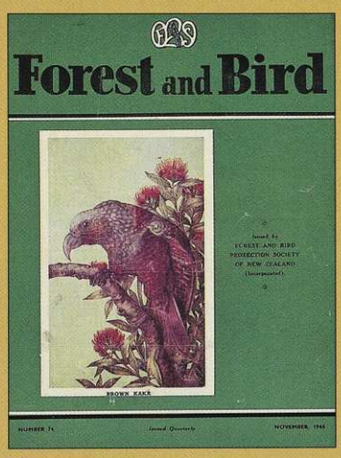
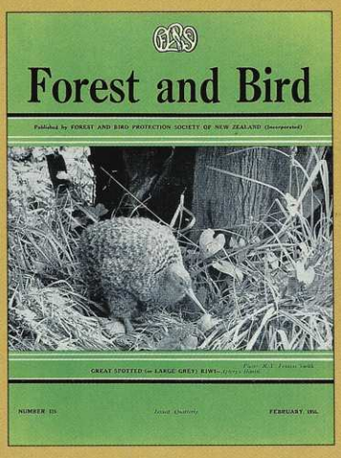
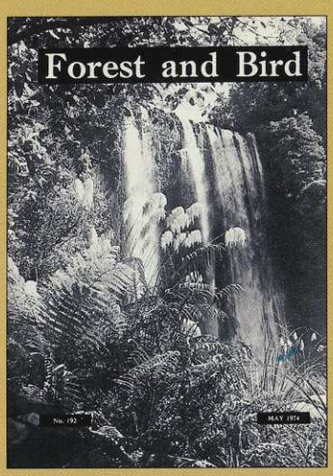
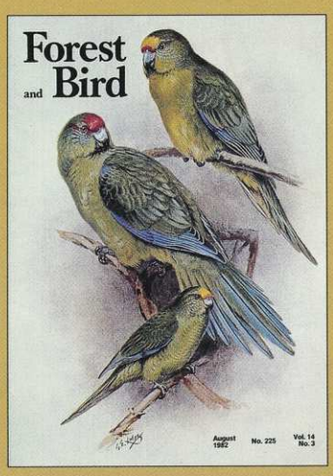
FOREST & BIRD

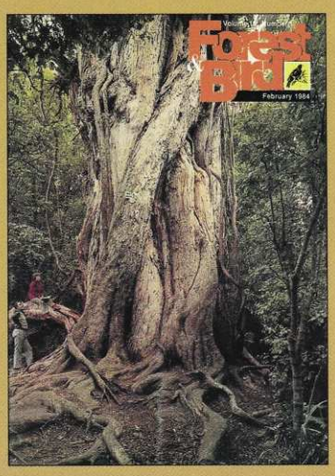
NUMBER 300 • MAY 2001

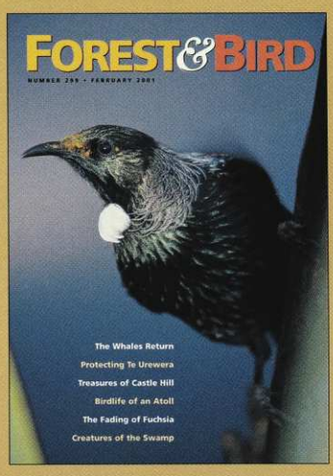












Our 300th Issue

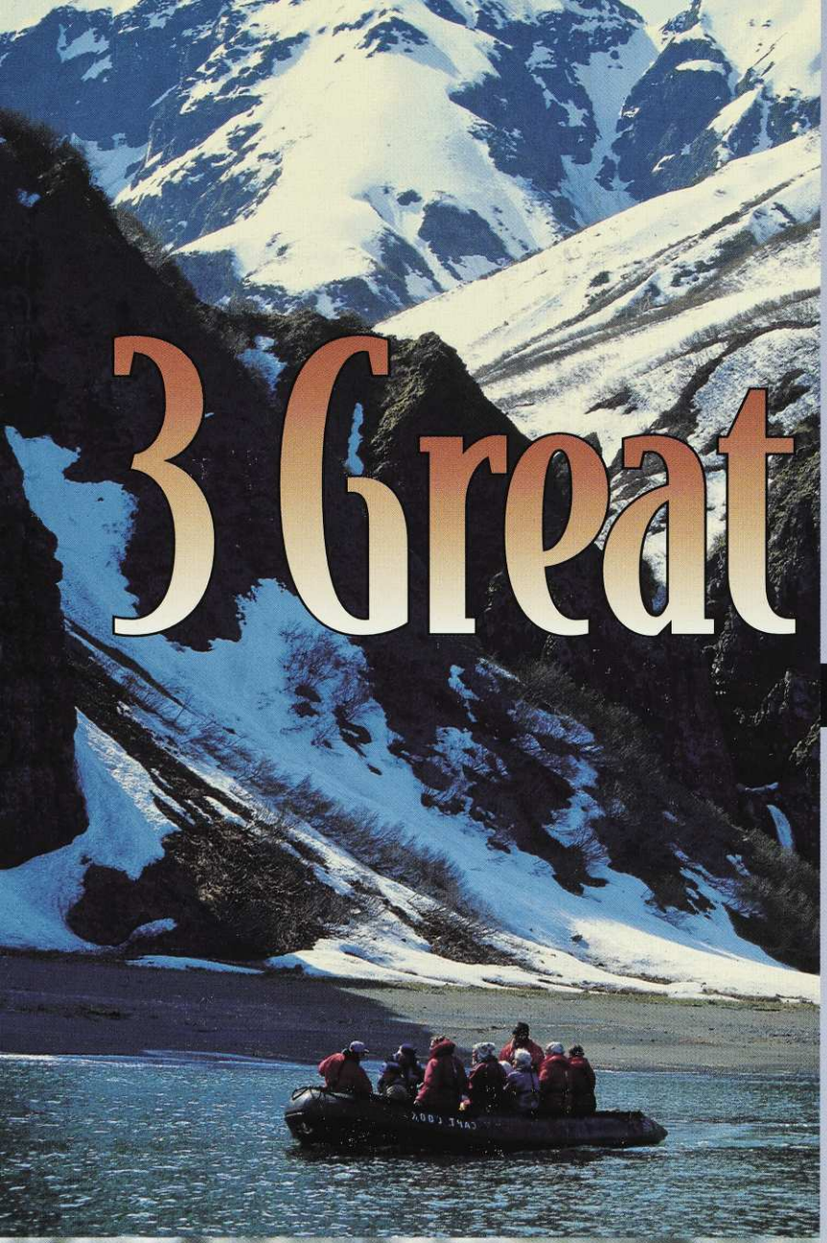
New Start for Sea Lions

Cunning Kea

Farthest North

Subantarctic Macquarie

Wild Rivers at Risk



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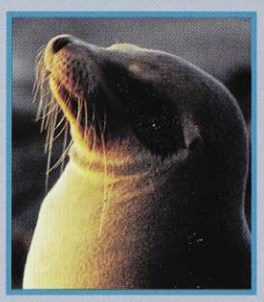

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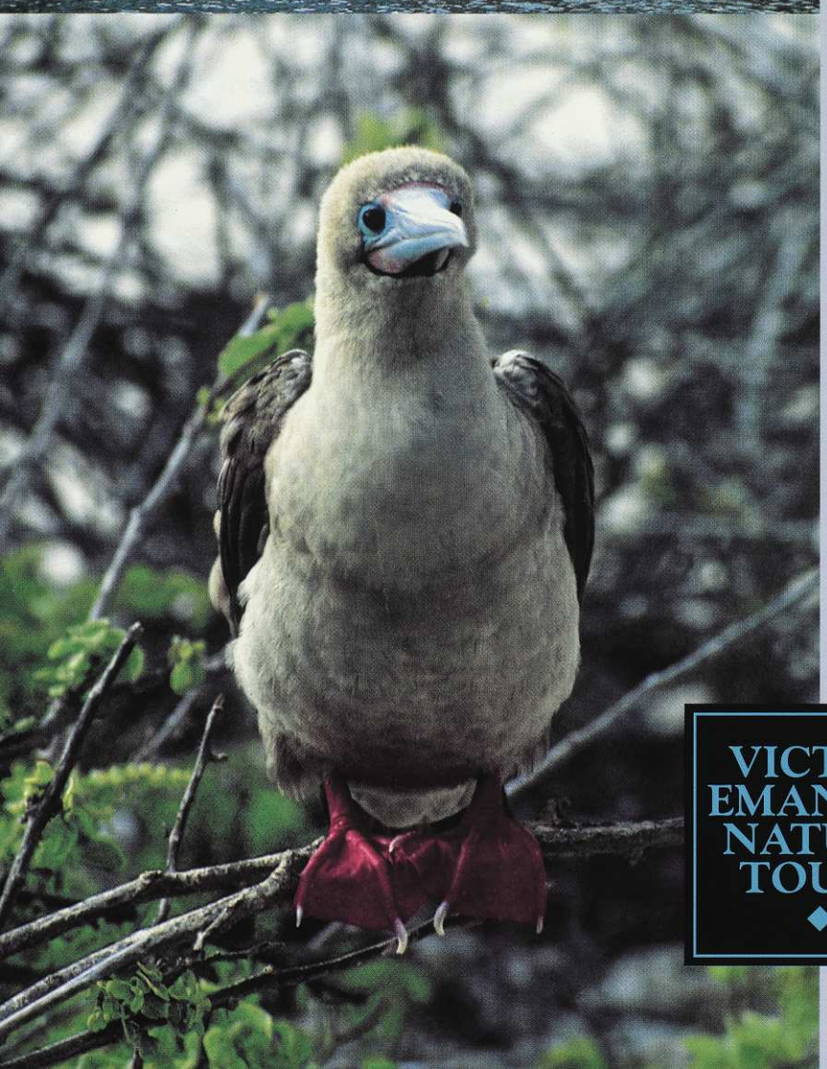

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Working together we can make a difference

Forest and Bird, New Zealand's largest environmental organisation, is involved in a wide range of conservation work. We are a registered charity which works to preserve and protect the indigenous flora and fauna and natural features of New Zealand for the benefit of the public including future generations. Current Forest and Bird membership is 40,000, and the Kiwi Conservation Club, for young people, has an additional membership of 6,000.

Forest and Bird is helping to:

- Protect natural areas including forests, tussocklands, wetlands and rivers.
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- Save dolphins, seals and seabirds by ending damaging fishing practices.
- Promote a safe environment, free from pollution.

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FOREST & BIRD

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

NUMBER 300 • MAY 2001

FOREST & BIRD

Forest & Bird is published every February, May, August and November by the Royal Forest and Bird Protection Society of New Zealand Inc.
The society's objectives are to preserve and protect the indigenous flora and fauna and natural features and landscapes of New Zealand for their intrinsic worth and for the benefit of all people. Forest and Bird is a member of the World Conservation Union and of Birdlife International.
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Editor: GORDON ELL
The Bush Press, PO Box 33-029, Takapuna 1309.
Telephone & fax: (09) 486-2667
Email: bush.press@clear.net.nz

Design: Gina Falconer, Microdot
Prepress production: Microdot
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Advertising: Peg Mackay,
Print Advertising Ltd, PO Box 27-194, Wellington.
Ph: (04) 801-6187 Fax: (04) 801-6261
Email: peg@printad.co.nz

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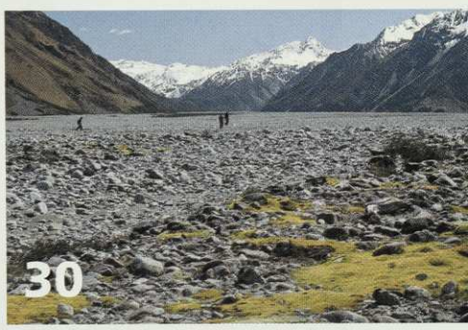
Features



Regulars

Cover: The changing face of *Forest & Bird* magazine through 300 issues since 1923. Feature, page 34.

comment

After 78 years, Forest and Bird is still about the same principles.

This is the 300th edition of *Forest & Bird*. By any yardstick, that's a notable feat. *Forest & Bird* is one of the oldest continuous publications in New Zealand. After 78 years the magazine is still here and still going strong. Well done.

On behalf of three generations of members, I want to place on record their grateful appreciation to the editors and contributors who have made *Forest & Bird* what it is today. Our magazine is recognised around the world as a leading nature-conservation publication covering a wide range of topical science and environmental issues. Long may it reign.

The Society's raison d'etre was set out in 1923 by our founder, Captain Val Sanderson, and his small band of fellow conservationists. They composed a deceptively simple statement of intent — to preserve and protect the indigenous plants and animals of New Zealand. Seventy-eight years on, the Society continues its pursuit of this principal constitutional object. Such longevity speaks volumes for the wisdom and foresight of our founding members, and the value of clearly stated goals.

Over the years as your President, the most frequent enquiries I receive concern the Society's objectives and its tenacious defence of New Zealand's environment. We know the answers, but it's no bad thing to occasionally visit them afresh for what the jargon inelegantly calls, a 'reality check'.

First and foremost must surely be the moral imperative. Humans are one of millions of species living on planet Earth. Numerically, we're well down the list — there are more bacteria in your mouth than there are humans on the planet. By impact, we're unsurpassed. Humans have developed awesome powers. We can destroy species and have done so with apparent impunity. Many of the planet's life forms are extinct because of our actions.

Species exinction and planet Earth are not strangers. But the dinosaurs were not driven to extinction by another species. That humans have the power to destroy is undeniable, but in general terms such power should be exercised only in exceptional circumstances, such as eradication of alien invaders that threaten local ecosystems.

Secondly, there is a patriotic imperative. Of the organisations in New Zealand (and there are a lot), is it fanciful to suggest that the Royal Forest and Bird Protection Society ranks high in the patriotic stakes. We focus on the indigenous; the kiwi and keruru, the rimu and red moki, the pohutukawa and yellow-eyed penguin. We strive to protect and preserve plants, animals and ecosystems that are uniquely New Zealand. We hold this as a special duty because much of our biota is not known elsewhere.

Of course, we are not alone in this. There are many groups and individuals working for the same goal. It seems to me there can be few higher patriotic callings than protecting and preserving in as natural a state as possible our little bit of planet Earth.

'...destroying our biodiversity can be likened to living in a house devoid of those things that make a house a home. No art, no music, no ornaments, no garden, no flowers...'

Thirdly, there is enlightened self-interest. In the words of Edward Wilson, one of the master intellects of conservation in this age: 'Only in the last moment of human history has the delusion arisen that people can flourish apart from the rest of the living world'. Does humanity really believe it can go it alone? How strange.

Every now and then we need to give ourselves a metaphorical kick in the

backside. Planet Earth is the only storehouse. There is only so much biological capital. Does it not strike you as odd that the economic gnomes who talk about economic stability, and not eroding the capital and all that stuff, don't visit the same strictures on the use of our biological capital?

Aside from the biological resources we use now, New Zealand's biodiversity represents a pool of untapped resources. The new sponge discovered off the Kaikoura coast, that produces a cancer-fighting substance, is but one example.

Fourthly, there is enjoyment. The sheer abundance and scope of New Zealand's biodiversity is a wonder in itself. For me, little surpasses the enjoyment of sitting in a forest and listening to our very special birds. Human art is a wonder as well, no doubt about that. But nothing I have heard in my lifetime has come close to the haunting melody of a kokako or a flock of bellbirds.

On that note, can I say with unabashed sentimentality, I to belong to a school of thought that believes birds sing, in part, because they enjoy singing.

Reduced to a simplistic analogy, destroying our biodiversity can be likened to living in a house devoid of those things that make a house a home. No art, no music, no ornaments, no garden, no flowers, not even any wallpaper, just a box. How drab. And how long before we realize how much we cherished those things and miss them desperately?

Finally, there is altruism — the doctrine that holds the general welfare of society as a whole is the proper goal of an individual's actions. The principles of Forest and Bird support that.

KEITH CHAPPLE QSO, *is national president of Forest and Bird.*

mailbag

'Mainland Islands'

What happens to the birds when they leave the safety of a 'mainland island'? asks Keith Chapple, in his editorial in *Forest & Bird* of February 2001.

Anyone who has spent time in New Zealand's forests knows full well the paucity of birdlife there compared with that on predator-free offshore islands. Birds in mainland native forests away from 'mainland islands' are hard-pressed to survive.

Increasing populations of birds in 'mainland island' areas have to spread further afield into untreated forest remnants where predators run rife.

However, this no longer need be the case for we now have the fence. Thanks to the Karori Wildlife Sanctuary Trust. and people like businessman/farmer David Wallace of Cambridge and a few others who are starting to experiment, the predator-proof fence has now arrived and is continuing to be perfected.

It is now possible to surround a remnant forest with a fence which will shut out all predators right down to mice. As time progresses new ideas are coming forward with cheaper prices and easier methods of construction on the horizon.

With this great advance in predator control the time is now right to do something about 'big is good' and look at preserving as much of our native remnant forests as is possible, not with the seven-wire post-and-batten fence, but the latest model of the predator-proof fence. If this were done, the birds escaping from the 'ecological sanctuaries' would then have somewhere safe to go.

Stuart Chambers, RD4 Pukekohe

Beaches as Roads

I took this picture (above right) at Lang Cove, Northland during this summer.

As I observed a constant stream of tractors driving back and forth along the entire length of the bay (where birds breed) I wondered what the rules were for vehicles on the beach. When I phoned the Whangarei District Council I was advised beaches are considered roadways in the north. I was referred to the traffic department if I wished to complain about excessive speed or dangerous driving.

A small area of the foreshore is fenced off to protect the rare New Zealand dotterels and variable oystercatchers. It is amusing to note the birds are unaware of the purpose of the fences and wander all over the beach. I was very upset to see a tiny dotterel narrowly escape the wheels of a boat trailer which she could not hear above the sound of the waves.

I can't imagine what tourists make of the New Zealand attitude towards our beaches, treating them as roadways. It doesn't do much for our clean, green image.

Helen Gillespie, Campbells Bay

Genetic Engineering

I'm writing to express my disappointment with the latest issue of *Forest & Bird*. Although its content is excellent (as usual) in many respects, there is a conspicuous absence of *any* information on the critical issue of genetic engineering. Considering that the Royal Commission of Inquiry into this new and unproven technology is in full swing, and that several branches of Forest and Bird have Interested Party status, this is a serious oversight. I understand that Peter Maddison is 'in charge' of overseeing this important issue — can we not hear from him or the branches doing admirable work in addressing this issue?

I wish to express my thanks to the Northern branch of Forest and Bird (in particular, the chairman Steven Westgate and secretary Ngaio Davis) for their support of GE Free Northland in lobbying the local council to class GE as a prohibited activity in the district plan, and pressuring Northland Regional Council to take responsibility for protecting both biodiversity and Northland farmers from transgenic pollution.

Zelka Grammer, Chairwoman, GE Free Northland, Member, Whangarei Forest and Bird

As previously reported, Forest and Bird's policy with regard to genetic engineering was decided at the June 1999 Council meeting when branches resolved to urge 'the Government to adopt a precautionary approach to genetic engineering because of the significant uncertainty of the environmental risks of genetically engineered species or their hybrid derivatives becoming established in the wild, to the detriment of indigenous biodiverity or to domestic animal or crop species'.

The Society was still developing its position for the Royal Commission when we last went to press, so no article was available. Dr Maddison, who chairs the national executive's committee on biosecurity, reports on the Society's evidence on page 46 of this issue.

Lang Cove, beach or road?

Seals and Sea Lions

I noticed in the most recent *Forest & Bird* magazine a photo of sea lions in the Catlins (in the article 'Lodges and Reserves') which were mis-labelled as fur seals.

Shaun McConkey, Dunedin

Helpfully, Shaun McConkey includes the field characteristics which determine the difference between these seals in his article on the spread of New Zealand sea lions, from page 14 of this issue.

Tussock Grassland Conservation Park Proposed in Otago

New Zealand's first tussock grassland conservation park is being put together in Otago by the Department of Conservation. The park is being formed in large part from lands surrendered to the Crown on the Lammerlaw and Lammermoor Ranges, inland from Dunedin.

To be named Te Papanui, this is also the first conservation park to be formed by DoC since its establishment in 1987. Altogether some 17,000 hectares of high country will be included.

Te Papanui is technically mountain-top country, but it is quite unlike the steep slopes of the Southern Alps. Instead these mountain ranges are extensive, flat-topped areas, worn down by erosion into an upland plateau. Tussock grasslands sweep over the subdued landforms; and there is little exposed rock, unlike the tor-topped ranges further inland. Among the tussocks, fingering water seepages, peat bogs and tarns act as a giant sponge, absorbing the southwesterly rains that dominate the climate.

Run-off from this moorland-like tableland is therefore slow and regular. Stormwater has little energy, and the drainage pattern is gently and shallowly etched, like the branching pattern of trees.

The source of land for Te Papanui is mixed, but a large part comes from a review of the Crown leases governing Halwyn and Castledent stations. More will come when the review of Rocklands station is complete. All combined, these lands will form a contiguous area covering 17,000 hectares. The park will also include existing reserves such as Deep Stream Conservation Area (1899 hectares), Nardoo Conservation Area (925 hectares) and the Halwyn Conservation Area (1300 hectares).

Forest and Bird has given considerable support for the proposed conservation park. Members have publicly advocated for the formal protection of Otago tussock grasslands for many years.

Recently the Dr Marjorie Barclay Trust, administered by Dunedin Forest and Bird, helped purchase the Halwyn block, comprising 1300 hectares, to be part of the proposed park. The Miss E.L. Hellaby Indigenous Grasslands Research Trust, chaired by Prof. Alan Mark, also contributed to the purchase of the Halwyn block.

The newly acquired land is located north of Lawrence and comprises tall tussock land with a significant shrubland component, including areas of bogpine at high altitudes, sedge-rush wetlands and sphagnum bogs.

'Tussock grasslands are an essential element of New Zealand's landscape ecology and culture, but historically are poorly represented in the parks and reserves system,' the Minister of Conservation, Hon Sandra Lee, said when announcing the purchase of the Halwyn block by the Nature Heritage Fund.

Viewed as a unit, Te Papanui is a sweeping, undulating plateau. The dense tussockland of *Chionochloa rigida* grows on deep loess soils that accumulated at the end of the last glaciation. In its shelter grow many tiny plants, specially adapted to the harsh environment. In places, stock grazing and fires have had their influence on the vegetation, but the humid climate bestows a resilience to native plants which still form a landscape of outstanding natural character. A sense of remoteness and antiquity is enriched by remnants of bogpine, Hall's totara and papauma *Griselinia littoralis*, which recall a more woody vegetation in the past.

An evocative feature is one of the rare rock outcrops, the 'Ship at Anchor', which has a moat of water around three quarters of its circumference. It is a point of reference for the surrounding countryside and has historic values as a marker for route-finding in the gold rush days.

The insect fauna of the Waipori Ecological District, which covers the ranges, is of national importance with 511 species from some 13 orders. Some species are restricted to the ranges or are rare. The local day-flying caddisfly *Tiphobiosis* occurs here, as does the brown form of the large weta species *Hemideina maori*. Colourful day-flying moths, 18 species in total, are a feature of the herbfields and snowbanks.

Common lizards and skinks occur throughout the ecological district with jewelled geckos found in the catchment of the Lammerlaw Stream.

The area is of crucial importance for its water yield. It supplies approximately 70 percent of Dunedin's water. It is also the source of the Taieri, New Zealand's fourth longest river, which flows for much of its length through areas where water is in short supply.

The Otago Conservation Management Strategy, which provides for the development of the park, implies the area will be managed for its remote

BRIAN PATRICK, OTAGO MUSEUM

BRIAN PATRICK

Tussock grassland of the Lammermoor Ranges, typical of the Otago high-country to be incorporated in the proposed Te Papanui conservation park. At left, a new species of moth Orocrambus geminus *was described from the snow tussock in 1991.*

Water seepages and peat bogs act as a giant sponge absorbing the prevailing southwesterly rains.

recreation experience. For day use, limited public facilities will be provided. These will include signposting, and interpretation at park entrances, and shelter within the park.

There are two existing walking tracks that are maintained by the Dunedin City Council's water department. The Deep Creek Gorge walkway crosses a picturesque gorge a number of times over bridges which support the city water pipeline. The second track is accessed off Mahinerangi Road to the Ship at Anchor rock formation.

Recreational opportunities include mountain biking, horse trekking, cross-country skiing, walking, hunting and possibly 4WD touring. Access is likely to be the most significant management issue, according to the Department of Conservation. At present the main access is via a 4WD track. The department will have to determine what standard of road access is put in, and what maintenance costs could be sustained.

It could be several years before Te Papanui can be formally recognised as a conservation park.

The process requires public notification of the intention to establish a conservation park. Submissions are then received, followed by public hearings if requested. The Minister of Conservation considers the summary of objections and comments before deciding whether to proceed with the creation of a conservation park.

— *Janet Gregory, DoC, Dunedin.*

Conservationist Receives High Royal Honour

A former national president of Forest and Bird, Prof Alan Mark, has been made a Distinguished Companion of the New Zealand Order of Merit — the equivalent of a knighthood in the new honours system. He has previously been made a CBE (in 1988), and his peers and colleagues have also recognised his stature, electing him a Fellow of the Royal Society of New Zealand in 1978, and awarding him the Society's prestigious Hutton Medal in 1997 'for botanical research'.

The DCNZM is the highest award ever made for services to conservation in New Zealand.

'For me the greatest satisfaction is to have conservation based on sound science accepted as such a worthy cause,' he says. 'It's far from plain sailing and there are plenty of brickbats along the way, even if the case is scientifically credible.

'I've tried to keep all my campaigns and personal involvement in campaigns scientific,' says the man once dubbed the 'professor of political botany' for his effectiveness as a scientific advocate for conservation. He is now an Emeritus Professor of Otago University, having retired from his personal chair in 1998. He maintains an active involvement in research as chairman of the board of governors of the Miss E.L. Hellaby Indigenous Grasslands Research Trust, and continues writing (adding to the 150 or so scientific papers already published) and working on his beloved central Otago and Fiordland mountain ranges.

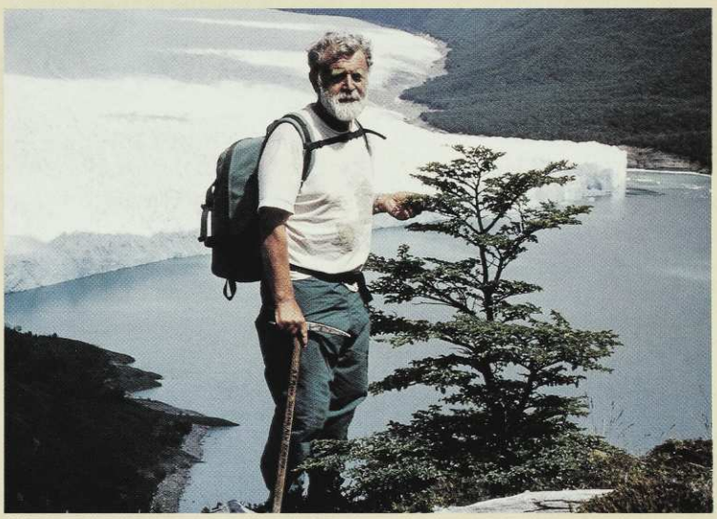
Alan Mark first rose to national prominence with the campaign to save Lakes Manapouri and Te Anau from damage by hydroelectric development. Lake Monowai had already been flooded, and dead trees still clog the shores of that lost lake. When agreement was reached to maintain the natural levels of the lakes, Alan Mark became the first chairman of the Guardians of Manapouri and Te Anau, an appointment he held for 26 years. He has served on the Otago Catchment Board (1974-86), the Land Settlement Board (1984-86), and the Mountain Lands Committee from 1989 until it was dissolved in 1993; positions which gave him many opportunities for advocating sustainable management and the natural values of the land.

Alan Mark was born and educated in Otago but earned his doctorate through a Fulbright grant at Duke University in North Carolina, graduating with a prestigious Phi Beta Kappa in 1958. He was a founding 'advisory' member of the Native Forests Action Council and joined Forest and Bird during the late 1970s, at a time when the Society was growing in activism for the absolute protection of all native forests. He also initiated, with the then conservation director Dr Gerry McSweeney, the redirection of the Society's activities into the conservation of non-forest ecosystems, particularly tussock grasslands and wetlands, where significant conservation gains have since been made.

He served on the national executive from 1982-1998 and was national president from 1985-1990.

In academic circles Alan Mark is well-known as an advocate of ecology. He has studied the southern beech forests and grasslands both here and in other remnants of the ancient continent known as Gondwana. He has also written a standard work on the plants of the high-country, *New Zealand Alpine Plants* (with Nancy M. Adams). The award of the Loder Cup in 1975 recognised his work in the conservation of New Zealand flora.

'Hopefully this award will encourage a few more ecologists into the frontline of conservation,' Alan Mark says. 'We could certainly do with some reinforcement.'



Prof Alan Mark, DCNZM, CBE, FRSNZ, most recently honoured by the Queen in the New Year's honours list. A former national president of Forest and Bird, he is presently chairman of the Dunedin branch. This picture was taken in Patagonia in 1997, with a southern beech, above the Perito Merino Glacier in Los Glaciars National Park, Argentina.

Alan Mark is still active in conservation, being chairman of the Dunedin branch of Forest and Bird, and also a member of the Otago Conservation Board. His service there over the past 10 years, included a seven-year term as chair of the board. Previously he was Forest and Bird's statutory nominee to the National Parks and Reserves Authority (precursor of the Conservation Authority) all through the 1980s.

His wife Patricia, also involved in conservation, was honoured by the Queen last year when she was made a QSO in recognition of her community services, particularly to health boards in Otago and the Yellow-eyed Penguin Trust.

Major Gifts of Northern Forest To Preserve Heritage

Two major gifts of forest in Northland, and a gift and purchases near Auckland, have expanded the number of public reserves which protect the surviving rainforests of the north.

- A forest of 753 hectares, south of Kaikohe, has been gifted to the nation by the family of the late Mr Hilel Korman, former owner of Hilstan Industries and founder and chairman of Holeproof Industries. The forest is inhabited by several threatened species.
- Project Crimson has benefited from a transfer of lands on the southern shores of the Hokianga, with the gift of 245 hectares by the timber company Carter Holt Harvey.
- Three blocks of South Auckland kauri and other native trees, totalling just over 350 hectares, have also been protected with help from the Nature Heritage Fund.

The gift of forest by the Korman family has been described by the Minister of Conservation, Hon. Sandra Lee, as 'a magnificent and extremely generous act of philanthropy.'

The Korman forest is dominated by totara, rimu, and two of Northland's key forest trees, towai and taraire. It is home to several precious species of native wildlife, most notably the North Island brown kiwi, kukupa or native pigeon, kauri snail and the forest ringlet butterfly.

The reserve is a prominent local landscape feature and a strategic source of water for many streams flowing three ways; to the Bay of Islands, to the Hokianga and to the Kaipara harbours. It adjoins the Hikurangi Scenic Reserve and together the two reserves form the largest expanse of native forest in the Tangihua Ecological District.

The forest will be securely protected as the Hilel Korman Scenic Reserve, and administered by the Department of Conservation. A grant from the Nature Heritage Fund covered the legal and administration costs of the gifting.

Project Crimson Takes Over 245-hectare Reserve

Project Crimson's sponsor, Carter Holt Harvey, has donated a 245-hectare block of largely virgin hardwood-podocarp forest to the trust. The forest, which is located in the Utakura valley, northwest of Kaikohe, has been described as a 'spectacular piece of land' by Project Crimson trustees.

The site's remote location saw the forest remain largely untouched through two generations of ownership by the Austin family, according to he chief executive officer of Carter Holt Harvey, Chris Liddell, who is also chairman of Project Crimson.

'Carter Holt Harvey and the Austin family have been neighbours in this area for some years, and employees of the company had noted the conservation importance of the Austin block,' says Chris Liddell. 'As the company's neighbouring land was of little commercial value, but was useful for farming, a swap seemed the optimal solution.'

Mr Liddell says the gifting to Project Crimson was seen as a unique opportunity to protect a remnant forest with large northern rata stands, which are of great interest to the trustees.

A preliminary survey of the land, conducted by a Project Crimson Trustee, Dave Bartram, shows that it contains a wide range of native trees, including northern rata *Metrosideros robusta*, flowering white rata vines, and yellow-flowering rata *Metrosideros fulgens*. Other trees include stands of mature and developing kauri, dense stands of rimu, kahikatea, totara, matai and kawaka.

'While there is some evidence of possums, the overall crown health and vigour are exceptional,' says Dave Bartram. 'Even very exposed ancient trees look very healthy.

'I would go so far as to say that this is the finest remaining example of unmodified Hokianga forest that I have seen during more than 45 years working as an arborist and in the field of tree health. This forest is of great importance to both Project Crimson and New Zealand as a whole.'

A complete flora and fauna species list has yet to be prepared, but Peter Anderson of the Department of Conservation confirms that the land 'has the finest stand of old-growth podocarps ,with the greatest diversity of indigenous gymnosperms from any single site in Northland today. This is also the last dense podocarp stand remaining in Northland, and we are delighted to see it protected.'

Project Crimson's land sits between two DoC parcels which together give around 1200 hectares of land under protection. Over the coming months, Project Crimson will be working with tangata whenua and the Department of Conservation to develop a comprehensive management plan.

DAVE BARTRAM

Part of the Hokianga forest of 245 hectares gifted by Carter Holt Harvey to Project Crimson. 'This is the finest remaining example of unmodified Hokianga forest that I have seen during more than 45 years working as an arborist and in the field of tree health' says Project Crimson trustee, Dave Bartram.

Northern Coastal Forest Protected Near Firth of Thames

In South Auckland, the Nature Heritage Fund has helped with the protection of three blocks of kauri and other native trees near the Firth of Thames.

The three blocks totalling just over 350 hectares include the Boulder Brae kauri, which has a circumference of about seven metres, as well as other kauri-beech, taraire-tawa forest with scattered puriri, and tanekaha and kanuka vegetation.

'We are indebted to Glenis and Duncan Munro, to Jennifer and Keith Kelly, and to Ann and George Richardson for each allowing a block with high conservation values, which their families have cared for over the years, to be taken into public ownership for the benefit of all New Zealanders,' says the Minister of Conservation, Hon Sandra Lee.

The Kelly block of 108 hectares and the Munro block of 227 hectares adjoin the Mataitai Forest Stewardship Area in the Ness Valley near Clevedon, resulting in a total protected area of about 700 hectares. The Munro block is known locally as Whakatiri and contains two large kauri, one of which is to be named the Luke Kauri and the other the Munro Kauri, in recognition of the former owners.

The Richardson family has gifted land, at Kawakawa Bay on the Firth of Thames. The 16.5 hectares will be known as the Richardson Scenic Reserve. It is adjacent to the 52-hectare Te Morehu Scenic Reserve.

Sandra Lee thanked the Manukau City Council for helping the Crown acquire the land, and the Nature Heritage Fund which contributed more than $300,000 to make the transfers to public ownership a reality. The blocks will be administered as conservation land by the Department of Conservation.

Lessons from the Gulls of Kaikoura Peninsula

One of the world's longest-running bird studies focuses on a thoroughly common species, but its results are providing information that may help with the management of some of the rarest and most endangered.

For 43 years, red-billed gulls at seven colonies around Kaikoura Peninsula have been netted, banded, sampled and monitored. Some 100,000 chicks have been ringed, and 35,000 'breeding attempts' monitored. More than 5000 birds are colour-banded for individual recognition.

One long-term researcher, Dr Jim Mills, has been going to Kaikoura each year since 1964. He says the Kaikoura gull population has captured scientific interest because it has very little immigration or emigration, allowing researchers to calculate lifetime reproductive rates and the contribution that an individual makes to the next generation. This is different to many bird populations where young animals disperse and breed away from the natal colony.

Data from Kaikoura has now led to a major finding with implications for the conservation of species — that is, relatively few 'high quality' individuals maintain the population from one generation to the next. While a large number of birds breed, most are continually unsuccessful.

At Kaikoura 24 percent of breeding females 'recruit' young into the breeding population. Over all, only 15 percent of the females produce 52 percent of the young 'recruits'. Dr Mills says this finding is consistent across the small number of long-term animal studies carried out throughout the world, ranging from insects, to birds, to elephants.

DAVE HANSFORD, ORIGIN NATURAL HISTORY MEDIA

Dr Jim Mills returns to New Zealand from the Unted States each year to don overalls, hat and earmuffs and get among the red-billed gulls of Kaikoura. The biggest threat to the colonies today is predation by feral cats which now threaten the long-term viability of red-billed gull and white-fronted tern colonies at Kaikoura. Dr Mills links the increased predation to the introduction of the rabbit calicivirus disease — cats have 'prey switched'. One or two cats can, over the course of a breeding season, destroy 1000-3000 nests and kill large numbers of chicks and adults.

'If management of endangered species populations is to be effective it is important that these high-quality individuals are identified and carefully managed so their production is not jeopardised,' he says.

The next stage of the Kaikoura investigation will build up information about these high-quality birds. It will look at individual characteristics to see whether the more successful breeders, and those that live longer, have a better set of immunity genes; and whether females choose mates on the basis of their immunity genes, to maximise the chances of their own offspring's survival. The study is being funded by a Marsden Grant administered by the Royal Society of New Zealand.

The Kaikoura study had its beginnings as part of a nationwide study by the Ornithological Society of New Zealand to investigate the winter dispersal of red-billed gulls. Past years have shown that most adults and young disperse from the colonies during autumn and winter, but most remain within 250 kilometres of Kaikoura. However, colour-marked birds have been seen as far away as Invercargill, Auckland and Greymouth.

Dr Mills is keen to get reports of further sightings to help build the pattern of this dispersal. Anyone who sees a colour-banded red-billed gull is encouraged to send details to the Banding Officer, Department of Conservation, P O Box 10 420, Wellington. The metal band should be read as a colour band, with the sequence running from top to bottom, noting which of the bird's legs the colours are on.

Dr Mills says long-term studies like Kaikoura have added a new dimension to the study of ecology, all thanks to the support of successive research directors of the Wildlife Service and the subsequent Department of Conservation — Doctors Gordon Williams, Malcolm Crawley, and Richard Sadleir.

— *Marieke Hilhorst*

Wellington Harbour, a Capital Place for Birds

Offal, it seems, is one bird's feast but another bird's famine.

Wellington Harbour's diverse coastal birdlife is changing, the result of sewage and offal outfalls closing down during the past 25 years. Numbers of offal eaters, such as giant petrels, have declined markedly, while spotted shags, which like clean water for fishing, have moved in and begun breeding.

The trends in bird numbers and distribution are coming forth from results of a long-term survey carried out by members of the Wellington branch of the Ornithological Society of New Zealand (OSNZ).

Three times since 1975, most recently from 1998 to 2000, the volunteers have given up every second Sunday each month for two years to survey their patch of the harbour, rain or shine.

Their efforts have recorded the presence of 13 key coastal-bird species, and 32 others, helping to map changes in numbers and distribution.

Hugh Robertson, a Department of Conservation scientist and OSNZ member, has been involved in two of the three surveys. He says the changes in the populations of some birds can be linked to the efforts to clean up the harbour waters over the past 25 years.

'Clean ups' include diverting raw abattoir waste into Wellington city's sewage system, the milli-screening of sewage outfalls, and the closure of the city's infamous inshore sewage discharge at Moa Point.

Not all birds have benefited from the changes. Along with the giant petrel whose numbers have dropped from more than 100 in the early 1960s to virtually none today, reductions in waste discharges may also be responsible for the dramatic drop in red-billed and black-backed gull populations. Red-billed gulls now number less than 2000 birds, fewer than half the numbers counted in the original 1975-77 survey.

Black-backed gulls are down to one-third of their mid-1970s population. Decreases in the population of black-backed gulls may be due to egg-pricking programmes at the airport and on Somes/Matiu Island, or a decrease of local nesting habitat. Hugh Robertson suspects the main cause is less food in the harbour, while the egg pricking has exacerbated the decrease.

The effect of a cleaner harbour on shags is less clear. Two species, the spotted shag and little black shag, both seem to have benefited. Spotted shags are a relatively recent colonist in Wellington Harbour, arriving in the early 1970s. Their numbers have risen to about 50 and they are breeding. Little black shags are a non-breeding visitor whose numbers have soared, from less than five in the mid-1970s to more than 100 now.

Two shag species that have not fared so well, for unknown reasons, are the black shag and little shag. Both populations seem to have stabilised at about 30 and 180 birds respectively.

Hugh Robertson says the growing database of Wellington Harbour's coastal birds provides interesting trends and clues about the health of the harbour and its impacts on birds, but the pathways and causes are speculative.

— *Marieke Hilhorst.*

DAVE HANSFORD

In his spare time, ornithologist Hugh Robertson keeps a count on Wellington Harbour birds. He is co-author of The Field Guide to the Birds of New Zealand, *and head of the kiwi recovery programme, sponsored by the Bank of New Zealand in conjunction with Forest and Bird, and the Department of Conservation.*

Breakthrough in Cabbage Tree Mystery: Cause Revealed

Landcare Research has made some major advances in understanding the 'sudden decline' disease which is killing the native cabbage tree *Cordyline australis*, also known as ti kouka. Cabbage trees have succumbed in large numbers to the disease, which causes the leaves to yellow and fall off, usually followed by the death of the tree three to 12 months later. In some areas, particularly in the north, no big trees are left.

Landcare Research and HortResearch scientists used highly sensitive DNA techniques and electron microscopy to identify the cause of the disease as a phytoplasma, *Phytoplasma australiense*, an elusive type of bacterium that lives in plant sap. 'Seeing the phytoplasma under the electron microscope was like finding a needle in a haystack,' according to Dr Ross Beever of Landcare Research.

DNA techniques indicate that the phytoplasma is native to New Zealand flax, and has spread to other species, Dr Beever says. The pathogen caused massive epidemics of yellow leaf disease in flax early last century, destroying the once extensive flax swamps of Manawatu and was a major factor leading to the eventual collapse of the once-flourishing flax fibre industry. Dr Beever says as well as spreading to the cabbage tree, this microscopic pest also affects the health of other native species, particularly karamu *Coprosma robusta*.

It is also suspected to cause dieback and death of the black tree fern or mamaku, kohuhu *Pittosporum tenufolium* and puriri. The phytoplasma has also been found in strawberries in New Zealand, and in Australia it is linked with diseases of grape and papaya.

Altough the cabbage tree pathogen has been identified, Dr Beever says many questions still need to be answered.

'The next major aim of the research is to identify the plant-hopping insect or insects that spread the phytoplasma. This knowledge is important for devising methods for managing the disease long-term.

'We also need a clearer picture of what plant species are affected by the pathogen, and how. Do the insect vectors move the phytoplasma from the cabbage tree to other species? Does the pathogen affect commercial crops other than strawberry? Are there symptomless carriers of the phytoplasma? Are there natural sources of resistance? And is there is some way of repelling the insect vectors?'

While the research is on-going, Dr Beever says it has identified things that people can do to increase the survival of cabbage trees in the short term.

'I would encourage rural landowners to fence off existing cabbage tree patches, to keep them clear of grazing stock, and thus allow more natural regeneration to occur. Planting cabbage trees in gardens and land restoration projects will also play an important role in maintaining cabbage trees as a special feature of our landscape, he says. *— Diana Leufkens, Landcare Research*

LANDCARE RESEARCH

The cause of 'sudden decline' disease in cabbage trees appears in this photomicrograph as circular and dumbell-shaped bodies with granular contents, inside a sap-conducting cell. The photograph was obtained by magnifying the cell 30,000 times though it appears here in reduced form. The picture was made by Paul Sutherland of HortResearch

ROSS BEEVER

Chris Winks of Landcare Research examines a dead cabbage tree near Waimauku, Auckland. Dead and dying trees are still a feature of the landscape but the cause of 'sudden decline' disease is now known.

Improvements to Forest and Bird Information Website

A major overhaul of the Forest and Bird internet website has taken place over the last few months resulting in a smart, clean and professional new look. It is hoped the improvements will encourage more visitors and cut down on administration time.

The graphic designer is Catherine Hanham who prepares many of Forest and Bird's office publications.

Among changes, there is now a side navigation bar on each page which allows you to see at a glance the remainder of the section entered.

The 'home page' features a news bulletin area where recent headlines and their 'short-form descriptions' are displayed. Links are provided for those wishing to explore a particular item in full. The site index and a search facility is also available from the home page.

'Our Conservation Work' is the new link from the home page to browse such sections as marine and coastal conservation, natural heritage, species at risk, alien invaders, campaigns and submissions. Graphics, cartoons, maps and related newspaper articles will enhance the browsing experience.

Media releases and journals will remain pretty much as before but with a useful new addition. A database has been developed of all articles published in the *Forest & Bird* journal since 1984. The user simply initiates a 'find' function on their chosen topic and the database delivers the article name, author, page number and date of publication. A request can then be made to the central office of the Society for a copy of the article or the issue containing it, in return for a donation.

To access Forest and Bird's website enter the address: www.forest-bird.org.nz

An information page about the plight of albatross in the Southern Ocean, a typical page from the world wide website of Forest and Bird. Access it by entering www.forest-bird.org.nz

The Kiwi Conservation Club, for junior members, has its own website at www.kcc.org.nz

Recognition for KCC Website Too

Forest and Bird's Kiwi Conservation Club has been recognised for the quality of its internet website, www.kcc.org.nz

The KCC website was recently placed in *Net Guide*'s Top 500 of worldwide websites, and featured in the *Net Guide* Top 500 special edition of that magazine — a wonderful compliment for a growing resource. The site was placed in the top 10 for its category.

Feedback about the site has also been steadily increasing from many web users. A young KCC member emailed: 'I love your weta info. It's helped me a lot with my school projects. I would like to work at Forest and Bird when I am older.'

Recent additions to the site include new fact sheets; New Zealand forests, species counts, and Maori bird names. In the teachers' section there is a new forest trip resource. The 'How Can I Help?' section has been extended to help young environmentalists help the planet.

Reach the Kiwi Conservation Club on the net at www.kcc.org.nz — *Contributed by Melissa Kwapisz and Carol Knutson.*

Green Globe Scheme Aims to Curb Excesses of Tourism

Growing international demand for 'eco-friendly' tourism could provide strong incentives for tour operators to become proactive conservationists, and we are talking beyond the obvious 'dont kill the goose' analogy.

The year 2000 was a record breaker for New Zealand tourism: another one. Nearly 1.8 million international visitors flocked here and Tourism New Zealand gleefully forecasts these numbers will continue to soar. But millions of tourists drawn to our parks, our tracks, our coastline, our wilderness, and by our wildlife, obviously bring with them huge pressures on our natural environment.

In one response, the New Zealand Government has recently sanctioned an environmental certification programme called Green Globe 21 for the tourism and travel industry.

There are also encouraging signs that tourists themselves want operators to 'clean up their acts'.

Research by international tourism organisations sends a clear message: that travellers are seeking proven 'green' travel operators, and are prepared to pay more for their holidays to ensure a commitment to environmental protection.

Studies commissioned by the World Tourism Organisation, British Tourism, and the United States Tourism Industry Association have established some interesting evidence of this:

- 83 percent of travellers are inclined to support 'green' travel companies;
- 52 percent of people are prepared to pay an average of NZ$18 more to every tour operator, transport company, accommodation provider, tourist attraction, caterer and retailer, to ensure commitment to environmental protection.
- More than 50 percent of British tourists are willing to pay more for their overseas holiday — provided the extra money goes towards the preservation of the local environment, and that workers in destinations are guaranteed good wages, or their money goes to local charities.

These findings apply not just to 'ecotourism' style operations but to the entire travel and tourism industry, including transport companies, accommodation providers, tourist attractions and retailers.

The ramifications are obvious — run a tourist operation on the basis of sound environmental principles and not only does the environment benefit; so does the business.

'Our greatest business asset is the environment we operate within,' says Darryl Wilson of Abel Tasman National Park Experiences, a New Zealand Tourism Award winner in 2000. 'Working to protect the environment and educating those passing through it makes the utmost sense.'

The natural environment may be our trump tourism card, but in the rush to welcome the touring millions there are still a scary number of examples that blow the 'clean green' myth.

Looking at the big picture, there is the tourist industry's incredible reliance on energy consumption. Speaking last year at TRENZ — the annual trade show where New Zealand tourism operators sell their wares to overseas travel wholesalers — conservationist and ecotourism operator Dr Gerry McSweeney said a major 'attitude change' is needed in the way we are doing tourism.

'So much of our tourism industry is built around the natural environment yet the activities we're undertaking in that environment are often alien to the natural principles of water quality, air quality and above all the reduction of greenhouse gas emissions,' Gerry McSweeney said. 'We are an industry whose flagship is energy consumption. You only have to look around TRENZ displays to see this: huge 4WD vehicles, high-powered jetboats and helicopters.

'In quite a short time I believe consumers are going to look at the issue of fossil fuel consumption and make their choices,' he said. 'The sort of activity we're engaged in here now is akin to tiger hunting a hundred years ago.'

Green Globe 21

With Gerry McSweeney's prophecies already coming true, the establishment of Green Globe 21 in New Zealand could be a positive move. Three agencies, the Ministry for the Environment, Office of Tourism and Sport and the Tourism Industry Association (TIA) have jointly funded an initiative to encourage New Zealand tourist operators to join this international accreditation programme.

Green Globe 21 is based on the Agenda 21 principles, developed 10 years ago at Rio de Janiero by the world biodiversity congress

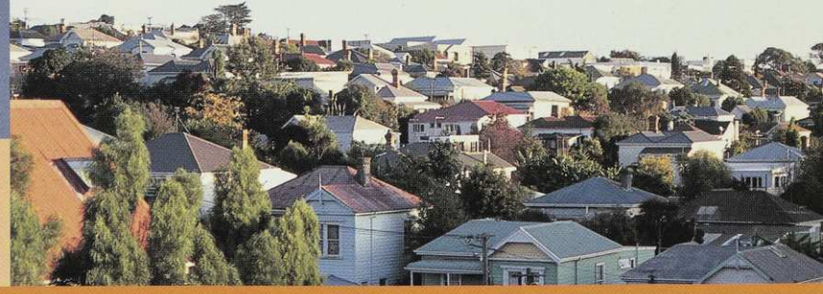
'Basically the principles for sustainable tourism fit perfectly with where Green Globe 21 is going,' says Malcolm Anderson of the Tourism Industry Association, who is responsible for its implementation. 'The programme is based on internationally agreed principles, requires a commitment to continuous improvement, has an independent certification component and is reviewed on an annual basis by an international advisory council.'

This year, the TIA has negotiated free entry for New Zealand companies to enter the first stage of Green Globe 21 accreditation. This involves the completion of an environmental plan, requiring companies to consider key performance areas, and identify and address their environmental impacts. Performance areas include minimising and recycling waste, energy efficiency, management of fresh water resources, ecosystem conservation, and management, social and cultural issues, reducing greenhouse gas emissions, optimising wastewater management and air quality protection and noise control.

In early March, Malcolm Anderson reported that 48 New Zealand tourism operators had applied for certification.

— KATHY OMBLER *writes about the outdoors and travel from a base in Wellington.*

Ministry for the Environment
Manatū Mō Te Taiao



OUR ENVIRONMENT

Te Taiao - ki a koe, he aha ngā take nunui?

what matters to you?

The Ministry for the Environment wants to know your views.

- Is New Zealand's environment as healthy as you would like it to be?
- Are we making enough progress with our key environmental problems?
- What should be the priorities for future action?

The 'Rio+10' programme is an opportunity for the community to have its say in time for the next 'Earth Summit', or World Summit on Sustainable Development, in 2002. Your views will also help inform the Ministry's own work priorities.

You can become involved by filling in a 'Rio+10' response form, or by using our starter kit for discussions in your local branch.

To request a response form and starter kit, please contact the Ministry at:

Phone: (04) 917-7493

Fax: (04) 917-7523

E-mail: rio@mfe.govt.nz

Or fill in a response form on-line: www.mfe.govt.nz/new/rio.htm.

We look forward to your involvement!

rio +10

After 100 years or more, New Zealand sea lions are breeding on the mainland again, but they need help, according to SHAUN McCONKEY.

New Start for the Sea Lions

After being driven from our shores by Maori hunters and European sealers, New Zealand sea lions are coming back from the subantarctic. Mostly males, the population around our southern coast may now exceed 100.

This return of the threatened sea lion has received a welcome boost with the recent birth of three pups, adding to the previous six pups already born on the mainland. What is remarkable is that all nine births are descended from one female. She is simply called 'Mum'.

Mum was first seen in Otago in 1991 at four years of age. Having been born on the Auckland Islands she swam close to 650 kilometres to reach Otago. She is one of only five or six females to make the journey.

Unlike Mum, most female sea lions are rarely seen. Due to this lack of females the first successful birth of a sea lion pup on the mainland did not occur until Mum gave birth in the summer of 1993-94. Males, on the other hand, have been increasing their numbers in Otago, from infrequent sightings as early as the 1950s, to approximately 100 resident animals in the year 2000.

Mum is now a regular on Otago Peninsula and has given birth successfully to six pups; four daughters and two sons. Mum's first four offspring have survived and continue to live on Otago Peninsula where they were raised. Sadly last year's pup was found dead on Otago Peninsula with no obvious cause of death. Her most recent pup, born in January 2001, went missing shortly after he was discovered and there is little chance that he will survive for long away from his mother. There is some concern that these recent breeding failures may cause Mum to abandon the area.

New Zealand sea lions are also widely known by their former name of Hooker's sea lion. It is believed officials introduced the 'New Zealand' name to heighten awareness of the species as a local one.

All photographs with this article are by SHAUN McCONKEY

Sea lion or fur seal

Fur seals and sea lions are sometimes mistaken for one another but have several physical and behavioural differences.

Sea lions

- Blunt nose
- Larger (max 400kg)
- Adult males have a mane of longer hair around neck and chest
- Coarser, less dense fur
- Hind flippers move independently
- Unafraid of people
- Prefer sandy beaches
- Feed over the continental shelf

Fur seals

- Pointed nose
- Smaller (max 200kg)
- Adult males have no mane
- Finer, denser fur
- Hind flippers move together
- Afraid of people (unless used to them, or territorial breeding males)
- Prefer rocky shores
- Feed at the edge of the continental shelf or beyond

'With the birth of another three pups on the mainland this summer, one of which has gone missing from a very public beach with dog access, I think it is important to let people know their current situation.' — Shaun McConkey.

All this serves to highlight how fragile the breeding status of sea lions on the mainland may be. On the Auckland Islands and Campbell Island, large 'beachmaster' males defend territories containing groups of females and their pups, which are born in December or January. In Otago, Mum and her two breeding daughters are solitary breeders and must care for and protect their pups on their own. Added to this, both pups and adults face new dangers when living near human habitation.

The main danger is from uncontrolled dogs, which may find sea lion pups hiding near the beach where they have been left while their mothers go to sea to feed. Another danger is from well-meaning members of the public who sometimes pick up a pup, thinking it has been abandoned. Mothers return to the area where they left their offspring, calling until they hear a response. Once they meet, mother and pup will sniff one another to make sure they have the correct match. If pups are not returned to the place they were removed from, their mothers will not be able to find them when they return and the pups will starve.

Adult sea lions are at times on the receiving end of human aggression as they are often condemned for competing with local fishers. They feed within the range of the continental shelf, usually on or near the bottom, focussing on species such as barracouta, jack mackerel, flatfish, octopus, and cod. In the recent past sea lions have been shot, rammed by cars, and clubbed to death, in Otago.

Most sea lions have so far avoided beaches heavily used by the public, but if numbers continue to increase there are likely to be more encounters and sadly more sea lion deaths. The increasing popularity of ecotourism in the region will also lead to further 'interactions' which will need to be carefully managed.

There is little reason for people to fear sea lions as long as they are given a wide berth; the Department of Conservation recommends a distance of at least 10 metres. Sea lions are seldom frightened by people, and their tendency to sleep when ashore often makes people complacent. This can be dangerous as sea lions have very quick reflexes and can move rapidly over short stretches of beach. When faced with an uncertain situation, sea lions will often put on a display of aggression, but seldom do more than sit up and 'roar'. When sea lions are in a group, one

Female sea lions

Females can be distinguished from adult males as they are generally light grey or pale brown in colour. As adults they are much smaller and lack the mane of longer hair around the neck which is characteristic of males. Young males can sometimes be light in colour and, being smaller than adults, are often mistaken for females.

New Zealand Sea Lions at Risk in the Subantarctic

The greater number of New Zealand sea lions breed on the subantarctic Auckland Islands some 600 kilometres south of mainland New Zealand. There they are under pressure from commercial fishing, particularly for squid, and Forest and Bird has been active in seeking better protection for them.

In 1982, fishing was forbidden within 12 nautical miles of the island group, and in 1997 an Auckland Island Marine Mammal Sanctuary was declared covering this area. Forest and Bird wants this sanctuary extended out to 60 nautical miles to make it more effective.

Sea lions still get caught accidentally: about 80-100 a year. In the last five years the fishery has been closed four times as the accidental 'by-catch' gets close to or exceeds the limit set by the Minister of Fisheries.

The limit has been set at between 60 and 80 sea lions every year since 1992. When this limit is reached the Government closes the fishery for the season. Despite this, it is believed the number of sea lions killed has still exceeded 100 animals a year, in several years, due to delays in closing the fishery. This figure is based on extrapolations from Ministry of Fisheries observers — the fishing industry is believed not to accurately report the number of sea lions killed. This year, for the first time, there will be 100 percent coverage of the catch by observers on the ships.

Under pressure from Forest and Bird, and the Department of Conservation, the fishing industry is now trialling a net-exclusion device that may stop sea lions being drowned in trawl nets. It is hoped this year it will be possible to determine whether the net device ejects live, or dead, or injured sea lions.

Forest and Bird has also called on the fishery to use an alternative fishing method, such as jigging, but there have been industry claims that the subantarctic waters are too rough for this technique, despite the fact they have fished there in the past with good catch rates.

A population management plan for the sea lion will be released later this year, sertting out proposals to protect New Zealand sea lions and build their population to a non-threatened state. The plan will be open for public submissions and be binding on the Minister of Fisheries.

— Barry Weeber, Forest and Bird marine specialist.

disturbed animal can affect the whole group, increasing agitation or aggression. Also, during the breeding season, which extends from November through January, males may become more aggressive and territorial. A greater distance should be maintained in these situations, or if animals are active.

Mum's first two daughters, 'Katya' and 'Leone', have now followed in their mother's footsteps, remaining on Otago Peninsula and giving birth to pups of their own. While this breeding is at the limit of their current distribution, archaeological evidence suggests that historically sea lions were not only present, but also bred at many mainland sites, including the northern ends of both the South and North Islands. Sea lions were eliminated from the mainland by hunting pressure from Maori and early European hunters.

Both sea lions and fur seals were protected by 1893, at which time they were largely restricted to islands in the subantarctic. Unlike fur seals, which have spread right around the South Island and onto the North Island, sea lions have remained severely restricted in their distribution. Sea lion breeding occurs, almost exclusively, on a few subantarctic islands — on Dundas, Enderby and Figure of Eight islands in the Auckland Islands, and on Campbell Island. Outside the subantarctic, sea lions are generally limited to sandy beaches on Stewart Island and the Otago coastline, with strongholds in the Catlins region and on Otago Peninsula.

Due to their limited breeding range (two breeding colonies in the Auckland Islands produce 90 percent of all pups), New Zealand sea lions are currently classified as 'vulnerable' by the World Conservation Union. The vulnerability of the sea lion population to infection or disease, caused by this limited distribution, was highlighted during the 1997-98 summer when more than 50 percent of pups and an unknown number of adults died. Most deaths were caused by a bacterial infection of unknown origin, though some pups probably died of starvation after being abandoned by sick mothers. It is believed a combination of environmental factors may have lowered the sea lions' immunity to a naturally occurring, normally non-lethal, bacteria. No evidence of similar widespread illness has been found since.

The number of sea lions at the Auckland Islands has been recently estimated at

Female sea lion and pup

11,000-14,000. There is concern that the number of sea lions caught as accidental bycatch in the Auckland Island squid fishery may be affecting the ability of the population to recover. Current government policy is focusing on reducing the bycatch enough to allow the population to increase and expand its distribution.

These sea lion births on the Otago mainland may herald the successful establishment of a breeding colony outside the population base at the Auckland Islands. A report of a breeding female in the Catlins is currently under investigation.

The lack of females migrating to Otago makes those already here even more important. Katya's most recent pup, born this year, is a female which is likely to remain and breed in Otago. The future of mainland breeding rests with females like Mum, her daughters, and her granddaughters being able to survive and produce more female offspring to continue the population expansion.

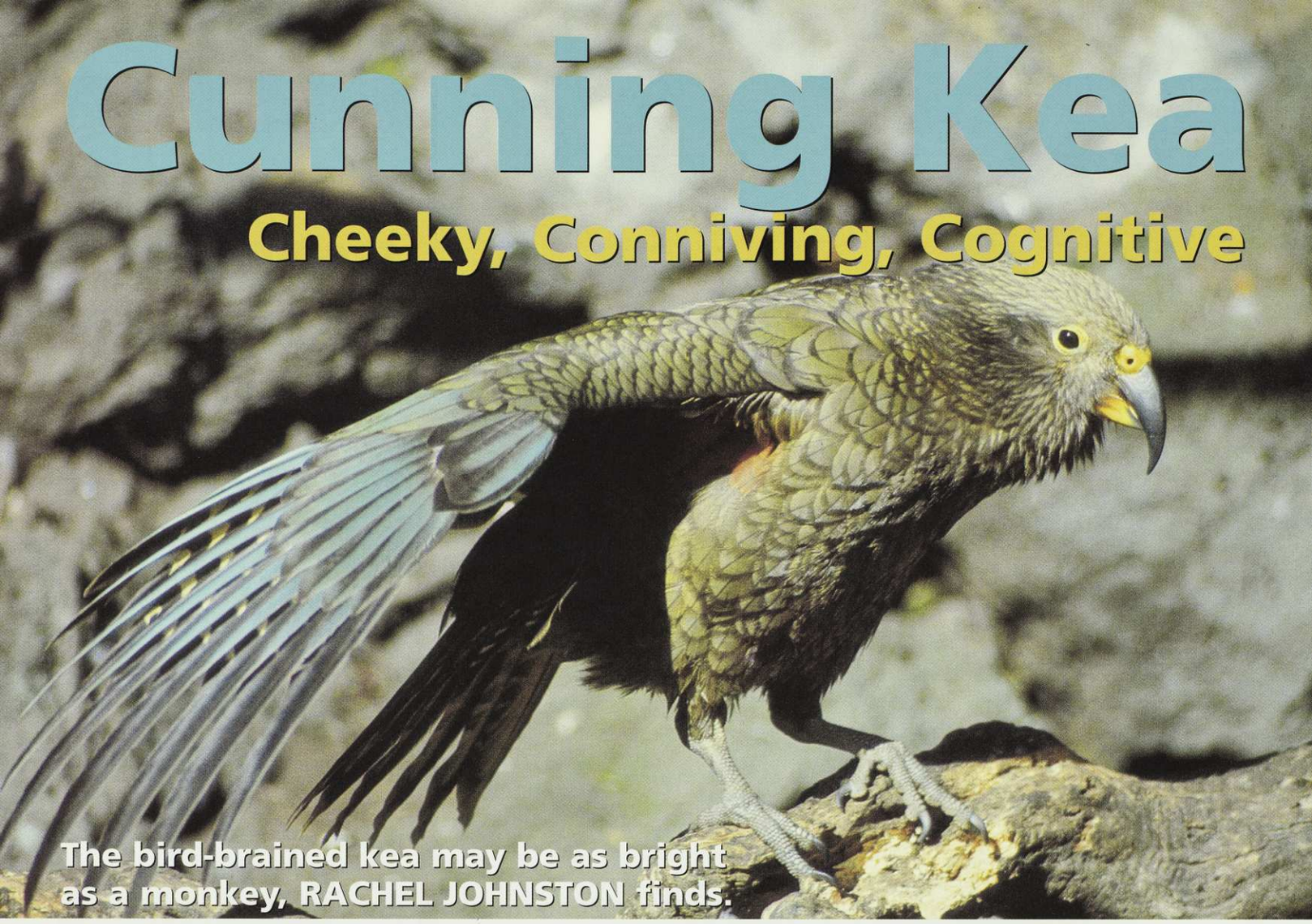
The greatest threats to mainland colonies are from uncontrolled dogs attacking pups, and unwarranted acts of violence by people. With careful management and public support, however, breeding should continue, and sea lion pups on the mainland will become a common sight after an absence of at least 100 years.

– SHAUN McCONKEY *completed an MSc on the photographic identification of sea lions in 1997, and continues to watch their progress on Otago Peninsula.*

Bull sea lion

Cunning Kea

Cheeky, Conniving, Cognitive



The bird-brained kea may be as bright as a monkey, RACHEL JOHNSTON finds.

Depending whether or not it's your property under inspection, the kea can appear as a cheeky comic, or a mischievous vandal. Stories abound of kea-damaged tents, sleeping bags, backpacks, skis, mountain bikes, and even cars and huts. What drives this mountain parrot to behave, or misbehave, so destructively?

Restricted to the South Island of New Zealand, kea are one of the few parrots in the world to include the true alpine environment in their habitat. With the proliferation of ski-fields in the Southern Alps, kea are now routinely in close contact with the myriad of items we, as an alien species, have introduced into their living space. Inquisitive by nature, the kea soon sinks its claws and beak into any novel object including, unfortunately, things we perceive as our valuable private property.

RACHEL JOHNSTON

Kea can take a strong grip. They 'latch on' using a fully articulated beak and 'zygodactylous' feet (a term for parrot feet having opposable toes).

Kea, in their exploration of human objects, may primarily be seeking information. Like their lowland kin, kea are skilled at holding, manipulating and breaking objects. Behaviours such as these, or 'exploring', may be an important part of how kea, and all parrots, investigate their environment.

As humans, we may be biased towards the notion that sensory information comes from a distance — as in seeing and hearing — rather than by direct contact. Perhaps for kea, investigation is more often by direct contact: picking up objects, manipulating them and taking them apart.

Our ski-fields probably present themselves as big alien enterprises put down in the kea's backyard just to investigate. If a UFO landed in our own backyard, would we be content to look at it, smell it, say, 'isn't that an unusual foreign object', then simply walk away? Wouldn't it be tempting to push a few buttons and turn handles? Perhaps kea are not so different from ourselves in this regard. We may both be exceptionally inquisitive species but how do we account for the kea's sense of curiosity?

One clue may be the kea's omnivorous feeding habits. It may be that omnivorous animals, such as kea, must often feed opportunely. Being inquisitive by nature may give omnivorous animals an adaptive advantage.

For kea, the unpredictable, often harsh, climate in the alpine environment may have put an added premium on resourcefulness. A high degree of curiosity and a capacity for resourcefulness appear to be tightly linked attributes that largely define the kea's character. Manipulating objects is an expression of curiosity, and may partly explain the attention kea give to a wide variety of natural and human-made things. But can we be more precise? What characteristics of objects elicit manipulation (or investigatory behaviour) by kea?

I examined this idea with a series of experiments in which five 'object characteristics' (colour, texture, pliability, complexity, and complexity combined with novelty) were varied. The experiments were presented to kea frequenting the Mt Hutt ski-field, above the Rakaia Gorge in Canterbury. This research might be viewed as an effort to understand the mind of the kea, but the rationale is partly a practical concern. An understanding of the kea's psychological profile might hold the key to

Young kea (left) has a bright yellow eye-ring and nostrils. This may be the reason for the adult kea's interest in the colour yellow.

understanding, and minimizing, the damage kea do to human property.

My study showed that the characteristics of objects which particularly provoked investigation by kea were the colour yellow and pliability. Kea were also particularly interested in objects that were novel (i.e., not being frequently encountered) and also contained some element of complexity. It might therefore be asking for trouble to head into kea country with an original, yellow-foam ski-rack. A simply constructed, hard, green ski-rack might be a better idea. But why might some of the features of certain objects be so provocative to kea?

Reasons relating to communication and feeding may provide part of the answer. For example, young kea have a bright yellow eye-ring and cere (nostrils), but as the bird matures these features darken. For kea, yellow may therefore serve as a badge, advertising the youngster's special status to other kea. This might be the ultimate cause of kea interest in yellow. That is, over evolutionary time the 'psychological landscape' of kea may have been shaped to respond to yellow. An animal's psychological landscape refers to biases that have evolved in relation to how the brain and nervous system operate, which in turn affect an animal's response to potential signals. One explanation may be that kea are predisposed to take an interest in yellow for reasons relating to their own relationships with each other. This is not to suggest that kea investigate yellow objects at a ski-field because they mistake them for juveniles, but rather, for kea, yellow may stand out in the environment as a particularly interesting colour.

I also found kea to favour a soft, pliable object over a hard object. This preference might be considered in relation to kea's natural diet. Kea in the wild feed on a wide variety of food items, such as fruits, seeds, roots, leaves and buds, nectar, insect larvae, honeydew and occasionally meat (including carrion). There is evidence, however, that kea take a particular interest in foods that are not very fibrous or hard. Certain soft, succulent berries, such as those of *Coprosoma* species are a favoured food source for kea. Again, this is not to imply that kea mistake especially pliant human-made objects for a soft berry, but it is possible that kea have a psychological landscape in which these similar sensory characteristics attract attention.

There is an important, but perhaps subtle, distinction here. As with colour, attraction of kea to pliable objects may be a consequence of behaviour that originally evolved for feeding, but can lead to damage when kea encounter human-made objects with similar properties.

Perhaps kea have a driving curiosity that may account for much of their behaviour, but what about intelligence? Just how smart is the kea? Is the kea's interest in human-made objects a byproduct of intelligence?

Recent studies by Irene Pepperberg on the problem-solving abilities of an African grey parrot named Alex have given new meaning to the expression 'bird brain'. This bird does not merely mimic the sound of human speech, but can carry on rudimentary conversations in English. It can also master abstract concepts such as counting, shapes and matter, and in general rivals the language skills of chimpanzees.

Kea, unlike other parrots, do not have a predilection toward articulating the sounds of human speech. I chose to examine the intellectual prowess of kea in a different way. Kea were presented with opportunities to solve string-pulling problems, with cheese being the reward. Using their bill and feet, kea could pull up a string out of a clear cylindrical tube and obtain the cheese. The problem is more complex than it may sound, as the string is too long to be pulled up in one movement.

I termed the two string-pulling problems the 'single' and 'double' string pulling tasks, the latter test being a modification of an experiment formerly used to test the problem-solving ability of gibbons. In the single string-pulling task, seven out of the 19 kea tested solved the problem, six of these seven birds doing so on their first encounter. The kea's performance on the double string-pulling test compared favourably with that of the gibbon, a primate. In fact, seven kea solved the problem in less time than the gibbons took on a similar problem. Kea completed the task in an average of 50 seconds on their first encounter. As might be expected from kea, there was considerable individuality.

Successful techniques varied from bird to bird, and from trial to trial, for the same individual. For example, Split, a juvenile male, used seven different techniques to successfully obtain the cheese reward. Whenever Split saw me carrying the apparatus through the ski-field carpark he would follow in hot pursuit, head tilted and hopping about in typical kea style, as though eager for the challenge and thinking, 'hmm, which cheese extraction

RACHEL JOHNSTON

Finding the food: Rachel Johnston's experiments with kea showed their ability to think their way through complex problems.

RACHEL JOHNSTON

method shall I use today?'

These results show that kea are very capable of solving a problem they have, presumably, never before encountered. Is this surprising? Perhaps not when we consider that kea live in a relatively harsh 'problem-solving' environment. The kea's curiosity and intelligence has enabled it to adapt to a radically altered environment. It can also exploit new food-gathering opportunities, and take advantage of innovations as they arise through human agency.

Maybe our ski-fields and alpine resorts, with all their associated paraphernalia, merely represent 'invading UFOs' to kea, providing a source of entertainment and challenge. In the scientific world, the idea that birds might rival the cognitive abilities of primates has only recently gained respectability.

So, is New Zealand's kea a genuine vandal, or some form of remarkable 'flying primate' with well-developed thinking skills, a sense of curiosity and adaptability? Keep these thoughts in mind next time you catch a kea interfering with your car.

RACHEL JOHNSTON *studied kea behaviour for her masters degree in science.*

DEAN BAIGENT-MERCER finds a strange region of unique plants at the far northern tip of New Zealand.

Farthest North, Strangest Things

The Surville Cliffs rise some 200 metres from the sea at North Cape. Rare plants grow in an area of serpentine on the cliff tops.

Many of the tourists who visit Cape Reinga, where the Tasman and Pacific Oceans mix, mistakenly believe they have reached the farthest north of New Zealand. Yet that point lies, generally inaccessible, 33 kilometres to the west, beyond Spirits Bay. Here above the giant Surville Cliffs is a 120-hectare plateau of botanical curiosities, protected from casual visitors by the North Cape Scientific Reserve.

Until the last Ice Age melted, this place was a separate island, with its own strange plants. The major reason for its number of rarities, however, is the substance of the plateau itself — serpentine rock, which has its own peculiar vegetation.

The Surville Cliffs are thought to have been created when the Pacific and Indo-Australian tectonic plates collided, pinching a piece of oceanic crust and pushing it up. The crust was under such pressure that water molecules were squeezed out to create a 'hydrated' rock, somewhat similar to pounamu or jade, but which feels soapy to touch.

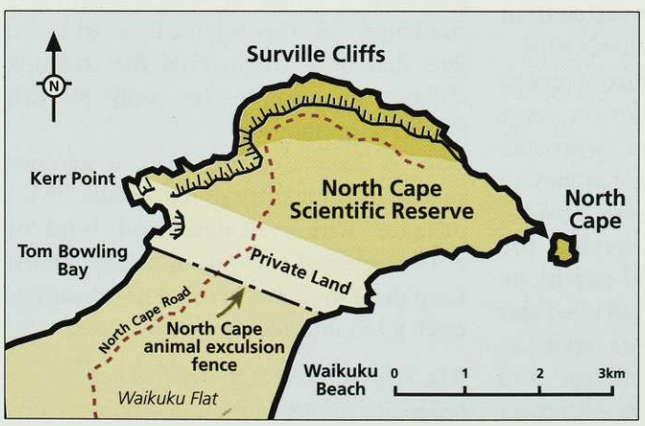
The main rock type is serpentinite, which runs in a kilometre-wide strip for about three kilometres along the cliff tops. Serpentinite is an uncommon 'ultramafic' rock which is extremely rich in magnesium and iron, with lower levels of associated minerals such as nickel and chromium. The combination of these minerals forms a rock cocktail of toxic minerals which challenges normal plant growth.

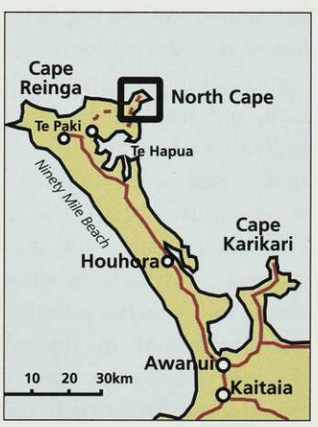
It is because of this rock that, over time, a unique vegetation has evolved, containing many plants found nowhere else. Among botanists, the Surville Cliffs serpentine area has the reputation of having the highest level of unique plants for its size in the whole country.

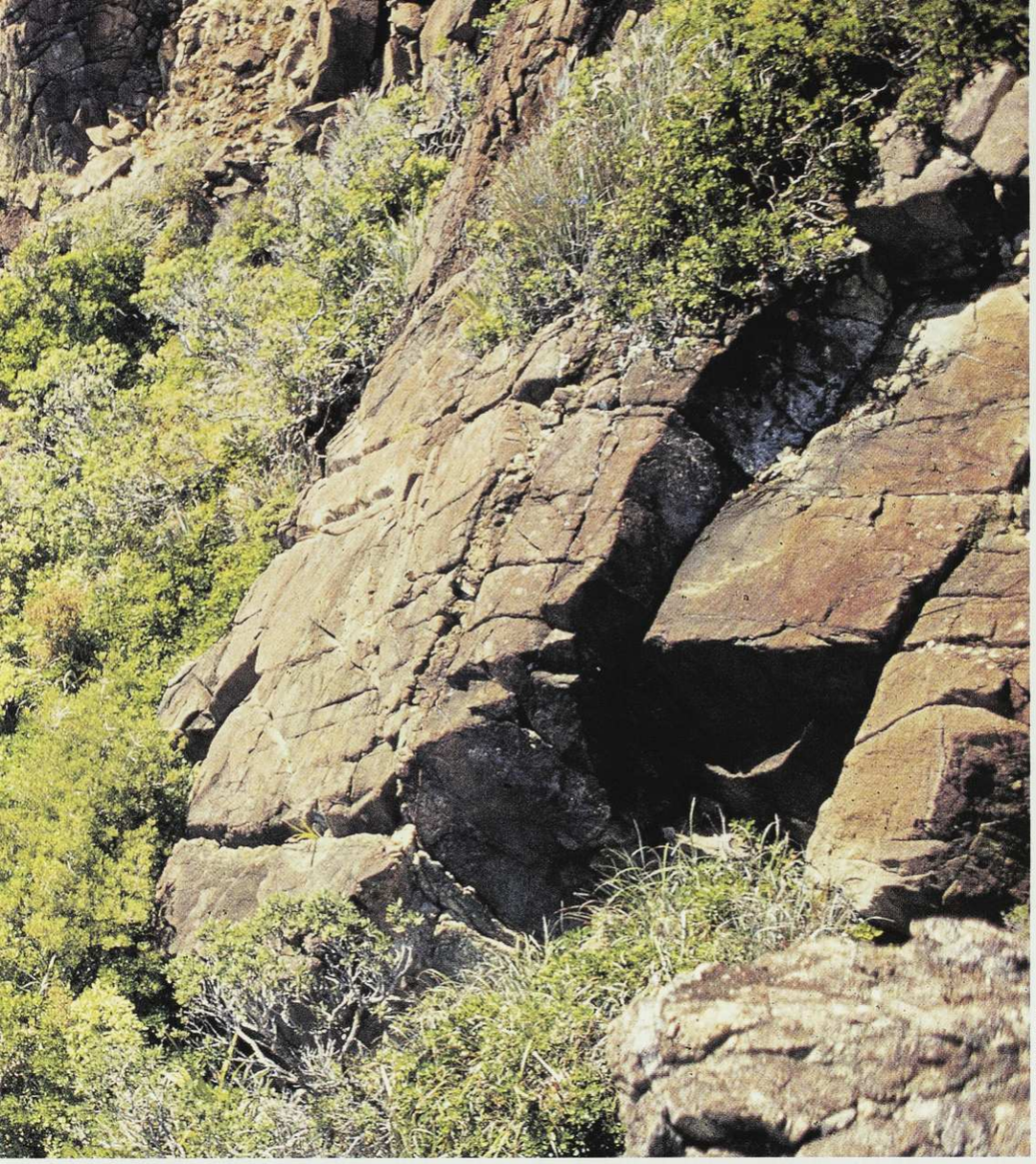
Botanist Peter de Lange of the Department of Conservation, describes the ultramafic, heath-like vegetation as 'utterly unique' and estimates there are 15-20 forms of vascular plants found only on the Surville Cliffs.

Mineral-rich 'ultramafic' areas occur elsewhere in New Zealand, including the Red Hill in the Richmond Range of Marlborough, the Cobb in northwest Nelson, and West Dome of the Red Hills in northern Fiordland. These have been glaciated, however, and so support fewer and mainly herbaceous localised plants.

'The Surville Cliffs have never been glaciated, and occur within a warm, lowland setting,' says Peter de Lange. 'This







JC SMITH-DODSWORTH

has enabled a shrubby, woody flora to develop, unlike other ultramafic areas.'

Approximately 7000 years ago, when sea levels were higher, the Surville Cliffs plateau was a separate island. Now it is joined to the mainland by a low-lying area clothed in manuka.

Before the Te Paki area of the Far North was burned, however, kauri forest dominated the inland areas with pohutukawa forest in the coastal gullies and on the cliffs. These forests would have grown hard up to the ultramafic zone of the Surville Cliffs. It is from these forest plants that some of the Surville Cliff plants evolved.

One of the most obvious and striking features of the vegetation is the number of plants which grow squat, sprawling, and trailing through other plants, with stems sometimes several metres long. These growth forms contrast strongly with neighbouring relatives from which they evolved.

For example, tanekaha, a slender forest tree which grows up to 30 metres has become a different species growing only three metres high but spreading five metres wide here on the cliff tops.

Tauhinu/cottonwood grows in nearby areas usually as an upright shrub of up to three metres. On Surville Cliffs it has become a squat species up to one metre in height with larger, more yellow leaves.

Pittosporum pimelioides, a rare shrub growing up to two metres high in the kauri forest, here has much larger leaves and grows horizontally with trailing branches.

The serpentine influence has also shaped a local native jasmine *Parsonsia praeruptis*, which doesn't climb at all but trails across rocks and amidst other plants.

On the Surville Cliffs plateau, plants of 10 different families show these unusual characteristics. The special nature of the rock, and severe droughts, have placed strict selection criteria on those plants that survive. The Surville Cliffs is a place of evolution in action.

Some plants are obviously different from their closest relatives; for example they may be smaller and have hairier leaves, but still aren't different enough to be considered a separate species. Some of these plants have instead been given the rank of 'subspecies' by botanists.

Nine of the 15-20 endemic plants have already received formal botanical recognition, either as species or subspecies. A further three, a sedge, a coprosma and a kind of tanekaha, are in the process of being scientifically described. Further

Deciphering the past: fire and human habitation

The Surville Cliffs and surrounding area are dotted with historic pa sites and had been highly populated by Maori. This all changed in the 1800s with the introduction of muskets, when inter-tribal wars broke out. Large-scale massacres occurred around North Cape. The land has since been sparsely inhabited by Maori due to the tapu nature of the area.

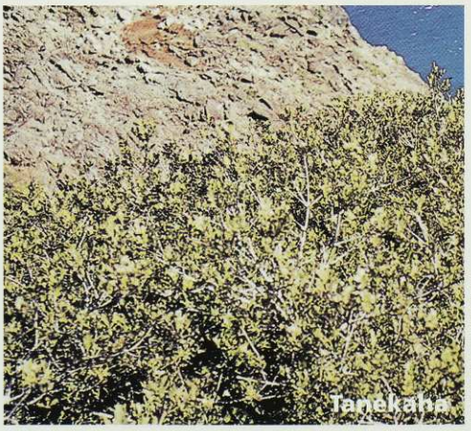
'This area has been protected through tragedy,' says Dave Spicer, of the local Ngati Kuri people, who is also a biodiversity manager with the Department of Conservation.

One of the earliest European naturalists to travel across this area was Ernst Dieffenbach in 1843. At this time, North Cape was obviously a landscape that had been changed by fire, with Dieffenbach noting burnt remains of large trees.

For most of the first part of the 1900s, burning of the plant cover of the North Cape area was customary and frequent. Cattle, horses and sheep used to roam across the unfenced hills and wild pigs were numerous. By the 1970s very little forest remained sufficiently free of fire and animal damage to indicate the pre-human forest cover.

Research into the localised tanekaha has shown burnt cores denoting numerous fires in the past. The most likely causes are lightning and fires lit accidentally or deliberately by people.

The Surville Cliffs area is part of a Treaty of Waitangi land claim, lodged by Ngati Kuri. The tribe has also recently joined the 'Wai 262' claim which includes ownership of New Zealand's flora and fauna, and related intellectual property rights.



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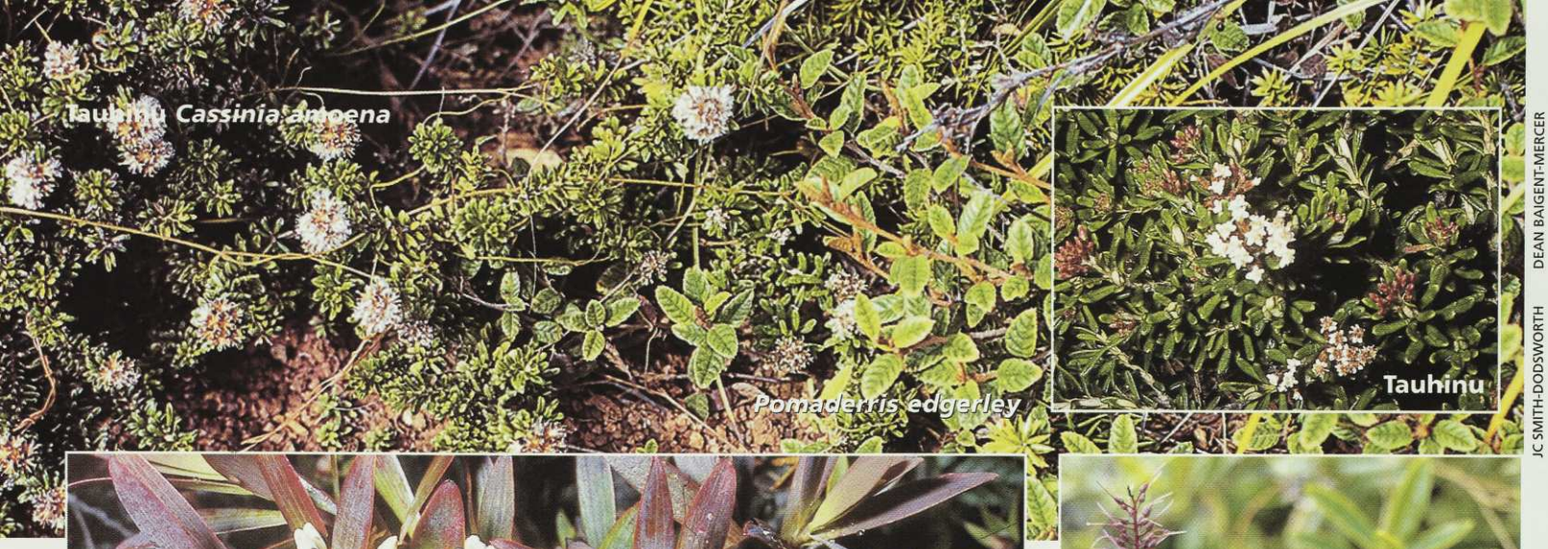
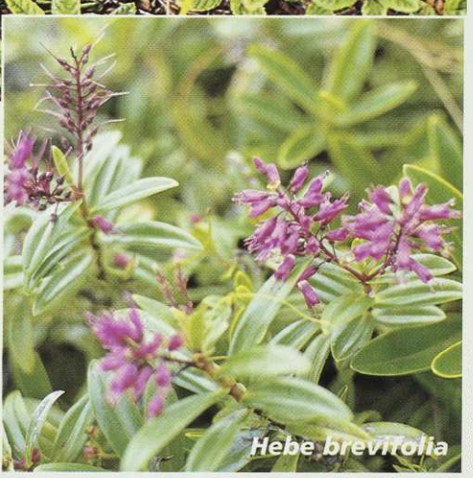




research into the remaining 10 or so as yet 'undescribed' variants is underway.

Biogeographically, the Surville Cliffs also have peculiar connections to Australia with some plant species having odd distributions between the countries. Surville Cliffs is home to an unnamed mingimingi (*Leucopogon* aff. *parviflora*). Its closest relatives live in coastal Australia from New South Wales to Tasmania and, even more surprisingly, the Chatham Islands.

A relative of the common gumdiggers' soap/kumarahou, *Pomaderris paniculosa* var. novaezelandica, reaches its greatest abundance at Surville Cliffs and Whangarei, with another close relative in Australia.

Other unusual plant distributions include *Coprosma obconica*, otherwise known only from near Taihape in the North Island, and in the South Island from Nelson, Canterbury, Otago and Southland. As might be expected, the Surville Cliffs form of *Coprosma obconica* is different in being a shorter, sprawling shrub, and it too is in the process of being formally described, possibly as a new subspecies, peculiar to the Surville Cliffs.

Another bizarre occurrence is that of a small grass, *Trisetum serpentinium*, discovered on the Surville Cliffs in 1996. Till that time it was thought to be restricted to the ultramafic rocks of the Nelson region. To date it still has not been found in between, though it has recently been discovered on D'Urville Island in Cook Strait.

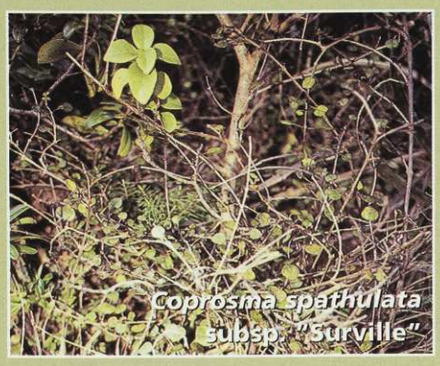
In recent years Peter de Lange, of DoC's science and research division, and Dr Peter Heenan, of Landcare Research, have been studying the unnamed plants of the Surville Cliffs.

'Everytime we visit the area another distinct and possibly new plant is discovered' says Peter de Lange. Neither scientist believes that the Surville Cliffs has yielded up all its botanical treasures, and both stress the need for a more thorough and systematic botanical survey.

— The author acknowledges scientific advice from Peter de Lange.

The plants featured in this article grow in this low shrubland atop the Surville Cliffs.

Two threatened plants of the Surville Cliffs



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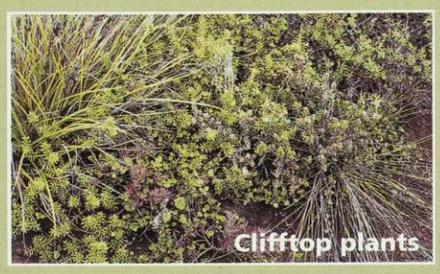


DEAN BAIGENT-MERCER

The most extreme and remarkable example of the strange 'ultramafic growth' forms is exhibited by a local subspecies of *Coprosma spathulata*. Elsewhere *Coprosma spathulata* is an upright shrub reaching two metres tall: here it is a low-growing shrub producing long flexible stems up to five metres long, which occasionally root on coming in contact with soil in crevices.

Repeated burning has opened up light levels on the clifftops. This in turn, has changed an environment which would have suited plants such as *Coprosma spathulata* subsp. "Surville" and the Surville hook grass, close relatives of which which prefer shade. Now *Coprosma spathulata* subsp. "Surville" is reduced to about 50 plants and the world population of Surville hook grass exists within a site of five square metres.

Another blow for *Coprosma spathulata* subsp. "Surville" is that increased light levels, induced by fire, have created a favourable habitat for other colonising, light-demanding coprosma species such as karamu *Coprosma lucida* and *Coprosma macrocarpa*.

All coprosmas have wind-borne pollen. This means that when the coprosmas flower, the pollen spectrum of the surrounding area will be dominated by the pollen of the more common light-loving plants. Thus it is possible that *Coprosma spathulata* subsp. "Surville" may become extinct through hybridisation.

Threats to Ecology

Between 1968 and 1984, the major threat to Surville Cliffs plants was the quarrying of serpentinite, and associated mining activities. Serpentinite is a mineral which helps create a free-flowing mixture of fertiliser for use in aerial topdressing. When it is removed from the mine, plant recovery there is extremely slow.

With cessation of quarrying in 1984, fire, animal-browse and trampling, and the introduction of weeds in stock faeces became the major threats to the reserve. In April 1995, these concerns were significantly reduced by the erection of an electric fence across the North Cape isthmus by the Department of Conservation, to exclude feral animals and human traffic.

All visitors need permits to go to the North Cape Scientific Reserve from DoC, and from the Muriwhenua Corporation through whose land the four-wheel-drive track passes.

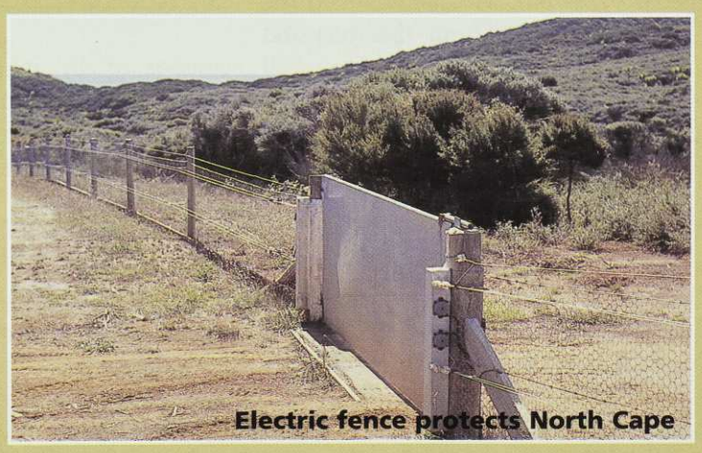
DEAN BAIGENT-MERCER

Ongoing pest control is vital. Now that all the feral horses and cattle have been removed, rabbit and possum removal is in progress. Unfortunately, locals have occasionally liberated wild pigs over the fence.

Weeds are the prominent remaining threat, especially South American pampas grass, and Australian prickly and downy hakea, all of which can thrive on ultramafic rock. An eradication programme for these weeds has begun. Although herbicides are not needed to eliminate the two hakea species, it is a labour-intensive job. All plant material has to be removed from the area, as the seedpods will otherwise dry out, split, and release the winged seeds.

— *Dean Baigent-Mercer*

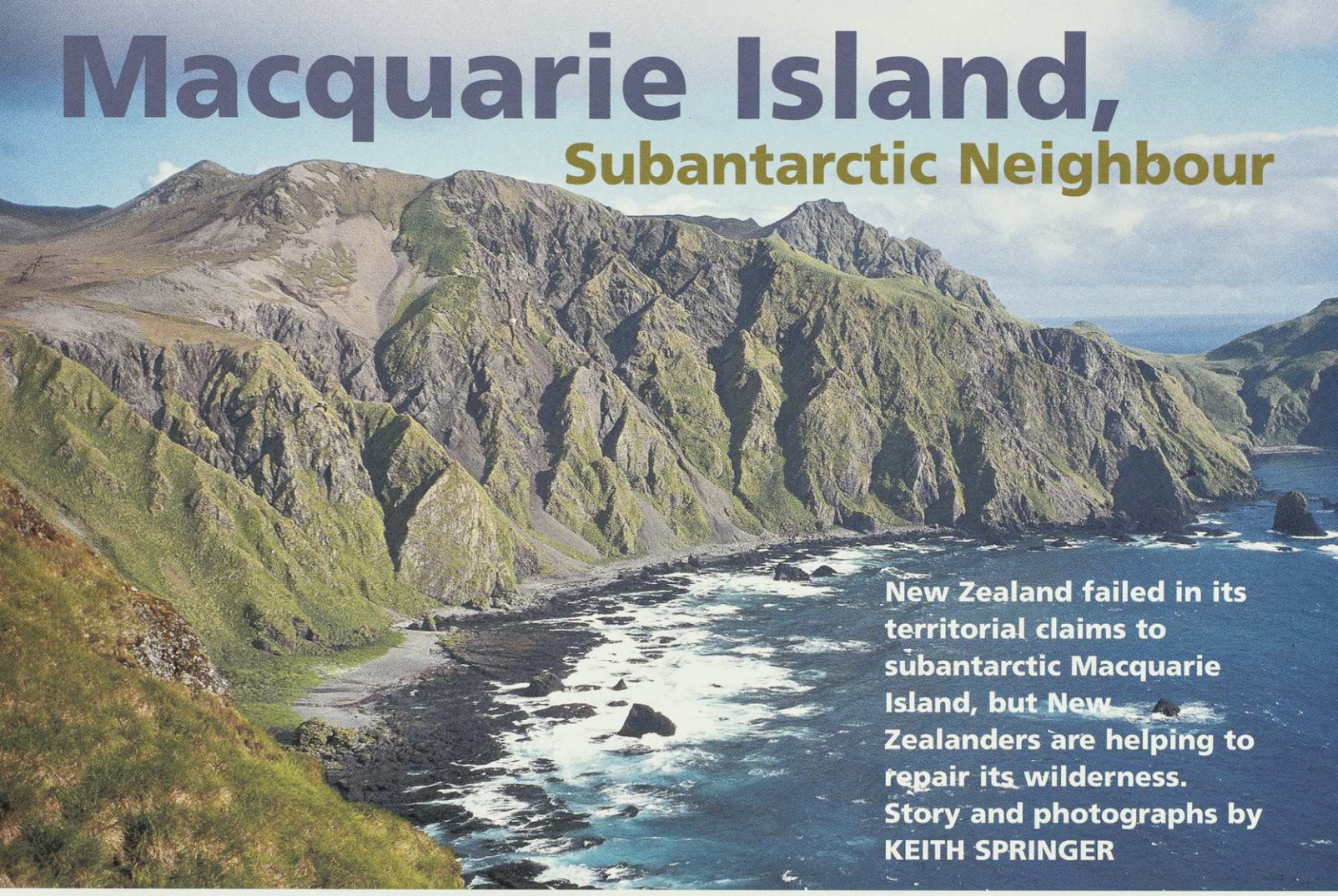
DEAN BAIGENT-MERCER



DEAN BAIGENT-MERCER

Macquarie Island,

Subantarctic Neighbour



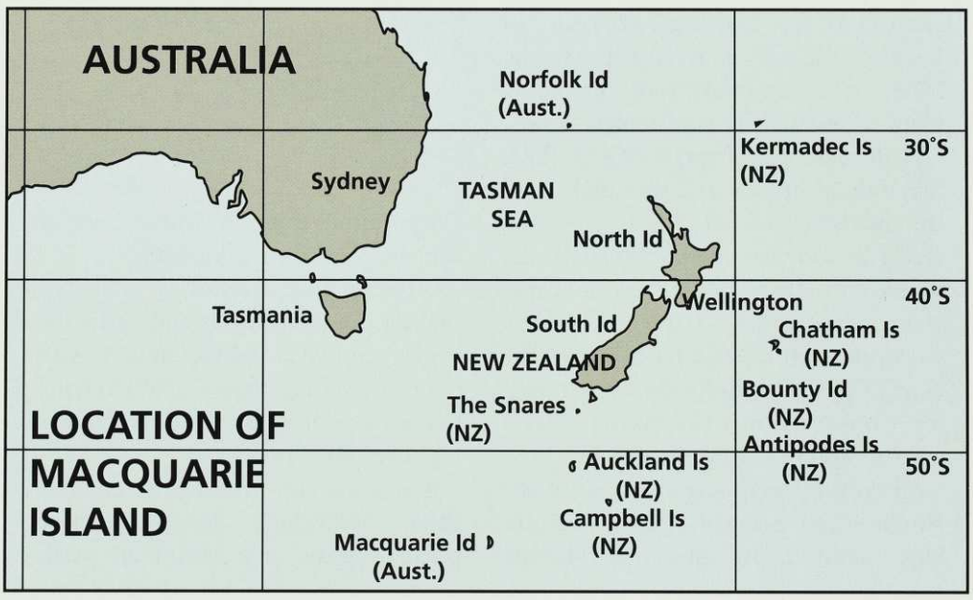
New Zealand failed in its territorial claims to subantarctic Macquarie Island, but New Zealanders are helping to repair its wilderness. Story and photographs by KEITH SPRINGER

For most New Zealanders the images conjured up by the subantarctic islands involve wild, stormy, windswept islands lashed by constant gales. All true. Other images bring to mind the wreck of the *General Grant* on the Auckland Islands, the former weather station on Campbell Island, windblown scrub and rata forest, flowering megaherbs, masses of albatross and petrels, with New Zealand sea lions and fur seals thrown in for good measure. Also true.

These images are confirmed by an Australian island a little further to the southwest, but emerging from a submarine ridge that extends up to New Zealand and joins the Alpine Fault of the South Island.

At 54° 30′ south, Macquarie Island lies only 640 kilometres from the Auckland Islands and 700 kilometres from Campbell Island. Awareness of Macquarie Island is much lower amongst New Zealanders, however, primarily because it is part of Australia. But while it's political links lie with Hobart in Tasmania, the island has strong biogeographical and historical links to New Zealand (see box); indeed the New Zealand Government tried to acquire Macquarie several times around the late 1800s and early 1900s.

Macquarie Island is about the same size as Campbell Island, at 12,800 hectares, and consists of an uplifted plateau, with a narrow coastal plain around part of the island. Its shape is long and narrow, being about 33 kilometres long and 2-5 kilometres wide. The weather is wet, windy and cool, heavily influenced by the winds and currents of the Southern Ocean. Some have appreciated its beauty; others have been less complimentary. Captain Douglas, in 1822, viewed it as 'the most wretched place of involuntary and slavish exilium that could possibly be conceived; nothing could warrant any civilised creature living



Bull sea elephant

King penguins

on such a spot.' On the other hand, Sir Douglas Mawson, Australia's best-known Antarctic explorer, was more positive, describing the island in 1919 as 'One of the wonder spots of the world. It is the great focus of the seal and bird life in the Australasian subantarctic regions....'

Along with most subantarctic islands, Macquarie's early history was one of commercial exploitation. Discovered by Frederick Hasselborough on July 11, 1810, the island was soon visited by sealers, who virtually wiped out the fur seal population by 1820. Exploitation of the elephant seals followed, their oil being a valuable item for soap manufacture, lubrication and lighting.

Occasional visits were made to Macquarie over the next 60 years, primarily to see if there were sufficient seals to re-establish the sealing industry, but largely the island was undisturbed until the next wave of the oil industry began around 1880. The foremost entrepreneur in this was Joseph Hatch, an Invercargill chemist who shipped crews and machinery to the

Close Links with New Zealand Flora and Fauna

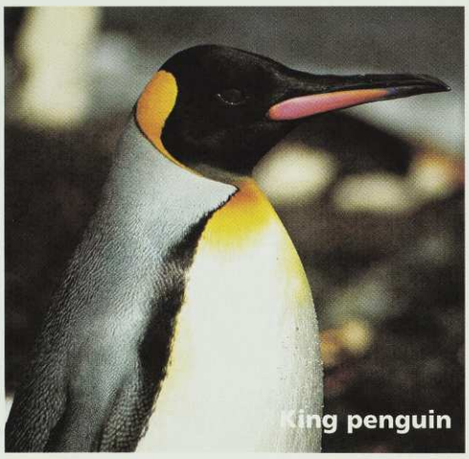
Many of the native species found on Macquarie Island are also found in New Zealand, or on New Zealand's subantarctic islands. These areas are both in the same biogeographical zone as Macquarie Island. In addition closely related birds are found between the islands, such as subspecies of blue-eyed shag, and black-browed and grey-headed albatross.

Many of the petrels found on Macquarie also breed on the New Zealand subantarctics, although with lesser diversity of vegetation types on Macquarie Island the land bird diversity is also lower. With the Pacific banded rail and Macquarie Island parakeet now extinct, the only purely land birds on the island are introduced redpolls and starlings.

Very few of the penguin species are common to Macquarie and the New Zealand subantarctics, however, with rock-hopper penguins the only ones breeding in both regions.

Wind, water and birds all play a role in dispersal of species around the southern ocean. Of 43 plant species on Macquarie, 31 are common to the New Zealand region.

Some Macquarie Island plants found in either New Zealand or Auckland/Campbell Islands are: ranunculus, *Stilbocarpa polaris, Pleurophyllum hookeri, Polystichum vestitum, Blechnum penna-marina, Grammitis poepigiana,* Uncinia sp., *Coprosma perpusillia, Acaena minor, Poa foliosa,* Colobanthus sp., *Carex trifida, Luzula crinita, Cardamine corymbosa.*


King penguin

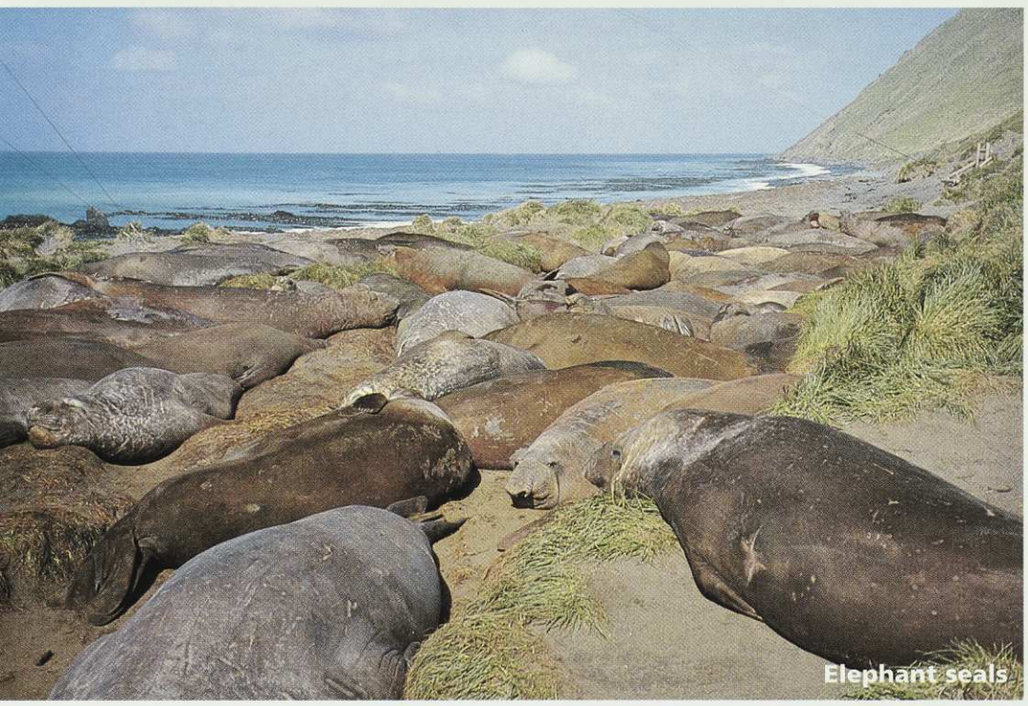
island to extract oil from penguins and elephant seals.

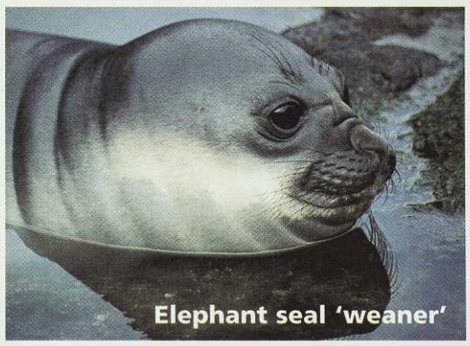
The vast king penguin colony at Lusitania Bay was worked first, but king penguin oil proved to be contaminated with blood, and attention was soon turned to the smaller, but more numerous, royal penguin. Oil from the royals proved to be of a higher quality, and the industry began in earnest. Boilers were set up at several locations around the island, and the penguins packed into 'digestors' and steamed. The oil was drained off into casks and stored until the next ship arrived. This industry continued for nearly 30 years, during which Hatch lost three of his ships when they were wrecked on the exposed coast.

Around 1890, the New Zealand Government began its first attempts to acquire possession of Macquarie Island from the Australian Government. Initially, the purpose was to complement restricted sealing seasons on the New Zealand subantarctic islands: without Macquarie Island under New Zealand control it was difficult to police the closed seasons on Campbell and the Auckland Islands. Sealers could sail southwards and return with a cargo of skins, claiming that they had been obtained at Macquarie Island when they had actually been obtained on New Zealand islands. Despite successive approaches, Australia declined to relinquish the island to New Zealand.

The New Zealand Government, however, did contribute financially to a weather station set up on Macquarie in 1913.

When von Bellinghausen visited Macquarie in 1821, he noted in his diary that


Elephant seals


Elephant seal 'weaner'

the sky above Macquarie was black with huge flocks of seabirds. Despite a big decline since then, Macquarie Island is still notable for its variety and quantity of wildlife. Breeding populations of albatrosses (four species), penguins (four species, including one found nowhere else), shag (a local subspecies), petrels (nine species), prions (three species), skua, gull and tern, all combine to produce mind-boggling numbers of birds. On the beaches southern elephant seals lie in stacks, or semi-submerged in fetid wallows. Fur seals (three species) are slowly rebuilding their populations after the depredation of early hunting. Leopard seals and New Zealand sea lions are occasional visitors to these shores as well, but don't breed on the island.

In a story very familiar to New Zealand's, the introduction of mammals to the island has had a dramatic and catastrophic impact on bird species (see box, page 28). Mice were accidentally introduced with the first sealers, and cats were introduced shortly afterwards to control mice. Hatch's crews introduced rabbits in the 1880s as a food source, and rats were established on the island by the early 1900s. Sealing crews, from the 1880s on, also introduced sheep, horses, cattle, goats and dogs. Although they all had an impact to some degree, the animals that established best were rats, mice, cats and rabbits, and it is these that still remain. Weka were also introduced as a food source, and these too created havoc amongst the island's wildlife. By 1900 two endemic species, a rail and a parakeet, were extinct, and some burrowing seabirds restricted to offshore rockstacks.

The Australian Antarctic Division has maintained a station on Macquarie Island since 1947, and currently supports research on elephant and fur seals, upper atmosphere physics, geology, botany, meteorology and birdlife (particularly albatross). Through the logistical support of this agency, the Tasmanian Parks and Wildlife Service is able to base field staff on the island which is a nature reserve.

In the late 1960s, Parks and Wildlife Service staff began releasing European rabbit fleas, and this work was continued through the 1970s. By 1978 sufficient fleas were established throughout the island to act as a vector, and myxoma virus was introduced to control rabbit numbers, which at that stage were estimated at around 150,000. Myxomatosis quickly swept through the rabbit population, reducing the numbers to a fraction of their former abundance.

Control work then turned to cats, which were estimated to be killing about 60,000

Royal penguin

burrowing seabirds each year, although rabbits and rats also formed a significant part of their diet. With only one or two staff working on cat control, it was soon apparent that control efforts were holding the cat population stable and preventing its expansion, but not actually reducing it.

By the mid-1990s, eradication of cats from the island, rather than population control, became the focus. (Cat numbers were then estimated at about 500.) Federal funding for the project was obtained from the Natural Heritage Trust (a fund set up from the Australian Government's partial sale of Telstra). Teams of six were sent to the island, and a range of techniques used to reduce cat numbers.

In 1998, the first year of the enlarged project, 225 cats were killed. Shooting (by day and night) and trapping were the main means of taking cats, but poisoning was also trialled. In 1999 the tally was 98 cats: most of the juveniles and adult males had been removed from the population, leaving mainly the more cunning adult females. Cage traps had been used extensively in the past, and were good at catching young cats, but the adults tended to be wary of them, so soft-jawed leg-hold traps were introduced and showed immediate results.

In 2000, two New Zealanders joined the team, Kerri-Anne Edge (Whangarei) and Keith Springer (Glenorchy), the author of this article. With fewer cats to find, the work focus changed to searching for cat sign, primarily on the coast and escarpment slopes; areas covered in dense tussock and megaherbs. The plateau was also covered, particularly areas of open clay or scree where prints would show up. Once sign of cat activity was found, the area would be targeted with traps and spotlighting. Despite intensive searching by the team,

during 2000 very little evidence of cats was found, and only one cat was taken during the year.

To assist in locating the last few cats, a New Zealand dog handler was contracted to go to the island in November 2000. Gary Aburn (Whataroa), and his two dogs Kim and Tua, have spent four months scouring the island for cats, so far without success. Due to the amount of breeding wildlife on the coast, the dogs have so far been concentrating on the plateau, particularly in the southwest corner where prints and scats were found during the winter of 2000. Then, as the breeding colonies of giant petrels and the four species of penguin fledge their young, the dogs will move onto the coast and scour the rockstacks and tussock slopes for the ever more elusive quarry.

With cat numbers now so low, the response in the seabird populations has been rapid and dramatic. A survey of Antarctic prions in the 1999-2000 summer showed a 15 percent increase since the previous census, and numbers of white-headed petrels were also up. Blue petrels, previously restricted to offshore rockstacks, were re-establishing on the main island. Perhaps the biggest sign of success was the discovery of breeding grey petrels in May 2000. With a large burrow entrance, and breeding in winter when other cat-prey species were absent, grey petrels had succumbed to cat predation long ago, and none had been recorded as breeding on Macquarie since the 1890s. Discovery of the first grey petrels known to have bred on the island in more than a century was a major boost to the success of the programme, with seven chicks confirmed to have fledged by early October.

It would be a brave person to confidently state the number of cats left on Macquarie Island, but the best guess after the results of the last year's work is up to three. The pressure on those cats is being maintained during 2001, again with the involvement of New Zealanders. Sandy King (Stewart Island) was scheduled to take over as dog handler in March, with Georgie Hedley (South Kaipara) also joining the team then.

The cat programme will continue for another two years, moving into a monitoring phase to ensure that none survive. With no evidence of breeding in the past two years the outlook is certainly bright for the wildlife on the island.

The next task will be the eradication of rabbits and rodents from Macquarie, which will be a big challenge, both logistically and to find funding. The Tasmanian Parks and Wildlife Service is keeping in close touch with the New Zealand Department of Conservation over the upcoming rat-eradication project on subantarctic Campbell Island. Success there will be of great benefit to planning for the same outcome on Macquarie Island. Rabbits are probably the biggest remaining threat to the island, because of their capacity to destroy vegetation and thus modify the natural state of the island.

Should eradication be successful, visitors to Macquarie Island might once again see the skies black with seabirds in the years to come.

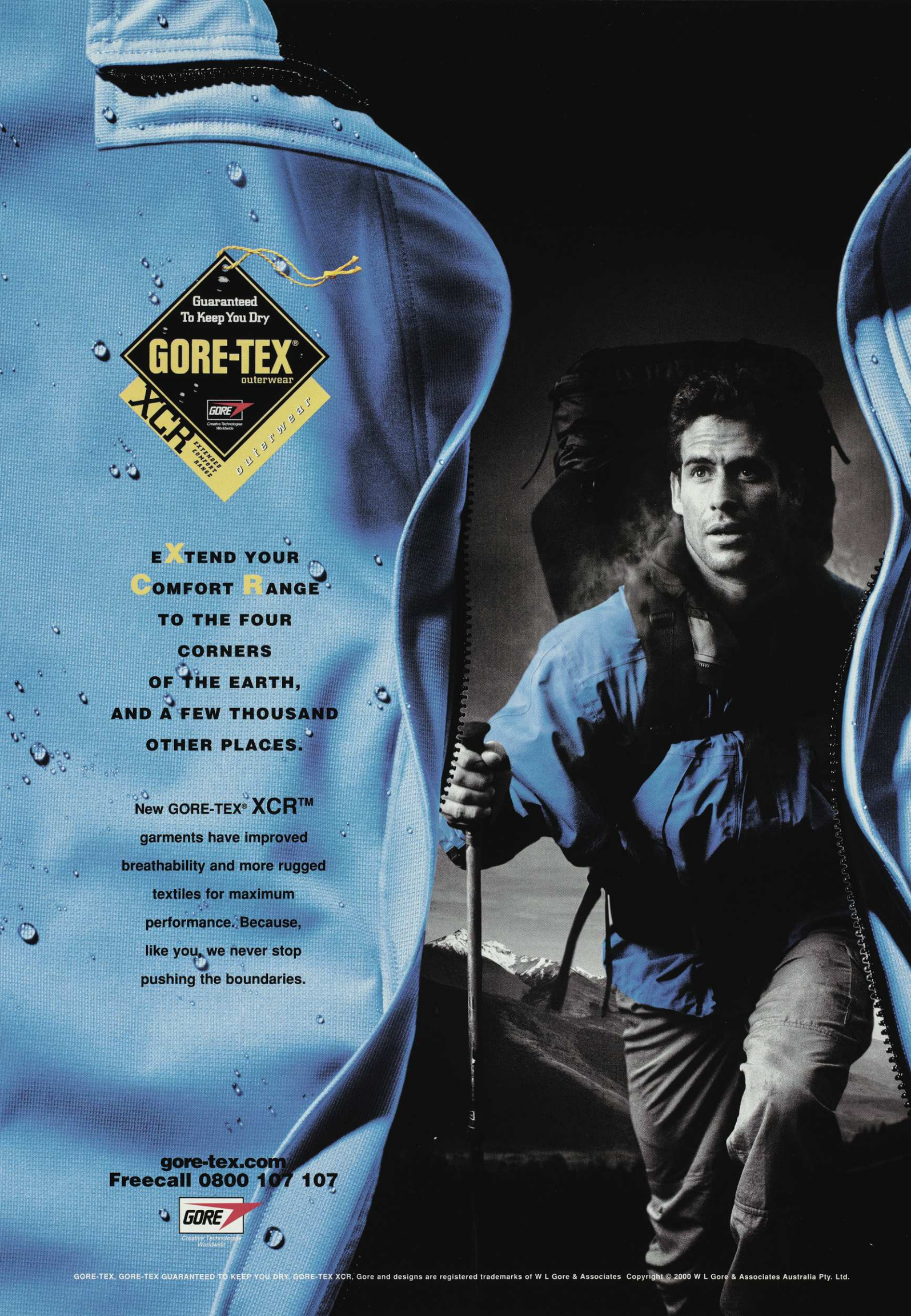
– KEITH SPRINGER *from Glenorchy worked with the cat-eradication programme on Macquarie Island for 14 months.*

Visiting Macquarie Island: Two companies currently visit Macquarie Island each summer; Quark Expeditions and Southern Heritage Expeditions.

Management of Introduced Animals

Human intervention in the populations of some animals has an effect on other populations too, sometimes with a variety of impacts. Pest control programmes on Macquarie Island, had several interesting side-effects.

- Removal of weka (by 1988) reduced predation on penguin chicks and eggs, and on burrowing seabirds; weka also ate the endemic orchid *Corybas dienemus*, amongst other vegetation.
- Removal of cats (completion imminent) resulted in vastly reduced predation on burrowing seabirds (petrels and prions), an increase in their numbers, and reduced predation on penguin chicks and injured adults; reduced predation on rabbits led to an increase in rabbit numbers, however.
- Control of rabbits by myxomatosis led to reduced grazing pressure on vegetation, recovery of tussock on the plateau and will enhance habitat for white-headed petrels, allowing them to recover in number. But killing cats led to increasing numbers of rabbits; thus there was an increase in skua numbers, supported by a year-round food supply of rabbits.
- Increased skua numbers — with prions, blue petrels and rabbits all able to recover numbers due to removed predation by cats, skuas are able to increase their predation on all these species. In addition, high skua numbers supported by increasing rabbit populations increase their predation on penguin colonies, part of their natural food source. Recent warm winters have also increased the breeding success of rabbits.
- Rat control: localised rat control leads to reduction in egg and chick predation, particularly on blue petrels, but also on white-headed petrels and Antarctic prions. Control on the shoreline, near offshore rockstacks, allows blue petrels to recolonise the main island; however they are then susceptible to predation by skuas.



Wild Waters at Risk

GORDON ELL reports on the case for a water conservation order to protect the Rangitata.

Canterbury's wild rivers are under increasing threat as irrigators and power generators want to take even more of their water, as the nature of agriculture changes.

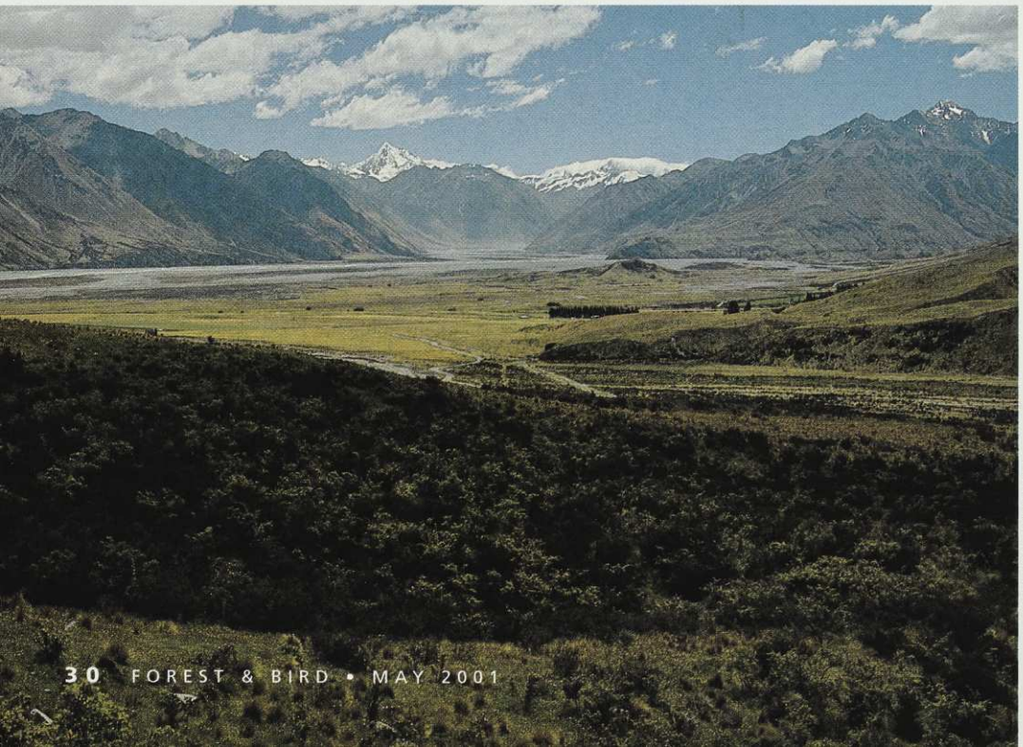
Born in the snowfields of the Southern Alps, the great eastern rivers debouche onto the sunburnt plains across broad stony riverbeds. Developers see that free running water as wasted while it races unimpeded to the sea. On the other hand, people who respect the natural world see the rivers as public domains, places for nature, for fishing and kayaking, and the essential habitats for some of our rarest bird species. They want more water left in the rivers.

Presently, Forest and Bird is joining with Fish and Game to support an application for a water conservation order to protect the Rangitata. At the same time, North Canterbury Forest and Bird has been among those trying to defend the Hurunui from proposals to dam it.

The Lawrence, one of three major tributaries of the upper Rangitata River.

The plight of the rivers has been obvious for a long time, with developers long ago winning the right to take water from the rivers at the upper edge of the plains, both for irrigation and rural supply. The Rangitata is one such, its water abstracted since the 1940s and fed into milky-blue water races which irrigate 64,000 hectares of Mid Canterbury. Some of it is piped even, over high river terraces into the bed of a neighbouring river, the Rakaia, where electricity has been generated at Highbank since 1945.

The trouble is this historical take of water is no longer enough for modern farming. The sheep and cropping regimes which



GORDON ELL, BUSH FILMS

Looking into the valley of the upper Rangitata from the north bank. Some birds depend on the broad riverbed for nesting habitat. Stilt, pied oystercatchers and banded dotterel, however, also make use of the adjacent river terraces and wet patches.

A Mythic Landscape

The Canterbury high-country has been mythologised both by Maori and European New Zealanders. The great rivers of the South Island were for Maori the lines for routes across the Alps to Westland, the greenstone trails. For European settlers they were the boundaries of great sheep stations, and the way to the goldfields.

One of the more famous settlers, Samuel Butler, farmed the Mesopotamia Station on the south bank of the Rangitata. Later he crossed it in an attempt to discover a way to Westland. Erewhon station on his route takes its name from the novel he later wrote, about a fanstasy land 'beyond the ranges'. His book is still regarded as the outstanding critique of the Victorian machine age.

No wonder then, that the call to save such rivers from the ravages of development strikes a deep response among those who have lingered there.

GORDON ELL, BUSH FILMS

Irrigation channels and banks of the Rangitata diversion scheme take water from the river to more than 64,000 hectares of Mid Canterbury.

GORDON ELL, BUSH FILMS

were long the backbone of Canterbury are currently being superseded by more intensive farming, particularly dairying, as the climate warms, and snowfalls and summer rains falter.

'The spiralling demand for water, particularly to grow grass for dairy cows, is not sustainable,' argues Forest and Bird's field officer in Christchurch, Eugenie Sage. 'As the climate changes the demand for water will create intolerable pressure on the region's rivers and groundwater.

'Forest and Bird seeks to have more water left in both the Rangitata and Ashburton Rivers, by challenging the proposed flow regime in Rangitata Diversion Race Ltd's application to renew its existing resource consents,' she says.

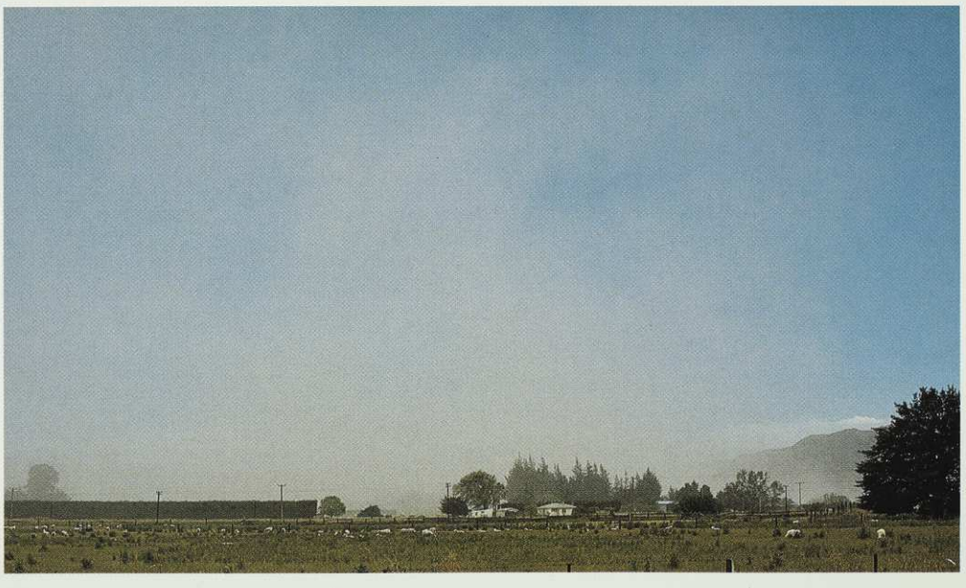
Non-farmers are more alive to the risks of taking water, having seen many Canterbury rivers radically diminished or changed by irrigation or hydro generation over the years. Among them are the Waipara, Kowai, Ashley, Ashburton, Opihi, Waitaki and Tekapo rivers. Some, such as, the Kowai which naturally feeds the Waimakariri, were diverted nearly a century ago, but this was originally for stockwater and village supplies; nothing like the amount of water needed to power the great marching fountains which now bring artificial rainstorms to the irrigated pastures of the plains.

The broad shingle riverbeds of Canterbury (and Marlborough and North Otago) are major features in an often undistinguished landscape of flat farmlands. In their headwaters, along the Main Divide, they can be iconic; running in waterfalls from rock faces, springing from crevices in the bush, melting out of ice sheets which fall from the grey faces of decaying glaciers. Joined together they wind through steep-sided gorges, and spill out over mountain valleys, carved by ancient glaciers and now filled with long islands of boulders and gravel.

The Upper Rangitata is one of the broadest glacial valleys east of the Alps. In a rollicking Nor'wester, its airborne sands and silts can create dust storms sufficient to blur the view from one side of the valley to the other. The river itself flows in fitful strands, or braids, across a bed of stones and shingle, in places three to five kilometres across.

It is the beds and natural flows of these rivers which are so important for the conservation of wildlife. Rare and endangered native birds use them for nesting.

Most delicately poised in this hostile environment is the New Zealand wrybill plover. There are only 5000 of these birds in the world, and they breed only on the shingle riverbeds of Canterbury and Otago. In recent decades their numbers have been declining, in part it is believed, due to the extraction of water from its favoured riverbeds and the destruction of habitat by spreading weeds. The Rangitata is one of the main breeding places of this curious bird which breeds on the shingle, and feeds on insects which it gathers here from under stones using its sideways-turning 'wry' bill. Wrybill migrate to the



GORDON ELL, BUSH FILMS

Cloud of dust on the horizon of the Canterbury Plains indicates the position of a broad shingle river bed when the Nor'wester blows.

shingle riverbeds to breed from late August, making a scoop in the shingle, and laying eggs among the stones. (See picture opposite). In late December and early January they return again, usually to the harbours of northern New Zealand, to feed among the foreign migrants which also flock there from the Arctic tundra.

Another migrant plover is the banded dotterel which, while common still, has been affected by the deterioration of the riverbed habitat due to abstraction for irrigation and hydroelectric development. The birds which breed in the high-country arrive in August-September, and are believed to migrate to Australia in March. They nest in scrapes on the riverbed or adjacent river terraces.

Other birds which frequently breed on the riverbed (but not exclusively) are two other 'internal migrants', the pied stilt and the South Island pied oystercatcher. Those pied stilts which nest inland may form small colonies between August and October, on farmland, wetlands or riverbeds. They move to the coast in late December-January following their breeding, some flocking as far as the terns nest on the Rangitata riverbed between October and January but spend autumn and winter at the coast.

Seagulls, too, nest on the riverbeds: the common black-backed gulls, and the smaller black-billed gulls particularly, have large colonies on the river. A count on the Rangitata recorded 11,000 black-backed gulls and 2500 black-billed gulls on the riverbed below the Gorge during last breeding season. The coastal Caspian tern also nests there. In all the Rangitata supports around 80 different kinds of native bird.

Rangitata Water Already Heavily Used

Water from the Rangitata river is already widely used for irrigation in Mid Canterbury. The Rangitata Diversion Race takes up to 30.7 cubic metres of water every second (cumecs), along with seven cumecs from the South Branch of the Ashburton. This water is distributed among four irrigation schemes instigated by the State more than 50 years ago — Mayfield-Hinds, Valetta, Ashburton-Lyndhurst and Ashburton county stockwater. Other users take a further two cumecs.

Now applications have been made to the Canterbury Regional Council to take more: the Ruapuna irrigation scheme wants eight cumecs of water to irrigate 16,500 hectares of farmland and generate electricity; Rangitata South Irrigation Ltd wants six cumecs to irrigate 12,000 hectares. Further proposals are in train.

Environment Canterbury (the Canterbury Regional Council) opposes the water conservation order because it wants to retain control of the planning process through its natural resources regional plan. Its Rangitata water management plan expired in 1996, however, and a new one could be six to eight years away, on the Council's own admission.

Proponents of a water conservation order fear the flows of the river will vanish meanwhile , through a succession of 'consents' given by the Council before then.

— Source: Geoff Keey, Forest and Bird field office, Christchurch.

GORDON ELL, BUSH FILMS

The seemingly bare riverbeds of the high-country have their own special, often minute vegetation. Mosses and lichens, cushion and mat plants, are early colonisers. Taking the natural flow can cause braids of the river to dry up and allow weeds such as broom and lupins to take over the open shingle where threatened birds nest and feed. The bird here is a banded dotterel, common along the river.

northern North Island. The oystercatchers migrate inland to the braided rivers (and adjacent grasslands and wetlands) in late July-August to breed, before returning to the coast, particularly the northern harbours, from late December to early March.

A rare species of the upper Rangitata tributaries is the mountain blue duck, or whio. A few pairs survive in the torrents which flow into the wild river. A territorial bird, each pair clings to its own favoured reach of river. The blue duck is now a threatened species.

Another rare but almost forgotten bird of the river, is the black-fronted tern — by habit, it is as much a land bird as a seabird. For some months of the year the tern depends on these riverbeds and the adjacent countryside as places to hawk for insect food. The black-fronted tern may sometimes be seen in small flocks near the river, following a ploughing tractor perhaps, dipping and diving like its white-fronted tern cousins at sea. At other times, they fly just above the surface of the braided streams, taking emerging insects, or dipping in for tiny fish. Black-fronted

The dangers of water abstraction are several, but fundamentally it changes the special kind of habitat on which these birds depend. As the natural river flows are modified, weeds such as broom, willow and lupin move onto the islands and obscure the feeding and nesting habitats of the birds. These weed thickets provide shelter for predatory wildcats, ferrets, stoats, weasels, rats and hedgehogs. The running moats of water, which once isolated the breeding islands, dry up, allowing predators to cross into nesting areas. With the river flows effectively tamed, regularised, there are also diminished chances for mountain freshes to re-sort the sands, and create new beds for insect food to develop. There are now fewer places where the migratory and resident birds can live. Their habitat is destroyed.

The lower flows have a significant effect on native fish too. In cut-off stretches of the now overheating and shrinking river, native bullies and torrentfish die along with the game fish. Many fish need the run of the wild river to live out their lifecycles: eels, lamprey and whitebait (galaxids) need

migratory pathways up and down the river to breeding grounds.

People who love the wild river lose amenities too. From the perpective of the recreational angler (17,000 of them fish the Rangitata) there is the loss of fishable water, and the breeding places of migratory trout and salmon are compromised. Each year thousands of visitors enjoy the thrills and spills of whitewater rafting or kayaking through the Rangitata Gorge.

The proposal for a water conservation order over the Rangitata would protect its flows and nature from the mountains to the sea.

GEOFF MOON

The wrybill, a rare plover restricted to New Zealand, nests on the shingle beds of the Rangitata. It is distinguished a by a twisted (wry) bill which is useful for probing under stones for food. In 1995, it was estimated fewer than 5000 wrybill survived. After breeding they migrate to the great harbours of northern New Zealand, for the summer and autumn.

In a 1983 report on the wildlife and conservation values of braided rivers in Canterbury, the old Wildlife Service rated the Rangitata as having outstanding values for wildlife. The Department of Conservation has confirmed this in recent years, and joins in supporting the application for a water conservation order. In an action plan for threatened seabirds, the department has identified hydro dams and irrigation schemes as a major threat to birds which nest on riverbeds.

A substantial portion of the Rangitata is already diverted for irrigation and power generation. Around half the flow of the river is taken during almost half the year, with a drop to a third in other seasons. Irrigators recently applied to Environment Canterbury (the regional council) for consent to take even more. (See box.) Further proposals include a rock dam, 550 metres wide above the Rangitata Gorge, to irrigate 95,000 hectares of land and generate electricity. This would flood the riverbed for 18 kilometres upstream, drowning important bird habitat, and abstract another 46 cubic metres of water per second - around 150 percent more than the total amount presently taken.

In response, Forest and Bird is joining with the Department of Conservation and Te Runanga o Ngai Tahi (the Maori people of the region), to support a water conservation order to protect the Rangitata River and its tributaries from further development. The formal application has been lodged with the Minister for the Environment by both the New Zealand Fish and Game Council and its local organisation, the Central South Island Fish and Game Council. It will be heard by a tribunal appointed by the minister.

A water conservation order would prevent dams on the river, restrict alterations to the natural flow of the river or changing its form, restrict the taking of water, and ensure the continued free passage up and downstream for migratory fish. The idea is to help maintain the river in a natural state, while protecting a healthy habitat for fish and birds.

Details of the claims on the Rangitata were compiled by Eugenie Sage and Geoff Keey, Forest and Bird field staff in Canterbury.

Less famed than the wrybill, the black-fronted tern is also rare — similarly reduced to some 5000 birds. The terns nest on the riverbed, hawk insects over land, and skim the river braids for hatching insects and tiny fish.

GEOFF MOON

Water Conservation Order Protects Values

The Rangitata application is the first Water Conservation Order to be sought under the Resource Management Act, 1991. Water conservation orders are a tool to recognise and sustain a water body's intrinsic, ecological, scientific, and amenity values. They protect wild and scenic character, and outstanding features such as habitat or fisheries. They may be applied for recreational, historic, spiritual or cultural purposes.

The Rangitata proposal has attracted widespread support from Forest and Bird, the Department of Conservation, Te Runanga o Ngai Tahu and around 75 percent of some 1200 public submissions. Notable opponents include Environment Canterbury, the Ashburton District Council and irrigators.

— Eugenie Sage, Forest and Bird.

Our 300th Issue

Forest & Bird is one of New Zealand's oldest magazines

Founded as the Society's bulletin, 78 years ago, *Forest & Bird* this issue celebrates its 300th edition. Now, as through the years, its purpose is still to draw attention to New Zealand's native animals and plants, its distinctive landscapes, and the need for their protection.

The first five 'bulletins' of the Society survive in the Alexander Turnbull Library, largely in the form of typed letters to members beginning 'Dear Sir,' and appending printed press statements issued by the Society in preceding months. The concerns are so similar to those today that the Society's initial efforts strike an immediate understanding with the reader 78 years on. In many cases only the context has changed.

The challenge of habitat protection is a theme from the first issues; the threat of introduced pests and weeds is early apparent, while concern over declining bird numbers, and the need to educate the public in an understanding of our fragile environments, are as relevant today as they were in 1923.

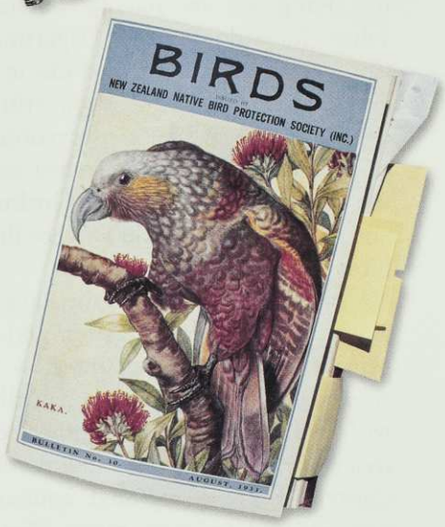
The concerns may not have changed but the country has. Some problems have intensified as New Zealand has continued to develop, but the possibilities for saving nature have also increased with the influence of science, particularly ecology.

In May 1923, Forest and Bird was arguing that bird conservation could help control the £7 million worth of damage done to farms by insect life. It also observed: 'The work of native birds is mainly confined to the welfare of our forests...which are largely dependent on birds for cross pollination, destruction of insect life, seed distribution &c.... It behoves those who want only to destroy native pigeons, the principal forest seed distributor, to ponder on such facts.' Sound familiar? Helpfully, another corespondent urges: 'There is no reason our native birds should die out ... with efficient care of our forests, and proper destruction of natural enemies.'

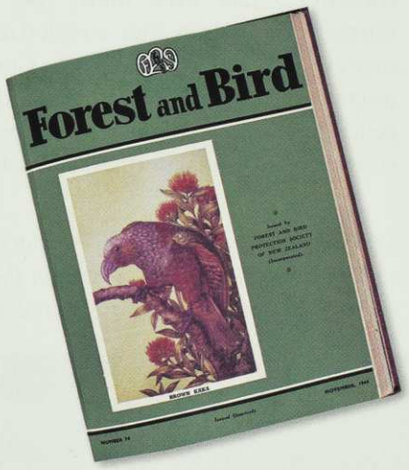
In November 1923, the journal took the form of printed *Relative Notes submitted by The N.Z. Native Bird Protection Society* circulated to members and the press. Items included the need to recognise manuka as

The first issues of what has become Forest & Bird *were cyclostyled newsletters with a printed supplement of news items. By issue 6, it had become* Birds *an illustrated digest-sized magazine (right and far right.)*

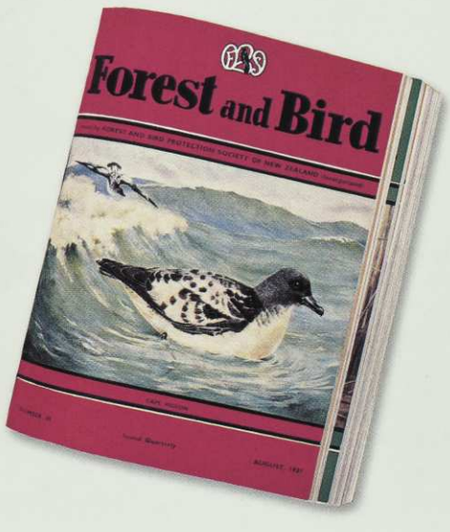
The kaka cover on the last copy under the Birds *masthead (August 1933) also reappeared in May 1956 (see below right.)*

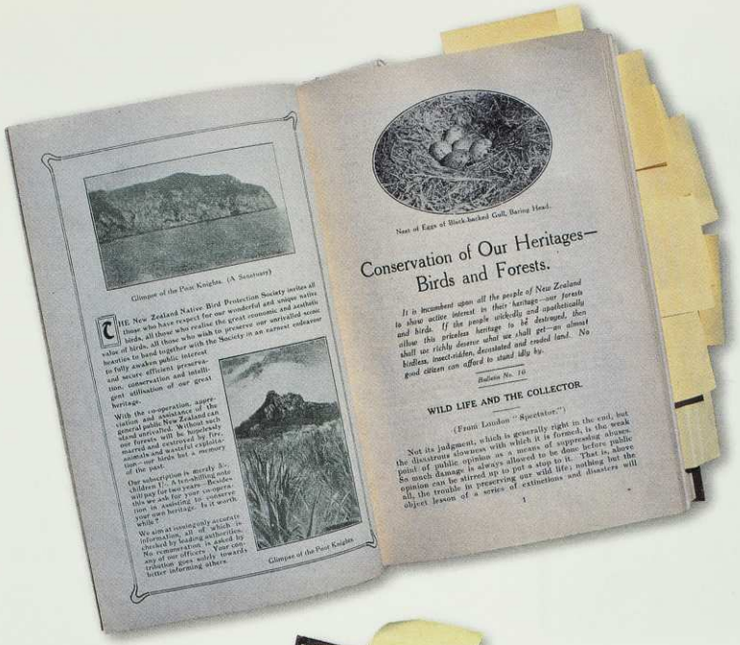


The first issue of Forest & Bird *under its present title, in October 1933,* (above). *The painting of nesting fantails was one of a series commissioned by the Society for its advocacy. This painting was to reappear again years later, recycled on the cover of a larger-format magazine in 1946 (far right).*



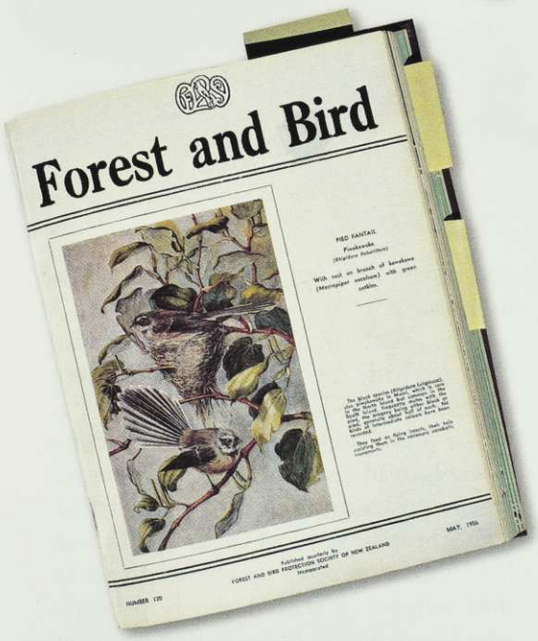
Coloured covers gave the journal an attractive appearance during the 1930s. Even during the restrictions of the Second World War, colour covers were frequent but things changed during the late 1940s.





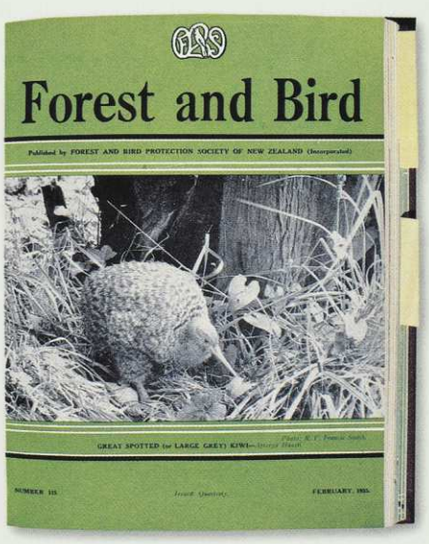
Conservation of Our Heritages—
Birds and Forests.

WILD LIFE AND THE COLLECTOR.



This issue from 1956 re-uses the printing blocks from the first issue of Forest & Bird *(far left). The cost of such engravings was so expensive in those days that recycling was a worthwhile economy.*

Signs of the post-war economy in printing and paper quality are reflected in the magazine from the late 1940s through the 1960s (below).



Forest & Bird *covers were usually printed in black and white with a coloured panel during the 1950s, when membership was too small to sustain the regular use of expensive colour printing.*
The green, and occasionally red, panels were used for some 25 years on a fairly utilitarian journal. Editors of the time worked on a largely voluntary basis.

a nursery crop for regenerating forest, the damage done by grazing animals in forests, and bewailing the growing effects of introduced 'opossums'.

Shortly the bulletins evolved into a small magazine called *Birds*. It was digest-sized, printed in coloured type, with similarly tinted illustrations. From its first appearance, as bulletin number six in 1925, *Birds* took the broad view of native animals and plants as part of a wider environment. Its lead story was 'A Plea for New Zealand for New Zealand, The Dangers of Acclimatisation'. The author, J.G. Myers MSc, FES, RAOU, regards as 'sinners against posterity, those whose patriotism rises no higher than a desire to create in New Zealand a paltry replica of other lands'. His particular target is the introduction of heather to 'Waimarino's tussock plains.' It is now, as predicted, a major weed in the central North Island. The Society's secretary Captain Val Sanderson blames the inroduced weasel as 'one of the most probable causes of our wild bird life troubles.' The damage done by deer in forests was equally clear.

From the beginning, photographs provided irrefutable evidence of the impact of introduced pests. Pollution too was noted. The effect of steamers discharging oil and killing birds in their slick was early recognised as a problem for seabirds. *Birds* was also a medium which recorded many early expeditions to remote places and offshore islands.

The broader interests of the New Zealand Native Bird Protection Society (as Forest and Bird was originally known) were recognised when the name of the Journal changed to *Forest and Bird* in October 1933. The early *Birds* magazines are generally credited to the work of the Secretary (and founder) of Forest and Bird, Captain Val Sanderson. In 1932, the Society employed its first journalist, L.S. Fanning, to provide newspapers with articles about nature. His name and others were also connected with the development of a now more-sophisticated journal.

It is a curiosity of *Forest & Bird* that, while its role developed, the presentation of the magazine floundered. Coloured covers, generally featuring bird paintings, gave it an attractive appearance through the difficult 1930s and even into the Second World War. Increasingly, however, the covers were reduced to one decorative colour; either red or green panels enclosing a black and white photograph often provided by the Government's National Publicity Studios. It was not until the late 1970s, as the Society went through a

traumatic redefinition of its approach to conservation, that colour returned to the covers.

The changing magazine through the 1970s reflected the redevelopment of the Society's conservation stance, and the move to an approach of absolute protection for native wildlife, trees and plants. A vibrant magazine was to be part of the campaign to stop native logging, and the colour pictures told more dramatically than grey columns of type what was happening to the 'last of the bush'.

When the Society published the first of its A4-sized 'modern' magazines in 1984, the president of the time, A.A.T. Ellis QC wrote: 'We have chosen to change to the proven A4 format to improve presentation both of pictorial and printed content. This is an expensive matter but it is very important indeed that the journal is appreciated and read.'

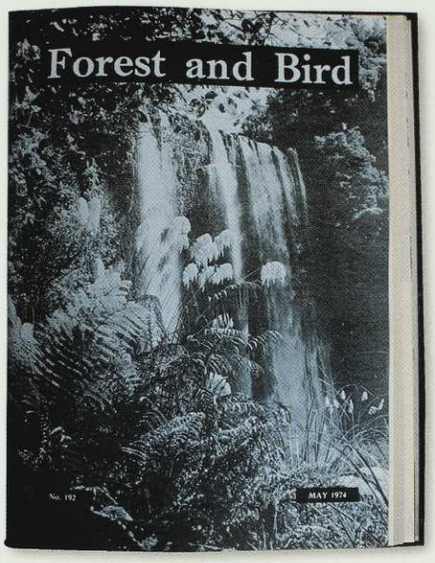
David Collingwood who had been both national conservation officer and 'relieving editor and journal compiler' since 1975 was succeeded by a professional editor, Gerard Hutching, in 1984. The Society's new president, Dr Alan Edmonds was in Wellington on study leave from Waikato University that year and determined to develop the magazine as the Society's flagship. Authoritative articles backgrounding New Zealand's ecological crises were regularly presented along with evidential colour photographs. The Society was entering a new era of influence, with a bounding membership (up from 15,000 to 40,000 in the 10 years to 1983), and was now financially able to make the most of the colour-printing revolution.

Despite the qualitative improvement in the appearance of the magazine, the central concerns of the Society were still highly recognisable; the first of the new issues carried stories about the Northland forests, the demand for irrigation water in Canterbury, and the plight of the sea lion. The first to be edited by Gerard Hutching included the need for reserve status for the tussock grasslands in the Lammerlaw-Lammermuir ranges of Otago, the need to protect nature in the Far North, and the plight of birds in high-country riverbeds. All these issues are, wholly coincidentally, revisited in the current journal; more evidence of Forest and Bird's long-term advocacy for theatened places and species. Happily they also demonstrate that over the past two decades Forest and Bird has made real gains for nature.

The fact that some issues have been on Forest and Bird's agenda for nearly a century is not necessarily bad, or discouraging. Conservation has moved into the mainstream of New Zealand life over the past two decades. One of our few remaining government departments is wholly dedicated to the protection of the natural world, while another Ministry monitors the effects of change on the environment. (In 1923, a major platform of Forest and Bird was to achieve a 'unity of control' over matters affecting wildlife) The Resource Management Act now governs what people can do to the land, taking account of 'sustainability' of the environment. Newspapers and mass circulation magazines carry frequent articles about conservation problems and local initiatives. Forest and Bird advocates appear frequently in the media, outlining conservation perspectives on topical issues. We should be glad that television programmes and editorial columns will now pick up on threats to our environment and expose the implications in time to set things right.

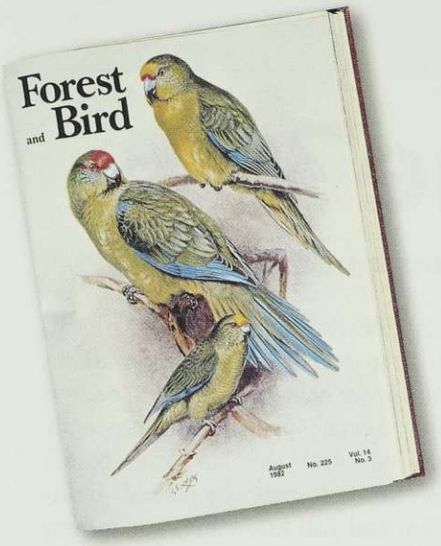
As a quarterly, *Forest & Bird* cannot compete with the immediacy of modern media, nor conduct the kind of debates which have now become mainstream news. Instead the journal takes a longer view, presenting information which highlights the values of things at risk and, hopefully, empowers its readers to act in their defence. It should also help people who like nature to enjoy it more, drawing attention to the fascinating as well as the endangered.

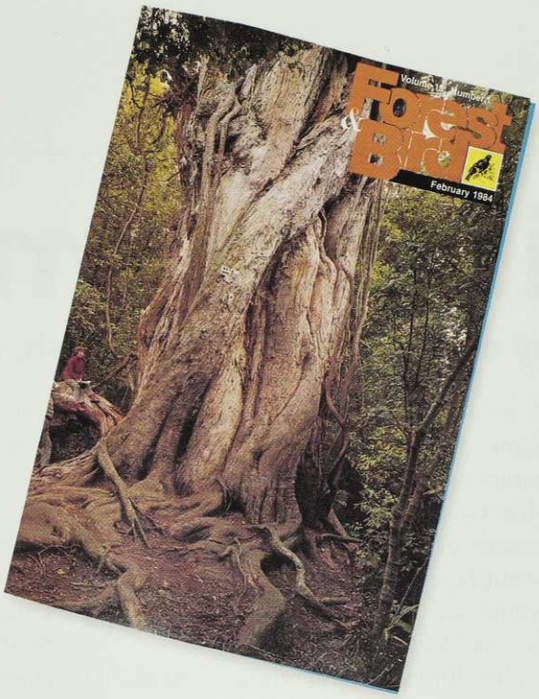
The need for a more immediate, campaigning approach was recognised in the 1980s with the publication of a more topical sister publication, *Conservation News*, compiled by the Society's conservation staff, and now delivered to all members with the journal. This does not have the long lead-times of a quarterly



The issue for May 1974 is typical of the early 1970s when pictorial, but monochrome, covers were a feature of Forest & Bird.

Natural history photographer Geoff Moon, first contributed to Forest & Bird *during the 1950s. His pictures were then reproduced in black and white, though similar images have subsequently been published in colour. These include the pictures of birds nesting on the Rangitata riverbed in the current issue. The issue of May 1955 featured the grey warbler (top) a male pukeko turning eggs on the nest (bottom).*

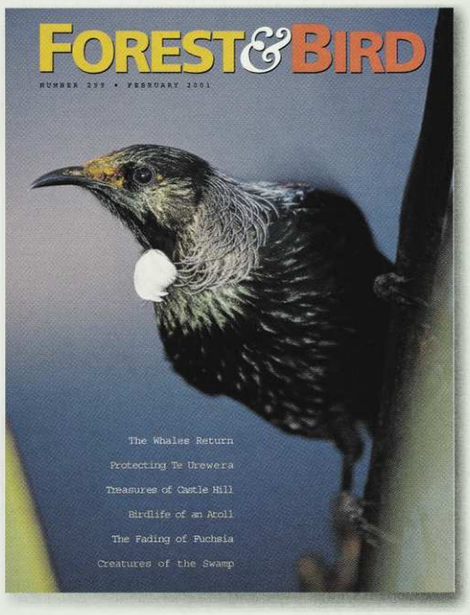




Since the 1970s, colour printing has become a major element of Forest & Bird. *Colour photographs illustrate the values which the Society seeks to protect.*

Top right is the first issue in the A4 format launched in support of the campaigns to save native forests, in February 1984.

The changing format of Forest & Bird *from its first issues as* Birds *(below right) is demonstrated in this bound set belonging to the Society.*



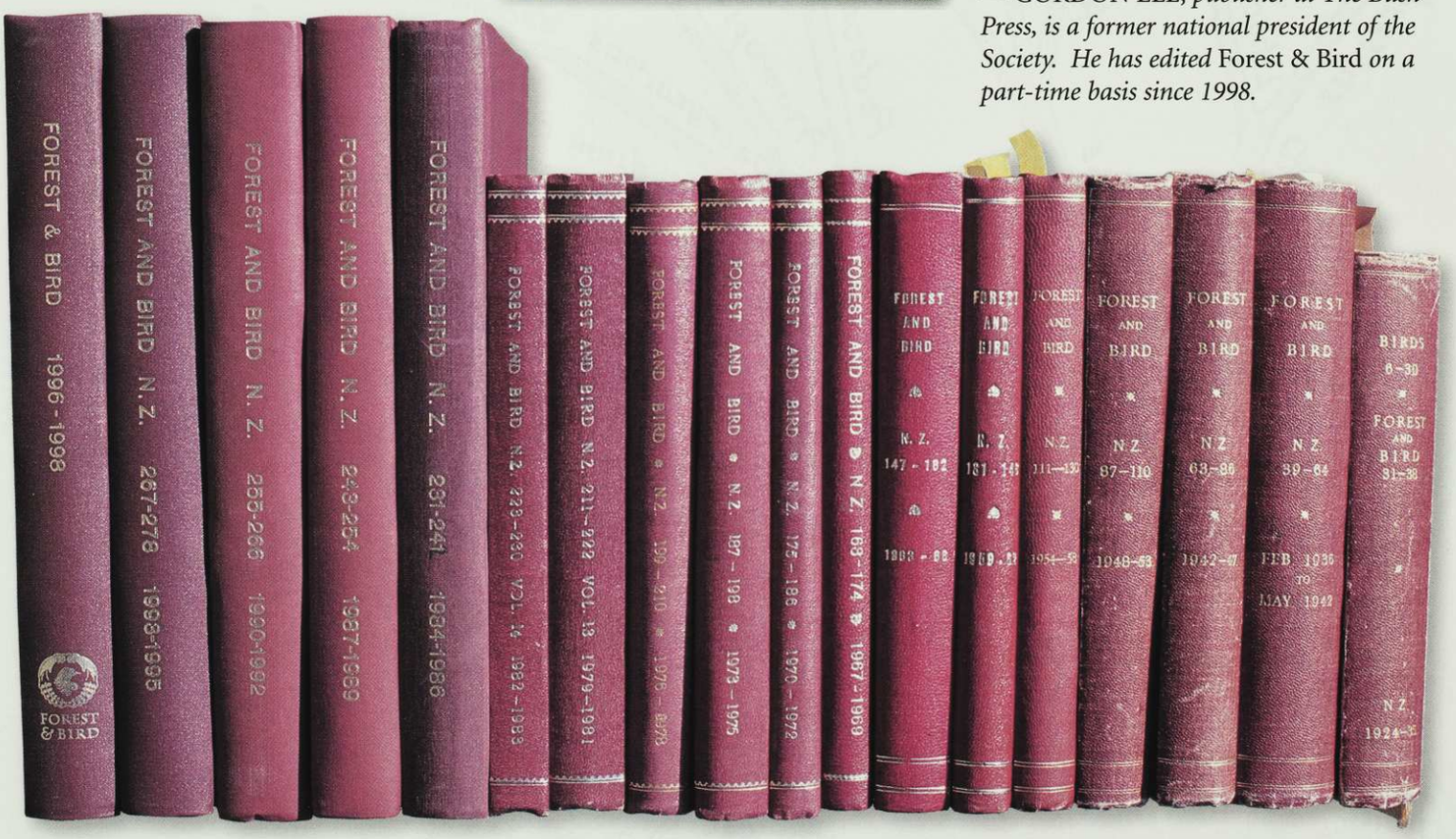
magazine and is aimed at providing background for activists to campaign and lobby on more immediate issues.

The interests of children in conservation have also been a concern of the Society since its first meeting called for a Bird Day in schools. The production of posters, junior membership, and children's pages in *Forest & Bird* continued for several decades. Since 1987, however, the Society has had a special children's wing in the form of the Kiwi Conservation Clubs, and their formative interests are now better catered for in a separate and widely admired publication edited by the organiser, Ann Graeme.

The emphases of the journal have changed but subtly with the expanding vision of the Society, and its different editors. During the 1990s, Ian Close produced an expanded magazine which also dealt with broader environmental issues, such as population control and urban transport. In recent years there has been a greater concentration on natural history features and illustrating the core environmental concerns of *Forest and Bird.*

The journal has evolved over many years as a major element in the Society's service to its members. Skimming through its 300 issues it is easy to see how it continually reflects the values and issues which the Society upholds. Look beyond the coloured illustrations, and contemporary presentation, and it's surprising to note how in conservation what goes round, comes round, again and again.

— GORDON ELL, *publisher at The Bush Press, is a former national president of the Society. He has edited* Forest & Bird *on a part-time basis since 1998.*



What's in a name?

ANN GRAEME notes that many creatures and plants vanish, unnamed.

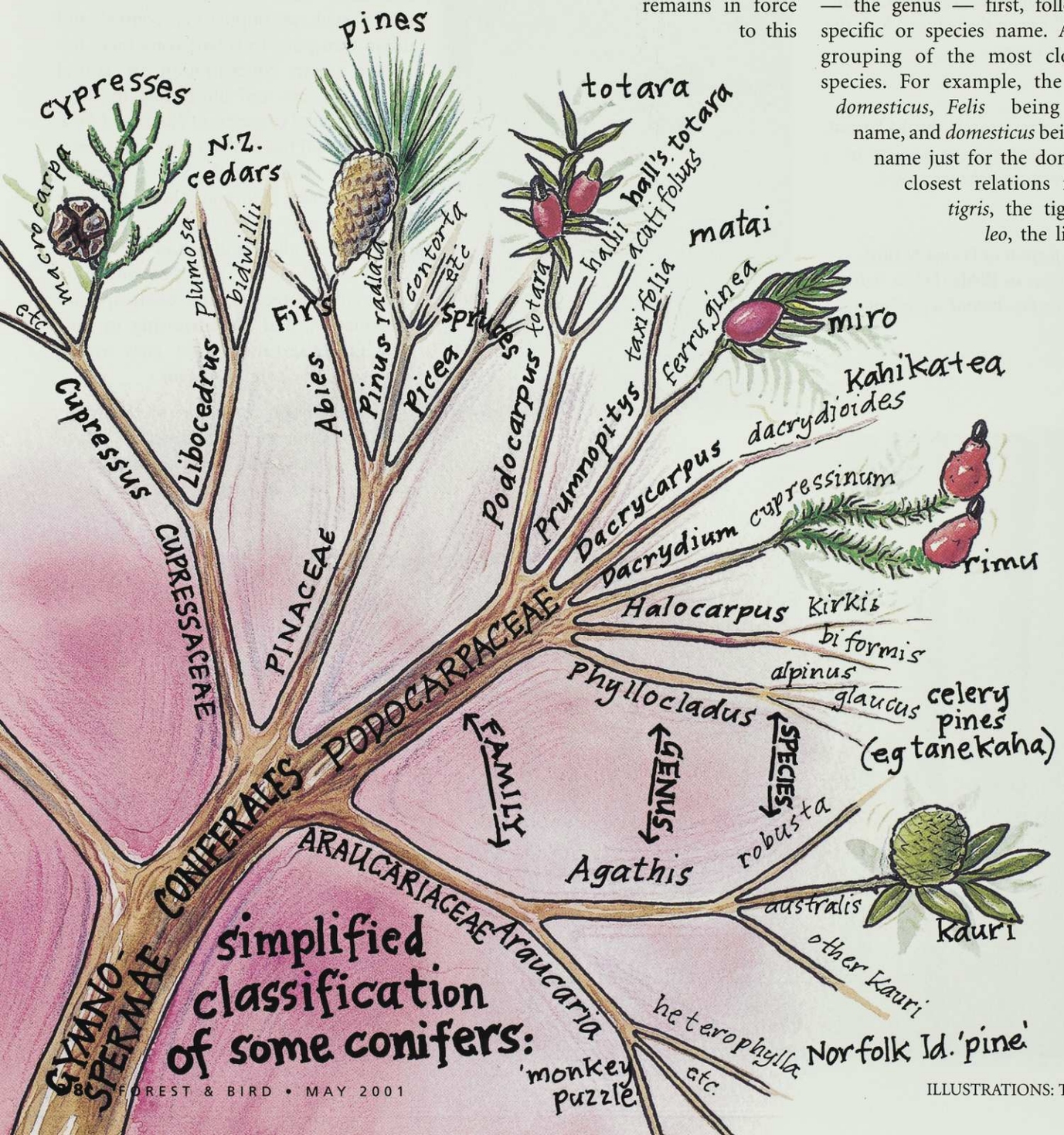
The first step to knowledge is a name. Imagine there were no name words. A conversation might go like this:

'I went with my tall, thin, handsome man to the rough-stemmed plant with wavy-edged leaves, to gather sweet, green skinned fruit.'

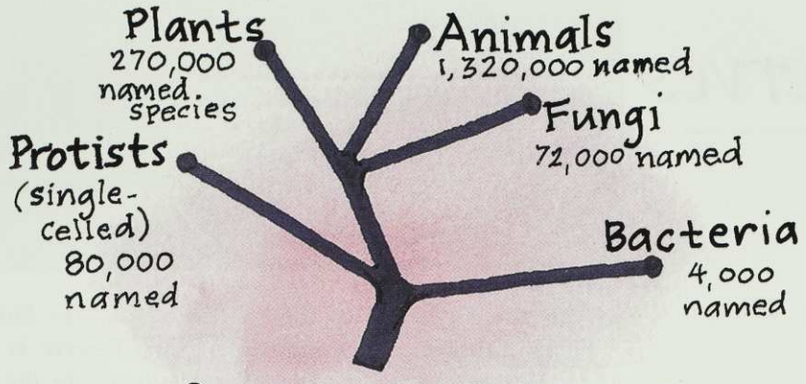
Was he my husband — or my lover? Were we gathering apples — or pears — or feijoas — or even melons? How clumsy, how imprecise it would be to communicate without names. People of every race have made up names to briefly and accurately identify objects, but the most elegant naming system of all, which oils the wheels of scientific communication throughout the world, was invented by Carl Linnaeus in the mid-18th century.

The 'binomial' naming system he invented is so practical, so sturdy and so logical that it remains in force to this day. Binomial means 'two names', and the system is to some degree similar to the present way we name people. With people, the first name, special to the person, comes first, and the surname comes second. So you may be called Jenny Baradine, and you know that you belong to the Baradine family and are related, albeit distantly, to all the other Baradines in the world.

The binomial system puts the 'surname' — the genus — first, followed by the specific or species name. A genus is a grouping of the most closely related species. For example, the cat is *Felis domesticus*, *Felis* being the generic name, and *domesticus* being the special name just for the domestic cat. Its closest relations include *Felis tigris*, the tiger, and *Felis leo*, the lion. Similarly



ILLUSTRATIONS: TIM GALLOWAY



Earth's family tree and classification
– the FIVE KINGDOM view.
From "The State of NZ's Environment."

our kauri, *Agathis australis*, is related to the Queensland kauri, *Agathis robusta*, and the Fijian kauri *Agathis macrophylla*.

The genera are then grouped into families, families into orders, orders into classes, classes into phyla and finally, the phyla are finally united into the five kingdoms of living organisms.

So the binomial naming system does more then accurately pinpoint each species: it provides a picture of the relationships between species, mirroring, as best we know, the pattern of their evolution.

If the first step to knowledge is a name, we are a very long way from understanding the biodiversity of our world. About 14 million species are thought to be living at present.

Of these, about 1.75 million species have been scientifically described, and thus given a name. These include a disproportionate number of large species, edible species and those of direct use to people. That leaves more than 12 million species unnamed, unnoticed and hence unknown to us.

These nameless species include the vast majority of insects, nematodes, fungi, bacteria and protists (tiny but important creatures such as protozoa). We may think them of little relevance to ourselves — if such a view should measure their importance — but we would be wrong. The more we learn about one species, the more we see its dependence on other species. For example, we now know that more than 90 percent of all plant species depend on a symbiotic relationship with particular fungi. The fungi need the plant roots for shelter and food, and the fungus left-overs provide the plant roots with essential nutrients. The more we look, the more intricate the relationships we find. The web of life is tangled beyond our imagination.

At present the world's biological diversity is declining for the first time since the catastrophic wave of extinctions 65 million years ago which wiped out the dinosaurs and half of Earth's other species. We are the reason for the current wave of extinctions, as our species takes over the territory and the resources needed by other species. Around the world, about 52 percent of land ecosystems have been destroyed or disturbed by farmland, settlements, logging, mining and roads. In New Zealand, 63 percent of our natural habitat has been destroyed for farmland and a further 10 percent significantly degraded.

This is not a happy scenario for our native biodiversity, which is more primitive in character — and more vulnerable — than that of many other countries. In only 30 human generations New Zealanders have eliminated 32 percent of the endemic land and freshwater birds, 18 percent of the endemic sea birds, unknown numbers of invertebrate species and greatly reduced the numbers of most of the survivors. Of about 80,000 species of native animals, fungi and plants, only about 30,000 have been described and named.

To protect our biodiversity, we need to identify and classify it, but declining too is the pure science of taxonomy. In New Zealand and around the world, research funds are increasingly being channelled into the applied sciences of ecosystem management, fisheries, bioprospecting and biotechnology. These are urgent and exciting tasks, and can generate money. Describing tiny beetles has no immediate commercial spin-off. Many taxonomists are elderly and retired, but their skills are of prime importance in protecting our biodiversity. In the current enthusiasm to encourage science graduates, we must include and provide jobs for young taxonomists.

Somewhere, every day, another forest is felled, another grassland is ploughed, and another species becomes extinct, and we don't even notice for it didn't have a name.

— ANN GRAEME *is responsible for the Kiwi Conservation Club of Forest and Bird. She lives in Tauranga.*

Footnote:
The statistical data for this article was taken from The State of New Zealand's Environment *published in 1997 by the Ministry for the Environment and available from them and from bookshops. It is a wonderfully comprehensive, well-written and fascinating account of our country and should be on the bookshelf of everyone interested in conservation. — A.G.*

Names Can Change

Names are not set in stone. As taxonomists study species, they may find features which suggest that a species is better related to another genus than to the one to which it has been assigned. So in recent years, the original *Podocarpus* genus, which contained kahikatea, totara, miro and matai, has been split. Miro and matai are now placed in the genus *Prumnopitys*, and kahikatea in the genus *Dacrycarpus*. (Taxonomically justified, no doubt, but a source of annoyance to older botanists!) A number of native birds have also had their scientific names changed in recent years.

A human vanity

Closely related species are generally given the same genus name, but our species, *Homo sapiens*, has a genus all to itself. This status dates from Carl Linnaeus himself, who wrote to a friend that he feared the clergy's reaction if he were to classify humans and chimpanzees together.

It is now known that, besides their physical and psychological similarities, humans and chimpanzees have 98.4 percent identical genes. Some scientists and philosophers now argue that a reclassification is long overdue.


Sutherland Turakina Reserve

A Feast of Tawa and Kahikatea

PETER WHITE explores the Forest and Bird reserves of Rangitikei.

Forest and Bird's Rangitikei branch manages five bush reserves in the upper reaches of the region's rivers, inland from Manawatu and Wanganui. In this region of steep hills, papa cliffs and gorges, the remnants of native forest have been reserved for more than 50 years, protecting mainly podocarp and hardwood forests largely cleared from the surrounding farmland.

Rangitikei branch has the most forest reserves of any Society branch and, in addition, manages the Simpson property outside Marton which contains a few planted native and exotic trees.

The branch's major challenge has been controlling the old man's beard vine which has over-run so much forest in this sector of the North Island (see box). Apart from weed control the branch has also been controlling possums to a low level, maintaining tracks, creating picnic areas, erecting signs and replanting open areas of the reserves.

Possum control has resulted in a marked improvement in the canopy, an increase in bird life and birdsong, and more native plant seedlings on the forest floor.

In the past the reserves have been home to the Australian sulphur-crested cockatoo a flock of which were liberated in the early 1900s by someone living near Turakina. There is some evidence to suggest the birds undermine the health of podocarp trees by stripping bark, eating the growing tips and digging into the trees with their beaks, probably to extract bark and grubs. Flocks of them would congregate in the reserves, screeching from the canopy. For many years a concessionaire caught the birds and sold them to pet shops in Auckland, and today the numbers are considerably less.

Each of the reserves retains its own character, however, and tracks have been formed so people can enjoy them.

The Sutherland Bequests

On August 4, 1967 Archibald Sutherland died, leaving most of his money and around 1164 hectares of land to seven charitable organisations. Two separate blocks of forest, now known as the Sutherland reserves, went to Forest and Bird, with the rest of the land being sold at public auction. Both reserves were transferred to the Society in 1970, the Sutherland Turakina block only after a subdivision of the original block enabled a land exchange of some open pasture for two areas of native and exotic forest left out of the bequest.

A generous endowment, the 'Sutherland Bequest', was also left for the future development, upkeep and maintenance of the two reserves.

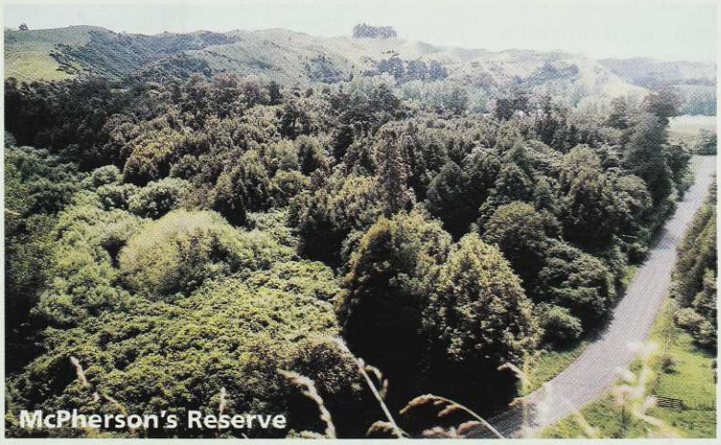
The 60-hectare Sutherland Turakina Reserve is situated to the north of Marton at the junction of Mangahoe and Turakina Valley Roads. The reserve is significant in that it is one of the few remaining areas of indigenous forest associated with a river terrace in the Rangitikei ecological region. It is predominantly kahikatea forest with matai, rimu, hinau and occasional totara over a subcanopy of tawa and some titoki in the central portions of the reserve. There are pockets dominated by kanuka and a smaller area on the other side of Turakina Valley Road contains titoki-tawa forest. It represents the finest remnant of plains forest in the Turakina area, a representative podocarp forest. Most of the remaining forest areas in the region are confined to river valleys that are too steep or inaccessible for logging or farming.

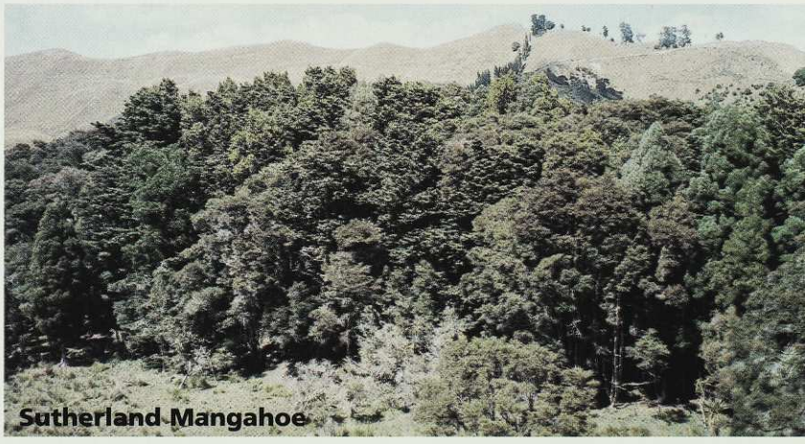
The 12-hectare Sutherland Mangahoe Reserve is situated five kilometres to the east on Mangahoe Rd. Its vegetation consists mainly of kahikatea forest rising over tawa. The kahikatea ranges from more mature trees at the southern end to younger and quite densely-packed trees at the northern end. The reserve also has many particularly fine totara.

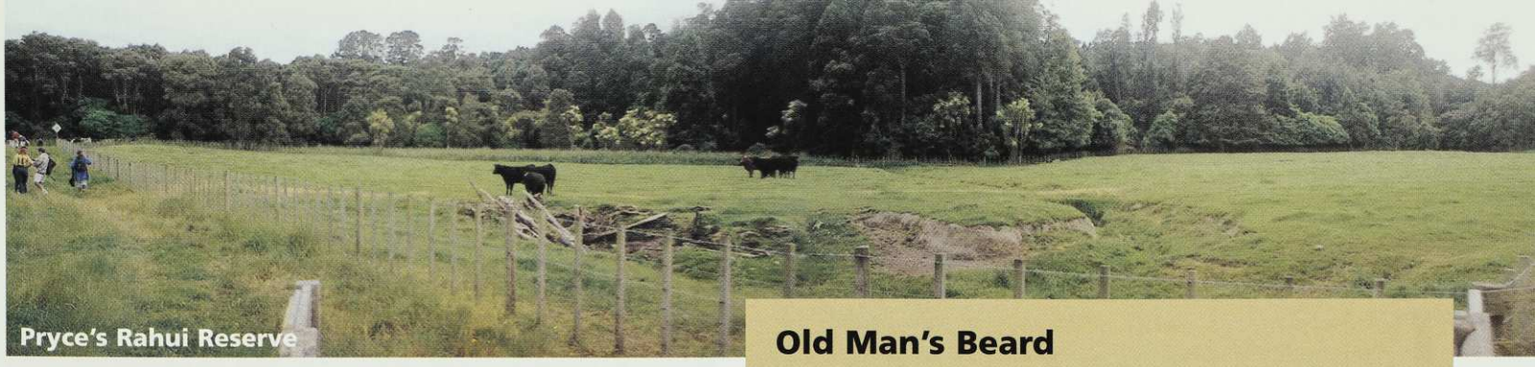
Sutherland Mangahoe contains an internal circular track leading off from Mangahoe Rd and crossing the Mangahowhi Stream via a wooden bridge. Sutherland Turakina has a more extensive colour-coded track network, that provides visitors with walks ranging from 20 minutes to 1 hour 30 minutes.

Wartime Gifts

Mr W B Atkins, a neighbouring farmer at the time and later honorary ranger for Pryce's Rahui Reserve, relates that a sawmiller in the Hunterville region approached Eric Oakeley Pryce, after whom the reserve is named, to secure the forest for milling purposes. Mr Pryce's answer was a definite 'No'. In response the miller remarked that he could secure the milling rights under War Regulations, and gave him some days to think the matter


McPherson's Reserve


Sutherland Mangahoe



Pryce's Rahui Reserve

over. Eric Pryce immediately took steps to hand the area over as a scenic reserve to the Rangitikei Scenery Preservation and Tree Planting Society, and when the miller returned he was informed that the forest had new owners.

A similar story is related about McPherson's Reserve, then owned as part of the landholdings of Alex McPherson Junior. He also wished to save his forest from being taken over by the Government for timber required for the war effort. There must have been some communication between McPherson and Pryce, as both gifts of land were donated to the Rangitikei Society on the same day, March 18, 1941.

In 1961 the Rangitikei Scenery Preservation Society merged with Forest and Bird and the Rangitikei Forest and Bird Section was formed. From this merger Forest and Bird gained McPherson's and Pryce's Rahui Reserves along with the Simpson property, originally gifted to the Rangitikei Society by Margaret Kirk-Patrick Simpson.

The 9-hectare McPherson's Reserve is situated just up from Taurimu Rd on Turakina Valley Rd, north of Marton. It has an internal track system that roughly follows a figure-of-eight pattern with a stream running through the middle, spanned by a wooden bridge. Its forest consists of impressive stands of tawa with titoki and emergent kahikatea, rewarewa, matai and occasional miro and rimu.

At almost 13 hectares, Pryce's Rahui Reserve is an excellent example of floodplain podocarp forest, dominated by huge kahikatea trees and matai. This forest type was once common along the fertile river flats of the Rangitikei River but much of this has unfortunately been cleared for pastoral farming, leaving only isolated remnants. In narrow channels and on its western margin there is swamp vegetation varying from raupo and flax reedland to wet shrubland dominated by coprosmas, cabbage trees and occasional *Olearia virgata*. In drier western areas there is tall kanuka forest with pole-sized to medium-sized totara, matai, kahikatea and rimu. The reserve contains green mistletoe *Ileostylus micranthus*, which has only local distribution.

Pryce's Rahui Reserve is accessed from the end of Putorino Rd where it meets the Rangitikei River, 8 kilometres east of Rata. Like McPherson's it has a network of internal tracks, with boardwalks over wet areas that skirt the different vegetation types of the reserve.

Old Man's Beard

What do you do about a plant pest that continually invades your reserves from infestations outside? This is a question the Rangitikei Forest and Bird branch has been facing for some years. Their solution? Tackle the seed source!

The plant in question is old man's beard *Clematis vitalba*, a prolific grower that can produce more than 100,000 seeds per plant, 64 percent of which are viable. The seeds are dispersed by wind and water and can persist in the soil for 8-10 years. The vines kill plants through strangulation and smother-ing and can climb quite tall trees (a 30-metre pukatea in one instance in McPherson's Reserve).

Over the years the branch has removed old man's beard from its five reserves to the point where they just need monitoring for reinvasion. To protect the reserves from reinfestation the branch has been working closely with farmers, the Department of Conservation and the local councils to control huge infestations of old man's beard all along the Turakina River.

Gift by Brothers

Laird's Reserve was donated to the Society in 1966 by the two brothers L.J. and R.B. Laird as a living memorial to their father, Charles Richard Laird, the first settler in the Turakina Valley. At seven hectares it is the smallest of the reserves managed by the branch. It is situated in a sheltered gully and accessed via a public easement from Mangahoe Rd, 10 kilometres west of Hunterville.

The reserve represents a small portion of a block of virgin forest that escaped the devastation of a huge bush fire in 1898. Its vegetation consists of towering kahikatea forest with matai, totara, rimu and occasional miro over a tawa dominant subcanopy. Some magnificent totara, rimu and kahikatea can be seen from the circular track inside the reserve.

Over the years the branch has planted cabbage trees, kahikatea, totara and tarata along the banks of the stream running along the southern boundary.

— PETER WHITE, *a member of Forest and Bird's national executive, is currently reviewing the management plans of the Society's reserves.*

Laird's Reserve

Southland Community Nursery Supports Restoration Projects

The Southland Community Nursery, supported by Southland Forest and Bird, has produced thousands of native plants for restoration schemes around the region since its establishment in 1996. Some of the larger projects include Southland Forest and Bird's Te Rere Penguin Reserve, the Riverton Estuary Care Society's wetland and estuary plantings, Otarara Landcare Group's '2000 in 2000' planting scheme, and planting in QEII National Trust covenants around Southland.

The nursery was first funded by Forest and Bird's J.S. Watson Trust Fund in 1996. It is now a community scheme run by volunteers and the contribution made by different Conservation Corps groups cannot be underestimated.

Anyone who has run a nursery will vouch for the fact that from time to time things 'get away' on you! At the beginning of the growing season in Southland many of the plants which have had the protection of the shadehouse over winter have to be moved out, so people can 'pot up' new seedlings which then need protection.

In October 2000, the Southland YMCA Conservation Corps made one of its regular visits to the Southland Community Nursery. Such major tidy ups by the Conservation Corps are vital for the continued success of the community nursery.

In the year 2000, Environment Southland funded the community nursery from their 'millennium fund'. The regional council chairman, John Matheson, told me recently that the scheme was successful because of the quality of the application and the innovative concept of the community nursery involving many community groups, individuals, schools and conservation groups in restoration. Because the infrastructure of the nursery (shadehouse, potting sheds, plant-standing areas, some irrigation) had been funded previously from environmental grants, this year's grant provides mainly for potting mix and pots. All native seed is collected locally and people are able to pot up their own native plants and take them away for free. Help with running the nursery, such as weeding, is also appreciated.

The Southland Community Nursery has also been a popular place for school visits, open days (QEII National Trust and Southland landcare groups), scouts and guides, and garden club. Training days are also held throughout the year, teaching people how to propagate native plants — collecting seed, taking cuttings etc.

The scheme is free for anyone in Southland to use: the only catch is that you have to do the nursery work yourself — but that can be fun too! Phone Chris Rance (03) 2131161 if you want to find out more.

— Chris Rance, Southland Forest and Bird

CHRIS RANCE

The Gladstone Scout Group planting for their conservation badges at the Southland Community Nursery. The nursery is a popular place with visiting groups, including school children helped by a teacher from the Department of Conservation.

The Southland YMCA Conservation Corp moving plants around the community nursery set up with funds from Forest and Bird's J.S. Watson Grants.

CHRIS RANCE

Money for Stoat Trapping with Freeze-dried Rats

The Eastern Bay of Plenty branch of Forest and Bird has been awarded $18,750 from the environmental enhancement fund of Environment Bay of Plenty. More than $350,000 from this fund was distributed to conservation projects, throughout the Bay of Plenty, early in the New Year.

The Forest and Bird branch is using the money to enlarge the trapping area for stoats in the Otamatuna 'mainland island' area, in Te Urewera National Park (see *Forest & Bird* February 2001). Trapping will be carried out from September 2001 till April 2002 and is planned to coincide with the kiwi nesting period. Opotiki staff of the Department of Conservation will be providing oversight and design of the stoat trapping programme, and monitoring information.

The objective is to promote the health of fauna inhabiting the area of Te Waiiti stream by enlarging the existing area of stoat control, thereby creating a more sustainable habitat range for kiwi, other forest birds, insect, reptiles and aquatic species.

Arthur Sandom, a Forest and Bird member, will be project manager involved in carrying out the stoat control work.

'I shall be employing a local person to help us with this programme, and hope he will in turn pass on knowledge and information to whanau [Maori family groups],' says Arthur. 'We hope to use freeze-dried rats as a lure in the stoat tunnels as the success rate for trapping stoats is 70 percent higher than with plastic eggs.'

— Meg Collins, Eastern Bay of Plenty Forest and Bird.

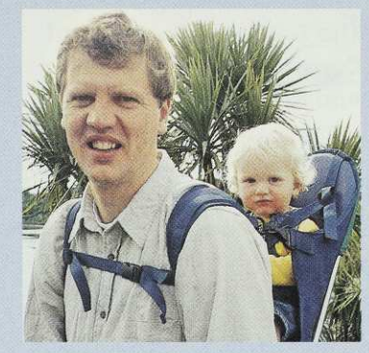
New Conservation Manager Appointed

Forest and Bird's new conservation manager is Eric Pyle, aged 37, who has particular knowledge of resource management and an extensive background in conservation policy development.

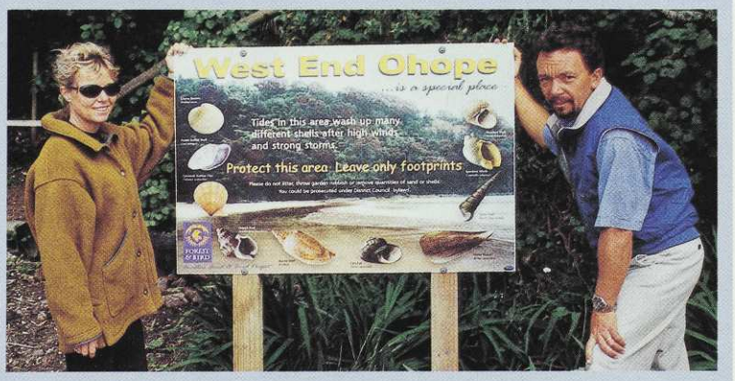
Previously with the World Wide Fund for Nature, Eric Pyle has been in the conservation sector all his working life, including positions with the Department of Conservation, the Ministry for the Environment, and the former Department of Scientific and Industrial Research.

He has also worked overseas, from 1992-94 as an environmental scientist in Eire and England, advising on catchment and statutory planning associated with water. In 1999 he returned to Eire, briefly, to review the environmental performance of the Republic of Ireland as part of an OECD review team.

Eric Pyle has a masters degree with honours in natural resource management and a bachelors degree in physics. His appointment follows a four-month process which attracted applicants from both New Zealand and overseas, including Australia, the United States, Japan, South Africa and Belgium.



Eric Pyle, the new conservation manager of Forest and Bird, 'in the field' with son Kit.



MEG COLLINS

Eastern Bay of Plenty Forest and Bird won a special prize of $250 for its efforts in the Clean Up New Zealand campaign. Concerned at the dumping of garden rubbish and weeds on the foreshore at Ohope, they coordinated equipment and volunteers to restore the western entrance to the Kohi Point walkway. The Department of Conservation, the Whakatane District Council, a neighbour, and the Salvation Army youth team joined in. A local 'coast care' group has been formed with members planting up the dunes with spinifex and pingao.

MEG COLLINS

bulletin

J.S Watson Trust Funding Available

The J.S. Watson Conservation Trust is a source of funding for individuals or conservation groups seeking financial asistance for conservation projects. The fund is administered by Forest and Bird and applications are are now sought for projects over the 2001-2002 year.

The criteria for assistance are:

- the conservation of plants and animals and natural features of New Zealand;
- the advancement of knowledge in these matters by way of research, literary contribution, essay or articles, or other effort;
- general education of the public to give them an undertanding and love of the earth in which they live.

It may be awarded to one or more applicants, or held over for a subsequent year.

For further details and application forms write to the Watson Grants, Forest and Bird, PO Box 631, Wellington. Applications close July 31, 2001.

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 16, 2001, 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 of the Society.

The meeting will be followed by the formal sessions of the Society's national council, an elected body representing branches. These councillors discuss the Society's policies, and in turn elect a national executive and officers to conduct the Society's affairs for the ensuing year.

This national council meeting will also be held at the Quality Inn, beginning with a welcome and workshops on the Friday evening. The Council meeting concludes on Sunday, June 17.

— *General Manager.*

Award for Pauatahanui Reserve

A tidal marshland managed by Forest and Bird enthusiasts near Wellington has been recognised with a New Zealand Wetlands Award, made jointly by the Ministers of Conservation and the Environment. The award recognises the work of the Pauatahanui Reserve Management Committee of Forest and Bird which looks after extensive wetlands and saltmarsh at the head of the Paremata Harbour.

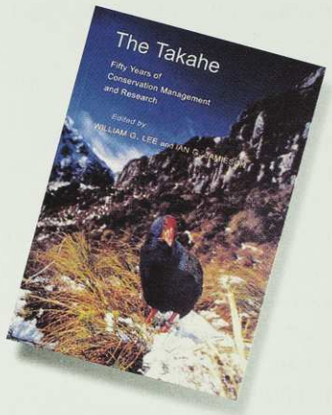
The award recognises 'sustained commitment to a comprehensive restoration and interpretation programme' since 1985.

Concessions Fares on Ferry

Trans Rail has extended its concession for Forest and and Bird members travelling on the inter-island ferry service for a further year. The discount is 30 percent off the fare to travel across Cook Strait between February 1, 2001 and November 30, 2001 — excluding sailings from June 1-4 and October 19-22. To make a booking call 0800 802 802 to speak to one of Tranz Rail's reservations staff. Presentation of a valid Forest and Bird membership card upon check-in will be required. Bookings are subject to availability and must be made 24 hours prior to travel.

— *Lyn Bates, general manager, Forest and Bird.*

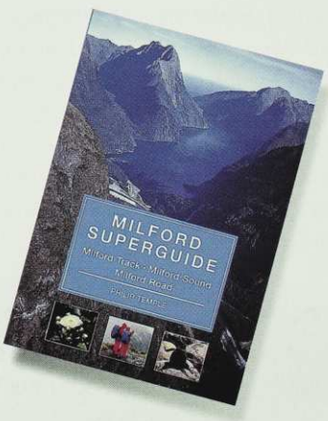
booknotes



The Takahe: Fifty Years of Conservation Management and Research

edited by William G. Lee and Ian G. Jamieson, 132pp limpbound, University of Otago Press, Dunedin 2001, RRP$39.95.

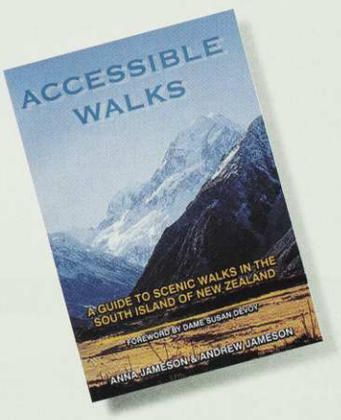
This is a serious book about the conservation of the takahe, long believed extinct, but rediscovered in the mountains of Fiordland in 1948. The birds' subsequent history, and efforts to develop captive populations and release them elsewhere, is documented in the words of scientists involved with these jobs. *The Takahe* is the product of an academic symposium, publishing the papers presented at a joint meeting of the ecological societies of Australia and New Zealand. It is not popular reading but it does summarise the plight of the takahe in a set of authoritative, illustrated papers.



Milford Superguide

by Philip Temple, 80pp, limp, Godwit/Random House, Auckland 2000, RRP $24.95.

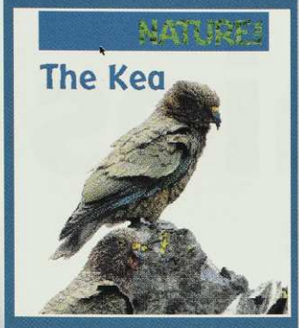
Whatever way you visit Milford, Philip Temple has it covered. This guide includes the Milford Track, the Milford Road, and the Sound itself. It's excellent: not just track notes for which the author has a long-established reputation, but cultural and historical notes, Maori and European history, botany, zoology, geology and that weather. If a topic is of interest to people who like the outdoors, Philip Temple provides a well-illustrated, informative page about it, whether it's seals or keas, the various beech trees identified by leaves, or the process of mountain-building or ice erosion. The book is nicely designed and full of colour pictures: an armchair introduction; an evocative souvenir for afterwards.

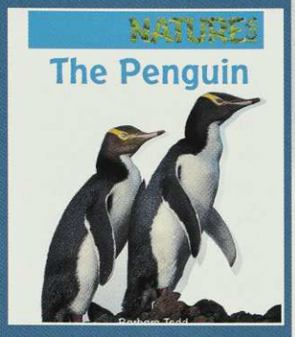


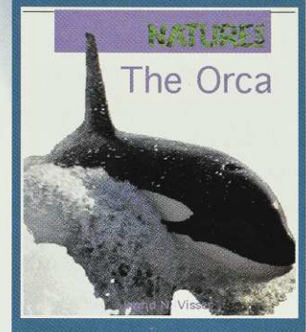
Accessible Walks: A Guide to the Scenic Walks in the South Island of New Zealand

by Anna Jameson and Andrew Jameson, 112pp limpbound, MadYeti Publications, PO Box 5216, Invercargill, Invercargill 2000, RRP$25.95 plus $4 postage.

Anna Jameson is a wheelchair wanderer. Her selection of southern walks accessible this way will be of interest to anyone unable to get about freely, or taking a child in a pushchair. Many of her experiences suggest wheelchair 'walking' can be a fairly challenging way to enjoy the wild outdoors, however, and best tackled young. There are 90 walks identified, graded according to the amount of effort involved and whether someone is also needed to give a push in places. Words like 'steep', 'narrow' and 'awkward gates' occur frequently, which is challenging but worthwhile information.







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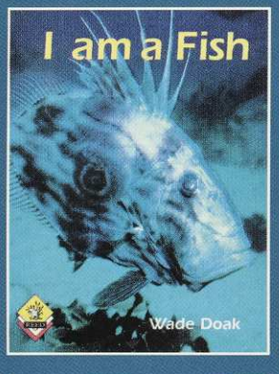
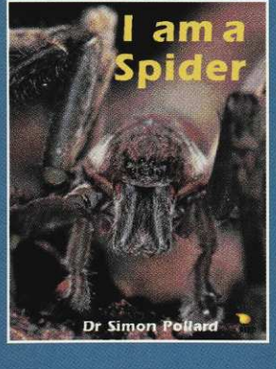




Children's Books from Reed

NATURE kids

The Nature Kids series is aimed at 5-8 year old children, and is designed to introduce popular aspects of natural history to a younger age group. The series has been warmly welcomed by teachers, librarians, the media, and – most importantly – by children. Each book is $12.95

The Kea • John Lockyer

DID YOU KNOW that kea are called the 'clowns of the mountains'? In this book you can explore their cheeky behaviour, see where they live, study their babies, find out what they eat and see just how close they get to humans!

The Penguin • Barbara Todd

DID YOU KNOW that seven types of penguins live in New Zealand? This includes the Blue penguin, which stands at only 35–45 centimetres tall. Find out where penguins live, what they eat, the differences between them and how they look after their babies.

The Orca • Ingrid Visser

DID YOU KNOW that when an orca goes to sleep half of its brain stays awake? Find out how long orca can breathe underwater, what they eat, what makes each orca an individual and how orca babies are brought up.

The Kiwi • Ingrid Visser

Did you know that kiwis can smell food that is three centimetres underground? They are also very noisy and whistle, squeal, chortle and meow like a cat!

The Weta • Ingrid Visser

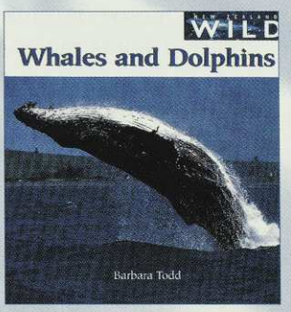
DID YOU KNOW that the giant weta is the largest insect in New Zealand? Or that some weta can weigh as much as a small bird? Find out more amazing facts about New Zealand's scariest looking insect.

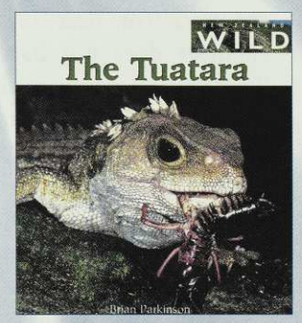
I am a Fish • Wade Doak

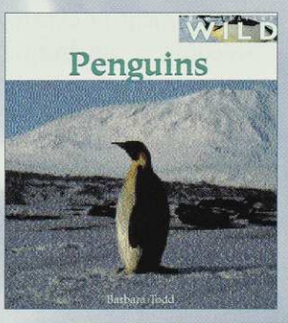
Meet fourteen fish commonly found in the waters around New Zealand. The fish tell their own stories and explain what makes them so special. Find out about the unique way that fish survive in their watery world. $19.95

I am a Spider • Simon Pollard

Meet 18 spiders commonly found in New Zealand and some of their relatives from other countries. Find out where the spiders live and how they survive. Learn about spider classification, senses, spider silk and venom, as well as some fascinating spider myths and legends, including the real story of Little Miss Muffet. $19.95







This series, for 8-12 year olds, focuses on some of the more fascinating aspects of New Zealand's natural heritage. Superb full colour photographs supplement the informative texts.

NEW ZEALAND WILD

Each book is $14.95

Whales and Dolphins • Barbara Todd

Pull-out boxes contain important 'cool and amazing facts' about the different whales and dolphins found around New Zealand.

The Tuatara • Brian Parkinson

Find out about the tuatara's beginnings, survival, as well as breeding habits and behaviour, socialisation, and where it lives.

Penguins • Ingrid Visser

Find about about what penguins look like, how they live together, and share parenthood. The book looks at both penguins that live in New Zealand and other penguins around the world.

Available from leading booksellers nationwide

Visit the Reed Publishing website: www.reed.co.nz

Genes and Genies — putting the cork in the bottle

DR PETER MADDISON outlines Forest and Bird's concerns about genetic engineering, and argues for the 'precautionary approach'.

Forest and Bird has been telling the Royal Commission on Genetic Engineering of the need to take a 'precautionary approach' to genetic modification of plants and animal life forms. That means anyone involved in this work should be cautious where there is scientific and technical uncertainty about the effects.

These concerns arise over what genetic change could do to our natural world, and our productive economy.

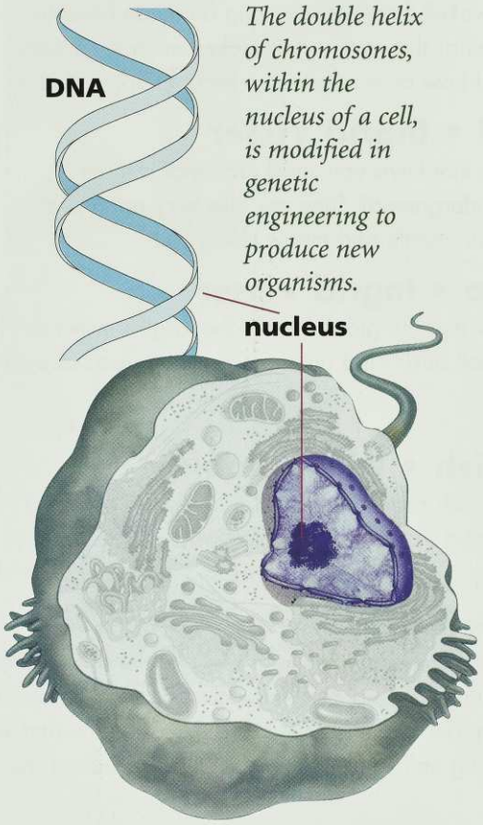
The terms 'genetic engineering' and 'genetic modification' are interchangeable. They label a set of technologies that are used to alter the genetic make-up of cells, and to move genes between species, creating novel organisms.

In nature, the only known ways to produce new gene combinations are through the processes of mutation and sexual reproduction. If, for example, a brown mouse is crossed with a white mouse, a young mouse of different colour is produced. But normal reproductive mechanisms limit the number of possible combinations. Mice must breed with mice (or very near relatives.)

If scientists wanted to create a bright blue mouse, they would be able to breed towards this, but would only succeed if the necessary bright blue gene were present in the mice (or near relatives). A genetic engineer does not have this restriction. Bright blue genes from elsewhere in nature — say from a blue starfish — could be used to attempt to produce the bright blue mouse. This ability to mix genes means that genetic engineers can create 'transgenic' gene combinations that would never occur naturally.

Genetic engineering is not just a simple development of existing plant and animal breeding (including hybridisation) methods. It is a radical new technology for altering the traits of living organisms. It is not beyond the bounds of this technology to suggest that one day soon it may be possible to synthesise novel genes in the laboratory and insert these into other (transgenic) organisms — creating new life itself.

Though there has been denial from the biotechnology industry, it is clear that novel organisms will bring novel risks. It is essential that all the effects (both benign and adverse) of the novel organism are understood before they are released into the wild. This is why Forest amd Bird advocates the application of the 'precautionary principle' (see box.)



The double helix of chromosones, within the nucleus of a cell, is modified in genetic engineering to produce new organisms.

Careful case-by-case study of genetic engineering experiments, and the examination of alternatives, is required. This should happen within an overall framework that recognises the need for protection of the natural ecosystems; and while promoting a move towards sustainable methods of food production.

Unforeseen consequences from genetic engineering could place at risk New Zealand's plants and wildlife, hence the need for caution.

The protection of New Zealand's unique biodiversity is a fundamental tenet of the Government's Biodiversity Strategy. The responsibility for the continued existence of this unique resource is entirely ours, as there is nowhere else in the world where it can be conserved.

The Precautionary Principle

Forest and Bird believes the 'precautionary principle' should be applied to experiments with genetic engineering. Various forms of the principle exist. Because it is already legislated for in our Hazardous Substances and New Organisms Act 1996, the following definition taken from that Act is proposed as a basis for this principle: *Precautionary Approach — All persons exercising functions, powers, and duties under this Act ... shall take into account the need for caution in managing adverse effects where there is scientific and technical uncertainty about these effects.*

More than 90 percent of our insects and marine molluscs are confined to New Zealand. About 80 percent of all vascular plants, all 60 reptiles, all four (or five) native frogs, all two (or three) bats, and about a quarter of all bird species, occur nowhere else. In contrast, Great Britain has only two purely local species.

And this is only what we know to date! An estimated 50,000 (out of 80,000) native species have yet to be described (or even discovered) by scientists. These native organisms exist in ecosystems, where a complex 'web of life' has built up between the various species.

There is already considerable concern about the loss of New Zealand's native plants and animals. Genetic modification adds another layer of concern for our special flora and fauna.

A number of other issues arise from the potential use of genetically modified organisms (GMOs) in agriculture, horticulture and tree farming.

Unless GMOs prove to be different from other organisms, history has shown that the planting of substantial areas of one crop, with a reduced number of cultivars, results in loss of genetic diversity and more severe attacks by plant diseases and pests. This has generally resulted in the increased use of pesticides, with consequent effects on nearby native wildlife.

History has also shown that despite great

hopes with each wave of pesticide type, diseases and pests will adapt and overcome the constraints. (There is already some evidence that this may apply to GMOs.)

Gene flows, particularly between modified crops and wild relatives, are also a concern. These could create new herbicide -resistant 'superweeds'.

The use of viruses or plasmids to transmit gene material is another concern. These may break down species barriers, so that they can shuttle genes between a wide range of species, thus affecting other organisms in the ecosystem. A developing resistance to the GMOs is also a possibility.

— DR PETER MADDISON, *is a member of Forest and Bird's national executive and chair of its biosecurity committee.*

Modified Possums

Landcare Research and others are researching the use of genetic modification to control the Australian brush-tailed possum which seriously damages our forests, and other pests. Forest and Bird's concerns are:

1. That we do not support the spread of any GMO for possum control — with particular regard to the potential for this to invade the Australian environment.
2. We have great reservations about the work on genetically modified proteins associated with the coat of sperm and ova, to sterilise possums. The proposal to incorporate these proteins into carrot baits is of concern until testing has been done on the ecological effects of this protein on other animals, particularly insects, that might eat the bait and any bacteria that might be involved in the breakdown of the proteins.
3. Our other concern about the bait protein method relates to the efficiency of these proteins in sterilising possums. If they are not 100 percent efficient in sterilising possums, what is the propensity for a surviving 'resistant' population to multiply?

This research has to be run alongside comparisons of the effectiveness of 1080 and other chemicals currently being used. Surely the logic must be that if you can get the possum to eat the bait, wouldn't it be better to kill rather than sterilise it?

— *Peter Maddison, National Executive.*

International Bird Conference

BirdLife International's Pacific Regional meeting was hosted by Forest and Bird at the Miranda Shore Bird Centre on the Firth of Thames, from April 6-10. The delegates from seven Pacific island countries and from the Birdlife Secretariat in Britain were welcomed by our president, Keith Chapple. He noted that New Zealand had 76 endangered or threatened bird species, one of the highest numbers in the world.

Various sessions at the conference dealt with endangered birds, threats to their survival and some success stories, such as the kakerori (Rarotonga flycatcher) project and our own black robin. Keith entertained delegates to an after-dinner account of the Kiwi for Kiwis campaign, and I took them to the Stilt Ponds to see sharp-tailed sandpipers, red-breasted stint and even an elusive Terek sandpiper among the wrybills. Back to business and many concerns about predator control and habitat loss — common problems throughout the Pacific. This was the first Pacific regional meeting and New Zealand was proud to be the host. Miranda proved a useful meeting place. — *Peter Maddison, Executive Member on International Committee*

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.

Kiwi Conservation Club

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

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Name (Mr/Mrs/Ms) _____

Address _____

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This is a ☐ new membership
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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		

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or charge my ☐ Visa ☐ Mastercard ☐ Amex ☐ Diners

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

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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.

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- KCC member's stickers.
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Kiwi Conservation Club

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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, contact: 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 Myriam Schreuder, PO Box 91, Piha, Waitakere City. Tel: (09) 812-8541.

Waiheke Island Cottage
Located next to our 49ha Wildlife Reserve,10 minutes walk to Onetangi Beach, general stores etc. Sleeps up to 8 in two bedrooms. Lounge, well-equipped kitchen, separate toilet, bathroom, shower, laundry. Pillows, blankets provided. No pets. Ferries 35 minutes from Auckland. Enquiries with stamped addressed envelope to: Maya Spence, 16 Hobson Tce, Waiheke Island, Tel/fax: (09) 372 9333, e-mail: andyspence@xtra.co.nz

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. Tel: (03) 415-8024, fax (03) 415-8244. Email: dianan@clear.net.nz

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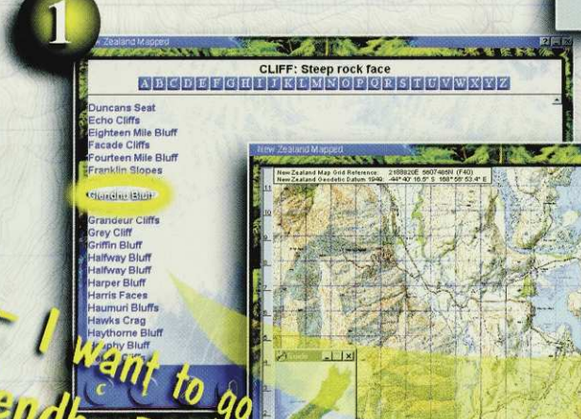

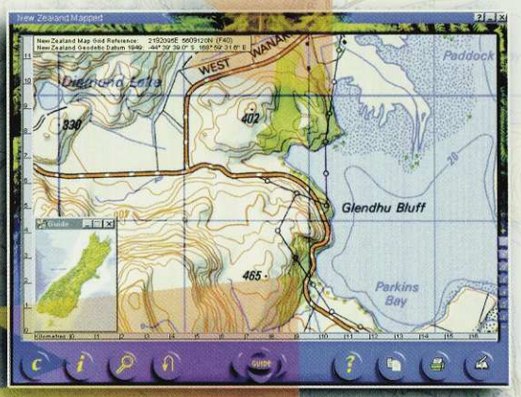

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