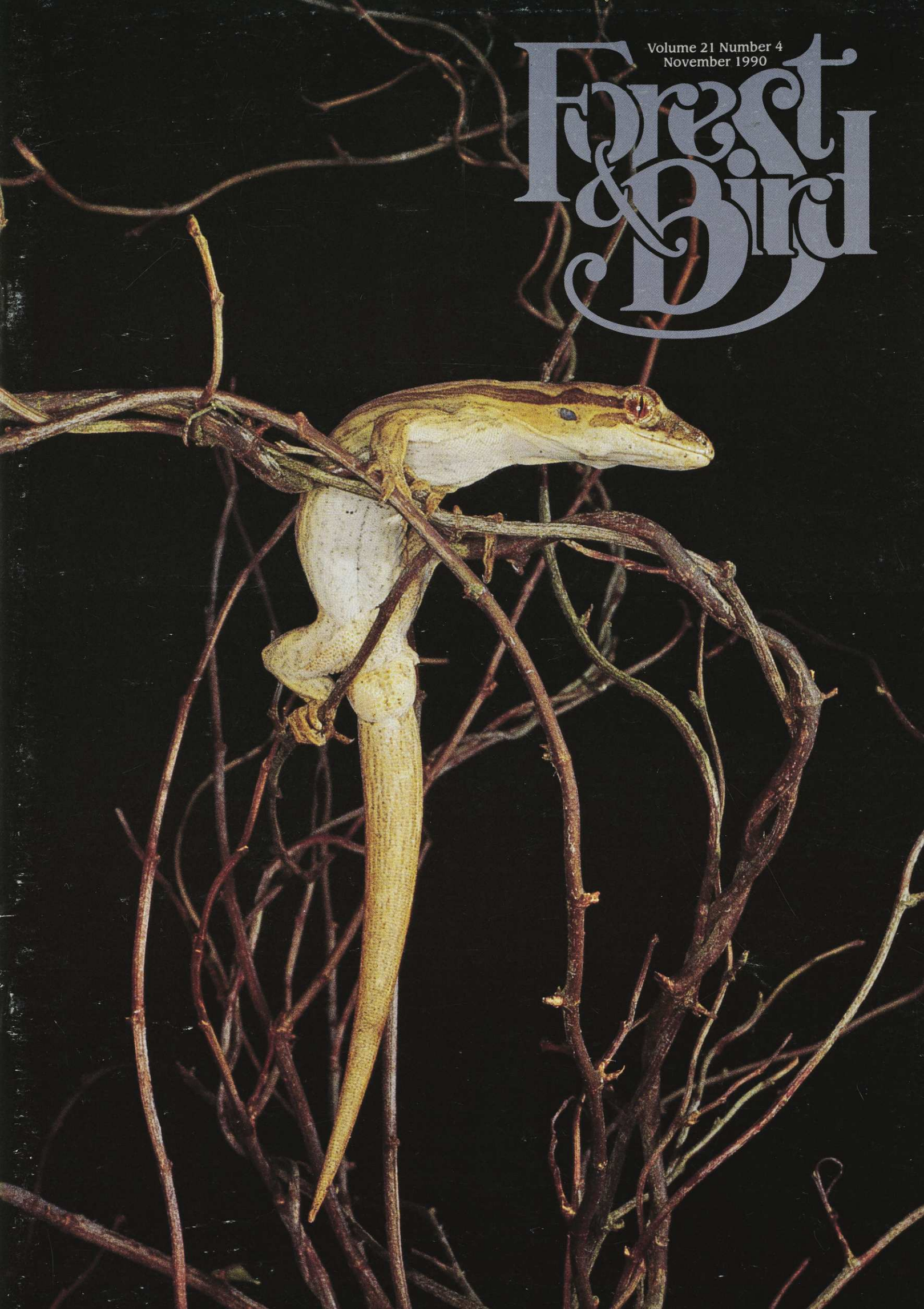
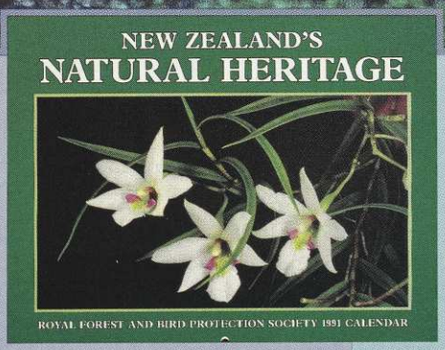
Volume 21 Number 4
November 1990

Forest & Bird



Give a Forest and Bird membership...



Receive a free 1991 Forest and Bird Calendar

Gift forms are on the card application forms at the back of the magazine.

Solve your Christmas gift problems at a stroke and do yourself and Forest and Bird a favour. This holiday season, share the special gift of Forest and Bird membership with your friends and relatives.

Act now and we will send you a FREE 1991 Forest and Bird calendar with every gift membership you give.

Cover: *As its name suggests, the Stephens Island gecko,* Hoplodactylus stephensi *is known only from Stephens Island. In fact, its existence was unknown until about 30 years ago and it still remains poorly understood. It is most abundant in* Muehlenbeckia australis *vinelands and is probably more cryptic and overlooked rather than extremely rare. As in other species of geckos, males have a large swelling at the top of the tail below the vent. This swelling contains the paired hemipenes that are everted during copulation. A pictorial essay about other Stephens Island animals appears on page 31.*
Photo: Brian Enting.

Thanks

A special thanks to all those members who have helped us reach our target of 60,000 members in 1990. We first aimed for that figure at the beginning of 1989 when membership stood at 50,000 and had reached it by May 1990. Gift memberships are always a significant element in new memberships. Roll on 70,000!

Issue Number 258
November 1990
Volume 21 Number 4

Forest & Bird

The Other Side of Green

IT IS EASIER to be "green" than it used to be. Many more people can now see the logic, indeed the necessity, to go easy on the earth. That has not made the proponents of development and exploitation go away. It has simply made it more difficult for them to find a good press.

The opponents of conservation are still out there though and regrouping – witness the emergence of the Resource Users Group which successfully lobbied to block the Resource Management Bill. The more sophisticated adapt to change and mix in some regard for more enlightened public values as they go about their business. Some even recognise that the public has had enough of certain developments and redirect their energies into more friendly directions. Both attitudes must be better for the country. Other interests however, locked into a vision of New Zealand as a last frontier, persist with the philosophy of the pioneers and turn again and again on the land, to exercise their perceived right to take from it without regard to future generations.

These are the people who will never change their minds. The idea of looking after the earth for everyone is too much of a mind-stretch. To them policies to encourage the protection of forests and keep water and air clean, in the broader public interest, are a gross intrusion into their personal rights and values. Some have been denied the advantages of liberalising experience, through education or travel. Others trust to God or Science to find ways around our environmental crisis. Some are simply perverse. You will see them in the media exercising their property rights just to get one across the Government: clearfelling their patch of bush, for example. They symbolise the potential backlash to the environmental "revolution" and we may experience it anytime now.

Practically every New Zealander has had to rethink lifestyles and values with the sweeping social changes of recent years. This has been unpleasant for many people, so backlash is inevitable. Politicians who feel this backlash are quite likely to be sensitive to demands to put people before the environment. Yet environmental issues have affected very few jobs in the larger picture of unemployment and change through economic restructuring. "Greenies" are simply a handy target for those who cannot see through events to the real causes of change.

It has always been Forest and Bird policy to look for solutions to conservation questions which take people into account, too. This comes challengingly close to politics but it is the only way we can fairly say that our concerns for the future of the earth are to make it a place where people can live, as part of a natural system of life which will survive into the coming centuries.

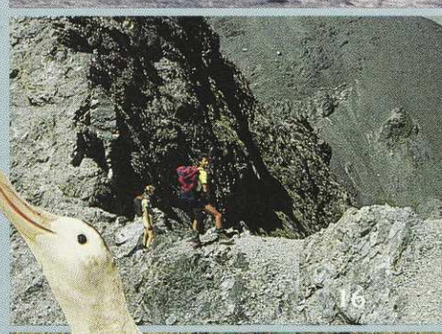
Our Society welcomed the idea of protecting native forests on private lands as a move which was in the interests of the future community. Where individuals have had to pay a price for the rest of us, there is room for injustice, and a need to provide against this. For this reason we welcome the Forest Heritage Trust Fund of $6.75 million which is to help with the protection of forests on private land. In South Westland our world heritage proposals included the development of tourist facilities, with attendant job opportunities.

If we want to hang on to the advances of recent years then we must continue to show our concern for people as well as the planet. Should we forget in our campaigning to provide for those who will suffer then we invite the backlash which, in changing times, could see our cause undone.

Gordon Ell,
President

C·O·N·T·E·N·T·S

Articles



Departments

Forest & Bird is published quarterly by the Royal Forest & Bird Protection Society of New Zealand Inc.

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

The Royal Forest & Bird Protection Society is a member of the International Union for the Protection of Nature and Natural Resources (IUCN) and the International Council for Bird Preservation (ICBP).

ISSN 0015-7384

Head Office: Seventh Floor, Central House, 26 Brandon Street, Wellington.

Postal address: P.O. Box 631, Wellington

Editor: Gerard Hutching.

Registered at P.O. Headquarters Wellington as a magazine.

Design & Production: Creative Services Ltd
Typesetting: Computype Ltd
Photoprocess: Colourcraft Reprographics Ltd
Printing: Bascands; Christchurch

Advertising Manager: Jill Wood, Print Advertising, PO Box 3016, Wellington. (04) 733-010.

Lobster on the rocks

INCOMPETENCE BY FISHERIES managers and intransigence by crayfishers are together driving the New Zealand rock lobster population to commercial collapse. For a number of years fisheries scientists have warned of overfishing, falling catches and poor stock recruitment.

However, the warnings have been ignored and overfishing has continued. Today an end to all commercial crayfishing in the North and South Islands may not be enough to restore the commercial fishery.

The problems in the rock lobster fishery were discussed in the *Future Rock Lobster Strategy* (1986). All of the present concerns were recognised then, but never addressed. Again in 1988, fisheries scientists emphasised stock recruitment problems in the population and the need to reduce catches.

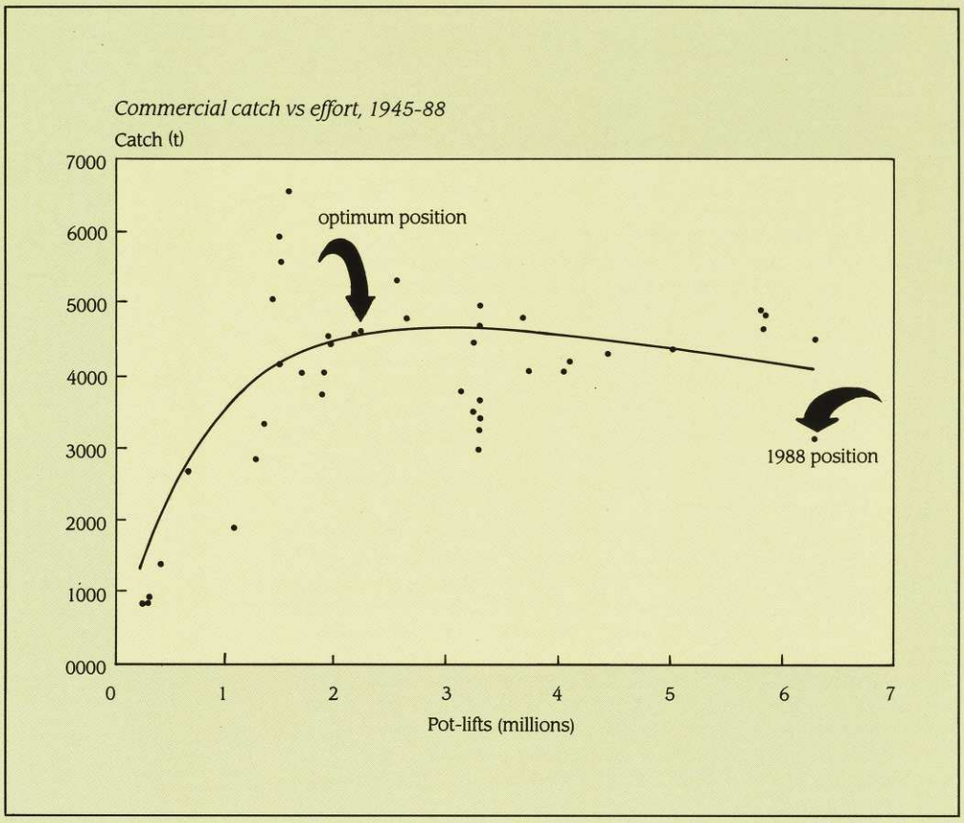
"The catch levels of recent years for the North and South Island are probably not sustainable... the biological safety of the fishery depends on stopping and reversing the present trend towards increased effort and decreased stock levels."

By 1989 the scientists were describing the fishery as "stressed." But when quota were set for rock lobster in the Maori Fisheries Act 1989, it was at the same level as the previous two years. The much needed reduction in catch was not there.

The Chatham Islands rock lobster fishery – once severely overfished – is presently at a sustainable level. But the Chathams population relies on recruitment from New Zealand. We can therefore expect this population to suffer soon after the North and South Island populations collapse.

It appears also that Otago and Southland lobster breed later in their life cycle, so many are caught before they have had the chance to breed. Conversely, those in northern areas have bred several times before reaching the legal size for capture.

Meanwhile at the Leigh Marine Reserve, rock lobster numbers are now 20 times higher than in similar marine habitats nearby. When the commercial fishery collapses, inhabitants of this marine reserve (and others as they are created), may be the only hope for any recovery of the population. Each year the crayfish produce millions of larvae that drift off along the coast to build up stocks in other areas.



Crayfishers are putting down three times as many pots (pot-lifts) as in the 1960s, yet are catching fewer crayfish.

Early next year the Minister of Fisheries will set the total allowable commercial catch (TACC) for rock lobster. Unless the TACC for the North and South Islands is more than halved, we can expect to see the demise of commercial and possibly recreational crayfishing in New Zealand. The Minister should reduce the catch in the Chathams to buffer that population from a New Zealand recruitment failure. A larger size limit is also needed to give lobsters sufficient time to breed before they are caught.

The only sure hope for rock lobster seems to be marine reserves and taiapure (Maori reserve) which are closed to fishing.

Mark Bellingham

A decade of restoration

IN SEPTEMBER THIS YEAR the Native Forest Restoration Trust celebrated its tenth anniversary and could look back at some notable achievements.

The Trust's beginnings can be traced back to 1978 and the now famous tree-top sit-in led by Trust member Steve King to protect the giant totara of Pureora Forest in the central North Island. As a result the Government placed a three-year logging moratorium over the forest.

A number of those who protested about the logging later formed the Trust, which tried to convince local mill workers that they should restore the forests they had destroyed. By growing 100,000 trees at a nursery at Oratia, the Trust hoped to provide the initial impetus for the restoration project. However, the Government decided to close the mills and $7 million was provided as compensation.

Trust patron Sir Edmund Hillary with Pat and Arhur Cowan on the Cowan Wildlife Reserve, Pureora, an area where the Trust has planted 20,000 trees.

This left the Trust with thousands of mainly kahikatea and totara seedlings looking for a home. Many were sold to farmers, and the proceeds formed the start of the Trust's fund. Since then the Trust has added 319 ha to Puketi forest and 248 ha to Waipoua forest with its purchase of the Puketi Mokau Reserve and the Prof W.R. McGregor Reserve. Its current campaign is to restore reverting farmland on Rangitoto Station to the east of Te Kuiti.

If you would like to know more about the Trust's work, write to The Trust, PO Box 80-007, Green Bay, Auckland 7.

In defence of sharks

FEW ANIMAL SPECIES have been so relentlessly persecuted by humans as sharks. Even before *Jaws*, people held irrational fears about these great predators of the seas. Shark killers are fêted as heroes – ridding the seas of an awful menace.

So it was not surprising that when Forest and Bird's Northern Conservation Officer, Fiona Edwards, recently mounted a protest at the slaughter of sharks for the shark-fin soup trade, some people questioned her sanity. Fiona was incensed at the sight of hundreds of drying shark-fins on the decks of Japanese longliner fishing boats tied up at Auckland's waterfront. Her protest attracted publicity both at home and in Australia – a nation often seized by shark phobia.

Fiona pointed out that sharks are a very slow-growing long-lived fish with a low reproductive rate. They are vulnerable to overfishing.

"Sharks have survived in the world's oceans for hundreds of millions of years and outlived the dinosaurs. But it must be remembered that until the development of modern bulk fisheries, sharks were not subject to any significant predation," says Fiona. In New Zealand waters, sharks are taken in large numbers as by-catch of longlining for tuna with up to 100,000 sharks caught each year. Up to ten times as many sharks are caught as the supposed target fish bluefin tuna.

Bottom trawlers largely wiped out New Zealand's inshore school shark and rig fisheries during the early 1980s. Recreational fishers say the catch of mako sharks has declined alarmingly and put the blame on the longliners.

Seaman Yasuzu Ito dries out hundreds of shark fins destined for soup during an Auckland stopover on board the fishing boat Daikichi Maru. The fishing practise was criticised by Forest and Bird's northern North Island field officer Fiona Edwards (below right).

Internationally, the shark-fin soup trade places enormous pressure on shark fisheries with the trade exceeding $240 million per annum. The great white shark is regarded by Jacques Cousteau as an endangered species.

Fiona's advocacy for the sharks was rubbished by local "experts" who questioned Forest and Bird's credibility. The Ministry of Fisheries' Dr Talbot Murray, who heads the pelagic species unit, said there was "certainly no evidence" to suggest sharks were under threat. Fishing industry spokespersons echoed these claims and accused Forest and Bird of having its priorities wrong. More accurately, they said Forest and Bird's actions amounted to a protest about the "sheer nature of commercial fishing."

One month later, Fiona gained a powerful ally in her lonely crusade for shark conservation. Australia's Environment Minister, Mr Tim Moore, announced that the world's first international shark conference would be held in Sydney early next year prompted by concern over declining shark numbers. Mr Moore said shark numbers were falling worldwide because of overfishing and it was time to "give sharks a fair go."

Around 100 million sharks are harvested from the world's oceans every year, with the fishing level more than doubling in the last five years. Most sharks were killed to supply the Asian shark-fin market.

Mr Moore said it was important to increase public awareness of the need to protect sharks and have facts replace fear and myth. Sharks were as important to marine ecosystems as lions were to the African plains.

Kevin Smith

Conservation holidays – any volunteers?

FOR A HOLIDAY with a difference, try the Department of Conservation's Conservation Volunteers working holiday projects. At present the working holidays scheme is operating in just three conservancies – Otago, Southland and the West Coast.

In Otago and Southland former Forest and Bird executive member Fergus Sutherland has been directing the scheme for the past two years. In that time more than 200 volunteers have taken part in live-in working holidays and the projects have run the gamut from yellow-eyed penguin surveying to historic back country hut restorations.

"The projects run for a week and are often in remote and interesting locations. One of the most popular has been the beach clean up at Mason's Bay on Stewart Island's remote west coast.

"The volunteers were landed on the beach by light plane and put up in the old run homestead at the bay. Here they spent six days collecting about 30 cubic metres of plastic debris off the beach, most of it from fishing boats. The volunteers were also able to join scientists monitoring the behaviour of Stewart Island brown kiwi – a bonus was seeing the Duke of Edinburgh on his flying visit to the island in February this year," Fergus says.

Another group spent a week surveying the native sand binding plant pingao along the Catlins coast in South Otago. They found the plant in extensive stands, but threatened by marram grass or stock grazing.

Two thirds of the volunteers were from Otago and Southland; however others came from as far away as Auckland and a significant number were overseas travellers.

More than 20 working holidays are planned for the 1990-91 summer, including more beach clean ups on Stewart Island and in remotest Fiordland, blue duck surveys in Fiordland and seedling pine eradication in several high country locations.

Surveying for pingao and plastic rubbish along the Catlins coast are, from left, Susan Carter (Palmerston North), Brian Murphy (DoC Owaka), Philip Rhodes (Invercargill), Carlo Laing (Wellington) and Mark Crocker (Paeroa).

If you are interested in the Otago, Southland and West Coast working holidays, write to the Co-ordinator, Conservation Volunteers, Department of Conservation, PO Box 5244, Dunedin, or the Department of Conservation, Private Bag, Hokitika. A $4 donation is asked to help cover the costs of sending the programme as well as regular newsletters.

Other conservancies are running volunteer programmes as well. Phone the co-ordinator for conservation volunteers at the DoC conservancy near you.

Wandering Jew

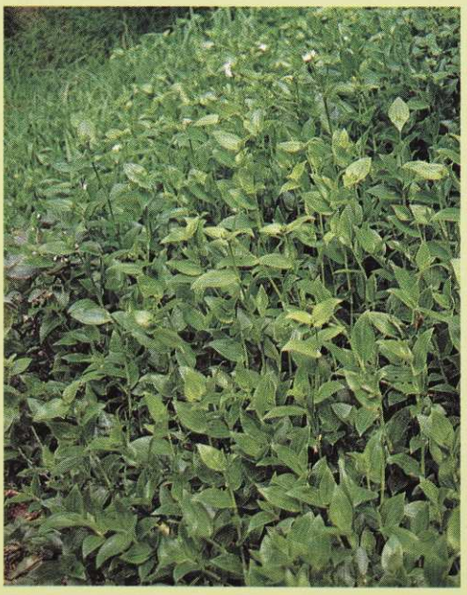
WANDERING JEW (*Tradescantia fluminensis*) is a ground covering plant which forms dense somethering carpets in damp shaded areas of native forest, inhibiting the germination of most other species. In the long term this could cause the demise of many forests due to canopy species not being able to regenerate, allowing other weeds to establish. It is ubiquitous in small lowland forests in warmer areas, but is sensitive to frosts.

The succulent nature of the plant's stem and its ability to grow from any fragment allows wandering Jew to be such a successful weed without setting seed. It is frequently dispersed along waterways.

Control

Attempts to control wandering Jew have had mixed success. In small areas such as home gardens, rolling up dense patches like a carpet, then hand weeding remaining fragments can be successful. The weed should be either well composted or burnt. Hens are an effective non-chemical control. Field trials have shown that paraquat is effective, but the danger of using this herbicide is unacceptable. Roundup, with fewer side effects to humans, has been used at 2 percent concentration with a surfactant or glue such as Pulse, and applied with a knapsack in spring. This method has recently cleared the weed in a reserve in the Manawatu area.

If wandering Jew has been dispersed along a waterway, trace it to its source and eradicate it there.



Wandering Jew

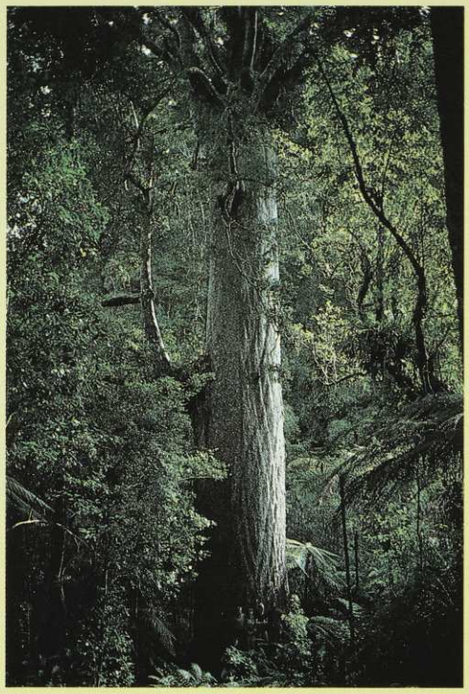
Kokako in Northland

SURVEY WORK CARRIED out this year in Waipoua Forest in preparation for an aerial possum poisoning operation has turned up a bonus in the form of an unexpectedly high kokako population.

At the time of writing (early September) DoC field workers had located 17 birds, including at least six pairs. The kokako found so far are clustered in the eastern reaches of Waipoua, on high, wet plateau country along the old Waoku coach road. While there have been sporadic records of kokako from Waipoua for many years, this is the first time the birds have been systematically monitored in the forest.

But the news from Puketi forest is less bright. Preliminary survey results suggest a major decline in kokako numbers since 1984 when 100 birds were recorded. This decline has coincided with increased levels of possum damage in the forest, and DoC staff from Kaikohe are gearing up for an intensive possum trapping programme around the known kokako area.

The department is now weighing up long term management options for the two populations. Possum and goat control operations are either underway or imminent in both habitats. Preliminary stoat trapping is being carried out in populations, albeit temporarily.



Ward kauri, Waipoua forest, centrepiece of the proposed Kauri National Park. With the news of a sizeable kokako population in the area, DoC's possum control programme has come at a timely moment. Photo: Mark Bellingham

The intensive ground-based possum trapping in Puketi may provide a logistic base on which to build rat and mustelid control programmes.

The discovery of the Waipoua kokako population has thrown a new angle on kokako management in Northland, and DoC faces some difficult choices as to where and how kokako populations can best be protected in these large and rugged blocks of forest. This work in Northland will be co-ordinated with kokako management in other parts of the North Island under the North Island kokako recovery plan, which will be released shortly.

Nick Hancox and Gretchen Rasch

Kakerori starting to recover

IN THE AUGUST 1990 issue of *Forest & Bird* we read of the plight of the kakerori or Rarotonga flycatcher (population circa 30) and the efforts to improve its chances of survival. This year is the second of a major rat poisoning campaign within the bird's habitat and the signs of recovery already look good.

Last year a marvellous volunteer effort by Wellingtonian Eddie Saul led to a breakthrough in juvenile production. The rat control campaign which he carried out allowed 13 kakerori young to successfully leave the nest, a huge increase on previous years.

How many of those young survived to reach breeding age? After a week of survey, Hugh Robertson of the Department of Conservation reported that at least six of the fledglings had survived the year. He was hopeful of more, since not all of the habitat had yet been searched. In addition, almost all of the previous year's adults had survived, including three which Rod Hay banded in 1984!

Eddie Saul made an even bigger commitment this year. His application for leave from his job at DSIR's Library Centre was not received very sympathetically and he had to retire early, a sacrifice he was prepared to make for the sake of the birds. We trust that Eddie's efforts will provide an even bigger boost to the kakerori this season.

CFCs phase out

WEST GERMANY has announced it will become the first nation to completely ban the production, sale and use of chlorofluorocarbons, chemicals that destroy the earth's essential ozone layer. By next year, CFCs will be gone from aerosol sprays and eliminated from all products, such as coolants and refrigerants, by 1995. The date is five years ahead of the target set by the Montreal Protocol, and four years ahead of New Zealand's stated goal.
Source: Earth Island Journal

Bad for business

THE BUSINESS Roundtable, a global organisation founded in the United States during the Richard Nixon days to counter the influence of organised labour, has successfully scuttled a US proposal for stricter pollution sentences.

The measures would have set sizeable fines as well as jail terms for executives convicted of causing pollution. However, following a meeting between high level executives from the Roundtable and the US Attorney, the tougher sentence proposal was shelved.

The members of the secretive Roundtable are all household names, and some of them are the world's worst polluters, which may explain their opposition to stiff fines and jail sentences. Among those named as the top twelve contributors to global pollution by the *Earth Day Wall Street Action Handbook* are DuPont, Shell, British Petroleum, Monsanto and Kodak.

In New Zealand the Business Roundtable has demonstrated its distaste of stronger environmental protection. It successfully fought to hold over the Resource Management Bill.
Source: Earth Island Journal

Great White sharks – How rare?

THE GREAT WHITE shark of *Jaws* fame may well be a threatened species, according to fisheries scientists.

Because of the great white's ecological significance as a top-level predator, scientists are keen to discover more about them. At present little is known, other than they may live to 100 years and become mature about 9-10 years.

In recent years reports of people encountering the sharks in South Australia have dropped off noticeably, leading to the conclusion that the species is declining. One problem with trying to conserve great whites is overcoming human fear of the sharks. However, according to the US Navy Shark Attack File, a worldwide average of only 28 shark attacks have occurred each year since 1940 and fewer than 35 per cent were fatal.
Source: Oryx

Favourite feline foods

CAT LOVERS might never be able to view their pets in the same light following a survey of the eating habits of domestic cats in an English village.

The scientists who carried out the study pointed out that most other studies of the effects of cats have focused on feral cats (for example, the impact of feral cats on New Zealand birds has been devastating). Few had investigated the impact of domestic cats.

In the unusual study, cat owners were asked to collect the remains of prey that their moggies brought home. Plastic bags containing the specimens were collected weekly over a one-year period and the contents analysed.

The results: In the UK at least, domestic cats – no matter how well they are fed – may be the major killer of small birds and mammals in urban and suburban environments. The scientists estimated that domestic cats kill at least 20 million birds a year in Britain. The figure could be a lot higher as an American study has showed that cats bring home only about half their catch.
Source: Natural History

Books Received

The Handbook of New Zealand Mammals, *edited by Carolyn King ($69.95, Oxford University Press)*
The new *Handbook of New Zealand Mammals* will prove a disappointment to those readers expecting some lead from New Zealand's mammal scientists on the control or eradication of introduced animals. The editor's introduction describes New Zealand as a "vast natural laboratory for observing the processes of adaptation" and the opportunity of observing mammals both in their own and in an alien environment as "irresistible to the evolutionary biologist....Mammalogy in New Zealand is a young science, but its horizons are wide."

In a year where there has been a public outcry at the destruction of our forests by possums, the notion that New Zealanders might be willing to accept their country as a laboratory for alien pests seems out of place. People are becoming more aware of their natural heritage and less tolerant of its destruction by introduced mammals.

Despite presenting good data on mammals, the authors draw unsubstantiated conclusions or ignore key items when commenting on the environmental significance of various species. For instance, the fact that wapiti (and red deer) threaten the survival of the takahe in Fiordland is not mentioned; it is incorrectly claimed feral horses have not destroyed plant cover in open grassland; there is a ludicrous call for a thar reserve in the Southern Alps at a time when this destructive alpine goat continues to spread.

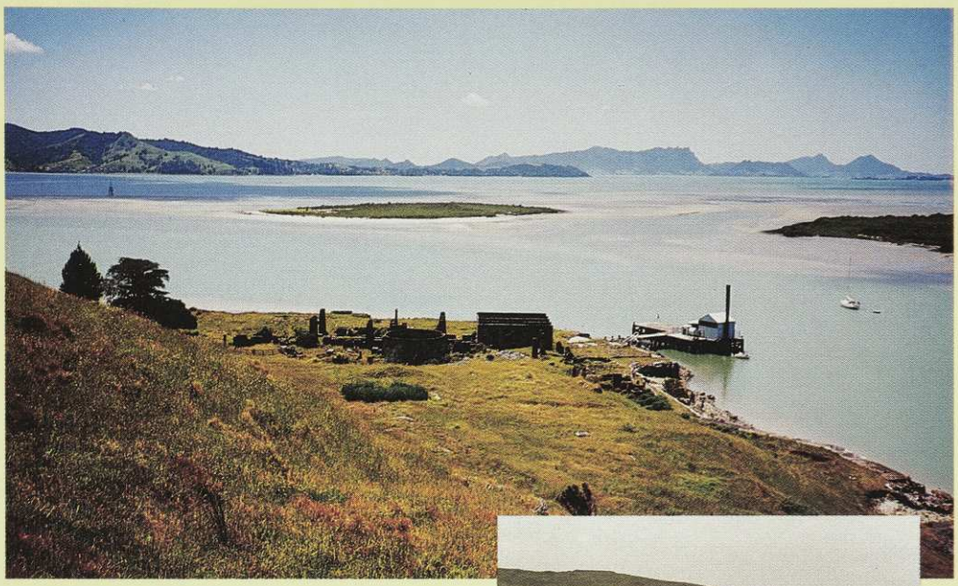
The section on stoats portrays them as fairly innocuous; yet more than 40 percent of their diet is birds and predation by them has been directly implicated in the decline of the yellowhead. Dr King claims that on the mainland there are only two threatened bird species that run the risk of stoat predation. By my count there are at least 11 such threatened bird species on the mainland. (yellowhead, takahe, yellow-eyed penguin, Westland black petrel, black stilt, red-crowned parakeet, Hutton's shearwater, North and South Island kaka, NZ dotterel, banded rail). This list does not include reptiles, invertebrates and bats.

Despite the problems with the introduction and certain other sections, the book cannot be dismissed out of hand. It is the first comprehensive reference of native and introduced mammals since 1950, and does provide a mine of information on mammal distribution, habitat, social behaviour, reproduction, predators, parasites and diseases in its 600 pages.
Reviewed by Mark Bellingham, RFBPS Field Director.

A Land Apart, *by Michael King and Robin Morrison ($49.95, Random Century (NZ) Ltd).*
In many ways Chatham Islanders are a people apart as well as living on a land apart: the present day small population can trace their ancestry to Moriori, Maori, German, British and American forbears. The book records a change of attitude towards the natural resources of the islands which augurs well for the future; nature tourism will play an increasingly significant part in the Chathams' economy.

Land Evaluation For Nature Conservation *($32, K.F. O'Connor, F.B. Overmars, M.M. Ralston).*
This New Zealand application of scientific principles of nature conservation, land evaluation and reserve design is long awaited. The project was originally started at the former Biological Resources Centre by Fred Overmars and has come to fruition with the guidance of Kevin O'Connor and Mary Ralston of Lincoln University. It will prove to be an extremely useful guide and reference for conservation planners, and managers within government departments, local government and conservation groups. It will also be a useful reference for the public when they have to provide comment on management plans and the new regional and district plans under the Resource Management Act.
Available from DoC Science Publications PO Box 10-420, Wellington, or Centre for Resource Management, Lincoln University, PO Box 56, Lincoln, Christchurch.

Matakohe Island Reserve



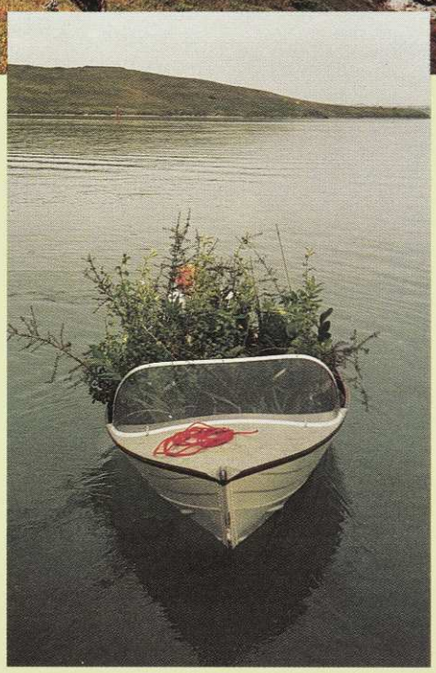
Matakohe Island and the remains of the old lime works.

AFTER FOUR YEARS of lobbying, Forest and Bird's Northern branch has succeeded in its aim of seeing Matakohe (Limestone Island) in the middle of Whangarei Harbour created a reserve. The Northland Harbour Board recently gifted the island to the people of Whangarei and the branch's management plan has been adopted.

Once the island has been cleared of possums, Forest and Bird members and other community groups plan to plant pohutukawa and other coastal species on it. Kereru and tui are just two of the species which should be encouraged to return to the 37-ha island.

Matakohe Island is an important wildlife refuge for wading birds including the threatened New Zealand dotterel. An historic Maori midden and pa site is also sited there.

Once an island quarried for its lime, hopes are high that it will in time become an important open sanctuary.



Matakohe's revegetation project is launched.

Forest & Bird Festival

GLENFIELD MALL SHOPPERS in Auckland were treated to a week-long Forest and Bird festival in September.

Organised by the North Shore branch, the festival involved colouring-in competitions, nature games and other activities.

Auckland celebrities were on hand – a 2m high Monsta and Robert Frogg (the Auckland Regional Council's endearing water conservation mascot) attracting attention.

Videos and displays highlighted environmental issues such as noxious weeds and pests, and recycling. The Timm's possum traps advertised by Forest and Bird sold well, indicating that some North Shore residents are prepared to fight the possum takeover and help protect the small native forest reserves on the Shore.

1990 Trees for 1990

A NUMBER of Forest and Bird branches have been busy planting trees this year. One of the most successful restoration projects has been initiated by the Coromandel branch, which approached the 1990 Commission to fund a "Trees for 1990" scheme.

The branch and its sub-groups – at Mercury Bay and Upper Coromandel – have been actively planting in areas such as the new Coromandel wetland reserve, which is being developed jointly by the community and the Upper Coromandel group. So far the Upper Coromandel group alone has planted more than 1000 trees.

Fencing for Kokako

MAKINO FOREST in north eastern Taranaki is home to the southernmost population of the threatened North Island kokako. However stock wandering into the forest have progressively destroyed the birds' habitat.

In order to assist the kokako's survival, Taranaki branch member Philip Smith has recently started an "environment action" account which has funded the fencing of the forest's ridgeline boundary.

The funds were raised through a recycling venture (mainly cans and scrap metal), and by shooting goats in the forest and selling the meat. Fence posts were obtained by taking thinnings from a plantation (with permission!). A farmer donated more than $600 worth of fencing materials.

As part of enhancing the kokako's habitat, the forest has also been poisoned with 1080 against possums.

Manawatu nature trail

ANOTHER 1990 PROJECT has been the reconstruction of the Esplanade Bush nature trail in Palmerston North by the Manawatu branch.

First opened in 1971, the trail has been upgraded with 17 stops along an all weather track that winds through the largest stand of original native forest left in the vicinity of Palmerston North. A descriptive leaflet written and illustrated by Forest and Bird committee members assists tourists and school parties to identify trees and ferns.

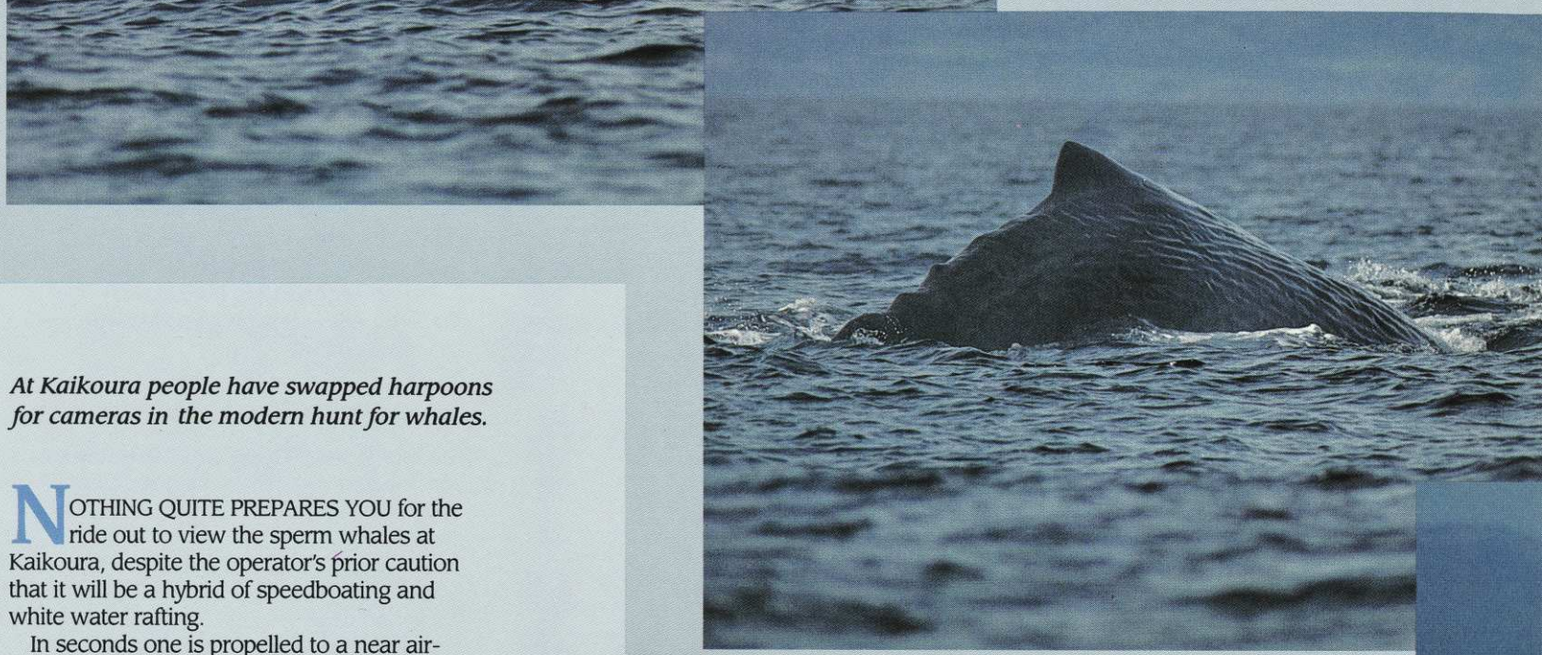
Not content with one project, the branch is now creating a nature trail at Totara Reserve in the Pohangina Valley, north of Palmerston North. The reserve is one of the few places in Manawatu where once commonplace totara can still be seen.

The branch has been involved with clearing old man's beard and ivy from bush, controlling spartina at the mouth of the Manawatu and propagating pingao to stabilise sand dunes.

Rosemary van Essen cuts the ribbon to officially open the Esplanade Bush nature trail. Rosemary's father is treasurer of the Manawatu branch. Photo: The Guardian

Compiled by Melanie Hutton

KA



At Kaikoura people have swapped harpoons for cameras in the modern hunt for whales.

NOTHING QUITE PREPARES YOU for the ride out to view the sperm whales at Kaikoura, despite the operator's prior caution that it will be a hybrid of speedboating and white water rafting.

In seconds one is propelled to a near airborne attitude as the rubber-pontooned vessel speeds out to its appointment with the whales. After ten minutes at high velocity on a cool winter's morning, a form of lockjaw settles in, making communication with fellow whale watchers impossible. Fortunately this particular morning the sun breaks clear of the cloud to allow myself and fellow tourists to warm up.

This is eco-tourism, 1990s-style and whale watching is a high technology business. One of our guides from Kaikoura Tours Ltd, a marae-based venture, informs us that the twin-engined outboard vessel is the fastest passenger boat on the water.

It soon becomes apparent why the speed is required. For an hour we wait patiently for the whales to appear, monitoring their progress underwater with the aid of a hydrophone which picks up the sonic clicks they use to locate their prey. As soon as a telltale 3-metre high plume is spotted about half a kilometre away, we are treated to another rollicking sprint across the ocean. But within 30 seconds of our arrival the sperm whale heaves its tail flukes in the air, the signal that it is about to dive under for a further hour or so. This particular whale has been "spooked" by the presence of the whale watching boats, the guides suggest. It is presumed that it is a recent arrival to the herd that winters off the Kaikoura coast and is unaccustomed to human attention.

No such inhibitions concern Hoon, the darling of the whale watching set. Those fortunate enough to see Hoon are spoiled with up to 15 minutes of whale frolicking. At times the 15-metre, 50-tonne leviathan has been known to dive under the watching boats. However, this morning Hoon fails to make an appearance. In fact, despite a further two brief sightings, the whales stay out of sight.

However, that afternoon and the following day they are more obliging and whale tourists are treated to numerous and lengthy sightings.

Kaikoura is one of the best locations in the world to view whales, especially sperm whales. Almost nowhere else do large sperm whales routinely come so close to shore. The Kaikoura population is comprised of only adolescent males and the attraction is their prey – giant squid which live deep down in the Hikurangi Trough, the southern extent of which ends near Kaikoura. At depths of more than 1000 metres the whales and squid engage in titanic battles, evidence of which can be seen in the occasional squid sucker marks on the whales.

But it is the dusky dolphins which are the highlight of my trip, and conversations with other whale watchers reveal that the dolphin encounters are the most enjoyable. It is the different natures of the mammals: the whales, huge and remote, the dolphins curious and playful, revelling in their acrobatic performances. To the onlooker there seems no doubt that the dolphins do cartwheels or backward flips for the delight of humans; the humans respond with appropriate "oohs" and "aahs", encouraging the cetaceans to perform even more outrageously.

Less than 30 years ago at Kaikoura humans were still chasing whales with harpoons rather than pursuing them with cameras. Today whale watching is one of the factors that has changed Kaikoura from being a sleepy stop-off en route to Christchurch or

KAIKOURA, NATURE TOURISM TOWN

By Gerard Hutching

Sperm whales dive deepest of all whales. They have been found entangled in submarine cables at depths of 1000m and more, recorded by sonar at depths of 2000m and there is even evidence of dives to more than 3000m. During dives the whales reduce their heart rate, limit blood flow to the heart and brain and collapse their lungs, offsetting the potentially damaging effects of diving to such depths. Off Kaikoura, where a deep canyon comes within several kilometres of the coast, the whales dive to depths of about 1000 metres in their search for giant squid. Photos: Craig Potton

Picton to a "must see" town offering a variety of leisure activities: diving, fishing, tramping, skiing. Looming behind Kaikoura are the Seaward Kaikoura mountains, tramping and climbing meccas for locals and important habitat for a number of special plants and animals.

Since 1983 Forest and Bird's Kaikoura section, led by chairperson Barry Dunnett, has promoted the Seaward and Inland Kaikoura Ranges as potential conservation parks. Lowland beech and podocarp forest sporadically clothes the hills along the coast to the Clarence River. This represents the largest forest remnant on the east coast of the South Island outside of the Catlins coast.

In the northern section of the Seaward Kaikouras grow stands of the rare weeping broom *Chordospatium stevonsonii*. The forest contains most native bird species with the notable exceptions of kiwi, kaka and weka. Above the treeline are located the only two known breeding colonies of Hutton's shearwater. The colonies contain about 50,000 birds. Recent research indicates a very low breeding rate, but scientists are puzzled as to

why. The unusual shearwater used to breed throughout the Seaward Kaikoura Range. A variety of giant weta and the black-eyed gecko also live on the range.

Today Barry is involved in another campaign, to create a marine reserve around the Kaikoura Peninsula (see box).

In response to the tourist influx, locals have begun to offer services beyond just whale watching. While many whale watchers come from Christchurch, Blenheim or Nelson for the day, others stay overnight and are looking for different activities.

Kaikoura public relations officer Sue McInnes says it is an exaggeration to say that the 3000-population town is booming as a result of the whale watching.

"However, the whales have definitely put Kaikoura on the map with all the publicity. The frequent media attention has heightened the nation's awareness of the area generally. Several new businesses have developed, including tour operations which are unique – swimming with dolphins, snorkelling with seals, and alpine barbecue expeditions, which have all succeeded well in their first year of operation," she says.

The whale watching venture has proved invaluable because the best time to see sperm whales is during the winter, when tourism is normally at a low ebb.

Above: *The local iwi Ngati Kuri has taken on a new lease of life thanks to the advent of whale watching. Guide Lorraine Hawke and pilot Marcus Solomon are two of about 20 people now employed in the new business.* Photo: Craig Potton

The world's smallest marine dolphin is native to New Zealand coastal waters. Hector's dolphins are commonly sighted around Kaikoura, although their total numbers are not high – about 3000-4000. Photo: Craig Potton

The attractions of whale watching trips are not confined to whales: the waters around Kaikoura are rich with bird life such as the cape pigeon (top) and Buller's mollymawk (bottom).

Photos: Craig Potton

Kaikoura, meaning "to eat crayfish", has always been an important centre of Maori culture. In turn the Waitaha, Ngati Mamoe and Ngai Tahu occupied the district, and the peninsula was studded with pa sites. In 1828 Te Rauparaha carried out an infamous invasion of the peninsula from Kapiti Island, killing 1400 people before returning home.

Today, Maori are still present and partially thanks to whale watching the local iwi, Ngati Kuri, of the Ngai Tahu tribe, are experiencing a renaissance. Two years ago they set up Kaikoura Tours Ltd with one boat. Today they run two boats and employ about 20 full and part time staff. The company has taken over the old railway station where they run a tearooms and souvenir shop.

Luke Clayton, who works in the shop, says the venture has lifted the pride of his people.

"The reason we set the company up was to look after our unemployed. The young ones were moving away," he says.

He notes that overseas tourists are particularly interested in the Kaikoura Tours operation because they are seeking a uniquely indigenous experience.

He says that so far sperm, fin, pilot and orca whales have been seen. The fin, the second largest whale, "was a real bonus. But we would love to see the blue."

The local youth hostel is enjoying a miniboom, with the number of people staying up 100 percent from three years ago. Manageress Clare Matthews says the hostel may have to add more rooms if the demand increases. She notices that people are now staying for two to three days rather than just overnighting.

Nature tourism has given Kaikoura a much needed shot in the arm, and the future looks even brighter with proposals for a marine reserve, marine mammal sanctuary and Kaikoura mountains conservation park.

Keeping an eye on human sharks

WHALE WATCHING is becoming big business. The two companies involved at present expect to take 20,000 people to view the whales this year. At $70 per head that adds up to $1.4 million in ticket sales.

There is no question that Kaikoura Tours and Nature Watch Charters are in the business for the right reasons. In fact, Barbara Todd of Nature Watch started the tours in order to support her research of sperm whales.

But now there are nine additional applications in the pipeline to take people to the whales. Earlier this year one operator started without a permit required under the Marine Mammals Protection Act but was promptly shut down.

Mike Donoghue, the Department of Conservation's senior marine mammal conservation officer, says the department's first concern is for the whales, but on the other hand he cannot ignore the fact that whale watching has been a "shot in the arm" for Kaikoura.

Canterbury University's Jane McGibbon is working under a DoC contract with Victoria University's Dr Scott Baker to assess what might be the optimum number of boats the whales can cope with. Dr Baker has carried out similar work on humpbacks in Alaska.

Mike Donoghue is cautious about the notion that the noise of the whale watching boats unduly harasses the whales. Noisy as the outboards are, most of their sound carries into the air and is of a high frequency.

On the other hand, low frequency sounds from slow revving commercial vessels are different. Kaikoura Tours are keen on the idea of a Marine Mammal Sanctuary out as far as the shipping lanes – about 15 nautical miles offshore. They believe that the low frequency sounds frighten whales more than the high revving outboards.

This summer DoC is expecting higher interest than ever in the whales. It is envisaged that more and more private boats will want to view them. Therefore signs are being erected around Kaikoura warning people of the correct ways in which to approach whales, the minimum distance they should keep from whales (100 metres) and the fact that they should not jump into the water with them.

Donoghue says it's well known that some whales "spook" easier than others, especially new arrivals. Fortunately the population off Kaikoura is all adolescent males. If they were breeding, DoC would impose much tighter restrictions on whale watching. But, he asks, what would you sooner want: "Dolphins in a concrete pool or whales in the ocean, even if the odd one is spooked? I know which I prefer."

Kaikoura Marine Reserve – "Much in little"

"I'VE BEEN DIVING in the area for 25 years; it's a pretty magic place." The praise comes from diver Brian Betts and is reserved for the reefs around the Kaikoura Peninsula which are soon to be nominated for marine reserve status.

Forest and Bird section chairperson Barry Dunnett has so far successfully steered the proposal through to the stage where it is hoped to be formally proposed to the Department of Conservation by autumn next year. In other areas charting the course towards creating a marine reserve has often proved to be difficult; as many reefs of potential disaster can lie onshore as are found in the reserve itself. However Barry's navigational skills have not deserted him – yet.

"We've got support from fishermen, divers, Maori groups and strong support from the Marlborough Business Development Board, tourist operators and many locals," says Barry.

He describes the proposed area as "a natural choice, one of the best locations in New Zealand, and one marine reserve expert Bill Ballantine was very impressed with."

The proposed area runs for more than 5 kms around the point of the Kaikoura Peninsula. It is close to Kaikoura township, and especially to the popular youth hostel.

Two factors contribute to make the Kaikoura coast unique: the deep Hikurangi Trough close offshore with its associated nutrient-rich upwellings, and the sub-tropical convergence, caused by the meeting of the cold Southland current and the warm East Cape current. As a result of the latter, Kaikoura marks the distribution limits of both typically southern and northern marine species. The coastal waters attract schooling dusky and Hector's dolphins, while the reef platform supports a breeding seal colony, as well as nesting populations of red-billed gulls and white-fronted terns.

As Professor John Morton remarks in *Margins of the Sea*: "Kaikoura Peninsula, then, offers 'much in little'; it has examples of every type of rocky habitat: level platforms, pools and deep channels, stacks and bluffs, and folds and overhangs as the limestone or siltstone has been carved and eroded. Add to this geological foundation the differences between sheltered and wave-exposed faces, and the wealth of living communities can be understood."

If numbers of species is anything to go by, then the peninsula is indeed well endowed. There are 123 species of macroinvertebrates and fishes, 45 species of algae and 64 species of molluscs.

Scientist Ida Marsden, who has surveyed the peninsula's marine life, describes the intertidal area as "of enormous recreational and educational value." Work being carried out by scientists at the nearby University of Canterbury's Edward Percival Marine Biological Station is providing the first baseline study for rocky intertidal areas in New Zealand. The proposed reserve is of exceptional importance for marine science.

However, despite the richness of the marine life around the peninsula, all is not well, as tourist operator Rod Rae readily attest. He recently invested in a glass bottom boat, calling it Kaikoura Seafaris and offering clients "a window on the undersea world" for a charge of $20 for one hour, families at concession rates. Unfortunately some of the undersea world is disappearing fast, and that is not good for business.

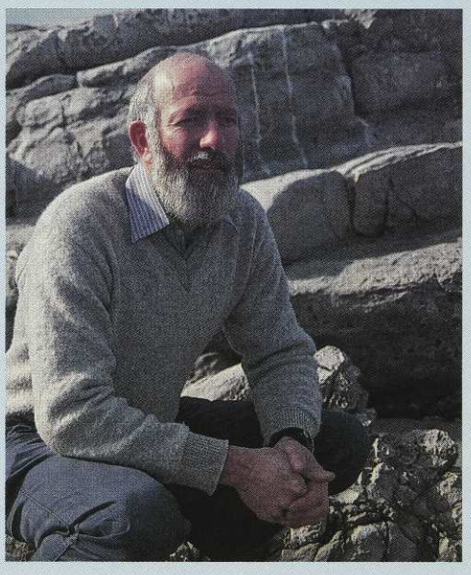
Not that the business is uppermost in their minds: "The reason we came up here 25 years ago (from Christchurch) was for the diving. The water is so clean because it is constantly moving," says Rod.

The truth of this statement becomes apparent in a trip on the the glass bottomed boat. Flanked by two friendly Hector's dolphins, we slowly motor between reefs, observing the underwater world. The clarity of the water is obvious; but so too is the paucity of fish life compared to years gone by, according to Rod. Spotting a paua brings the comment "that's a rare sight here these days."

The fish are now afraid and have to be stalked, in contrast to the past, says Rod. Ten years ago you could get a feed of crayfish, but not today.

Forest and Bird circulated Kaikoura interest groups with a questionnaire last Christmas, providing options for a reserve and asking people for their response. As a result, in April a firmer proposal was put forward, and negotiations are continuing.

Locals such as public relations officer Sue McInnes can see the value of a reserve.



Barry Dunnett, chairperson of Forest and Bird's Kaikoura section and prime mover behind the marine reserve proposal.
Photo: Gerard Hutching

Opposite: *The Kaikoura Peninsula from the air: "a natural area for a marine reserve."*
Photo: Craig Potton

Rod Rae (left) launching his new business with part time skipper Brian Betts. Both are convinced of the need for a marine reserve around the Kaikoura Peninsula. Photo: Gerard Hutching

Most spectacular and abundant of the dolphins around the Kaikoura coast is the dusky.
Photo: Craig Potton

"The chimney is on fire"

On 21 December 1964 the last whale harpooning by a New Zealand boat in New Zealand waters occurred off Kaikoura. In* The Perano Whalers of Cook Strait 1911-1964, *author Don Grady graphically describes a typical sperm whale hunt of the mid-1960s by the killer vessel* Orca, *which operated out of Tory Channel. Such a romanticised account is unthinkable in today's more enlightened times.

A pod of sperm whales has been sighted by the whale-spotter aircraft or by the lookout man in *Orca's* barrel high up on the foremast. The hunt is now in earnest.

The steel-hulled *Orca* is steaming off Kaikoura in a circle on a smooth sea with a SSE swell. The weather is fine and clear. The men on the bridge are purposeful and alert.

Master-gunner Trevor Norton lopes down the catwalk in a gunner's gait to the deadly swivel gun pointing ominously out from the bow. Several times Trevor holds off firing the gun at the last minute. He's like a ballet dancer doing shadow exercises before the real thing.

For reasons known to himself, Trevor holds his fire again. It might have been that the big bull sperm in his gunsights was too far away; perhaps it turned out to be a dam with a calf,

"We're going to lose our sea life if we don't do something," she says.

Rod Rae sums up the attitude of someone who once used to take as much from the sea as he wanted, but now would like to put something back.

"Twenty years ago I could dive and spear 30 butterfish in 30 minutes. You can't do that anymore. The peninsula is an area worth preserving because there's such diversity. These days more and more divers are beginning to see the merits of reserves."

Kaikoura, a town of surprises. The leopard seal in the background would be classed as a "vagrant individual" by marine mammal scientists, since the seal is usually confined to the southern oceans. Photo: Gerard Hutching

If whale numbers continue to plummet as they have in the last 100 years, these whalebone relics may be all that future generations have to remind them of one of the greatest natural wonders the world has seen. Photo: Craig Potton

or an undersize juvenile bull. He's looking for the biggest bull, and he tries to gauge its length by observing the width of its head when it breaks the sea's surface. By now, half a dozen whales in the pod ahead are regularly breaking surface. The crew themselves are a little nonplussed. Will Trevor Norton ever fire at any of the whales? What, they wonder, can be holding him back now?

Again and again the sperm whales break surface in front of the bows, their shiny backs glistening in the morning sun and their spouts occasionally bursting into the air like escaping steam. The final phase of the hunt nears. Only Trevor Norton, crouched businesslike behind the huge harpoon-gun, can assess the whole scene and decide when to press the trigger. Now Trevor Norton is standing on the gun platform. Without turning, he gives hand signals to the bridge. He raises a single finger. This means "dead slow" on the telegraph to the *Orca's* engine room.

The pulse of the engine quietens. Stealthily, *Orca* inches ahead. The great mammal zigzags in bewilderment as the iron ship pursues. The end is inevitable. Gunner Norton signals with his hands. The *Orca's* engine stops and she glides slowly, almost noiselessly, ahead. Everyone on deck is watching. The bull sperm spouts no more than 10 metres away.

Norton swings the harpoon-gun, bracing his legs wide apart on the *Orca's* deck. He points his gun downwards. There is dead silence. It seems like an eternity.

Gunner Norton, killer of more than 1,000 whales, looks down the white-tipped sighting device and squeezes the trigger. The gun barks. It is almost deafening, much louder than any layman would expect. The coiled-fore-runner (line) from a box in front of the gun is snaking outwards. The harpoon is embedded deep into the sperm's back, and there is a muffled thud from the delayed action grenade, exploding inside the whale's vitals.

The rusty steam winch on the *Orca's* foredeck now begins to clatter. With the winch as the reel and the foremast as the fishing rod, the whole steel hull of the *Orca* becomes the fisherman. The whale is fighting for its life, a fight it cannot hope to win.

The harpoon line runs back over the bow rails of the *Orca*, then down inside the internal part of the chaser near the keel. Here there are about 20 to 30 special kinds of springs. The rope attached to the whale runs through a pulley linked to these springs and then up to two big blocks, weighing about 76 kilograms each, on the foremast. By this ingenious system of blocks, springs, and steam-winch, the whale is played like a fish, till it tires, dies or is killed with another harpoon.

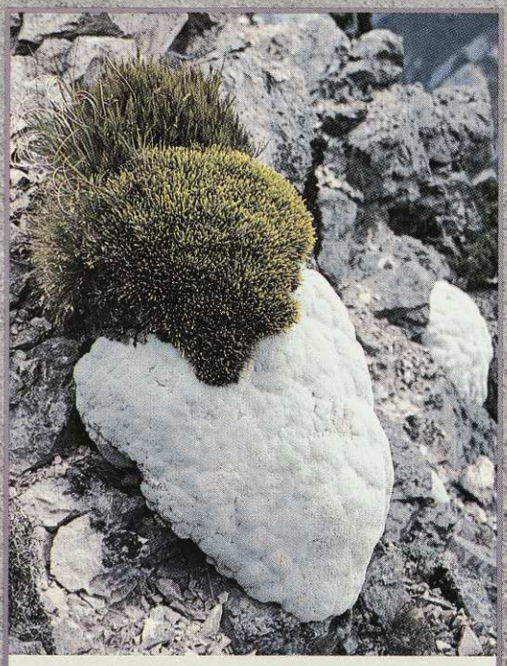
From the foremast the whale line is fed back to the winch. As the harpooned sperm takes the strain, these weighted blocks on the foremast come down to meet one another. By carefully watching these blocks, the winchman driving the steam-winch can quickly see how much strain is being placed on the rope. When there is a heavy strain he eases the brakes (tension) on the winch, and that in turn lets more rope go out with the whale. When the strain comes off the rope, the blocks go up the mast, the winchman puts his winch into reeling-in action again and pulls in the line with the harpooned whale on the end.

The struggle goes on. The whale, securely harpooned, surfaces 40 metres away. The bull sperm's great square head breaks the surface in a surge of foam several times in quick succession. His flukes wave madly in the air.

A soft groan comes from his open jaws. The sea is crimson with his blood. As he spouts, a crimson mist blows upwards. In old whaling vernacular "the chimney is on fire".

The harpoon gun is quickly reloaded. A mercy-killing harpoon is fired into the stricken sperm bull. A few death flurries, and it is all over. The *Orca* has added another sperm to her tally. Soon she will be chasing after other whales from the same pod.

(Reprinted by permission of Heinemann Reed, a division of Octopus Publishing Group (NZ) Ltd).



*Hardy alpine plants cling tenaciously to the shattered rock ridges. Vegetable sheep (*Raoulia eximia*), native broom (*Carmichaelia monroi*) and Dracophyllum uniflorum.* Photo: Anne Relling

THE TORLESSE RANGE

A Tussockland Conservation Park

by Forest and Bird South Island field officer Mike Harding

With the hot summer sun baking behind, you run with giant strides down a 30 degree slope, each step sinking deep into shattered rock fragments, the dust swirling around your boots. Below, the broad plains are stretched out like a carpet and sedentary sheep watch silently from the rock outcrops to the side. And, as you come to a sliding stop and the dust settles, flashes of colour show amongst the angular stones, bright flowers of the unusual plants that share this slope with lizards, butterflies and wetas. The top of the steep slope is framed hundreds of metres above by teetering rock ridges. From a dark speck spiralling against the sky, the sharp cry of the kea is heard. Far below a small stream winds its way between terraces of golden tussock and the jumbled boulders at the base of the slope. This is Canterbury. Not the peopled patchwork of the plains, or the wild snowy mountains of the main divide, but the dry foothills range that separates the two – a mountain wilderness at Canterbury's doorstep.

*The light green and red of the scree willowherb (*Epilobium pycnostachyum*) brightens the grey scree slope.* Photo: Mike Harding

*Merging into the rock are the cryptic black flowers of the scree cotula (*Leptinella atrata*).* Photo: Mike Harding

*Confined to these dry screes, the curious penwiper (*Notothlaspi rosulatum*) signals its presence with conspicuous white flowers.*
Photo: Mike Harding

THE TORLESSE RANGE lies one hour west of Christchurch by car. It is a barrier of ancient seafloor sediments uplifted to higher than 2000 metres by the same forces that raised the mountains of the main divide and the Kaikoura Ranges. The range lay in the path of the first transalpine travellers, who knew it by the name of Otarama, and who sought sustenance and solace from its valleys and peaks. It commanded the respect of Charles Torlesse, the first European to climb its slopes, who gazed at the "romantic and chaotic mass of mountains to the westward" from the mountain that now bears his name, and who named Starvation Gully when hunger forced him to choose between eating his donkey or his dog. (Both were spared by the arrival of an unfortunate weka!). Now the main transalpine highway winds over Porters Pass and through Starvation Gully at the southern end of the range and the Midland railway line follows the precipitous gorge of the Waimakariri River to the north.

Ancient Screes

To travellers on these routes the Torlesse Range may appear barren and desolate, a pile of broken rock devoid of vegetation. The finely-bedded sedimentary rocks of the range are greywackes and argillites which have been folded and twisted during uplift. When weathered by the extremes of a mountain climate, they shatter to fine fragments and form the screes that run from mountain top to valley floor. If exposed to heavy rainstorms these screes would move rapidly to feed the rivers running onto the plains.

The screes are surprisingly stable. They move only gradually, and then usually only at the surface, except in rare and catastrophic storm events. Sediment yields of the rivers draining the Torlesse Range are only a fraction of the yields of West Coast rivers which drain completely forested catchments. This is because rates of uplift and annual rainfall are significantly reduced east of the main alpine fault and in the lee of the predominant westerly winds. Dating of screes by measuring weathering rinds on rock surfaces indicate that often these rocks have hardly moved for hundreds of years.

"I was amazed at how stable the scree slope was," commented one keen participant at Forest and Bird's 1990 high country Easter gathering, "I didn't expect to be able to stay standing!" A scree only forms where the angle of the slope lies between 30 and 35 degrees; where a source of shattered rock fragments is present; and where the annual rainfall is low. Greywacke screes are found only on the east of the South Island in Canterbury and Marlborough, contributing to the bare appearance of the foothills ranges. The more specialised plants and animals that have colonised these screes are restricted to areas where the annual rainfall does not exceed 2500 mm.

Curious penwiper plants (*Notothlaspi rosulatum*) form rosettes above the rock fragments, black scree cotula (*Leptinella atrata*) and Haast's scree buttercup (*Ranunculus haastii*) appear in spring, flowering quickly in the short, harsh alpine summer. Disguised by its dull colouring and inconspicuous flowers, the fleshy lobelia (*Lobelia roughii*) nestles among the stones and the bright greens or reds of the leafy scree willowherbs (*Epilobium pycnostachyum*) provide contrast to the dull grey or black of the rocky slope. All are scree obligates, growing only on these greywacke screes, where summer temperatures can soar to 50 degrees in the midday sun and plummet to below zero at night.

These plants are able to survive, and even flourish, in such extreme conditions. They have evolved to tolerate the desiccating climate, the short harsh growing season, and movement of the scree surface. Beneath the scree surface lies a thin hard crust which, with the overlying stones, protects the soil below from water loss and helps stabilise the surface layer. Even in the hottest weather the soil remains moist, so scree plants have evolved complex and extensive root systems to exploit this water. Succulent leaves, fine hairs and cushion growth forms are other adaptions to an extreme climate. Most scree plants are summer-green herbs. They die away to a taproot or rhizome in winter and re-emerge in spring after snow melt. When the scree moves they survive by either having tough stems, buds protected by whorls of leaves, or small leaves connected delicately to the stem and root system which break easily and are quickly replaced when conditions stabilise. They are also inconspicuous, no doubt to help escape the hungry eyes of the ubiquitous alpine grasshoppers.

Sharing the screes with the grasshoppers and specialized plants are wetas, cockroaches, lizards, and butterflies. Sheltered beneath the stones a weta (*Deinacrida connectens*) scavenges for plant and animal fragments, the female reaching more than 6 cm long, mouse-sized and dwarfing the male. Lower down is the scree cockroach (*Celatoblatta montana*) which is confined to these dry eastern ranges and the common weta (*Hemideina maori*). Another undescribed cockroach (*Celatoblatta sp.*) lives in areas of very dry rock and scree within the forest. Skinks scuttle amongst the scree stones or crevices of the rock bluffs sheltering from the baking daytime sun and emerge to soak warmth from the rocks in the cool of the evening.

The smaller inhabitants are less well known but have not escaped serious study. Former Reserves Board member Peter Johns has peered closely at many specimens to describe the differences that separate the cockroach species and he talks enthusiastically of a zone centred on Lake Coleridge and the southern Torlesse which is the geographic centre for the invertebrate fauna of the drier eastern foothills.

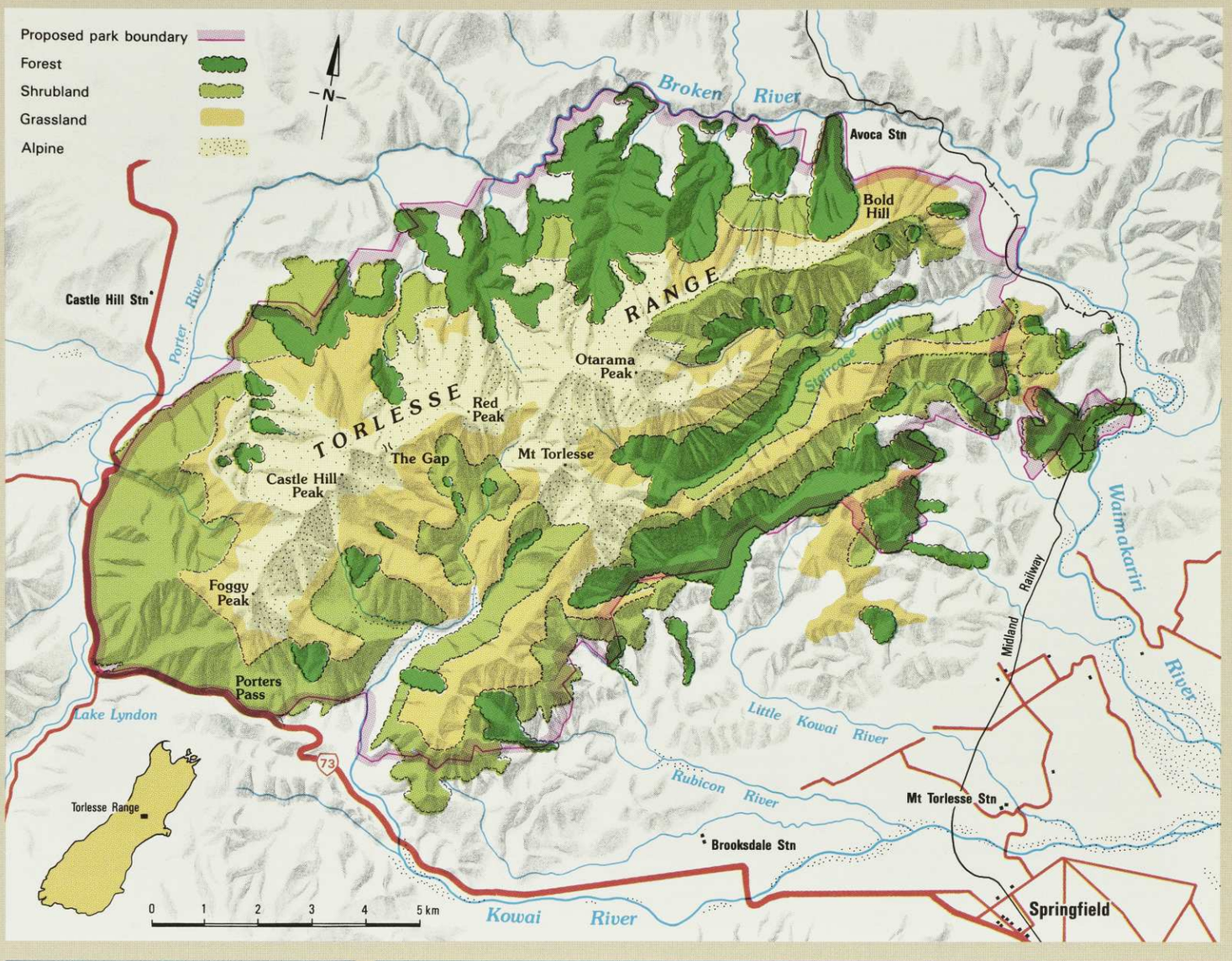
Conspicuous Animals

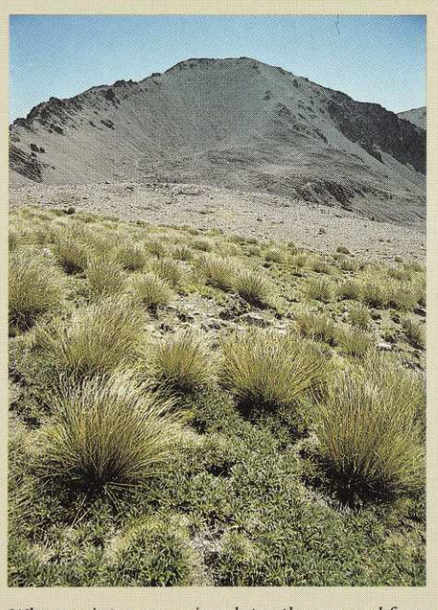
It is the more conspicuous animals such as the inquisitive alpine parrot, the kea, that visitors are likely to notice. Peter Newton in his classic high country book *Wayleggo* describes locating kea nests from the unusual whistles of nesting birds. Musterers have recorded kea nests in the Kowai Valley at the southern end of the Torlesse Range. Despite years of pressure from hunters, the now fully protected kea is still present. Phil Beckett, who worked voluntarily for Forest and Bird on the Torlesse proposal, tells of the time he was surrounded by a group of 14 kea in Torlesse Stream. Many of our more common birds inhabit the forests, shrublands and grasslands; pipits roam the open ridges and falcons patrol the valleys.

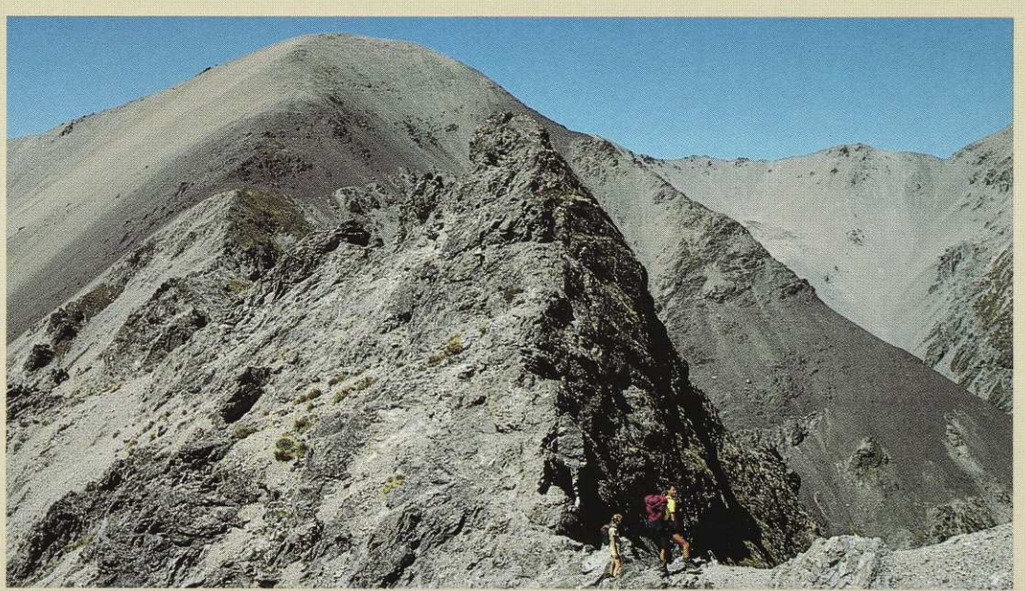
It is not only the scree plants and insects which make the Torlesse Range a special place. The high frost shattered ridges are home to the hard cushion plants such as the vegetable sheep (*Raoulia eximia* and *R.mammillaris*) and *Phyllachne colensoi*. South Island edelweiss (*Leucogenes grandiceps*) and furry *Haastia* species have established a foothold in the shelter of rock crevices and a range of alpine daisies (*Celmisia spp.*) occupy the more stable sites. Where snow cover insulates the ground from winter temperature extremes an alpine grassland of slim snow tussock (*Chionochloa macra*), and on wetter sites, mid-ribbed snow tussock (*C. pallens*) and snow patch grass (*C. oreophila*) are present. Many of our alpine plants were first collected from the Torlesse area and Foggy Peak is still a popular destination for botanical field trips.

Below the high alpine tops the original vegetation of the Torlesse Range has been altered by burning and grazing. Fires swept the area hundreds of years ago and fire was

These dry beech forests in the north-east of the Torlesse Range are all that remain of extensive stands which once clothed its northern flanks. The Department of Conservation's PNA survey scientists have earmarked these special arid forests for protection. Photo: Mike Harding







*Where winter snow insulates the ground from extremes of temperature, hardy snow tussocks (*Chionochloa macra*) and mountain daisies (*Celmisia viscosa*) endure.* Photo: Mike Harding. Right: *Trampers traverse the broken ridge to the Gap. Only an hour's drive from Christchurch, the Torlesse Range is a popular weekend destination.* Photo: Mike Harding

used by the first runholders to open the country for sheep grazing. Stock once roamed high over the open tops of the range and were mustered down to the lower country before the winter snows. Nowadays the upper country has been destocked, either voluntarily, or as part of soil and water conservation plans. Where stock pressure has been reduced and burning has ceased the rich *Dracophyllum acerosum* shrubland has regenerated and forest may eventually return.

On drier sites manuka or kanuka dominates and on the wetter terraces and higher slopes a tall tussock grassland remains. Above this, and in the scree-filled gullies, the open rock will remain in its natural sparsely vegetated state. Remnants of the original mountain beech forest still cover the steeper and less accessible northern and eastern parts of the range, and are now vested with the Department of Conservation as stewardship areas. Apart from the forested areas the entire range, including its alpine tops, is held in pastoral lease or pastoral occupation licence tenure. The range and its major summits of Castle Hill Peak, Mt Torlesse and Otarama separate the Castle Hill run to the north-west from Brooksdale in the south-west. The smaller Avoca run occupies the north-eastern part of the range and the freehold Mt Torlesse station covers the foothills to the south-east. The pastoral run tenure allows the grazing of sheep and cattle while retaining the land in

The Torlesse Range – A Natural Museum

FOREST AND BIRD has nominated the Torlesse Range as a Conservation Park. Close to the hearts of many Cantabrians, it has significance beyond Canterbury for its place in the botanical exploration of the country and its importance for mountainland research.

Well known Canterbury conservationist and regional councillor Di Lucas sums up local feeling about the Torlesse Range. "It is a very significant Canterbury landmark, a gateway to the high country, and a recognisable part of the Canterbury landscape. Its protection as a conservation park is important for landscape conservation and important for Canterbury."

The work of DSIR botanist Dr Brian Molloy in the early 1960s into subalpine and alpine plant ecology and soils at Porter's Pass illustrated the history of fire in the area and helped show that land instability has been a feature of the mountains for thousands of years. "This is a very special place," says Dr Molloy, "a natural museum housing much of our soil and vegetation history over the last 15,000 years. It is an extremely important area for biological conservation and, as a Conservation Park, would be a welcome addition to our protected areas."

The range was important in early botanical exploration. Well known alpine plants such as the slim snow tussock (*Chionochloa macra*) and the South Island edelweiss have their type localities here.

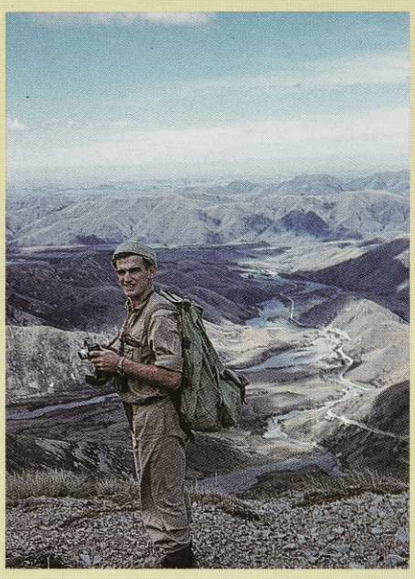
Di Lucas: "important for conservation."

Local recreationists are enthusiastic about the possibility of a conservation park. "The Torlesse Range has been a popular area for mountain recreation for nearly a century. We welcome moves to give it greater protection and coherent management," says Federated Mountain Clubs vice-president David Henson.

Adjoining runholder Richard Johnson of Torlesse Station says, "I believe strongly that the area should be managed for a wider community use than the traditional hunting."

One of the most extensive studies on the range combined the efforts of several scientists to research the processes occurring in one small but significant tributary of the Kowai River. Dr John Hayward, now director of the Centre for Resource Management in Christchurch, researched erosion and stream flow in the Torlesse Stream.

"These were the pioneering studies, aided by the accessibility of the site and the resources available for extensive field work," says Dr Hayward. They complemented studies of erosion and land stability occurring in other parts of the country and were instrumental in changing perceptions of high country erosion. The Torlesse Range remains a valuable research site and deserves formal recognition," he says.



Botanist Dr Brian Molloy in 1958 carrying out some pioneering research on the ridge to Foggy Peak above Porter's Pass. He supports the concept of a Torlesse Conservation Park over an area he has studied extensively. Photo: Prof. W.R. Philipson

Crown ownership. Over recent years run development has led to the intensification of grazing on the lower country and the destocking of the higher and steeper land. Land over 900 metres on Brooksdale Run is held under pastoral occupation licence with no right of grazing. The licence expired in June 1990; the land is now likely to pass to DoC.

Alpine Playground

While musterers may no longer trudge the steep ridges and screes, it is common to see people's smiling tanned faces emerging along the Porters Pass road after a long and satisfying day botanizing or walking on the range. And just two hours from the road, in a different season, you will hear the hiss of a primus stove from the candelit Kowai Hut as weekend adventurers prepare crampons and ice axes, for the ascent of the snow covered Mt Torlesse or for the steep climb to the Gap. This gunsight notch in the ridge provides stunning views of the Southern Alps to the west and Banks Peninsula to the east.

The Torlesse Range has long been a destination for Canterbury recreationists. Walkers and trampers explore the valleys and peaks, back country skiers and climbers pace the winter snows, botanists revel in the rich and unusual plant communities, and travellers gaze at it from most parts of the highway from Christchurch to Arthur's Pass – an alpine playground within sight of Christchurch. Yet legal access points remain unmarked and facilities are few. Wilding conifers emerge from the *Dracophyllum* shrublands, introduced broom invades the riverbeds, deer and chamois browse the palatable alpine herbs, and unscrupulous gardeners plunder alpine plants from the roadside at Porters Pass. And nowhere is a dry eastern range protected within our parks and reserves network.

This historic bias in our protected areas system towards the high and forested mountains is nowhere more dramatic than in Canterbury. While extensive areas of beech forest and alpine tops are protected in Arthur's Pass and Mt Cook National Parks and in Craigieburn and Lake Sumner Conservation Parks, only a scattering of pocket handkerchief reserves offer protection for tussock grasslands of the high country and no parks or reserves are centred on the dry rock and scree ranges.

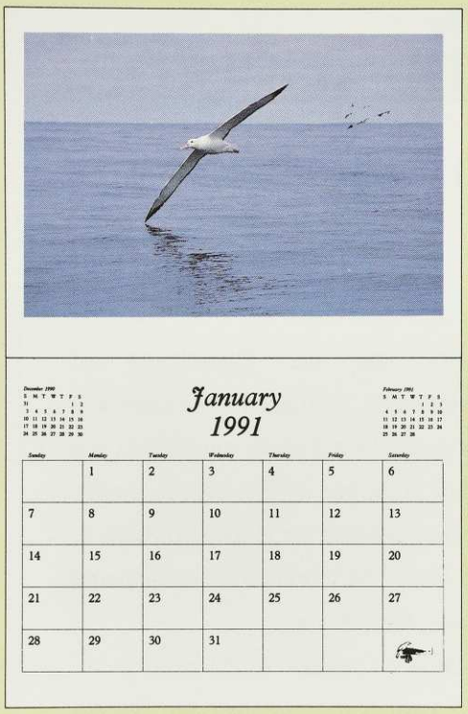
Historical circumstance meant that the foothills ranges of Canterbury, right to the ridge tops, were included in pastoral runs. Forested areas were eventually excluded as State Forest (now Stewardship Area), and for a time establishment of forest on the open rock and scree was considered essential to prevent whole mountainsides slipping to the sea. Now, a recognition that the barren appearance of these mountains is a largely natural phenomenon, and the gradual retirement of much of the higher country from grazing, casts the eastern foothills of Canterbury in a different light.

Few tussock grassland reserves exist anywhere in the east of the Main Divide. Scree and dry rock plant communities have been largely ignored. Yet they are two of the more unusual elements of our native flora, and both remain largely unprotected.

The Torlesse Range is an area that has been a focus for Canterbury's scientific exploration and recreation for many years. It has remarkable and distinct native plant communities. The range's economic importance for grazing is low and local support for its protection is high. It provides a wonderful opportunity to correct the imbalance inherent in the reserve system and to give formal recognition to an area that is refreshingly different from our traditional parks.

A Torlesse Conservation Park would allow us to actively manage an area of scree, rock and tussock grassland for conservation and recreation and to control any threats to their integrity. It would encourage us to advocate a broader concept of conservation, one which includes all ecosystems, and enable us to enhance the opportunities for people to discover these special screes and grasslands.

Forest and Bird's 1991 Calendar



New Zealand's Natural Heritage

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

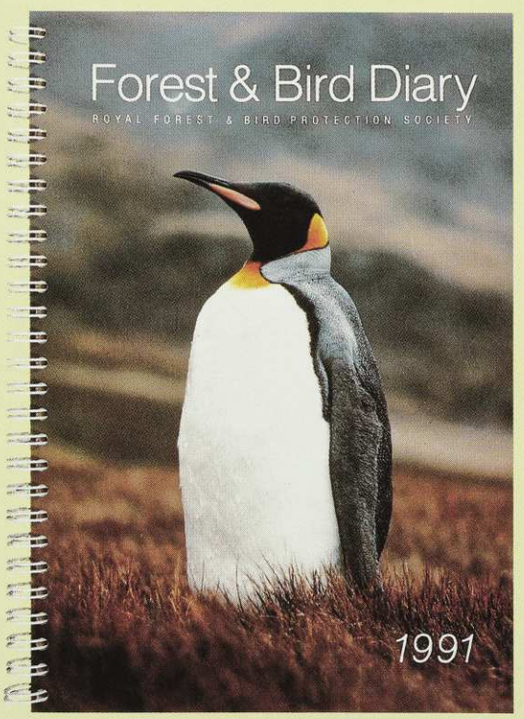
Buy now and ensure that your calendar will reach friends and relatives overseas in plenty of time.

Order now and don't miss out.

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

Forest and Bird's 1991 Diary

Forest and Bird's 1991 Desk Diary



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

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

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

Order Form

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

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

Name .....

Address .....

.....

Send to Forest and Bird Mail Order, PO Box 631, Wellington, or use order form in the catalogue.

Birds of a feather working together to save the Kakapo.

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

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

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

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

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

COMALCO
A POWER OF GOOD

In association with
The Royal Forest and Bird Protection Society
The Department of Conservation

C4091

Seabirds in Strife

New evidence shows that commercial fishing is responsible for the deaths of hundreds of thousands of New Zealand seabirds a year. However, as Forest and Bird researcher Alan Tennyson writes, such a slaughter is both unnecessary and avoidable.

A drowned wandering albatross with a longline hook in its bill. Photo: Nigel Brothers.

NEW ZEALAND can boast the most outstanding seabird fauna of any country in the world. Being situated in the middle of the southern ocean and having a latitudinal range spanning over 20 degrees, from the sub-tropical Kermadec Islands south to sub-antarctic Campbell Island, our country offers nesting grounds to a huge diversity of seabird species. About 85 species breed in New Zealand waters, including 10 albatrosses, 35 petrels and shearwaters and more inshore species, such as penguins, gannets, shags, gulls and terns.

Forty five percent of our seabirds breed nowhere else in the world. This November/December, ornithologists are flocking to New Zealand for the world conferences of the International Council for Bird Preservation and the International Ornithological Congress to celebrate our special seabird fauna.

Few New Zealanders realise this country's huge diversity of seabirds. Unfortunately, the ground-nesting habits of seabirds make them highly vulnerable to predation by introduced cats, stoats and rats and as a consequence, most are now confined to nesting on offshore islands where the public has little chance of seeing them.

Lack of protection

The lack of public awareness of seabirds has resulted in neglect of this magnificent and unique fauna. Fisheries by-catch problems have existed for decades, yet the majority of seabird colonies remain unsurveyed so that there are no measures of population changes. While most New Zealand seabirds enjoy legal protection onshore and within 12 miles of the coast, they are completely unprotected further out to sea. Albatrosses, shearwaters and petrels spend most of their lives in offshore waters where they can be legally killed. As with the conservation of most of our marine animals, the conservation of our seabirds has been sadly neglected.

The foreign tuna longline fishery

Japanese longline fishing for tuna began in the early 1950s. It has been a major fishery around New Zealand for about 25 years. Daily, the boats set their lines, which are an astonishing 125 km long and have about 3,000 hooks. Each boat sets just one line. In the early 1980s, about 100 foreign longliners operated in our economic zone, but that figure has dropped to about 70 a year.

The largest foreign fleet has about 40 boats and fishes for southern bluefin tuna. These boats generally begin the season in southern New Zealand waters in late summer and move, following the tuna, to the East Cape region during winter. Only one spawning ground for bluefin tuna, between northwest Australia and Indonesia, is known. Most bluefin tuna leave New Zealand waters in

spring and presumably travel to this spawning area.

A second foreign tuna longline fleet, made up of Korean and Japanese boats, operates in northern New Zealand. It mainly targets albacore tuna but high numbers of big-eye and yellowfin tuna may also be taken.

Fishery in danger of collapse

As with many New Zealand fisheries, tuna have been grossly over-exploited. Between 1980 and 1986 bluefin catch rates fell by 65 percent. In 1988, the drastic situation led New Zealand's Ministry of Agriculture and Fisheries (MAF) scientists and Australian and Japanese experts to suggest that the bluefin fishery be closed until there were clear signs of stock recovery. Only a 50 percent quota reduction occurred. MAF scientists were left to "hope for the right combination of environmental conditions ... to further slow the rate of ... decline".

As the southern bluefin catches have declined, other species of tuna (for which there are no quotas) have come under great pressure from longliners and the by-catch rates have increased. The tuna longline fishery may more aptly be described as a shark fishery in some areas. For example, 1200 sharks were taken when 650 tuna (including only 128 target bluefin) were taken by two boats off Poverty Bay. There is no limit to the number of other species such as mako and blue sharks or seabirds taken. Frequently, more seabirds than bluefin tuna are caught on the lines.

Longline mortality of NZ birds

In New Zealand waters, an average of between one and five birds die each time a bluefin tuna longline is set. About 5,000 lines are set annually, thus 5-25,000 birds are likely to be killed by foreign longliners each year. During the early 1980s, more than 10,000 foreign longlines were set annually, which would indicate that twice as many birds would have been drowned in this period.

The main species caught in New Zealand waters on foreign longlines are:

- Buller's mollymawk
- White-capped mollymawk
- New Zealand black-browed mollymawk
- Grey-headed mollymawk
- Wandering albatross
- Grey petrel
- Westland black petrel

There is not enough data to indicate exactly how many of each species are caught in New Zealand waters.

New Zealand breeding species reported caught elsewhere include:

- Light-mantled sooty albatross
- Giant petrel
- White-chinned petrel
- Southern skua

Worldwide, a yearly average of 107.9 million hooks were set between 1981-86 in the Japanese southern bluefin tuna fishery. Average catch rates for birds range from 0.35 – 1.6 per 1,000 hooks set, thus from 38-173,000 birds die annually. Tasmanian catch rates are among the lowest reported worldwide, but even they indicate that a minimum of 44,000 albatrosses die on longlines in the southern ocean each year. Not all birds die at sea, as several albatrosses have been found fatally injured by longline hooks at their nests.

These figures take no account of the by-catch in other longlining fisheries. For instance, more than 30 boats fish in northern New Zealand's albacore longline fishery. Northern domestic commercial longliners and even amateur fishers probably affect species such as flesh-footed and black petrels, which are strongly attracted to baits on lines.

A Japanese longline boat off Tasmania (June 1988).
Photo: Nigel Brothers

The Auckland Island squid fishery

Since the late 1970s, a major squid fishery has existed around the Auckland Islands, 460 km south of mainland New Zealand. Up to 50 trawlers fish in the area from December to May. Most trawlers are Soviet, with some Korean and Japanese boats, chartered by New Zealand companies such as Independent Fisheries Ltd, Sealord Products Ltd and Fletcher Fishing Ltd (whose deep water interests were recently sold to Sealords). Many of the ships are the size of the Cook Strait ferries and are the same ones that work in other major New Zealand fisheries, such as the hoki and southern blue whiting fisheries. These trawlers have drowned nearly 1,700 fur seals during the last two West Coast hoki seasons. Nearly 1,800 of the threatened Hooker's sea lion may have died due to the Auckland Island squid fishery since 1978, where large numbers of seabirds are also killed.

Trawler mortalities

Disturbingly high numbers of birds are killed by the Soviet Auckland Island squid trawlers. Vast flocks of birds are attracted to food at the trawlers' sterns as offal is dumped and nets are hauled in. On the Soviet boats, a cable that runs from the boat to the net proves a deadly obstacle. Birds hit the cable, which can catapult through the air like a whip as the tension from the net varies. Those struck by this flexing cable may be killed or injured. The force of a blow from the wire is sometimes enough to sever birds' wings completely. Many birds become tangled in the wire, slide into the water and drown.

Thousands of white-capped mollymawks and sooty shearwaters may die in the fishery

Background: *A Buller's mollymawk follows a fishing boat off the Snares. For those following longline boats, the attraction may prove fatal.*
Photo: Alan Tennyson.

Pole at stern of longline boat. Streamers from this pole scare birds away and can reduce bait loss to birds by 69 percent. Photo: Nigel Brothers.

The stern of a Soviet trawler. Many birds are killed when they hit a wire during trawler operations. Photo: Alan Tennyson.

Victims of the tuna longline fishery off Tasmania, including: black-browed and white-capped mollymawks, a wandering albatross and a southern skua. Photo: Nigel Brothers.

each year. Up to 14 mollymawks have been reported killed during a single net retrieval. Royal albatrosses have also been killed.

Forest and Bird's proposal for a marine mammal sanctuary around the Auckland Islands for the Hooker's sea lion excludes trawlers from within 60 nautical miles of the island's shoreline. Banning trawlers from this area should considerably reduce seabird mortality, but the trawlers still pose a problem to birds in other areas that they fish. The Bounty and Campbell Island albatross populations may also be threatened by the Soviet trawlers which fish for southern blue whiting close to those islands. Japanese boats do not have the offending cable used on Soviet boats and have much lower seabird kill rates. The Soviet trawlers' obsolete equipment should be replaced with the more modern equipment used by the Japanese boats.

The squid trawler bird mortality is but one example from New Zealand waters. We have no detailed information on seabird mortality in other trawl fisheries around New Zealand or elsewhere in the southern oceans. Casual observers report that seabirds are killed frequently by other trawlers, both foreign and domestic, but few people have any idea how to identify the different species being killed. There is no legal requirement for skippers or observers to record seabird deaths in our economic zone.

Drift netting and set netting

The indiscriminate slaughter of thousands of marine mammals, turtles, birds and non-target fish in drift nets has received huge media attention during the last two years. In July this year, Japanese and Korean fishers agreed to temporarily cease drift netting in the South Pacific and Tasman Sea but the Taiwanese are preparing for one more season in this region. Drift netting continues in the North Pacific and most other oceans. South Pacific drift nets were known to catch some seabird species but there are no details. Species worst affected were likely to have been those taken on longlines in New Zealand as well as smaller diving species such as shearwaters.

Few realise that half the 875,000 seabirds dying in the North Pacific Japanese and Taiwanese squid drift nets each year are species that breed on New Zealand islands. Every winter, the entire New Zealand population of sooty shearwaters, which breed mainly around our southern islands, migrate to the North Pacific where drift nets drown 427,000 of them annually. Flesh-footed and Buller's shearwaters from New Zealand have similar winter migrations and also drown in the nets. Thousands of sooty shearwaters are also drowned in other North Pacific gillnet fisheries, such as the Japanese salmon fishery and the Californian halibut fishery. For many other gillnet fisheries, there is no information on seabird by-catch.

Set nets in our coastal waters are well known as a killers of inshore seabird species, including little blue and yellow-eyed penguins,

This adult white-capped mollymawk on its nest at Disappointment Island (February 1988) has an estimated one in twelve chance of being killed by commercial fishing activities each year. Photo: Graeme Taylor.

Wandering albatrosses, the world's largest seabirds, displaying on Campbell Island (January 1987). Worldwide declines in this species first alerted scientists to the serious longline by-catch problem. Photo: Graeme Taylor.

White-Capped Mollymawk

The white-capped mollymawk nests only in two areas. In 1972-73, the Auckland Islands were estimated to have 64,000 pairs. A further 3,500 pairs nest on islands around Tasmania. The population is therefore made up of about 135,000 breeding adults with a further estimated 135,000 non-breeders. Immature birds may not breed until about their eighth year. The species' biology in New Zealand has never been studied.

More than 20,000 white-capped mollymawks are estimated to die in the bluefin tuna longline fishery and the Auckland Island squid fishery each year. This represents a staggering eight percent annual mortality in these fisheries alone. Worst still, all known fisheries deaths are of adult birds. Albatrosses are very long lived, up to 50 years, and pair for life. Both sexes incubate eggs and rear young and one adult cannot do this on its own. Thousands of chicks will have starved as a result of the high adult fishery kill and thousands more eggs will have failed to hatch.

Breeding colony counts from the Auckland Islands are hopelessly inadequate. The 1972-73 count is the only one ever done. The population could have been decimated in the last 20 years. A survey of Disappointment Island, where 90 percent of the world's population breeds, is desperately needed.

Wandering Albatross

The magnificent wandering albatross is well known for its huge size with a wing span of 3.4m. Worldwide declines of this species first alerted the world to the scale of the longline seabird by-catch problem. At the Crozet and Kerguelen Islands in the South Indian Ocean a dramatic decline has occurred during the 1970s and 80s, with most colonies reduced by half. At South Georgia and Gough Islands in the South Atlantic and at Macquarie Island, south of Australia, similar declines are reported. A bird marked on South Georgia was drowned on a longline off New Zealand in 1980.

Figures indicate that 10,000 wanderers die in the bluefin tuna longline fishery annually. This represents about 10 percent of the world population. New Zealand catches are mainly adult birds. Wanderers are also killed by trawlers, are shot or trapped and eaten by fishers.

New Zealand's sub-antarctic islands are the stronghold of the species. In 1972/73, Adams Island in the Auckland group had about 7,000 pairs – by far the largest island population. The only survey of Adams Island since then in 1989, indicates a possible decline of up to two-thirds.

This tallies with at-sea counts in areas such as northern New Zealand waters where tuna longlining has been carried out. From the 1950s to the mid-70s, up to 20 wanderers could be seen following boats; now it is rare to see five at one time. Transects by colleagues and myself between Auckland and the Kermadec Islands from 1988-89 reveal that only 10-20 percent of the number of birds seen in the mid-1960s now occur in our northern waters.

NZ black-browed mollymawk and chick (December 1984) – large numbers drown on longlines in the East Cape area. Photo: Graeme Taylor

Bluefin tuna – the target species of longlining boats – being cleaned. Bluefin tuna can grow up to 250 kilograms and are worth $3,000 (NZ) each. Photo: Nigel Brothers.

Hutton's shearwaters, and pied, Stewart Island and spotted shags.

A fatal attraction

The bird species worst affected by trawl and longline fishery by-catch are those most strongly attracted to offal and rubbish from boats. Seasoned mariners are well aware of this attraction – in the vastness of the open ocean, albatrosses often seem to appear from nowhere and will follow ships for days on end waiting for a morsel to be cast overboard. Albatrosses can cover huge distances in a few days, so are vulnerable to being killed in fisheries thousands of kilometres from their nesting islands. The tuna longliners' baits, which are usually 30cm squid or fish, are an ideal size for an albatross to swallow. Smaller birds are less likely to be able to swallow the bait before it sinks.

Vast flocks of birds often follow trawlers. In one instance, 3,000 white-capped mollymawks were reported following the Auckland Island squid trawler fleet. With such large flocks of birds around these boats, it is easy to see how some are hit by a cable swinging through the middle of them. Overseas, huge numbers of migrating birds are killed by flying into pylon wires at night. In both instances, the birds are unable to see the cables in time to avoid them.

Lack of population information

There is a serious lack of information on the sizes of our seabird colonies. The Department of Conservation must urgently start regular monitoring of all populations. Population falls overseas and estimated seabird fisheries by-catch numbers clearly warrant detailed breeding colony surveys – especially of albatrosses, such as the white-capped mollymawk, Buller's mollymawk and wan-

NZ Black-browed Mollymawk

The NZ black-browed mollymawk nests only on Campbell Island, our most southern subantarctic island. A survey in 1987-88 revealed 19-26,000 pairs, which points to a total population of about 90,000. Immatures of this species often disperse northwards and are common in temperate waters around mainland New Zealand.

Large numbers of immatures and some adults drown on longlines in our waters but exact figures are not known. Marked birds from Campbell Island have been recovered drowned on longlines off southern Australia.

A 38-57 percent decline in numbers on Campbell Island has occurred since the 1940s with the worst affected colonies falling by 88 percent. Temperature changes affecting food supplies have been implicated in causing declines in marine species, such as sea elephants and rockhopper penguins at Campbell Island, but fisheries by-catch may well be affecting mollymawk numbers. The decline in the South Indian Ocean Kerguelen Island population of black-browed mollymawks has been attributed to trawler mortality.

Buller's Mollymawk

Buller's mollymawks nest only in New Zealand at the Chatham, Solander and Snares Islands. With an estimated 36,000 pairs, the total population is likely to be about 150,000. Many immatures are thought to spend their first years in waters off Peru and all reported drownings on longlines are of adults.

There are no accurate figures, but Buller's mollymawks appear to suffer some of the heaviest mortality of any birds on the bluefin tuna longlines in New Zealand waters. Longliners concentrate in areas such as the Solander Trench off Fiordland, which is adjacent to the large Solander Island breeding colony. Effects on the mollymawk population are unknown.

Buller's mollymawk on the Snares Islands. This is one of the most commonly drowned species on longlines in New Zealand waters.
Photo: Alan Tennyson.

dering albatross. The French and British have been intensively monitoring albatross populations in the Indian Ocean and at South Georgia for 20 – 30 years. New Zealand is a long way behind in its responsibilities to monitor its internationally important seabird fauna.

There is no Government scheme to map seabirds at sea, where their numbers should also be monitored.

The increasing threat

As human populations grow and fishing technology improves, seabirds come under increasing threat from fisheries. The more fishing vessels in the oceans, the greater the by-catch problem and pressure on bird's food supplies. In Britain, overfishing of sandeels has lead to catastrophic failure in seabird breeding. Puffins, kittiwakes, arctic skuas and terns are unable to feed their young because of depleted fish stocks. Tens of thousands of arctic terns may only produce one hundred young in a season as a result. Local populations face rapid extinction.

In New Zealand, MAF commercial quotas take no account of secondary effects of fishing. They are based purely on the sustainability of the target fish population. A bird population's entire food supply could be harvested under current regulations. The intricacy of marine ecosystems needs to be recognised in the quotas. MAF is charged with the conservation of fishery resources, which includes "fish habitat and aquatic life," but specifically excludes birds. Our seabirds face a bleak future unless the marine ecosystem is considered as a whole.

Information on fisheries seabird by-catch is scant. We need compulsory reporting by skippers onboard vessels within our economic zone. In August 1990 Forest and Bird pressed the Minister of Conservation to institute compulsory reporting. DoC is now considering two options: whether to ask skippers to include seabird by-catch figures with their monthly fish returns; or simply to require skippers to advise DoC of all seabird deaths.

Solutions to the problem

Three fishing methods are wrecking havoc on seabirds: driftnetting, trawling and longlining. Drift netting has been described as an ecological disaster; nations practising it are being forced out of the South Pacific, but they continue to plunder other oceans, especially the North Pacific. The only solution is a worldwide ban on this destructive fishing method.

Trawling, while more selective, is also damaging to seabirds. Soviet boats, identified as the major cause of bird deaths, must be made to upgrade their antiquated equipment.

Nigel Brothers, a seabird expert working for the Tasmanian Department of Parks, Wildlife and Heritage, says several simple measures could drastically reduce the seabird longline

Sooty Shearwater

No-one knows how many sooty shearwaters breed in New Zealand waters, but there are probably tens of millions of birds in the population. They are likely to be the most common seabird in the world. Knowing this, it is not difficult to see why the species dominates the birdlife in parts of the North Pacific when the entire population migrates there in the southern winter.

Its sheer numbers and its habit of diving for food explain why more sooty shearwaters than any other species are killed by the North Pacific drift nets. The total annual mortality in these nets, which is in the high hundreds of thousands, is estimated to be 1 – 5 percent of the total population. The sizes of most sooty shearwater populations have never been surveyed and our best hope of determining population changes may be from the memories of muttonbirders who annually harvest the shearwater's young on some islands around Stewart Island.

The sooty shearwater, our southern muttonbird, comes ashore in the evening on islands like the Snares. At least half a million die in drift nets each year during their migration to the North Pacific. Photo: Alan Tennyson

kill. He points out that birds drown when they grab baits as the longlines are passed into the water and sink. The longer baits remain on the surface, the higher the risk of catching birds. The measures suggested by Brothers reduce the amount of time the baits are accessible to birds.

He suggests:

- Skippers should place a pole at the rear of the boat. To this a line 150m long with several streamers is attached. The streamers dangle above the area where baits are thrown and frighten birds away. In tests, Brothers found that this method can reduce the number of baits taken by birds by up to 69 percent.
- Baits could be made to sink faster by increasing the weight on the lines. This method has been used to lessen longline bird kills in the Indian Ocean.
- Fishers should ensure baits are properly thawed as they then sink faster.
- Baits should be thrown further from the ship when the line is being set. This way they sink faster, away from the turbulence of the ship's wake.
- Offal or rubbish which attracts birds should not be thrown overboard.
- Longlines should be set at night as seabirds mainly feed by day.

Such measures make sense: it has been estimated that losing bait to birds costs the bluefin tuna industry $7.2 million a year. Japanese longliners off Australia have already taken steps to reduce bait loss to birds.

Acknowledgements

Many thanks to Nigel Brothers, the Department of Conservation and MAF Fisheries staff for supplying information for this article.

Key References

Brothers, N. 1990. Approaches to reducing albatross mortality and associated bait loss in the Japanese longline fishery. Biological Conservation.

Murray, T.; Edwards, M. 1988. Southern bluefin stock at risk. Catch *15:3-4.*

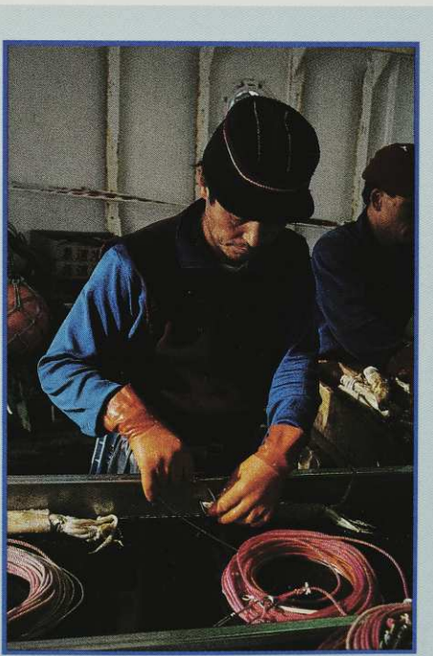
Report of the secretary of commerce to the congress of the United States. 1989. Nature, extent and effects of driftnet fishing in waters of the North Pacific Ocean.

Weimerskirch, H.; Jouventin, P. 1987. Population dynamics of the wandering albatross, Diomedia exulans, *of the Crozet Islands: causes and consequences of the population decline.* Oikos *49:315-322.*

Save the Seabirds

FOREST AND BIRD believes the seabird mortality rate in the world's oceans is totally unacceptable. In order to safeguard the survival of these magnificent birds, we are calling for:

- Protection of seabirds to be extended from the 12-mile to the 200-mile economic zone. Marine mammals and turtles are already protected within the 200-mile zone.
- Compulsory reporting to the Department of Conservation of seabird bycatch in commercial fisheries and an increase in the number of Government observers onboard boats. At present many more birds are being caught than are being reported.
- The Department of Conservation to set up regular population monitoring programs for all seabird species on land and at sea.
- A marine mammal sanctuary around the Auckland Islands, for the protection of the threatened Hooker's sealion. The 60-nautical mile trawler exclusion zone Forest and Bird is seeking would give some protection to seabirds within the area as well.
- An end to drift net fishing worldwide.
- An end to set netting around New Zealand coasts, except for flounder and yellow-eyed mullet, where fishers are attending their nets.
- Longline fishers to institute the changes outlined in this article to reduce seabird mortalities.
- The Minister of Fisheries, when setting fish quotas, to take into account the secondary effects of fishing, such as the effect on birds' food supplies.
- Fish quotas to be set at sustainable levels.



Squid baits are prepared onboard a Japanese longline boat. Photo: Nigel Brothers.

A Winter's Tale

Even in the middle of a windswept winter, Stephens Island in Cook Strait teems with curious and eye-catching wildlife. Photographer Brian Enting spent three nights there in July 1990 and illustrates some of his memorable encounters...

LYING at the western entrance to Cook Strait about 110 km west of Levin, Stephens Island is a wildlife sanctuary of exceptional importance. Captain Cook named it in 1770 in Honour of Phillip Stephens, Secretary of the British Admiralty, but never went ashore. The island was visited periodically by local Maori, the Ngati Koata, in search of the island's rich seabird harvest (kaimanu), and it also had significance to the tribe as a boundary marker of a gift of land from another tribe. The island's Maori name Takapourewa (floating matipou trees), as well as reports by naturalist Ernst Dieffenbach in 1843, indicate that Stephens Island was once forested on all but the rocky, encircling cliffs. However, a lighthouse was constructed between 1892-1894 and the combination of forest clearance, wind and salt spray and unrestricted roaming by introduced stock led to rapid loss of about 90·percent of the forest cover. Today, the southern two-thirds of the island above the clifftops is regenerating in a mosaic of scrub, vinelands, silver tussock and herbfields, aided by deliberate strip-plantings of taupata made in the 1950s-1970s by the Wildlife Service. Most of the remaining area above the cliffs is still grazed by sheep while plans for revegetation are formulated. The lighthouse was automated in 1989 and a Department of Conservation officer and his family now reside on the island.

Photographer: Brian Enting
Captions: Alison Cree

STEPHENS ISLAND'S immensely rich reptile-seabird community has never been exposed to rats, and cats were eradicated within 30 years of their appearance (but not before causing the extinction of the endemic Stephens Island wren). Tuatara are the largest and most famous reptiles on the island, reaching numbers of up to 2,000 per hectare (equivalent to about 750 kg of tuatara biomass). They feed on beetles, wetas, worms, lizards and the eggs and chicks of fairy prions.

JUVENILE TUATARA are initially brown, unspotted, and much more cryptic than their parents. Their adult colours develop over the 13 or so years it takes them to reach sexual maturity. Recent studies have revealed the surprising discovery that most tuatara nesting takes place in the island's sheep pasture, suggesting that the warm soil temperatures there are attractive to nesting females. Nevertheless, the eggs still take a year or more to incubate. Why rush when you'll probably live another 70 years or more?

THE SPECKLED SKINK is one of four species of the genus *Leiolopisma* (smooth shell) to be found on the island. With a total length of up to 240 mm, it is also the largest. Its specific name, *infrapunctatum* (spotted below), refers to the black spots on its spectacular yellow belly. Like tuatara, it thrives in the forest on Stephens Island and basks discreetly by day. Speckled skinks are not restricted to Stephens Island, being found also in the lower North Island and around Nelson.

UNLIKE the common gecko and the Stephens Island gecko, the Marlborough green gecko is most active by day. The tail is also less frequently dropped, extremely prehensile and used as a "fifth leg" when climbing. This species belongs to the genus *Heteropholis* (different scales) which is endemic to New Zealand and represented by six species. The specific name *manukanus* suggests that it is commonly found on manuka in some parts of the Marlborough Sounds. However, manuka is not seen on Stephens Island and these vivid green geckos are usually found on the foliage of ngaio trees, *Muehlenbeckia* vines or New Zealand spinach. Needless to say, only their movement gives them away!

THE STEPHENS ISLAND TREE WETA, *Hemideina crassidens* (*Hemideina* – half huge or terrible, *crassidens* – thick tooth), is renowned for the enormously enlarged heads of the males. Each male defends a hole in a tree in which several females may live. Females in the "harem" are free to come and go, but if another male attempts to enter, a ritualized fight occurs. The males lunge at each other with their jaws extended, each trying to grab the other male above its jaws. Usually one male retreats after a single lunge. Details of the behavioural repertoire of the species have been aided by Project Weta, an ambitious and successful weta breeding campaign led by Paul Barrett at Wellington Zoo. The zoo obtained its first wild adults in 1987, and in 1988 produced 962 youngsters! These are now adult and young from them are eagerly awaited.

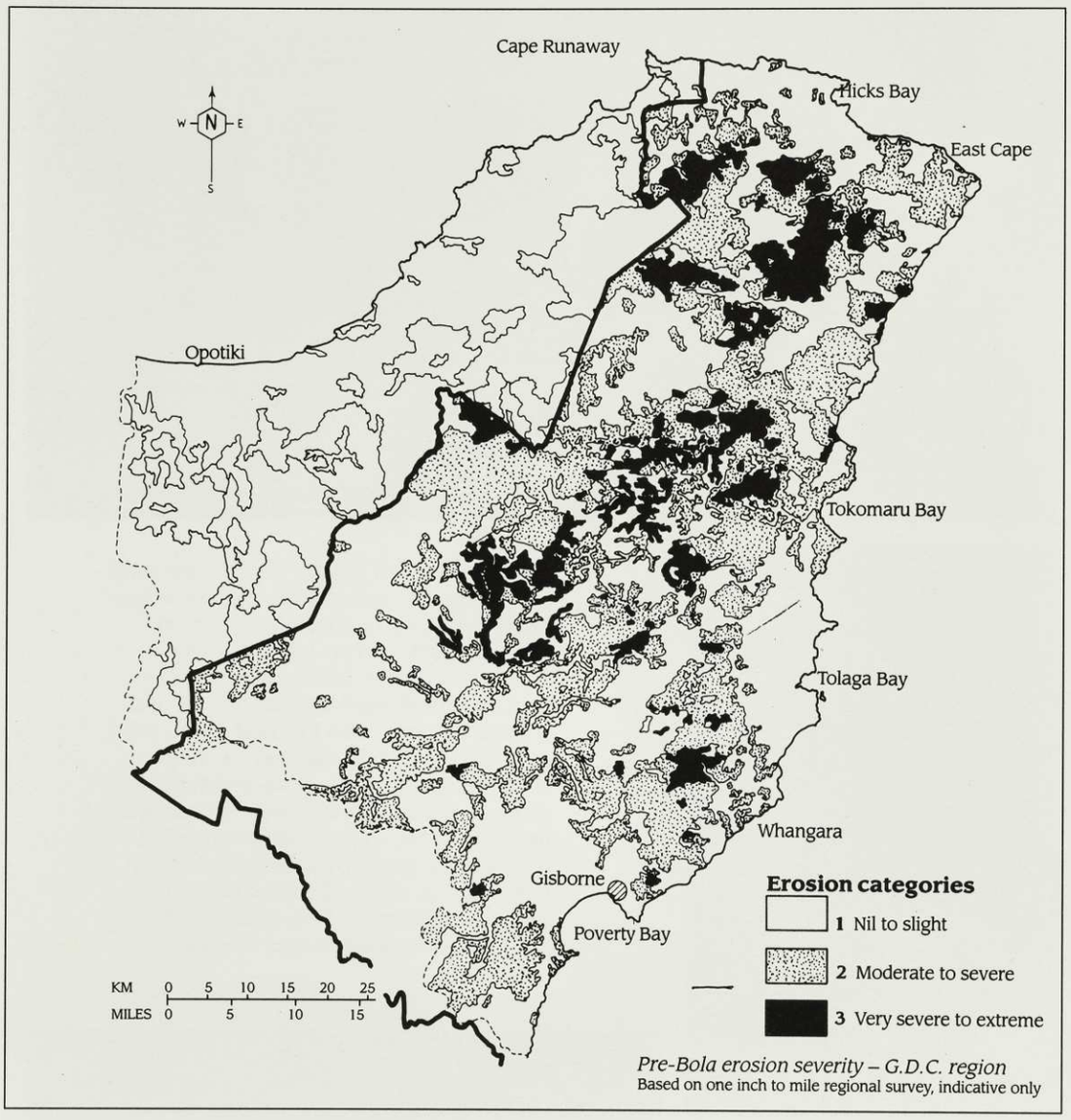
THE SO-CALLED "GIANT WETA" on Stephens Island is, surprisingly, smaller than the largest Stephens Island wetas and males do not have enlarged heads. Their scientific name, *Deinacrida rugosa*, honours their fierce appearance (*Deinacrida* – huge or terrible, and scaly; *rugosa* – wrinkled) but their archaic-looking armour conceals a placid and benign nature that is a delight to any wildlife photographer. Females are larger than males and are easily distinguished by their tail-like ovipositor. This species is also found on Mana and Middle Trio Islands, and was successfully introduced to Maud Island in 1977. Giant weta on Stephens Island occasionally fall victim to foraging tuatara, but are not endangered. They are particularly common in the *Muehlenbeckia* vinelands on the southern end of the island.

THE COMMON GECKO is one of the most widespread and abundant lizards in New Zealand, thriving on the North, South and Stewart Islands and on many offshore islands. It is a small (total length up to 155 mm), nocturnal lizard that climbs trees and occasionally gets eaten by tuatara. Like many lizards, it can drop its tail when in danger. However, the replacement tail is stiffened by cartilage, not bone, and it never appears quite the same as the original. Common geckos belong to the genus *Hoplodactylus (hoplon*, tool; *daktylus*, digit), all eight species of which are endemic to New Zealand. The specific name *maculatus* means "speckled".

THIS CURIOUS, NOCTURNAL WEEVIL is endemic to Stephens Island. Only about three specimens of this species, *Anagotis stephenensis*, have been reported in the last 16 years. The adult (shown here) is about 25 mm long and feeds on ngaio leaves, but the larvae have never been found. Two other weevils of this genus are also present on Stephens Island: *A. fairburni* (found on flax) and *A. rugosus* (found on coprosma). Large weevils are abundant only on islands where rats are absent.

EROSION ZONE

Earlier this century geologists warned about the problems of East Cape erosion; a major report was written about it in the 1960s; but Cyclone Bola in 1988 proved that none of the lessons of the past had been learned. Forest and Bird's central North Island conservation officer Basil Graeme has been investigating what measures must be taken if the region is to have any future.



Pre-Bola erosion severity – G.D.C. region
Based on one inch to mile regional survey, indicative only

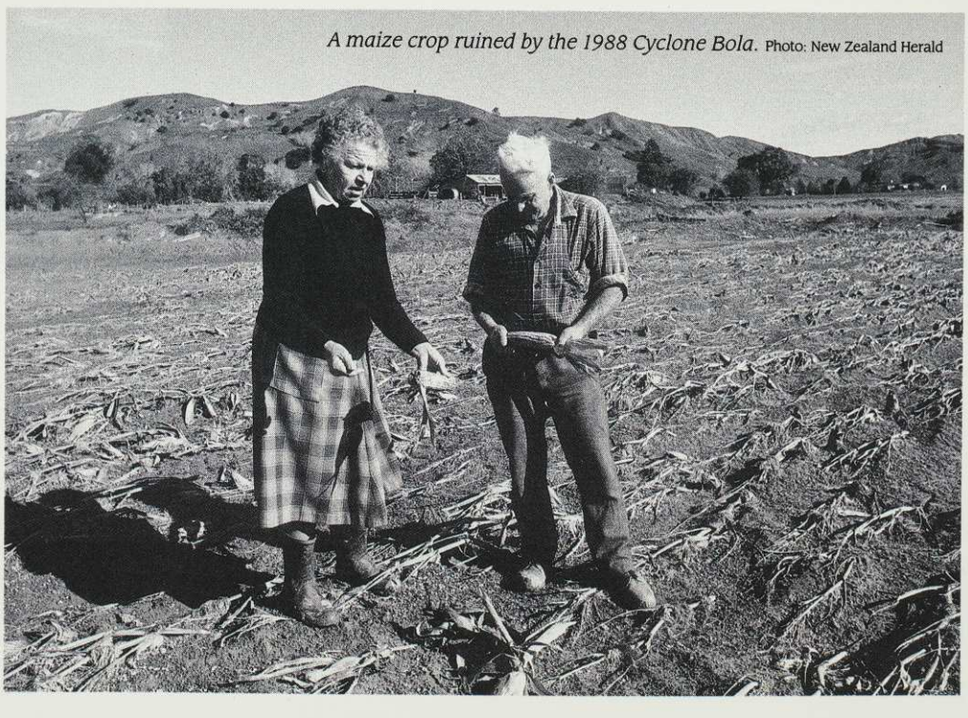
THE EROSION of the East Cape region is awesome. I will never forget seeing the tops of two posts sticking out of the mud – they were the tops of a cattle loading ramp. Somewhere beneath the mud lay a set of cattle yards and a farmer's endeavours.

Being human, we sympathise with the misfortunes of those individuals who have been devastated by such erosion. But in reality such tragedies are of little significance compared to the wider tragedy of the destructive silt blanketing the rivers, the sea and threatening to overwhelm the plains, and the economy of the region.

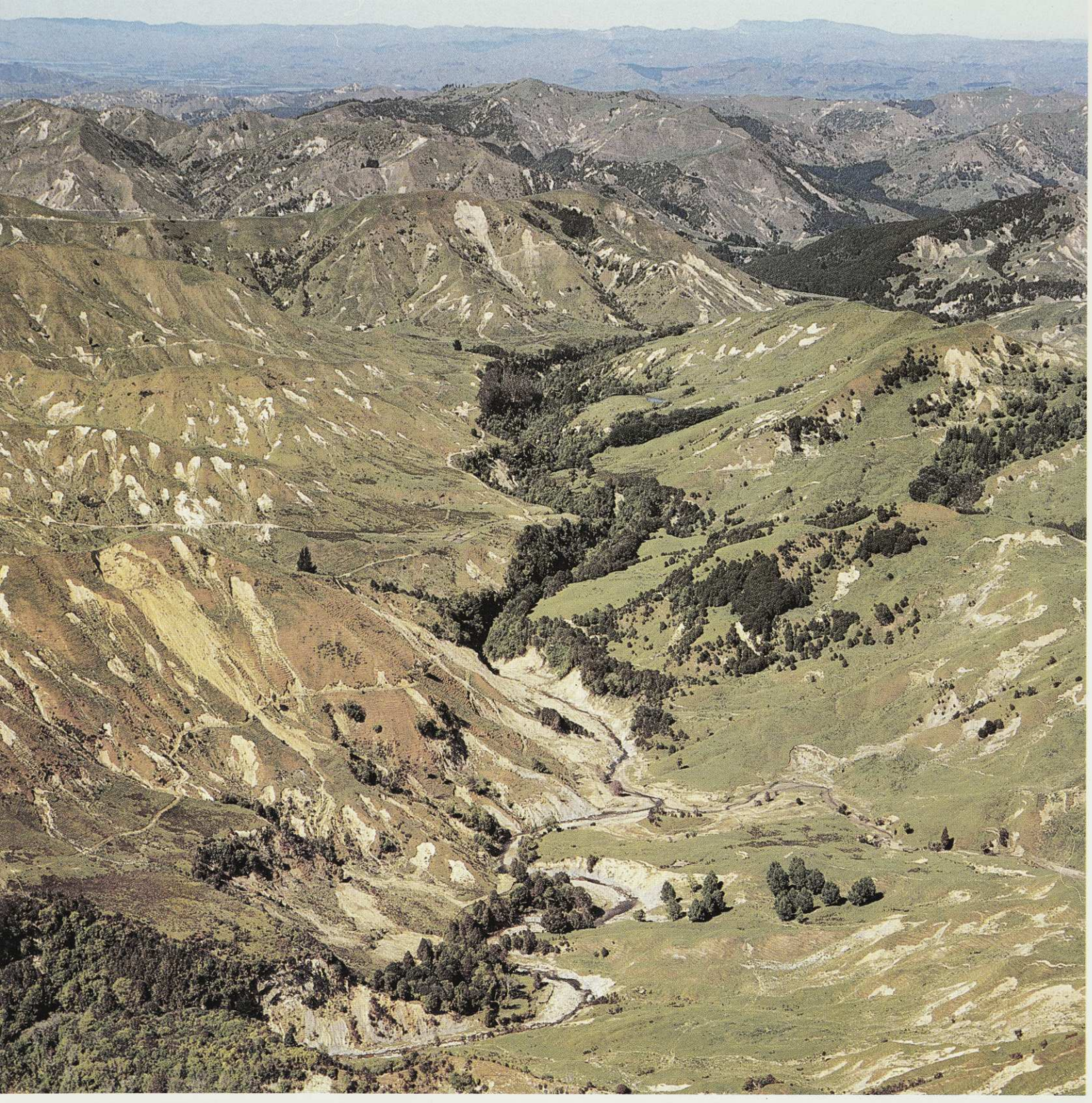
We respond to the personal tragedies as best we can, with $200 million of disaster relief. We respond to the greater disaster with a paltry $7 million over five years to tackle reafforestation; it is as if we cannot see the erosion for the silt.

Problems and solutions

How did this tragedy occur? What are the



A maize crop ruined by the 1988 Cyclone Bola. Photo: New Zealand Herald



Motumate Stream, Kaitangata Station area, looking south west towards Te Karaka on the Waipaoa River. In those few areas where forest remains the slopes are relatively stable. Photo: Lloyd Homer, Geological Survey

problems and solutions?

The seeds of destruction were laid in our pioneer culture which assigned too freely individual rights with property ownership. Today these rights are infringing the wider rights of the East Cape community.

It is not as if we have not known what we have been doing – today or in the past. In 1896 Sir James Hector, founder of the New Zealand Institute, warned that the elimination of the East Cape forest cover would result in widespread erosion. His warning, like dozens since, went unheeded. The land was privately owned and common sense could only stand aside as property rights were exercised and the bush felled.

Today the East Cape waits exposed and unprepared for the next cyclone. Inadequate measures have been adopted to reduce the area's vulnerability to further disaster. A study by the Ministry of Agriculture and Fisheries has this to say:

"The region is now more vulnerable to a Bola type disaster than at any time in the past;"

and:

"There is no strategy in place which is effectively diminishing the region's susceptibility to a repeat of the Bola disaster."

Existing strategies

This does not mean that there are no strategies in place. What it does mean is that the existing strategies are too small in scope, too slow and poorly directed. However the East Cape has a number of peculiarities that make it difficult to arrive at an effective solution.

The region has about 240,000 ha of hill country in a variety of unstable sandstones and mudstones. Of this, 140,000 ha is zoned as erosion category 2 land, having "moderate to severe" erosion. It is on this category 2 land that the Bola-induced surface slipping looks so appalling and has destroyed so much grazing. A further 100,000 ha is zoned category 3 erosion land, having "extreme" erosion. These predominately mudstone hills are collapsing and it is this major structural collapse that provides the most serious challenge and threat.

Paradoxically it is the unstable mudstones that are the most fertile, and in their short history between forest and slump, have provided some of the most productive hill country grazing in New Zealand.

It is from these more fertile and erosion-prone mudstone hills of both the north and south that stock and farmers should be most urgently removed, but it is precisely from this land that farmers will not shift. The reason is the unusual fertility of the soil. Even after Bola, many of these farms have a superficially

high value because of their productivity. This makes a major buy-out prohibitively expensive.

The tragedy is not just a tragedy of the hills, but also a tragedy of those hill families, tied to the eroding hills by debt. Many of them know their position is untenable in the long term, but because they have no buyer they stay, knowing that the next cyclone may be the end for them. In the meantime, no really effective restoration work can commence while these properties are still stocked. This in turn leaves the downstream community exposed to the full effects of the next cyclone.

Local government, farmers and foresters naturally favour a strategy of massive taxpayer intervention. They are calling for the reintroduction of the "East Coast Project" – a scheme started in the late 1960s whereby pines were planted on the worst category 3 lands. About 31,000 ha was planted at a cost of $92 million until the project was halted because, even with harvesting, it did not show a financial return. However, Cyclone Bola served to show how well the pines bound the hills; today nobody should contemplate harvesting the pines for that very reason.

Forestcorp, in its haste to realise assets, has sold cutting rights to Mangatu State Forest. As part of the East Coast Project, this taxpayer-funded forest was planted to hold together the collapsing Mangatu Station. This protection is unravelling as rainforest loggers, London Pacific fell the forest. Native mapou and titoki regenerating beneath the pines are harvested. Not a single pine is left to mitigate the continuing slumping and silting into the streams. The region is repeating the original folly of destroying the forest cover.

While the Labour Government has canned the East Coast Project as a financial investment, it has, since Bola, initiated two token catchment protection schemes based on pine planting. Both attempt to sidestep the cost of land purchase.

The first is the East Coast Project Conservation Forestry Scheme. It offers a seemingly irresistible 95 percent subsidy: a 66 percent central government subsidy of $7 million (net) spread over five years and a further 28 percent subsidy from district ratepayers. The farmer's share is just 5 percent.

In the first year 2000 ha were planted out of a possible 15,000 ha to be planted over five years. However landowners are reluctant to participate and understandably so. Why commit scarce resources to a project with no guarantee that one can harvest the trees in the future? No comprehensive land use plan exists to indicate which land requires permanent, no-harvest forest cover, or which land is zoned as suitable for forest which can be harvested without compromising the downstream economy. Few farmers can afford the ongoing silviculture costs when their cash flow from grazing has diminished.

The second government initiative is especially directed towards the multiple-owned land in the north. It offers government loans at favourable rates to companies willing to participate in joint forestry ventures with the land owners. Ngati Porou Forests Ltd, which planted 600 ha of forest last year, is one such venture. However, some of this planting has been done by removing mature manuka. Removing years of healing manuka regeneration is like picking at a scab to keep the wound open.

A further government strategy is an attempt to discourage farming on inappropriate land. Farmers have been warned by the Minister of Agriculture that they should face the risks of farming on these sites by paying their own insurance against disaster. Next time there may not be any taxpayer-funded relief scheme. This is an appropriate suggestion for the East Cape where soil fertility distorts the individual's profit-cost ledger in favour of farming these eroding hills.

However, this sensible strategy is unlikely to have any effect until after another cyclone, and the government of the day will have to stand by what it says. Incautious criticism of the policy by a National Party spokesperson has effectively undermined it anyway.

There is a strategy to reafforest land that is voluntarily retired with native trees. A conservation organisation, the East Coast Restoration Trust founded by John Hogan, is promoting this strategy. The Trust has had some success in raising the profile of East Cape problems, but it is unlikely to achieve any extensive revegetation through this method. The trustees of Rangitukia Station are the first to trial the scheme.

Land classification systems

- Land Use Capability classes (LUC) – The classes 1-8 largely indicate steepness from class 1 (flat) to class 8 (extremely steep).
- Gisborne District Council erosion categories – the categories indicate the severity of erosion from category 1 (nil to slight erosion), category 2 (moderate to severe erosion), to category 3 (extreme erosion).
- A "standard" hill country farm on the East Cape is most likely to be on class 7, category 2 land.

No regional commitment

What is the regional and district council response to the crisis? There is no evidence that they are committed to the only effective strategy, which is for wholesale retirement of stock and farmers from all category 3, and most of the category 2 lands. One would by now expect to have seen a regional plan, zoning water catchment under permanent forest as the only use for all category 3 and the backblocks category 2 lands. I would also expect to see a zone delineating "commercial" plantation or agro-forestry on the remaining category 2 lands, determined by a combination of land stability, topography and proximity to main roads.

I would certainly take local commitment to the restoration of the East Cape more seriously if the district and regional council prohibited the destruction of naturally regenerating native manuka or other scrub species.

Until the region itself shows it is prepared to grapple with the sacrifice of retiring the hills, then it is no wonder that the public and government tinker too with token regional subsidies. What is required is a "green line" beyond which lies a permanent cover of pine and native trees. Buffering this green line there needs to be a zone of sustainable land use for agro-forestry and plantations.

In the meantime there is virtually a stalemate on the widespread retirement and restoration of the East Cape hill catchment. Costs are blocking retirement and revegetation. Retirement planting in pines is an expensive commitment, as they should not be harvested. Fencing to keep stock out of forests is expensive, especially since the fences on unstable ground need continual maintenance. It is more cost effective to retire whole farms in the first instance, and whole districts in the second. In general trees and stock do not mix except on the most favourable land and in the most favourable economic circumstances. Commercial forestry should not be planted on distant unstable blocks requiring extensive road maintenance. Even stable hill farms in the headwaters have a cost, threatening the plains with peak storm run-off and downstream flooding.

The stalemate exists because of the unrealistic value placed on the hill country farms. Market forces which recognise the inherent fertility of the soils do not recognise the costs of maintaining road access, the costs of reticulating power and telephones, and the costs of insuring for the risk involved to both the plains and hill farmers from bad hill country management. New Zealand and the East Cape are being held to ransom by the unrealistic compensation expectations of the East Cape hill farmers. To break the stalemate, both regional and central government have to grasp the nettle of transferring the costs of remaking roads and reticulating power and phones to the farmers. The individual share of these costs will rise rapidly with progressive farm retirement and farm amalgamation. These rising costs will be the true costs of wrenching profit from these hills. Regional rating levels should vary so that people who live in areas with high flood protection costs should pay proportionately more for them.

Rescue package

Such a strategy could not be put in place without a parallel affordable incentive and rescue package that offers farmers a reasonable option to leave with enough capital to start afresh. This depends on having the Crown as a guaranteed last resort buyer. It also requires the implementation of land use restrictions to prevent the substitution of other inappropriate land uses, such as commercial forestry on seriously eroding land or on land that is financially marginal because of its isolation.

A realistic last resort land price may be in vicinity of $40 per hectare. For the farmer the alternatives are to sell to a neighbour, to forestry interests, or to linger on the hills, clearly increasing the chance of losing equity in stock and machinery.

The total cost of a taxpayer-funded retirement of some category 2 and all category 3 land at a realistic price and planting of the entire category 3 land, is unlikely to exceed the cost of the next disaster pay out. Effective restoration will in the meantime have commenced.

Large scale retirement of the hills is the

only effective means of protecting the plains and the coast. Emergency pine stabilisation of category 3 lands is essential. There is a role for commercial forestry, enhancing the regional economic base, and for catchment management on the better hills close to the plains. However the most cost-effective catchment protection for a huge area between these different plantation types is to allow the bush to return. All this land needs is retirement and pest control; nature will do the rest. It is here in the naturally revegetating lands that conservationists can enhance the process with judicious planting of seed source trees that are regionally scarce. The manuka and scrub species are already there, in pockets and gullies, waiting to do their job.

If it is appropriate for this region to return to subsidised pseudo-commercial forestry, then it is essential to first zone land suitable for commercial forestry and zone out with a green line those lands requiring permanent tree cover. We have enough to pay for without replacing one cycle of inappropriate land use with another.

The nation does owe a debt to the East Cape. We have had 100 years of wrenching export earnings from these hills. We will all have to pay if the category 3 lands are to be purchased, replanted and retired. We will all have to pay if most of the category 2 lands are to be purchased and retired. Anything less than this commitment to a "green line" is a decision to let the region die.

Land erosion – a marine disaster

by Quentin Bennett

UNTRUE, UNFORTUNATELY, is the commonly held belief that the seas surrounding New Zealand are an unpolluted paradise.

One particularly destructive type of pollution, land erosion, has had a marked effect on many large sections of the New Zealand coast.

The recent Cyclone Bola has raised awareness of the effects of land slippage on our steeper hill country. While concern has been focussed particularly on the East Cape, the problem exists over most of the country.

Alarm has been aroused regarding the effects of erosion on the hills and in the valley bottoms.

Almost forgotten is the equally destructive effects of the vast amount of silt and mud that is washed into the sea.

This covers the sea floor in a choking layer, smothering and suffocating many forms of marine life.

It clogs the systems of the many forms of marine life that depend on filtering planktonic food from the water.

Every time the sea is rough or the swells increase, so the disturbance lifts the fine silt back into suspension to continue its deadly effects.

While in suspension, it reduces the light reaching the algae or sea weeds that, like land plants, need light.

We all know how the grass turns yellow and dies if a plank of wood is left lying on the lawn, sealing it off from light. All plants, whether on land or in water, require light to carry out photosynthesis, an essential part of their being.

The algae and seaweeds, which are underwater plants, also perish without light, and require relatively clear water to exist.

Sometimes the layer of silt can be so thick that it simply buries areas of reef. I remember returning to the wreck of the *Tasmania* with Kelly Tarlton to find that it had been covered by two and a half metres of mud following a big Queen's Birthday flood some years ago.

The source of this mud was the Waipaoa River, the mouth of which is almost 30 nautical miles away!

This river's catchment includes some of the world's most eroded land and its effect on the sea is never the talking point or concern that the land is. We must face the fact that the sea is also being badly affected.

The Gisborne and Hawke's Bay hill country has one of the worst erosion problems anywhere on earth. Country that is now regarded as too steep even for forestry has in the past been cleared of bush and brought into pasture.

To a certain extent the roots remaining from the long removed bush continued to hold the land. With time these old hardwood roots have rotted away leaving little to hold the topsoil from slipping down the slopes.

Much of the East Cape's silt has pumice origins, so is very light, and remains a long time in suspension, prolonging its effects.

The East Cape may well be the worst, but many other areas suffer a similar fate. The Firth of Thames suffers badly from the effects of silt.

Silt enveloping a hermit crab in Hawke's Bay.
Photo: Quentin Bennett

I know the changes that have occurred in the last 20 years in the Tutukaka area of Northland as land has been bulldozed and developed. Too much of the local clay has finished up in the sea.

Unfortunately examples can be drawn from all over New Zealand.

Underwater silt causes similar problems to that caused on land, covering and choking much in its path. Suspended in water, the silt's ability to travel is vastly increased and its effects more widespread than were it on land.

The world below the ocean's surface is not seen by many and is easily and conveniently ignored by both the authorities and the public.

In 1960 it was estimated that the Waipaoa River alone discharged 30 million tonnes of material into Poverty Bay. During a major flood in 1948 it is believed that a similar 30 million tonnes went out to sea in one day.

When in flood the Tuki Tuki River carries 9,000 tonnes of silt per hour into Hawke's Bay. Several other rivers also carry immense silt loads into the bay.

One small 10 square kilometre catchment under study in the Ruahine Ranges is known to be eroding at the rate of 7,000 tonnes per year.

Authorities believe that 2.6 million tonnes of silt and soil per year wash into the hydro lake behind Central Otago's Roxburgh dam.

And so the story is repeated around our coast.

My home diving area is Hawke's Bay and because of our pleasant climate friends of mine from outside the area assume that I get a lot of local diving.

In fact I get little home diving because of this little recognised silt problem.

These days the diving in Hawke's Bay is generally hopeless.

The areas that I have known and frequented since the early 1950s now rarely offer clear water. Previously sandy bottoms are covered in mud and only a small swell or chop is required to stir this up and reduce visibility.

Much of the interesting life has been destroyed so there is less to see even if the water clears.

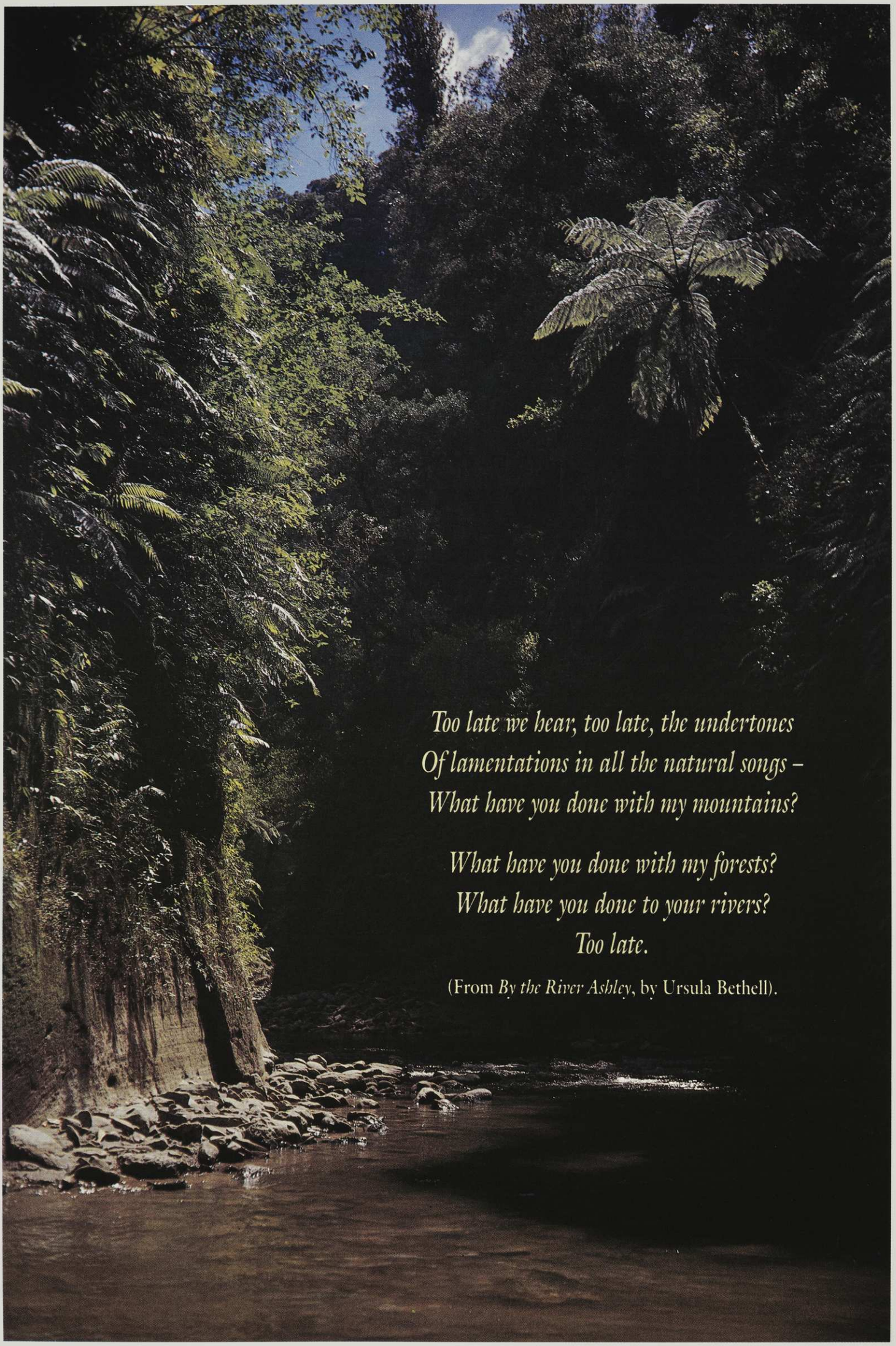
I know areas where overfishing gets blamed for a problem that in fact is caused by our ignorant mismanagement of land.

Those with a close interest in the coastal resources of New Zealand must retain an interest in the conservation of our land all the way from the mountain tops right down to the sea.

The beginning of the chain of life in the ocean is, we now know, already at the end of another chain that we are mismanaging and is in dire trouble.

Earlier generations were innocently unaware of what they were doing by their removal of the bush from hill country. The present generation knows better and must act to preserve the economy, the land and the ocean, interrelated as they all are.

Quentin Bennett is a Forest and Bird member from Napier who has long held a keen interest in marine matters.



Too late we hear, too late, the undertones
Of lamentations in all the natural songs –
What have you done with my mountains?

What have you done with my forests?
What have you done to your rivers?
Too late.

(From *By the River Ashley*, by Ursula Bethell).

PROFILE

Keith Chapple – Speaking for the Rivers

by Gerard Hutching

IN ANOTHER LIFE Keith Chapple might have been a lawyer. According to those who have watched him at work in a Planning Tribunal, in *this* life Chapple is the match of most with an LL.B after their name.

"He would have made a brilliant lawyer. He has a quick ability to size up issues and an equally quick ability to size up technical matters," considers Jim Guthrie, the lawyer who handled the Department of Conservation's Wanganui River flows appeal.

The David and Goliath encounter between those who advocated a return of the headwaters of the Wanganui and Electricorp who opposed such a move provided the platform for Forest and Bird's King Country branch chairperson to hone his legal skills. For six months he commuted weekdays to Wellington for the marathon hearing, probably the lengthiest Planning Tribunal hearing ever held. There he advocated on behalf of the Wanganui River Flows Coalition, of which Forest and Bird is a member. Despite the personal hardships the hearing caused, one senses it was a role he relished.

"It was the most difficult thing I've done in my life. I developed a love-hate relationship towards the legal process. The satisfying times were cross examining and destroying a witnesses' credibility.

"But at the same time Electricorp made life difficult, changing evidence and suddenly forcing me to change my questions. At times it was overwhelming when their witnesses had so much information," he says.

For Keith and Brenda Chapple – an indispensable partner in the saga – the Wanganui story began in 1987 when they were making submissions to the Whanganui National park draft management plan. It was then that the implications of taking all the headwaters away from the lower reaches of the Wanganui River, and in fact diverting the waters of 66 rivers from around Tongariro National Park for the Tongariro power scheme, hit home. Fish stocks were depleted, the blue duck's population plummeted, canoeists and rafters lost some of the finest white water rivers in the North Island, and the local Maori lost the source of their mana. Chapple chronicled the history of the scheme in a sell-out booklet *The Rape of the Wanganui*.

Fortunately a review of the minimum flow regime for the Wanganui was due in May 1988. The Chapples swiftly seized upon this opportunity. Realising that broad community support would be one of the key elements in winning the campaign, they melded together 35 groups into the Wanganui River Flows Coalition. King Country Federated Farmers, the Wanganui Chamber of Commerce and Forest and Bird were some of the diverse organisations involved. A detailed hearing before the Central Districts Catchment Board followed.

At the same time the Government announced it was preparing to sell all water rights and assets to Electricorp. The Chapples promptly organised a petition calling on the State-Owned Enterprise to apply for a water right for the Wanganui. The petition had the desired effect; within six weeks of its launch Electricorp had decided to apply for a water right for the western diversion and the Wanganui tributaries.

By October 1988 the Catchment Board announced its decision in favour of returning 100 percent of the Wanganui River headwaters and eight to sixteen times the flow of the Whakapapa River. Unaffected by the decision were the remaining 64 rivers diverted for the power scheme. They would continue to flow north into Lake Taupo.

The decision was an obvious body blow to Electricorp. Chairman John Fernyhough's immediate reaction – informing TV news viewers that their power bills would jump by $100 as a result – graphically demonstrated how shaken the SOE had been by the decision. The scaremongering claims were swiftly rebutted by energy researcher Molly Melhuish who calculated that at the most the extra costs would amount to $1.54. However, pleading that the national interest was at stake, Electricorp decided to appeal the case to the Planning Tribunal.

It soon became apparent that Electricorp would spare no expense to win the hearing. They called more than 40 witnesses and rumour places their total costs at anything between $7-$15 million. Citing the potential costs of more than $100,000, Forest and Bird decided to withdraw from the hearing in April 1989, leaving the Department of Conservation, the Wanganui River Flows Coalition and the Wanganui Maori Trust Board to advance the conservation case.

In fact Forest and Bird continued to play a part in the proceedings: for a period Keith Chapple was forced to take leave from his job in the engineering department of the local hospital, for which the Society reimbursed him. However, he often continued to work night shift at weekends. It was a frenetic schedule: commuting to Wellington on Monday for the hearing, returning to Kakahi on Friday evening and working at the hospital through the weekend.

"It was bloody murder. The hearing lasted eight months and I took two-thirds of that time off work. If it wasn't for Forest and Bird's help we would have been forced to withdraw from the hearing," Chapple recalls.

As Electricorp raised the ante, the support the Flows Coalition had received up until then began to recede. Of the 35 groups originally in the coalition, only 13 agreed to remain for the hearing. The spectre of costs being charged against the coalition was having its effect.

The Coalition prepared its case. Keith describes Brenda as "the lynchpin" of the coalition. A former secretary/personal assistant, she provided the professional touch required for submissions. She became pregnant during the campaign and gave birth to Brendan Wainui at the time when Tribunal members were undertaking a field inspection of the rivers. Little Brendan and Brenda attended the Tribunal during its last days to lend moral support to a proud father.

Other key members of the coalition were Tom Wells, Larry Rogers, the Parker brothers, Manu Lala and Jim Gosman. Expert advice came from Massey University geography lecturer Peter Horsley and former Auckland University environmental studies lecturer Dr Bob Mann. Graeme Dingle and Grant Davidson gave invaluable advice on recreation; David Pate on the electricity system, energy conservation and management; Brian Carran on regional development and tourism opportunities; the Parker brothers, owners of Plateau Guides Ltd, donated thousands of dollars of time and research trips down the rivers. In addition the Chapples received an award from the Orangi Kaupapa Trust – "for services to the environment" – which assisted with personal expenses. Other financial support came from the Ruapehu District Council which weighed in with $5000 for the Coalition when funds were running short, and Taumarunui residents who donated

RIVER LAW

ACCORDING to the Justice Department, the Planning Tribunal hearing into Electricorp's appeal over the minimum flow regime set down for the Wanganui and Whakapapa Rivers was "probably" the lengthiest and most costly in New Zealand history.

For the statistically minded, the following facts about the case will be of interest:

Length of sitting: 94 sitting days spread over seven months.
Number of witnesses: 104
Number of lawyers: 14 maximum, 10 minimum.
Electricorp's evidence: 2.5 metres tall.
Length of transcript: 2,500 pages.
Length of evidence of all parties: 100,000 pages.
Expense to Electricorp: Estimated $7 million minimum; $15 million maximum.
Expense to Department of Conservation: $625,000.
Witness expenses: Rumoured $750,000 to one witness; $250,000 to another; $5 million to a scientific establishment.

$10,000 during the course of a three-hour radio appeal.

"The decision not to employ counsel was a big worry. However I decided to put my best foot forward and fronted up at the court.

"When we decided to advocate it ourselves we were sending a message to Electricorp – that ordinary people were prepared to have their say on the Tribunal's terms," says Chapple.

The coalition confined itself to regional issues: the impact of the diversions on the blue duck, recreation, the trout fishery, the history of the scheme and tourism and regional development. The Department of Conservation played the major role, tackling energy conservation, economics, hydrology and environment. On the Putiki marae – the first time a Planning Tribunal hearing had been held on a marae – the Wanganui Maori Trust Board told of the spiritual values of the river to their people. "The river can only live and maintain its mauri, essence of life, with a plentiful supply of water from its source," said tribal elder Mr Taitoke Tawhiri.

Central to the coalition's thinking about the case was the fate of the blue duck, since birds are the best indicator of environmental degradation. Being a torrent duck, the loss of the cold headwaters around Tongariro National Park had a devastating effect on the bird's population. It has been claimed that the blue duck is especially vulnerable because it does not readily fly from one catchment to another. Therefore, the argument goes, once the habitat is degraded in a river, the population there is highly vulnerable. The strong territorial instincts of the blue duck mean that chicks fail to establish new colonies.

However, Electricorp's expert witness contended that, while the bird was threatened, there was evidence of it moving from catchment to catchment. This was based on observations of *one* bird. However, researchers point out it appears more likely that males only are travelling long distances; therefore new populations are failing to establish.

Chapple says there is no doubt the blue duck is fragmented and under pressure. He cites the example of the diversion of the Tongariro River in 1984. Beforehand the population was 32; today it has plummeted to five.

Despite the huge negative impact the diversion of the rivers' headwaters has had, the coalition does not advocate scrapping the Tongariro scheme.

"The nation has spent money on the scheme, we should be able to get something out of it. But Electricorp have shot themselves in the foot. Fernyhough said the decision on the Wanganui would affect all rivers, but that's nonsense.

"Had they accepted the catchment board's decision they would have had a pretty good deal, allowing them half the water from the western diversion," Chapple says.

He sees one benefit of the Planning Tribunal hearing being the higher standard of information presented than at the catchment board hearing. As a result the tribunal could more accurately judge the percentage of water that should be restored for ecological purposes.

Judge David Sheppard of the Planning Tribunal.

WHEN HE ARRIVED in New Zealand in 1968, Keith Chapple had little inkling he would be making national headlines 20 years later. Born in London in 1943, he cut short a philosophy and political science degree at Reading University in favour of travelling the world. His first 18 months in New Zealand was spent on a farm near Lake Waikaremoana, which he describes "as good an introduction as any to New Zealand." He was impressed by his contact with local Maori; years later the Maori community alongside the Wanganui River would prove invaluable allies.

From there he lived in Auckland where he met Brenda.

"We used to sit down at dinner parties and solve the world's problems," he recalls.

It was not until 1980 when he and Brenda moved to Kakahi, near Taumarunui, that theory was transformed into practice. The occasion was a developer advertising his intention to extract metal from the Whakapapa River. From his home on the terrace overlooking the river, he describes in his quiet and intense manner how locals formed Friends of the Rivers of Kakahi (FORKS). Well known artist Peter MacIntyre, who owns the house the Chapples live in as well as a neighbouring holiday cottage, was a founding member. His love of angling and artistic appreciation of the area's natural beauty had also led to his campaigning against the Tongariro power project in the 1960s. Then the term "environmental considerations" was relatively unheard of. However in the early 1980s FORKS won the day against the metal extractor and continued as a ginger group for several more years.

Chapple's next major issue became the 1984-86 campaign to create a forest park centred on Tongariro State Forest. It was the end of an era: in its dying days the Forest Service was still clearing native forest using taxpayers' funds. Even after the logging had stopped, officials continued to insist that they, and not the local people, knew what was the best use of the forest. The issue taught him not to trust bureaucrats and showed him they were not the servants of the people. Brenda proved her worth with her secretarial skills and determined advocacy.

"In our first meeting with the Forest Service they treated us very patronisingly. However Brenda took extremely accurate notes and at the next meeting we were able to go through each point of what they had agreed to. They didn't expect us to be so professional," he says.

In 1986 he became chairperson of Forest and Bird's King Country branch.

"When we arrived King Country people had a pioneering ethic but you couldn't blame them. Now we've become accepted for our views. Just look at the stance taken by the locals over the Wanganui – that's a real achievement."

PRAISE for Keith Chapple's abilities – from both supporters and opponents in the Wanganui case – abounds.

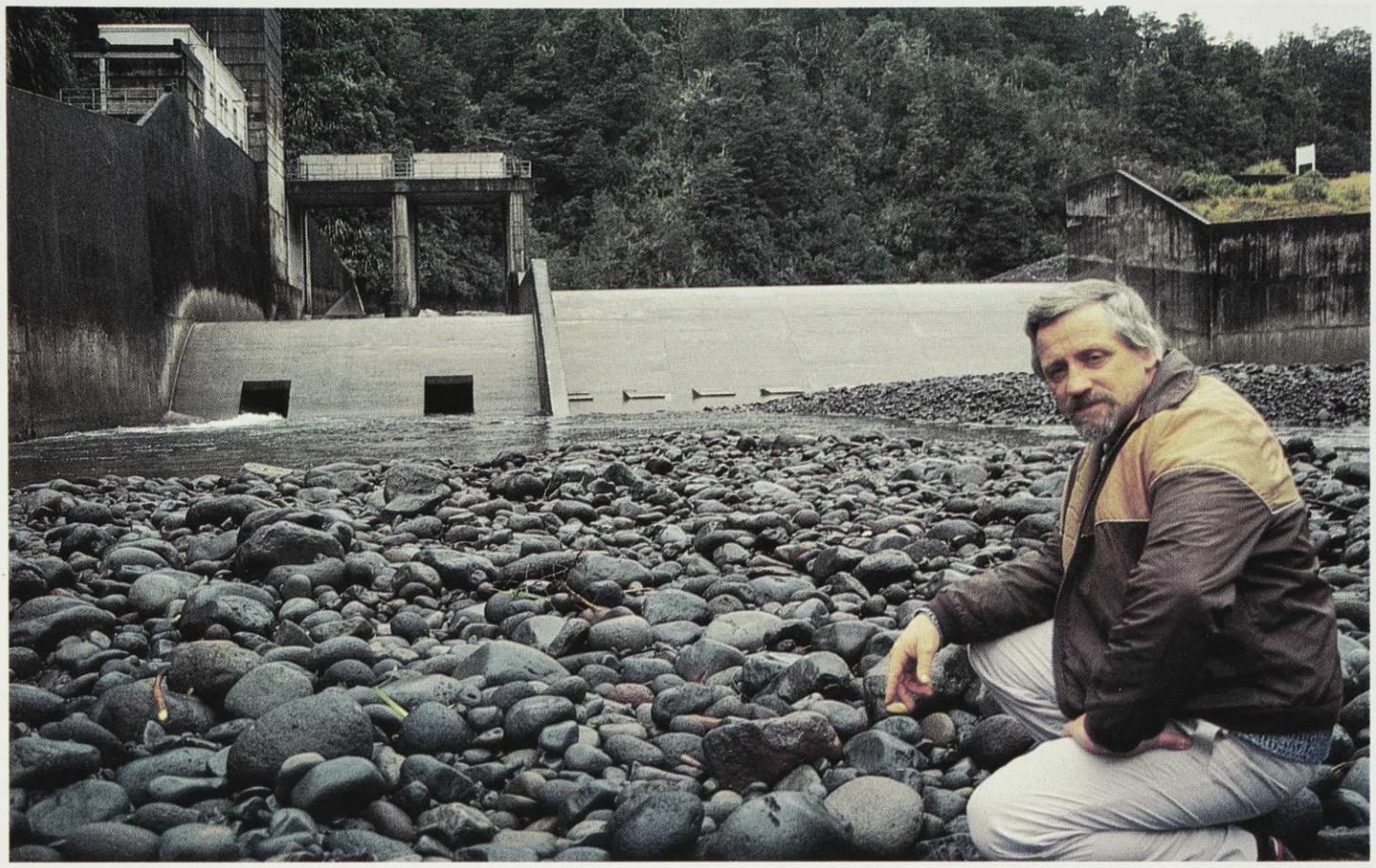
Massey University Geography lecturer Peter Horsley sees his role as crucial.

"He had the extra tenacity and a clear vision of what had to be done. Without him there would have been a different outcome. Keith was respected by all in the tribunal."

Horsley says that Chapple's role in bringing in local opinion to the tribunal hearing was especially important.

According to Jim Guthrie, the Wanganui case would never have got where it did if it had not been for Chapple's commitment. He had galvanised other, perhaps less committed people: "Once you've got on the train, you've got to take it to the station," is the way Guthrie puts it. The Dunedin lawyer – a member of the New Zealand Conservation Authority – also found Chapple "extraordinarily well read" with a taste for fine red wines (discovered on a trip to Hawkes Bay).

Electricorp officials are reticent about criticising Chapple. Public relations head Juliet



Keith Chapple at the Whakakapa River intake: "Ordinary people had their say."

Hensley applauds him for "putting the rights of local people into perspective. I think people do care very deeply about the environment."

She sees the Wanganui issue as part of a "huge debate" and the question that has to be resolved is whether the regional or national interest comes first.

Electricorp's staff lawyer Hilary Talbot is similarly reserved in her comments. She found the Flows Coalition to be very professional, especially in relation to the way it presented evidence. Ms Talbot credits Brenda for her role in this.

Privately Electricorp officials feel deeply wounded by the bad publicity the SOE has attracted as a result of the Wanganui case. A *Frontline* programme on the Wanganui River earlier this year exposed Electricorp's role on the issue to a national audience – an audience usually assailed by Electricorp's TV advertising campaigns promoting power use. As the spearhead of the Wanganui campaign, Chapple is held responsible by some for placing Electricorp in such an unfavourable light.

However he is unrepentant. He sees Electricorp as "the great New Zealand clobbering machine writ large" and with Forest and Bird staff and members is now embarking as coordinator of Forest and Bird's nationwide energy conservation campaign. Electricorp will be a major focus. On the one hand, he points out, the corporation has a production arm which claims to have an environmental policy; on the other it has a marketing arm which is hell bent on increasing energy usage, hence profits.

Electricorp's sophisticated PR machine has fought back with an expensive video putting its side of the story. Fronted by Peter Hayden, better known for his role as presenter of TVNZ's Wild South series, and scripted by cartoonist Tom Scott, the video has the smart PR title of *Our Future Generation*. Electricorp says the video is intended to portray the corporation as environmentally responsible and thus assist in its endeavours to be granted water rights for its power plants. The effect is somewhat spoiled, however, by the flier promoting the video – it features a photo of the Whakapapa River with the heading "environmentally sound."

Chapple believes that, with the threat of climate warming around the corner, the public is more likely now to get behind an energy conservation campaign than at any time in recent history.

"However, energy conservation does mean that people will have to change their lifestyles, and that will be difficult. For example, people on Auckland's North Shore will not take readily to messages that their sole passenger car trips will have to stop; neither will industry want to control energy plants and reduce CO_2 emissions."

He believes it is vital that the campaign places the emphasis on the positive rather than negative values of energy conservation.

One thing is for certain: if the Chapples put as much drive and commitment into energy conservation as they did into saving the Wanganui, such a campaign has a strong chance of being a success (Editor's note: at the time of writing the Planning Tribunal had not announced its decision).

Brenda Chapple: the "lynch pin of the Coalition."

Chathams Heritage Programme Takes Off

Forest and Bird volunteers visited the Chatham Islands earlier this year. Their mission: to fence forests, dunelands and wetlands as part of a push to encourage conservation on the islands. Mark Bellingham reports on progress.

Long time Forest and Bird member Stan Hemsley returned to the Chathams for the first time in 40 years to help with the project and to visit old time acquaintances. Photo: Mike Harding

Moriori tree carving, Hapupu National Reserve. Photo: Mark Bellingham

Driving posts – the hard way! Photo: Mike Harding

SHOWER CLOUDS scudded across the sky; the warmth of the sun was lost to a wind which felt as though it had just left Antarctica. It was one of those Chatham Island days one hears about on the weather forecast, but which locals assure you is a figment of the weather forecaster's imagination.

Despite the daunting weather, the Forest and Bird volunteers set out for Hapupu Reserve, 40 minutes away on the other side of the island. After negotiating various stray sheep and the fairways of the Kaiangaroa golf course, they headed into Hapupu, a bush remnant famous for its Moriori tree carvings on the large kopi (karaka) trees.

The group were enthralled by the tree carvings which for decades have been a stark reminder of an indigenous culture which was almost lost. It was then they began to understand the locals' scepticism about weather forecasts. Out of the wind it was pleasantly warm and the party could concentrate on their goal: to help Chatham Islanders to protect and restore their forests and natural heritage.

During the next week, numerous islanders told the mainland visitors how much forest had disappeared from the Chathams – even in their own lifetimes – and how this loss was linked to a loss of identity. All Chathams settlers – Moriori, Maori and Pakeha – had relied on the natural environment for shelter, materials and inspiration.

The Ngati Mutanga and Ngati Tama of Taranaki were lured to Rekohu (Chatham Islands) in 1836 by their tribesman Paki Whara's description of the islands: "It is a land of food – he whenua kai! It is full of birds, both land and seabirds of all kinds, some living in the peaty soil; with albatrosses in plenty on the outlying islands. There is an abundance of fish and shellfish; the lakes swarm with eels; and it is a land of the karaka berry...."

Today, with just 10 percent of the forests left and numerous bird species extinct, the Chathams is no longer the natural paradise it was painted 150 years ago.

Denise and John Sutherland run Chatham Lodge, which is hosting increasing numbers of people who come to appreciate the Chathams heritage. As John explains: "We've got to get the bush back and then native birds. We've got to conserve the fish, the shellfish and the crayfish so that tourists can gather them and eat them too. We've got to preserve our historical buildings and evidence of our past to be able to draw on the part of the tourist market that's interested in those things. If we don't do all this, we're going to be in more trouble. If we do, we're not only preserving an on-going income for islanders: we're also making this a more viable and more pleasant place in which to live and work."

The Forest and Bird party at Hapupu erected interpretation signs, which explained the importance of the tree carvings, the forest ecosystem and its birdlife. The trip also involved building a track and nature trail in Henga Scenic Reserve, behind Chatham Lodge and a walkway through Rangaika Reserve, on the Southern Tablelands.

The project marked the start of the Chatham Islands Heritage Programme – a co-operative effort by Chatham Island landowners, the County Council, Forest and Bird and the Department of Conservation to protect and enhance the natural and cultural heritage of the Chathams. In its first year the programme has received funding from the Lottery Grants Board for projects at Hapupu, Henga, Rangaika and fencing of 800 ha of wetlands and dunelands at Ocean Mail.

Next year the aim is to help a number of landowners fence stock out of their forests. With 1991 also being the bicentenary of the European discovery of the Chathams, we plan to publish a guidebook for the growing number of visitors to the islands.

The Forest and Bird volunteers, who came from Christchurch, were helped by the Wellington Conservation Corps to clear and mark the tracks in Henga and Rangaika Reserves. The Henga track, on John Sutherland's land, passes through some magnificent kopi strands, the last tree carving in Henga, and out to the limestone bluffs overlooking Long Beach.

Perhaps in the future the forests of the Chathams will have recovered and the sight of the endangered pigeon – New Zealand's most endangered bird – will be more common and the call of the tui no longer confined to the southern bush and outlying islands.

Quotations from A Land Apart *(Michael King and Robin Morrison, Random Century (NZ) Ltd).*

Wellington Conservation Corps members and the bust of Tommy Solomon, the last full blooded Moriori. Photo: Mike Harding

Five years after Forest and Bird helped fence the Hapupu Reserve, the regeneration is evident (left). Such protective measures are desperately needed in areas such as the Ocean Mail Reserve (right) which was fenced this year. Photos: Mark Bellingham

National Kea and Kaka Databases

Last year a request for information on sightings of kea and kaka was made through *Forest & Bird* magazine, with the intention of establishing a long term database looking at species distribution and status.

Since then I have received a range of sightings and this information has been put on to computer. Some of the main areas I have received sightings for so far are:

North Island kaka: Whangarei, Hunua, Urewera, Pureora, Kaimanawas, Tongariro.
South Island kaka: generally lower altitude valleys from Mt Richmond, Nelson Lakes, Victorias, Paparoas, Arthur's Pass, Western Alps, South Westland, Fiordland.
Kea: generally higher altitude ranges from Mt Richmond, Nelson Lakes, Victorias, Paparoas, Arthur's Pass, Remarkables, Mt Aspiring, Fiordland.

It is impossible to say whether either species is increasing or decreasing in distribution or abundance with one year's information. The data I have so far is sparse and tends to reflect the popularity of recreational areas. Also kea and kaka tend to vary between being very conspicuous to being quite secretive, making it difficult to say how many there are, particularly in the short term. I hope that by receiving sightings over successive years any trends will become apparent.

Please report any sightings of kea or kaka to me, stating accurate location (map reference preferable), altitude, date and time, number of birds. Send sightings to: Michael Wakelin, Science and Research Division, Department of Conservation, PO Box 10-420, Wellington.

The Green Paper Chase

The Royal Forest and Bird Protection Society is committed to recycling paper and making use of recycled paper if it is available and economically priced.

At our Wellington head office we recycle most of the paper that is used; we are attempting to find a source of recycled paper for photocopying and once our present supply of letterhead has run out, we will reprint more stocks on recycled paper. Our newsletter *Conservation News* is published on 100 percent recycled New Zealand paper.

Forest & Bird Magazine

Many Forest and Bird members are attracted to the Society through its colour magazine, calendar, diary and posters; many more are influenced by them. Unfortunately, the high quality, clay-coated glossy paper stock required to reproduce our magnificent photographs has not to date been made with a significant proportion of recycled paper.

Of those papers that do contain a proportion of recycled paper, the following problems make them difficult to work with: they have a low tensile strength for the high speed presses the magazine is printed on; and they tend to soak up more ink, leading to a loss of detail and a reduction in overall clarity. Paper mills are continuing to make progress on these aspects and it appears likely that a satisfactory glossy recycled paper will be available in the near future.

Some members and the public are under the impression that glossy paper is made from tropical rainforest timber. That is not true: in the case of *Forest & Bird*, for example, our paper is sourced from sustainable-yield Scandinavian plantation forests. Questions have been raised over the dioxins produced by bleaching glossy paper. We are investigating the use of dioxin-free paper for the magazine and have already used some for our last mail order catalogue and new membership application form (described as "environment friendly paper".)

Misleading Terms

The word "recycled" can be misleading. There are two types of recycled paper: that produced from post-consumer waste, or that produced from pre-consumer waste.

Post-consumer waste refers to paper that has been used and returned after recycling. It would have otherwise been dumped and is therefore the paper we would ideally like to use. Much of the high quality recycled paper available today contains little or no post-consumer waste. Instead it will usually be a combination of 50 percent virgin pulp, a proportion of paper mill waste and finally perhaps 10-15 percent of truly recycled material.

Pre-consumer waste refers to paper that has never left a mill: it may be a reject batch, or offcuts. In the past this paper has been dumped, but with the increase in demand for recycled paper, mills have seen an opportunity to market this as "recycled" paper. From an environmental point of view, it is laudable that mills are no longer dumping the paper; however, it is not reducing the waste stream to the same extent as paper made from post-consumer waste.

Overseas a labelling scheme is being developed to help clear up misconceptions. This will specify the percentage of new versus recycled fibre in the paper and the method of bleaching (or whether it is in fact unbleached).

The New Zealand Situation

The only recycled paper we know of made in New Zealand is from NZ Forest Products. It is the same brown coloured paper that is used in *Conservation News*. The disadvantage of this paper is that it makes print harder to read and does not reproduce photos very well. It was also not developed as a printing but as a packaging paper.

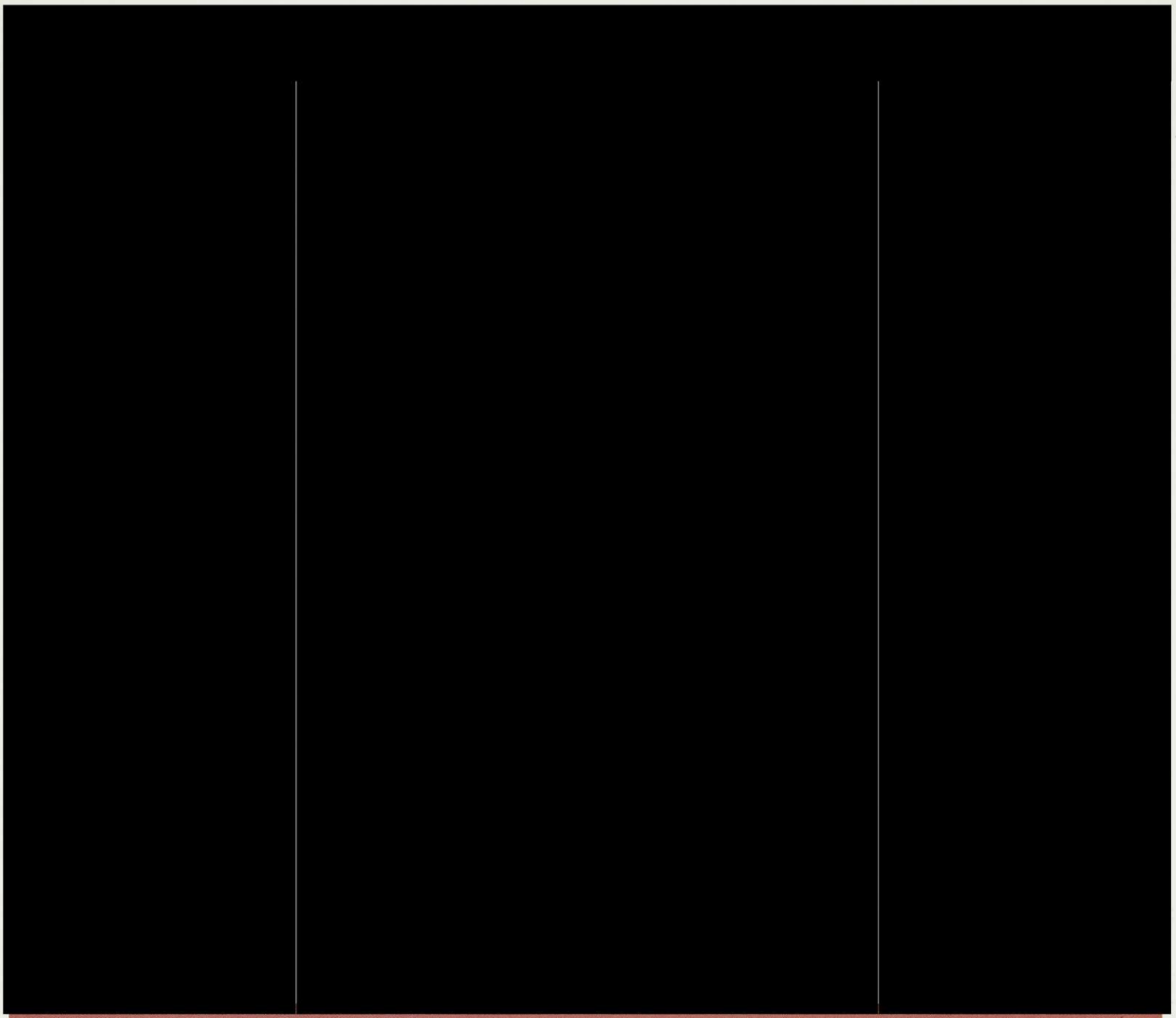
We have approached NZ Forest Products to ask them to produce white or off-white recycled paper. Their initial response was that the cost of a de-inking plant (approximately $100 million) could not be justified for the New Zealand market. We agreed but have asked them to produce non-de-inked paper – which would be acceptable to most.

Members can be assured that Forest and Bird will be doing its best to keep up with the latest developments in recycled paper in order to reduce waste as much as possible.

Subject & Author Index Vol. 21 No. 1-4

Subject

Authors



SOCIETY'S LODGES AND HOUSES

Ruapehu Lodge, Whakapapa Village, Tongariro National Park

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

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

Bookings and enquiries should be made from P O Box 631, Wellington (04) 728-154. The lodge is very popular, and bookings may be made six months in advance, if secured with a 20% deposit. The rates are reasonable, and fluctuate seasonally.

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

Turner Cottage, Stewart Island

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

William Hartree Memorial Lodge, Hawke's Bay

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

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

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

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

Tautuku Lodge

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

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

Tai Haruru Lodge, Piha, West Auckand

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

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

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

Different rates apply for winter and summer, for rates send a stamped, addressed envelope to the Booking Officer, Mrs B. Marshall, 160 Valley Road, Henderson, Auckland. Telephone 836-5859.

Waiheke Island Cottage, Onetangi, Waiheke Island

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

Different rates apply for winter and summer. For rates send an addressed envelope to the Booking Officer, Mr D. McLean, 55a Queens Drive, Oneroa, Waiheke Island. Telephone Waiheke 6494.

Bushy Park Lodge

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

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

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

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

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

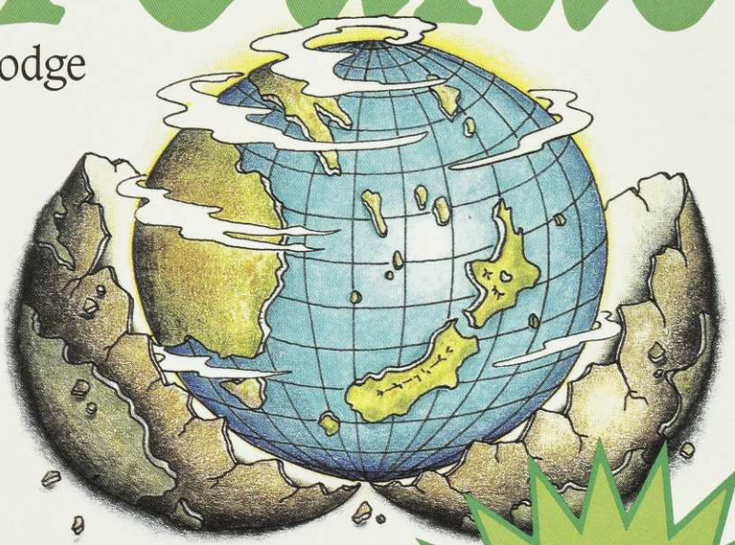
Bookings and Information leaflets: Manager, Bushy Park Lodge, Kai Iwi, RD8 Wanganui. Telephone Kai Iwi 879. STD (064) 29-879.

SPECIAL OFFER

TO FOREST AND BIRD MEMBERS!

The New Zealand Green Guide

by Peter Davis and Judith Hodge



This long awaited publication provides you with the most up-to-date information on how to lead an environmentally friendly lifestyle. Topics covered include:

- Personal Health
- Good Food
- Making More of Your Garden
- Sustainable Farming
- Stopping the Greenhouse Effect - Energy and Transport
- Health Before Wealth - Business and the Environment
- Environmentally Friendly Leisure
- Shopping
- Self Empowering

Author Peter Davis is an environmental consultant with Eco-logic with a background in organic gardening, naturopathy and green politics. Judith Hodge is a journalist specialising in health.

SPECIAL OFFER TO MEMBERS $19.95 (retail price is $24.95)

ENDORSED BY FOREST AND BIRD

The New Zealand Green Guide

Please send me _____ copies of *The New Zealand Green Guide* @ $19.95 each, plus postage and packaging $2.00 each.

Name _____

Address _____

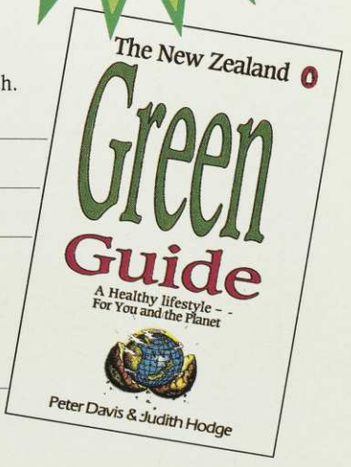
_____

My cheque enclosed $_____ or

☐ Visa ☐ Bankcard ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Expiry Date / / Signature _____

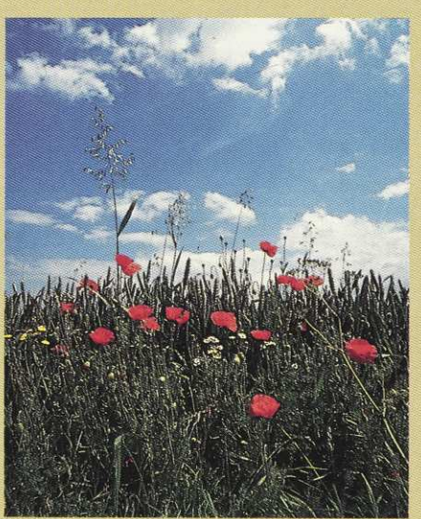
Please send orders to Forest and Bird Mail Order, PO Box 631, Wellington.



RECITAL

The complete picture on recycled paper from BJBall Papers

Recycled fibre has been used for many years in newsprint and packaging paper manufacture. Recently, technology and consumer demand have made it possible to produce high quality printing and writing papers from this same fibre source.



Companies are now starting to demand recycled paper because of its benefits to the environment, and its distinctive qualities.

Specifying RECITAL recycled paper for both internal use and for corporate literature is a good way of showing that an environmental policy is being implemented.

Available in letterhead quality wove and laid, bond, copier, graphic boards and kraft. Suitable for letterheads or labels, posters or point of sale. Specify RECITAL recycled paper and boards from BJBall Papers.

Phone toll free for more information or to have a sales representative call.

BJBALLPAPERS

AUCKLAND	WELLINGTON	CHRISTCHURCH	DUNEDIN
(09) 590-059	(04) 729-079	(03) 660-299	(024) 740-457
TOLLFREE	TOLLFREE	TOLLFREE	TOLLFREE

THE FIFTY RAREST BIRDS OF THE WORLD.

BLAKE L. TWIGDEN

THE BOOK

The subjects painted for this book are those most urgently in need of conservation.

It was this important, if sad fact, which took artist Blake Twigden on a mission to a variety of international locations to capture by reference sketches and film the 50 rarest birds in the world.

The W.W.F. International recommended that the list of the 50 rarest birds be compiled by Dr Nigel Collar, Deputy Director of the International Council for Bird Preservation. Both of these international authorities are deeply concerned at the probable rate of demise of these species. The text for this book has been written by Mark Cocker in consultation with Dr Nigel Collar. Portrayed over 212 pages, "THE FIFTY RAREST BIRDS OF THE WORLD" book also promises to become scarce. Produced in a strictly limited edition of 2000 worldwide it is hand sewn and bound in genuine New Zealand leather measuring 415mm x 315mm. Each book is numbered and signed by the Artist and the foreword written by Prince Bernhard of the Netherlands. Additionally each book is accompanied by a ready to frame numbered and signed art print of the "Whooping Crane" of North America, chosen from endangered species by the Artist. This book is for the student of ornithology, the connoisseur and the serious collector. "PISCES TROPICANI", an earlier limited edition book of Blake Twigden's marine subjects was oversubscribed.

THE ARTIST

Without optical assistance Blake Twigden's paintings seem vested with an extra dimension; in which the subjects appear almost to be suspended in the loosely rendered backgrounds. This luminous style coupled with the extraordinary detail achieved by the artist has produced a unique art which today can be found in palaces, boardrooms, galleries and private homes internationally.

This production has drawn on his experience of the last 24 years as a professional painter specialising in birds. There are cases among this collection of species where there remains only one living example known. In these cases the resources of the British Museum at Tring have been invaluable to him. He works in oils on wood board, believing the effects he achieves are not possible in any other medium.

At 45, Blake Twigden continues to travel the world for his research and subject matter but prefers to work in his native South Pacific where, he says, the light, fewer distractions and the abundant natural flora and fauna enhance his output.

OSBORNE EDITIONS INTERNATIONAL
P.O. BOX 1768
AUCKLAND, N.Z.

This strictly limited edition publication is currently in progress and as promotion is worldwide we recommend you order now to avoid disappointment. Become a privileged owner of an exclusive, informative and artistic production, portraying a major issue of our time. Your book will be hand delivered by courier to your address.

From the proceeds of the sales of the book, a substantial donation will be made to the International Council for Bird Preservation, Cambridge U.K. to assist in the protection of endangered species.

Osborne Editions International,
P.O. Box 1768
Auckland, N.Z.

ORDER FORM

Please accept my order of ___ copy/copies of the limited edition book, 'The Fifty Rarest Birds of the World'' by Blake L. Twigden.

If still available, please reserve limited edition number ___.

I understand that if this order is received on or before November 20th 1990, the pre-publication price will be $2590 after which time the retail price is $3050.

☐ Cheque enclosed or ☐ Please debit my Mastercard/Amex/Diners Club/ or Visa Card (delete as applicable)

Card No.___

Name___ Address___

City___

Photocopy of order form is acceptable