Volume 22 Number 4
November 1991

Forest & Bird

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Cover: *A dazzling array of forest and marine wildlife adorns the Forest and Bird Head Office at 172 Taranaki Street in downtown Wellington. The mural, created by Chris Finlayson, displays giant-sized images from the kauri and rata of the north, to the takahe and Mt Cook buttercup of the south. There is even one of New Zealand's oddities – a carnivorous land snail from North West Nelson. Formerly the Wellington City Mission, the head office premises also contain a shop and information centre – "Branches". Forest and Bird head office staff welcome visits from members.* Photos: Colleen Tunnicliff

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Forest & Bird

The costs of conservation

WHEN TIMES ARE TOUGH people stop spending. Now we have a Government of similar mind. State conservation, like other Government responsibilities, is vulnerable to funding cuts.

Right now many New Zealanders are developing a siege mentality; holding out till better times. In the interval, our defence of the environment may well involve suffering continued bombardment from the advocates of development. So, instead of securing the future of our forests – and wetlands, high country and oceans – conservationists are also spending energy redefending some of the battle fields of the 1980s.

It is manifest that, politically, some West Coasters don't appreciate the meaning of "stewardship land" managed by the Department of Conservation. During a recent series of public meetings, held by the New Zealand Conservation Authority, to establish local interest in a North West Nelson National Park, politicians from west of the main divide spoke often about opening the stewardship lands for development. They chose not to acknowledge that such an option no longer exists. When former Forest Service and Lands and Survey blocks were allocated to the Department of Conservation, they achieved a legal status akin to conservation reserves. Yet development interests on the West Coast still look longingly at the cash potential of those hills, often ignoring the potential income from nature tourism based on the conservation estate.

One of the criticisms of the Department of Conservation's management of such areas as North West Nelson is that the State is not a good neighbour. Nearby farmers complain, justifiably, of the risk of tuberculosis infection from possums crowding the public estate. Yet it is estimated that an effective wild animal control programme would cost more than half the conservation budget annually.

Some have said that if effective control of pests is not made shortly, there is some risk that large areas of native forest could be diminished to the status of scrublands within fifteen years. Such a problem is a national one, transcending conservation politics.

There appears to be no more public money for conservation just now. That makes Forest and Bird's task all the more vital. We need to take a leading role in the debate about the future of public lands.

Above all, we must continue to defend the idea of conservation as a public good, not a cost-accountable resource to be sold off. Without a secure environment we run the risk of destroying the world for our children. Hard times are not good times to reassess the value of what the wider community has accepted in recent years as socially responsible.

The environment is not a commodity to trade off. The solutions to our present economic dilemmas must lie beyond our investment in the environment of the future.

Gordon Ell
President

C·O·N·T·E·N·T·S

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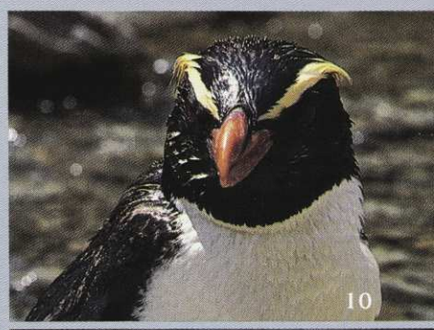

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Fisheries research gets a boost

THE ARRIVAL in July of the Ministry of Agriculture and Fisheries' new vessel *Tangaroa* could signal a new era for the conservation of New Zealand's fisheries. Its arrival marks the end of seven years of departmental wrangling, which saw Treasury veto funding for the vessel several times. Surveys by the 70 metre, 2282 tonne, Norwegian built vessel will greatly improve information on rock lobster, squid and fish stocks, such as orange roughy and hoki. This should allow better management of our precious fisheries.

New Zealand's 200 mile exclusive economic zone is the fourth largest in the world. In the past, fisheries research has been hampered by the lack of vessels with modern scientific equipment able to work in deep water down to 2000m. Serious depletion of orange roughy stocks may have been avoided with better research on the species and a more cautious approach from the Government in setting quotas.

The Government is showing more concern for protecting New Zealand's fisheries by buying the *Tangaroa*. It has also been cracking down on widespread illegal commercial fishing activities, with recent arrests in the rock lobster, paua, scallop, snapper and orange roughy fisheries. However, it needs to show far more commitment to marine conservation.

There is an urgent need to integrate the wider effects of fishing on the marine environment into fisheries management. Additional exploited species, such as southern blue whiting, should be added into the quota management system, and the Government needs to take more notice of scientists' warnings about over-fishing. Stopping the deaths of hundreds of fur seals and Hooker's sea lions, and thousands of seabirds should be central to fisheries management, as should research on the effects of fishing on complex marine food webs. The Minister of Fisheries' September decision to increase the hake quota off the West Coast and east of the Auckland Islands, could see more fur seals, sea lions and seabirds killed by trawlers.

One of the best ways of improving fisheries management would be to greatly increase funding for MAF's scientific staff – particularly the observer programme, which largely monitors catches of foreign deep-water vessels. In all fisheries, the most selective methods of fishing should be encouraged – indiscriminate fishing methods like set-netting should be outlawed.

Alan Tennyson

Information gathered by MAF's new research vessel Tangaroa *could greatly improve conservation of New Zealand's precious fish stocks.* Photo: A Blacklock

Sharks under threat

IN EVERY OCEAN in the world sharks are coming under increasing pressure from expanding commercial fisheries. About 400 species of shark are known, ranging from the giant 12m plankton-feeding whale shark to tiny 20cm deepwater species. Only about twenty species are fished commercially and little is known of their biology.

Earlier this year, a conference on shark conservation was held in Sydney and attended by thirty three international delegates and 130 shark enthusiasts. The conference highlighted the vulnerability of sharks to overfishing. Most sharks are long-lived (12-70 years), slow-growing, and produce relatively small numbers of young each year.

Specific recommendations to assist the conservation of sharks were agreed to by the conference. If adopted in New Zealand several changes to fisheries management would be required:

- Known shark nursery grounds would be closed to fishing – a conservation measure of particular importance for heavily exploited inshore species, such as school shark and rig.
- The practice of "finning" sharks would be outlawed and it would be a requirement for all sharks to be brought in and sold with fins intact. "Finning" is commonly carried out by Asian tuna longliners who catch more than one hundred thousand sharks in New Zealand waters each year.
- Quotas would be set and fisheries management plans established for all shark species. Currently the catch of only three species – school shark, rig and elephant fish – is controlled by quotas in New Zealand waters. International quotas would be needed for many wide-ranging pelagic species, such as blue and mako sharks. More than two million blue sharks are killed each year in the North Pacific by drift nets set for squid.
- A minimum size for big game fish would be imposed so that immature sharks would be returned to the sea.

Shark fins hanging out to dry on the Japanese tuna longliner Kompira Maru No.1 in Auckland last year. The fins are taken for shark fin soup with the shark bodies often discarded. The trade is seriously depleting shark populations worldwide. Photo: NZ Herald

Sharks are a vital and fascinating part of the marine ecosystem. They are top-level predators, and the decline in their numbers may be adversely affecting the whole marine ecosystem.

Alan Tennyson

The Banks Peninsula track

BANKS PENINSULA has long been a special place for many New Zealanders, drawn to its two superb harbours and its picturesque rugged countryside.

First discovered in 1770 by James Cook and named after Joseph Banks, botanist on the Endeavour, it was thought to be an island until 1809.

Holiday-makers from as far away as Auckland spend their summers here, many of them in the charming seaside village of Akaroa, the town that so nearly became a French colony in 1840 and still quietly states its romantic past in street and family names, old grape vines and quaint, rose-covered cottages.

The south eastern corner of Banks Peninsula has always been the most remote; farmed by a handful of isolated families and, up until the last few years, seldom visited by outsiders.

When the whole east coast of New Zealand was hit by one of the worst droughts in living memory (1989), the rural populace had to look to diversification as a means of survival. Those separated from civilisation by high, rough and sometimes snow-covered roads were very receptive to any ideas not involving travel. When a four-day walking track was mooted, ears pricked up and a business was on the drawing board. The result is a charming mixture of stock and horse tracks, open farmland, musterers' huts, old cottages and superb coastal scenery, all put together with the individuality of eight different landowners and mixed with a wonderful sense of history.

The 30 kilometre track has two shorter sections giving time for bird-watching, swimming, fishing and beachcombing.

Sadly, a common sight these days. Local DoC officer, Alistair Hutt, has been a tower of strength in working out strategies to combat this needless slaughter by ferrets. Trapping and poisoning programmes are underway. Ferret-proof fencing around one colony is a possibility. Photo: Lester White

Increasing awareness of the plight of the little blue and white-flippered penguins has several farmers out hunting ferrets. The results have surprised experts and added positive evidence as to why these birds are on the decline. Mustelids have taken up to 90 percent of chicks and 5 percent of adults in the colonies in the area this season. Photo: Lester White

During the 89/90 season there was a 35 percent decline in numbers of yellow-eyed penguins on Banks Peninsula due to unidentified causes. Resting from breeding this season has enabled them to regain strength and condition, lifting hopes for 91/92. Photo: Lester White

Gullies filled with lowland forest, small streams and waterfalls are very special features. One beautiful area of red beech is the pride and joy of that well-known bike-riding botanist and conservationist, Hugh Wilson of Hinewai. Not to be taken lightly, the track has some testing sections, so good boots and wet-weather gear are essential. Hut accomodation is provided.

In setting up the track, great care was taken to see that flora and fauna were not adversely affected by passing walkers.

The 1989/90/91 seasons were telling ones for local bird populations, with fluctuations in food supply, disease and predators all taking a toll. Despite this, the organisers are enthusiastically preparing for the track's third season, after seeing a number of positive benefits for walkers, farmers and wildlife. For contact details see advertisement on the Bulletin page.

Mark Armstrong

Kahawai update

A QUOTA FOR KAHAWAI was finally announced in October 1990, after years of controversy over whether commercial boats should be allowed to plunder kahawai stocks prized by recreational fishers. Amateurs have been furious about the continuing decline in kahawai numbers and the lack of action by MAF to control commercial exploitation (see *Forest & Bird* May 1990).

However, the amateurs are still not satisfied. The commercial quota of 6500 tonnes was a political decision by the Minister of Fisheries which lacked any scientific reasoning.

The kahawai quota of 6500 tonnes exceeds the commercial kahawai catch for every year up until 1987, when kahawai were already in trouble. The effect of a 6500 tonne quota is to sanction the continued destruction of kahawai stocks by the three purse-seine companies (Sanford's is the largest). The commercial quota will also be shared amongst longliners, set netters and trawlers.

A total commercial quota of 4000 tonnes would be more sensible. No more than 1000 tonnes should be allocated to commercial interests off the northeast of the North Island (Quota Management Area 1), where there are nearly 200,000 recreational kahawai fishers. Recreational fishers could do their share to conserve kahawai stocks by adopting a four kahawai per person daily limit. The wasteful and indiscriminate practice of set netting for kahawai should be outlawed.

Another major problem is looming for the kahawai fishery. Many are caught as by-catch in the purse-seine jack mackerel fishery. Unfortunately, the Quota Appeal Authority recently increased the mackerel quota for the west coast of both islands by a staggering 60 percent to 32,000 tonnes. This will lead to many more kahawai being taken as an incidental catch.

Recently a further 500 tonnes of kahawai was allocated as by-catch in the mackerel fishery. Recreational fishers are alarmed – they see no reason why this increase has been allowed. One solution to the by-catch problem in the mackerel fishery is to deduct the tonnage of kahawai caught from the operator's mackerel quota for the next season. A steep penalty for the dumping of kahawai would be required.

We are running out of time to save the kahawai fishery. If we don't act now our kahawai will do what they did in West Australia because of over-fishing – disappear.

Mark Feldman

Westland black petrel

LARGE BLACK PETRELS crashing through the forest canopy as they return to their burrows, then calling and displaying are sights few have seen. However, the Westland petrels are set to become an important tourist attraction for the West Coast. Forest and Bird members, Bruce Stuart-Menteath and Denise Howard have built a boardwalk and viewing platform that allows easy viewing of the petrels at a nesting colony south of Punakaiki.

The world's only colony of Westland black petrels is scattered along the coastal ranges from Punakaiki to Barrytown. Typical of petrels, Westland blacks spend most of their lives at sea, returning to land only to breed. They are the largest burrow nesting petrel and only come ashore at night. At sea they range as far afield as South America and Australia.

Westland blacks are a powerful and aggressive species. This has allowed them to survive on the mainland despite some losses to introduced predators such as cats, dogs, stoats and rats. Most petrel species now breed only on relatively inaccessible offshore islands because of predation on the mainland. In the past, petrel colonies like the Westland black colony would have been common in coastal areas throughout much of New Zealand.

Westland black petrels preparing for take off. Photo: Bruce Stewart-Menteath.

Visits

The earliest birds come ashore in March. The colony is most active from April to August but chicks can be seen until November. Visits to the colony take two hours, beginning 30 minutes before sunset and are available only by arrangement with Paparoa Nature Tours. All visitors are accompanied by a guide.

For more information contact: Paparoa Nature Tours, PO Box 36, Punakaiki, West Coast.

The proposed Barrytown Flats ilmenite mine will be New Zealand's largest mine. Photo: Alan Tennyson.

Mining threat

North Broken Hill Peko's proposal to mine 1300ha of the Barrytown Flats alluvial ironsands for ilmenite has recently hit the headlines. Local people are concerned that fragile wetlands and coastal areas will be destroyed by the mine, a scar created on the doorstep to the spectacular Paparoa National Park, and their idyllic rural area transformed into a large industrial mine site.

The giant mine, which would be New Zealand's largest by far, also directly threatens the future of the Westland black petrel. Most of the petrel burrows are protected within the Black Petrel Nature Reserve and Forest and Bird's adjacent petrel reserve gifted to the Society by Fletcher Titanium before they sold the ilmenite project to Broken Hill.

The mining application area comes within 20m of nesting petrels, and the 25m high processing plant is to be sited directly in the petrel flight-path to the colony. Forest and Bird's West Coast branch has opposed the proposed plans to mine so close to nesting petrels and objects to the siting of the processing plant. Petrels will be attracted at night to the lights of the plant and mining dredges. They could be killed by flying into these structures. Fledglings will be especially vulnerable on their first flights from the colony. Increased human activity around the plant may result in greater numbers of dogs and cats being in the vicinity of the petrel colony and increased levels of predation. It remains to be seen whether the mining proposal could be modified to meet the environmental concerns.

Alan Tennyson

Electricity efficiency clarified

A GREAT DEAL OF CONFUSION surrounds the subject of energy-efficient light bulbs. The August *Forest & Bird* article on 'Getting the green light' only added to the confusion according to Stuart Bridgman, an energy management specialist.

While the electronic lights recommended by Forest and Bird are about 20 percent more efficient than the light bulbs David Bellamy is promoting for Electricorp, the 'power factor' mentioned in the item is a red herring. Power factor has very little to do with efficiency and something of concern only to big consumers of electricity. If an appliance uses 100 watts, you pay for 100 watts (times the hours of use, of course) whether its power factor is 1 or 0.1.

Forest and Bird notes that on a straight cost comparison it is likely that the electronic light bulb has a longer payback period, but it will also help put back the need for expensive new power stations that all consumers will have to pay for.

Another advantage of the electronic bulbs that is only just starting to receive attention is the total absence of flicker, either visible or invisible. In a controlled experiment in England using the bulbs as a light source, people reported a 50 percent reduction in the incidence of headaches or eyestrain.

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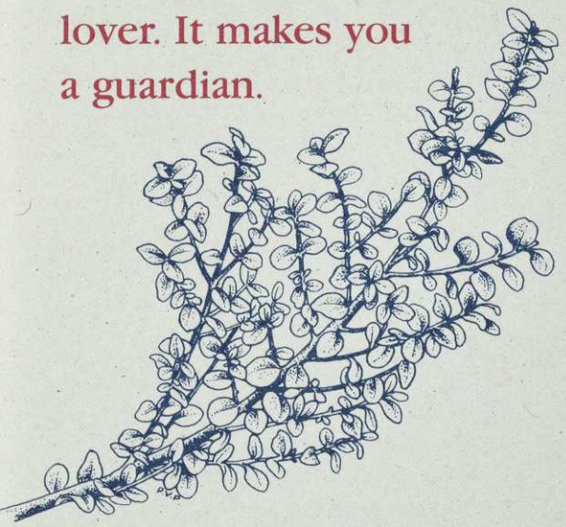


FOREST & BIRD

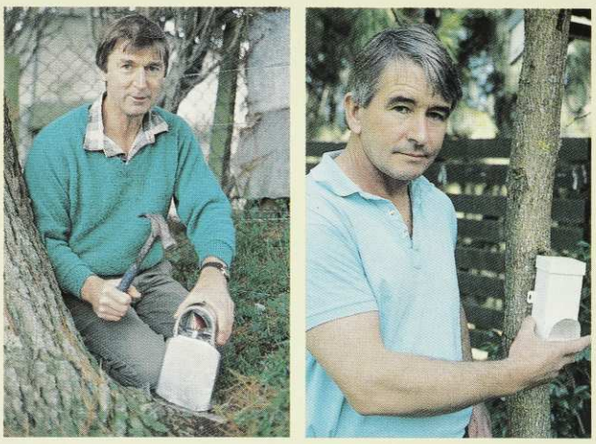
the luscious rain forest
the endless beaches
the searing deserts
the bustling cities
the silent mountains
the romantic islands

but where can I stay?

Possum Busters

THE "POSSUM BUSTERS" stand at the 1991 National Fieldays at Mystery Creek near Hamilton was probably the giant exhibition's most popular attraction. Thousands of people visited the fur-lined stand to learn about possums, the damage they do, the uses to which their fur can be put and how to skin them. The competition to find better possum traps and bait stations probably gained the most interest. Forest and Bird put up a large share of the prize money and first prize was taken jointly by James Burke of Katikati and Roger Smith of Waihou.

Possums and Roger Smith have a long association. The pest destruction officer with the Waikato Regional Council has 30 years' experience in pest destruction. He began working on the trap in March this year and since winning the award has carried out further refinements and field trials.



Roger Smith (left) and James Burke (right) with their award winning possum trap and bait station. Photo: Elaine Fisher

"It's getting close to the stage where I can look at producing the trap commercially. If it can go on the market for around $15, I believe it will be very viable," he said.

Roger designed the trap to meet the contest specifications. It is light, cheap to make, made of durable materials and about the same weight as the old gin traps. Unlike the gin traps, however, it kills instantly.

"I can't see the time returning when hunters can make a living from possum trapping, nor do I think the bounty system on tails will come back. We are able to control possums reasonably well on well farmed and managed land, but their spread in native bush is going virtually unchecked.

"If New Zealanders want their children and grandchildren to enjoy our native bush and its wildlife, I think they are going to have to make a personal stand to control possums."

Roger believes people should regard using possum traps (preferably his, of course), in much the way they would mouse traps – to control a pest. However, should the fur market pick up, Roger's trap should prove attractive to hunters. His traps weigh about the same as gin traps, but kill the possum instantly, meaning a trapper does not have to wait for the body to go cold before skinning it.

"With gin traps, the hunter had to work his line, kill the possum, hang it up to go . cold and then skin it."

A concern for the environment and a background in possum hunting lead James Burke to enter the "Possum Busters" competition.

"I read about the contest in a rural paper and that set me thinking. I enjoy designing and believed that there was a need for a cheap, efficient way to control possums," he said.

The design and production of the PVC bait station took about two months and at the same time James worked on a kill trap.

"In fact, I thought the kill trap had more chance in the contest than the bait station. However, I believe there will be a ready market for the station, once it is produced commercially."

Recent developments in the effectiveness and availability of poison for killing possums will mean the stations can be used by anyone, not just licensed operators.

"ICI have just produced a poison in pellet form which can be used by unlicensed people and these are ideal in the bait station."

Lightweight, easy to see and easy to fix on trees or to fences, the bait stations are designed to protect the bait from the rain. They pose no threat to ground birds, even nosy ones like wekas, as they are set well out of the reach of these birds.

James believes the bait station will appeal to farmers, orchardists and city dwellers because it is clean and easy to use, light to carry and quick to fix in place. It can be used to control rats and mice too. A special mould would be required to produce the stations commercially, but once the dye was made, production would be quick and cheap per unit.

"If I am able to produce them commercially, I intend giving a small portion of the proceeds from each sale to Forest and Bird."

Elaine Fisher

W·O·R·L·D W·A·T·C·H

New evidence on ozone depletion

RECENT DATA collected by NASA reveals that ozone depletion over the last decade has been occurring at twice the rate, over a wider area and for a longer period of time than previously predicted.

While ozone loss is highest in the southern hemisphere, the extent of depletion in the northern hemisphere has also reached dangerous levels with measurements over Britain last winter recording an 8 percent thinning of the ozone layer which persisted into early spring.

Under the terms of the Montreal Protocol, an international treaty designed to halt ozone destruction, production of CFCs is to continue for another 9 years and the manufacture of their substitutes, HCFCs until 2040. The HCFCs still contribute to ozone depletion and global warming. The industry, dominated by multinational companies DuPont and ICI, continues to pour millions of dollars into research and development of their use, while proven non-depleting alternatives like ammonia and propane – which do not offer the same profits as they cannot be patented – are ignored.

Source: The Ecologist

It's not easy being green

HOT ON THE HEELS of the helpful green guides with advice on the simple things you can do to go easy on the earth, comes a more daunting recipe to ecologically responsible lifestyles entitled "50 difficult things you can do to save the Earth".

Some of the more challenging items on the list are: dismantle your car, don't have children, have your power supply disconnected, plant a tree every day, don't own pets, liberate a zoo and try to live on the world average income of $US1250 a year for just a month.

Source: Earth Island Journal

NZ flatworm - wanted dead or alive

A FLATWORM native to New Zealand, *Artioposthia triangulata*, has shot to notoriety in Ireland and Scotland as the arch enemy of the earthworm. The above caption featured on a recent poster distributed amongst garden societies in Scotland as researchers attempt to map the spread of the murdering import. Thought to have been accidentally imported into Ireland in 1963 in a shipment of potted plants, the flatworm has flourished in the cooler northern climate. Back at home its inability to survive in temperatures above 20°C confines it to forested areas, but in Britain it seems to be adapting to a wide range of habitats and could pose a major threat to horticulture and gardening. One study of a field near Belfast showed a 75% decline in earthworm numbers three years after the flatworm was introduced.

Source: New Scientist

B·I·R·D·S I·N·T·E·R·N·A·T·I·O·N·A·L

Pelicans threatened

LATE LAST CENTURY, the white Dalmatian pelican – the world's largest – numbered in the millions in Europe and Asia. Since then, the impacts of habitat drainage, nesting disturbance and persecution by fishers have drastically reduced its population. Only a few hundred pairs remain.

This year, 35 pelicans were discovered in two colonies in Albania. Unfortunately, 36 eggs in these nests were either sterile or pricked, presumably by nearby fishers who consider these birds to be competitors. Karavastas lagoon, where the pelicans were discovered, is Albania's most important and last intact wetland which meets the criteria for Wetland of International Importance, according to the Ramsar Convention. It is currently threatened by plans to reclaim the lagoon for agriculture. ICBP are seeking the inclusion of the lagoon in the adjacent Divjakes National Park.

Albatross assisted

THE SHORT-TAILED ALBATROSS once nested in huge numbers on southern Japanese islands, but by 1949 it was considered extinct as the result of 60 years of relentless hunting by feather collectors. Fortunately a tiny colony, of less than fifty birds, was found on Torishima Island in 1951 and the Japanese Government gave full protection to the species. Conservation management of the colony has been successful and the population now stands at almost 500 birds.

In 1988 a second tiny nesting colony was confirmed at the Senkaku Island group, where adults had been seen since 1971. In March this year at least ten chicks were at the second colony, which is now estimated to consist of about 75 birds.

Gulf aftermath

THE OIL SPILL resulting from the Gulf war is the world's worst at about 7 million barrels. Thousands of grebes and cormorants have been killed, and in some areas up to 75 percent of wading birds, particularly plovers, godwits and sandpipers, were affected by oil. A total of 20-50,000 birds of 53 species were thought to have been oiled by March, but significant numbers of migratory species were still to arrive in the Gulf. There is particular concern about the future of the Socotra cormorant as its numbers were already in decline before the war.

The war oil spill has highlighted the threats faced by birds in the Arabian Gulf. The marine ecosystem continues to be threatened by serious oil spills, which are commonplace. Rapid coastal development in Saudi Arabia has already grossly modified up to 40 percent of the Gulf coast.

Antshrike rediscovered

ICBP report that the western antshrike, a complete mystery for more than fifty years, has been rediscovered in eastern Ecuador. At least seven birds were found in January 1991 at altitudes greater than 1600m on the undisturbed forested slopes of a volcanic peak, Mt Sumaco.

Chinese gull habitat destroyed

IN CHINA Saunders' gull is seriously threatened by reclamation of its wetland nesting sites for shrimp, reed and rice farming. The full population is estimated to be 2000 individuals. One nesting site of about 130 pairs was driven out by reclamation last year, while the largest known nesting colony of more than 1000 birds is scheduled for development in a project funded by the World Bank. Only one other nesting site is known.

At Watkins, we've searched the world to pick flowers for you.

Gardeners are always looking for exciting new plants. So Watkins is proud to introduce the Heritage Selection of hybrid seeds. Each represents the very best and latest in plant breeding from around the world. Each is unique and is bred for outstanding characteristics in flower size, colour, plant form, and resistance to pests and diseases.

The first to be released is the gold-medal-winning hybrid Dianthus 'Strawberry Parfait'. It is the finest eyed Dianthus available, and not only delights with its beautiful berry colour but is extremely dense flowering.

Other Heritage Selection introductions are just as exciting. There'll be an award winning Vinca, 'Princess in Pink', a gorgeous and versatile Achillea 'Country Lace', a stunning Pansy 'Antique Shades', a hybrid Impatiens 'Pink Swirl', and a very exciting Dwarf Lavetera 'Pink Loveliness'—a flower which really does live up to its name. And that's just the beginning. More Heritage Selection seeds will follow later.

One new Heritage Selection seed will be released each month and you'll find them on their own stand at your garden centre.

Potting mix: A head start for pot plants.

Watkins new formulation potting mixes.

The right potting mix is vital to the success of pot plants. Many are sandy and drain too quickly. Others don't drain quickly enough and can become water-logged.

Watkins research has produced a range of potting mixes with the ideal drainage, yet which still provide and retain plenty of water and nutrients for plants in either conventional or terracotta pots. Not only that, but Watkins potting mixes contain Osmocote® Plus controlled release fertiliser with trace elements to provide complete balanced and healthy feeding for your plants.

Look for Watkins potting mixes in their attractive new packs at your local garden centre.

Just add water.

A good watering system is essential in the New Zealand summer. So we looked to Italy to source what we believe is the best designed home garden watering system available.

Claber is an advanced Italian design which not only works beautifully, but looks attractive with it. Its quick-click connector has been tested to an amazing 1.5 million plus lock-unlock cycles without failure, and the design incorporates many ingenious and practical touches which make working with Claber a delight.

Claber is 100% rust-proof, and is totally compatible with other click-on systems in use in New Zealand.

Watkins

At home in the garden.

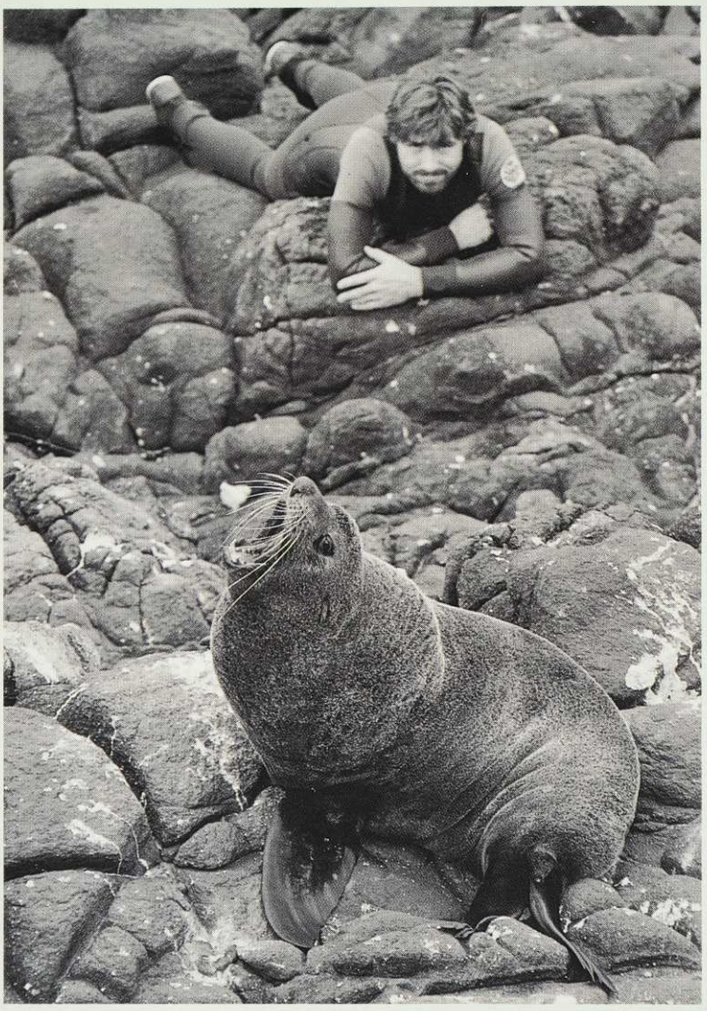
CL/NM W1

BRANCHING OUT.....

Fur seals at Muriwai

GETTING DRENCHED by wild west coast surf and jumping from boats onto a rocky island to spend an hour among a group of bad tempered fur seals is not everybody's idea of fun, but this is exactly what a group of enthusiastic members from our Auckland branches and volunteers from the Environment Centre have been doing over the last few months. Their aim is to collect data on one of the northern most colonies of New Zealand fur seals *(Arctocephalus forsteri)*.

Oaia Island, a wet and rough 1.5 km boat ride off Muriwai Beach, is home to a large number of Australasian gannets, and becomes overcrowded when at least 130 seals arrive during the winter months. Little is known about where the seals come from or how many use Oaia Island between May and November. The Forest and Birders are carrying out counts of the seals present at Oaia and observing their behaviour over the next few years. Information will be analysed to provide a useful picture of changes in this New Zealand fur seal population.



Volunteer Glenn Edney observes one of the fur seals on Oaia Island north-west of Auckland. Photo: New Zealand Herald

Waiau River water rights

WHILE THE SALE of the Manapouri Power Station has been grabbing the headlines, another side issue has been developing over the renewal of its water rights. Southland branch members have been sitting on the Waiau River Working Party along with other community groups and Electricorp to determine how much water gets diverted from the Waiau and Mararoa Rivers to augment Lakes Manapouri and Te Anau water levels.

Apart from Electricorp, nearly everyone seems to want sufficient Mararoa water to be returned to the lower Waiau River, instead of most of it going through the Manapouri power station and into Doubtful Sound. Branch spokesperson Christine Henderson says that if power users can save the equivalent water flow from conservation and/or energy efficiency measures then "we have a chance to change not only the course of a river, but also history. If we can do it on the Waiau we can do if for all rivers".

Bird minders guard New Zealand dotterel

SPECIAL "BIRD MINDERS" have been on hand at Omaha Spit and Stillwater, in North Auckland, since September, protecting threatened New Zealand dotterel while they breed. Local residents and volunteers from Mid-North and Hibiscus Coast branches and the Auckland Environment Centre have been spending weekends at these beaches giving out information leaflets and explaining the need for temporary restrictions on the use of these areas.

The total population of NZ dotterels has been declining since the turn of the century. Coastal subdivisions, dogs, vehicles and predators have caused numbers in the upper North Island to drop to only 1400. There are 13 pairs of NZ dotterel nesting at Omaha Spit and five pairs at Stillwater and the future of these rare birds lies in their ability to breed without disturbance. Minders have been asking people to stay outside fenced areas and to keep dogs on a leash so that the dotterels can nest in peace. If the adults are disturbed from their nests, the eggs grow cold and the embryo chicks die.

The success of the bird minding programme will be known in December as hopefully some of the adults will have raised chicks.

New Zealand dotterel "bird minders" at Omaha Spit. From left, Claire Stevens, Northern Regional Field Officer Fiona Edwards, and Val Hollard. Photo: New Zealand Herald.

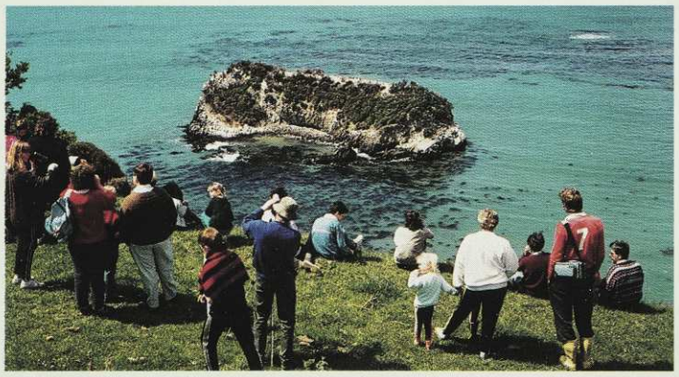
Compiled by Lisa Rae

Forest & Birders, with local residents protecting Papamoa beach from the Tauranga District Council. Photo: New Zealand Herald

Outfall draws a storm of protest

NINETY Forest and Bird members from Te Puke and Tauranga, plus local residents, staged a beach protest over the proposed stormwater outfall at Papamoa. The 1200mm drain would be in the middle of an area designated as wilderness by the Tauranga District Council and would create an eyesore along the unspoilt beach.

A petition was sent to the District Council asking it to consider other options for stormwater disposal, including re-creating the natural drainage system which existed behind the beachfront, or for the outfall to be put underground at an area of the beach zoned for development.



Waitaki Branch members viewing the Royal spoonbills on Maukiekie Island off Moeraki Peninsula. The colony is one of the largest in New Zealand with 60-80 birds. The island is Maori owned and "tapu" so the birds are undisturbed.

Moeraki helicopter grounded

THE PROPOSED SIGHTSEEING helicopter flights over Moeraki, site of the famous boulders, was turned down recently after an appeal to the Planning Tribunal by a coalition of local residents including Forest and Bird's Waitaki Branch.

They were concerned that the low level flights would disturb breeding colonies of royal spoonbills and various shag species on Maukiekie Island, just offshore, and the yellow-eyed penguin sanctuary at Katiki Point. The application was originally approved by the Waitaki District Council despite 23 objections, including one by the Department of Conservation. A coalition was formed to pool resources for the appeal.

In its decision, the Tribunal said the Moeraki Boulders area is of national importance and that a helicopter scenic flight operation would have detrimental effects.

North Island weka recovery plan

PROJECT WEKA is the latest in a series of Forest and Bird projects sponsored by Trilogy Business Systems. The North Island weka has declined markedly in the last 10 years, and Forest and Bird, together with the Department of Conservation, have launched a recovery programme to try and reverse this situation. This mischeivous bird is an endearing sight in the bush and normally a plucky survivor of changing conditions. But for some reason, possibly due to severe drought, numbers are declining fast.

Ann Graeme, Forest and Bird Regional Field Officer, is in charge of this programme and so far has 10 people who are willing to undertake captive rearing of wekas to boost the numbers of wild wekas in the Central North Island. Forest and Bird members Andre Bakker and Judith Leonard of Lower Hutt are the first lucky people to receive a weka to care for under this programme.

"I had just finished the 'wekary', as we call it, and been given my permit from DoC when I heard that our female bird would be arriving almost immediately," said Andre.

"We are thrilled to have her here, and we have named her Winifred. She was very nervous for the first two days but now she is quite friendly and relaxed. I hope to have a partner for her soon so that we can begin the process of getting birds back into the wild."

Pictured are some of the team from Trilogy Business Systems Wellington welcoming Winifred on behalf of Trilogy – principal sponsor of the North Island Weka Recovery Project.

Preserving the miracle

South West New Zealand (Te Wahipounamu) is one of less than 100 premier natural sites around the world. Its World Heritage status puts it alongside the Grand Canyon, Australia's Great Barrier Reef and the Rocky Mountains of North America. Eugenie Sage reports on developments in the heart of the South West, South Westland.

IN HAAST, where "tree-hugger" was once a term of abuse, half the local community now turns out for the opening of a forest and wetland walk. Roadside signs advertise the World Heritage Hotel Haast Ltd and a new promotional pamphlet begins "Haast – a refuge of wildlife, stands guard over the last and biggest stands of native forest in the country". Talk of the campaign for World Heritage listing being a communist plot to undermine New Zealand's sovereignty has been largely forgotten. In its place is emerging one of the country's most positive partnerships between conservation and development.

Forest and Bird first suggested the South West nomination in 1985. It is an area of wild and rugged beauty extending from the Saltwater Ecological Area and Waitangiroto Nature Reserve in the north to Dean, Waitutu and Rowallan forests in the south east, encompassing Mount Cook, Westland, Fiordland and Mount Aspiring National Parks and another 1.079 million hectares of conservation land, scenic, nature and scientific reserves.

Making the case for World Heritage listing was a key element in the campaign to persuade the South Westland Working Party and then Government to allocate New Zealand's last stand of lowland semi-wilderness, the beech, kahikatea and podocarp forests south of the Cook River, to the Department of Conservation rather than the Forestry Corporation (See *Forest & Bird* February 1988). Pamphlets, a calendar, posters, a stream of articles in newspapers and magazines, reports, and the Society's book "Forests, Fiords and Glaciers" helped raise public awareness of the World Heritage concept and the values of the area sought for nomination.

It was a high profile and controversial campaign. It was rewarded with the Labour Government's 1989 decision to protect the total area of publicly owned forests and wetlands, and the announcement on New Year's Day 1991 that UNESCO's World Heritage Committee had accepted the South West nomination.

In South Westland there has been an outpouring of creative energy, effort and innovation to grasp the opportunities presented by both events. December will see the opening of the new $649,000 South West Heritage Centre in Haast. The centre is the lynch pin in a $1.2 million package of recreational, interpretation and visitor facilities designed to present the travelling public with a "sample of the best of South Westland".

Several existing tracks such as those to Monro Beach and at Jamie Creek beside Lake Paringa have been upgraded. New tracks and associated visitor facilities have been built at Hapuka Estuary and Ship Creek. A new picnic area and car park is planned at Jackson Bay. A clifftop promenade and toilets are to be built at the Knight's Point lookout. New displays and other improvements planned for the visitor centres at Fox Glacier and Makarora will make them more fitting entrances to the southern section of a network of heritage highways being promoted on the West Coast. A handbook due for publication in December 1991 will provide visitors with information on the range of things to do and see close to the road. "Its really great to see the things DoC is putting in place because they are of a very good standard," says Jenny Barratt, Westland District Councillor and former member of the South Westland Working Party.

The Haast visitor centre under construction at the junction of the roads to Haast Pass, Fox Glacier, and Jackson Bay. An artificial wetland beside the centre and indigenous plantings are intended to attract birds and re-create nature in what was once a farm paddock. Photo: Eugenie Sage

There has been a conscious effort by the department to link all the new recreational and tourist facilities with information about the cultural and natural values of South Westland, and the special features of this part of the World Heritage area. On site interpretation panels explain phenomena such as the beech gap, glaciation, and food webs in fresh water ecosystems. Liaison with local tourism operators means facilities are being developed where they will be best used, encouraging visitors to stay another day in the region. Haast Motor Camp owner, Phillipa Glubb, says guests often walk the new Hapuka Estuary track opposite the camp several times during their stay.

Low key promotion

The intense activity in South Westland is due largely to the $1.5 million grant which accompanied the Labour Government's 1989 decision, the vision of key individuals and the use of employment schemes to extend the funds available and get local people directly involved in track construction and other projects.

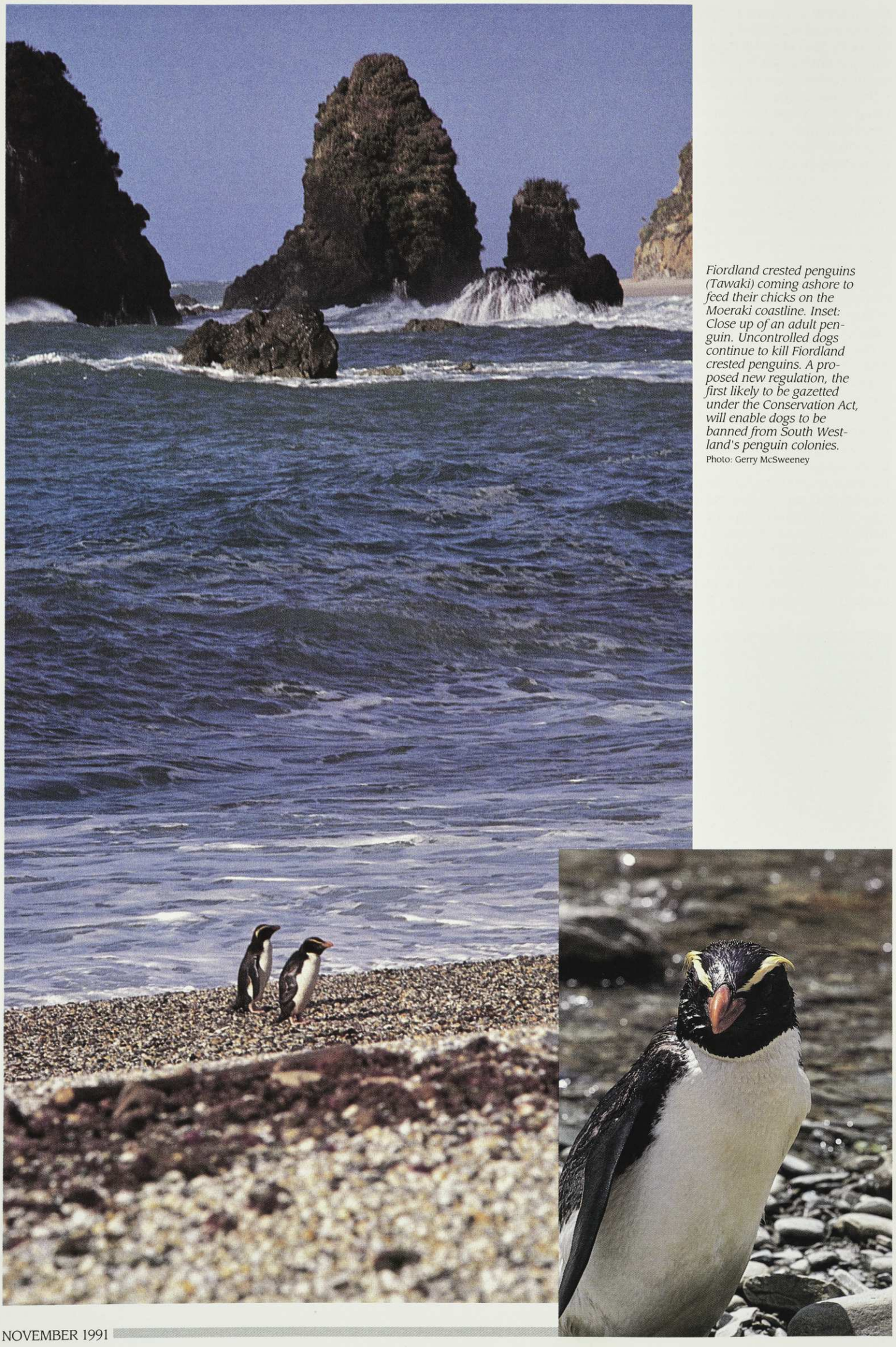
Elsewhere, at national level and in the three other DoC conservancies which are responsible for the management of parts of the South West, there has been a decidedly low key approach to explaining the importance of World Heritage status or examining its implications for current management regimes. Not a single pamphlet on a World Heritage theme has emerged from DoC's Wellington Head Office since the January announcement. The new draft review of the Mt Aspiring National Park Management Plan gives it one sentence and a footnote.

There are proposals for DoC's Canterbury, Southland and Otago conservancies to promote different aspects of the South West World Heritage area and in their visitor centre displays and signage. In practice this may be a long time coming with scarce conservation dollars having to be pared from other projects.

By comparison, Australians have seized on the opportunity their World Heritage areas have created by enacting a World Heritage Properties Act in 1974 to outline the status of these sites, established a management committee for them, and prepared a raft of promotional material – films, pamphlets and videos aimed at domestic as well as international visitors.

While the Tourism Department's current marketing strategies include encouraging "green tourists" to visit New Zealand, no campaigns focusing on the South West are currently planned. The potential for the World Heritage theme to be a powerful tool in New Zealand's international marketing effort appears to have fallen foul of the incomplete restructuring of the Tourism Department into the Tourism Board.

At a local level it's a different story. The West Coast Tourism Council has been closely involved with the developments in



Fiordland crested penguins (Tawaki) coming ashore to feed their chicks on the Moeraki coastline. Inset: Close up of an adult penguin. Uncontrolled dogs continue to kill Fiordland crested penguins. A proposed new regulation, the first likely to be gazetted under the Conservation Act, will enable dogs to be banned from South Westland's penguin colonies.
Photo: Gerry McSweeney

South Westland and is preparing a new souvenir and promotional video. The Council's Executive Director, Ian Wooster, says the West Coast is probably better equipped than many New Zealand regions to take advantage of the eco-tourism trend. "It's so easy here for people to get close to nature." He cautions against expecting World Heritage status to pay immediate dividends in terms of tourist numbers. " Sustainable tourism doesn't happen overnight . . . even if you had cubic dollars to spend in terms of promotion." Word of mouth advertising by people who have enjoyed their stay is the best promotion and that takes time. Even so, tourism contributed $90 million to the West Coast economy in the March 1990 year, up $5 million on the previous year allowing for inflation.

DoC's West Coast Regional Conservator, Bruce Watson, says it is "remarkable" how quickly the climate of local opinion has changed since 1989. Part of the credit for the turnaround must go to the South Westland Environment and Community Advisory Group, (SWECAG), chaired by Jenny Barrett. With representatives from the tourism industry, farming, fishing, recreational and other community interests, it has worked with DoC to advise and make decision on spending priorities. Conservation interests are represented on the committee by Forest and Bird's Gerry McSweeney. It has also allocated a small amount of seeding money ($150,000 over three years) to fledgling tourism ventures. As a bonus, Watson says SWECAG has been so successful as a forum for community consultation on local conservation issues that similar forms of liaison groups are likely to be established elsewhere, for example at Karamea.

It is early days yet but there are already a number of ventures which highlight the potential for nature tourism and firmly dispel the "lock-up" myth that conservation and economic development are mutually exclusive. Former Forest and Bird Director, Gerry McSweeney, and Anne Saunders' efforts in taking a run down 40 bed motel with a turnover of $60,000 and increasing staff numbers and turnover eight fold in two years, the Monks salmon farm at Paringa, plans for new accommodation at Haast, and increasing interest by residents in organising guided horse treks, hunting, nature photography and jet boat tours show that the stumbling block to economic development in this part of the South West has not been land in government tenure but a lack of previous initiatives by the private sector.

Okuru potter and crayfisher, Jenny Barratt. "The World Heritage area hasn't even been promoted overseas for people to be aware of it. It's no good putting this area into World Heritage status if it isn't advertised." Photo: Eugenie Sage

Wooster says the distance remains an obstacle to South Westland taking advantage of the forecasted growth in international visitors to New Zealand from one million to between 2.3 and 2.9 million by the end of the decade. An airport in South Westland has been mooted as opening up a number of fly/drive options for short stay Asian tourists and others. A feasibility study is being circulated for comment. Questions of funding and location have yet to be closely examined.

Haphazard tourist developments, however, can compromise or destroy the very qualities and features which visitors come to see and experience. As McSweeney warns, "We've been trying to foster tourism based on nature, yet we haven't done the work to identify the sensitive areas, communities, and species which are vulnerable to tourism disturbance."

The new Hapuka Estuary track, south of Haast. The track passes through a sequence of vegetation from salt marsh sedges to tall rimu and kahikatea forest. Interpretation panels explain the story of whitebait in South Westland, and the importance of estuarine ecosystems and local kowhai forests. Photo: Gerry McSweeney

New Zealand fur seal at Knights Point. A tagging programme of the 600-700 seal pups born each season on the Open Bay Islands colony further south aims to help establish which colonies the seals caught and drowned by hoki trawlers are coming from. Photo Gerry McSweeney

Land status important

Much of the land in South Westland is stewardship land, with the lowest standard of protection. "When the pressure comes on for tourism activities, sphagnum moss harvesting, or mining, stewardship land is seen as the multiple use land, the land with the lowest priority," says McSweeney. The fact that it is in the World Heritage area currently makes no difference. It is the tenure of the land in New Zealand law which is important.

The bold print of Government's 1989 forest allocation decision requires DoC to take account of existing uses and lifestyles, such as moss picking, grazing, and whitebaiting. Both McSweeney and Forest and Bird Executive member, Professor Alan Mark, say the failure to identify the most ecologically important areas of South Westland and give them the higher protective status which national park or reserve classification brings, risks permanent damage to pristine environments through activities such as sphagnum harvesting.

An investigation of all Crown land managed by DoC on the western side of the main divide between the Westland and Fiordland National Parks under section eight of the National Parks Act, 1980, was announced in April 1988. The investigation would have helped resolve the issue by indentifying key areas of ecological importance. Options such as the creation of a conservation park were to be considered along with formation of a new national park or an addition to existing ones.

Three and a half years later, the investigation remains firmly on the back burner with the fire all but out. In an era of limited budgets, the gazetting of the Hooker-Landsborough Wilderness Area (accomplished in 1990), improved visitor facilities in South Westland (now well underway) and a management plan for Paparoa National Park are seen as higher priorities. Work on the Paparoa plan continues and the new Conservation Authority has given the national park investigation in the North West South Island top priority. The drafting of a Conservation Management Strategy for the region is also close to the top of the queue for available staff time and resources. There seems little likelihood of additional resources being available to accomplish these tasks more quickly.

Bruce Watson says DoC has been careful about the type of privileges which have been allocated in South Westland since 1987. "It has been concerned not to jeopardise the high intrinsic and ecological values of the area and is aware of the proposed higher status for some areas. . . We have tried to be conservative so that we don't prejudice the outcome of future investigations." On the issue of sphagnum harvesting, he says departmental policy is to assess the conservation values of application areas, and to grant licences on modified sites, and in areas which have had a history of harvesting. Large moss areas proposed for longterm licence, up to 5 years, are publicly advertised for comment. Fortuitous changes in the moss market and a possible over-supply in Japan have temporarily reduced the pressure of licence applications for moss picking.

The 60 or more grazing licences south of Westland National Park on stewardship land are being individually reviewed and existing year to year licences replaced by five year leases. There has been an effort to negotiate stocking regimes with individual farmers to reduce the likelihood of hungry stock grazing adjacent forest. A contract study by the DSIR on the effects of excluding cattle from a series of plots on forest margins, grassy flats and within the forest in the Jackson and Arawata Valleys will help provide useful information for future licence reviews.

Mining is a more serious threat. What happens when a mining company applies for a mining licence on stewardship land in a World Heritage area? World Heritage listing has no status in law. Under the law and under DoC's mining policy it doesn't have the status of a national park or ecological area. McSweeney says the test against mining is weaker than it should be in these outstanding natural areas.

Lack of progress with the section eight investigation also rankles with Jenny Barrett. "We want to know what status this land is going to have placed on it so that we can have some stability for the future." She says entrepreneurs who initiate a tourism venture such as jet boat trips don't want to risk being put out of business by stricter controls on concessions if the area then becomes part of a national park.

In the absence of a section eight investigation, a Conservation Management Strategy would at least establish policy

A guided canoe trip down the Moeraki River. "Within five minutes of leaving the State Highway people can be walking in untracked bush or in a canoe imagining they are the only person on earth. With those sort of opportunities you haven't got a case for carving a road through the wilderness from Milford to Jackson Bay." – Gerry McSweeney Photo: Gerry McSweeney

objectives and an implementation framework for the integrated management of all the region's natural and historic resources including stewardship land. Work on the strategy on the West Coast and in other South Island regions is in its early stages and several years away from completion.

Close liaison between the four DoC conservancies responsible for managing the South West is needed to maintain high standards in protecting natural ecosystems. Rising visitor numbers and the desire of eco-tourists to experience the environment they travel through, and not just admire the scenery through a coach or car window, will inevitably increase the pressure for tourist concessions and access to the conservation estate.

Awarua or Big Bay illustrates the potential for conflicting management objectives within the department compromising conservation and wilderness values. Enclosed on three sides by lowland forests and wetlands, access is by air or several days walking. A number of concessions for guided hunting trips include Big Bay within their licence area. New applications for guided walking trips and canoe safaris are being considered by DoC Southland. If these ventures are successful, the number of aircraft landings on the beach, and the number of visitors to an area which currently has only a DoC hut, whitebaiters' cribs, and no proper rubbish, toilet or other facilities, could increase considerably.

Yet to the north east of Big Bay, the Upper Cascade/Gorge River area is managed by DoC West Coast as a remote experience area in accordance with former Forest Service policies. Without an adequate buffer zone, the potential for incremental erosion of a potential wilderness area is high, particularly as DoC Otago proposes to permit aircraft access to the nearby Red Hills after a 22 year ban on landings to protect the area's wilderness values.

The more sensible strategy would be to direct concessionaires to focus their activities on Martin's Bay, a little further south. An airstrip, toilets, rubbish and accommodation facilities already exist there. Such decisions, however, require a

Brenda and Graham Monk at their Waituna Creek salmon farm. "Five years ago we didn't dream of getting into tourism." Photo Eugenie Sage

level of inter-regional coordination within DoC which is not currently obvious.

One potential solution may be to establish a management committee for the South West World Heritage area, including sector groups and non-government representatives, as has been done in Australia. This could have the added benefit of linking communities as distant and diverse as Haast, Tuapatere, and Twizel, and fostering a sense of identity for the area as a whole.

Possum threat

In the estate protection area, other management challenges exist. Possums threaten to repeat the ecological disaster they have created in the rata and kamahi forests of the central Southern Alps in extensive areas of South Westland forest.

This year, DoC's control efforts are focused on the Copland/Karangaru and Moeraki catchments. Possum numbers in the Moeraki catchment are low at present while the kaka population is strong. The overlap between the foods preferred by kaka and possums means control programmes are vital in ensuring that those plant species which help support high bird populations such as native fuchsia, mistletoe and Southern rata remain abundant.

The continued decline in real terms in the conservation vote has seen control work "postponed" in other areas, including the magnificent stands of rata forest in the Turnbull River catchment. This risks a burgeoning of current low populations capable of containment, and possums invading the forests between the Paringa and Haast Rivers where they are now largely absent.

Introduced predators also threaten bird species such as the yellowhead. A survey of the yellowhead population in the Landsborough Valley in January showed a huge decline in bird numbers compared to a similar 1985 survey. A stoat plague last summer is thought to be responsible and DoC plans to start a five year trapping programme this summer.

With its wild and rugged splendour, outstanding examples of temperate rainforests and floristically rich alpine plant communities, its landforms bearing the imprint of major stages in the earth's revolutionary history, and the range of habitats it provides for a number of threatened species the South West easily satisfied all four criterion for World Heritage listing. As "Forest, Fiords and Glaciers" said, "that such a stunning natural asset has survived almost untouched for so long seems a miracle."

The miracle must be preserved by ensuring that human uses continue to touch the landscape only lightly. In South Westland sustainable economic development depends on conservation. Increasing local confidence in the future of nature tourism and the high quality visitor facilities being put in place are the result of a creative partnership between DoC, private sector tourism operators and industry representatives, and the local community. Each relies on the other. All rely on the preservation of the unique natural values of this part of the South West.

A warm welcome in the wilderness

THE ROAR of an enormous Mack truck shatters the towering forests and lakeside setting of the Lake Moeraki Wilderness Lodge. Local roading contractor, Nobby Clark from Haast, and his team are delivering yet another load of shingle as part of their landscaping contract at the lodge.

The lodge's driveway is crammed with the vehicles of tradesmen all rushing to complete a $250,000 rebuilding of the lodge. Even local cray fisherman and neighbour, Barry Wyber, is here helping to build a spectacular fireplace from local stone while the weather is too bad for him to go to sea. His daughter Lynn Brown is the lodge's assistant manager.

Former Forest and Bird Director, Gerry McSweeney, and his partner Anne Saunders are in the midst of a massive exercise to get the Lodge open in time for the 1 September reopening day. The scale of the project underway gives a good indication that they are succeeding with their aim of setting up the Lodge to show that nature based tourism could generate jobs and revenue while preserving the forests.

"We expected it might be difficult to be accepted down here," says Anne, "But we've been impressed by the help and support we have had from all the locals. We've got wonderful neighbours and if ever we have a problem, help is just a phone call away."

Gerry is also full of praise for the recreation and tourism project in the area being coordinated by the Department of Conservation. "DoC have built probably the finest network of walks and information in the country. The kowhai and kahikatea forest walks, wetland lookouts, seacoast tracks and the new visitor centre are just what this area needed. They have given an enormous boost to tourism and lots of people are coming specially to walk these tracks and discover the Haast area and its people."

Since its reopening on 1 September, the Wilderness Lodge has been involved in running a number of special nature programmes as well as catering for casual guests. Four times a year it offers special week-long "Wilderness Weeks", where New Zealanders spend seven full days exploring southern South Westland. Lodge staff have also just completed a three-day special nature discovery course for 26 senior citizens from the Upper Clutha region. They discovered forest birds and Fiordland crested penguins and learnt about the different forest trees and plants. A highlight of their visit was a special jet boat trip with long time Haast farmer, Crikey Cron, who has just turned tourist operator. For more than 100 years, the Cron family have lived at Haast where they were the ferrymen helping travellers to cross the wild Haast River. Crikey Cron's jet boat tours are therefore continuing a long tradition. His tourist venture is just one of a range of activities that have recently started at Haast – horse treks, fishing, jet boat and helicopter trips, hunting trips and craft displays, as well as expansion of accommodation and other tourist services.

The McSweeney family and lodge staff, Lake Moeraki. Top: Gerry McSweeney, Anne Saunders, Katie McSweeney, Lyn Brown. Bottom: Michael McSweeney, Claire McSweeney, Emma Falk.

More than half the visitors to the Lake Moeraki Lodge are from overseas, mainly Germany and the United States. At a time when the New Zealand economy is depressed, the numbers of overseas visitors to the Lodge has been increasing spectacularly.

"Last year we had 80 small tour groups from overseas, averaging about 15 people each tour. This year we already have over 200 groups booked to stay. They want good quality accommodation and meals in a natural setting and they also want the special nature activities, the guided walks and canoe trips that we can offer", says Gerry. "It's given us the confidence to press ahead with developments and take on more staff when the rest of the economy is in the doldrums."

At a time when there has been heated opposition from the West Coast to proposals to investigate DoC's protected lands in the North West Nelson/Buller region for national park or world heritage status, based on the Haast experience, one can't help feeling the sooner the North West becomes a national park or world heritage area, the better.

Kevin Smith

The Hauraki Gulf: Auckland

"I have seen Napoli la bella and didn't die; have gazed on panoramas from Alpine and Apennines summits . . . but. . . Waitemata's waters . . . stood forth, pre-eminent, unequalled, unsurpassed." Sir John Logan Campbell, 1817-1912

THE HAURAKI GULF stretches from the mangrove-fringed fingers of the Upper Waitemata harbour, past the sprawl of Auckland City and out over the sparkling water to the Barrier Islands. With ample harbours and idyllic islands, the Hauraki Gulf's 7,450 square kilometres provide a unique coastal haven for recreation. Auckland has more boats per capita than any city in the world. Every Sunday afternoon the harbour resembles a motorway as boats dodge one another racing back to their weekday moorings.

Over forty islands are scattered across the Gulf, varying in size, topography, geology, vegetation cover, wildlife and accessibility. Beneath the waters of the Gulf an even greater range of species and habitat diversity exists. From the mud flats that provide extensive feeding areas for birds, to the bladderkelp fringe and kina flats of sub-tidal zones, down through the ocean depths to underwater forests of *Ecklonia* and sponge gardens, the Hauraki Gulf provides a range of habitats with a vast array of marine plant and animal life. This complex mosaic of life is supported by the microscopic phytoplankton living in the lighted surface layers of the sea. Moving with the ocean's moods, these plants are the mainstay of all life in the sea. Marine animals eat either phytoplankton or other animals which are dependent on these minute plants for food.

Along with phytoplankton, the sea floor, with all its benthic richness, is one of the marine ecosystem's key production areas. The thin, living skin of the sea floor is like the top-soil found on land: immensely fertile, fragile and minute in size when compared to the vastness of the waters above. The sea knows no boundaries. Its productivity and food chains depend upon clean water and the health and diversity of life on the sea floor.

In civilisation's haste to develop, grow and expand, we have encroached upon the sea – redesigning the boundaries between land and sea, disgorging sewage into oceans, dumping lifeless and toxic sediments scraped off the land into the sea, and filling in shallow estuaries where marine productivity is highest.

As the Roman poet Horace wrote two millenia ago, as he despaired the dumping of marina dredgings into the sea, *"Contracta pisces aequora sentiunt"* – the fishes feel the seas contracting.

History of dumping in the Hauraki Gulf

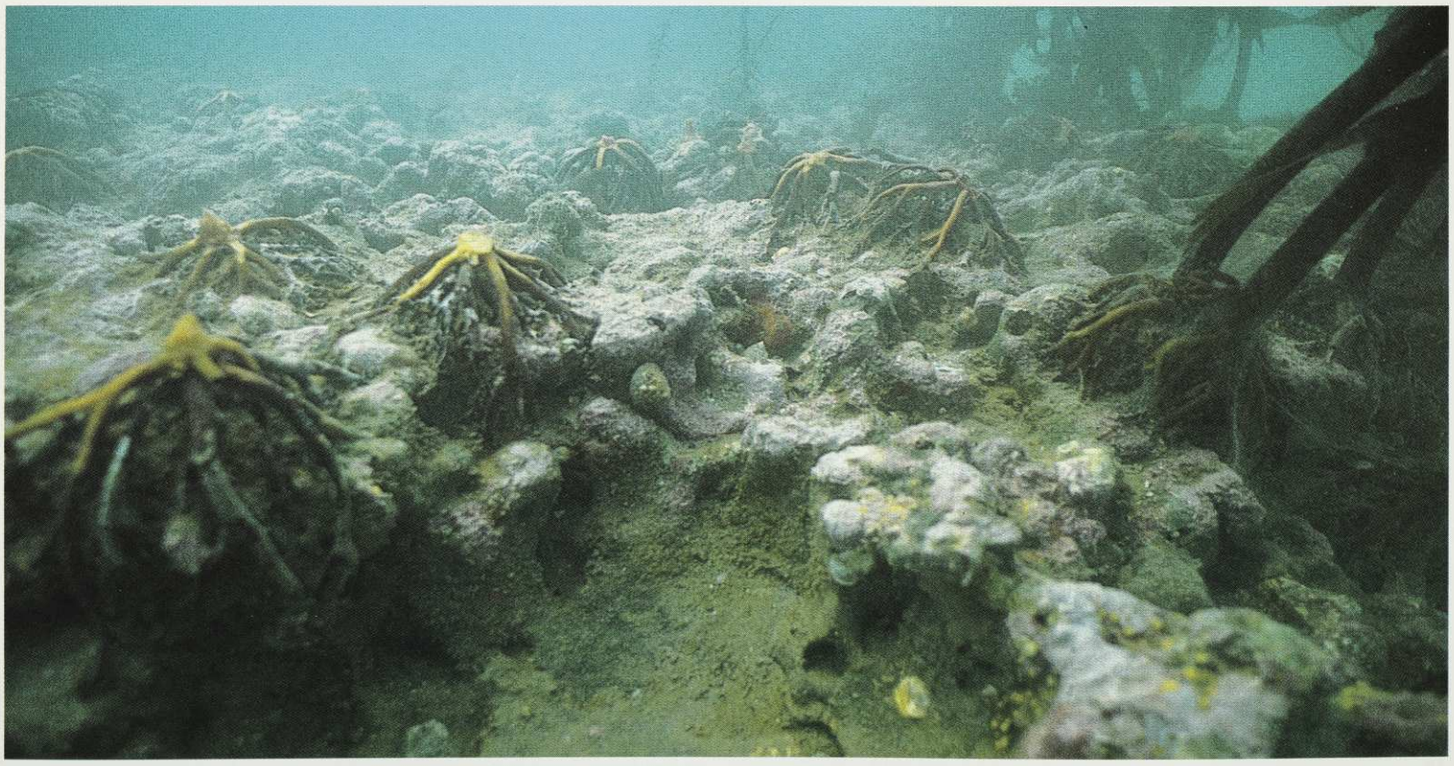
Over the past century, the sea floor of the Hauraki Gulf has been the recipient of over six million cubic metres of sediment dredged from Auckland's wharves and marinas. Around the foreshores of the Waitemata Harbour a similar amount has been dumped to reclaim land from the sea. Twelve million cubic metres of sediment over a century is a lot of dirt – enough to build a new island the same size as Browns Island or Pakatoa.

Dredge dumping in the waters of the Gulf became a pressing public concern in 1987 when material was dumped near Browns Island. The dumping of 143,000 cubic metres of dredge spoil at a site near Browns Island was ecological vandalism. Over 150 hectares of seabed surrounding the dump site was visibly affected, with a marked reduction in the diversity and abundance of marine life.

Dr Roger Grace, a biological consultant with over 25 years of experience in coastal and marine environments, undertook the post-dumping ecological survey of Browns Island. He found that in the most adversely affected area 97% of marine life had disappeared from a 21 hectare area of the seabed. In assessing the future ecology of the dump site, Dr Grace predicted that marine life would recolonise the area but stated "it was unlikely that the previous populations of marine life would be restored." Some marine life would return once the dumping ended but would lack the diversity and richness of the original community.

Proposals to dump a century of dirt

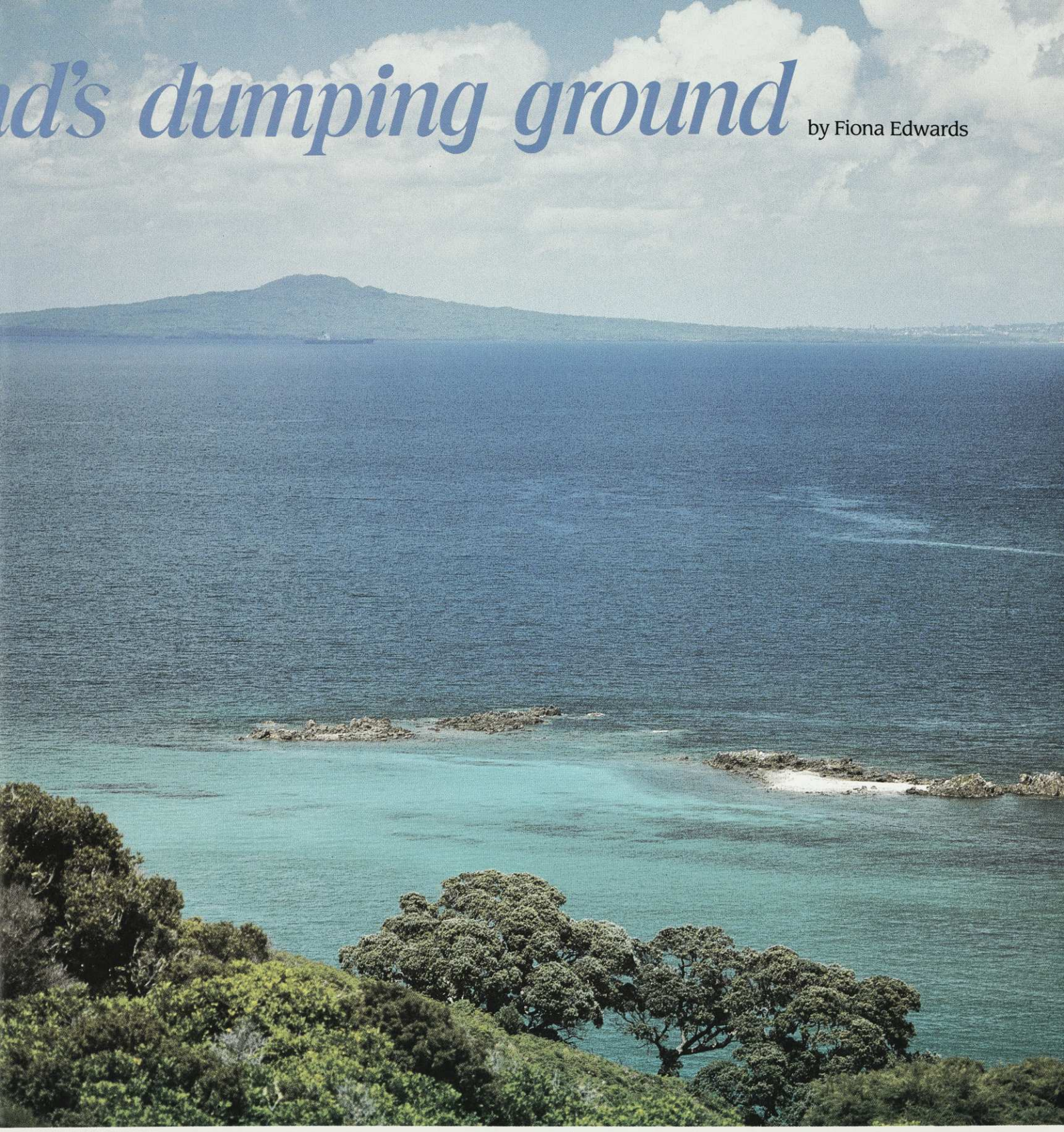
Maintenance dredging is needed if Auckland's international container port is to continue operating. Each year, goods to the value of $10.5 billion move across Auckland's wharves and the port generates an estimated $2.5 billion in revenue for the region. Groups concerned about the dumping accept that dredging is needed if the port is to remain viable. There is,



Rotted Ecklonia *seaweed. When dump sediment accumulates around the bases of Ecklonia, this important seaweed rots leaving a star-shaped root system.*
Photo: Roger Grace

...d's dumping ground

by Fiona Edwards



Rangitoto from Tiritiri Matangi. To the right is the port company's north Rangitoto dredgings dump site. Photo: Tony Lilleby/DoC

however, very strong disagreement about where sediment dredged from the port area should be disposed.

In 1988, at the request of the Regional Water Board, the Ports of Auckland Ltd (the successor to the Auckland Harbour Board) assessed the environmental effects of decades of dredge dumping at the Rangitoto site. They found that there was a change in the physical nature of the sea floor, detectable changes in the chemical composition of the sediment within the dump site, and that there had been "disturbance" to benthic communities buried by the sediment. Local divers point out that before dumping occurred at the Rangitoto site, the area was heavily stocked with crayfish. From July to September every year, thousands of female cray bred in the area. On the seaward side of the dump zone, scallop beds flourished. Within two weeks of the dumping, most of the scallops were dead – just empty shells on the sea floor. Within a month, the crayfish living along the rocky foreshore had gone.

The Auckland Regional Water Board considered the port company's findings and decided that the north Rangitoto site would be unable to cope with the intended disposal of twelve million cubic metres of sediment over 15 years. The Regional Water Board suggested that the port company investigate alternative long-term disposal sites. In September 1990, the port company applied for two water rights, one for 270,000 cubic metres of maintenance dredgings from around the wharf areas and a second, much larger water right, for 11.8 million cubic metres from capital works – sediment dredged from the Rangitoto channel. In total, the two water rights cover 12 million cubic metres of sediment – an amount equal to about 38,000 houses full of silt. The port company intends to dredge and dump this

Golf ball sponges at progressively closer distances to the Milford Marina dump site showing the smothering impact of silt. Photos: Roger Grace

sediment into the waters of the Gulf over 15 years.

After two years of investigation, the port company proposed that this mountain of dredgings should be dumped at a new 400 hectare dump in 30 metre deep water at a site seven kilometres south east of Tiritiri Matangi Island, three kilometres north of the Noises Islands. One month later, in October 1990, the Auckland Regional Water Board heard evidence from the port company and from 26 objectors, including Forest and Bird. The objectors had less than one month and, in some cases only a matter of days, to prepare their objections. It was hardly surprising that the Regional Water Board, overwhelmed by the weight of the port company's evidence, granted a water right for the disposal of 270,000 cubic metres of wharf dredgings. In a minor victory, objectors requested that the Regional Water Board not hear objections to the second water right application as these capital works dredging were not urgent. The Board compromised and agreed to hear evidence from the port company but deferred hearing objections so that objectors would have more time to prepare evidence.

The conclusions of the Regional Water Board make interesting reading. The Board accepted that the level of risk posed to spawning fish, their eggs and larvae was unknown. They also considered that the port company's evidence was lacking in regard to the issue of water clarity (turbidity) and the response of fish to the discharge of sediment. In order to allay some of their concerns, the Board imposed a restriction on the months that the port company can dump dredgings. During November to January each year, disposal of sediment will be prohibited because of the unknown level of risk posed to snapper breeding. Only one snapper egg per million survives to adulthood. It is highly probable that a barge load of sediment dumped on top of the spawning ground will not increase their chances of survival.

The decision of the Regional Water Board was subsequently appealed by the New Zealand Underwater Association, Hauraki Maori Trust Board, Auckland City Council and the Maruia Society. In the months that led up to the Planning Tribunal hearing, the port company became increasingly alarmed about delays. Their political scramblings could be heard throughout the city. In May 1991, the new Mayor of Auckland, Les Mills, met with the port company and then persuaded Councillors to overturn their earlier decision and withdraw the Council's appeal.

A process of attrition then followed with the Hauraki Maori Trust Board being denied appellant status and the Maruia Society withdrawing from the case. The weight of the appeal fell on the NZ Underwater Association, represented by Max Hetherington, a recreational diver from Wellington with a love of Auckland's Gulf, and the Hauraki Maori Trust Board, re-entering the case as an interested party. The appeal was heard before the Planning Tribunal in July – August but the Tribunal had not released its findings at the time of writing.

On-site impacts

The most immediate and devastating impact of sediment dumping would be felt by the marine life found at the dumpsite. The surface of the proposed site is fine, silty mud and is marked and sculptured by animal burrows and tracks, indicating the presence of abundant benthic (bottom dwelling) life. Dense populations of brittle stars and heart urchins are found at the site and nearby are large beds of scallops. When sediment is dumped at the site, most benthic life will be killed. Dredgings smother marine life on the sea floor, creating a virtual marine desert. Any

The dumping process

SINCE 1974, dual consents have been required for anyone wanting to dump material at sea. Any applicant wanting to dump sediment requires a water right issued by the Regional Water Board, and an annual permit issued by the Minister of Transport under the Marine Pollution Act 1974.

Under Section 21 of the Water and Soil Conservation Act, the Regional Water Board must consider discharges into natural waters including the territorial sea out to the 12 mile limit. However, not all Regional Councils throughout New Zealand enforce this requirement. Many Councils just accept a dumping permit as issued by the Ministry of Transport.

Additional controls on dumping were added to the Marine Pollution Act in 1980 so that New Zealand could ratify the London Dumping Convention. Section 24 of the Act outlines an extensive list of matters the Ministry of Transport have to take into account when an application is considered. These include the characteristics and composition of the material being disposed, the characteristics of the dump site and method of disposal, and the possible effect on amenities, marine life and other uses of the sea. This section of the Act also requires consideration of the practical availability of alternative land-based methods of treatment and disposal. Historically, the Ministry of Transport have tended to rubber stamp applications for marine dumping permits as there are no provisions for public input or any external assessments.

In 1989, the Parliamentary Commissioner for the Environment was asked to investigate the marine dumping of sediment at Paihia. Her recommendations state that the Ministry of Transport should not issue a permit for dumping until it is satisfied that the "practical availability" of land-based options has been adequately considered. The Commissioner also recommended that Regional Councils should take into account all the criteria in Section 24 of the Marine Pollution Act. Under the new Resource Management Act, Regional Councils will be able to issue resource consents permitting dumping as of right where the Regional Coastal Plan allows dumping to occur.

marine life attempting to recolonise are killed by the repeated smothering of sediment as dumping continues. The effects on fish larvae, phytoplankton and zooplankton living in the water column at the dump site are largely unknown, but increased sediment concentrations are not generally beneficial to any marine life. Since the dump site is centred within a major breeding ground for at least 30 different species of finfish, including snapper, the impacts of sediment dumping on fish larvae may be severe.

Impact on the Noises Islands

The beguilingly named "little nuts" or Noisettes, since anglicised to Noises Islands, are 15 nautical miles from downtown Auckland. These islands (pronounced "Noyzees") are only three kilometres from the proposed dump site. But, unlike the dump site itself, the Noises are characterised by rocky reef marine communities. Habitats range from open rocky bottoms which provide an ideal habitat for octopus, to extensive beds of green-lipped mussels, paua and scallops through to kelp beds and spectacular displays of coloured sponges and jewelled anemones. Reef fish, crayfish, conger eels and finfish abound in this underwater world, which is adapted to low levels of suspended sediment. Sediment drifting from the dump site threatens these communities.

The port company acknowledges that two to four percent of the dumped spoil will end up in suspension on release from the barge and that this sediment will travel from the dump site. Some of this sediment could travel in the direction of the Noises Islands. If this occurs, marine communities will be destroyed, disrupted or displaced. In a rock reef environment, the gradual effects of increased sediment could be nearly as detrimental over time as direct dumping.

Toxic effects

An added problem with the marine disposal of wharf dredgings is the potential these dredgings have to create persistent problems due to the presence of toxic contaminants. The sediments from Auckland's port area contain concentrations of copper, lead and zinc above background levels and elevated levels of DDT, TBT (tributyl tin) and mercury. It is well documented that mercury – a heavy metal – and DDT accumulate in the tissues of marine organisms, especially long-lived animals such as sharks and snapper. The antifouling compound, TBT, has been described as the most toxic substance ever deliberately introduced into marine waters. The effects of TBT on marine organisms include reduced growth rates, larval mortality and shell deformation.

The port company has developed a sediment testing protocol which is designed to assess the toxicity of sediments and any samples that are "too toxic" for marine disposal will be dumped on land. Unfortunately, they do not have any approved land-based disposal sites and their protocol is less than adequate.

Alternatives

The port company has investigated a number of alternatives during a two year study. Over 16 land based disposal sites were considered but only the Mt Wellington quarry had the capacity to accommodate 10 million cubic metres of dredgings. Mt Wellington is within the six kilmetre economic limit for pumping dredge slurry from the wharves. A combination of land-based disposal sites could be used rather than just one site. They also investigated possible harbour margin reclamations and

Pollen Island Marine Reserve

IN 1989, the Society lodged an application for a marine reserve at Pollen Island. This inner city estuarine wetland is a biological gem. It sits serenely in the upper Waitemata Harbour, a low shellbank flanked by saltmarsh, mangroves and tidal flats. Seven kilometres from downtown Auckland, this peaceful area is a haven for wildlife, a feeding ground for rare birds and the spawning grounds of snapper, flounder and mullet.

The application has received the Minister of Conservation's approval but the Auckland Regional Council have stalled the application. In its schizophrenic Regional Scheme, the Auckland Regional Council recognises Pollen Island as both an internationally important wetland that must be preserved and as a possible port site. The regional council have caved in to pressure from the port company by stalling the only proposal to protect this area in favour of the remote chance of Pollen Island becoming a container port. It is this latter possibility that has the Council worried that the port company will take legal action against them if they allow a marine reserve to proceed. In reality, Pollen Island is a most unlikely site for a port – it is an area of shallow water and mudflats, requiring extensive dredging, and the Auckland Harbour bridge blocks access for large container vessels.

Above: *Browns Island, close to Auckland City, one of the port company's dredging dump sites.* Photo: Eric Taylor/DAC

Left: *Public apathy to the impacts of dredge dumping in the waters of the Gulf is a concern. A public appeal to assist objectors meet legal costs raised only $800. Photo depicts Half Moon Bay marina with several million dollars worth of boats in view. Forest and Bid has contributed $2000 each to the New Zealand Underwater Association and Hauraki Maori Trust Board to help with their costs.* Photo: Mark Bellingham

Hauraki Gulf Marine Park

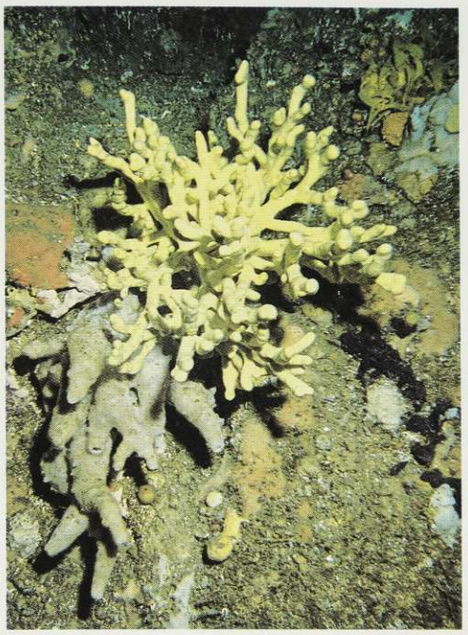
IN 1967, the protected land areas of the Gulf were gathered together to make the Hauraki Gulf Maritime Park. It was New Zealand's first maritime park and a completely new concept in reserves. The park provided integrated management for more than 50 islands. Today the park is administered by the Department of Conservation and the Hauraki Conservation Board.

Unfortunately, the waters of the Hauraki Gulf have always been outside the jurisdiction of the Park. But last year, the Minister of Conservation, Denis Marshall, proposed addressing this omission by creating a new Hauraki Gulf Marine Park that would give widespread protection to marine communities within the Gulf. At this stage, the area, the controlling authority, permitted uses and guiding principles for the park are undetermined. The Department of Conservation hope to publish a draft discussion document on the proposal shortly. For further information refer to Forest and Bird's *Conservation News*.

island creation schemes but all were discounted for a variety of reasons, including cost. Land disposal options are considerably more expensive than marine disposal options. The port company's figures indicate that it would cost the company $25.00 per cubic metre to dispose of sediment at the Noises site and approximately $75.00 per cubic metre to dump the sediment on land.

Real alternatives to dumping at sea do exist and are being used successfully overseas. In Glasgow, the Clyde Port Authority has combined with the University of Strathclyde to devise the techniques and technology to process 100,000 tonnes of sediment per annum into soil. The sediment is mixed with compostable materials, dewatered and desalinated then used as a landscaping soil. The Clyde Port Authority is effectively recycling their sediment and by treating it as a resource, they are able to sell the soil and operate the plant at a profit. This type of process is ideal for non-toxic sediments. However, contaminated dredgings should still be disposed of in a landfill where leachate is contained and treated.

When the Planning Tribunal make their decision on the water rights for the Auckland Port Company's dredge dumping applications, that will not be the end of the matter. The Minister of Transport, Mr Rob Storey, is also required to give his consent to a dumping permit under the Marine Pollution Act. The Minister has to consider wider matters than those considered by the Planning Tribunal, though there is no formal process for the public of Auckland to object under this Act. Mr Storey may consider that land disposal is preferable – then let the fish dare to complain!



Sponges and other marine life cover rocks at the Noises – but will die if smothered by silt. Photo: Bruce Carter

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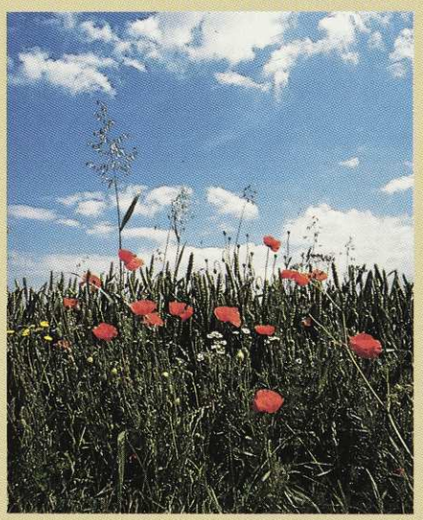

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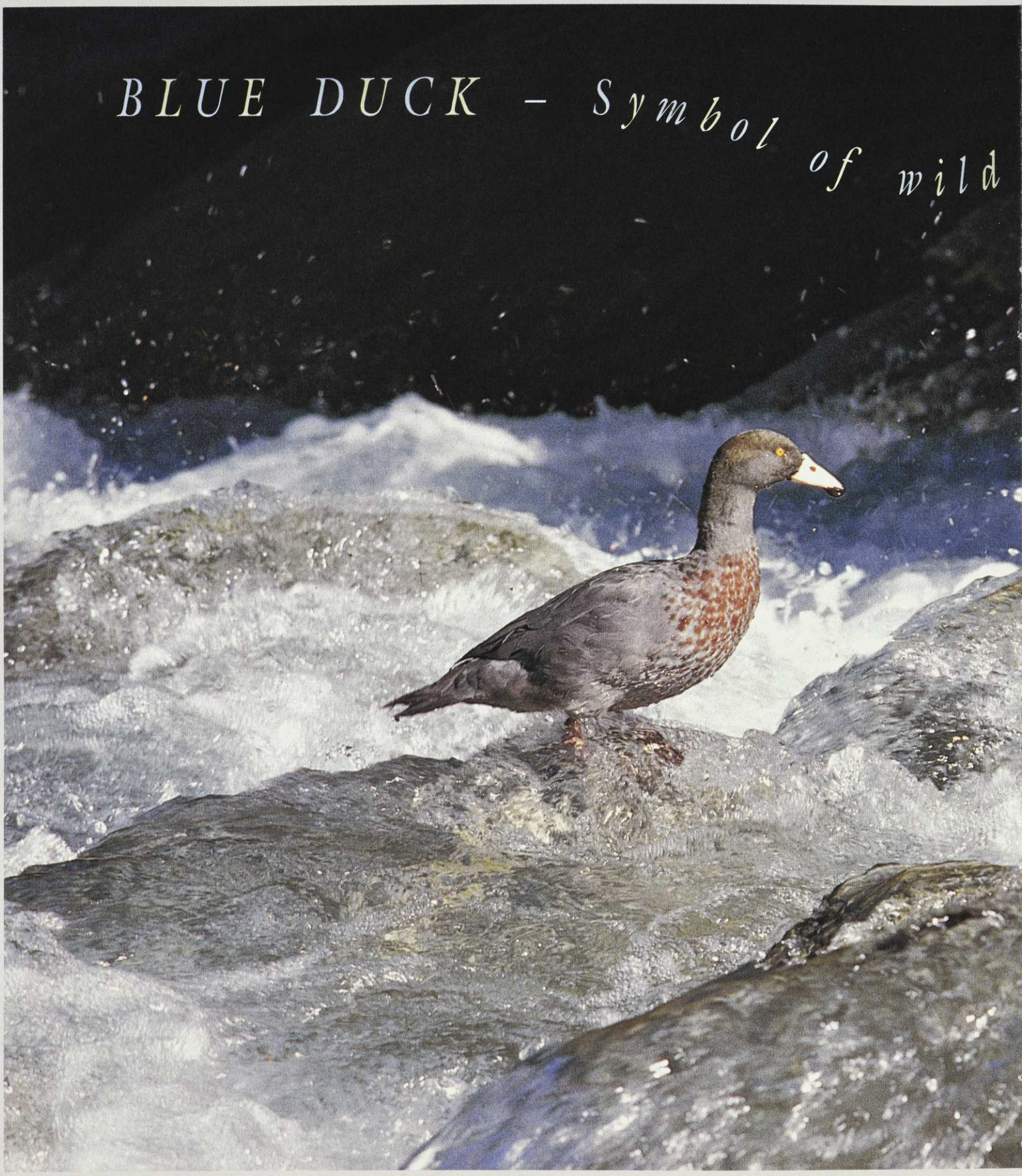
BLUE DUCK – Symbol of wild



Forest and Bird's South Island Field Officer Mike Harding, has taken an active interest in blue duck – carrying out his own research at Arthur's Pass. Here he explains what is special about the blue duck, or whio, and describes the current threats facing the species.

FOR ANYONE who has tramped through the mountains of New Zealand, the whistle of the blue duck is one of the most characteristic sounds of the wilderness. The spectacle of a pair of blue ducks bobbing downstream with their fluffy chicks, expertly negotiating rapids and white water, is unique to unmodified mountain rivers. Even the most hardened back country traveller treasures the memory of these tame and confiding birds. Yet, despite its legal protection, the future of the blue duck is by no means secure.

Blue ducks are river specialists, a distinction they share with few other species of duck world-wide, notably the African black duck, Salvadori's duck of Papua New Guinea and the torrent ducks of South America. None of these species are closely related. All have evolved separately to live in the difficult fast-water habitat – a textbook case of convergent evolution. The blue duck is an ancient New Zealand species. It has very simple courtship dis-

plays and is territorial – unusual features for a duck. Most revealing, however, are the distinctive proteins that make up its feathers. These are an important indication of its genetic uniqueness and ancient origins.

Species in decline

When Forster, a naturalist on Cook's Endeavour, first described the blue duck, it was present throughout the mountains of the New Zealand mainland. It appears to have been common in all forested river catchments, particularly in steep high altitude areas, and occasionally right to the coast as observed in Fiordland. Well known to the Maori, it was an important source of food on inland expeditions. They named it *whio* after the distinctive whistling call of the male bird. For the early European explorers it was a charming and friendly source of companionship and amusement. So tame in fact that it often ended up in the billy for the evening meal.

Charlie Douglas, the famous surveyor of South Westland, noted that ". . . its prevailing characteristic is stupidity to an amazing degree. This combined with what appears to be a fatal thirst for admiration is its ruin, and make it an easy prey to dogs and men, and nothing but the inaccessible places it frequents saves it from being exterminated." Blue ducks were a staple food of back country explorers such as Barrington who, on his epic exploration of the Red Hills in West Otago, ate blue ducks to help survive the rigours of this remote and unforgiving country.

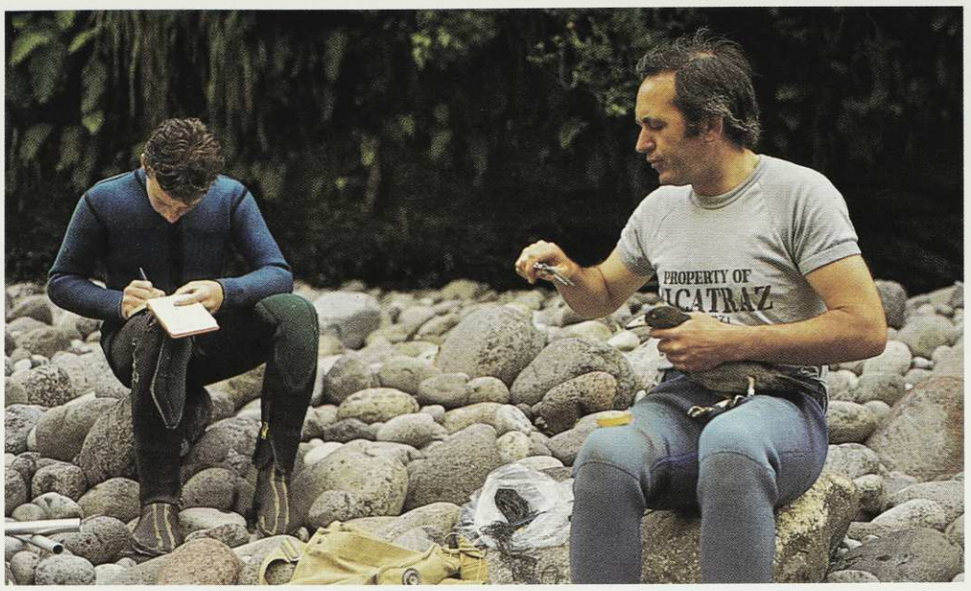
Early oral records show that blue ducks were widespread and abundant. Sadly, that is not the case today. Most birds are now confined to unmodified mountain rivers in the central North Island and western South Island. River diversions and hydro dams for irrigation or power generation have turned clear rushing waters into slow turbid streams, as in the headwaters of the Whanganui River. Forest removal and agricultural development have led to siltation of clean rivers and the loss of necessary riparian (streamside) vegetation. Populations of introduced trout compete with blue duck for in-stream invertebrate food sources. Introduced predators threaten accessible populations of the blue duck, whose ground nesting habits make it especially vulnerable. Its only natural predators were other birds such as the black-backed gull and maybe the native falcon or now extinct birds of prey.

Concern has been mounting in recent years over the apparent contraction of blue duck distribution. Trampers and hunters noted its disappearance from favoured back country haunts such as the Tararua Ranges. Sightings of birds, and systematic surveys of rivers, in the Arthur's Pass area show that blue ducks have disappeared from several river tributaries over the last 20 years. But detailed monitoring of small populations has so far failed to provide a conclusive answer to one of the mysteries of blue duck populations – where do all the young birds disperse?

Most years there is a surplus of fledglings, but very few manage to either

Above: *Blue duck rest on riverside boulders during the day, but keep a watchful eye up and down the river.* Photo: Alan Reith/Arthur's Pass National Park Collection

Left: *Found only in New Zealand's back country rivers and streams, the blue duck is one of only a few birds in the world adapted to fast water habitat.* Photo: Alan Reith



Department of Conservation staff (Murray Williams on right) taking measurements after banding a blue duck on the Manganui-a-te-Ao River.
Photo: DoC

kilometres from its natal area.

Blue ducks have much in common with other relict New Zealand species. They are relatively long-lived, have a low reproductive rate and irregular breeding success, similar to our more critically endangered species. Fortunately, the blue duck is still what Murray calls a 'second tier' species. The blue duck joins a long list of native birds which are still reasonably widespread but are nowhere common. Birds like the kea, kaka, kiwi, falcon, robin and blue duck are still adjusting to extensive loss of habitat, introduced predators and competition from browsing mammals. At least

squeeze in a new territory amongst existing pairs, displace an adult bird, or fill the gap left by a dead bird. However, numerous sightings of blue ducks on alpine tarns and of single male birds have suggested that young birds are more mobile than previously expected. This has been confirmed recently by sightings of colour-banded birds in rivers some distance from their home territory in both the North and South Islands.

Blue duck show all the symptoms of a species in decline. Populations are scattered between the headwater tributaries of major rivers. Blue ducks are present in some streams but absent from adjacent, and apparently similar, streams. The lower modified reaches of rivers are usually unoccupied as though blue ducks are reluctant to disperse over land or across unfavourable habitat. While the total population is estimated to be about three

Blue duck have large strong feet – an essential adaptation for survival in fast turbulent water.
Photo: Alan Reith

Westland's Toaroha River is typical blue duck habitat. The wild mountain rivers of the South Island's West Coast are a national stronghold for blue duck. Photo: Alan Reith

to four thousand adults, this is split into discreet sub-populations. The largest two in the North Island are the 40 pairs in each of the Motu and Whanganui catchments. Their small size and lack of interaction makes these populations increasingly vulnerable to habitat changes.

In 1980, Wildlife Service (now DoC) scientist Murray Williams set out to solve the mysteries of the blue duck by studying their ecology on the Manganui-a-te-Ao River, a tributary of the Whanganui. The stimulus, Murray recalls, came from two people – Janet Kear of England's Wildfowl Trust and US waterfowl biologist Frank McKinney. They had carried out brief studies of blue duck and recognised the need for further, more detailed, research. As well as their encouragement there was a conservation imperative. The National Government's subsidised loans for small hydro schemes had focussed attention on the Manganui-a-te-Ao. The entire river, the only remaining free-flowing tributary of the Whanganui rising in Tongariro National Park, was under threat.

For over ten years, Murray colour-banded every resident bird and all juvenile birds that fledged in a ten kilometre stretch of the river, monitoring an increase from four to nine pairs. Initially limited to 20 field days each year, the research project is now one of the longest studies of any duck species in the world and certainly the most important study of a riverine duck. It has revealed some interesting results. Most significant is that inbreeding appears to be a natural feature of the blue duck population – a surprising discovery in light of the widely-held view that a broad genetic base is essential for the long term survival of a species. Colour banding of individuals by Murray, and genetic 'fingerprinting' by fellow DoC scientist Sue Triggs, has confirmed that there are successful brother-sister pairings and even a grandmother-grandson pairing. In this study no duckling established a territory more than ten

with these species, early attention may ensure that last-ditch rescue programmes, like those mounted for the black robin, black stilt and kakapo, may not be necessary.

Suited to fast water

Blue ducks are admirably suited to the fast water habitat. Their strong webbed feet can propel them across rushing white water – the young chicks literally run across the top. They are superb divers and adept at foraging amongst the stones in riffles, and in the lee of large boulders. A curious-looking black flap on either side of the bill protects it from abrasion against rocks. So harsh is their rough rocky home that plastic leg bands can wear through completely in two years and the identification numbers stamped into the thick aluminium bands soon become illegible.

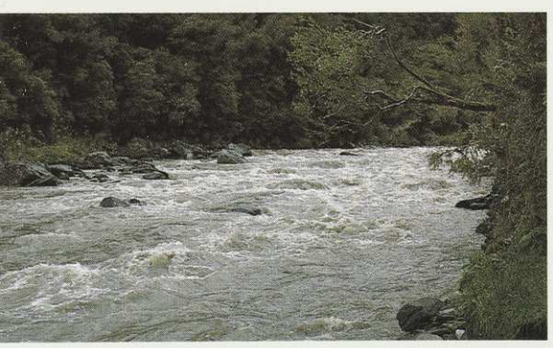
Blue ducks rely on insect larvae for food. These invertebrates live on and under the stones of the river, occasionally drifting downstream, particularly in floods. Recent studies by Kevin Collier (DoC) and Clare Veltman and Ian Henderson (Massey University) indicate that large prey items, particularly caddis fly larvae, are preferred in North Island rivers. The frequent shiny dark fragments of insect exoskeleton in their conspicuous droppings testify to their

rich invertebrate diet. In the Southern Alps, where blue ducks are present in the subalpine zone, fruit from riparian shrubs forms an important part of their autumn diet. I have observed blue ducks amongst the streamside shrubs, gorging themselves on Coprosma berries and leaving thousands of undigested seeds splattered on the open riverbed.

Year-round territoriality has probably evolved from the need for a pair to maintain their breeding partnership and to defend their nesting and feeding areas. Observations by blue duck researchers, including my own over several years in the Arthur's Pass area, indicate that the main constraint on blue duck productivity is the availability of females. Female blue ducks have a lower survival rate than males, because of the energy demands of producing eggs and their vulnerability to predators during nesting. Males are more common. They often engage in spectacular fights, swiping at each other with the prominent spurs on their wings, when competing for the limited number of females.

Recovery plan

Work on blue duck is now coordinated by a national liaison group with representatives from DoC, Forest and Bird, Ducks Unlimited and universities, as well as independent researchers. The group's working document, compiled after the first national blue duck meeting in 1987, has directed efforts over the last five years. A revised version of this Blue Duck Recovery Plan will guide blue duck work for the next decade, identifying research and monitoring priorities for blue duck conservation. The annual meetings of the group provide valuable forums for discussing the latest research results and for encouraging



Styx River, Westland. Flooding is a common occurrence in mountain rivers and one of the major hazards for young blue ducks. The relatively peaceful waters of the Styx River are transformed by heavy rain. Photo: Alan Reith

regional conservation projects. Colour-banding of individual birds and monitoring of small populations is now occurring in most blue duck areas.

Several studies of blue duck ecology are being carried out by Massey University and DoC researchers, including an important study of the effects of introduced trout on blue duck productivity. Birds have been transferred from the central North Island to Mt Taranaki where they have successfully established a new breeding population. Also, scientists are experimenting with radio transmitters in an attempt to solve

A year in the life of a blue duck

Three week old chicks on the Manganui-a-te-Ao. Photo: Alan Reith

AS MORNING MISTS SWIRL down the open riverbed, there is a flurry of activity on the rapids as a pair of adult blue duck work from rock to rock gleaning insects from beneath the current. It is winter and the pair are travelling over most of their territory each day, wary for intruders. Feeding is concentrated in the first hours of the day and several hours after dusk, with the middle of the day spent preening or asleep on river boulders or hidden amongst the riparian vegetation.

By late August, the female selects a sheltered site to nest, often a previously-used nest and usually beneath a rock overhang, or in dense vegetation with complete cover overhead. The female lays six white ovoid eggs. Each egg is ten percent of her body weight, and they are usually laid two days apart. The eggs are in a shallow depression lined with a few feathers. For the next 32-35 days the female incubates the eggs, leaving the nest for only about 45 minutes in the morning and evening to feed. The male is usually inactive and often concealed near the nest, joining the female when she feeds. Nesting can be a month to six weeks later in the alpine regions of the South Island.

In early October, the first fluffy white and grey chicks emerge, with tiny bodies and huge feet, ready to start life battling the strong current of a stream frequently swollen with spring snow melt. The main causes of nest failure are flooding and predation. Flooding continues to be a major hazard for the young brood as the adults share the difficult task of raising the young. The adults remain vigilant, watchful for threats such as predators. Paddling frequently around the chicks, they call softly, herding them into a tight bunch, especially when guiding the brood across difficult water.

The young birds remain flightless for 80 days, about 60% of them surviving to fledge. Fragmentation of the brood is a major threat as young birds have a significantly reduced chance of survival away from their parents. As the young fledge, they explore beyond their home territory while their parents begin their annual moult. They need to be fully feathered when the time comes to defend their territory from other blue duck, including their own offspring. Juveniles have only a 50 percent chance of surviving their first year, males a slightly better chance than females. On average, only one juvenile will survive from each breeding attempt. Some pairs are much more successful at raising young than others.

Most juveniles disperse up-river searching for a vacant territory, a lone bird to pair with, or a weaker adult that they can displace. About one juvenile from every two breeding pairs will be successful in establishing itself as a breeding adult. Some juveniles may travel a considerable distance, seeking a mate and territory, perhaps right out of the catchment, but most attempt to settle close to their home territory.

Once successfully established as a pair, blue duck can expect to live for about seven years. A pair will defend a stretch of river about one kilometre long, all year-round, provided it contains a suitable nest site, roosting areas and adequate feeding riffles to raise a brood. They usually maintain a buffer between theirs and the adjacent territory and will fight fiercely to defend it from aggressors. Pair bonds are long term, with changes resulting from successful male challenges or the death of one of the pair. Both birds remain close together throughout the year and, as winter eases, prepare for another breeding season.

the great blue duck mystery – Where do all the young birds go? Preliminary results show that some young males move right out of the catchment, returning again after a few months.

An important part of this national conservation effort is captive breeding. 'Operation Whio' aims to breed blue ducks in captivity for eventual release into the wild to supplement existing populations or establish new ones. Over 40 blue ducks, nearly all raised in captivity, are now held in aviaries around the country. The breeding effort is coordinated by Ducks Unlimited, a national waterfowl organisation.

The Mt Taranaki experiment has shown that it should be possible to re-establish blue duck in areas where they have become extinct. However, further research to determine the critical requirements of good blue duck habitat is essential, as the reasons for the decline in blue duck populations are still not clearly understood. A survey of blue duck habitat throughout the country by scientist Kevin Collier has shown that favourable rivers tend to have narrow channels, high gradients and stability, low summer water temperatures, large boulders, and intact native forest as riparian vegetation.

With an improved understanding of blue duck ecology, and the guidance of a recovery plan, efforts to protect the species can be better directed. According to Murray Williams, the key to survival of the species lies in the protection of successful family lines. Some pairs are very productive, consistently raising at least two young per year on average. Other pairs rarely succeed in their breeding attempts. He found the recovery of the blue duck population on the Manganui-a-te-Ao was primarily due to the efforts of two pairs whose abundant offspring colonised the vacant territories up and down the river.

In an effort to assist the Manganui-a-te-Ao blue duck population, white water rafters have voluntarily agreed to stop rafting down the river during the critical months of October and November, when newly born chicks are vulnerable to outside disturbance.

Unfortunately, the major threat to the survival of the blue duck, and the historic cause of its decline, is still with us. Destruction or modification of blue duck habitat continues today and has taken on a whole new meaning with the creation of Electricorp – a State Owned Enterprise which believes it has a mandate to increase electricity consumption. With the growing demand for energy, pressure is mounting to increase hydro power generation from the country's untamed rivers. The Government does not have an energy conservation policy and New Zealanders are facing a succession of battles throughout the country as wild rivers are eyed by electricity producers to supply more power. Increasing hydro power generation is not necessary if proper energy conservation and energy efficiency measures are implemented.

The blue duck requires unmodified rivers. Its present distribution is testimony to this. While the intricate ecological requirements of the blue duck are still only partially understood, there is no doubt about its requirement for a pristine habitat. The blue duck is a symbol for the life-blood of the country – our wild and scenic rivers. Its presence indicates healthy and unmodified river ecosystem, upon which many agricultural, industrial and urban uses downstream are dependent. If New Zealand loses the distinctive *'whio. . . whio. . . '* from its mountain streams then it has lost not only a national symbol of the back country, but will have sacrificed the quality and character of the country's river systems.

Effects of water diversion on the Whanganui whio

by Keith Chapple, Forest and Bird energy campaigner

The future of one of the key populations of blue duck (or whio as used here) hangs on the outcome of Court action being taken by Electricorp. This publicly owned corporation is challenging a Planning Tribunal decision for the partial return of water to the upper Wanganui catchment taken for the Tongariro Power Scheme.

THE UPPER WHANGANUI CATCHMENT comprises six tributaries: Whakapapa, Okupata, Taurewa, Tawhitikuri, Mangatepopo, uppermost Whanganui. These rivers are all prime whio habitat.

Tributaries of these streams are be-headed – the water being piped under the hills to the Tongariro Power Scheme. The Whakapapa has a mere five percent residual flow, while the other tributaries are left dry below the intake. This is known as the Western diversion.

Little is known about whio on the Tongariro Scheme's Eastern diversion (Rangipo), which comprises more dam sites and more be-headed rivers. The Tongariro river is the only one in the power scheme to have been studied in depth. The whio population on that river plummeted from 32 to five when water diversion commenced in 1984. Numbers may have risen a little since then.

Early population density

The size of the Whanganui whio population before the power scheme began is uncertain. No population counts or studies were carried out as part of the power scheme investigation work. The only biological study of note is the 'Woods Report 1957' which was concerned only with eels and whether they would migrate through the tunnels and infest Lake Taupo.

Whio were known to populate the Whakapapa/Whanganui confluence and were recorded in the early 1950s. The population at this time would certainly have been in the region of hundreds of pairs.

The Whakapapa currently supports 10-11 pairs, but carrying capacity would be much greater with full water flow. In May 1991, the river was running naturally due to the diversion tunnel being blocked off for repairs. Two fledglings were sighted at Owhango, having migrated about 12 kilometres downstream. It was a tragedy in the making, because the next day the water was diverted back into the tunnel. The birds have since disappeared as the low water level has left much of their habitat high and dry. The Owhango sighting demonstrates the probable elimination of 12 pair on the Whakapapa river. The power scheme has eliminated habitat for at least 16 pairs on the Whanganui and Mangatepopo tributaries. Two pairs have been eliminated from the Okupata river (five pairs presently live here).

Dewatering of the Taurewa and Tawhitikuri rivers, plus farming and forestry activity have probably eliminated a further ten pairs. Thus, about 40 pairs – half the blue duck in these tributaries – have been eliminated since 1972.

Significance of the Whanganui whio population

The upper Whanganui river and tributaries affected by the power scheme currently holds about 43 to 49 whio pairs. This is thought to be the largest whio concentration in the North Island.

In addition, the Manganui-a-te-Ao, where the most intensive whio study has been carried out, holds a further 36 to 40 pairs. The Manganui-a-te-Ao is also a tributary of the Whanganui. It is unaffected by the power scheme and fully protected by a National Water Conservation order.

Vulnerability

Conservation status could change overnight. The Whakapapa colony is the most vulnerable because it is on a lahar path (volcanic mud eruption). One major lahar could wipe out the entire colony. The Manganui-a-te-Ao is equally vulnerable; it too lies on a lahar path.

The single most important conservation action for North Island whio would be to restore the water to the Mangatepopo river and the upper headwaters of the Wanganui. These tributaries are more secure habitat because they are not on potential lahar flows.

KIWI RECOVERY UNDERWAY

Brown kiwi pair at the nest. Photo: Rod Morris, DoC

Concerns for the future of kiwi have led the Department of Conservation to launch a Kiwi Recovery Programme in partnership with Forest and Bird and the Bank of New Zealand. This article summarises DoC's* Kiwi Recovery Plan *and was compiled by Estelle Sarney.

IMAGINE NEW ZEALAND without the kiwi. It's unthinkable, but that tragedy has become possible. This unique bird, whose origins go back 70 million years, has become New Zealand's national symbol, yet few of the self-proclaimed human 'kiwis' have ever seen one in the wild or heard their call. Now the chances of such contact are becoming increasingly remote – the kiwi is threatened with possible extinction. Scientists have noticed the forests becoming quieter. In many areas that used to ring at night with the shrill, quavering call of the kiwi the morepork now calls alone.

We may have adopted the kiwi to represent ourselves, but we have also unwittingly triggered its decline. The kiwi is on the run in its own country from introduced predators and land clearance. Sometime in the past thirty years one of the three species of kiwi, the little spotted kiwi, became extinct on the mainland. It is a measure of how little we know about our national bird that the disappearance of this species went largely unnoticed. It is now exiled to Kapiti and other offshore islands, classified as not just threatened but endangered.

The other two species, the great spotted kiwi and the brown kiwi, and the three sub-species of brown kiwi, the North Island, South Island and Stewart Island varieties, are considered threatened. A five year kiwi recovery programme has been launched recently by the Department of Conservation. The recovery programme is a Threatened Species Trust project sponsored by the Bank of New Zealand in partnership with the Department of Conservation and the Royal Forest and Bird Protection Society.

This recovery plan presents a five-year programme of research and management aimed at a long term goal of maintaining and, where possible, enhancing the current abundance, distribution and genetic diversity of kiwis.

All kiwi species are included in this one plan because all are considered threatened with extinction unless the causes of declines are addressed. The little spotted kiwi is at particular risk and is classified as endangered. The establishment of populations on offshore islands and perhaps in captivity may continue to be necessary for those species in the most immediate danger, but this plan aims to retain kiwis on the mainland. It recognises that in the long run the best way of preserving the diversity of New Zealand's flora and fauna is to conserve species as part of the community in which they have evolved.

Introducing the kiwi

Kiwi are the smallest members of the ratites, a group of flightless birds which includes the rheas of South America, the cassowaries of Australia and New Guinea, and the ostriches of Africa. They are endemic to New Zealand and ancient in origin; their ancestor, which may also have spawned the moas, probably arrived in New Zealand some 70 million years ago.

Kiwis are biological oddities, unique in both appearance and behaviour. Many of their features are more typical of mammals than birds, with some scientists referring to them as New Zealand's honorary mammals. Kiwis hold a variety of records among birds; their eggs are extremely large and rich in energy, and take an exceedingly long time to hatch. Males are the smaller of the two sexes and perform most of the parental care, which is unusual for a monogamous bird.

The kiwi genus *Apteryx* is truly a "one-off" design, and it is not surprising, then, that kiwis have become an important part

of our culture, an unofficial national emblem proclaiming our uniqueness. They are, without question, among the most distinctive and interesting elements of our fauna.

Taxonomy

Three species of kiwi are recognised – the little spotted kiwi, the great spotted kiwi and the brown kiwi. The brown kiwi is also divided into three sub-species on the North Island, the South Island and Stewart Island. Research to be undertaken as part of the recovery plan will further define the taxonomy of kiwis, and changes to the status of the brown kiwi are likely.

Past and present distribution

Little Spotted Kiwi

Members of this species used to be spread throughout the North Island but were all but extinct there by the time the Europeans arrived. They used to be common in the South Island, but declined soon after the settlers arrived and are now probably extinct on both islands. They also occurred naturally on D'Urville Island, but are almost extinct there today.

Today the little spotted kiwi is thought to exist only on offshore islands. The Kapiti Island population of between 500 and 1500 birds is the largest, and some have been shifted to Long Island in the Marlborough Sounds, Red Mercury Island off the Coromandel coast and Hen Island in the Hauraki Gulf. These new populations appear to be reasonably successful, but until they are more securely established the little spotted kiwi will be considered endangered.

Great Spotted Kiwi

This kiwi appears never to have reached the North Island, and to have contracted its range in the South Island over the past few hundred years. It is thought this species was once more widespread east of the Southern Alps than they are now.

The present distribution of great spotted kiwis is not known in detail. They are found in three fairly separate groups mainly west of the Alps, between the Whanganui Inlet just below Cape Farewell and the Karangarua River half way down the western side of the South Island.

Brown Kiwi

Brown kiwi densities which are considered exceptional today, such as that in Waipoua in Northland, seem to have been common in the North Island at the turn of the century. Large numbers were reported on Mt Hikurangi on East Cape, and in 1877 a group of hunters in the Kaimanawa Ranges southeast of Taupo were reported as having 300 skins in their possession, but kiwis are now seldom seen in those regions.

It is thought that brown kiwis died out in the Tararua Ranges before the arrival of Europeans. Bones have been found at Paremata, north of Wellington, and in caves in the Wairarapa, but now the southern most population in the North Island is at the tip of the Ruahine Range just south of the Hawke's Bay. Their retreat northwards seems to be continuing.

The brown kiwi was formerly widespread in Marlborough and the coastal regions of Kaikoura, Canterbury and northern Otago. Today the northernmost population in the South Island is at Okarito on the West Coast.

The most successful population exists in Northland across a range of vegetation types including exotic forest and rough farmland. They extend south to a line running westwards from Mangawai Heads to the top of the Kaipara Harbour.

Brown kiwis also live in the forests of the Coromandel Peninsula, in an area that fans out west from Lake Taupo to Kawhia Harbour southwest of Hamilton in the north and Wanganui in the south, and in an area east of Rotorua, extending from the Raukumara Ranges on East Cape to the tip of the Ruahine Range. The birds are often heard and caught in gin traps in the foothills along the eastern Bay of Plenty. Populations exist on Little Barrier, Kawau and Ponui Islands in the Hauraki Gulf, Moturua Island in the Bay of Islands and on Kapiti Island.

Brown kiwi footprints in sand dunes at Masons Bay, Stewart Island. The Stewart Island subspecies has the unusual habit of foraging in the open during daylight. Photo: Rogan Colbourne, DoC

Little spotted kiwi, now extinct on the mainland, are thriving on Kapiti Island. Photo: Peter Daniel, DoC.

Kiwi Recovery Strategy – Aims and objectives

Aim

To identify the current distribution, abundance and genetic diversity of kiwi, the trends of their populations and the threats they face.

Objectives

- Identify current distribution and abundance of kiwi
- Identify genetic diversity of kiwi
- Determine kiwi population trends through monitoring
- Determine threats to wild populations and develop management techniques for population maintenance and recovery

Aim

Take action to remove the risk of extension of endangered species, prevent further declines and begin the recovery of other kiwi populations.

Objectives

- Ensure the survival of the little spotted kiwi
- Identify and evaluate islands available for brown or great spotted kiwi (a contingency in case island transfers are required in the short term for endangered populations)
- Manage recovery of key mainland populations
- Develop the expertise to breed all kiwi species in captivity
- Promote public interest and involvement in kiwi conservation
- Manage mainland populations to reduce their rate of decline

The last objective will be achieved by endeavouring to protect and enhance kiwi habitat and by reducing the impact of dogs, possum trapping and poisoning, and road kills. This will involve the education of private landowners, such as farmers and the managers of exotic forests, possum hunters and pig hunters. Signs could be erected on roadsides alerting motorists to the possibility of kiwis crossing the road at night.

The largest population of brown kiwi in the South Island is in Fiordland, between the Hollyford and Waitutu Rivers. They extend east to the shores of Lakes Manapouri, Monowai, Hauroko and Poteriteri, and the Livingstone Range east of Lake Te Anau. They are also present on Resolution, Secretary and Parrot Islands.

Brown kiwis are also found at Haast and at Okarito on the West Coast, and are spread throughout Stewart Island.

Threats to kiwis

Predators such as rats, stoats and wild cats, dogs and pigs have had a major impact on the kiwi population since the arrival of Europeans. During a six week period in late 1987 a wild dog killed about 50% of the 1000 kiwis living in the Waitangi State Forest in the Bay of Islands. Kiwis have also been victims of gin traps and cyanide poison laid for possums. It is common to find kiwis in lowland areas with missing toes. In part of the Waipoua State Forest in Northland, about 15 kiwis were killed on roads over an eight month period.

Land clearance by both Maori and Europeans eliminated the birds in most coastal and lowland areas of the North Island, and this continues to be a threat to some populations. Kiwis are very territorial and pairs require areas of between 1.6 hectares and 40 hectares depending on species and locality, so that large areas are required to support self-sustaining populations. In Hawke's Bay, for example, forest remnants as large as 500 hectares lost their kiwis within two decades of becoming isolated. Two populations in that region have declined by about 50% in the past four years.

Even in areas where brown kiwis seem plentiful, such as Northland and Taranaki, recent forest clearance has probably lead to a decline in reproduction. The resulting decline in population will be seen over the next two decades if nothing is done in the near future.

Why kiwis are so vulnerable to predators

Before Europeans arrived the only predators of kiwis were large birds such as the extinct eagle. It is thought they were the main reason kiwis became nocturnal and well camouflaged. They have also evolved for some 25 million years in the presence of wekas, the only natural predator of kiwi eggs and chicks. All species developed defences against wekas, including such elaborate ploys as placing vegetation over the entrance of breeding burrows to hide their entrances.

The vulnerability of kiwis to mammalian predators is therefore not because the birds lack defences, but because the ones they have evolved are ineffective against the new predators. They evolved to foil day-active birds which hunted by sight, not nocturnal animals hunting by sound and scent. Little spotted kiwis were the main victims of the new predators – at half the size of their fellow species, they were simply too small to defend themselves.

The breeding rate factor

All three species of kiwi have long life-spans and low reproductive rates. The average life-span is probably about 10 years, with some adults living to the age of 30 or 35. Male kiwis become sexually mature at 18 months, but females do not lay until they are three to five years old.

The eggs size to body size ratio in kiwis is among the greatest of any bird in the world. It takes a female 30 days to form an egg, which then takes 70 to 80 days to hatch. North Island brown kiwis and little spotted kiwis on Kapiti Island normally lay two eggs a year, 20 to 30 days apart, and some will lay a second clutch if the first one fails.

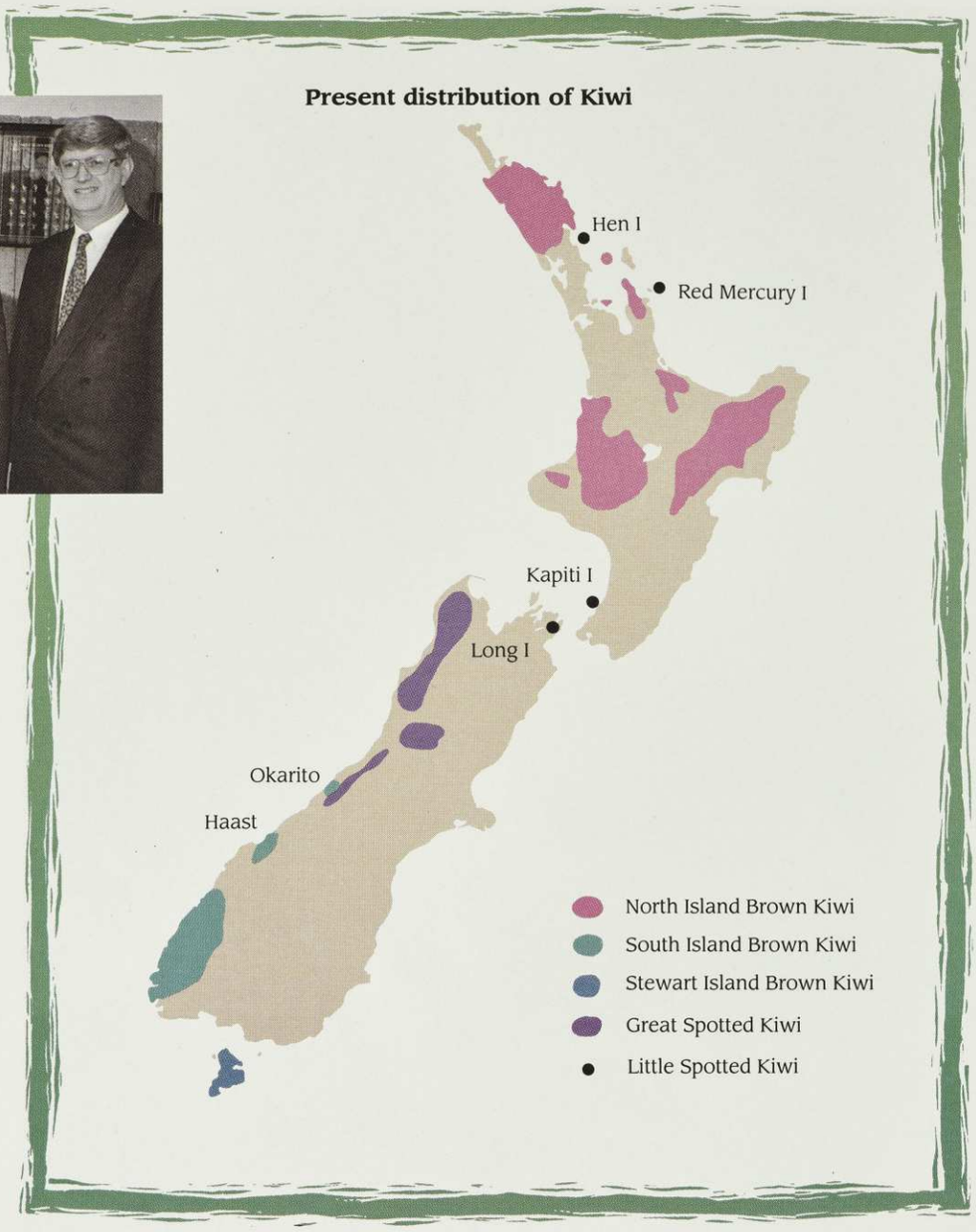
Great spotted kiwis in northwest Nelson usually lay just one egg a year, and replacement layings are rare. The rate of egg production in birds further south is not known.

About 75% of kiwi eggs fail to hatch. Some are deserted for no apparent reason, some are invaded by microbes, some are chipped or cracked by the incubating male, some are infertile and a few are eaten by predators. Wekas account for the greatest loss of eggs of little spotted kiwis on Kapiti Island.

North Island brown kiwi killed by dogs. In 1987, about 500 kiwi were killed in Waitangi Forest, Northland, by a single dog in just six weeks. Forest and Bird wants all kiwi habitat to be zoned as dog-free areas. Photo: P. Morrison, DoC

At present, most populations are managing to produce enough chicks to theoretically replace themselves with young every two to eight breeding seasons. This implies that the failure of some populations on the mainland is due to poor adult and/or

Beehive launch of the Kiwi Recovery Plan, August 1991. Rt. Hon. Jim Bolger, Lindsay Pyne, Kevin Smith and Denis Marshall. Photo: Lance Lawson



juvenile survival rather than inadequate breeding. However, the relatively slow rate of breeding makes it difficult for populations to recover when faced with other threats.

Kiwis have proved to be robust animals that can be handled and transported with little apparent harm. The North Island brown kiwi breeds regularly in captivity and both great and little spotted kiwis have done so occasionally.

BNZ sponsorship good news for kiwi

Fortunately, the plight of the kiwi has been recognised before the bird reaches the brink of extinction. The Department of Conservation is now well into the first stage of its Kiwi Recovery Programme, launched in August in partnership with the Royal Forest and Bird Protection Society and the Bank of New Zealand.

The Plan and the partnership were first announced by a world authority on conservation, Sir David Attenborough, at the conclusion of a superb, eye-opening television documentary on the kiwi produced by the Natural History Unit of TVNZ.

"Once again New Zealand is leading the way in conservation. By forming this coalition for research and action, you can address the threats the kiwi faces and ensure it can flourish at home on the mainland," said Sir David.

"The Kiwi Recovery Programme is a marvellous alliance . . . and a source of great hope, because it is New Zealanders who are the guardians of this remarkable survivor."

The authors of the Kiwi Recovery Plan were Dr David Butler of the Department's Threatened Species Unit, and Dr John McLennan of DSIR Land Resources. They prepared a five year programme of research and management aimed at the long term goal of maintaining and, where possible, enhancing the current abundance, distribution and genetic diversity of kiwi. It will be co-ordinated by the Threatened Species Trust Programme, a partnership between DoC and Forest and Bird.

The Bank of New Zealand will provide substantial financial support, and will also actively promote the programme through its nationwide network of branches.

The Managing Director of the Bank, Mr Lindsay Pyne, presented the Recovery Plan to the Prime Minister, Mr Bolger, at a function attended by the Minister of Conservation, Mr Denis Marshall, and Forest and Bird's Conservation Director, Kevin Smith.

In accepting the plan, Mr Bolger said the programme would ensure a more promising future for the kiwi.

"We are now taking steps to save this unique bird, our national emblem, before its position becomes critical," said Mr Bolger.

A whakawatea (clearing of the path) was later held at the National Museum and Art Gallery (Te Whare Taonga O Aoteoroa), bringing the Maori community alongside the partners to endorse the programme. Maori people wanted to participate in the Recovery Programme because of their deep relationship with the kiwi and the natural world.

According to many Maori traditions, the kiwi is the oldest of Tanemahuta's bird family. It was Tane, the god of the forest, who, with different wives, created much of the natural world including birds, trees, stones and humans. At significant moments in Maori life – deaths, marriages or other great events – the kahukiwi (kiwi feather cloak) is drawn over the shoulders as a privileged symbol of chieftainship and high birth. The cloaks, which are nearly always named, are great taonga (treasures) that carry the wairua (spirit) of the birds themselves. Today, however, it is only through kiwi that die naturally or through things like road accidents that the Maori people gather the prized feathers and continue the tradition of kahukiwi.

The Bank of New Zealand's General Manager of Group Policy and Development, Mr Thomas Tennent, said it was significant that a world authority of the stature of Sir David Attenborough had been so forthright in his support of the partnership.

"This interest and support tells us that this recovery programme has a significance that transcends our own shores, and we once again have an opportunity to demonstrate to the world our leadership in caring for the preservation of native species," said Mr Tennent.

The Minister of Conservation, Mr Marshall, said the kiwi was one of our most precious treasures – a symbol of our identity and pride.

"I commend this plan to you. I hope it sparks unprecedented co-operation and sustained effort to turn the kiwi away from the edge of the cliff," said Mr Marshall.

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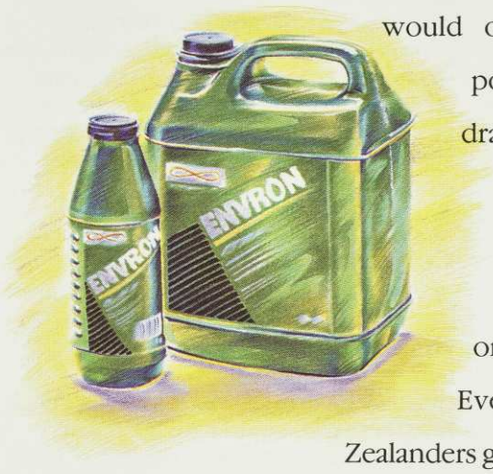

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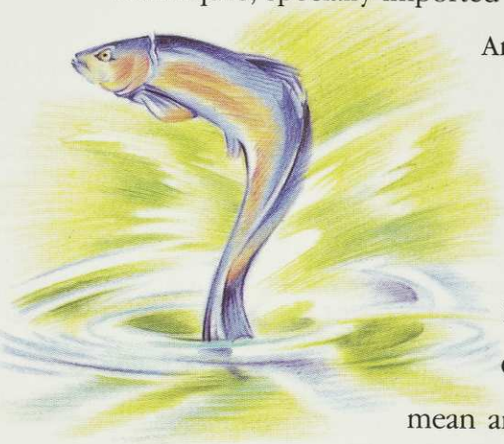

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Megawatts or Negawatts

ELECTRICORP'S PROPOSALS to increase electricity prices in anticipation of the need for a new thermal power station in 10 years' time recently hit the headlines.

A simultaneous shortage in capacity, because of a cold winter and low storage in South Island hydro lakes, has kept energy issues in the news.

All of this highlights the urgent need for this country to address the major opportunities for economic and environmental benefits through energy efficiency.

There is an alternative to Electricorp's proposal for a new thermal power generation station. It is called improved energy efficiency. It happens when consumers get the same amount of heat, light or other service for a lesser cost through requiring less energy.

This source of energy has been called "negawatts". A unit of saved energy or "negawatt" is just as good as an extra unit of electricity or megawatt, and costs less. That is, it makes common sense as well as good economic and environmental sense for people to use energy efficiency measures (or buying "negawatts") up to the point where the costs equal the current price of electricity.

The more efficiently a nation uses energy, the more cost competitive are its goods and services. At present, New Zealand ranks badly in terms of the amount of energy used to produce a unit of Gross Domestic Product (GDP).

This international measure of energy intensity shows that while other OECD countries have reduced their energy intensity in recent years, New Zealand's has risen sharply.

Between 1970 and 1988, the average energy intensity of OECD countries fell 25 percent while New Zealand's has risen 31 percent, as shown in Figure 1. The effects of the Think Big projects accounts for only part of this.

Industry

Case studies by the Ministry of Commerce in recent years have identified energy savings of 40 percent within the meat industry. The technology investigated includes cogeneration and boiler heat recovery, computer controls to optimise speed in blast freezers, and technical advances such as hot boning plants leading to substantial energy savings. Potential energy savings of a similar amount have been identified in the cement, glass, and steel manufacturing industries. The pulp and paper, aluminium, dairy and food industries also show great scope for more efficient use of energy.

Transport

The transport sector contributes 40 percent of New Zealand's CO2 emissions, a significant proportion of our greenhouse gas emissions. If all petrol vehicles were adequately tuned, total fuel savings of around four percent could be achieved.

If more fuel efficient vehicles were used than at present, there could be an overall reduction in petrol use and, consequently, a reduction in greenhouse gas emissions. For example, a target of an increase by 50 percent in fleet average economy (from the present 30 mpg to 45 mpg) by 1995 would allow sufficient time, with the present rate of turnover of the fleet, to meet a target of a 30 percent reduction in carbon dioxide levels from vehicles by 2005. There would be corresponding costs savings to the drivers.

The use of CNG and LPG instead of petrol offers vehicle drivers potential costs savings of 30 to 40 percent for the same distance travelled, assuming engines are properly tuuned in each case. The corresponding reduction in carbon dioxide emissions is around 33 percent.

Competitive advantage

Improved energy efficiency would reduce the unit costs of production, increase firms' international competitiveness, encourage economic growth and increased employment. So why don't people take these chances to save energy and save themselves money? There are "institutional barriers" to the market delivering the full potential for energy efficiency. These include average instead of marginal cost pricing of energy, lack of competition in energy markets, lack of information to consumers, those who benefit are often not those who pay, and company investment criteria which favour production ahead of energy saving measures.

Lake Manapouri, saved from having its water level raised for increased power generation in the early 1970s, is now at the centre of the energy debate again. Government proposals to privatise the underground Manapouri power station are strongly opposed on environmental grounds by Forest and Bird. Photo: Alan Mark

Domestic

A 1986 study for the Ministry of Energy by Jan Wright and James Baines, of the Centre for Resource Management, Lincoln College, showed that simple cost effective measures to achieve energy efficiency in just four areas – domestic water heating, home heating, lighting and appliances – if fully utilised, could save the need for planned future power stations: Waikato thermal, lower Clutha hydro, Queensbury hydro and Mokai geothermal.

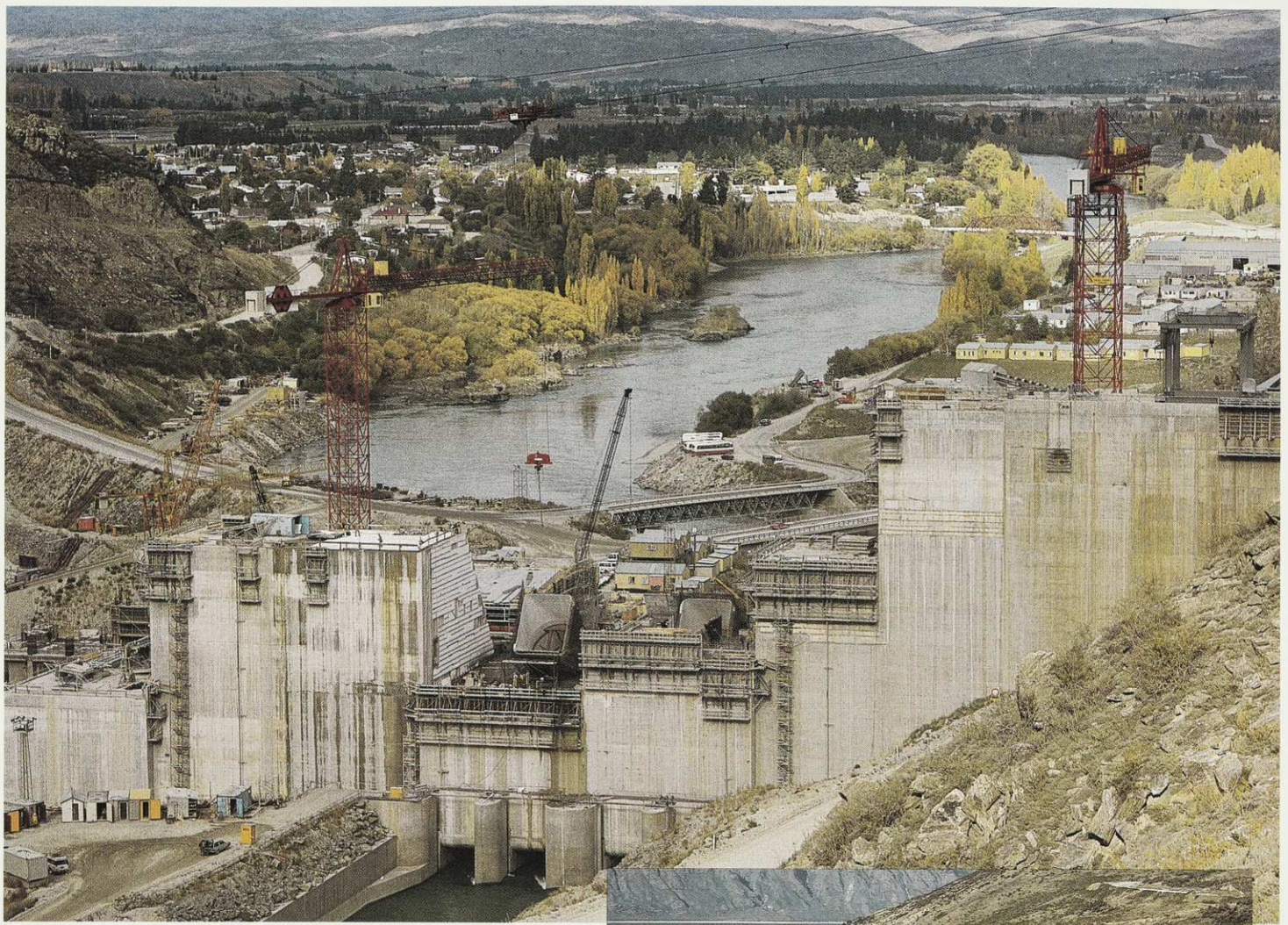
Electricity industry reform

Let me suggest some fundamental requirements in the electricity industry.

- Consumers need to have the information and be able to purchase the required equipment and appliances. A good

Urgent need to consider alternatives to building more power stations.

By Roger Blakeley.



Above: *The Clyde Dam under construction showing how close Clyde is if the unstable scree slopes caused the proposed Lake Dunstan to flood over the dam.* Photo: DAC Communicate NZ

Right: *The environmental costs of power generation. Exposed shorelines on Lake Hawea after an extremely dry winter and excessive water draw off for electricity. The lake was raised 20 metres in the 1950s to increase waterflow to the Roxborough power station.* Photo: Alan Mark

example is Southpower's provision of computerised meters which provide customers with detailed information, never before available to them, about electricity consumption and costs. I am told that this has brought consumer savings of 20 percent in many cases and 10 percent on average.

Recently, Southpower announced that it would pay customers not to use electricity, because of the current situation of high winter demand and low hydro lake levels. This is a sign of how, in the longer term, supply authorities could be marketing energy efficiency.

- The structure of the electricity supply industry needs to ensure that there are the right incentives for industry efficiency and energy efficiency.

Other aspects of the electricity industry restructuring which have been released in public discussion documents include the proposal to separate power charges into fixed costs such as installation of power lines and variable charges reflecting the electricity used. It is crucial that such separation is applied in a way that does not take away the incentives for energy efficiency.

- There must be the right incentives for the new Electric Power Companies (to be established under the proposed Energy Reform Bill), to market energy services at the least cost, (including saved energy), instead of simply selling more and more electricity. For example, overseas companies already deal in markets in saved energy. This idea has been promoted in a recent report by the New Zealand Planning Council. Earlier work by American energy expert Amory Lovins suggests markets in saved energy

Energy efficiency being left in the cold?

DR BLAKELEY'S ARTICLE suggests some fundamental requirements in the electricity industry reforms in relation to energy efficiency. The obvious question is will the reforms deliver?

While the Minister of Energy, John Luxton, stated at a recent Power Industry Conference in Wellington that electricity industry reforms were consistent with energy efficiency, Forest and Bird and other commentators have a different view.

John Collinge, Chairman of the Auckland Electric Power Board pointed out that the reforms have only looked at the generation side of the industry, not the demand side.

This is a fundamental flaw, as the efficient market solution Treasury and the Ministry of Commerce are so dearly attached to depends on efficiency existing on both the demand and supply sides of the industry. For example, investigations by Electricorp and the NZ Planning Council indicate cost effective energy efficiency could supply over 50 percent of New Zealand's electricity demand. This means the country could be wealthier, have higher employment and have less rivers dammed with the same level of energy services because investing in power stations is much more expensive than energy efficiency improvements. Efficiency measures can be installed for less than 3 cents a kilowatt hour. Building power stations would cost at least 15 cents a kilowatt hour.

Why consumers are neither being supplied with or demanding cost effective energy efficiency has to date not been considered in the electricity reform process. If it had been, perhaps we would all know how better to cope with looming electricity price rises! Electricity price increases are not such a hard thing to cope with if consumers can reduce the amount they use for the same level of comfort and at less cost. Consumers are presently being sent the wrong messages. There is much more information available on energy consumption than on energy efficiency and conservation. This situation needs to be reversed if New Zealand is to become an energy efficient, and thus economically efficient, country.

Fixed charges

At the Power Industry Conference serious doubt was expressed by a number of people, both on and of the floor, about the application of fixed charges for electricity distribution lines as opposed to variable charges for generation. The Ministry of Commerce's reply seemed removed from common sense, business reality and economic theory and augurs ill for energy efficiency.

Documents put out by the Ministry of Commerce in September increase concerns that fixed charges will be applied in a way that unfairly discriminates against energy efficiency and cogeneration fuels, such as gas. They have suggested that fixed charges could make up 50 to 75 percent of power bills, substantially reducing the incentive to apply energy efficiency techniques.

Efficiency from competition

Energy Minister John Luxton claims there will be efficiency gains from the electricity reforms, especially the proposed share giveaway from electricity supply authorities. Yet energy trading by the ESAs only accounts for 3 percent of the costs of electricity. Not much room for cost cutting there. Forest and Bird believes the Minister has jumped the gun and is freeing up the energy sector before the proper guidelines have been set to ensure energy efficiency and conservation. These guidelines should be the subject of an energy policy statement under the Resource Management Act.

Information disclosure

The Ministry of Commerce and Treasury are proposing mandatory information disclosure as part of the reforms, but are not specifying what form the disclosure will take. How can households make rational decisions about minimising the cost of energy services if the information disclosure regime does not result in standardised, easily read and widely available information on the comparative costs of different sources of energy services? (Be the sources other electricity supply companies, energy efficiency or other fuels?)

Ideally every household should have the type of meter supplied by Southpower in Christchurch, plus detailed information on how to save energy arriving with every power bill. Amongst other things, this would encourage electricity suppliers to stock energy efficient products, such as water cylinder wraps.

Barry Weeber

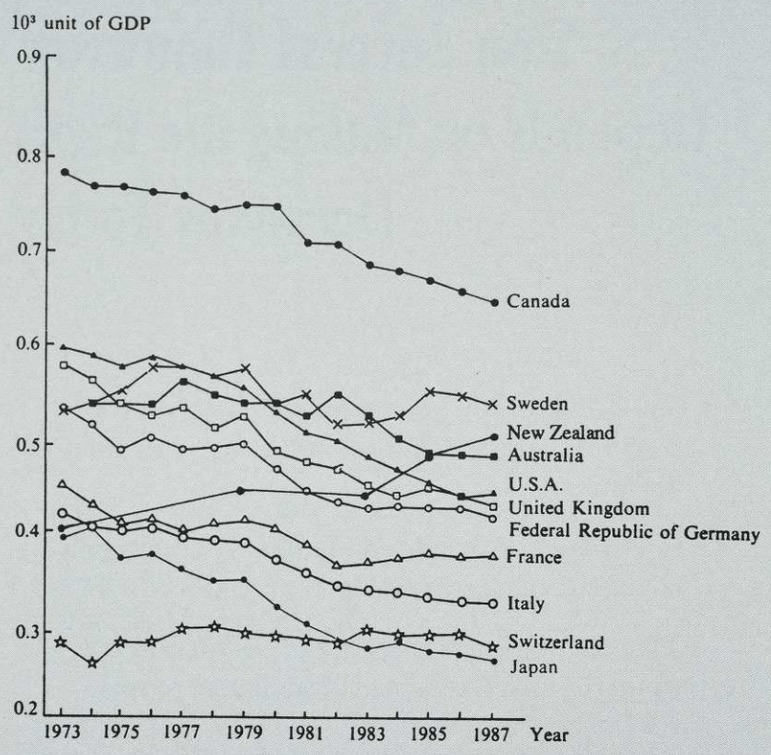
and innovative financial arrangements such as futures markets, arbitrage and competitive bidding. Market forces could be a powerful promoter of energy efficiency providing the "playing field is level".

New Zealand initiatives

There are impressive examples in New Zealand of companies successfully developing and applying energy-conscious technology to waste and other environmental problems. These include:

- Auckland Regional Council's $15 million joint venture with the Auckland Electric Power Board to convert methane gas from landfills into electricity. Landfills being considered are Green Mount and Rosedale Road which together could generate enough electricity to supply 12,000 households.
- Electricorp's $24 million re-injection system for the Wairakei power station to be spent over three years. Rather than releasing hot water containing some natural toxic chemicals into the Waikato River, water will be piped through reinjection wells back into the geothermal reservoir.
- The Ministry of Agriculture and Fisheries waste technology unit has developed anaerobic systems for meat and other processing plants. The system in place at the new Fortex Meat Processing plant, at Mosgiel, separates liquid waste and puts it into an anaerobic digestor. The process produces gas, which is harnessed to run a dryer, and eight hours later the effluent is 90 percent pollution-free.
- FERNZ Corporation recently won the Arthur Mead Environment Award of the Auckland Branch of the Institution of Professional Engineers of New Zealand for a chemical plant at the NZFP pulp and paper plant at Kinleith which enables the bleaching process to achieve a ten times decrease in waste discharge.
- Auckland University recently upgraded its heating, ventilation and air conditioning plant. For a capital cost of $73,000, a 50 percent saving in gas consumption ($60,000pa) was achieved. The payback period was 14 months.
- Bay of Plenty Electricity developed an insulation blanket for CIP (clean in place) hot water units, used on dairy farms for rinsing the interior of bulk milk tanks after each milk collection by a dairy company tanker. For a capital cost of $197 per unit, a 46 percent saving in energy use for the CIP unit was achieved. The payback period is 8.5 months.
- The Energy Management Group (of Ministry of Commerce) has calculated that $220 million is spent annually by public sector agencies on energy within their own in-house operations. Of this total, savings of 10 to 20 percent are achievable simply by ensuring equipment maintenance and operations are optimised to reduce energy consumption.

Fig 1. Trend of energy per GDP in major OECD countries



Energy per GDP = primary energy demand (toe)/GDP (1 million US$(1985)
Source: Energy Balances of OECD Countries. 1986/87

Further energy costs savings of between 15 and 60 percent are available through investment in energy efficient capital equipment. Energy efficiency can serve goals both of a more efficient and competitive economy and improved environmental quality. It is an opportunity that we cannot afford to miss.

This article is reprinted from the August 1991 issue of the Ministry for the Environment publication Environment Update.

Roger Blakeley is Secretary for the Environment, Ministry for the Environment, in Wellington.

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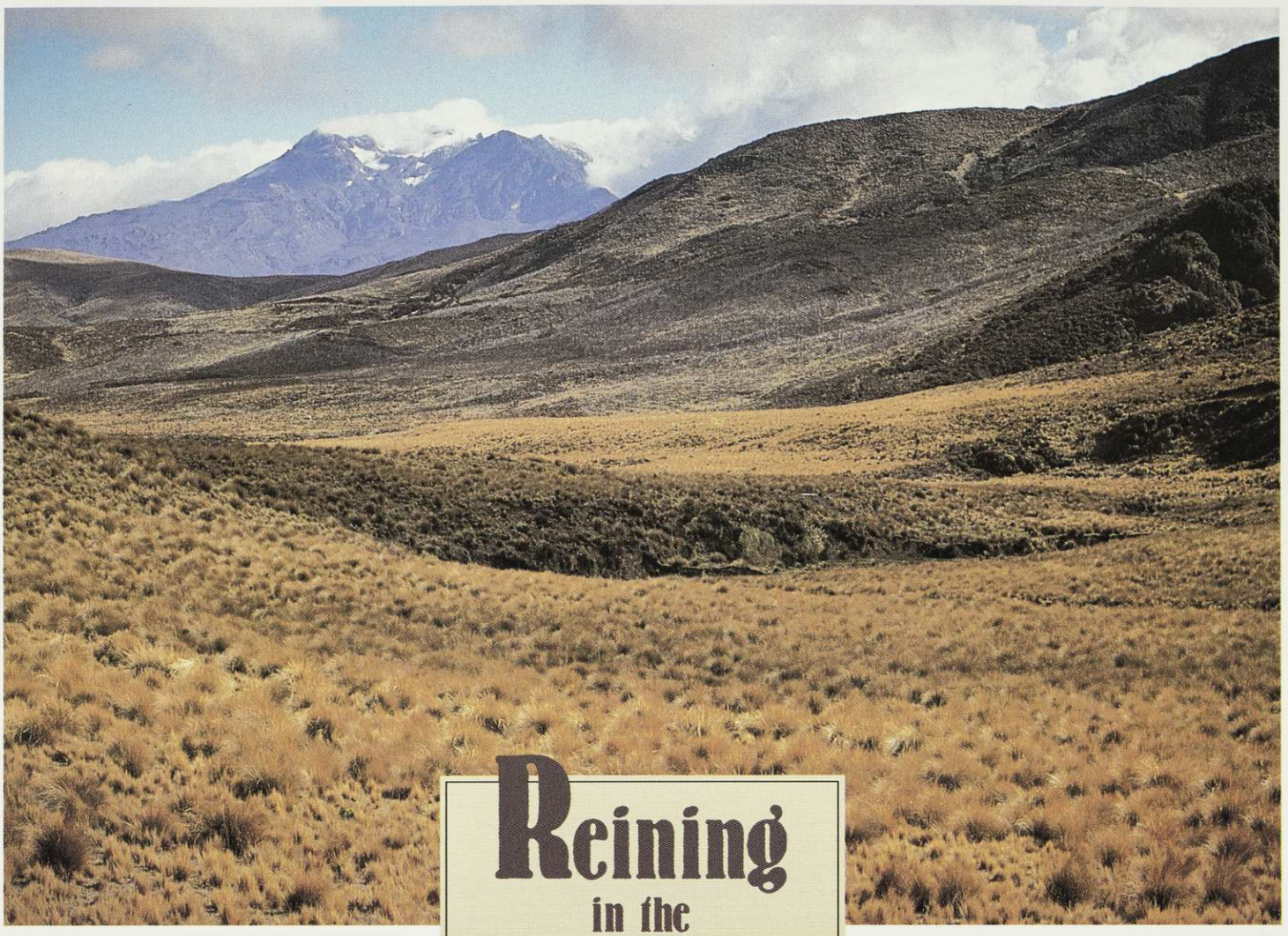


Reining in the brumbies

Protected feral horses threaten the North Island's best remaining area of tussock grassland. Forest and Bird's Conservation Director, Kevin Smith, makes the case for the protection of the grasslands rather than the horses.

THE SIGHT OF HORSES running free across open country has universal appeal. Film producers used the imagery to good effect in countless movies of the wild west. It is not surprising therefore that a lobby has developed in New Zealand to champion the cause of a herd of feral horses found in the central North Island. What is surprising is that the feral horses enjoy protected status under the Wildlife Act – a privilege otherwise reserved only for indigenous wildlife.

Roaming over 70,000 hectares of montane to subalpine tussock grassland in the southwestern Kaimanawa-Moawhango area, the feral horses were granted absolute protection within this area by an order in council in 1981. Their grazing, trampling, campsites and dung heaps threaten the survival of the last extensive area of tussock grassland in the North Island. A number of rare or special native plants and special habitats may be eliminated by the horses with one species of native grass, *Deschampsia caespitosa*, having already disappeared.

The 1981 protection order has resulted in burgeoning horse numbers. In 1990 they numbered 1102, increasing at 16.7% per annum from 174 in 1979. In the last two years they have increased at 20% per annum, a doubling time of 3.43 years. The estimate after this current breeding season is 1490 horses.

In August this year, a public discussion document on the future of the horses was produced by the Department of Conservation. The document put forward three options now being considered by the Minister of Conservation, Denis Marshall. These included the "do nothing" option, a reduction in horse numbers and on-going management, or the uplifting of the protection order and removal of horses from the area.

Over 1300 feral domestic horses exist in the Moawhango area. The descendants of escapes, strays and deliberate releases of domestic horses, they currently enjoy absolute protection under the Wildlife Act. Photo: John Barkla, DoC

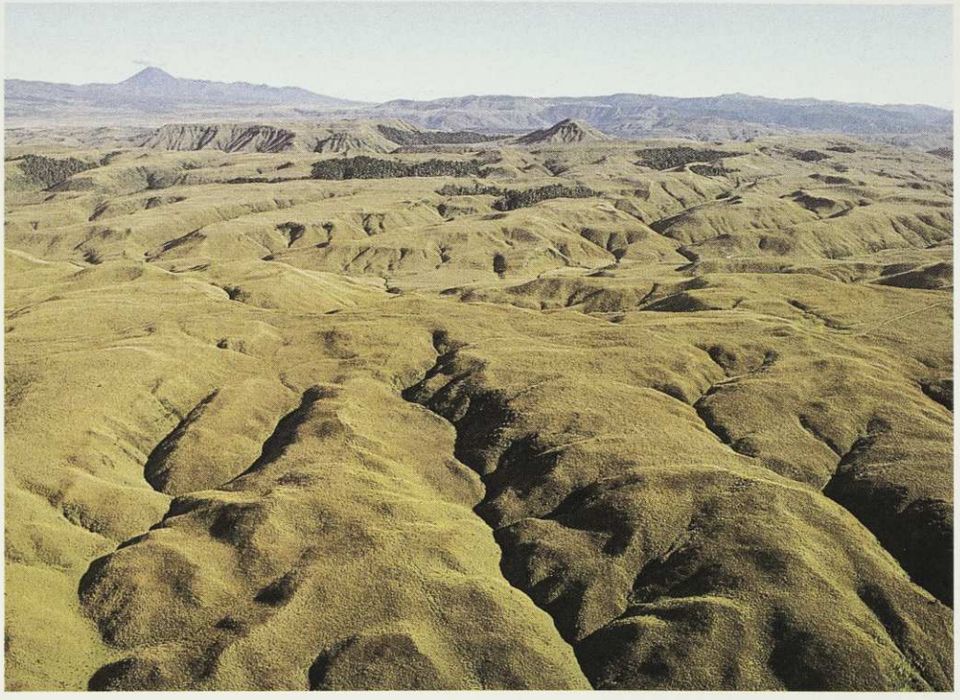
Top: *Tussock grasslands of the Awapatu Valley, Moawhango catchment, rapidly being degraded by trampling and grazing from feral horses. Mt Ruapehu, in the distance, the centrepiece of Tongariro National Park (now a World Heritage site).* Photo: John Barkla, DoC

The 1981 protection order marked the end of a successful campaign by a small group of horse lovers who persuaded the New Zealand Forest Service to establish the Kaimanawa Wild Horse Committee in 1978. Comprised of horse lovers, army officers, a Forest Service ranger and an animal physiologist from Massey University, the committee was concerned at the loss of feral horses from the central North Island. In 1981, when the horses were protected, there were only about 170 remaining in the Kaimanawas.

Feral horses were once common in many areas of the North Island in the late 1800s and early 1900s. Since then, land development, wild animal control programmes and commercial exploitation have caused their range and numbers to shrink rapidly. The only remaining feral horses, or brumbies, in the North Island are the Kaimanawa horses and a few horses in Aupori forest in Northland. Feral horses first originated from deliberately released domestic horses, escaped cavalry horses and Maori horses. These were supplemented by the liberation of horses belonging to the Mounted Rifles near Waiouru at the end of World War II and from the escapes or releases of farm horses from nearby sheep stations.

The reduction in the range of feral horses has been matched by a more dramatic reduction in the area of tussock grassland and low monoao *(Dracophyllum)* shrublands in the North Island. These grassland/shrubland communities developed mostly from Maori fires that deforested the extensive central North Island plateaux. Once widespread across the volcanic plateau, the tussock has given way to pine forests and farmland. The last stronghold is on the army land of the Waiouru Military Reserve east of the Desert Road and Waiouru. For the travelling public, the wild open landscapes of the Desert Road provides one of the few natural scenic highlights in the drive from Auckland to Wellington.

Only 20 years ago, uninterrupted vistas of tall red tussock land also flanked the Taihape-Napier highway just to the south-east; but subsidised agricultural development of these marginal lands in the 1970s and early 1980s eliminated vast areas of tussock. Ironically, the Kaimanawa-Moawhango tussock was spared because of its ownership by the Army who value the open landscape for military manoeuvres. Under the control of the New Zealand Forest Service or Department of Lands and Survey – departments that ostensibly had nature conservation responsibilities – the tussock would probably have been cleared for some foolish forestry or land development programme.



The Moawhango area contains the last sizeable areas of tussock grasslands/shrubland systems that once stretched from Rotorua to the northern Ruahine range in the south. Part of the Waiouru Military Reserve, this area is of outstanding national significance as a refugia for many rare or special native plants.
Photo: Geoff Rogers, FRI

Rare plant habitat

The ecological importance of the Kaimanawa tussock grassland has only been appreciated in recent years, both as the best surviving example of a once-common ecosystem, and as the habitat of a number of rare or unusual plants. Botanical surveys of the area by Dr Geoff Rogers of the Forest Research Institute have shown the area to be of outstanding biogeographic significance. It contains 32 native herbs and grasses with important biogeographic limits whose distribution coincides with the feral horse range and another three species just south of the horse area. These include two plants – *Ranunculus recens var* and *Logania depressa* (probably extinct) – found nowhere else; the southern limit of five plants endemic to the central North Island; ten species of montane herbs that occur only in the Kaimanawa grasslands in the North Island but are present in the South Island; and the North Island southern limits of sixteen species that re-occur in the South Island.

Dr Rogers describes the area as having the highest national concentration of biogeographically special plants in one area. He believes the Moawhango region south of the Kaimanawas and north of the Ruahines is an ancient centre of biotic survival. Parts of this area escaped the marine innundation of the lower North Island in the late Miocene-Pliocene (8-12 million years ago) and the tectonic upheaval resulting in the uplift of the Tararua and Ruahine Ranges that started less than one million years ago. This geological upheaval would have wiped out the habitats of these old land mass plants elsewhere in the lower North Island (see *Forest & Bird*, November 1986).

Protection plea

Rogers makes a plea for the protection of the Kaimanawa-Moawhango grassland both as an ancient refugia of immense

Feral horses – a personal account

HORSE-CATCHERS would have removed the Kaimanawa feral horses by now if the horses hadn't been protected. First by the army blocking access, and then by the Order in Council. One of those eager to catch the Kaimanawa horses was my late father, Colin Smith, or Bluey, as he was known. In the 1960s and early 1970s, he joined forces with Ross Konui and then with Boy Kuru of the Tuwharetoa in numerous horse chases in Tongariro National Park. Together they caught 169 horses from the park, not really for profit or for any special qualities of the horses, but mainly for the love of the chase.

As a child, I was allowed to join in some of the latter chases. It was the end of an era. The frontier of the King Country was rapidly disappearing as development penetrated the forests, manuka and tussock of the National Park-Lake Rotoaira area. Wild rivers full of trout and blue duck

Smart Pants, a brumby caught in Tongariro National Park, and its captor, the late Colin Smith.
Photo: Taranaki Daily News

botanical significance and as the last significant example of the natural grasslands that once stretched from Rotorua in the north to the northern Ruahine Range in the south. Only 10% of the 660,000 hectares of natural grassland present in 1840 remains today.

Maori fires removed the original forest cover of the upland plateaux of the Moawhango area. Relict pockets of beech (mainly mountain beech with some red and silver) and kaikawaka survive on south facing sites and in damp valleys. In areas burnt in early European times, shrublands of manuka and monoa prevail at lower altitudes and, at higher altitudes, the shrub species *Dracophyllum recurvum, Brachyglottis bidwillii,* and *Hebe tetragona*. Extensive tussock grasslands comprising red and hard tussock cover areas burnt more recently. In the floors of the basins in this undulating terrain are hard tussock grasslands. These basin floor sites have probably never supported forest since the last glaciation and are centres of outstanding conservation value because they were the sites from where the tussocks dispersed when fire deforested the region.

Valley floor wetlands such as this tarn in the Awatapu valley are the habitat of a number of rare or special native plants. Such vulnerable habitats are severely damaged by horse trampling and grazing. Photo: Geoff Rogers, FRI

The Department of Conservation discussion document on the horses notes that:

> "The wild horse range encompasses a unique range of basin floors, wetland and flush zone habitats and contains many outstanding botanical and ecological features. The high fertility flushes fed by ground water seeping from the underlying marine sediments, the extensive blanket bogs capping rounded greywacke ridges and the extensive basin bogs support many of the at least 32 plant species, with important biogeographic limits, present."

A quagmired wetland.

Trampling and grazing by the burgeoning horse population is seriously degrading these natural plant communities. The heavy grazing of the hard tussock grassland in the basins is gradually eliminating the hard tussock and favouring the spread of weeds such as Hieracium and exotic grasses. The DoC report summarises Dr Rogers' conclusions of the environmental impact of horses as follows:

> "The northern Moawhango is the only example of undulating ridge and basin topography in the North Island. The region supports by far the highest concentration of biogeographically significant plants in New Zealand. Five species are suffering damage by horses that, in the long term, threatens their survival. Because of intensive grazing pressure, many tussock communities about water courses have been severely modified or eliminated. Furthermore, many mires, seepages, and other riparian microhabitats are being severely damaged by trampling and grazing. The spread of weeds, mainly *Hieracium*, heather and exotic grasses is enhanced by all facets of horse disturbance including grazing, trampling and the creation of dung heaps. Unique flush zones also suffer gross modification by trampling and grazing."

Dr Rogers points to the intermontane basin floor of the Argo Valley as an area where horse and stock grazing has eliminated the hard tussock. Basins to the north will suffer a similar fate if horse grazing continues.

The natural wildlife values of the tussock grasslands are unknown and are not mentioned in the DoC discussion document. Evidence from elsewhere suggests that the tussock grasslands and shrublands will be just as important for invertebrate conservation as they are for botanical conservation. They are likely to contain the best remaining populations of insects associated with scrubland and tussock grassland vegetation that characterised wide areas of the North Island during cold, glacial periods in the past. Native birds present include pipit, paradise duck, banded dotterel, blue duck and the New Zealand falcon, a declining species.

In summary, the Moawhango Ecological District has botanical, scientific and landscape values of outstanding national significance warranting their total protection. Many of these features are unique to the area. The values are such that the Moawhango grasslands would be a worthy addition to the Tongariro World Heritage Area, which presently covers only the Tongariro National Park, or to the Kaimanawa Conservation Park.

were decapitated, their headwaters disappearing into tunnels of the Tongariro Power Scheme. Native forest logging in the adjacent Tongariro State Forest, where my father worked as a bushman, was coming to an end as the forests ran out of timber. Subsidised farm development swept aside the natural vegetation and exotic forestry spread from the eastern shores of Lake Taupo into the Rotoaira basin.

If sentiment dictated, the horses would be given a special value as part of the heritage of the volcanic plateau. Yet, the horses do not belong with the blue duck, kaka, totara or tussock, but with the heather, contorta pine, broom, deer and the Caterpillar tractor – alien elements modifying and degrading the natural ecosystems.

The exploits of the horse catchers generated colourful yarns, with the facts becoming distorted over the years and turning into legends. The October issue of North and South magazine recently featured a piece of crusading journalism on behalf of the horses in which legends have become myths. My father is credited in the article with having transformed two of the brumbies, turning one into a Tokyo Olympic showjumper and the other into a Horse of the Year title winner. Two of the horses he broke-in did achieve such fame but they had rather mundane origins, with the Olympian being bought out of the Taumarunui saleyards rather than starting life as a mountain-dwelling brumby.

Yet, forgetting the myths, there is no doubt horse catching was an exciting existence. The most celebrated incidents were the chases for a seemingly uncatchable cream stallion. The young horse somehow dodged nooses, tranquilliser darts and blockades until my father bought a powerful staying hack and ran the feral horse to a standstill. A New Zealand western, the 1981 film 'Wild Horses', was loosely based on the chases for the young cream horse (I just don't recall the fights or the women of the movie).

True to its domestic origins, the horse was broken-in in a couple of days after its capture to become a likable, but self-willed pony named Smart Pants. He became my hunting horse and for several years carried deer out from Tongariro forest. Returning with him to the tussock once, I was struck by his skill in gently tugging on the flower stalks of the mountain daisies till they parted from the presumably less palatable basal leaves. Here lies the problem. Horses, wonderful animals that they are, have no place in the last remaining tussock grasslands of the North Island with their suite of vulnerable herbs and native grasses.

Kevin Smith

A horse exclosure plot illustrating the grazing induced degradation of the tussock grassland community. If unchecked, horses will eventually eliminate the hard tussock grassland of the basin floors. Photo: Mark Bellingham

These natural heritage values are threatened by feral horses, by the spread of exotic weeds including heather, *Hieracium* and contorta pine, and by physical damage from heavy machinery used in army manoeuvres. Of these threats, the most pressing is the rapidly increasing horse population. Horses directly foster the spread of *Hieracium* and create disturbed sites for the spread of contorta and heather.

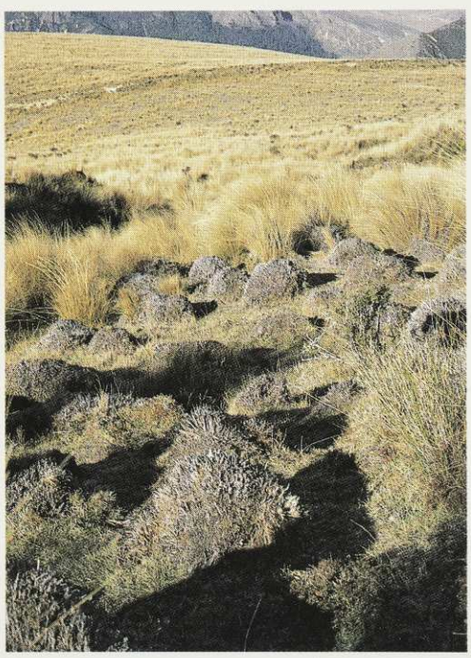
Removal of horses sought

New Zealand has national and international responsibilities for the protection of its endemic flora and fauna. It is clear that the ongoing presence of feral horses in the Kaimanawa area is not compatible with the protection of the natural plant and animal communities. Accordingly, the Forest and Bird Executive have called on the Minister of Conservation, Denis Marshall, to rescind the protection order on the horses and to remove them from areas of public land with natural vegetation.

Supporting Forest and Bird in this call have been ECO (Environment and Conservation Organisations), Federated Mountain Clubs and the Tongariro-Taupo Conservation Board. The Board chairman, Mr John Ryan, said groups which wanted to maintain the herd were welcome to take horses from the Kaimanawa Forest Park and from important areas south of the park because the horses were doing as much damage to the environment as rabbits in Central Otago. The Board is also concerned that the horses will keep increasing their range and spread into Tongariro National Park or further areas of the Kaimanawa Forest Park. Maori members of the Board were concerned at their spread onto Tuwharetoa land adjoining the Kaimanawa Conservation Park. Feral horses were removed from Tongariro National Park in the 1960s and 1970s through live capture and shooting by private operators.

In light of the current environmental crisis caused by the expanding horse population, it is worth revisiting the reasons advanced for their protection in the first place.

- The most extraordinary argument advanced at the time was that the animals lived in 'unique conditions.' (The uniqueness of the conditions, of course, relates to the presence of endemic flora and fauna which is being eliminated by the horses).
- The existence of the feral horses would enable 'scientifically valuable' comparisons with other wild or feral equids such as zebra.
- The animals **may** have physiological, anatomical or behavioural differences from other horses (emphasis added).
- The herd **may** be of future value as a genetic source of traits associated with 'hardiness'.



Red tussock killed by horse grazing. Photo: Geoff Rogers, FRI

- The only honest arguments were those not based on pseudo-science but on the horses' intrinsic aesthetic value and historical value as a remnant of once larger feral horse groups. No attempt was made to balance these values against the aesthetic values of a wild natural tussock land ecosystem free of domestic animals or the historical values of flora and fauna that evolved over millions of years.

There was no evaluation of the environmental impacts of a protection order, nor was there any opportunity for public comment. Botanists and natural history scientists in the DSIR were not consulted. It remains a mystery why the former Wildlife Service, with its proud record in the conservation of native wildlife, went ahead with the protection proposal. It must be remembered that not only are horses a recent introduction to New Zealand, but that they are not wild horses at all, merely feral domesticated horses.

The domestic horse *(Equus caballus)* is derived from the extinct wild tarpan, first tamed sometime between 5000 and 3000 BC. An article on horses in the 'Handbook of New Zealand Mammals' notes that:

> "Over the centuries many national varieties of domesticated horses have developed and been taken to all continents and to a very large number of oceanic islands. Escaped or unwanted horses have established feral populations in many parts of the world including Asia, Europe, North and South America and Australia."

So much for the scarcity value of feral horses.

However, there are those who refuse to accept that the Kaimanawa horses are just feral domestic animals and insist they represent relict genetic material. Forest and Bird joins the Tongariro-Taupo Board in inviting these people to remove the horses – and most could be easily rounded up and driven into corrals – and care for them on lands of no conservation value, such as marginal farmland of which there are vast areas nearby.

The genetic stock could be maintained and the horses left to run free for those who wish to view them. However, few people seem to have this ambition with only six parties a year at most requesting permission to view the horses. A concessionaire has extensively advertised horse viewing trips but has not had any takers yet.

Ongoing culling of the feral horses to maintain a reduced herd in the more modified areas in the south of the range is an option canvassed by DoC in its discussion paper. Forest and Bird does not support this proposal (though it finds favour with our Rangitikei branch) because degradation of the natural areas will continue, albeit at a slower rate; DoC will be committed to spending scarce conservation dollars on feral horse management forever when there are other pressing conservation priorities in the Kaimanawa area; and DoC will be forced to kill horses on a regular basis and leave itself open to continued criticisms from the people concerned with the ethics of killing horses.

And then where would it end? Similar arguments could be advanced – and sometimes are – to maintain feral populations of other domestic animals including sheep, cattle, goats or cats.

The native flora and fauna of New Zealand evolved in isolation over millions of years. It is unique in the world and we have an international obligation to ensure its survival. Sentiment and emotion should not allow introduced animals, which are wrecking New Zealand's natural ecology, to be placed on a pedestal above these island's original inhabitants.

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	Seabirds	Graham Taylor
	School Dinner from 7 p.m.	
Day three	**Bird Recognition**	Colin Miskelly
	Current Bird Research at Canterbury	Graduate students
	Breeding Systems in Birds	Ian McLean
Day four	**A Coach Trip to Kaikoura Departing at 7.30 a.m. and returning to Christchurch about 6.00 p.m.**	
Day five	**The History of Bird Conservation and Endangered Species Management in New Zealand**	Don Merton
	Evening talk, commencing 7.30 p.m.	
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Insect conservation

John Hutcheson

'Mighty midgets and tiny tyrants' was the theme for this year's Conservation Week, which focussed on the conservation of invertebrates. In this personal plea, written with younger readers in mind, John Hutcheson suggests practical ways of improving the lot of insects.

'WHY ON EARTH would anyone want to conserve insects?' I hear my friends exclaim. 'What are they good for anyway? They only eat my vegetables and suck my blood!' Well, let's look at what insects do, what the New Zealand situation is, and what we can and should do for insect conservation.

Firstly, a few figures. Ninety three percent of the animal biomass in natural forests is in the form of invertebrates (animals without backbones) and this may also be the case for natural grasslands. About two thirds of this biomass consists of earthworms, while the rest is composed of the arthropods. Insects are the major group of the arthropods and comprise an estimated 20,000 species here in New Zealand. Why are there so many?

Let's look for a moment at the system in which they work. All life on earth runs on energy from the sun, and the most efficient solar collectors (by a huge margin) are the green plants. In the presence of water, plants communities transform bare ground into highly productive ecosystems. They can only do this by creating their own sheltered environment, they 'grow their own house' as it were. In true Kiwi do-it-yourself style, modifications and extensions are made to the structure continually. From the modest beginning of bracken or tussock grasslands (the equivalent of a raincoat), through the 'cottage' stage of manuka and Coprosma species, then the 'house in suburbia' of fivefinger or lancewood tall shrubland, the 'large country house' of low forests, to the 'enclosed cities' of kauri, podocarp or broadleaf forests.

This amazing transformation is only possible because of the highly skilled and dedicated workforce that is continually pruning, thinning and recycling all debris, from leaf fragments to whole trees. These workers are the insects, who, together with micro-organisms and fungi, are the only terrestrial organisms able to break-down cellulose, the building material of plants. They skilfully help new growth to succeed the old, while retaining that all important shelter.

The Harvard biologist E. O. Wilson describes the importance of the invertebrates in the following graphic terms. . .

'If invertebrate species were to disappear, most of the fish, amphibians, birds and mammals (including humans) would crash to extinction within a few months. Next would go the bulk of the flowering plants and with them the physical structure of the majority of the terrestrial habitats of the world. The earth would rot. As dead vegetation piled up and dried out, closing the channels of the nutrient cycles, other complex forms of vegetation would die off, and with them the last remnants of the vertebrates. The remaining fungi, after enjoying a population explosion of stupen-

dous proportions, would also perish. Within a few decades the world would return to the state of a billion years ago, composed primarily of bacteria, algae and a few other very simple multicellular plants.'

Approximately 80% of New Zealand's insects are endemic. This means that, like our plants and birds, they evolved, live and, all too often, have become extinct here. They are different to everything else in the world, and are a vast library of unique genetic material. They comprise millions of years of problem solving, attractively and usefully packaged and presented freely to those who have the abilities to utilise the information.

However, most of our indigenous insects can only survive in their own natural ecosystem, i.e., their own 'house'. Therefore, the way to conserve them is to conserve their habitat. The best thing you can do for global conservation is to conserve or rehabilitate the plant community (not just the individual species) that is natural to your area, because this is the only place in the world where this particular community exists.

Many farmers leave natural areas for stock shelter and because they genuinely appreciate these areas. However, if they are not fenced, the effect of grazing is the equivalent of tearing the walls and floor off the shelter and removing the furnishings. Once that vital shelter is gone the winds get in, and over a relatively short period of time, compared with their normal life-span, the.remaining trees and shrubs die out. With no protection from browsing, the natural recycling by insects is disrupted and all attempts by the system to rebuild, through rejuvenation or regeneration, fail.

Can we do anything about it?

Yes we can. Once we understand what's happening, we can change the degenerative process. If browsing is stopped, the insect workers will begin construction of shelter from the available materials, and the process of regrowing the natural community will have begun. Once natural areas are fenced, the major damage source is gone and the feral browsers can be

Above: *The forest weevil* Rhyncodes ursus *is found throughout New Zealand, its larvae feed on dead beech and rimu wood. Adults can sometimes be found feeding on sap exuding from rimu trees.*

Opposite left: *New Zealand's cicadas are very obvious from their song. Maori people identified different species from their song, as did Sir Charles Fleming when he carried out his classic study on New Zealand's cicada. Cicadas belong to the bug family, they suck sap from plants. Cicada nymphs live underground sucking sap from roots, and can take up to three years to develop into an adult. Here a green cicada,* Kikihea ochrina *emerges from its nymphal sac. This species lives in the lower North Island, but has recently arrived in Picton. It is suspected of hitch-hiking across Cook Strait on the rail ferry.*

All photos by Mike Meads, D.S.I.R. Land Resources.

Wetas are one of New Zealand's most distinctive insects. They range in size from small cave weta to giant weta the size of mice. Pictured is the brightly-coloured Fiordland ground weta, Zealandosandrus fiordlandica.

Unlike their overseas relatives, the New Zealand stick insects are flightless. The common stick insect, Micrarchus hystriculeus *is found on tauhinu, pohuehue and small-leafed Coprosmas.*

Cromwell chafer

THE ENDANGERED Cromwell chafer is a special insect, even though its relative the grass-grub is a pest. It is the only insect with its own special reserve, the 81 hectare Cromwell Chafer Scientific Reserve, in Central Otago, and it appears that it is restricted to this small area. The reserve's vegetation is silver tussock grassland with scabweed and low herbs. Chafer larvae feed on the roots of the tussock. The adults feed on the low herbs at night and bury themselves under the tussock roots during the day.

But this poor beetle is having a hard time, rabbits have severely depleted the tussocks in the reserve and introduced little owl eat large numbers of the adults during the summer. Now the Central Otago District Council are planning a rubbish dump next to the reserve. Forest and Bird's Upper Clutha and Otago branches have persuaded the council to agree to fence the reserve, control rats and other scavengers and to properly control the dump. But only the future will tell whether this special insect will survive with expanding housing areas and a rubbish dump as neighbours.

Cromwell chafer, Prodontria lewisi *feeding on a Raoulia scabweed.*

eliminated. Regrowth in the absence of stock, wild goats and possums has been demonstrated in surveys throughout the North Island of both pohutukawa and cabbage trees. Where areas are protected from stock and feral animals controlled, good regrowth can be found.

On farms, if areas that are marginal for production are fenced off they will pay their way by providing shelter for stock and buffering water movement. This provides not only erosion protection, but nutrient stripping from water catchment areas, a the insect life will start recycling the nutrients in plant material and building up leaf litter and soil structure.

For those of us who live in the urban/semi-urban areas 'doing something that matters' is even easier, because we don't have to contend with cattle, sheep, goats or possums. We can set the successional process in motion in our own backyards, hold it at the height that best suits us (and our neighbours) and enjoy the feeling of having the insect equivalents of kauri trees, kokako and tuatara living under our protection.

If the idea of living in a scenic reserve appeals to you, you are proud of New Zealand, and you would like to be 'doing something' about the rapidly degenerating ecological state of the world, try this.

- Select an area (or all) or your section for conversion into native shrubland, typical of your district. Firstly, remove the grass (mowing lawns is an inane and extremely noisy activity that people make their children do because their parents made them do it!).

The endangered knobbled weevil Hadramphus stilbocarpae *feeds on the coastal megaherbs* Stilbocarpa lyallii *and* Anisotome lyallii. *It survives on rat-free islands around Fiordland, Stewart Island and on the Snares Islands.*

Grasshoppers are the major natural browsers of New Zealand's tussock grasslands. The grasshoppers have declined with the destruction and degradation of the tussock grasslands; the endangered robust grasshopper has only recently been rediscovered and is known to survive in only one locality in the MacKenzie Basin. Native grasshoppers are interesting in that some species can take up to 7 years to develop into an adult. A typical species in the high altitude tussocklands is the alpine grasshopper, Brachapsis nivalis, *pictured here.*

- Cover the areas in bark or a similar mulch to conserve moisture and prevent grass and adventive weed regrowth. Douglas fir bark breaks down well and gives good results. A tiny amount of fowl manure under the bark feeds the breakdown process. Not too much though, as early colonising plants are generally not used to it.

- Plant the start of a succession, ie, tussocks, manuka, karamu or hebes, that you can collect seeds or cuttings (not plants) from your general area. Leave paths and an area to sit and enjoy the vibrancy of a complete artwork, but keep the plantings grouped for that all important shelter. If you want rapid, moderately higher growth, put in some kohuhu, kanuka and lacebark. Resist the impulse to 'tidy-up' leaf mulch, twigs and woody debris, as this provides shelter, homes and jobs for the insects. If you grow specimen plants that are precisely spaced with bare ground between them, that's all you'll ever have. The native insects (and the mosses and lichens that make our bush so beautiful) need close growth and dead material to feel at home. In fact you can provide early shelter as well as insect tucker using prunings from other plants. Our society's compulsive 'tidy-up' reflex has led to spraying and mowing of thousands of kilometres of roadsides all around the country at great expense. Where roadsides have been left intact the jewel that is natural New Zealand can be seen.

- Go and look at natural areas around your district (a difficult thing to do in some regions) and let the area show you what plants grow at which stages of the succession. Sow seeds from the next stage of the succession into each stage (The best way is to gather a small amount of leaf/soil litter from within an advanced weed-free shrubland area. Your leaf litter will also bring in insects, worms, fungi and other organisms that will thrive in your reserve). Given shelter from the drying wind, almost all of these

Under-rated insects

MORE than 20,000 species of insects are found in New Zealand, including 4000 species of beetle and 1700 moth species. The fate of New Zealand's unique insect fauna is similar to that of our native birdlife. The arrival and settlement of humans, the subsequent loss of natural vegetation, and the spread of exotic predators and competitors has caused the extinction of some insects and the decline of many more. Some large insects only survive on island refugia.

The ground beetles are among our commonest beetles, the Stephens Island ground beetle *Mecodema costellum* pictured here, feeds on native snails in forest remnants. A close relative, the now-extinct giant ground beetle *Mecodema punctellum*, may have become extinct when the forests were cleared on Stephens Island and the large land snails died out.

Stephens Island ground beetle.

plants will also grow from cuttings. A number of hebe cuttings started in a sheltered spot before the conversion will make an excellent start to your new shrubland area. They also provide food for many of our attractive pollen feeding weevils.

- Sit back and enjoy the real world, a complete work of art. Unlike the forest trees, the early successional plants grow extremely fast. Soon the shrubbery will be head high and instead of grass grubs, you will be seeing beautiful metallic green manuka beetle, dragonflies, damsel flies and native birds will be frequent visitors. You won't have to spend your life's earnings at the nursery. All the plants will grow well because they are growing within their natural growth range. Any insects you get, you won't have to worry about because they will be part of the art, and providing food for other insects and birds. The area will require the absolute minimum of maintenance because the insects will be doing the work for you. You won't need to spray poisons around yourself and your children, and you won't have to waste your life mowing lawns!

Natural Wellington – conservation in the capital

by Sido Kitchin

Few cities in the world have such a splendid geographical setting as Wellington. Sadly, the coastal waters have been polluted and overfished, the hills stripped bare and few natural areas protected. Wellington's Forest and Bird branch is setting out to reverse this trend in its 'Natural Wellington' project. Photo: Lloyd Homer/DAC Communicate NZ

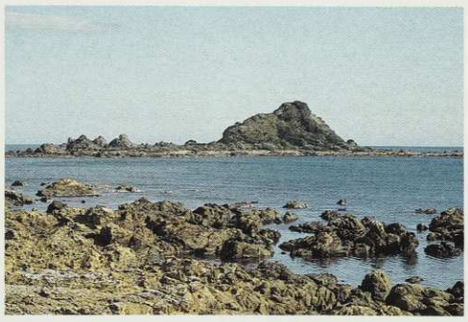
THE DAWN CHORUS was deafening. Thousands of native birds flocked in the vast forest. Kereru cooed in the kohekohe and miro trees. Tui, bellbirds and kokako chimed in the treetops while saddlebacks and the mystical huia called in the bush. Whitehead, robins, and tits flitted around the forest floor and the mid canopy. Kaka and parakeets were abundant.

That was Wellington last century. Today, less than one percent of the capital's 31,000 hectares of natural habitat is suitable for native birds and although a number of seabirds have survived around its coastal waters, only eight native forest birds remain – three in small numbers. At last count four kereru pairs remained in Wellington City, and about 30 pairs of tui search desperately for food.

Before 1840, the Wellington landscape was relatively pristine. The Maori had little impact on the area. Fire spoiled some areas and hunting reduced numbers of a few birds, but most of the region's Maori population was located in the richer Porirua and Hutt Valleys with their better soils and marine food sources.

Within 50 years of the European settlement in 1840, the forest was practically gone. Rats, which escaped from ships after 1800, reduced the wildlife, but the first settlers cleared massive areas of land with fire for farming and settlement. The swamps in areas like Karori were drained and coastal saltmarshes reclaimed. By 1920, 99.5 percent of the original forest cover had disappeared. Destruction of the forest meant little food for the remaining birds and so they rapidly disappeared.

"Wellington the rainforest city will not only enhance our lives and lifestyles but that of the generations to come – that in itself makes it worth doing."



Tapu Te Ranga is the island of Island Bay – one of Natural Wellington's sites of ecological significance. Photo: Peter Goodwin

The sleeping giant awakes

The Wellington branch of Forest and Bird, sometimes called the 'sleeping giant', has awoken. Branch Chairman, Colin Ryder, admits that the branch of about 6000 members has had little conservation focus for some time – jumping in when an issue arises and returning to its dormant self afterwards. However, its regular field trips in and around Wellington have built up a large constituency of knowledgeable people concerned about the future of the capital's natural heritage.

Above: *Gorse has replaced forests on greywacke hills surrounding the capital. If protected from fire, it can provide a useful nursery for regenerating native shrublands and forest.* Photo: Peter Goodwin

Right: *Regenerating native forest on Johnsons Hill.* Photo: Peter Goodwin

The face of conservation in the capital is changing as the branch channels this grassroots concern into positive action. Natural Wellington is the branch's plan to preserve and enhance the natural treasures of Wellington and to bring the native birds back to the city. It may not be possible to bring back the extensive stands of giant rata and rimu, the kokako or the saddleback, but it might be possible to lure back the bellbird, the whitehead and the robin and greatly increase the number of tui, morepork, fantails, and kereru.

Branch member, Jim Lynch, has prepared the vision on paper. With the help of Colin Ryder, local experts have been quizzed. Adding to the plan were botanists Maggy Wassilieff, Bill van Gorkom with his wealth of knowledge on local wildlife – a living treasure himself, and Tony Beauchamp with his original concepts such as bird corridors. Regeneration of New Zealand's natural ecosystems is a slow process – it takes 100 years to grow a sizable rimu tree. So the plan looks far into the future and spans whole generations. It begins with a 50 year vision.

The way it could be

When Natural Wellington's mission is achieved, Wellington could be an exceptionally beautiful rainforest city. The hills clothed in tall native bush with birds singing and playing in the canopy once more. A place of true natural beauty for residents and visitors to enjoy. As Jim Lynch explains, "It will be a wonderful complement to the city's vibrant cultural, business and recreational life."

A more challenging task is to improve the birdlife in the forests, as native birdlife is declining across the nation as a whole. It can be done if the branch's vision is taken on board by the wider community to reverse the degradation of the capital's natural surrounds.

Natural Wellington aims to preserve existing permanent scrublands and pre-European forests – only very small isolated areas of native scrubland, grassland and herbfields remain out of the 570 hectares estimated to exist around 1800.

If regenerating forests are protected, they will inevitably grow through to maturity. At the turn of last century, there were 1750 hectares of coastal and lowland broadleaf forest, 10,000 hectares of podocarp/broadleaf forest and about 1000 hectares of swamp forest. In 1991, there is only 120 hectares of coastal and lowland broadleaf, 13 hectares of podocarp/broadleaf and no swamp forest at all. Natural Wellington aims to see over 100 hectares of the first category by 2040, nearly double the amount of podocarp/broadleaf and two hectares of partly restored swamp forest. Also, protection from fire will see the scrublands move through to regenerating forest and more unproductive, marginal land and gorse areas into the early scrubland stage.

The branch's aim is to restore at least one small area as an example of swamp forest and preserve the one area of coastal saltmarsh left at Makara, which is the last habitat for an endangered cotula, *Leptinella dioica* ssp. *monoica*. Only 10 hectares of saltmarsh and 10 hectares of swamp are left out of the 750 hectare and 500 hectare areas which once existed.

Natural Wellington aims to add a little to the existing coastline ecosystems. Last century there were 85 kilometres of relatively natural coastline, but this has been reduced today to 50 kilometres. By 2040, the plan is for the resoration of a further 10 kilometres. Wellington's marine ecosystems have not been forgotten. The branch is currently preparing a public discussion document on proposals for a marine reserve along the rocky south coast.

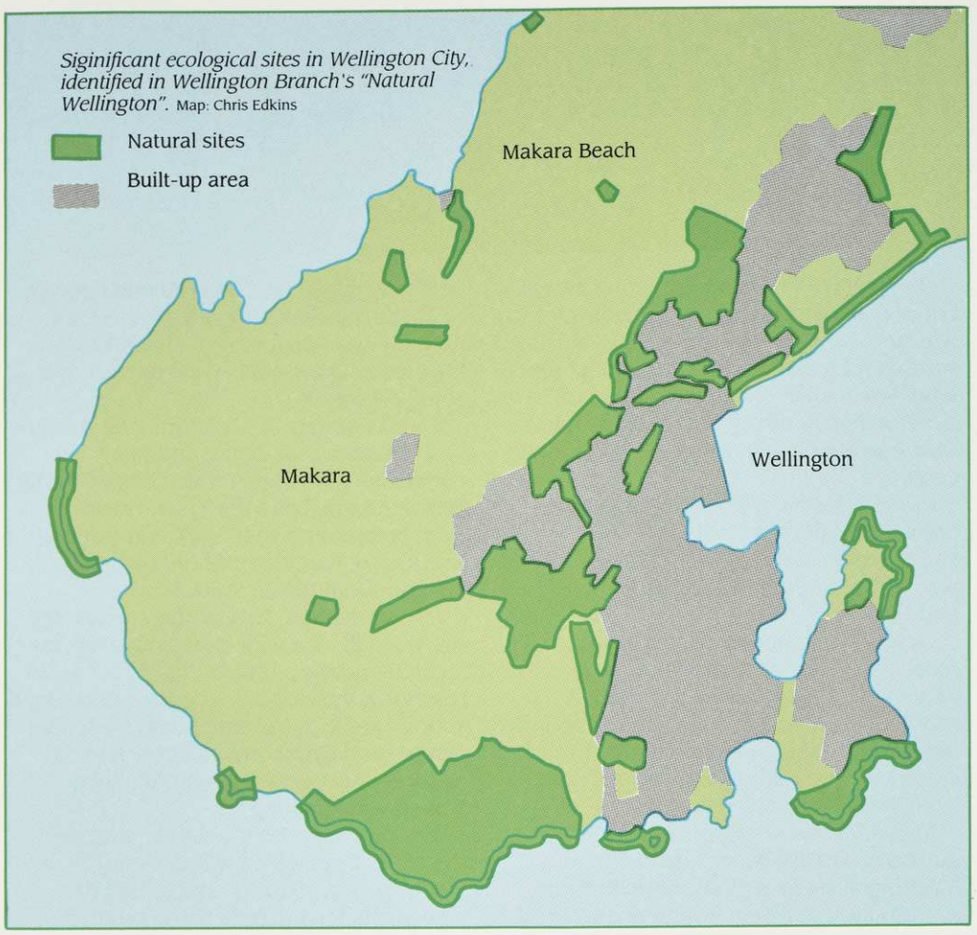
A key part of the Natural Wellington ideal is to provide linked forest corridors through the suburbs. They will be revegetated and overplanted with bird food sources and predator control will be investigated. Bird numbers should increase substantially in variety and number in the forests. Some bird species may have to be reintroduced to the area to achieve this. One of the goals in Natural Wellington is for increased numbers of native birds and an increase in the number of species from eight to fifteen by 2040. Another goal is for all of the 36 significant ecological sites in Wellington to have full protection – only eight sites are protected now. The number will be added to as new sites are identified – perhaps there will be up to 50 by 2040.

The final aim is to change people's attitudes towards their natural world. Some citizens of Wellington place high value on their natural surrounds but such attitudes are not universal. Ignorance and apathy has prevailed for years leading to the awful abuses that have occurred to the capital's natural surroundings. Civic pride has expressed itself as town halls and traffic island flower beds while quarries, scrub fires and urban sprawl have destroyed much of Wellington's unique natural heritage.

Jim Lynch believes all the Natural Wellington aims are possible in time. "And perhaps our children and grandchildren will appreciate the foresight of this generation who acted positively to hand it on to

Centre right: *The 'Natural Wellington' team (left to right) Chris Mathieson, Maggy Wassilieff, Fiona Wilson, Bill Van Gorkum, Jim Lynch, Eve Lynch, Jeff Sheerin.* Photo: Peter Goodwin

Bottom right: *Wellington South Coast – home to seals, sea birds, a number of rare coastal plants and the endangered speargrass weevil.* Photo: Mark Bellingham



Siginificant ecological sites in Wellington City, identified in Wellington Branch's "Natural Wellington". Map: Chris Edkins

them in a better condition than they found it," he says. "Perhaps then we could look back and say we had achieved our mission."

Progress to date

Natural Wellington is already underway. Acceptance of the plan to date has been even better than expected. Last year the idea was presented to the Wellington City Council, who welcomed it with open arms. It passed a resolution of unanimous support for the plan and council officers have been instructed to work in accordance with the general plan. If any council moves affect Natural Wellington, they will consult with Forest and Bird. This resolution is already in effect with consultation regarding work on Karori's Wright's Hill and the Ngaio Gorge already taking place.

Jim Lynch and Colin Ryder have taken the plan to the people of Wellington and will continue to do so, as the plan's success rests on public commitment. Forest and Bird branch officers are explaining the concept to residents' associations and other community groups and support is growing rapidly.

"People care about the environment and they can help by looking after and contributing to their area," Jim says. "They'll get the direct benefits too."

Even a quarry owner has given support. Jim presented Natural Wellington to a local quarry owner who agreed to covenant strips at the back of the excavated land to retain a wildlife corridor through the area.

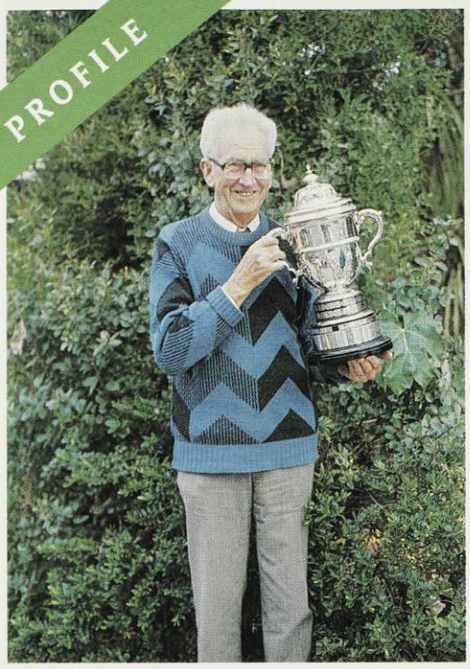
Natural Wellington aims to see the 36 ecological sites fully protected by 1995. With community and council support this looks possible. Three sites under immediate threat of destruction and damage have been given urgent priority and are being worked on anew. Spooky Gully on the capital's south coast has unique plant life, including 29 regionally rare species and five nationally rare species. It is threatened by pine planting, quarrying, goats and rubbish disposal. Red Rocks on the coast is protected, but the inland area urgently needs to be formally protected. This may be possible as the neighbouring Long Gully Farm is for sale. Further east adjoining Huntleigh Park in Ngaio is privately owned native shrubland proposed for subdivision. It provides a vital bird corridor with Khandallah Park and needs protection.

You can do it too!

Other Forest and Bird branches are encouraged to give such a plan a go in their area. Branches may not have the advantage of Jim and Eve Lynch's planning skills and publishing facilities, but Natural Wellington is a blueprint others can follow. The emphasis may be different depending on the communities' needs in the area. For example, preservation of natural areas rather than restoration may be the order of the day for some branches. Natural Wellington can be used as a starting point and the Lynches have conveniently prepared a step by step plan available for branch use. (For more information please contact Wellington Forest and Bird, PO Box 4183, Wellington.)

PROFILE

Mr 'Kaimai' – Reg Janes



The Loder Cup and its proud recipient for 1991, Mr Reg Janes of Tauranga. Photo: Elaine Fisher

REG JANES, an ardent conservationist and distinguished life member of Forest and Bird is the recipient of the Loder Cup for 1991.

For the last four decades Reg has been educating people of all ages about the protection of the environment. A man of action as well as words, he has brought the message to the public at large through his role as the Bay of Plenty district representative for Conservation Week for the last 17 years. In awarding Mr Janes the country's top conservation award, the Minister of Conservation, Denis Marshall, paid tribute to his significant contribution to the Conservation Week programme.

In nominating him for the cup, the Bay of Plenty District Council of the New Zealand Nurserymen's Association highlighted the diverse nature of his involvement in conservation.

The 79 year old's love of native flora and the desire to work for its preservation was fostered by Mr Charles Cameron (winner of the Loder Cup in 1959) and Mr Peter Furse, who ran a junior Forest and Bird Group in Tauranga in 1947.

"They were really my inspiration," he recalls.

Born in Wellington in 1911, Reg began work in 1928 as a builder of church pipe organs. He spent three years in the Airforce during the war and in 1946 decided to become a school teacher. The following year he moved to Tauranga as a woodwork and technical drawing teacher, a role he continued until retirement in 1972.

Through his woodworking classes, Mr Janes gained a vast knowledge of native timbers, but the wastage of clear felling and the unselective use of timbers, together with failure to replace the resource, distressed him.

He became actively involved with the junior Forest and Bird Group and was a foundation member of the Tauranga section of the Forest and Bird Protection Society when it was formed in May of 1955.

"In most places the junior group grows out of the senior group, but in Tauranga it was just the reverse. We got off to a flying start with an enthusiastic group of parents who had been involved in what their children had been doing. The branch has continued to be one of the strongest in the country."

In 1964, Mr Janes became Tauranga branch president, a position he held for ten years. For five years, from 1981 to 1986, he was on the national executive of Forest and Bird.

"A lot of changes were made during those five years. The executive worked very hard, sometimes we met once a month, which meant travelling to Wellington." Mr Janes was also appointed branch councillor and for the last 15 years has been branch secretary.

In 1980 he was honoured as a Distinguished Life Member of Forest and Bird. Tauranga City recognised his significant contribution to its environment and community by awarding him a commemorative Golden Key to mark the city's 21st birthday in 1984.

Today, Reg is still actively involved in conservation. He gives regular talks to schools and youth groups and oversees much of the organisation of the Tauranga Forest and Bird activities including monthly meetings, field trips, walks and annual camps.

In its nomination for the Loder Cup, the Nurserymen's Association said, "Reg's abilities in written and verbal submissions both to local bodies and Government on conservation issues has brought many successes for the benefit of future New Zealanders. Reg played a prominent role in the "Save our Kaimai National Park" campaign, which resulted in the halting of milling and planting of exotics in the state forest of the Kaimai Range and to the formation of the Kaimai-Mamaku Forest Park.

His continuing efforts are aimed at conservation of privately owned areas of native bush, particularly in water catchment areas. He was recently involved with a court action which won protection for wetlands in Tauranga Harbour.

When not lobbying for conservation, Reg grows trees. He has a thriving nursery for thousands of young native trees and shrubs, many of them grown from seed, in his backyard.

Pohutukawa, as thick as weeds, are in propagating boxes awaiting transfer to larger trays, while others seedlings flourish in polythene bags, ready for next season when they will be planted out. Most local schools, many local reserves and a few private gardens boast trees from the Janes nursery.

Right now his biggest project is the reafforestation of 9 hectares of farmland Te Puna, called the Keith I'Anson Reserve.

"Keith wanted to donate the land but nothing was happening, so I approached the Queen Elizabeth II Trust to see what could be done."

Thanks largely to his efforts, the conservation area was adopted and today is administered by the Western Bay of Plenty District Council and the Trust. However, even before the paper work was finalised, Reg began planting trees, involving local children from the Te Puna School.

Five years later, half the area is planted out, a small lake with an island has been created and the public is enjoying a new reserve in the making. Reg has encouraged young people to become involved in the reserve and Omokoroa School children and the Kiwi Conservation Club have helped with planting.

Mr Janes was delighted to be awarded the Loder Cup, which was donated to New Zealanders in 1926 by Lord Wakehurst, who wished to encourage the protection and cultivation of native plants in New Zealand.

"A number of my friends have won it over the years and it is a real honour to have my name on the cup alongside theirs."

The first planting – Reg Janes with a group of children and teachers from Te Puna School planting trees at the Keith I'Anson Reserve in 1987.

Very reserved about his achievements, Reg does believe attitudes have changed dramatically since he first became involved in conservation.

"Twenty years ago people didn't care about conservation. In the pioneer days settlers had no choice but to clear land to establish their farms, but it didn't stop there."

Today he continues to see children as the important focus of the conservation education effort. He relates well with youngsters – perhaps that's his years of experience as a teacher and scout leader coming through – and what he enjoys most is being out in the country planting trees with children.

Plant a tree and save the world, the slogan says. If so, Reg Janes has done his bit for world preservation many thousand times over.

Elaine Fisher

Governor General opens Forest and Bird's new Head Office

A WEEK after the unveiling of our stunning new mural (see cover), Her Excellency the Governor General, Dame Catherine Tizard formally opened Forest and Bird's new building.

The reception was hosted by Society President Gordon Ell, and attended by Distinguished Life Members, local branch officers, dignitaries, media and staff. She was guided through "Gateway For Giants" into the building by staff members disguised as kakariki, kokako,tui and takahe, in the now famous bird costumes.

Dame Catherine spoke about her own involvement with Forest and Bird and shared some of the memories she had of the Society. She said that conservation and habitat protection were important to her and was pleased to act as patron to the Society during her time as Governor General.

It was an important and enjoyable occasion for Forest and Bird and we hope that in the future there will other opportunities to celebrate successes in conservation.

The Governor General, Dame Catherine Tizard, cutting the ribbon to formally open the new Society Head Office.

National kea and kaka databases

This summer (1991-92) is the beginning of the third year of the kea and kaka schemes. I've received much valuable information from Forest and Bird members around New Zealand over these last two years, which has been inputted onto the computer but even with this information it is difficult to see what might be happening to the birds. The sightings received so far can be summarised as follows:

North Island Kaka

- Moderate numbers in Pureora, Tongariro, Kaimanawa, Urewera.
- Few in Tararua, Ruahine, Raukumera, Coromandel ranges.
- Vagrants around northern North Island.
- Noticeably no sightings from Egmont, Wanganui.
- Most sightings are of one or two birds, occasional larger flocks in February.
- Seen between 0-1500 metres, averaging around 450-700 (summer), and 400-550 m (winter).

South Island Kaka

- Moderate numbers in Fiordland, Mt Aspiring, Westland.
- Scattered throughout lower altitude valleys of the western main divide, Paparoas, Richmond Range, Nelson Lakes.
- No sightings from eastern divide, Lake Sumner, Arthur's Pass.
- Most sightings are of one or two birds, occasional larger flocks in February – April.
- Seen between 0-1200 metres, averaging around 450-700 m (summer) and 50-200 (winter).

Kea

- Well represented in Fiordland, Westland, Mt Aspiring, North West Nelson, Landsborough, Whitcombe.
- Some present in Richmond Range, Kaikouras, Nelson Lakes, Paparoas, Craigeburn.
- Numbers seen are very variable.
- Seen between 20-2400 metres, averaging about 950-1400, but also vary variable throughout the year.

I don't wish to bias the database by requesting sightings of particular birds from particular areas. However, sightings from less accessible areas or birds out of their normal range are always valuable. Please keep on recording accurate location (map reference if possible), altitude, date and time, number of birds seen.

Send sightings to; Michael Wakelin, Science and Research Division, Department of Conservation, PO Box 10-420, Wellington.

Errata

The photograph by Conon Fraser in "The Jigger Solution" (*Forest & Bird* May 1991, page 14) is of young elephant seals, not Hooker's sea lions.

JOIN FOREST AND BIRD

We need your support and the support of your friends to fight for New Zealand's natural heritage.

Being a member of the society means being a part of New Zealand's most effective conservation lobby.

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And of course, you receive 4 copies a year of *Forest & Bird,* the Society's superb natural history magazine.

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We need your friends and relatives to join Forest & Bird. Show them through *Forest & Bird* magazine the wonder of our natural heritage and why it should be protected.

Our key campaigns for the future are:
• Private forest clearance • A network of marine reserves • High country tussocklands • South Pacific rainforests • Ozone layer • Antarctica • Climate change • Fisheries • Pollution

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The World of Penguins
The World of Albatrosses

by Chris Gaskin and Neville Peat, photographs by Kim Westerskov (Hodder & Stoughton)

DID YOU KNOW that Emperor penguins can dive to deeper than 450m? That Fiordland crested penguins prefer squid, while yellow-eyed penguins prefer fish? That an albatross flew 5500km in 22 days? And that some albatrosses take 14 years before they start breeding? These two books contain a wealth of information on these remarkable seabirds, of which New Zealand has more species frequenting its waters than any other country. Excellent illustrations and photographs accompany readable text. Available from Forest and Bird's Wellington shop or from Forest and Bird, PO Box 631, Wellington for $19.95 + $3 p&p.

Marine Reserves for New Zealand

by Bill Ballantine (University of Auckland)

THIS BOOK CARRIES a health warning: "Marine reserves are addictive and can affect your health. People who have them do not want to give them up. They start clamouring for more. The side effects are serious. People infected with the idea become interested, enthusiastic, active, knowledgeable, healthy and impatient with silly arguments and no-hopers. . .". Bill Ballantine has gained an international reputation as a leading advocate for marine reserves, and in this outstanding new book he brings together his ideas, strategies and experiences.

The 190 pages of information brings together the lessons from Bill's lifelong work on marine protection here and overseas, and, in particular, from his experiences in establishing the now famous Leigh Marine Reserve north of Auckland. As John Morton points out in the foreword, strong citizen input is needed to get marine reserves. The need for public support and action runs through the book. Recently, Dr Ballantine welcomed the fishing industry's view that there needs to be a balance over marine reserves. He was happy to settle for the protection of only 10 percent of the New Zealand coastline. "But if its balance they want then. . ." This book has almost everything you need to know about marine reserves, how to answer the critics, and the process to follow in establishing a marine reserve in your region. Available from Forest and Bird's Wellington shop and mail-order for $15 + $3 p&p.

Reviews by Mark Bellingham

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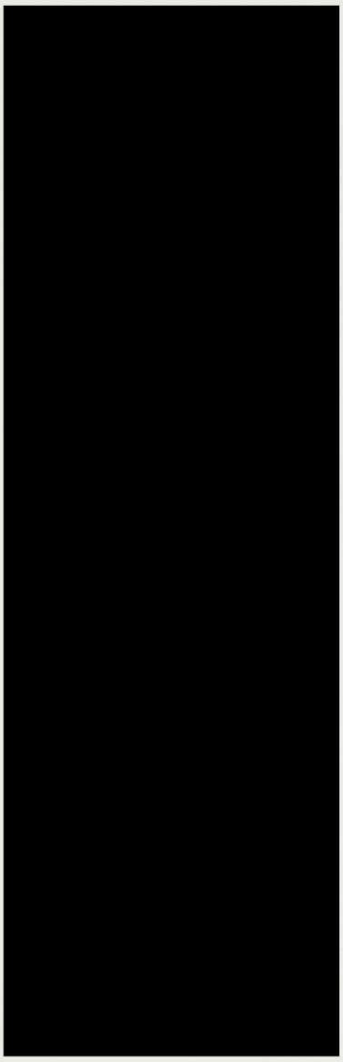

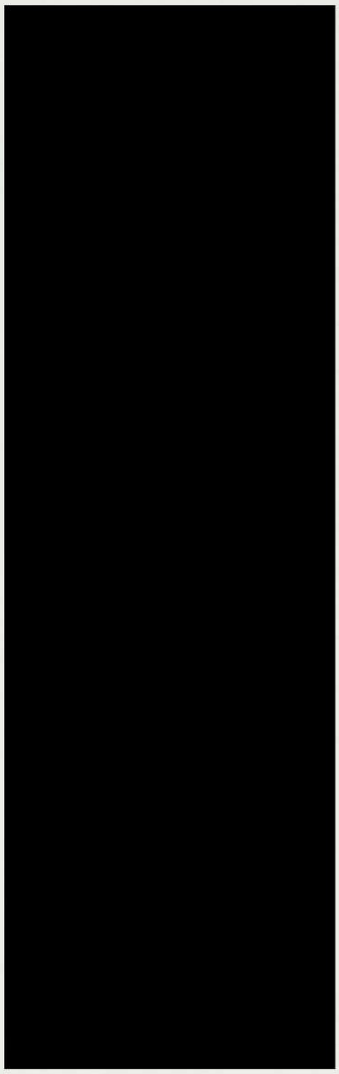

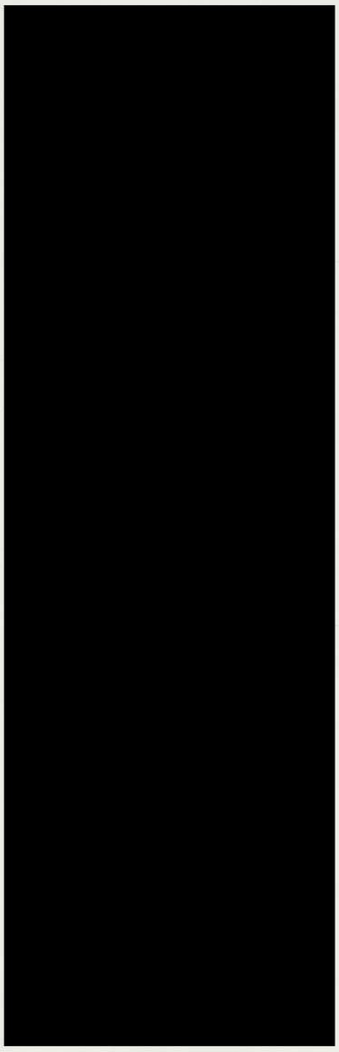

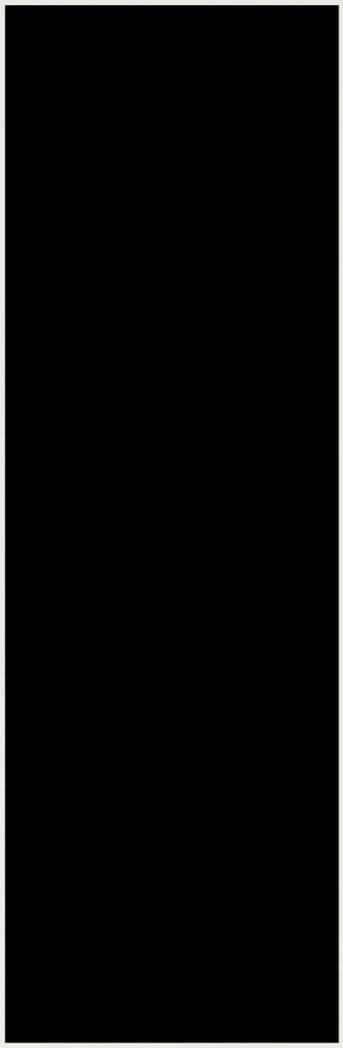

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Set in a privileged position within the National Park this lodge is available for MEMBERS ONLY, and is an ideal location for tramping, skiing, botanising and exploring.

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) 857-374. 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.

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Turner Cottage, is on Stewart Island and is a three-roomed dwelling with sleeping arrangements for six people. For details write, enclosing a stamped, addressed envelope, to: "Turner Cottage", C/- Mrs M. Tait, P.O. Box 48, Stewart Island, Telephone (03) 219-1396.

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, 89 Rodgers Road, Bayview, Napier, Telephone (06) 836-6836.

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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 (03) 415-8024. 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 (09) 838-5859.

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 (09) 726-494.

Bushy Park Lodge

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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 (06) 3429-879.

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

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

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

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

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

If this continues they will eventually become extinct.

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

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

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

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