FOREST & BIRD

NUMBER 279 • FEBRUARY 1996

- rat-free islands
- mudfish
- Cook Islands under siege
- children say "Leave it to us"
- protecting sand dunes
- John Kendrick

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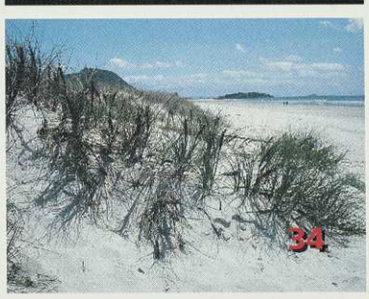
FOREST & BIRD

FEATURES

REGULARS



Cover:
A male Archey's frog guards its egg cluster. The "tadpoles" metamorphose inside the eggs – their own personal ponds. After hatching, still with remnant tails, they will climb their father's hind legs and spend their final weeks of development on his back. New Zealand's four native frog species – all croakless and earless – are considered the most primitive of living frogs.

ROD MORRIS

comment

Restoring the icons

IN 1987 New Zealanders celebrated the centenary of national parks in New Zealand. The adopted motto "Parks for People" prompted Forest and Bird president Alan Mark to remind us, in *Forest & Bird* (August 1987) of the "Parks for Preservation" mandate of the National Parks Act. He also warned that national parks risked losing their pre-eminence and uniqueness if they were simply managed as other protected areas. Not surprisingly, these debates have occurred in the United States of America – the origin of the national park ideal, and the origin of much of our early national park management practice.

Five months visiting national parks in North America last year gave me an opportunity to make some comparisons between park management in both countries. Can we learn anything from the United States? In that country, national parks are managed by a high-profile National Parks Service, and have a pre-eminent position over other protected areas.

One lesson is that the parks in the USA have generally proved to be too small. At Yellowstone, for example, large mammals are dependent upon land outside the park for winter forage. The protection of Everglades National Park in Florida is hampered by the drainage of surrounding wetlands, and many other parks are also threatened by outside activities, such as air pollution from industry, vehicles and urban sprawl. Visibility has declined by 60 percent at the Great Smoky Mountains, and many visitors to the Grand Canyon will only gain a clear view of the opposite rim from photos on the display panels. Introduced pests are decimating some park forests and parks are still threatened by proposals for mining, damming of rivers, and road construction.

However, the most obvious impression is the congestion. Visitor levels in US national parks soared to 270 million in 1994, with the most popular parks receiving around four million visitors a year. Park managers struggle to control the influx of summer visitors by limiting parking spaces and providing shuttle buses. They also struggle to maintain expensive facilities, especially roads, that were developed to encourage park use. Managers are often under pressure (sometimes resisted, sometimes not) to push road ends further into parks to be closer to key attractions.

Half of most park budgets is spent on facilities maintenance and the National Parks Service estimates that about US$3 billion is urgently needed for deferred maintenance and construction work. Hotels, service stations, supermarkets and shops are well established in parks, and concessionaire contracts (many dating from a more laissez-faire era) currently return only three percent of their revenue to the parks.

Despite the congestion and the many threats, some things are refreshing about national parks in the USA. The on-site interpretation and visitor programmes contain unashamed conservation advocacy messages, urging people to become involved in the parks, to support key legislation, and to take personal responsibility for environmental protection both with-in and outside the parks.

"Despite the congestion and the many threats, some things are refreshing about national parks in the USA. The on-site interpretation and visitor programmes contain unashamed conservation advocacy messages, urging people to become involved in the parks, to support key legislation, and to take personal responsibility for environmental protection both within and outside the parks."

Congestion is mitigated to some extent by the professional and consistent standard of facilities and clear guidelines for visitor behaviour. Proactive management of the backcountry helps provide wilderness opportunities even in high-use parks, and aircraft landings and overflights are strictly controlled in some areas. The parks service is removing inappropriate concession facilities from some parks, and proposed legislation will ensure that parks receive a greater proportion of concession profits. Importantly, national parks are promoted as national treasures, worthy of respect and support. People are encouraged to be involved in park projects and volunteers frequently perform meaningful and responsible tasks.

While all is not good in the national parks of the USA, there are some lessons for us:

- parks should be large, preferably encompassing a range of ecosystems, and linked to other protected areas;
- park funding should be directed to resource protection, not visitor access and comfort;
- parks should not attempt to provide all things for all people, and some activities, such as competitive events, are best provided for in other areas;
- wherever possible, facilities should be located outside parks;
- concession operations must be limited and strictly controlled;
- and, of course, parks should receive sufficient funding to protect resources, retain professional staff, and maintain a consistently high standard of interpretation and services.

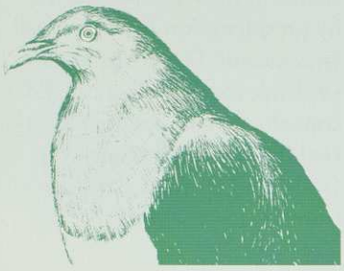
Coming home, I couldn't help feeling that our national parks have suffered since 1987. Budget cuts, departmental restructuring, and increased visitor use have undoubtedly had a big impact. But it is more than that. National parks seem to have lost status, and direct public involvement is lacking. New Zealand's national parks were often set aside in response to pressure or support from individuals and community groups, and survival of individual parks is ultimately dependent upon continued public support. Public involvement in park management can lead to a greater understanding of the need for restrictions on park use and development, and to a willingness to fight for the adequate resourcing and protection of national parks.

National parks in New Zealand deserve to be restored to their position as icons. They are the natural cathedrals of this rich and varied land and, like cathedrals, merit respect and adoration. Park managers should be given adequate resources to manage the parks to a high professional standard, and public involvement in park management should be encouraged. There are many problems in American parks that we should avoid, but the successful marriage between a professional national park service and a sympathetic public is something we could do well to imitate. ◆

Mike Harding

MIKE HARDING *is a conservation consultant living at Arthur's Pass, and a former field officer for Forest and Bird.*

mailbag



Shooting kukupa

"Pigeon Patrol" (November) made me sad, angry and bewildered.

I am sad that the population of kereru (kukupa) continues to decline. Obviously loss of habitat, and predation of nests are among the main causes.

I am angry that criminals are hastening the decline by shooting these great forest birds, despite the vital role pigeons play in maintaining forest ecosystems, despite the fact that they are totally protected and despite the efforts of DoC staff and voluntary rangers.

I am bewildered to read that a learned academic, Dr Margaret Mutu, a member of the New Zealand Conservation Authority, has encouraged iwi to exercise their right to harvest native wildlife. No one has the right to kill totally protected native species. No one, anywhere, at any time.

Did Dr Mutu list her opinions on the right of individuals to breach the Wildlife Act in the CV she presented to the Minister of Conservation when she was nominated for appointment to the NZCA? If she did not, is she guilty of deception of the minister, the government, Parliament and the people of New Zealand?

The final blow in the article is the astounding revelation that legislation protecting Northland's native wildlife is enforced by two part-time DoC rangers and some volunteer rangers, while in Tongariro/Taupo trout fishery, three full-time DoC rangers and eleven warrant-holding DoC staff enforce the legislation protecting alien species which devastate indigenous aquatic ecosystems!

Clearly our priorities for funding the enforcement of legislation protecting native and alien species need reversing urgently.

J. Chris Horne
Wellington

Wilderness and noise

Thanks for the "Comment" by Gottlieb Braun-Elwert (November). Our family had the unpleasant experience of a tramp to a small lake in the Franz Josef area, ruined by the buzzing and circling of a helicopter. Noise pollution can ruin a trip into the bush. I do not think we should sacrifice the opportunity for New Zealanders to enjoy our wilderness, in order to cater for what Gottlieb describes as "fast-food tourism". Let's keep our wilderness areas clean and quiet and not worry about tourists who cannot accept us as we are. They can go to Las Vegas. If we turn New Zealand into a theme park, we ruin it for our own people.

Lois Griffiths
Christchurch

Gottlieb Braun-Elwert shows us one important aspect of high-yield, high-expenditure tourism rather clearly. I'm sure there are lots of people out there who have been sickened by the drone of an aircraft engine or outboard motor while attempting to have a "wilderness experience". Please – let's do something about this form of pollution and ban the use of combustion engines in and above national parks and marine reserves.

And do it before the tourism lobby is strong enough to run the country as a huge amusement park.

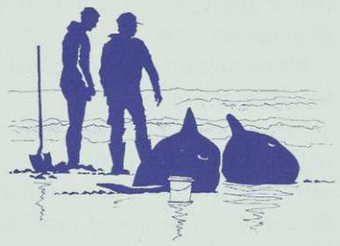
H.P. Dietz
Dunedin

Stranded whales

We read with great interest Iris Goodfellow's article, and Kevin Smith's attached column, on the pilot whale strandings in Golden Bay (November).

I was interested in Mr Smith's thought-provoking comments on the question of whether human intervention is warranted in these natural emergencies.

Firstly, from an ethical point of view, why should we wait until a species is on the brink of extinction before we are compelled to lend a helping hand? Are the inroads that humankind makes daily into all whale populations, not least of which is the pilot whale carnage in the North Atlantic, not reason enough to be countered with some help to save the victim of a natural accident?



Secondly, and far more important, is the enormous public relations component of the volunteer side of whale rescue operations. I was extremely impressed to note the deep emotional impact that first-hand involvement produced in people who may never have cared for nature before. In a world where so many have lost touch with nature this situation produces a priceless opportunity for fostering public awareness and turning it into action.

We very much appreciate the no-nonsense (even though sometimes depressing) treatment of critical topics in *Forest & Bird*. Keep up the good work.

Tui De Roy
Takaka

LES MAIDEN

The new tusked weta – the size of its back legs suggests it can jump a metre high. Most weta species have become much restricted in distribution since the arrival of introduced predators, and only survive in niches where they can avoid the attention of rats.

New tusked weta ▼

A NEW SPECIES of tusked weta has been discovered in the Raukumara Range near East Cape. It was found by DoC field staff in a wood pile at the Mangatutara hut.

Although only one specimen has been found, Victoria University entomologist Dr George Gibbs is certain that it is a new species. It lacks the usual ridges on the tusks for calling and has different leg markings. He said that tusked wetas are very secretive animals and are very hard to find. "The new species might be very local or extended over the country, we don't know. But there will definitely be more of them out there."

Searches will be made for more weta in April/May. "This is the best time to look," said Gibbs. "The yearlings will have become adults and developed identifiable tusks, and they are mating and rushing around."

Tusked weta have only recently been recognised as a distinct group. Only two other species are known, one from scattered sites in Northland and the other (still undescribed) from Middle Mercury Island. They are distinguished from other weta by the long curved tusks projecting from the jaws of the male.

Forest and Bird takes on King Country loggers

IN A CASE taken by Forest and Bird to the Planning Tribunal, the society has established some important precedents on how local councils must consider applications for clearance of native vegetation. The case, decided late last year, was the first on the management of native forest under the Resource Management Act.

Forest and Bird had objected to a logging application by a contractor, George Twist, who had wanted to fell 10,000 tonnes of rimu and other native timbers from an area of just 300 hectares at Matiere in the King Country. Under the transitional provisions of the Forests Amendment Act, this amounted to more than three quarters of the remaining allowable cut for the entire Manawatu-Wanganui Region.

We argued that the application was simply forest destruction under the guise of selective logging, and took the Manawatu-Wanganui Regional Council, which had approved the application, to court.

Although the tribunal did not rule out all logging in this instance – it accepted our view that it was an area of a significant indigenous vegetation, but was not convinced that it was a significant habitat for wildlife – it did lay down some important rules that will need to be followed by all other regional and district councils in considering applications to log native forest:

- district plans have to control native forest logging and clearance;
- regional councils need to impose sustainable management requirements when considering consent applications for vegetation clearance (ie they are not limited to considering soil and water matters, an excuse several regional councils have used to allow clearance or logging of native forest);
- any logging must be sustainable and controlled by an expertly prepared management plan; and
- adverse effects on other elements of the forest such as forest structure and soil and water must be avoided as far as possible.

Forest and Bird was represented at the tribunal hearing by president, Jon Jackson. Basil Graeme and Duane Burtt gave evidence for the society as did consultants Dr Graeme Elliott (wildlife), Dr John Hawley (soils) and Dr John Bathgate (forestry).

Colour blue for water

STUDENTS IN Waitakere, New Zealand's first self-styled "eco-city", have been learning how to appreciate the city's environment and its dependence on the natural water cycle through a specially designed colouring-in poster and teacher's resource.

The "Nature's Water Cycle" poster competition attracted 18,000 entries from 69 primary, intermediate and secondary schools in the area.

"The aim of the poster competition and the accompanying teachers' resource kit has been to draw attention to nature's water cycle and the need to protect native plants and animals in the region," said Waitakere mayor Bob Harvey. "Much of the flora and fauna of the Waitakere Ranges is ▲

Armith Bounthirat, 12, from Royal Road School, displays his winning poster in the under-13 section of the water cycle poster competition.

featured in the poster".

The resource kit and colouring-in poster were developed with the assistance of local science teachers. The teaching materials and visual aids draw attention to the bush-clad Waitakeres, the natural process of rain, water runoff, flow and evaporation, and endangered or declining species of native flora and fauna in the city area.

Winning posters in the competition have been reproduced as gift cards and are being sold to raise funds for planting trees and other environmental projects with schools.

The city council's Water Cycle Strategy is a community-based programme to conserve, reuse and recycle water. It is intended to bring greater awareness and understanding of the importance of water conservation.

Restoring Christchurch's ecological past

IF YOU HAVE trouble thinking of Christchurch as a city of kahikatea and kereru, a guide has been produced to help you.

The concept belongs to the Otautahi Christchurch Agenda 21 Committee, a community group promoting the decisions of the 1992 Rio Earth Summit and in particular the biodiversity convention signed by New Zealand. The group wants ordinary citizens to feel that protecting and restoring biodiversity is something to which they can contribute directly.

As the group's coordinator, Diana Shand, says: "The task has to be made relevant to people's capacity and experience. They can relate to planting native sedges along a small stream at the end of the street rather than mowing grass if they understand this will attract insects that will feed the fish that shelter under the sedge."

By simply locating their street on a map in the booklet and noting what colour-coded ecosystem it fits into, residents can obtain the associated plant card (cost 50 cents) which lists trees, shrubs, groundcovers and special niche plants that once called that place their own. The map shows original landforms and existing remnants as well as letting you know what native animals once lived there.

As well as gardeners interested in restoring native plant systems and bringing back some native birds, lizards and insects, the plant lists will hopefully help nurseries, planners, schools and council landscapers to understand what belongs naturally to different parts of the city.

The first booklet was funded by the city council and covers the southern and western plains of Christchurch. The plan is to follow it with another three booklets covering the rest of the city.

Much use has been made of soil maps, historical data, pollen records and existing natural remnants to produce the information.

Di Lucas, Forest and Bird executive member and principal of the firm of landscape architects that produced the booklets, says that the project was particularly impressive coming "from the bottom up" as a community initiative.

P. CLERKE/DOC

Incredible as it seems, established environmental pests such as ferrets (pictured), weasels and stoats can legally be sold as pets. After the weka deaths at Karangahake, one advertisement was identified as coming from a property right next to the release site.

Although this region is one of the most modified landscapes in New Zealand, said Lucas, the ambitious project looks at "recovery and restoration, not just remnants".

Death at Christmas

THE CLOSE of 1995 was a disaster for Forest and Bird's weka project, the programme, aiming to re-establish North Island weka on the mainland.

Gary and Elaine Staples, the local members who have been overseeing the weka releases at Karangahake near Waihi over the past three summers, suddenly noticed the silence as weka whistles ceased. Investigating, they found dead and mauled weka in drain pipes and under vegetation. Gary put one dead weka back into a drain, setting fenn traps at either end of the pipe. Next morning a huge pregnant ferret was dead in the trap. A male ferret was trapped within the week by a neighbour.

Eighteen months of successful weka breeding and release was brought to a standstill within a period of 10 days. Only four wild weka have been located since.

Clearly weka are unlikely to re-establish from a small population base without an extensive trapping programme when ferrets are present. The tragedy gives even greater urgency to the need for DoC to manage the last vigorous mainland population of North Island weka of about 200 birds in the Toatoa and Whitikau valleys, between Matawai and Opotiki (see *Forest & Bird* May 1994). The formerly strong East

Coast population is now fragmented into small, declining populations.

The bad news on ferrets is that they can be sold legitimately and are being advertised in many "pets for sale", newspaper columns.

Forest and Bird is now seeking a safer release site for the weka that our members are breeding and we are urging DoC to find an island site, free at least, of ferrets. The department's Draft Recovery Plan for weka recommends establishing North Island birds on at least three safe islands. At the moment there is only one safe weka island in Rakitu (Arid Island) near Great Barrier, supporting about 200 birds.

The importance of Kawau Island near Warkworth is highlighted by the collapse of weka on the mainland. Weka were released on Kawau in the 1970s and it now holds some 30 percent of the North Island weka gene pool. But the birds on this highly modified island are extremely vulnerable. A population established earlier this century died out in a drought year. Introduced wallabies exacerbate the drought problem as all native ground cover and moist litter in which weka search for insects is cleared by the hungry wallabies. The recovery plan recommends eradication of wallabies on Kawau to protect the weka.

There are now probably fewer weka than kiwi in the North Island, a dubious distinction for this endemic bird.

Basil Graeme

Greening the foresters

HOW SHOULD plantation forest managers respond if a population of a threatened species, such as kiwi or Hochstetter's frog, is discovered in a pine forest? Who is responsible for curbing the spread of wilding trees from a plantation? What policy should New Zealand advocate internationally on forest issues? Are plantation monocultures an environmental problem?

These and other questions have been debated for more than a year by a working group of environmentalists and representatives of the New Zealand Forest Owners Association and the Farm Forestry Association.

Emerging from these discussions and wider consultation has been an agreement on "Principles for Commercial Plantation Forest Management in New Zealand". The principles were formally launched last December.

These principles build on, and are complementary to, the landmark New Zealand Forest Accord of 1991. While the accord safeguarded native forests and other defined natural areas from clearance for plantation forestry, the new voluntary agreement sets out principles for the management of New Zealand's commercial plantation forests.

The objectives of the agreement are "To promote understanding between the signatory parties with a view to New Zealand achieving environmental excellence in plantation forest management and participating as an effective advocate internationally for the sustainable management of plantation forest and the protection, preservation, and sustainable management of natural forests".

The agreement will make it easier for environmentalists and plantation managers to sort out site-specific problems. If threatened species are found in a plantation, for example, then DoC will be consulted. If DoC considers the presence of the species to be significant, it will advise on management practices to protect the population.

While WWF, Federated Mountain Clubs and the Maruia Society have joined Forest and Bird in signing up to the principles, ECO, Greenpeace and Friends of the Earth issued a statement criticising the document. They believe the principles are weak, and do not give due recognition to the Treaty of Waitangi and to the social concerns of communities affected by forestry. Some will see merit in their argument, but Forest and Bird believes the principles are a step forward in the greening of New Zealand's mainstream plantation industry.

Two different schools of thought are developing in the international environmental community on the way ahead for forestry. Some groups are opposed to the planting of monocultures, clearcutting of plantations and the use of non-indigenous species in plantation forestry. They promote eco-forest management of natural forests and multi-species plantations of indigenous species.

In the New Zealand context, surely the best model is for further expansion of plantations on previously cleared marginal hill country and the protection of all remaining natural forests. New Zealand's plantation forests can provide a more environmentally acceptable source of wood than that coming from virtually every other country in the world. This New Zealand model is not universally relevant but elements of our approach to forestry could be usefully followed by other countries.

Kevin Smith

Junk mail, no thanks

JIMMY McGUINESS doesn't like junk mail, but that didn't stop him from collecting every piece of unsolicited advertising material pushed into his Hutt Valley letter box in 1995. By the end of the year he had collected 1,664 items, an average of almost five every day. Put into one pile, the brochures, circulars, coupon booklets and samples reach over one and a half metres high.

He sees it all as waste: "Most of them are selling the same things; it doesn't make me want to buy any of it and all it does is clog up the letterbox."

If junk mail bothers you, get a Forest and Bird "No junk mail" sticker. It won't stop all unsolicited mail but it will help.

Remember that New Zealand uses over half a million tonnes

EVENING POST

Not really laughing. Jimmy McGuiness contemplates a year's collection of unsolicited mail.

KAREN DAY

Fourth formers at Stratford High planting totara for the Taranaki Tree Trust. The trust has been able to branch out into areas such as riparian management, fencing, surveying and tree planting. It even assisted with start-up costs for a New Plymouth Prison initiative "Arborgro" – growing native plants for community projects.

of paper products a year, only a quarter of which is recycled. And this is only a minuscule proportion of the four billion trees consumed annually to feed the world's voracious appetite for paper. Much of this is from the world's dwindling estate of natural forest and not only removes trees but destroys the habitats of hundreds of species of plants and animals in the process. The demand for paper products is increasing faster than population growth and is expected to double by 2010.

Taranaki trees

A TREE PROTECTION group established to protect dwindling indigenous forests in Taranaki may become a role model for others around the country.

Facilitator of the Taranaki Tree Trust, Maggie Bayfield, says the trust was set up in 1992 with representatives from a variety of organisations, to help fund regional and local projects aimed at protecting Taranaki's natural heritage.

"A group of local people including Forest and Bird representatives saw the gap between the national funding available from bodies such as Forest Heritage and what landowners themselves were able to afford to protect," said Mrs Bayfield. "There are lots of valuable areas of forest in Taranaki, but many landowners can't afford to do the work."

In the lush dairy country on the Taranaki ring plain, much of the forest has been cleared and only a few remnants remain. But the Taranaki hill forests are being heavily targeted by loggers all over the North Island before the Forests Amendment Act takes full effect in July. "We're trying to encourage landowners to protect their forest remnants," says Bayfield.

Boosted by a cash injection of $100,000 from ECNZ, the trust is innovative in gaining institutional support. It has worked with organisations as diverse as Soroptimists, the Natural Gas Corporation, the New Plymouth District Council and DoC. Other sources of funds include public donations and money raised from the annual TSB Bank "Around the Mountain" relay race.

Projects that receive funding are managed by agencies such as the Department of Conservation, QEII National Trust and district councils. Each project is carefully evaluated and must satisfy strict ecological criteria before funds are provided.

The Taranaki Regional Council administers the trust free of charge which means there are minimal overheads and all donations and funding go directly to the projects.

Maggie Bayfield claims the trust has achieved more than it ever expected in such a short time.

"As a local community-focused group, we are able to capitalise on the parochial interest which Taranaki-based projects generate."

Jane Wynyard

A belt in the pelt

IT'S UP AND it's working, all 9,000 volts of it. Not a lethal dose but, as they say, enough for a hell of a belt, especially if you're a possum.

Cape Brett (Rakaumangamanga) is the sacred seat of Nga Puhi and, with its famous Hole in the Wall and brilliant views of the Bay of Islands, it is visited by more than 100,000 visitors a year. But browsing possums and goats have reduced the pohutukawa to skeletons and prevented any natural regeneration.

The idea to build an electric fence came from discussions between the two main landowners – DoC and the 3B2 Iwi Trust – following frustration with possum reinfestations in spite of concentrated kill programmes on the peninsula.

The end result is a solar powered electric fence, built by local people and DoC, stretching 2.5 kilometres across the peninsula north of Rawhiti.

Funding came from Project Crimson, $73,000 from the Lottery Grants Board and $15,000 from Westpac's Save the Pohutukawa campaign. Forest and Bird, CCS's Horizon Gardens, inmates at Paremoremo, and locals have more than 3,000 seedlings from the area under propagation.

A private trust, with part-time resident Dame Kiri Te Kanawa as patron, has been established to raise the $10,000 a year needed for ongoing maintenance and restorative plantings.

The Northland Regional Council and DoC, who will now conduct a major animal control programme in the protected area, hope to reduce the possum population behind the fence by 98 percent in the first year.

On 8 December a gathering at Te Rawhiti marae celebrated the completion of this project. The cooperation between Maori and conservationists should see Rakaumangamanga bloom again.

Alison Henry

NORTHERN ADVOCATE

Fencing contractor Carl Le Heron working on the Cape Brett possum fence. Protecting 1,200 hectares of forest, the fence is different from others in the Coromandel and in the Marlborough Sounds. Plastic mesh was used to reduce the weight of the materials and traps will stop incursions around the coastal ends of the fence.

Welcome the new native?

NEW ZEALAND HAS a new native bird – from Australia.

The Nankeen night heron *(Nycticorax caledonicus)* has been confirmed as breeding – at Jerusalem on the Whanganui River. Under the Wildlife Act a self-introduced bird receives automatic status and protection as a New Zealand native.

The heron has never before been confirmed as breeding in New Zealand. They've been spotted around the country either in pairs or singly but not in the Wanganui area until two years ago, when up to a dozen were seen in an area between Hipango Park and Pipiriki. Only last November was DoC able to confirm that it bred there.

Despite DoC's description of the discovery of the breeding population as an "exciting find", the establishment of the heron and its inclusion as a protected native species raises some interesting questions. Should self-introduced species of birds gain this automatic and venerable status? There is no information at this stage as to how the heron might impact on more established native fauna, but presumably it already competes with indigenous birds and other animals for food and resources.

A sizeable proportion of the New Zealand avifauna comprises birds that have close relatives in Australia and that have arrived here with the help of the prevailing westerly winds and currents. In evolutionary terms they are recent additions to the New Zealand native biota. Such birds include the kotuku or white heron, morepork, harrier hawk and pukeko. Their arrival in our environment is part of the natural process of change that all ecosystems undergo and no one would quarrel with their genuine status as native birds.

But there is a growing group of arrivals from across the Tasman that have established breeding populations only since the major human-induced environmental changes of the past 200 years. There are at least ten such birds including the royal spoonbill, white-faced heron, silvereye, welcome swallow, black-fronted dotterel, hoary-headed grebe and spur-winged plover. Due to the recentness of their arrival, and the likely on-going recruitment from Australia, most of these birds are genetically indistinct from their Australian relatives.

An average of a new species every 20 years is well above what one would expect as the natural rate of self-introduction. Obviously if New Zealand was still a country of predominantly dense rainforest, rather than predominantly open pasture, then species such as the spur-winged plover which prefer the latter habitat would have been less likely to have established breeding populations.

It is possible also that habitat changes in Australia, creating large populations of certain advantaged species have contributed to the increase in arrivals here.

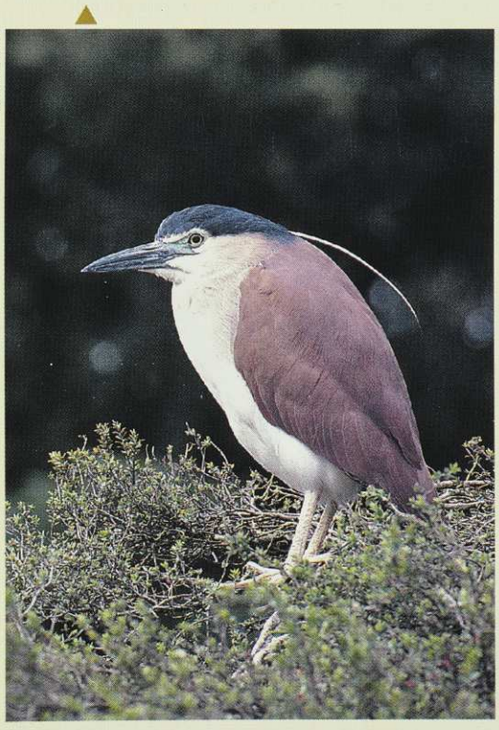
One might question whether there is a useful ecological distinction between the deliberate introduction of a bird such as the magpie, or changing the environment with the result that another species can gain a foothold and thrive.

The recent sighting near Auckland of spur-winged plovers destroying eggs of New Zealand dotterel – total population under 2,000 – suggests more discriminating criteria might be needed in providing Wildlife Act protections.

Certainly in the damaged natural world of Aotearoa, the status of self-introduced birds should be considered case by case, especially in relation to their impacts on this country's threatened endemic fauna.

Ian Close

ROD MORRIS



The Nankeen or rufous night heron roosting in a tree. The birds are native to Australia, New Guinea, Indonesia, the Philippines (and now) New Zealand. Largely nocturnal, the birds favour the edges of swamps, inlets and rivers. They feed on a wide range of fish, frogs, crustaceans and insects. Overseas they are reported to sometimes plunder the nests of other birds, destroying their eggs and young.

Is there life after KCC?

CONSERVATION needs young people. Forest and Bird recognised this need when, in 1988, members voted to set up a children's conservation group. The Kiwi Conservation Club was born, and has grown to its present membership of 6,000, including 700 schools, with about 30 local clubs offering nature activities and family outings.

But KCC caters only for children, not for teenagers. KCC leaders watch with regret as children outgrow the club, and drift away. These young people will be choosing careers and forming opinions which will shape their lives. What can Forest and Bird offer to inform and interest them in natural science and conservation?

A couple of suggestions are being canvassed.

One is a club for adolescents. A successful model might be the Hamilton Junior Naturalists, a very successful group for eleven to seventeen year olds. Weekly meetings with a variety of speakers regularly attract thirty members. On day trips and camps, members explore the countryside, collect data, and monitor species. A focal point and destination is Te Kauri, near Raglan, their very own lodge and bush reserve. While members help with the organisation, the continuing success of the club depends on the enthusiasm and charisma of a few adult leaders.

Clubs such as these could be fostered in different parts of the country.

The second idea is to make use of the rapidly growing arena of electronic media, specifically the Internet, a form of communication adopted avidly by young people. It is an avenue offering a door into every school and an increasing number of homes in New Zealand.

Using *Forest & Bird* and *Conservation News* as sources, real conservation case studies could be provided for teachers and students to discuss. This would be well researched, provocative, and updated monthly. Conservation is a part of the biology and geography syllabuses, and increasingly should connect with economics, commerce and engineering. While the format lacks the intimacy of a "club", it has the advantages of being available to a wide audience.

The two ideas complement one another, with electronic media providing a ready means of communication between individuals, clubs, schools and Forest and Bird.

Joe Crandle (executive member) and Ann Graeme (KCC coordinator) would welcome your ideas.

Write to them c/- Box 631, Wellington.

Platt's place

MAVERICK NATIVE nurseryman Graeme Platt has always done things differently. On TV's "Living Earth" he dangled from a helicopter harness, collecting cones from some of Northland's giant kauri. The seed from these is now growing at an astonishing rate – the fastest weight for age ever recorded – on his new five-hectare property at Albany north of Auckland.

But having devoted much of his working life to promoting, propagating and planting native trees, Platt was determined not to use any native timber in his new house. He was equally determined not to use any radiata pine. Instead he decided to make the dwelling a showcase for a wide variety of New Zealand farm-grown exotic timbers.

"The idea that you can have one wood for everything is stupid," he says. "We have to rediscover the old ethic of growing specific timbers for specific purposes."

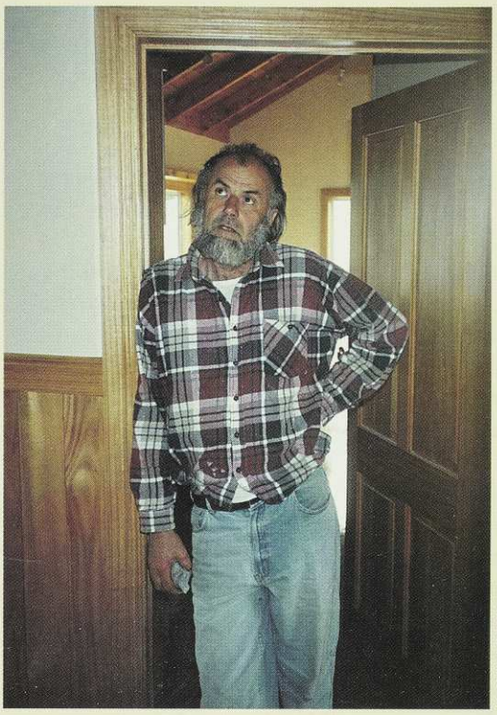
For the beams and studs he chose lawson cypress while the exterior weatherboards are macrocarpa – painted to prolong their life.

The major interior feature timbers are various New Zealand-grown eucalypts plus more lawson cypress and macrocarpa, with some New Zealand-grown Californian redwood, and Japanese cedar or tsugi. His neighbouring workshed features New Zealand-grown American swamp cypress panelling, an extremely durable timber Platt believes would be excellent for exterior cladding.

Platt – never one to mince his words – considers the New Zealand plantation forest industry suffers from a "monocultural, pine-blind fixation that is severely retarding timber development". He's compiled a list of 100 timber trees which grow better here than in their native countries, such as deodar cypress, Norfolk Island pine and other araucarias, and will be conducting extensive trials on them alongside some natives.

The property will have its own coppicing woodlot to feed the woodburner, plus a swamp garden with rushes to treat the septic tank effluent. The house will also feature recycled bricks from a number of former city landmarks.

Jacqui Barrington



JACQUI BARRINGTON

Graeme Platt in the hallway of his new house built entirely from farm-grown non-radiata timbers. The panelling is Eucalyptus fastigata *which, along with other eucalypts (*E. eugenioides, pilularis, saligna *and* botryoides*), he describes as the best hardwood New Zealand has produced.*

Going, going . . .

FLOWERING PLANTS and vertebrate animals are disappearing at 50 to 100 times the average expected natural rate and at least 5,400 animals and 4,000 plant species face extinction.

This is the message from the most comprehensive report yet produced on the state of global biodiversity. It was prepared by the United Nations Environment Program for the second Conference of Parties to the Convention on Biological Diversity which met in Jakarta last November.

Human behaviour is condemning tens of thousands of plants and animals to extinction, said the report. The world had an estimated 13 to 14 million species of organisms and, of that total, just 13 percent have been scientifically described.

Because of loss and modification of wildlife habitat worldwide, tens of thousands of species, most never identified, are sure to vanish, said the report. Besides species, the world was also rapidly losing genes and ecosystems.

Over the next 25 years, tropical forests could lose species at 1,000 to 10,000 times the natural rate. Even if some threatened species survive many would lose distinct populations and genetic differences.

Traditional medicines threaten seahorses

SEAHORSE populations are plummeting around the world as they are heavily exploited for use as medicines, aphrodisiacs, aquarium fishes, curios and food.

Trade in these beautiful and unusual fish – estimated now at 20 million animals a year – is rapidly increasing, driven largely by China's economic growth and the ensuing increase in demand for medicinal products in that country.

Research biologist Amanda Vincent, of Oxford University, says that "populations of the seahorses are certainly collapsing under exploitation".

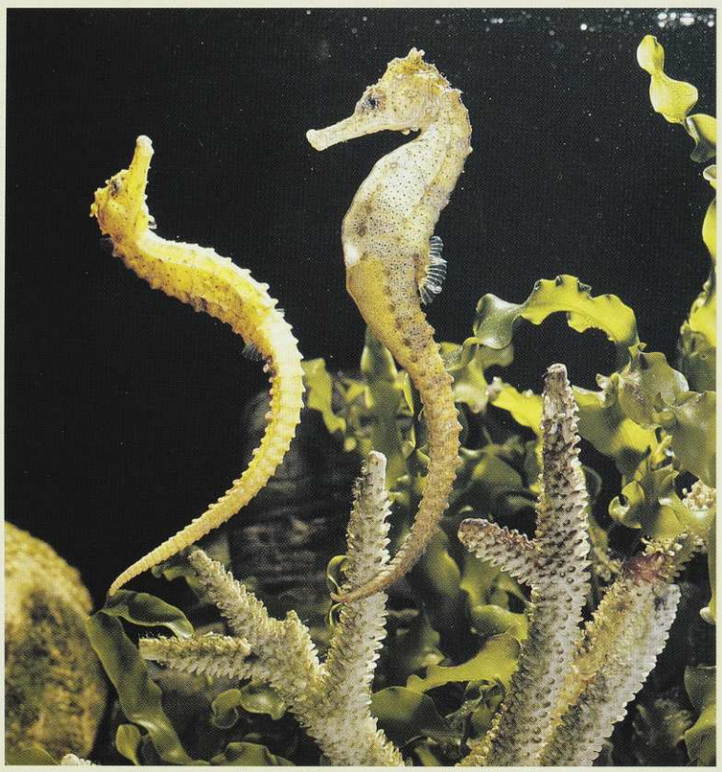
What we know of their biology suggests the animals are very vulnerable to fishing pressure. Parental care for up to six weeks and small brood size limit the potential rate of reproduction; strict monogamy means that social structure is easily disrupted; sparse distribution retards re-pairing; and small home ranges and low mobility restrict the recolonisation of depleted areas.

Countries that fish seahorses stretch from the Middle East to Australia and South America. In Hong Kong, large bleached seahorses can fetch up to US$1,200 a kilogram.

Vincent urges caution in relation to trade restrictions arguing they would be unenforceable and merely drive the trade underground. Better options she says would be localised community-based protection in the form of reserves (these are already working in areas of the Philippines), fishing restrictions (no juveniles or pregnant males), rotation of harvest areas and enhancement of seahorse numbers through improved aquaculture.

Source: TRAFFIC Bulletin

JANE BURTON/BRUCE COLEMAN LTD



Seahorses – there are about 35 species worldwide – live in coral, seagrass and mangrove habitats in temperate and tropical regions. The male (right) bears the young, and undergoes repeated pregnancies for much of the year.

Rabbit virus worries

WHILE NEW ZEALANDERS are understandably concerned about the possible effects of the escaped rabbit calicivirus on our own wildlife, many Australians, after the initial excitement of seeing piles of dead rabbits, are asking whether the whole exercise is going to provide a net plus for the natural environment.

Unlike New Zealand where the rabbit is largely an agricultural problem, in Australia it is one of the country's worst environmental pests. Rabbits are responsible for the decline of many native plant species and have displaced many small marsupial grazers such as bettongs and bilbies.

Many native herbs and shrubs, long suppressed by rabbit grazing, will flourish in the new rabbit-depleted environment, and the benefits will also flow through to herbivores such as wombats and kangaroos.

But the success of RCD – still spreading across the continent – is causing concerns about small native animals which are likely to come under greater threat from predators such as foxes and cats. The ravages of cats – there are up to 18 million feral cats in the country – and foxes on native wildlife have been mitigated to a degree by the supply (until now) of up to 200 million rabbits.

A quarter of the world's mammal extinctions of the past 200 years have been in Australia, and foxes and cats are thought to have played a large part in these. The worry is that increased predation pressure will tip the balance for many local populations of endangered animals including species of wallaby, potoroo and native mice.

Another problem is that a number of native species have become dependent on rabbits as prey. Rabbits make up 90 percent of the diet of wedge-tailed eagles, for example, and the birds are likely to experience a population crash.

Overall, the lives of rabbits, cats, foxes and native mammals have become so interwoven, that the demise of large rabbit populations is likely to have unpredictable effects.

Environmentalists have warned that if the gap produced by the fall in rabbit grazing pressure is merely filled by increases in sheep stocking levels, then very little will have been gained for the natural environment.

Clayoquot soundings

ATTEMPTS AT compromise in the protracted dispute over the clearfelling of rainforest in Canada's Clayoquot Sound have failed, and destructive clearance seems set to continue.

The Clayoquot forests, spanning 100 kilometres of the rugged Pacific coast of Vancouver Island, form one of the last

great tracts of old-growth temperate rainforest left in the world and have been the centre of a fierce dispute between environmentalists and the government of British Columbia for over three years (see *Forest & Bird* February 1994).

The government announced in July that it had accepted all 127 recommendations of a scientific panel established to look at a sustainable logging regime for the sound.

Logging would continue but clearcuts more than four tree heights wide would end, over 87,000 hectares of new parks would be created, and unlogged watersheds would be protected at least until full species inventories and ecological assessments had been carried out. There was an assumption (never denied by the government) that no clearcut could be greater than four hectares. The government claimed that clearcut logging "as we know it" at Clayoquot would end.

In a province where 15 percent of jobs are forestry related, the compromise was seen as a considerable environmental gain and most conservation groups acceded to the agreement.

By September the regime started to unravel when the first batch of new cutting permits – allowing 14 hectare clearcuts – was announced.

Environmentalists argue they have been deceived and have denounced the new rules as only providing for the forests to be destroyed with greater sensitivity.

The battle to save the Clayoquot forests is obviously not over yet.

From Auckland to Gunung Leuser

THREE YEARS of barefoot tracking in the jungle, taking photos of Indonesia's elusive wildlife, gave Aucklander Mike Griffiths the drive to fight to save the great rainforests of the Gunung Leuser National Park in northern Sumatra.

The Forest and Bird member and former oil company executive is now armed with a staggering US$60 million of European Union and Indonesian government money to protect the park and areas around it.

Gunung Leuser is Indonesia's premier national park with a wide variety of habitats from its high mountainous core to coastal swamp, and contains the largest area of lowland forest left in Sumatra.

It is also the last place on earth where orangutans, rhinos, elephants, tigers and leopards still live together.

Yet like many conservation areas in developing countries, legal protection for national parks in Indonesia is weak. Parks are regularly logged, cleared for agriculture by land-hungry farmers and available for all sorts of commercial exploitation if enough money is offered.

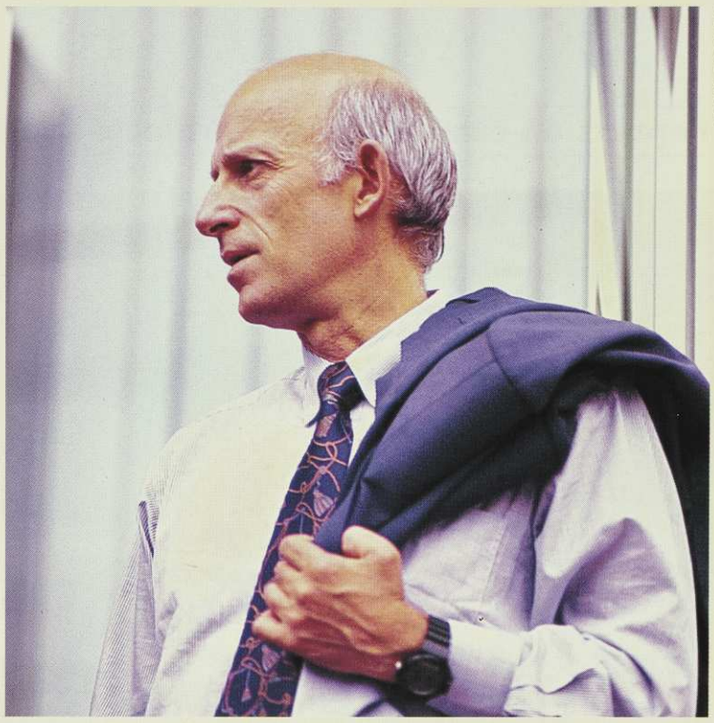
Mike Griffiths also found that the richest areas, biologically, were outside the park where many illegal timber operations were operating with impunity. "The amount of money that can be made exploiting rainforests gives those people so much power in Indonesia, that you must have access to the very top to conserve forests."

To halt the destruction, Griffiths and local allies proposed increasing the protected area by a million hectares to 1.8 million and effectively privatising the park by transferring its management to the Leuser International Foundation, the body he had set up in 1993 to lobby for the area's protection.

The government was under international pressure for its poor conservation record and was amenable to innovative proposals. Griffiths, who has worked for 20 years in Indonesia, pursued his goal and his international fundraising with the zeal and effectiveness of an experienced international negotiator.

Last April the Forestry Minister agreed to place the entire Leuser ecosystem under the management of the Leuser Foundation for seven years. The only drawback was that logging concession holders maintain their prior rights.

"In a stroke we doubled the land under protection and took the first step toward creating the most important conservation area in Southeast Asia and one of the top parks on the planet."



ADAM LEAVESLEY

Mike Griffiths: "I come from industry and I know how the world works. To save Gunung Leuser, I knew it would take a lot of money and influence. You must have tremendously good political support, and the funds to win that support."

The Leuser Development Programme has three ministers on it, the first time any Indonesian minister has been involved in this way in a conservation project.

Griffiths also has the committed support of some of the most powerful leaders in the province of Aceh where most of the forest is located.

"When we face really serious threats, the support of these leaders is essential in conveying the problem to President Suharto."

In only two years the foundation has already fought off two major incursions.

A local clique of retired army colonels and businessmen had cleared 12,000 hectares within the park and during 18 months of negotiations could not be persuaded to stop.

"After some wheeling and dealing in Jakarta, the head of the army in northern Sumatra heard about the problem and weighed in on our side, boots and all. Now we have a reforestation programme in place."

In another instance the bulldozers were warming up to begin construction of a road that would have sliced right through the heart of the rainforest.

Griffiths used his government connections; President Suharto heard about the project and it was stopped.

"In certain cases unofficial high-level lobbying can be very effective in Indonesia," Griffiths says with a smile.

He has also introduced patrols which are constantly moving around the park to protect the rhinos and he believes that poaching is now negligible.

The same patrols also appear to be protecting the tigers. Griffiths says a wildlife trafficker in Jakarta delivered a backhanded compliment by saying that tiger poachers were operating everywhere in Indonesia except Gunung Leuser.

Griffiths is aware that many conservationists are suspicious of privatisation but says it was essential in this case to break the institutionalised shortcomings of the present management system.

Griffiths expects it will be much easier to attract funding for conservation projects within the park and sustainable development in the region to protect the park.

Adam Leavesley

Reports on campaigns and projects by Forest and Bird branches and field officers

Four more possums about to join the 450 already buried in the garden of Errol Hardy's Waikanae home. The post-hole borer provides a quick and neat disposal method.

Possums galore

THE SHRUBBERY in Errol Hardy's garden conceals a secret – it is the burial ground for about 450 possums.

The graveyard belonging to the Kapiti branch committee member has an informal grid system to ensure that all his shrubs have their fair share of nutrients from the recycled marsupials.

Errol's garden is close to the Hemi Matenga Memorial Park Scenic Reserve in the hills behind Waikanae and his efforts are confined to the area around the walking tracks on the lower slopes of the reserve.

DoC trapped some 1,500 possums in the 330-hectare reserve in the past year, but there are still enough left to keep Errol's four Timms traps busy.

Wild Dunedin

"NEW ZEALAND'S wildlife capital" can now boast a fine natural history guide thanks in part to Dunedin Forest and Bird. *Wild Dunedin* is a detailed introduction to the geology, native plant, animal, insect and aquatic life of the city and its surrounds.

Compiled by branch members – writer Neville Peat and entomologist Brian Patrick – the book is more than a descriptive survey. It has a strong conservation focus and looks at what can be done to protect the rare and threatened species, habitats and landscapes of the region.

Much of the funding for research and writing came from the Marjorie Barclay Trust administered by the branch. Assistance was also provided by DoC's Otago conservancy.

Wild Dunedin was launched in a novel fashion with its authors emphasising that its coverage was not confined to the city only. They mountain-biked off the Rock and Pillar Range, met the Taieri Gorge train, were lifted by helicopter off the train into suburban Dunedin and had the book finally launched in the town hall by Dunedin Mayor Sukhi Turner.

The 144-page publication contains 200 colour photos, and illustrations by wildlife artist Chris Gaskin. It is published by the University of Otago Press and retails for $39.95.

Pest-free subdivisions

UPPER COROMANDEL branch members, Jocelyn and Paul Bieleski, faced a dilemma. How to turn around a potentially disastrous opening up of native forest next door to the Manaia Forest Sanctuary – one of the last areas of unlogged forest on the peninsula and home to kiwi, other native birds, native fish and Archey's and Hochstetter's frogs.

They had objected to a subdivision of 600 hectares of privately owned native forest into 26 lifestyle blocks adjacent to the sanctuary. A road through the private forest had been bulldozed without the required consents (see *Forest & Bird* May 1995).

The Bieleskis were appalled at the possible effects on the forest of so many families moving in with their cats, dogs, honeysuckle and ginger.

With the subdivision nearing reality, they met the developers and argued that certain conditions should be attached. These were that all titles prohibited the introduction of any exotic animal including fish and other domestic pets; prohibited a list of some 80 pest plant species; opened the land to any pest operation carried out by DoC on the sanctuary next door, and protected the forest itself by covenant.

After some market research, the developers, Larrie Dye and Terry Willegers, became convinced that there was in fact a demand for bush lots that preserved the features which drew buyers in the first place. They agreed to the Bieleskis' requests.

These "eco subdivision" principles can be applied through district plans to recognise and protect other vulnerable native habitats. Subdivision rules can be an opportunity to restrict the invasion of pests and to assist the survival of existing at-risk native wildlife.

THE PRESS

Ruth Dyson, Jim Lilley of Marine Watch, and members of Forest and Bird, Lincoln Environment Group, and Save Our Seas Coalition with a dead Hector's dolphin. The dolphin was found washed up on Christchurch's Sumner Beach in October with obvious cuts and markings on the body and around the snout from entanglement in a net.

Taupo branch members on the lookout for kokako in Mapara reserve. Their day was complete when, in late afternoon, a pair of the birds responded to the taped call and produced their beautiful song.

Call for set net action

FOREST AND BIRD'S North Canterbury branch and other conservation groups presented Lyttelton Labour MP Ruth Dyson with a petition late last year to pass on to Conservation Minister, Denis Marshall and Fisheries Minister, Doug Kidd.

The 6,471-signature petition called for a ban on the use of set nets in coastal waters.

"Ten dead Hector's dolphins were found on Canterbury beaches last summer," said Forest and Bird's regional field officer Eugenie Sage. "At least seven were either entangled in set nets or had tell-tale marks on their snouts and nick marks on their fins and flippers indicating they had drowned in a set net. An average of three Hector's dolphin deaths from commercial nets are reported annually but under-reporting is a consistent feature so the actual death rate is likely to be higher than this."

Hector's dolphin are the world's smallest and possibly rarest marine dolphin with a population estimated at under 4,000. They occur only in New Zealand's inshore waters and are concentrated around Banks Peninsula, the Southland coast and on the West Coast.

A set net ban would protect the dolphin, allow depleted coastal fish populations, especially reef species, to recover and would lead to a healthier marine ecosystem.

Visiting Mapara

LAST YEAR members of the Taupo branch witnessed first hand DoC's innovative project to intensively control pests around the key kokako reserve of Mapara in the south Waikato.

The branch had previously raised funds through recycling aluminium cans to assist the Mapara project. The money had been used for plantings in a wildlife corridor linking the two forest areas of the reserve. In September, 40 members travelled to Mapara and were shown around the reserve by DoC's Philip Bradfield.

When DoC started its intensive management at Mapara eight years ago there were only four female kokako in a population of 47 birds, the forest was full of goats, possums, rats, stoats and weasels, there was no regrowth in the understorey, few flowers or berries and certainly not enough food to provide for the dwindling kokako.

By the '94-95 summer there was such an abundance of flowers and fruit that over 50 young birds fledged – an indication of the dramatic effect well-managed predator control can have in the recovery of an endangered species.

As branch chair Bett Davies says: "Our outstanding impression was that this is a project which does not rely on manipulation of breeding to increase numbers but on work done by dedicated DoC staff to keep pests at bay, allow the bush to regenerate and provide an expanding habitat for further increases in kokako numbers.

"To know that we can go to an 'island reserve' on the mainland to see and hear an endangered bird living in natural surroundings is an experience our members will never forget."

Tasman plantings

THE ACTIVE TASMAN section has developed an ambitious revegetation plan for the Roding River in the Aniseed valley south of Nelson.

The valley was once covered in podocarp-hardwood forest but has been largely cleared, with a history of grazing, milling, mining and, more recently, radiata forestry. Much of the farmland is now being converted into lifestyle blocks. Many unusual plant communities are still found in the valley due to the limestone and ultramafic (heavily mineralised) rocks of the catchment. These communities include nationally rare species such as shovel mint *(Scutellaria novae-zelandiae)*, hairy daphne *(Pimelea tomentosa)* and *Coprosma obconica.*

Led by branch chairperson Kathy Graham, a concept plan for the revegetation has been developed with the help of DoC. The aim of the project is to protect remaining native vegetation with fencing and weed control, and to expand this area with native plantings along the Roding River. Schools and community groups will be involved in the project as much as possible.

Tasman members, helped by local residents and KCC members, at the inaugural plantings last year for the Roding River revegetation scheme.

In search of Mudfi

Sometimes known as mud eel or spring eel, mudfish are one of the strangest and most secretive of New Zealand's native fish. DAVID YOUNG looks at what is known of the animal Maori call hauhau or waikaka.

ROD MORRIS

DIG DEEP enough into the mud of old forests on the West Coast and you may come across a peculiar, elusive, tenacious fish that seems more a product of Hollywood than New Zealand.

This is the mysterious brown mudfish *(Neochanna apoda)*. Endemic to this country, it can live deep in soil without water for long periods of time and can survive deforestation, drought and probably burn-offs.

Though in every anatomical sense a fish, it is quite amphibious in the way it is adapted to dwelling in ephemeral forest ponds and wet places, like pakihi swamps and damp paddocks.

The mudfish delighted toiling settlers during the 1860s – the period of the New Zealand Wars. They discovered that their swampy potato patches yielded not only spuds, but fish: or "fish and chips" as fisheries scientist Dr Bob McDowall could not resist noting in his book, *New Zealand Freshwater Fisheries.*

As well as the West Coast, the brown mudfish is also known from the west coast of the North Island, in particular the Whanganui, Rangitikei and Manawatu catchments, as well as in the Wairarapa.

Dean Caskey and Matt Cook, from the Department of Conservation's Stratford field centre, returned to previously known haunts of the animal in winter 1994 to discover that in some places they were still there. When the fish is found it is often in plentiful supply.

In Ngaere, formerly a 4,000-hectare swamp whose remnant today is a mere ten hectares, they found 57 mudfish from three nights' fishing. "A lot of farmers came back to us after we advertised," says Wayne Hutchinson, senior DoC conservation officer at Wanganui. "The fish turn up if they have been digging drains. So a lot of their habitat is quite terminal".

The new findings of the brown mudfish – and its close relatives the Canterbury mudfish and black mudfish – raise some important issues. As Gavin Smith, planner for DoC's West Coast conservancy puts it, the fish's presence is a reminder that even in cut-over landscape, be it pakihi or even in old mining towns such as Kumara, there are natural ecosystems at work.

"It can be found under houses (as it was in Kumara), in paddocks, floodpools and pakahi. We have a responsibility under the Resource Management Act to protect these species – even when they occur outside national parks and protected areas.

"It illustrates the large unknowns in so much of the work that we do," says Smith. "It's listed as a class B threatened species, but it's quite possibly widespread over the West Coast.

"The fish is affected by land use as much as what happens to waterways. It is a species that could be lost or dangerously depleted before we really knew we had it."

FISHERIES RESEARCH technician Tony Eldon, now retired, agrees: "They are so bloody cryptic, people don't even know they're there." He described how, years ago, he visited Karamea, only to be assured by local bushmen that mudfish did not exist there. "There were a number of puddles out in the bush and we went there and fished them up from right under their feet."

Eldon said that the mudfish had been reported only once this century in

A Canterbury mudfish resting on a creek bed near Temuka. Belying their name, mudfish prefer clean, unpolluted, well oxygenated streams and their presence is a good indicator of the health of water bodies.

Taranaki. "But when DoC got interested and set out to look for them, they found them all over the place."

No one is sure exactly how widespread or densely distributed these animals are, either on the Coast or elsewhere, "We think they may be present in any places where there are old glacial or marine terraces," says Smith. "They can burrow down at least a metre into the ground. They have also been found in dune swamps. In one area where they were known to exist, 15 were trapped in a single night."

DoC fish scientist Campbell Robertson says that vegemite makes a most attractive lure but they also "eat anything that moves and are most aggressive".

Brown mudfish are most easily discovered in winter, and they have not been found more than 200 metres above sea level. Apart from their appearance in the most unlikely places, the mudfish also occur where they might be expected, in places like the whitebait spawning area in the important Kongahu Swamp, south of Karamea – a wetland so acidic it is impossible to do electric fishing there.

While, says Smith, most of the dam-

G.A. ELDON

An "elongate, tubular fish, like a short stocky eel" as fisheries scientist Bob McDowall puts it, the brown mudfish is reported to have been prized by Maori and common at feasts. Given that their average length is about 100 mm and few exceed 130 mm, large numbers would have been needed to meet the demands of hospitality.

KEITH MAYNARD

Tony Eldon points to a brown mudfish found beneath a log at Kumara on the West Coast in 1966 and (inset) the same fish up close. Eldon found that mudfish aestivate for a month or two in summer and autumn in the mud under forest litter. If the water dries up the fish move into holes under trees or logs until the water returns. This ability to survive after its water disappears allows mudfish to occupy habitats that other fish cannot.

age to mudfish habitat on the Coast has already been done, wetland drainage is still permitted by the transitional regional plan. The proposed regional policy statement supports the idea of protection and a series of fish and wildlife surveys are being conducted on the Coast. "The brown mudfish seems to live where few other fish do, and so we find that the only other creatures in its habitat are eels and koura."

ALTHOUGH THE three mudfish species attracted some interest last century, it was Tony Eldon, inspired by Bob McDowall, who was responsible for the revival of interest in the 1960s.

He found it to be abundant in forest swamps and bogs, mostly in shallow water of less than half a metre. Frequently, it appeared in holes round the buttresses of trees. He also noted that it was highly nocturnal.

It is the mudfish's tendency to "aestivate" (rather to fish what hibernating is to bears) in mud in a state of torpor, that still interests those who find them. More than 100 years ago R.C. Reid wrote, "As the water dries up it is forced to wriggle into the mud . . . it has been known to follow down the moisture in holes left by decaying roots and get a considerable depth underground . . . the discovery of a healthy fish five or six feet under solid dry ground has been looked upon as truly miraculous."

But as they are not totally inactive, McDowall questions whether they truly aestivate. Eldon suggests that some members of the same galaxiid family have already evolved a capacity for breathing air which has enabled the mudfish to survive without water. This is what some juvenile fish are capable of as they pass up the edges of waterfalls. From this it was a short step to adapt to an earthy habitat where there was little competition from other fish.

Apart from the importance of this little-understood creature and the habitats in which it can flourish, brown mudfish are almost certainly an important bio-indicator. "They are never found in foul water, they are only in good clean oxygenated water," says Eldon.

Seventy years ago W.J. Phillipps reflected ruefully on the future of the mudfish: "As the forest is gradually being cleared and the swamps drained there is little doubt that yet another animal unique in the natural world of New Zealand will become extinct."

Today the conservation status of the

The other mudfish

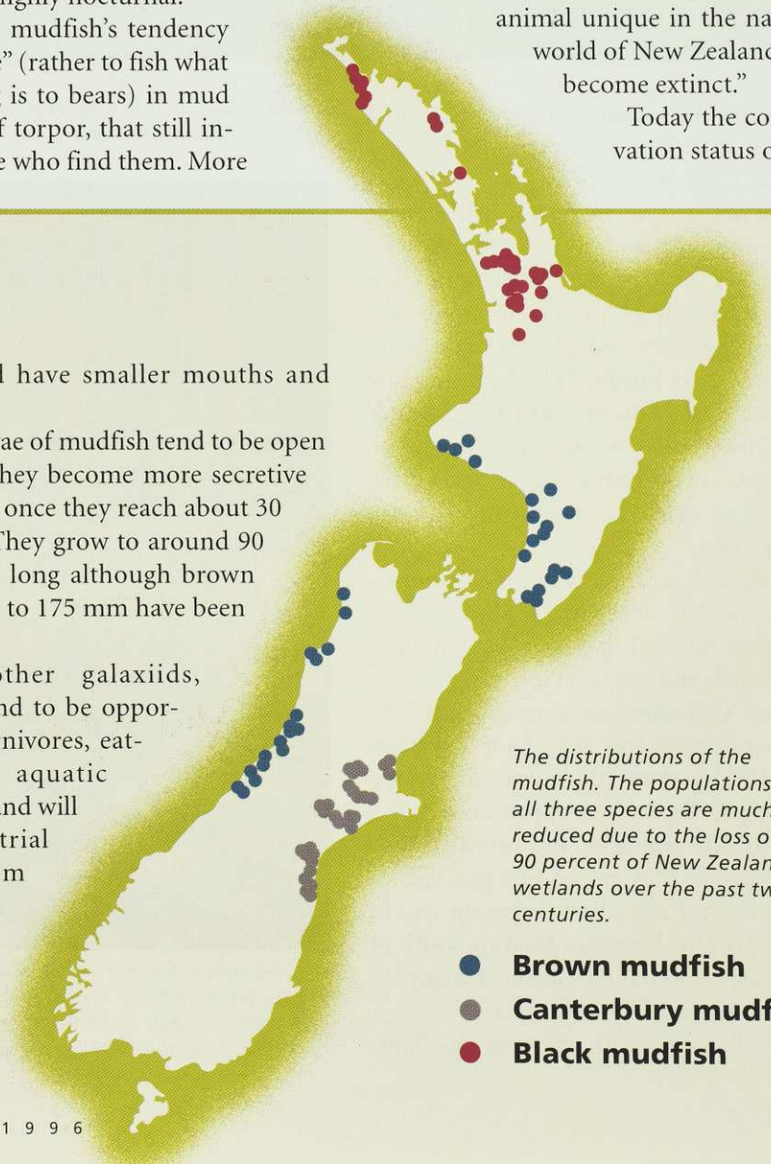
IN ADDITION TO the better known brown mudfish there are two other species: the black mudfish *(Neochanna diversus)* found only in the northern half of the North Island and the Canterbury mudfish (*N. burrowsius*) known, as the name suggests, only from that region. All three are members of the galaxiid family, the grouping that provides New Zealand with its whitebait species.

All mudfish, unlike the other galaxiids, either have their pelvic fins much reduced or absent. Canterbury mudfish have small pelvic fins and are most likely in a transitional evolutionary state between the majority of the galaxiids and the other mudfish. Brown and black mudfish have no pelvic fins.

Black mudfish differ from their brown cousins in having conical rather than chisel-shaped teeth. They are also much darker and have smaller mouths and larger eyes.

The larvae of mudfish tend to be open living but they become more secretive and cryptic once they reach about 30 mm long. They grow to around 90 to 120 mm long although brown mudfish up to 175 mm have been recorded.

Like other galaxiids, mudfish tend to be opportunistic carnivores, eating most aquatic organisms and will take terrestrial insects from the surface of the water.



The distributions of the mudfish. The populations of all three species are much reduced due to the loss of 90 percent of New Zealand's wetlands over the past two centuries.

G.A. ELDON

Brown mudfish habitat in Forest and Bird's Fensham reserve in the Wairarapa. Although there was no apparent water around, mudfish were found at this site. In cool damp conditions, it is thought that mudfish can live out of water for up to six months.

Protecting a special native animal

LIKE ALL native animals, mudfish are protected in national parks and reserves. But outside these areas they enjoy no special protection under the Wildlife Act or the Freshwater Fisheries Regulations. They can be taken either for human consumption or for scientific purposes.

There are certainly good arguments for better formal protection of native fish species – the only native vertebrates not given protection as a group. It is anomalous that those native fish listed as threatened by DoC – and all three mudfish species fit into this category – are not formally protected. Although mudfish, being secretive and with no current value as a food or commodity, are not threatened by exploitation, such protection would assist in advocacy under the Resource Management Act in protecting remaining mudfish habitat. It would also safeguard the fish from any future threats such as collection.

But it is the loss of habitat that has had the main impact on mudfish populations. And despite the destruction of 90 percent or more of our wetlands, drainage on farmland still continues in New Zealand, especially on a small scale, uncontrolled or without appropriate resource consents. The irony is that it is often only when the drainage occurs that the mudfish are discovered.

According to Bob McDowall all three species have "suffered enormously" from wetland drainage and all have a "perilous" conservation status.

In Northland, the Hikurangi Swamp inland from Whangarei was an important habitat for black mudfish. This large wetland was largely drained for pasture conversion during the 1950s and 60s. Small remnants remain such as the Otakairangi Wildlife Management Reserve. It was in Otakairangi that two black mudfish were discovered by DoC staff in August last year – the first find in the Hikurangi for 30 years.

Kaimaumau Swamp, north of Kaitaia was also a favoured habitat for this species, and much of it is unprotected and under threat of drainage.

Although one by one much of the black mudfish's remaining habitats have been lost, the protection of the Whangamarino wetland in the Waikato, has ensured that one substantial area has been saved for that species.

The Canterbury mudfish is the most restricted in distribution and probably the most threatened of the three. Tony Eldon has pointed out that it has faced "a battery of adverse conditions" in recent decades: exaggerated flood/drought cycles, water removal, stream channelling and the introduction of exotic predators such as trout. Canterbury has probably lost even a greater proportion of its wetlands than other regions. Faunal reserves have been suggested as a way of improving its prospects, but these would need to be substantial to avoid the effects of lowering of water tables in adjoining areas.

Ian Close

brown mudfish is still precarious. It presents New Zealand, once again, with the case of a natural phenomenon that belongs to these islands only: a reminder of the unique features of this ancient Gondwana relic for which we are all custodians.

Like its forest companion, the kahikatea, the mudfish can only benefit from closer scrutiny and the possibility of greater protection. ◆

DAVID YOUNG *is a freelance writer based in Wellington.*

G.A. ELDON

Canterbury mudfish can be easily distinguished from other mudfish by the presence of a reduced pelvic fin (half way along the underside of the fish). Like all mudfish this species is classified as threatened, even though it is not protected by any legislation.

ROD MORRIS

RAT-FREE ISLANDS

How rodents are being removed from our offshore sanctuaries

For many native species in New Zealand, offshore islands offer the last refuge against the predations of introduced animals, in particular rats. Yet while the conservation problems for mainland survivors worsen, the number and size of available islands is severely limited.

One of the key players, IAN McFADDEN, looks at how bigger islands are being liberated from rodents.

A Norway rat taking bait from a bait station on 170-hectare Breaksea Island off Fiordland in 1988. Baits were laid out in 743 stations made of plastic piping at 50-metre intervals and replenished daily. The aim was to exterminate the whole rat population in one intense effort leaving no opportunity for the rodents to recover or become bait-shy. The Breaksea campaign was the first of the successful rat eradications on larger islands.

Rangatira or South-East Island in the Chatham group is one of the few New Zealand islands of any size naturally free of rodents and is an important refuge for many highly threatened Chathams plants and animals. The 219-hectare island became the focus of the famous black robin saga in 1983 when the last breeding pair was moved there. The robin population on this and Mangere Island has now passed 200.

ROD MORRIS

NEW ZEALAND was the last major land mass settled by humans: a temperate paradise, brimming with unusual life forms, and free of the ravages of mammalian predators.

The arrival of Polynesians about 1,000 years ago, accompanied by foreign animals including the kiore or Pacific rat, began a massive alteration of the New Zealand environment and the beginning of the rapid loss of some of those strange plants and animals.

The first of a whole new suite of predators and competitors arrived with Europeans some 800 years later. When Cook sailed out of Fiordland, he left behind the Norway rat which would have quickly adapted to the larder of food in that untouched utopia.

During the next 100 years mice and ship rats, cats, mustelids, pigs, ungulates, hedgehogs, rabbits, possums and others joined the scramble for niches in the New Zealand environment – a process of invasion still going on today. These alien animals have had a devastating effect on both native flora and fauna. The most recent deliberate introduction, in 1985, was chinchilla, a small South American rodent, which will sooner or later establish in the wild if previous events are any guide.

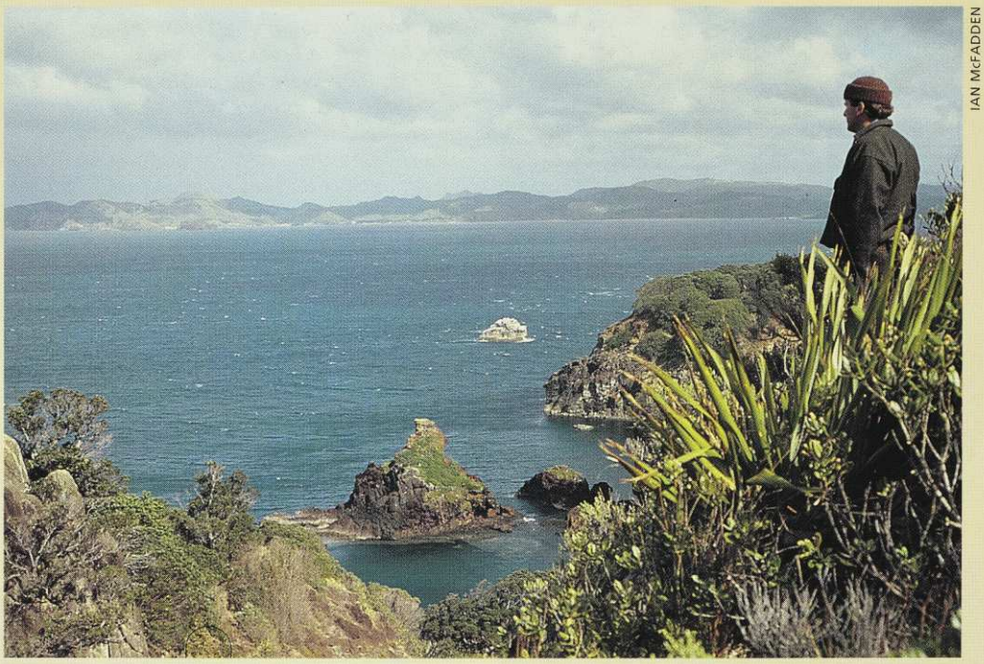
Along with this wave of animals came the destruction of huge tracts of forest on a scale quite unimaginable. Within less than 1,000 years – a blink in evolutionary time – the flora and fauna of this country – most of it found nowhere else in the world – had to adjust to these modifications. Unable to do this and having nowhere to go, many species simply vanished forever.

Today many of the survivors exist only on offshore islands – refuges that had escaped some of the alien introductions. Islands in a true pristine state do not exist around New Zealand any longer, but there are examples such as some of the more innaccessible islands in the Three Kings group, or the Poor Knights, which give a suggestion of what this corner of the universe must have looked like. The examples are few but the good news is that the trend of invasion is being pushed back and islands once occupied by introduced mammals are being given a second chance. The methodology of pest removal developed on these islands is now also being applied to isolated pockets of forest on mainland New Zealand.

The short-term solution for those endemic plants and animals that simply cannot coexist with introduced fauna, is marooning on offshore islands. With careful management it may be possible eventually to reintroduce some back onto the mainland, but in the meantime, more islands are required as holding areas.

Until about 15 years ago there were very few islands entirely free of animal pests. Although larger, more easily located mammals such as possums and deer, were being eradicated from islands around New Zealand as early as 1910, there was an assumption among scientists and managers that rodents simply could not be removed. The stumbling block with rodent eradication was more of a mindset than a lack of available technology. Looking back, the equipment was always there; it just required a different attitude to put it all together.

Kiore: management or eradication?



IAN McFADDEN

Korapuki Island in the Mercury group provides a good example of the "unseen" damage kiore continue to wreak even when they appear to coexist happily with native species. Within four years of the eradication of the rats from the island in 1986, counts of native lizards had increased more than ten-fold.

THE KIORE or Polynesian rat is one of the most widely distributed rats in the world, ranging from Bangladesh to Easter Island. Its introduction into fragile island environments by Polynesian seafarers, is part of one of the great biological holocaust stories of the past 10,000 years.

Introduced to New Zealand by early Maori, kiore soon spread throughout the two main islands. The effect of kiore on native plants and animals was, and is, not always obvious as they tend to remove smaller, less visible items in the food chain. But we now know that kiore were responsible for the local or total extinction of a wide range of insects, frogs, lizards, birds and bats in this country.

To gain a full appreciation of the damage wrought on New Zealand's native biota by kiore, first visit a rodent-free island like Aorangi in the Poor Knights group where at night the whole place is alive with animals that crawl, walk, run, slither, creep, or just sit motionless waiting for a meal to pass by. Next, visit an adjacent island with kiore as the only introduced predator, and spot the difference. At night the place appears quite dead, apart from those animals either too big for a kiore to tackle, or simply out of their reach.

The issue of kiore eradication has been complicated by claims from some Maori that as the rat had been a traditional food source it was a taonga with emotional and historical importance to a number of iwi.

Two years ago DoC attempted to develop a "Strategy for the management of kiore on New Zealand islands". The rat is found on 15 islands in the DoC estate (less than four percent of its total New Zealand distribution which includes Fiordland). The draft document included suggestions that while the department would continue to eradicate kiore from highly sensitive islands, it would also preserve the rat on others.

The response from Forest and Bird and many other conservationists was summed up in the question: why is the department that is charged with maintaining this country's indigenous biodiversity involving itself in the protection of an introduced rat?

Announced in October last year, the final strategy is as it should be. DoC will take no responsibility for the protection of kiore, and the rats will be eradicated, when feasible, from those islands where they are a risk to native fauna. The department will have regard to Maori cultural perspectives about the rat and will give assistance to any groups wishing to translocate kiore to special "reserves" in areas of low conservation value.

Ian Close

OF ALL NEW ZEALAND'S offshore and outlying islands bigger than five hectares, there are 151 with at least one species of alien animal, and 88 without. There is uncertainty about the status of another 91. Most of those 330 islands are the responsibility of the Department of Conservation, which aims to either maintain them in their present state or to restore them to what is perceived as their former condition.

Despite having been associated with humans for thousands of years and numerous attempts at eradication, rats and mice are still with us. Their ability to adapt is well known as they can respond quickly to changes in food source or living conditions. This is partly due to their high reproductive rate and partly their general physiology. In New Zealand, the four species known to have become established are ship rat, Norway rat, kiore and house mouse.

Ship rats are able climbers, occur throughout New Zealand and are the rats most commonly seen by humans. Because of their ability to climb so well, and widespread distribution throughout the country, ship rats are probably the most dangerous pest of the four.

Norway rats are usually associated with water, drains and sewers, and have only limited climbing ability. The kiore (see box above) has been ousted from most of the mainland by the other rats and now occurs only in Fiordland, and on certain offshore islands. It is a good climber.

Mice are found throughout the country and build up to huge numbers in the South Island beech forests every five to seven years, when beech trees seed profusely. This has serious implications for birds because stoats cash in on this abundance of mice, are able to breed more successfully and so the resulting high numbers of stoats the following year play havoc with vulnerable species like yellowhead.

The behaviour of a pest species determines the methods used to eradicate it. Rodents are vulnerable to anti-coagulant poisons. The most effective are brodifacoum (under the commercial label Talon), bromodialone (Ridrat), and flocoumafen (Storm). All are derived from the first generation anti-coagulant, warfarin, which caused rats to die from internal bleeding after one feeding. The rapidity of the effects, however, resulted in cautious rats, which only had a small taste of bait on their first day of exposure, developing the symptoms of poisoning but then recovering. Those rats then became bait shy and were no longer susceptible to that bait.

Research showed, in fact, that small amounts of warfarin deliberately fed to rats meant they developed an ability to change the clotting characteristics of their blood so they could survive on a warfarin bait diet. This is little different from prescribing small doses of anti-coagulants to humans to reduce the risk of a stroke from a blood clot.

The big difference with the second generation toxins is that they have a delayed action. Rats can feed on them for three or four days before developing the symptoms of poisoning, by which time they have normally consumed many times a lethal dose so are almost guaranteed to die. It was about 1970 that these toxins became commercially available in New Zealand and since then they have been the mainstay of all rodent control.

In 1982 I was assigned the task of developing methods suitable for eradicating rodents on islands up to 50 hectares. I began on Rurima Rocks in the Bay of Plenty by putting to use some results of basic bait trials I had carried out on Lady Alice Island with kiore. These had provided a list of flavours, baits and dispensing methods that kiore accepted.

It took some time to eradicate kiore from this group of islets. Initial attempts used 1080 but failed because the rats refused to eat toxic baits. However, once a change to anti-coagulant was made the rats were soon eradicated.

Once the department had been convinced that a formula had been found, the next step was to move up in size. I had already selected 18-hectare Korapuki Island in the Mercurys, after flying over it en route to Red Mercury to release little spotted kiwi. Permission was granted after some persuasive talking and in 1986 rats were eradicated from that island.

The standard method of using bait stations was labour intensive, however, and for very large islands logistically difficult. On Mana Island, for example – at 230 hectares the largest island cleared of rodents to date – about 5,400 bait stations were required to remove mice in 1989.

BY ABOUT 1987 it was obvious that the use of anti-coagulant toxins was producing the desired results, and any doubts about their usefulness were gone. At that time two paths of development were being pursued. One continued with fine-tuning the use of bait stations, leading to the successful operation against Norway rats on Hawea and Breaksea Islands off Fiordland in 1988. The other path began with bait stations of a differ-

IAN McFADDEN

Ian McFadden began work testing baits on rats on Rurima Rocks in the Bay of Plenty in 1982. Only about five hectares, the islets became his home for many weeks as different toxins and flavours were trialed.

IAN McFADDEN

Stanley Island in the Mercury group was the scene in 1991 of one of the first aerial drops of rat baits. The island contains a number of imporant reptile populations including tuatara. The operation, dropping baits from fire-fighting monsoon buckets over the 95-hectare island, was a success with all kiore eradicated and the mortality of native birds well below the level of concern.

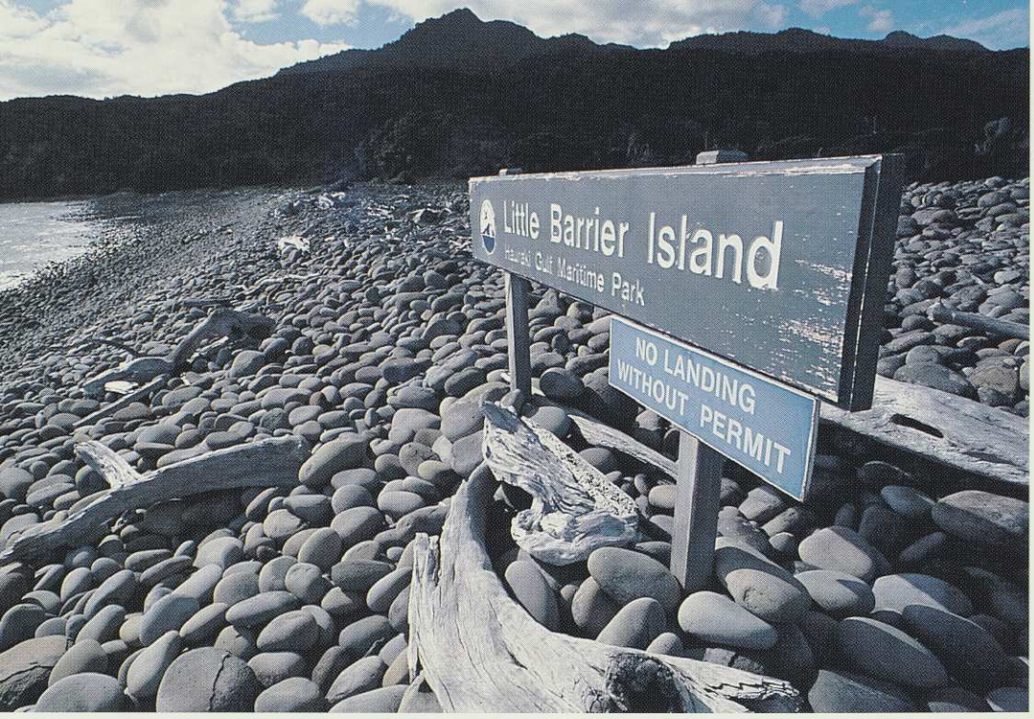
Kapiti: thinking big

HAVING SHOWN that one species of rodent can be eradicated with just one application of bait on islands up to 230 hectares, and having been successful on 16 islands in the past 12 years, the next move is to either larger islands or those with more than one rodent species.

This second phase is about to begin with Kapiti Island, scheduled for treatment later this year. At almost 2,000 hectares and containing both Norway rats and kiore, Kapiti is a big challenge. Two sets of trials over some 20 percent of the island with non-toxic bait has shown exactly how vulnerable each species is, and how reliable our methods are. There are of course several important endemic species on Kapiti and care will be taken to cause them as little harm as possible.

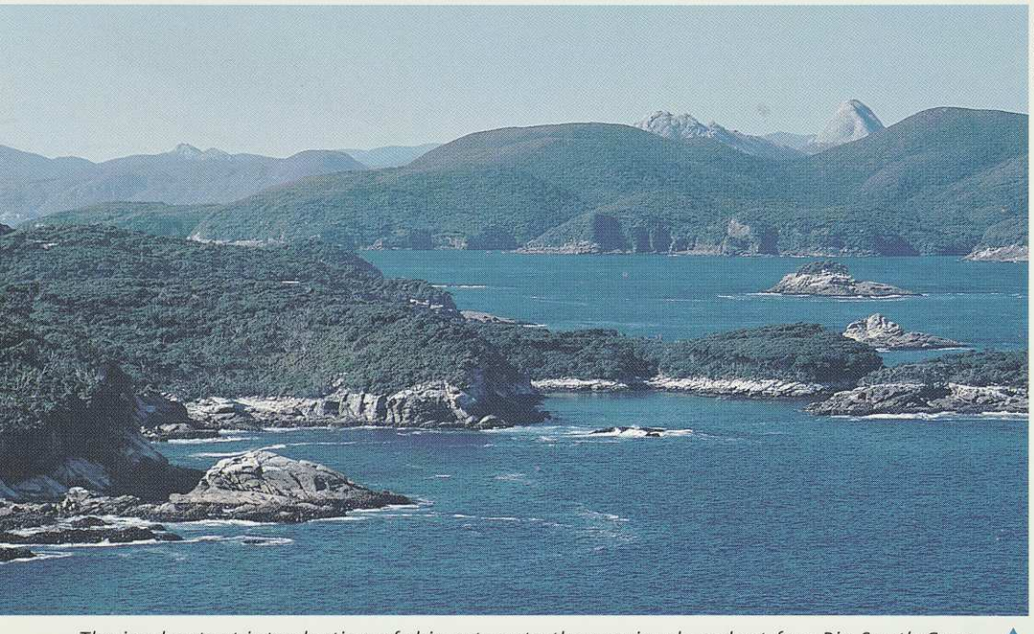
One issue which has caused considerable internal debate within DoC, is the presence of weka on the island. It is unlikely that weka were naturally present on Kapiti – the present population dates from introductions earlier this century – and their presence may make it harder to establish several threatened species on the island. However at this stage DoC has decided to retain Kapiti's weka.

There will only be one chance for these big islands so it is essential that everything is thoroughly thought through beforehand.



ROD MORRIS

Little Barrier Island is a jewel of the conservation estate, containing the largest area of undisturbed lowland forest left in the North Island and is an important sanctuary for threatened species including kakapo. But it is still infested with kiore. Regulations for landing need to be tight so that no other rodent species are introduced. Eradication of rats on an island of this size (2,800 hectares) is currently beyond DoC's resources, although the department is hopeful that it could be achieved by the turn of the century.



ROD MORRIS

The inadvertent introduction of ship rats onto the previously rodent-free Big South Cape Island (in the foreground) off Stewart Island around 1962 precipitated an ecological disaster. The rat population irrupted and remained high for at least three years after which two native birds, a species of short-tailed bat and a flightless weevil had become extinct. The episode provides a sad lesson about the danger of accidental introductions of rodents to pristine islands.

ent design, but progressed to broadcasting bait by hand on small islands, then onto aerial applications.

Sights turned to larger islands and more efficient methods of applying bait, including the use of helicopters with underslung buckets. However, applying tonnes of bait to the environment might appear to be against all conservation ethics. Unlike ground application where the placement and shape of bait stations gives considerable control over which animals can take the bait, aerial spread provides all opportunistic animals with free access to it. The species likely to be at risk are easy to determine, but quantifying the risk is not so simple.

There are two basic issues. Non-target species might eat the bait and die. This depends on how much bait is eaten and the species' tolerance to the toxin; some birds, for example, are remarkably tolerant to Talon.

The other very complex issue is the extent to which the toxin enters the environment or food chain. Theoretically a bird could die from eating insects that have fed on bait. But, as with the aerial drop of 1080 against possums, the decision has to be based on net benefit.

Some basic facts: brodifacoum is not water soluble, but once it enters the subsoil it is broken down by soil micro-organisms. This process may take several weeks during which time bait could be available to non-target species. The toxin once fixed into animal tissue may persist for several months. The mode of action also varies according to what animal has eaten the bait. Invertebrates are not affected as they do not have blood and simply pass the toxin through their system in four or five days.

Reptiles, on the other hand, while not affected by the anticoagulant properties of the bait, die from overheating as the bait interferes with their ability to thermo-regulate. Although lizards are not attracted to the actual bait, they can in some cases prey on insects that have just eaten bait.

The numbers of most ground-dwelling invertebrates and native birds or lizards on islands with rodents is relatively very low. Intensive searches have to be made to find any animals of size, and whole groups are absent. This means that the chance of a saddleback, for example, preying on the weta that has just eaten a bait is remote. In addition, most large ground-dwelling insects are nocturnal, and as saddleback are day-time feeders they do not have easy access to this food source anyway. Even if they did, the number of weta that would have to be consumed to provide a lethal dose far exceeds the relative abundance of weta on rat-infested islands.

Most deaths of native birds and lizards that have occurred to date have been from the direct consumption of bait.

The application of aerial methods for use against rodents was developed slowly, and began with the manual trial broadcast of bait on Double Island in the Mercury group in 1989. Over a long weekend a group of volunteers traversed the island and saturated it with bait. All rats were killed and the next step was to try the same principle on some of the Mokohinau group, using a helicopter. This was a crude method with a fire fighting monsoon bucket and bait applied at the high rate of 30 kilos a hectare. The rationale for the overdosing was the absence of non-target species on these highly modified islands. Again the operation worked.

Success brings attention, and a sponsorship deal was established with ICI Cropcare to attempt eradication of kiore from three islands in the Mercury group, starting with Stanley Island in 1991.

Intensive ground searches for dead birds after the drop revealed four saddleback, one morepork and a few introduced passerines. This level of mortality is well below the threshold of concern. The birds probably died from eating bait directly, apart from the morepork which would have eaten a rat full of bait.

Subsequent monitoring of the island's saddlebacks showed that, despite a very dry summer which usually results in increased juvenile mortality, there were higher than normal numbers of young birds alive. Survival of the banded adult population was equal to that in a normal year. The conclusion had to be that saddleback fared better after the removal of kiore than before, and that any deaths due to the poison were more than compensated for by increased productivity due to the absence of the rats.

Since those early days of "suck it and see", a lot of resources have been applied to ensuring environmental safety. The persistence of toxins in soil, effects on invertebrates, freshwater animals and, in particular, native birds have all been studied. To date, we have been unable to detect the presence of the toxins in the soil using the most sensitive methods of analysis available. Certainly there have been deaths of non-target species but the level of these has always been well within the limits of natural mortality, and more than compensated for by the productivity achieved after the removal of the rodents. Although we know there could be a toxin persistence issue, every possible step is being taken to ensure those species we are attempting to protect do not suffer.

OF COURSE the problem of introduced predators is not just a story about rats. Of all the pest predators in New Zealand, stoats are by far the most difficult to control. Unlike rodents they seem to need live prey, so developing a bait is very difficult. In particular, female stoats need a stimulus derived from catching live animals to trigger breeding. Also it is very difficult to detect stoats as they are essentially solitary, secretive and very wary. Fortunately, apart from islands within about a kilometre of the mainland (stoats are good swimmers), they are not a problem on offshore islands. If by some chance, however, they were to get onto a place like Little Barrier we are ill-equipped to do much about it. The recent report of a stoat on Stewart Island highlights this dilemma.

There is some stoat-control work being carried out at present with poisoned eggs which, while labour intensive, is producing encouraging results. The reality, sadly, is that because the problem of stoats is so widespread any control method is only going to be localised and for specific threatened species.

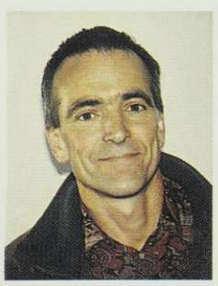
It is too soon yet to predict exactly where this will all lead, but, if past progress is any indication, by the turn of the century a long hard look will be being taken at islands like Campbell (11,000 hectares) which is infested with Norway rats. Already DoC is putting in place a strategy that will answer those questions relevant to eradication on Little Barrier, Raoul, Codfish, and Mayor Islands. We may be a long way off actually ordering bait for those operations, but if the majority of New Zealand's endemic species are to make it into the next century with a realistic chance of unaided survival then ambitious projects like these need to be started now.

International interest in New Zealand's achievements in island pest eradication is growing. Many overseas wildlife agencies also want to create pest-free environments for endangered species or embark on more ambitious restoration programmes, and New Zealand is seen as a world leader in island restoration.

Requests for advice and assistance have come from as far away as Canada, the US, Saudi Arabia, France, South Africa and Australia. This is encouraging, not just because it gives New Zealand recognition for its pest eradication achievements, but it gives us a way of contributing in a practical way to conservation around the world.

Methodology has changed somewhat – from putting out bait stations in the early '80s and recording the position using a hand held compass, to plotting weigh points into the computer as an island's perimeter is flown. Ten years ago a global positioning system (GPS) to provide accurate flight paths was not even a consideration. Now it is a regular tool of the business.

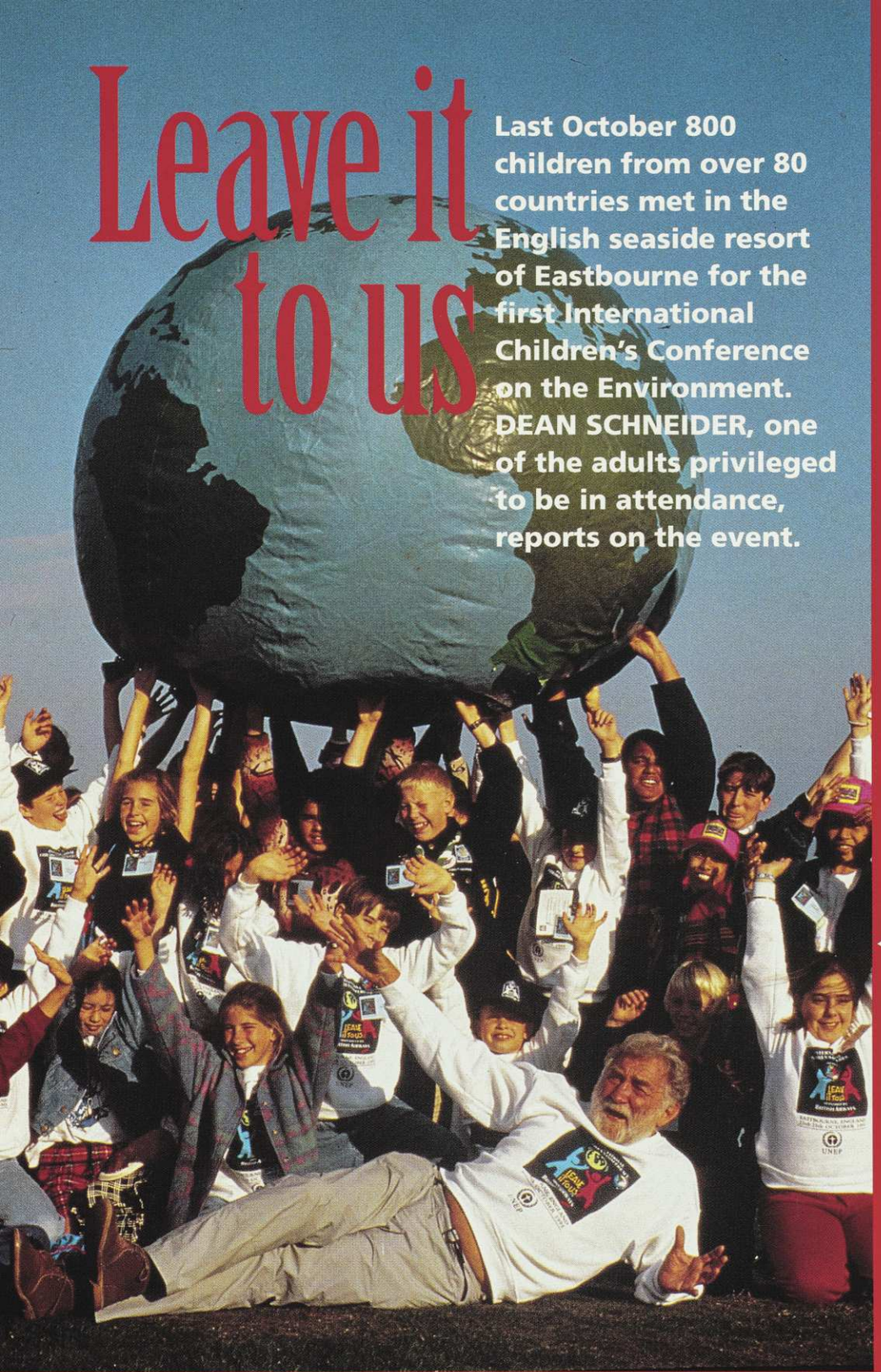
Logistically some of our big islands will be a bit of a nightmare. But with good planning those problems should be as easy to overcome as the original scepticism apparent when work first began all those years ago. ◆



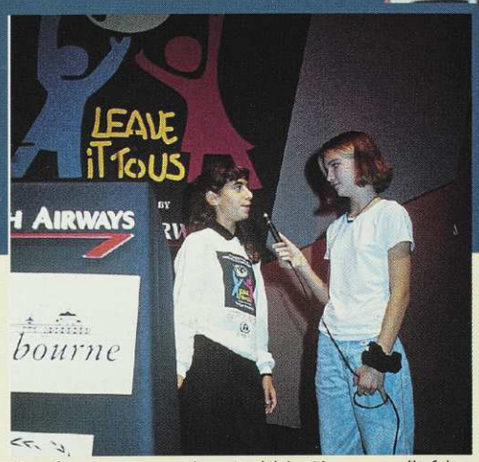
IAN MCFADDEN *is DoC's national technical coordinator for island pest eradications.*

Leave it to us

Last October 800 children from over 80 countries met in the English seaside resort of Eastbourne for the first International Children's Conference on the Environment. DEAN SCHNEIDER, one of the adults privileged to be in attendance, reports on the event.



The seven New Zealand delegates address the conference about French nuclear testing. "People in New Zealand are very angry about it," said Annick Bunting, 13, from Langs Beach Northland. "Our stance is that if it is safe as the French say, then why are the tests not being carried out in France?"



Conference organiser Debbie Simmons (left): "The world is turning into a tip. We want action, not words. Through UNEP we shall also expect governments to report back to our next conference on what they have done about our challenges. There is no time to be lost."

Delegates plus adult friend. David Bellamy told the conference: "Most conferences have a groundswell effect. We're only going to change the world from the bottom up. Eight hundred kids will go back to school and spread the green message to 8,000 other kids. Then, hopefully, all those youngsters will go home and tell their parents of the importance of protecting the earth's resources."

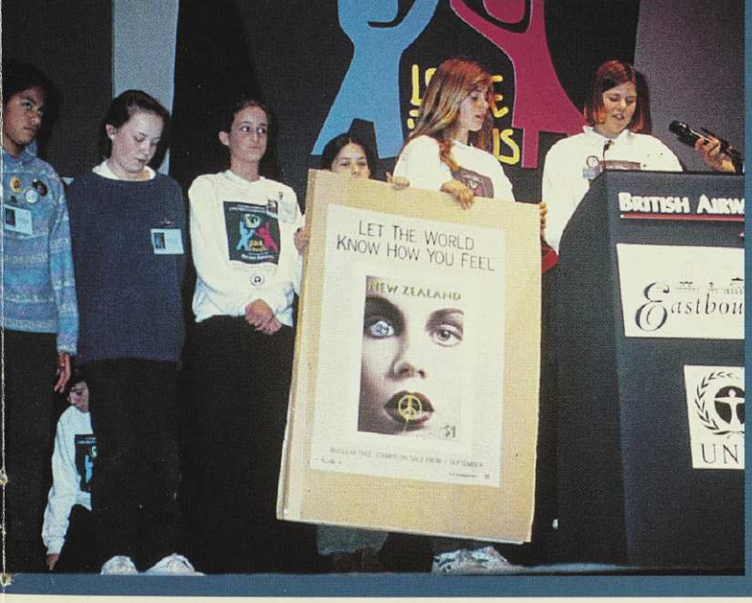
Christy Flaws from Dunedin: "I was given a lot of inspiration and ideas from people at the conference. I was amazed at the things people had achieved. The conference shows what we, the children of the world, can do together to change our future."

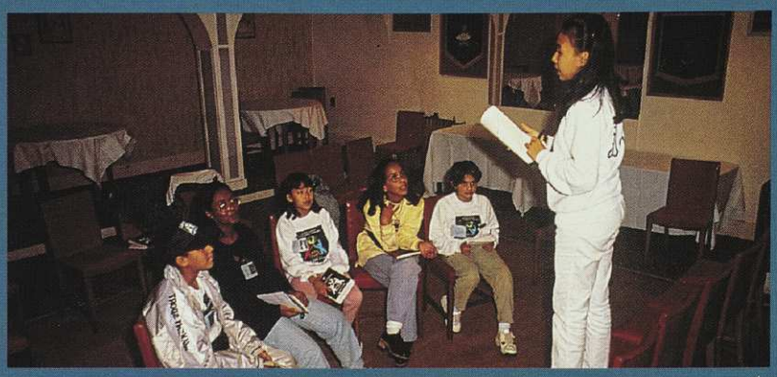
ALL PHOTOS BY DEAN SCHNEIDER / ELITE FILM DONATED BY KODAK

WITH A conference slogan "Leave it to us", and rejoinders to wayward delegates to "stop behaving like adults", the first environmental conference of children from the countries of the world lacked nothing in youthful self confidence or hope for the future.

The three-day forum was the brainchild of 13-year-old English girl Debbie Simmons, who was also its chairperson. "We felt that if we got lots of children together, adults would listen to what they have to say. We wanted to find out what problems people in other parts of the world had and to encourage each other".

While held under the auspices of the UN Environment Program as part of Agenda 21, the environmental blueprint hammered out at the 1992 Rio Earth





One evening was set aside for workshops organised and run by the children. It was fascinating to see environmental empowerment in action. The meetings began with everyone sitting in a circle then the children stood up and talked in small groups with some of them writing environmental statements which they later read to the others.

Summit, the conference was very much inspired by children, run for children and much of the key decision making was in the hands of children.

The 10-to-12-year-old delegates were no ordinary kids. All have made an impact with campaigns in their home countries and by the year 2020 could well be some of the world's political, economic and environmental leaders. "They couldn't have chosen a better time to meet to discuss global environmental problems," said David Bellamy. "I don't think the living earth has ever been in greater danger than it is today."

New Zealand and Australia had some of the strongest of the 6,000-plus applications received worldwide for places at the conference. The standard of applicants from this country was so high that British Airways, who co-sponsored the event and flew the delegates to London, invited seven young Kiwis rather than the original plan of only two.

Christy Flaws, 10, from Dunedin, was typical of the seven New Zealand delegates all of whom had already made substantial environmental contributions. Christy took part in a whale rescue course for adults when she was nine and then organised a Brighton beach clean-up operation which drew over 35 people.

Terehia Hassan was able to give one of only 18 presentations to the conference – on the yellow-eyed penguin. Terehia has helped at the Kataki Point sanctuary south of Oamaru caring for injured birds since she was five and gives talks to children on the dangers to penguins from discarded rubbish.

Morning sessions at the conference were given over to three themes: waste and recycling; wildlife in danger; sustainable development and the media.

Each afternoon there were over 30 interactive workshops to choose from. These ranged from finding out about wildlife habitats, caring for injured animals, learning to write books and newsletters and use the media, and, one of the most popular, exploring an estuary and seashore by foot and bike.

With the tight scheduling of the programme it was difficult to add additional items. Fortunately the seven New Zealanders were assertive and were given time to address the conference about French nuclear testing at Mururoa. They asked delegates to stand up to show support for their opposition to the tests. Everyone stood except an embarrassed John Gummer, British Environment Secretary, who was visiting for the session and was left sitting alone on the stage.

Chris Woodcock, 11, from the UK wrote an article for the local paper: "I wasn't really surprised at how seriously all those children took the world's problems. But the conference was an eye-opener for my mum, Sue."

Follow up from the conference will include a regular "Leave It To Us" newsletter, a children's conference home page on the Internet and regular surveys by UNEP every two years of young people's opinions on and involvement in environmental issues.

New Zealand has offered to host the next International Children's Conference and a decision will be made in the next few months. Watch this space.

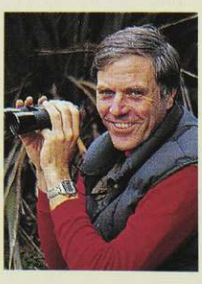
Wade Doak was once asked if he ever gets depressed about the magnitude of global environmental problems and his reply was that he is basically an optimist for when he looks around at nature it is always growing and evolving: "New life is always optimistic".

We must also listen to children for they have a freshness, enthusiasm and optimism that many of us have long forgotten and lost as we go about our daily routines. And all too soon – for better or worse – our kids will inherit the earth. ◆

NOTE: if you would like to receive information about the next International Children's Conference for the Environment, the complete list of the 26 Challenges and the first two newsletters please send two large stamped self addressed envelopes to Gaia Environmental Education, PO Box 5500, Dunedin.

It was decided to change the usual name of resolutions to challenges. Scores of challenges were suggested during the conference and a committee of children selected 26, covering issues as diverse as wildlife protection to renewable energy sources. The day after the conference Debbie Simmons flew to New York to present the challenges to the United Nations.

DEAN SCHNEIDER *teaches environmental education in Otago schools. He attended the children's conference as one of the UNEP facilitators.*



Neinei (Fitchia speciosa) *flower. The spectacular tree-sized sunflower of Rarotonga is endemic to the island and has stilt-like roots supporting the base of its trunk. Nectar produced by the large flowers is favoured by a number of endemic birds including the Rarotonga starling or I'oi.*

ROD MORRIS

PARADISE LOST

Cook Islands under siege

The Cooks are in the news these days more as a dubious tax haven than as a holiday destination. JACQUI BARRINGTON recently visited Rarotonga and also flew to Aitutaki for the first time. One successful species recovery programme was the highlight in an otherwise sobering survey of besieged island ecosystems.

FIFTEEN SMALL ISLANDS with a combined land area of just 237 square kilometres scattered over 1.8 million square kilometres of the South Pacific – the Cooks are a collection of coral cays and atolls with one high young volcanic island – the capital, Rarotonga. Samoa lies to the west and French Polynesia to the east.

The islands are generally thought to be the legendary Hawaiki from which the Polynesian waka set out upon their great ocean voyages to New Zealand some 700 to 1,000 years ago. Though the languages today are not identical, they are still close enough for New Zealand and Cook

"We are an island nation gone mad, behaving like a limitless continent in a world that has already turned into a crowded island."

GAVAN DAWS, *SHOAL OF TIME, 1968*

JACQUI BARRINGTON

Islands Maori to understand one another.

An unspoiled tropical environment and friendly locals are promoted as the islands' greatest assets by its number one industry, tourism. The friendly locals are still genuine. But untouched paradise? Unfortunately for the Cooks, many of the ugly environmental problems of the industrial world find their parallel in concentrated form in these tiny islands.

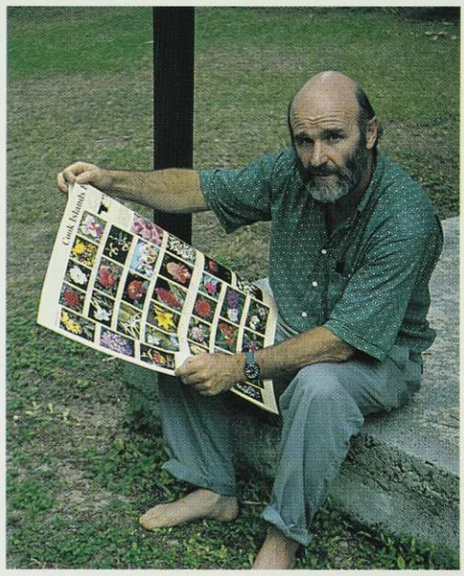
I first visited Rarotonga in 1990 and was charmed by its unhurried atmosphere. Most of its population of 10,000 (more than half of the nation's total) live on the flat coastal strip around the near-circular island, while its steep volcanic interior is still thickly forested.

Five years on, the pace of everything had markedly increased.

Runaway tourism, throwaway consumerism, and incremental pollution are shredding the country's fragile terrestrial and lagoon ecosystems. Tourism is currently worth some $60 million to the national economy with visitor numbers up from 10,000 in 1972 to 60,000 today. Prime Minister Sir Geoffrey Henry is now suggesting 100,000 as a sustainable limit and has decided to target the luxury end of the market.

But misleading promotion is luring high-living Europeans and Americans to a destination which fails to deliver on false glitzy promises. The trumpeted increase in

New Zealander Gerald McCormack has been living in the Cooks for 14 years. A former director of the Conservation Service he's now head of the Cook Islands Natural Heritage Project, a science advisor for secondary schools and writer of various natural history booklets and posters on the islands. ▼



JACQUI BARRINGTON

tourism numbers has therefore been accompanied by a reduction in the length of stay, as disenchanted visitors depart early.

Vegetation destruction is now rampant, with venerable old trees hacked back to mutilated stumps. An obsession with "neat and tidy" and unobstructed views, no doubt imported by returning islanders as well as New Zealand expatriates, is also causing a worrying loss of coastal vegetation. While the removal of big trees is promoted as a hurricane safety measure, the diffusing buffer effect of vegetation, which can break the force of a hurricane, is ignored. Hurricane damage to the interior only facilitates the spread of invasive introduced plants.

Gerald McCormack, Director of the Cook Islands Natural Heritage Project, is opposed to plans by the tourist industry to open up the interior of Rarotonga with a cross-island road. He's also opposed to better tracks up into the interior for eco-tourism. One well known track that features several rare plants has already been invaded with weeds due to increased visitor numbers.

A major difficulty for conservation is

Pacific "R and R"

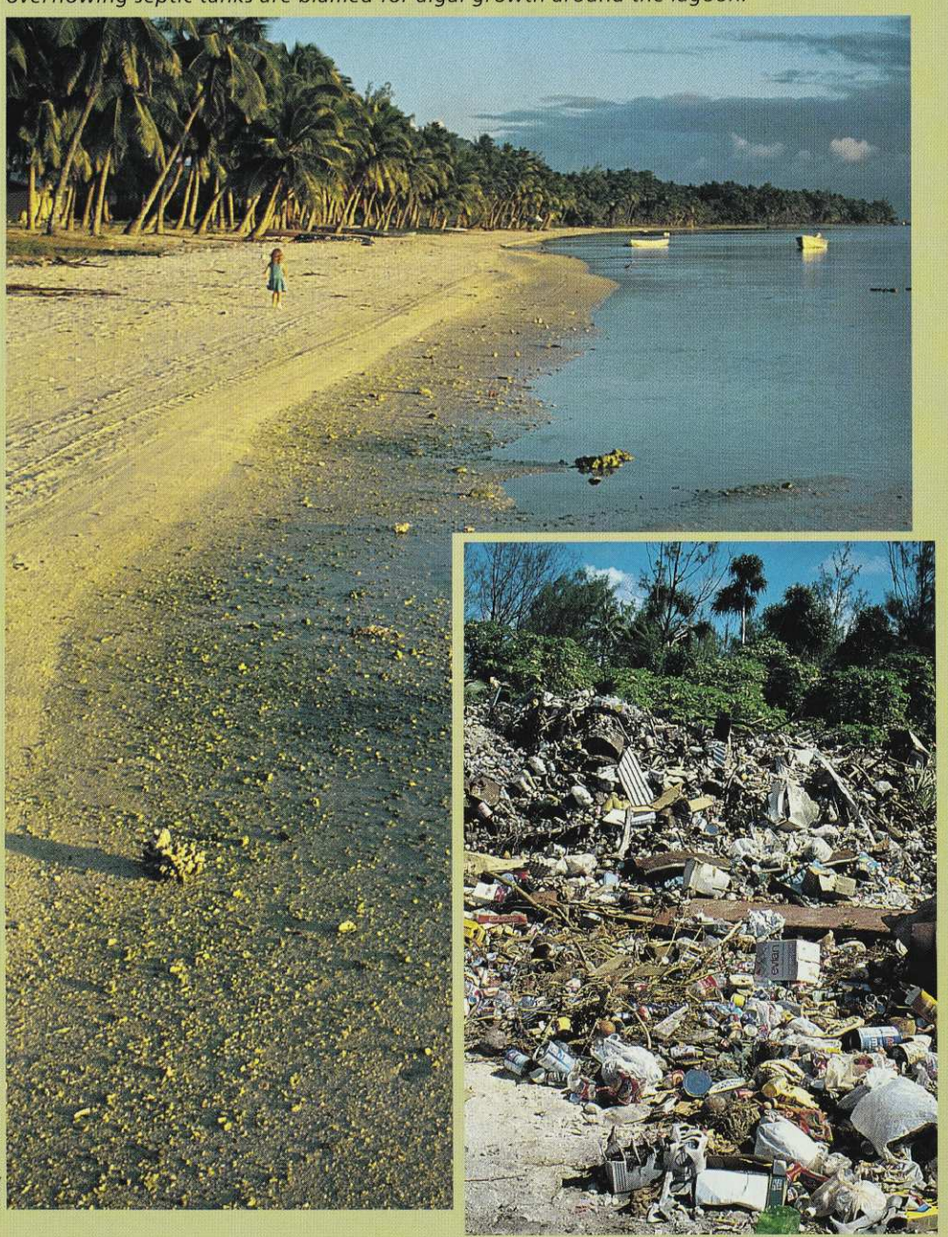
R'N'R THESE DAYS must mean reuse and recycle. Rubbish has become a huge and visible problem in the Cooks as in other Pacific island states, with the growth in population and the consumption of imported manufactured goods.

Until recently, all rubbish was burnt, usually for some unfathomable reason up against the largest nearby tree, thereby charring its trunk. Everything went in the fire, garden and kitchen waste along with tins and plastic, though the Conservation Service is now trying to educate people on the values of composting. The recycling of paper and plastic is also seen as an avenue to involve and mobilise local people. But it is time consuming and isn't widely practised.

The Minister for the Environment and Tourism made himself very unpopular by publicly speculating on banning plastic bags and disposable nappies, which litter beaches and roadsides. Despite aluminium can recycling schemes, the cans are still dumped on beaches, and plastic bags easily blow out to sea from the beachside rubbish fires where they can harm sea life such as turtles.

The official dumps on both islands are something of a disaster. On Rarotonga the dump is located up in the hills behind the town in a site originally dug for a reservoir but which never functioned properly. On Aitutaki, the old dump is adjacent to the airport runway, and only metres from the beach and lagoon. A new site has yet to be found.

Aitutaki lagoon is only metres from the island's old rubbish dump. Toxic materials including car batteries can be seen disintegrating, yet no analysis of possible toxic contamination of the lagoon has been conducted. Leachate from the dump as well as overflowing septic tanks are blamed for algal growth around the lagoon.



JACQUI BARRINGTON

that all land is in customary ownership and cannot be sold – only leased. Therefore when it's a question of setting land aside for conservation, or indeed for finding a new tip site, the government is dependent on the goodwill of individual families. The only formally protected area in the country, Suwarrow National Park, is a major seabird breeding site and covers only 40 hectares. Attempts over many years to reserve the central highland area of Rarotonga in a cloud forest reserve have no local support – "too high to be threatened anyway," in the words of one official.

THE ISLANDS have only ten species of native breeding landbirds but six of them are found nowhere else. These endemics include the endangered kakerori, the subject of a major recovery programme (see box page 31).

Other birds include the Rarotonga starling or i'oi, which while limited in range, is holding its own. These are large, aggressive birds that have retreated into the interior of the island from the modified lowlands.

The fruit dove, or kukupa, is a brightly coloured bird endemic to Rarotonga and Atiu. It and the Pacific pigeon or rupe are present in the interior of Rarotonga and are both still being shot for food.

The vini or Tahiti lorikeet, also known as nun bird or kuramo'o, was common on Aitutaki within living memory. It is a small, strikingly pretty parakeet with dark blue and white plumage that feeds on banana and other flowers. When pesticide spraying diminished two to three years ago as New Zealand imports of bananas were stopped, kuramo'o numbers began to increase substantially. The Conservation Service is trying to establish a reserve for the kuramo'o, but local owners are reluctant to give up land.

The Mangaian kingfisher or tangaeo is reduced to 300-500 birds. Anecdotal evidence suggests its numbers are decreasing.

Only 190 nests of the Atiu swiftlet or kopeka are known and breeding success is very low. It is predated by crabs, and only nests in two caves. After the kakerori it will be the next main conservation priority.

In the battle for the conservation dollar, the New Zealand government has largely refused to help the Cooks, preferring instead to put its money into the Solomons. New Zealand money has gone instead towards projects such as wharf development, and the misguided planting of steep cleared slopes on Rarotonga with pines for erosion control.

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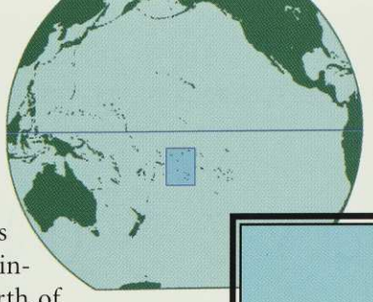
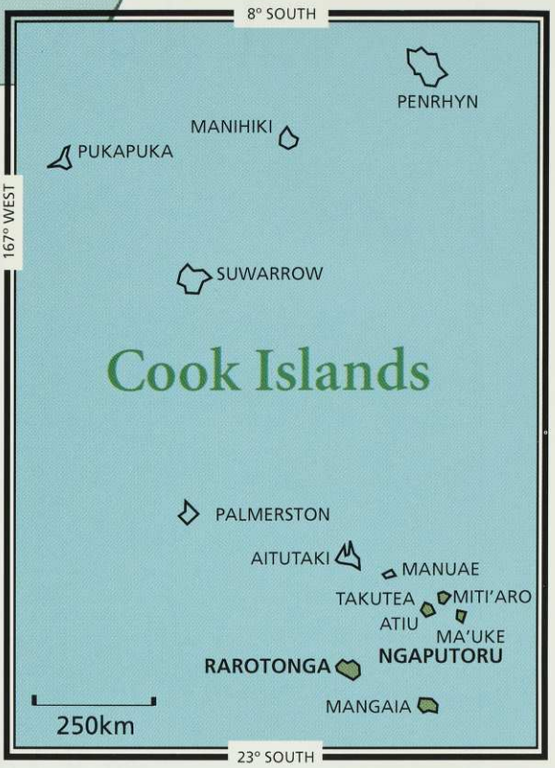
As in most island ecosystems, introduced pests are a major problem and include rats (both ship rat and kiore) as well as cats, dogs and mynas. The problems are spreading as increasing numbers of people move inland.

Mynas are a major hate of Cook Islanders (and the author). They were introduced to the islands to control stick insects in copra plantations and are now ubiquitous. They forage right down to the sea edge, walk boldly into houses and compete aggressively for nesting sites with native birds and sometimes attack them.

Cyclone Sally in 1987 knocked back the myna population, but they have since recovered and a bounty system didn't work. However, despite increasing numbers they have so far failed to invade the mountainous inland areas of Rarotonga.

The first crown of thorns starfish was sighted in the Cooks in 1969 although the first plague only occurred in 1983. As in other areas of the Pacific, the ecological significance of these starfish is in dispute. Are the plagues a naturally occurring cyclic phenomenon? Is there a link with nutrient runoff? Are they a cause or a symptom of reef degradation? Meanwhile former good dive sites are now a desert as thousands of the starfish have infested the reefs.





AITUTAKI is a high volcanic/lagoon atoll with 2,400 inhabitants approximately 50 minutes flying time north of Rarotonga. It is famous for its shimmering blue triangular lagoon – one of the largest in the world.

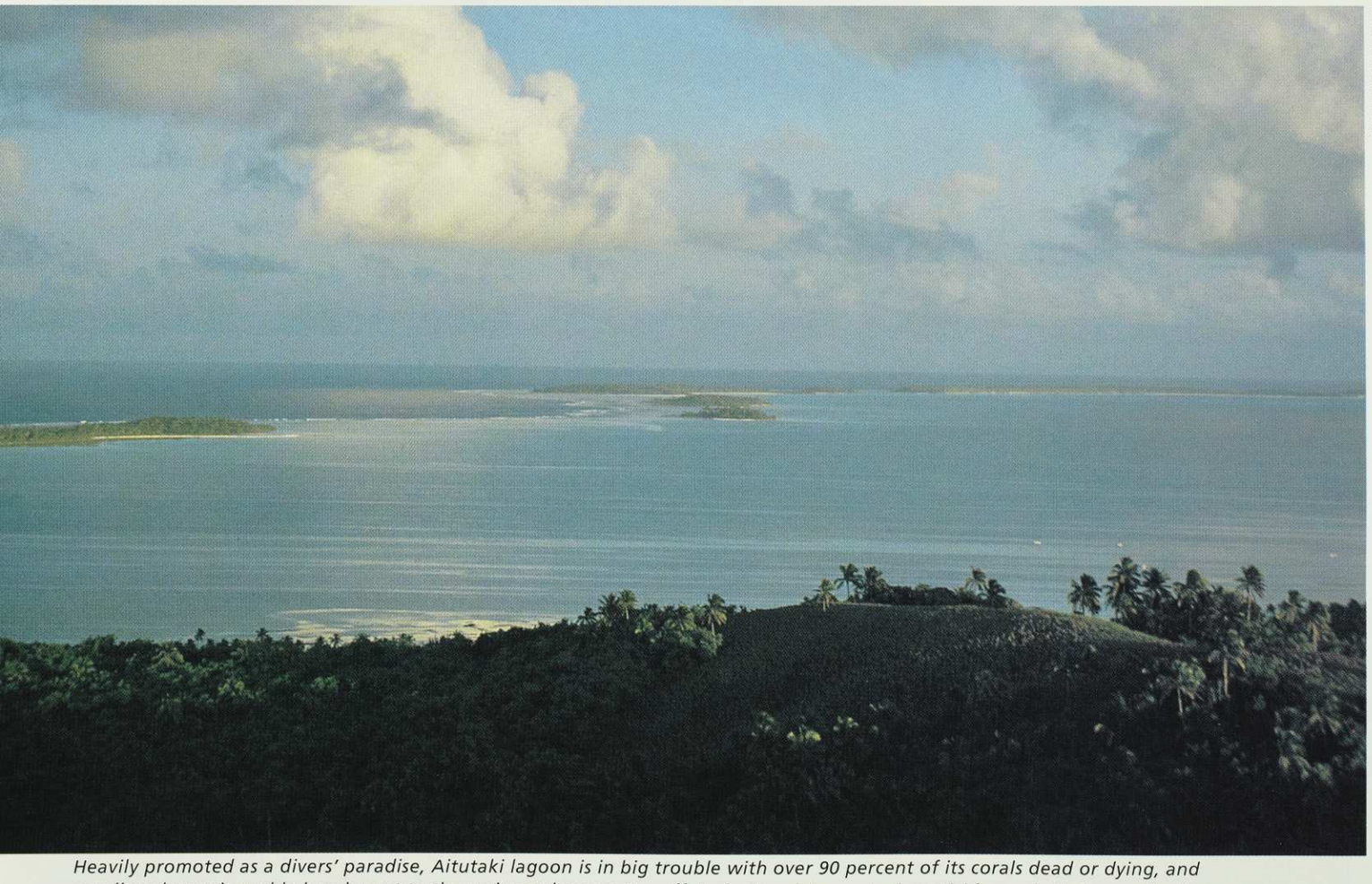
However its recent history is more a tale of the death of the blue lagoon.

The corals outside the reef are today mostly grey and lifeless and professional divers admit their businesses are in jeopardy, as they have to travel further and further to find something worth looking at.

Overfishing, coral bleaching and pollution are among the causes.

The South Pacific Regional Environmental Programme identifies poison fishing, using derris root and barringtonia seeds, dynamite fishing and gill nets as significant factors in overfishing.

Reef fish have been fished out using modern diving equipment, and the reefs are littered with discarded lines and hooks, and even anchors and chains. The old *ra'ui* (rahui) system was a complex and flexible arrangement allowing for a rotating no-take zone of up to a third of the reef to give each part a chance to bounce back. That system has broken down. There is a feeling that ra'ui is old



JACQUI BARRINGTON

Heavily promoted as a divers' paradise, Aitutaki lagoon is in big trouble with over 90 percent of its corals dead or dying, and a polluted unswimmable beach next to the main settlement. Runoff, including detergents, insecticides and oil, has markedly increased and overflow from septic tanks can be seen running into the lagoon at low tide.

Kakerori – back from the brink

THE SOUTH PACIFIC islands have the highest number of endangered bird species per unit land area in the world.

Once widespread throughout the swamp taro patches of lowland Rarotonga, the kakerori or endemic Rarotonga flycatcher *(Pomarea dimidiata)* is today confined to an area of less than 150 hectares in the southeast of the island.

The bird's decline was noted as far back as 1885, and early this century it was considered extinct. In 1987 the first full census revealed kakerori were still hanging on, but their numbers had fallen to below 40. It was apparent that ship rats were the main villains, although nest predation by long-tailed cuckoos, mynas and cats was also a possible factor.

With New Zealand assistance, a team from the Cook Islands Conservation Service launched an experimental recovery programme in 1989. The New Zealand help came mainly in the form of advice and expertise from DoC scientists, in particular Kiwi Recovery Programme coordinator, Dr Hugh Robertson, who has visited the Cooks each year since 1987 (mainly using his annual leave) to work on the project.

A combination of rat poisoning and tree banding has proved successful in reversing the decline. Some 78 percent of nests were then successful, compared to just 15 percent when there was no assistance. Then, to the surprise of researchers there was a marked decrease in adult deaths, though no-one had suspected beforehand that rats were taking adult birds. The average life expectancy of kakerori has now increased from 3.6 years to over 15.

Subsequent years have seen kakerori numbers climb from an all-time low of 29 in 1989-90 to over 100 this year.

To ensure the birds' continued survival, formal protection such as a kakerori nature reserve would help. Such a proposal was outlined in 1988 when a French forestry team was within days of clearfelling trees within Kakerori habitat in the Turoa Valley. Continuity of funding is also essential to ensure the bait shortage that occurred last year is never repeated. The Pacific Development and Conservation Trust has just provided a grant of $32,000 to Hugh Robertson to continue work on the project with the Cook Islands Conservation Service.

The success of the kakerori recovery programme marks it as a model for the many other endangered South Pacific birds, especially the other monarch flycatchers.

For the kakerori itself, the next step is perhaps the establishment of a second population, maybe even on a different – rat free – island.

Hugh Robertson (left) from DoC and Eddie Saul from the Cook Islands Conservation Service with one of the signs advertising the presence of rat bait in an area occupied by kakerori. Intensive baiting and tree banding have proved very effective in improving kakerori numbers. ▼

ROD HAY

◀ *The kakerori is remarkable for its two distinctive colour forms which are not, as was commonly believed, related to sex, but to age. All birds begin life with orange plumage, move into a transition stage of plumage in their third year and by the fourth year have acquired a uniform grey colouring. As the birds become sexually mature at one, they can breed in all three stages of plumage.*

HUGH ROBERTSON

Te Atakura, at 653 metres, is the highest point on Rarotonga. About two thirds of the island is mountainous and still largely covered with original tropical forest, although invaded by many introduced species around the lower slopes. The island has over 100 native flowering plant species, of which 16 are unique to Rarotonga.

fashioned, although the current mayor is doing his best to revive the concept.

Corals survive best in temperatures below 28 degrees although they will survive hotter temperatures for short periods. Coral bleaching sets in when water temperatures rise to 31 or 32 degrees for long periods as they did throughout much of the Pacific during the past decade under the influence of protracted El Niño conditions.

Coral bleaching has not (yet) occurred on uninhabited Manuae Atoll some 80 kilometres away. Manuae is part of a huge volcanic crater and has been nominated for an international marine park, but the government has it earmarked for an international luxury resort plus casino.

New Zealand scientist Charles D'Arby attributes the death of the lagoon to fertiliser runoff from the time when exports of oranges, bananas and copra provided the bulk of Aitutaki's foreign earnings. Because of its huge size, the lagoon is relatively slow to flush, and pollution problems may have built up insidiously over decades.

Large quantities of paraquat are still used in agriculture. When banana exports were in full swing, bunches were routinely dipped in vats of a chemical ripening retardant on the quay before loading. At the end of the day this was dumped into the lagoon.

Aitutaki has one Conservation Service worker – its only employee outside Rarotonga. He has set up a conservation task force, but he has no boat to monitor the lagoon and, anyway, many islanders resent the service for "restricting their freedom".

Unlike Rarotonga, almost all Aitutaki's vegetation has been highly modified by clearance for agriculture and by fire. Only

JACQUI BARRINGTON

Invasive weeds are a major threat to the Cooks' environment. Balloon vine – a local version of old man's beard – has the potential to destroy Rarotonga's inner lowland forest. Recorded from the 1920s, it only really took off after cyclones in 1987, when widespread stripping of trees allowed more light into the forest and enabled the wind-borne seeds to become widely established. No control is known.

a small patch, the size of a house section and the last stronghold of the kuramo'o, is left at the northern end.

The northern crook of the lagoon by the airport, supposedly protected as a fish spawning ground, has recently suffered wholesale bulldozing of all waterfront vegetation, including ngangie, a plant that shades and cools the water and is the local ecological equivalent of the mangrove.

Government plans are afoot to triple the number of available hotel beds on Aitutaki over the next ten years.

Many islanders do not want this kind of development. They fear the atoll cannot sustain it either environmentally or socially. There is already much resentment at Air Rarotonga's day trips onto the lagoon which come direct from the main island, putting further stress on local resources, while adding nothing to the island's economy.

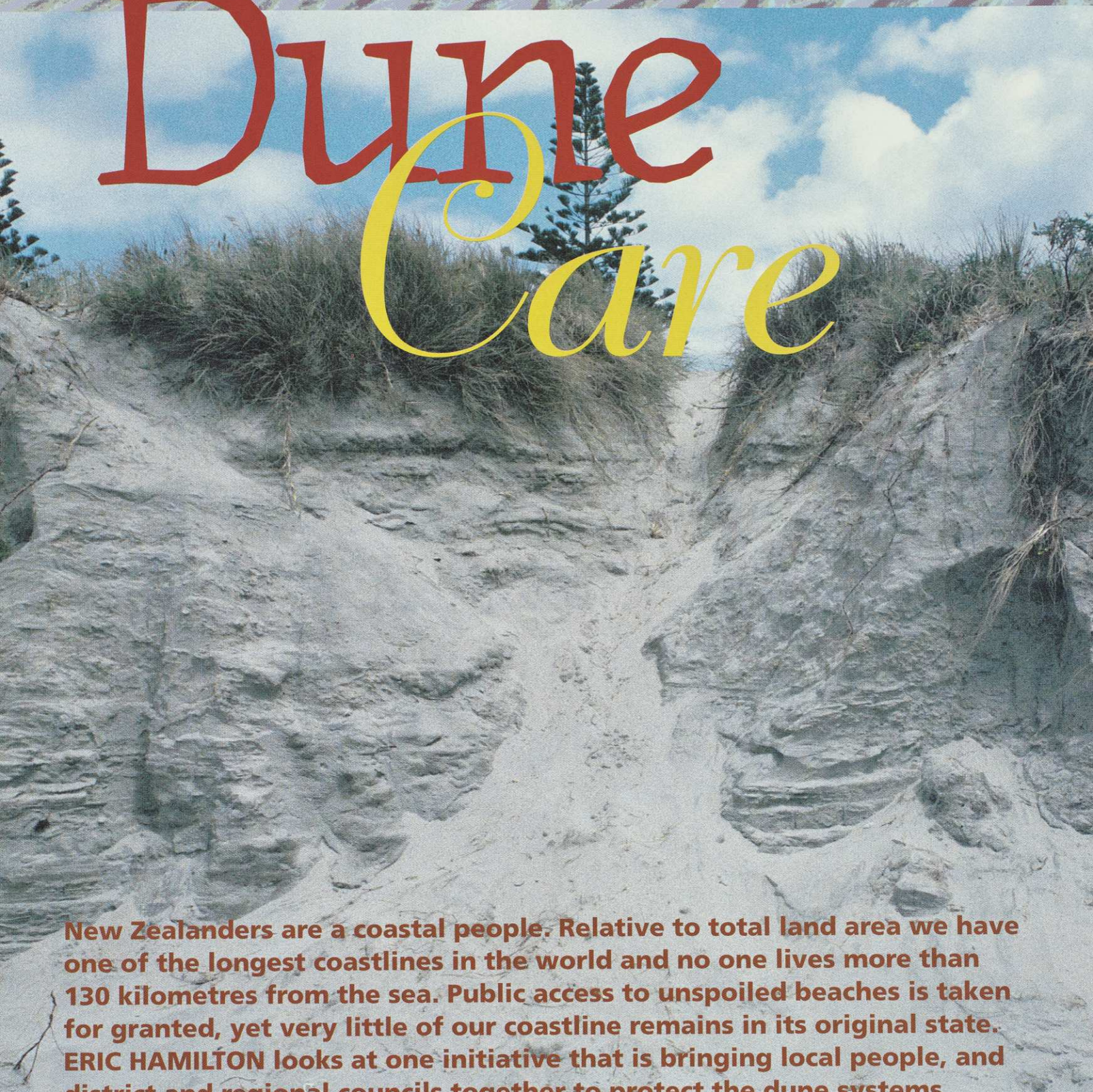
As the old systems have broken down, the fragile environment of the Cooks hangs in the balance. The following anecdote perhaps epitomises the paralysis.

Fishermen on Aitutaki caught a large turtle, bound it up and put it on sale in the market to be eaten. One of the enlightened locals, working in the tourism industry, bought it to save it, having the notion to ship it back to an uninhabited island. Until transport could be arranged, it was put in a cage in the polluted lagoon. Days became weeks; weeks became months. Five months went by and the turtle languished, weed growing on its shell, its eyes turning red, fungal infections invading its skin. Direct action finally came to the turtle's aid and one night it was liberated. The unofficial rescuers tipped over the cage, and without a second's hesitation the turtle began swimming strongly in the direction of the reef channel to the open sea and freedom.

The question is whether the political will and the funds to save the lagoons from further degradation can be found, and how long they will take to recover. New Zealand aid and advice should be geared towards a sustainable future for both the Cook Islands economy and that country's unique species. ◆

JACQUI BARRINGTON *is Forest and Bird's northern field officer. She has had a long love affair with tropical islands and lived in the Carribean for seven years.*

Dune Care



New Zealanders are a coastal people. Relative to total land area we have one of the longest coastlines in the world and no one lives more than 130 kilometres from the sea. Public access to unspoiled beaches is taken for granted, yet very little of our coastline remains in its original state. ERIC HAMILTON looks at one initiative that is bringing local people, and district and regional councils together to protect the dune systems.

On steep sandbank escarpments, access tracks to the beach often cause severe erosion and cutback of the dune face.

ERIC HAMILTON

ERIC HAMILTON

Waihi Beach residents planting the local foredune area as part of the Bay of Plenty Coast Care programme. The foredune will be fenced off to allow the plantings to develop.

THE COAST is a meeting point between two worlds – a complex and constantly changing web of interactions and ongo ing tension between the land and the erosive power of the sea.

Coastal land has a number of natural defences against the waves of the sea including offshore sand bars, beaches and dunes. The dunes are nature's last line of defence. They restrict the intrusion of waves, salt spray and sand into the back dune areas, and they also act as a reservoir for resupplying sand to the beach during storm periods.

Along much of our coastline, dunes have been removed, modified or degraded. The main culprits are residential development (we like to live near the sea), protection works such as sea walls, mining of beach sands, and heavy pedestrian and uncontrolled vehicular access damaging vegetation necessary for dune stabilisation and rebuilding. Dunelands are a threatened natural habitat and along many parts of the New Zealand coast one can walk for many kilometres without encountering a single native plant.

A number of local councils have recently promoted a concept of locally run "coast care" programmes involving community groups in popular beach and dune areas. The idea was developed from successful local schemes pioneered in New South Wales and the ideas and initiatives have been adapted to local conditions.

Local councils have powers under the Resource Management Act to preserve "the natural character of the coastal environment" and also protect it from "inappropriate subdivision, use, and development".

Coast care programmes (sometimes also known as "beach care" or "dune care") have now been established in Auckland, Waikato/Coromandel, Hawke's Bay, Christchurch and the Bay of Plenty. As yet the Bay of Plenty and Waikato have been the only regions to fund coordinators to develop and facilitate programmes involving local community groups which have an interest and concern for coastal protection and enhancement.

THE BAY OF PLENTY is becoming increasingly popular with a growing population of holiday makers and people retiring to live in the region. With this growth, comes an increase in pressure on the beach reserves with more and more people trampling the foredunes to get access to the beach.

Three coast care programmes run by volunteer groups have been operating in the region for two or more years with support and funding from four district councils (Western Bay, Tauranga, Whakatane, Opotiki) and the regional council (Environment BOP). A further four programmes are to be set up in the near future.

These volunteer coast care groups have been involved with:

- identifying weeds and working out how to control them

- protecting the dunes from human impacts, establishing formal access ways and building fences and sand ladders
- planting native plants on the foredunes
- education and publicity for schools and the general public on the role of the foredunes
- lobbying councils through annual plans for continued support.

The objectives of a coast care programme include developing a conservation/ recreation ethos in the community, and an awareness of coastal management. As a common resource, our beaches have been poorly maintained and heavily damaged in many urban areas. The partnership of a community and local government helps to reduce conflict and to sort out problems and solutions in a constructive way.

Benefits include public involvement in planning and management, and community "ownership" of the programme and the healthy advantages of enjoying a beach environment.

Coast care aims to educate people on the importance of coastal foredunes. Through the activity programmes, beachfront property owners, beach users and interested parties become involved in the actual construction and maintenance of the required structures. This in turn gives them an increased pride and respect for the work they have done.

Children from Mount Maunganui Primary School using a newly constructed sand ladder accessway. Sand ladders make access easier and reduce human impacts – in particular over the front face of the dune. They can easily be removed or lengthened depending upon sand build-up or erosion.

The schemes do not replace council work nor supersede planning requirements. Any work undertaken is planned by the community group and a proposal is put to the respective council for approval.

COMMUNITY involvement and support for coast care in the Bay of Plenty is mixed. In some of the larger areas, for example Mount Maunganui and Papamoa, there is a large influx of people over the summer period and getting support from them for the programmes is a hit and miss affair.

Of the permanent population, the strongest supporters are often retired people with an interest in the beach environment. Younger people in general have less time to become involved.

Like many new initiatives, some of the works have received complaints from beach users – "unsightly" fences, clay access tracks and sand ladders that are hard to walk on. Many of the ideas require trials and adaptation to fit varying situations.

ERIC HAMILTON

A spinifex-covered foredune acts as a buffer zone during storm periods, then as a sand catching/dune building area during calmer conditions. Spinifex seed heads begin appearing in late October, and the mature "spindle" seed head may be seen been blowing along the beach from mid-December onwards.

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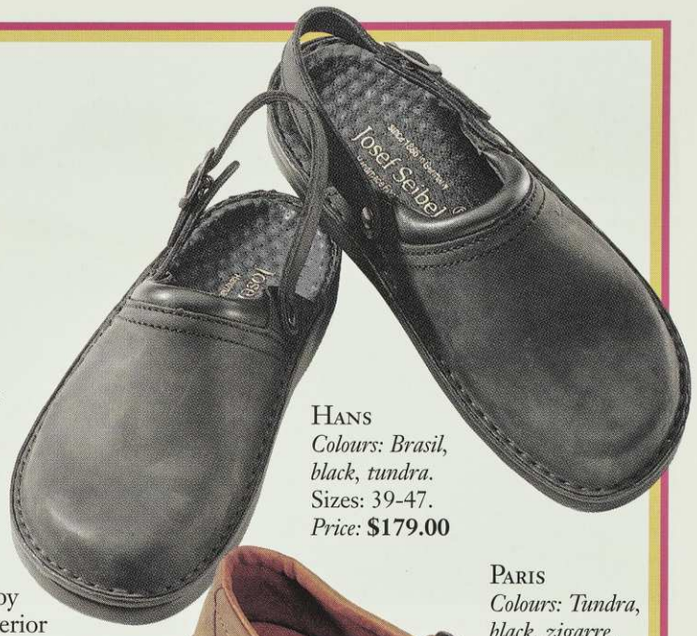

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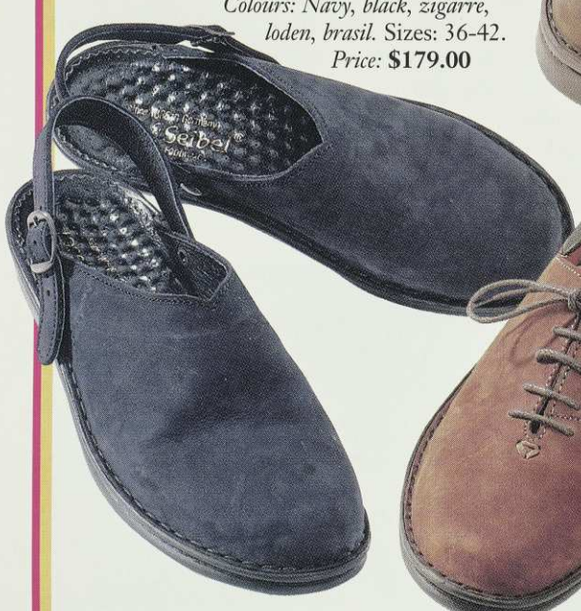

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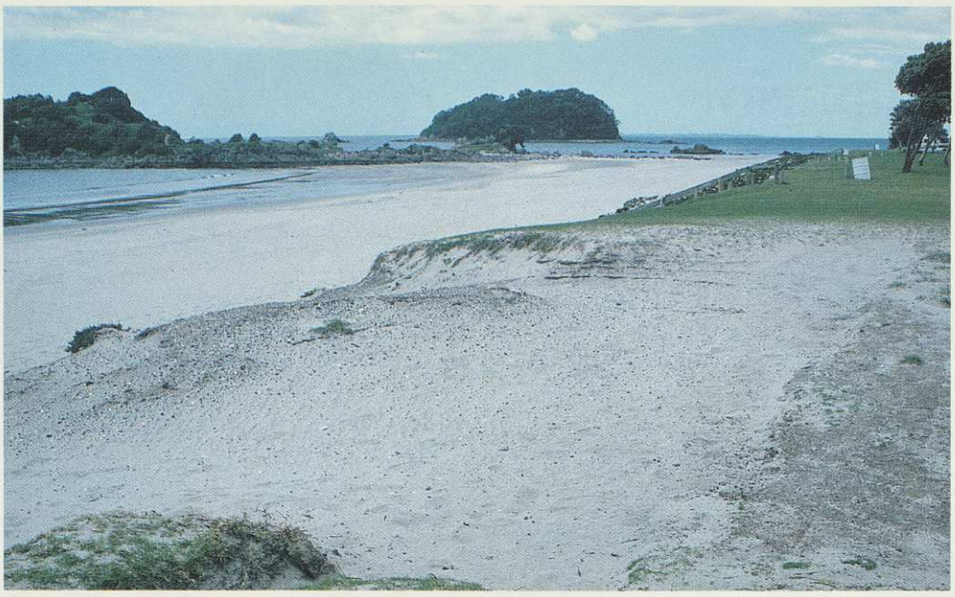


Heavy human use has resulted in the loss of the vegetated foredunes at the main beach at Mt Maunganui. During strong on-shore winds, sand is blown inland from the beach. A vegetated and protected foredune area of native dune plants would help reduce this sand loss, and assist in the dune rebuilding

Sometimes there are failures. For example sand ladders and foredune plantings get damaged in storms. Many people feel helpless and upset as they watch their work being washed away. The message is that this process is natural – beaches are constantly on the move and sand dunes and their natural vegetation have evolved to cope.

The cutting and chipping of large tracts of woody acacia growing along the foreshore at Mount Maunganui has been a huge success in returning the beach view. The chipping has provided an instant cover and mulch for the native plantings made by the group. But acacia seedling control requires ongoing work.

Coast care groups have grappled with the problems of encroachment onto the beach reserve by foreshore property owners and illegal dumping of garden

Living in the sand

NATURAL SAND DUNES are so dry and unstable that few plants and animals are able to colonise them. Two of the more widespread and successful traditional colonisers of New Zealand's dunelands were pingao or golden sand sedge *(Desmoschoenus spiralis)* and spinifex or kowhangatara *(Spinifex sericeus)*.

Not found anywhere else in the world, pingao's tufts of coarse grass-like leaves are borne on rope-like stems trailing across the dunes. The golden colour of pingao stands out against the grey green of spinifex.

Pingao is a sand binder and dune builder. Wind-blown sand is trapped among its leaves, and it accumulates and supplies nutrients to the plant. The stems continue to sprout new shoots as the sand shifts and covers them. Pingao only partially stabilises dunes, as natural dune systems are continually shifting.

Today, pingao has been largely supplanted by European marram grass whose more vigorous growth habit and network of roots and stems eventually stabilises the dunes, halting their natural volatility and allowing them to be colonised by other plants.

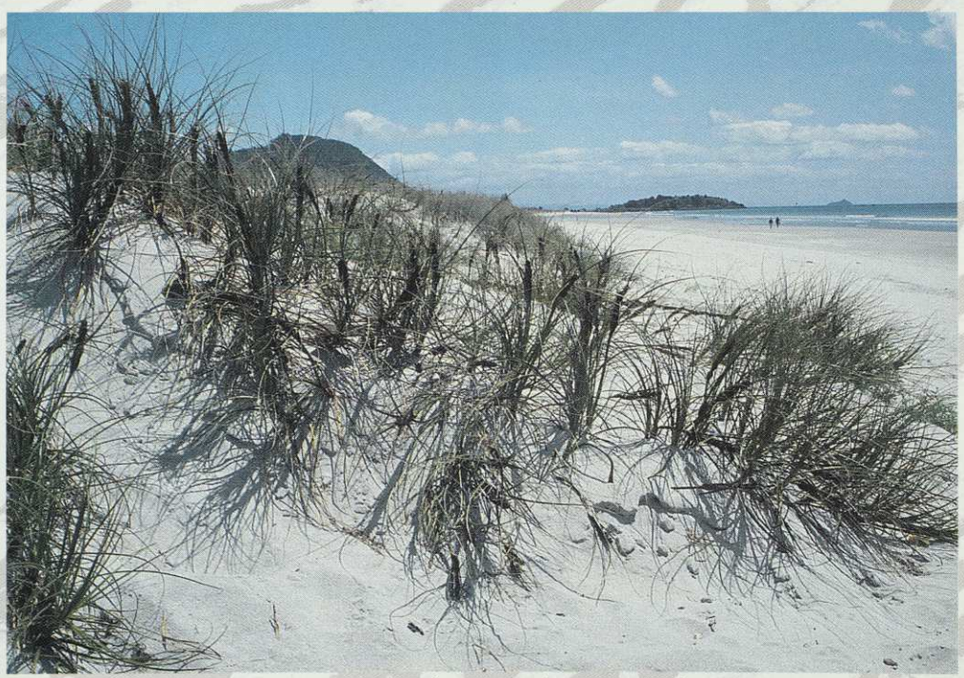
Pingao is much sought after by Maori weavers. Sun-dried, it produces a bright golden yellow and provides a vibrant contrast to the red and black dyed fibres used in tukutuku panelling, and also for the weaving of kete and whariki. With a resurgence in Maori crafts there is an increasing demand for pingao as a raw material, but at the same time the sedge is not plentiful. Supplementary planting and careful management of established stands is now necessary.

Sand dunes also support a small diverse group of specialised animals, mainly insects. These include the sand dune hopper with its peculiar sand-digging leg paddles, speckle-coated sand beetle and the nocturnal sand scarab beetle. Moths and butterflies are relatively common and some moth species are restricted to the dune environment.

Birds are not common on the dunes, unless the dunes are adjacent to lagoons or estuaries. Pipits and banded dotterels can be seen running through the sand in search of insects, and harriers sometimes nest amongst pingao.

Dunes and their special plants and animals are as unique and important as the great kauri forests. But few natural dunelands remain or are adequately protected and the threat of invasion by weeds such as boxthorn, boneseed and gorse is very real.

ERIC HAMILTON



An important sand-binding plant, pingao has evolved to tolerate the salt spray and wind-blown sand, thriving in the conditions. Seed heads appear on rigid dark spikes above the leaves in late September and bear hundreds of dark brown seeds. Introduced marram grass, coastal development, grazing by stock and direct human impacts, including heavy foot traffic and vehicles, have led to the decline of pingao in most areas.

refuse in the foredunes. Many residents who engage in these activities don't see the problem; some argue that they are enhancing the area. Councils do not have the staff or resources to inspect and monitor the whole beach – and there needs to be community interest in the need to protect these areas from disturbance.

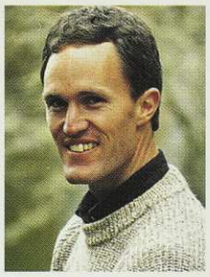
Education – from displays, open days and brochures, to media profiling to encourage public support and understanding of coastal issues – is a major part of the programmes.

Encouraging children to respect the dunes – especially the critical seaward face – and play elsewhere (there is lots of space on the beach itself) is a major aim and part of the education programmes that are being developed in schools. Surf clubs are also being targeted to get a message through their training and beach education programmes.

Through a greater appreciation of dunes and awareness of why they are important, people can continue to use and enjoy their environment and at the same time manage their impacts on these areas.

The future of coast care programmes lies in the backing from the community. Without local support and understanding of the usefulness of the programmes, respective councils will be hard pressed to continue funding the work needed.

Each year councils spend millions on providing services such as roading, sewerage and other public amenities. It is now time to look at what we have always taken for granted – our beach systems – and start addressing the protection and awareness of these important buffer zones connecting the land and the sea. ◆

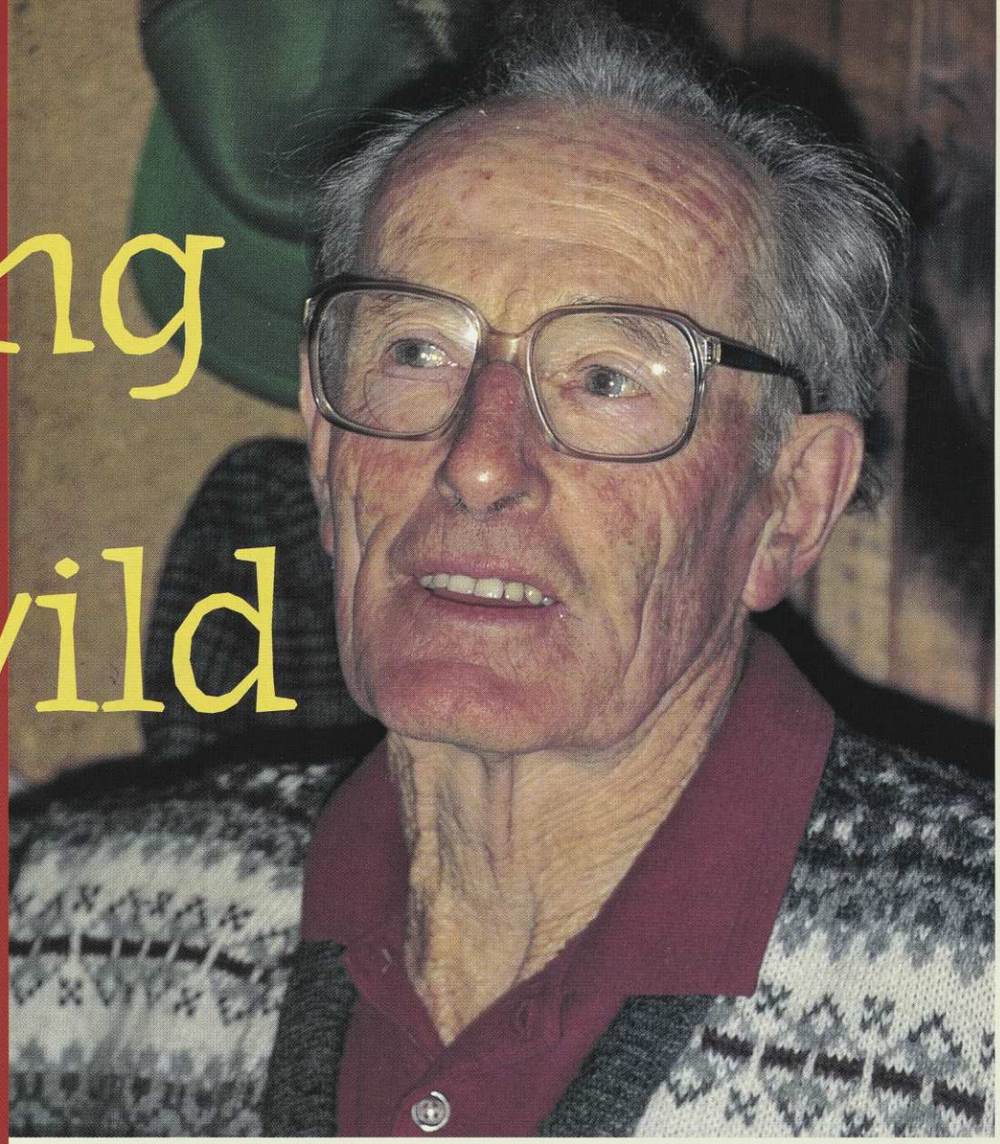


ERIC HAMILTON *is the Coast Care coordinator for the Bay of Plenty Regional Council and enjoys the discoveries and challenges of the outdoor environment.*

profile

Luring the wild

JACQUI BARRINGTON meets the man behind the bird calls that have beguiled generations of National Radio listeners – and finds him still hankering for one last quest for an elusive native bird.



JACQUI BARRINGTON

"QUICKSILVER" Kendrick he was to the former Wildlife Service; and at almost 74 John Kendrick displays the same mercurial mind – and body – that earned his nickname. He fairly sparkles recalling his ground-breaking recording of native birds (whose legacy survives in National Radio's morning bird call). Near his Whangaparaoa home, this coordinator of Hibiscus Coast's Kiwi Conservation Club, twinkles up steep hillsides at breakneck speed, talking all the while.

His English father came out in 1899; after breaking in and farming 700 hectares near Kawhia for 17 years he moved to a small farm near Hamilton where John was born. Growing up in the relatively unspoiled Waikato in the 1920s and 30s, and encouraged by their father, John and his sister became nature enthusiasts.

Their "bibles" were Moncrieff's *New Zealand Birds and How to Identify Them* and later the first, 1930, edition of W B. Oliver's *New Zealand Birds.*

These were pre-electricity days, when big oil lamps lit the evenings to the call of myriad moreporks or ruru and the days were filled with the song of tui and bellbird. But he also remembers the first mynas arriving in the Waikato when he was just seven. They nested in a nearby farm building, and local boys wanted to kill them, but were prevented by John. In hindsight he wishes he hadn't interfered. Like his friend, wildlife photographer Geoff Moon, he now recognises them, and the magpie, as significant intruders into the New Zealand environment.

Secondary school saw natural history take a back seat to a growing interest in electronics and this led to his first job – assistant projectionist with a travelling cinema. Two tonnes of equipment were hauled in caravans around the outlying district to places like the Ngaroma mill, which at this time was working its way through the northern part of Pureora forest. Some venues, like Marakopa, required a whole day's gruelling travel over clay roads to set up the show.

When World War II broke out, John signed up with the Waikato Mounted Rifles. His morse and radio skills soon saw him attached to Signals Division but, following illness, he was discharged.

For the next five years he ran the family dairy farm while pursuing his qualifications in radio. In 1950 he became very active in the newly formed New Zealand Speleological Society. For John, caving was a dream come true, "sporting science" where he could push his physical limits to the maximum, at the same time as extending scientific boundaries through the discovery of fossil and subfossil bird bones. These finds included one complete moa skeleton laid out on the sandy floor of a cave, and kakapo remains only 20 kilometres from the centre of Hamilton. His discoveries helped expand the number of known New Zealand bird species and redefine the historical distributions of others.

Meanwhile with the Waikato Tramping Club he explored the Raglan Hills and the Karakariki Bush, which at that time were still marvellously diverse. Today there's little left, he mourns, pointing the finger at the great push to break in marginal land for production following the War. Before then, despite the enormous changes wrought on the landscape, wild New Zealand was still alive and well, he asserts. The destruction with the most telling impact has all been in the last 50 years.

JOHN MOVED into Hamilton where he ran an electronics business for eight years.

In 1960 he bought one of the first

mobile tape recorders, and at this point his two interests – electronics and nature – merged during a trip across the East Cape, from Ruatoria to Te Kaha.

He becomes even more animated describing the ecological Shangri-La that was the Raukumaras only 30 years ago. With no tracks and surrounded by dense forest unmodified by possums or deer, it was map and compass work all the way.

High bluffs falling sheer more than a hundred metres to the rivers had helped ensure the area's isolation. Often John and his companions had to wade neck-deep through the river, surrounded by boulders the size of houses.

Though pigs – "real razor-backed Captain-Cookers" – and wild bush cattle had made incursions for over a century, the magnificence and diversity of the bush remained overwhelming.

So captivated was John by this wilderness that he returned in 1962 for a more exhaustive study. He describes in his journal how they "were especially fortunate to hear a full chorus of bellbird song early one morning. Often spoken of by old-time bushmen, but seldom heard these days, it resembled the chiming of many small bells all blending together in a most melodious manner."

A decade later John went back to the Raukumaras with Don Merton and Ian Atkinson. Strange calls had been reported, similar to what we now know to be kakapo booming, in the headwaters of the Tapuwaeroa River. They failed to find any kakapo – but there were now plenty of deer and possum. Atkinson's report prophetically warned that their destructive presence would contribute to severe erosion and recommended creating a forest park to protect the rare alpine flora of Mounts Honokawa and Hikurangi.

When John returned yet again, in 1993, it was a different world. A road now ran to the old station that had been their base camp. Hunters had cut a horse track to Te Kumi flats where DoC had installed a tin hut. Cyclones Bernie (1971) and Bola (1988) had tumbled the once-great forests. Deer and possums abounded but mistletoe and kaka had entirely disappeared. Kereru numbers were noticeably low.

And, in contrast to the primeval silence of the 1960s when no planes overflew this area, the inescapable clatter of helicopters now ripped the air.

"Sometimes ... if you really love a place, it's better not to go back," John says. In 1962 he began intermittent field work – "for love" – with the New Zealand Wildlife Service. Brian Bell led a trip to the Mercury Islands, while Don Merton was the leader to Taranga (Hen) Island off the Northland coast, where they studied the very last natural population of saddleback.

Here it was that John pioneered luring birds with taped songs. Combined with a stuffed decoy and the sudden startling appearance of the operator, the agile birds were eventually netted for transfer to Middle Chicken Island.

Don and John next visited Great Barrier, where they "rediscovered" the sole island population of kokako (alas no more; the last two known birds were relocated to Little Barrier last year), and found the place teeming with brown teal and petrels. On this particular trip Don raised the possibility of John officially joining the Wildlife Service team. So it was that, at the age of 42, John Kendrick became audio-visual officer with the New Zealand Wildlife Service, charged (among other duties) with setting up and maintaining a sound library.

"The most elusive bird imaginable. We saw signs of its distinctive moss-browsing, heard its heavy wing beats as well as its song, and even found a feather, but the birds themselves always managed to remain remote or unseen."

His new job soon took him to another magical but very different place – Adams Island in the Auckland Island group and one of the world's largest unmodified islands.

It was here, in 1965, that John found a bird not seen since 1852 – the Auckland Island rail, one of which was captured and transferred to Mt Bruce for further study. He recalls filming the hundreds of wandering and royal albatrosses, skuas, petrels and sooty shearwaters which crowded the island and its straits – and realising that at last he'd found his true vocation.

THE WILDLIFE SERVICE job meant a move to Wellington, where he met his wife, Lorna. Eighteen years were spent working with wildlife trainees on audio-visual subjects and the presentation of up to 50 public lectures a year.

1973 saw John again with Don Merton, this time tracking kakapo – "the most captivating bird imaginable" – in Milford Sound and uncovering, through infrared photography, the secrets of their bowls and booming. The amorous but lonely males, thwarted in their courtship, ended up redirecting their mating displays toward the startled wildlife team.

The bird calls painstakingly collected and stored in the Sound Archives became nationally famous when, in 1974, National Radio's early morning programme began playing the call of the ruru and 15 other native birds John had recorded. The bird call has been an enduring feature of radio now for over two decades.

After ten years in the job John was granted a Churchill Fellowship to Britain to study with the BBC Natural History Unit and to Cornell University's Laboratory of Ornithology in the US. In 1983, a year after his retirement, he won an award to attend a natural sound seminar in Australia.

Asked which of all the songs he finds the most beautiful, John doesn't hesitate: the North Island kokako has "the most varied, complex and haunting birdsong in New Zealand".

The tape technique he pioneered was used with great success to locate kokako in the forests of the Mamaku and West Taupo, revealing Pureora in particular to be an area of outstanding wildlife value.

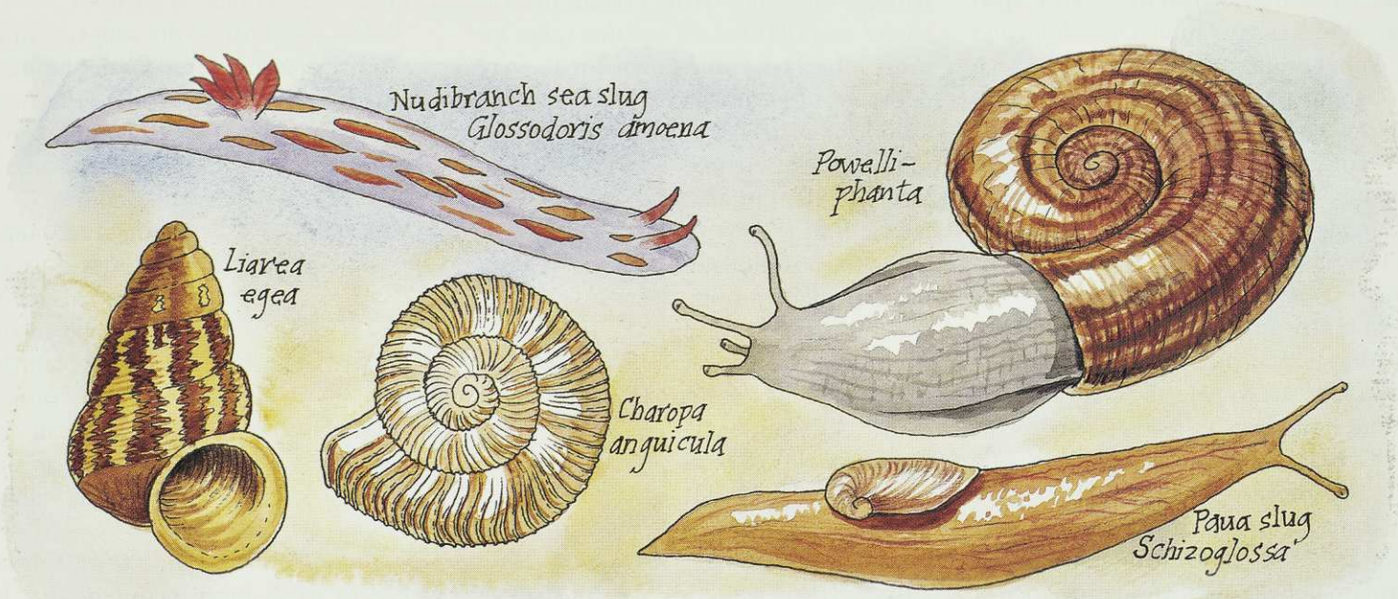
In the Caples Valley in 1983, John recorded what he believes to be the song of the South Island kokako, thought by many to be extinct. His recordings seem to match Buller's written descriptions of "a long plaintive double-note, pitched in a minor key, very pleasant to hear, but ... possessing less richness than the organ-note of the North Island bird. At other times a short mellifluous whistle, and every now and then a liquid bell-note ... indistinguishable from the evening tolling of the tui."

"The most elusive bird imaginable," John says. "We found its chew marks on pieces of orange rind, saw signs of its distinctive moss-browsing, heard its heavy wing beats as well as its song, and even found a feather on Stewart Island, but the birds themselves always managed to remain remote or unseen."

He's still hopeful, however, of sighting the South Island kokako and is planning – maybe – one last trip. After all, hope, adventure and excitement keep a person young – and he didn't get that "Quicksilver" nickname for nothing. ◆

JACQUI BARRINGTON *is Forest and Bird's northern field officer and is based in Auckland.*

Snail shells
an evolutionary saga



A few of New Zealand's many native snails and slugs (not to scale). Sea slugs or nudibranchs ("naked gills") flaunt bright colours to advertise their unpleasant taste.

ILLUSTRATIONS BY TIM GALLOWAY

WE ARE ALL familiar with the unwelcome garden snail. It is an introduced member of a group of animals called molluscs that also include the slugs, shellfish, chitons, octopus and squid. The mollusc way of life is very old and they appear far back in the fossil record – more than 500 million years ago. Over 100,000 different kinds of molluscs are alive today, and over 40,000 extinct species have been found. Snails and slugs – together known as gastropods – make up the largest group of the living molluscs.

The most primitive of known fossil snails are called "amphigastropods". Their shells did not have the trademark spiral coil of today's snail shells, but the paired muscle scars inside the shell suggest that the living animal was bilateral (meaning it had a head and tail end and could be divided into two equal halves, as humans can).

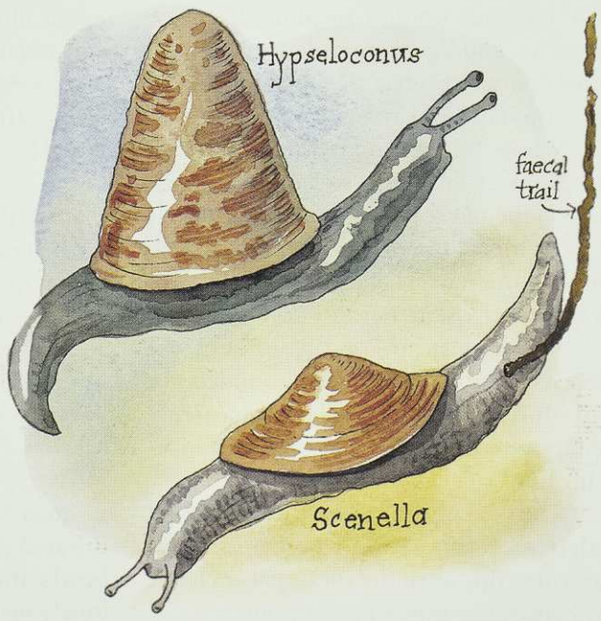
In a bilateral animal, the head carries the eyes, feelers, and the mouth, while the tail end, being at the end of the digestive system, is the route for defecation. This was the basic body plan of these ancient snails, as they glided along carrying their conical or caplike shells on their backs.

Then, around 500 million years ago, a gene mutation appeared that was to permanently change the evolution of the gastropods.

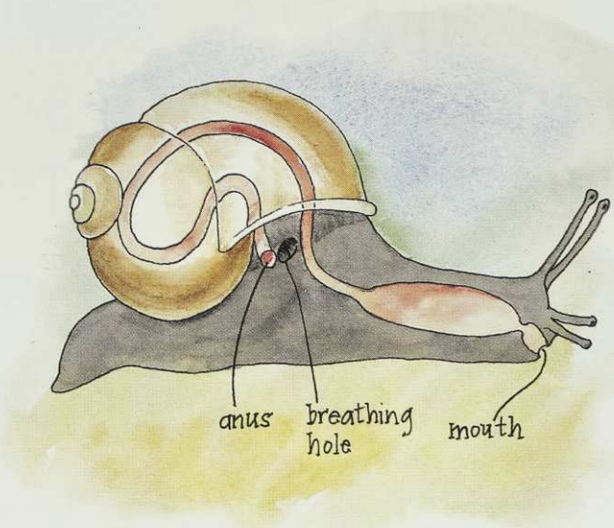
Gastropods, like all molluscs, hatch from eggs and develop through distinct larval stages before appearing as the recognisable adults of the species. One of the larval stages is called a veliger. In marine molluscs, the minute veliger swims amongst the plankton, a tiny, shelled animal propelled by a structure like a paddle wheel. It was in a veliger, back all those years ago, that this revolutionary mutation appeared. As the veliger grew, its head and foot remained stationary but the other body organs twisted, bringing the anus to lie above the head. This caused the organs on one side of the body to atrophy. The lop-sided body now grew in a spiral coil, and secreted a matching, spiral shell.

The mutated veliger carried this trait to adulthood, resulting in a snail that carried a compact portable spiral shell, rather than the long cumbersome cone or token cap that gastropods had carried up to that time.

The new spiral shell also offered better protection because it was sufficiently



Reconstructions of two of the ancient amphigastropods before the evolution of the spiralled shell. While the soft parts of these drawings are intelligent guesswork, we know that the snails had a head end and tail end and carried their shells like knapsacks on their backs.



A garden snail, showing the twisted gut it shares with all modern gastropods and the position of the anus closer to the head of the snail.

MORE THAN A thousand species of native land snails have been identified in New Zealand. They range from carnivorous snails – so large the extended animal would cover a human hand – to species the size of pin-heads. The best known of the large carnivores are the beautiful *Powelliphanta* and *Paryphanta* which live on the forest floor and hunt earthworms, slugs and smaller snails, devouring them with the hundreds of tiny dagger-like teeth that cover their tongues.

Why do we have such an abundance of species, when the whole of the similarly sized United Kingdom has only 112? The geological record suggests that New Zealand has always had a moist, snail-friendly climate. The past fragmentation of our land masses together with the variety of forest habitats has provided opportunities for species to become physically separated from their fellows, adapt to different niches and evolve into different species. Today, both ancient and more recent species make up our enormous diversity of native snails.

The snails evolved in this country along with natural predators such as weka which meant that snail numbers were maintained at a stable level. This balance was shattered by forest clearing and the introduction of mammals such as rats, pigs and possums. The result has been a decline in native snail populations throughout mainland New Zealand and today more than half of the threatened invertebrates listed by the Department of Conservation are native snails.

One of best ways in which you can help native land snails is to resist souveniring their shells. Firstly the shell may not be empty at all with the snail only aestivating inside – to emerge later on the mantlepiece – and, secondly, shells are eaten by other snails and are an important source of calcium for the next generation. One researcher who removed many shells from an area of snail habitat in Northland, was dismayed to discover on his return some years later, a large proportion of snails with deformed shells.

roomy for the entire animal to withdraw into, and the entrance could be plugged with its foot.

Such were the adaptive advantages offered by this ancient twisted veliger and its descendants that they cornered the market in the evolution of all future gastropod species. Today there are more than 50,000 species of land, sea and fresh-water snails carrying a wonderful array of spiral shells.

But however well designed, a secure home has its costs. For a snail, the cost is a loss of speed and agility. In some species the shell is shrunken, and the slugs have gone even further and reduced their shell to a tiny internal organ. Although slugs have outwardly straightened their bodies to a bilaterally symmetrical form, they still retain a contorted digestive system. Without a protective shell, land slugs have become nocturnal to avoid the burning sun and beady-eyed birds.

Despite the diverse forms of today's gastropods, every species still carries the secret of its ancestry in the twisted gut of its veliger larva.

Ann Graeme

ANN GRAEME *is the national coordinator of Forest and Bird's Kiwi Conservation Club.*

book reviews

Kokako Lost: the last days of the Great Barrier and Coromandel crow

by Sid Marsh, self-published, 1995, 77pp ($20 by mail from 15 Dobson St, Waihi)

This is a strangely compelling book, based on the author's columns in the *Waihi Leader.* These document his searches beginning in 1991 for the last remaining kokako on the Coromandel Peninsula, and end with his involvement in the 1994 capture of the last two known birds on Great Barrier Island and their transfer to Little Barrier.

Marsh's first chance encounter with a kokako in 1979 sowed the seeds for the quest which began a decade later. His transparent love for both the bird and the Coromandel region instantly engages the reader through a blow-by-blow account of forays deep into the ranges where "from the cover of dense forest loquacious kokako cast their spell unseen with organ-like notes".

A highlight of the small book are a dozen illustrations by the author of kokako and other wildlife, two hand-drawn maps of their territories, some 18 photographs and numerous anecdotes from other kokako enthusiasts.

Particularly poignant are the descriptions of lone birds and their frantically excited reactions to tape-recordings of kokako song or human imitations, as they desperately try to locate "the other bird".

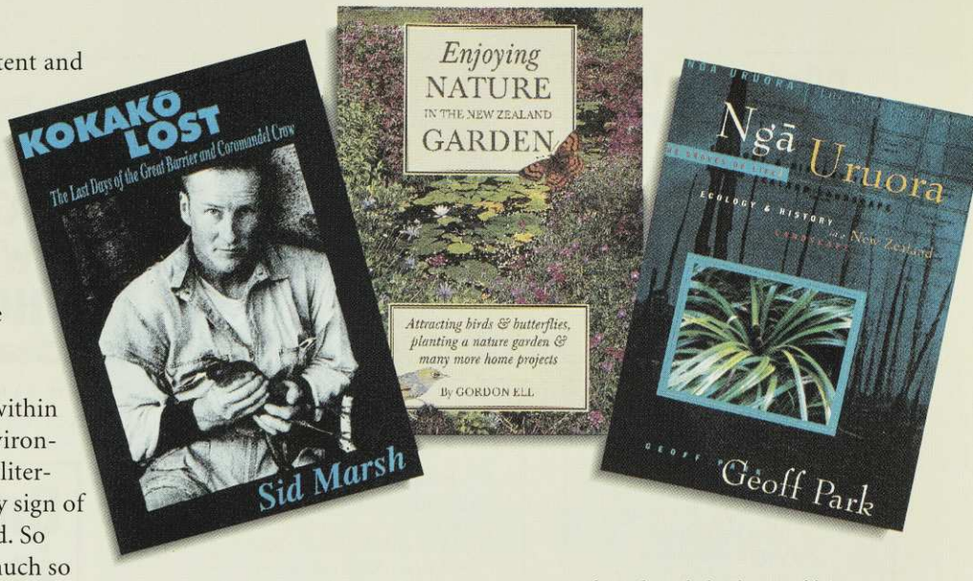
Dedicated to Mark Tugendhaft, Coromandel Watchdog and the late Skipper Chapman, this is a cry from the heart to protect what remains of primeval New Zealand from human destruction.

Jacqui Barrington

Nga Uruora: the groves of life

by Geoff Park (Victoria University Press) 1995, 376pp, $39.95

On first reading, this book seems like a documentation of 101 ways to destroy forest, so thorough, persistent and ingenious in the enterprise have been our forebears and peers.



We are swamp dwellers, says Park, a research scientist with the Department of Conservation in Wellington. Yet within our favoured environment we have obliterated almost every sign of the natural world. So quickly and so much so that it is now difficult to comprehend what we have lost.

Park starts at the Waihou and Hutt Rivers, paddling his canoe among hoofpocked dairy flats and kicking at the flotsam and jetsam of industry. Descriptions of these densely wooded valleys – the Hauraki Plains and Hutt Valley – by James Cook, William Wakefield and others, prompted the New Zealand Company to sell Aotearoa as a flat country.

The taipo or surveyor's theodolite followed, a three-footed monster that surveyed the flats into a grid, destined square by square to destruction. To understand what was lost, Park returns to tiny patches that escaped the axes, fires and drains: near Mokau, Levin, Whanganui Inlet and Punakaiki. The journey took him ten years. What started as a book about four patches of lowland forest, intended along the lines of Craig Potton and Andy Dennis's *Images from a Limestone Landscape,* became much more.

Like the forests it is about, the book is rich and diverse, incorporating personal observations, ecological notes, historical and literary references, interpretations of Maori and colonial history, and spiritual insight. It meanders like the lowland rivers before their stop banks were built; sometimes becoming bound up in back eddies, slipping quickly from one channel to another, bringing nourishment to parched soils.

Park says that we have exported the stored soil carbon out of the ecosystem with butter, milk and meat, with little regard to the time it took to amass. He challenges the traditional notions of scenery preservation, national parks and reserves, and modern conservation with "its denigration of people and its preoccupation with species as entities in themselves".

"The plains forests have come to within the few final acres of vanishing point," Park writes, "tragic in one sense, yet magic in another. We may no longer feel insignificant in their shade, but as much as they are evidence of our power over nature, they are reminders that every bit of land, agricultural, urban, suburban, is . . . never totally ruined, never completely unnatural. Always restorable."

In the end he finds that the remains of nga uruora reveal more about us than about themselves.

Tim Higham

Enjoying Nature in the New Zealand Garden

by Gordon Ell (Bush Press) 1995, 192pp, $29.95

What positive steps can the city dweller take to encourage wildlife back to where it once belonged? Can we ever re-create a place for wild animals and plants in town?

Naturalist/publisher and former Forest and Bird president Gordon Ell has combined and updated the best of his earlier works *Encouraging Birds in the New Zealand Garden* and *Nature Hobbies for New Zealanders* to bring us more than thirty projects "to attract birds, butterflies and other creatures" to the private garden.

As a how-to guide, the book provides practical advice on encouraging the passage and settlement of native animals around your home. Going beyond birds and lizards, it gives considerable coverage to insects, butterflies, frogs and spiders. The author even looks beneath the surface of the garden and discusses how to relate to "the creepy crawlies" that dwell there. "In some ways," suggests Ell, "the garden environment offers homes to a broader range of creatures than some wild places".

A chapter is devoted to the "unplanted plants" and explains that not all are un-desirables to be weeded out. Algae, mosses, lichen and fungi will all appear without encouragement.

Enjoying Nature encourages the whole family's involvement in the study of nature. There are discussions on raising butterflies and moths and how to build wormeries, and aquaria. Ell stresses the problems of keeping wild animals in even temporary captivity.

It doesn't matter whether your backyard is a jungle or an impeccable lawn; nature can be found and encouraged. Enthusiasm is the key.

Henricus Peters

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WANT TO HELP survey native frogs, kokako, kiwi and bats, or plant trees, eradicate pines or clean up an island?

The Department of Conservation has a detailed programme running through to September of practical and important projects that require volunteers. The projects are graded for varying fitness levels and desired skills (such as painting, first aid, or just good eyesight and keen interest), and vary from one-day jobs to longer ongoing projects. A donation is sometimes requested to cover food costs.

For details of projects in your area, contact the volunteer coordinator in the local DoC conservancy office. A list of the full national programme can be obtained from Christine Jacobson on 04-471-0726.

New membership benefits

THE ADVANTAGES of belonging to Forest and Bird are now even greater. With your 1996 membership renewal receipt you will receive a "1996" sticker to place on your current membership card. You can now get discounts by presenting your card (with the current year's sticker on it) to the companies below:

- **Kathmandu** (adventure and travel clothing and equipment) – free "Summit Club" membership which entitles you to between 10 percent and 30 percent discount depending on the size of the purchase.
- **Mount Cook Landline** – 30 percent discount off standard adult fares exceeding $20.
- **Bivouac** (outdoor clothing and equipment) – at least 10 percent discount off recommended retail price on most items.
- **Naturally New Zealand Holidays** – these holidays cover anything from guided walking, nature touring and walking, rafting and canoeing, backroad cycling to mini-stays and safaris. They have offered a 10 percent discount on bookings made directly with them on 0800 101 301. Heavily reduced connecting airfares are also available.

Kathmandu and Bivouac both have outlets in Auckland, Christchurch and Wellington while Mount Cook Landline operates extensively in the South Island and on the main central North Island route.

The card also provides benefits for Forest and Bird. On the back of your card is an Ansett account number. If you are travelling anywhere by Ansett, quote this number (MC 10053) when booking your ticket and a percentage of the ticket price will be given to the society – it will not affect the price of your ticket.

We plan to keep building on this list of benefits. If you have already renewed your membership, thank you and we hope that you enjoy the new benefits. If you haven't, please take the time to renew today – your membership will make a big difference.

GRAEME CALDER

Forest and Bird's conservation staff spent three days following the November council meeting in Waiouru working together on campaign themes and strategies for the coming year. From left: Basil Graeme, Clayton White, Kevin Smith, Duane Burtt, Jacqui Barrington, Ann Graeme, Eugenie Sage, Sue Maturin, Barry Weeber and executive member Claire Stevens.

Awards

DAVID GIVEN, conservation botanist and *Forest & Bird* contributor, is the latest winner of the Loder Cup. He has contributed greatly to increased awareness of the plight of threatened plant species in this country, and has an international reputation for his expertise in the principles and practices of plant conservation.

David co-authored the field guide, *Threatened Plants of New Zealand* in 1989.

The cup is awarded annually for contributions to the conservation of New Zealand's native plants.

Napier Branch chairperson, **Isabel Morgan,** was one of the winners of the inaugural Hawke's Bay Regional Council Environmental Awards last October.

Isabel, described in the award citation as "Hawke's Bay's most effective environmentalist" has been a member of Forest and Bird and an advocate for conservation on a wide range of local and national issues for over 40 years.

Obituary: Maurice Cowan

THE SUDDEN DEATH in November of long-time Forest and Bird member Maurice Cowan, was deeply felt in the Waihi District.

Described by the local press as one of Waihi's most loved and respected residents, Maurice, 47, together with his wife Jill, had a particular rapport with young people and was coordinator of the local Kiwi Conservation Club.

Known to some as being anti-mining in a town where mining had recently been re-established, Maurice claimed he would rather be known as pro-environment. As secretary of the local Forest and Bird section, Maurice was always there to organise and carry out tree planting or preservation work.

Maurice was deputy mayor of the former Waihi Borough Council for many years and later chairman of the Hauraki District Council's Waste Management Committee.

His work with the Waitawheta Youth Camp, the Waihi Beach Sea Scouts and the weekly skating activities in Waihi's old drill hall took up more of his time.

When all these community activities allowed and in his "spare" time he practised his trade as a master plumber.

Owen Morgan

Seaweek

"ON THE EDGE" will be the theme of Seaweek 96 – to be held 23-31 March. Organised by the Marine Education Society of Australasia (MESA), the programme will focus on the inter-tidal zone and threats to it.

Activities for the week are being organised around the country. For more information contact Sioux Campbell, DoC, Box 1146, Rotorua, phone 07-347-9179.

Sustainable energy

"ENERGY, TRANSPORT and development" will be the theme of the fourth Sustainable Energy Forum, to be held in Tauranga on 29-30 March.

The forum is a non-profit society set up to accelerate the transition to sustainable energy in New Zealand.

For more information contact Fiona Weightman, PO Box 11 152, Wellington, phone 04-499-8668.

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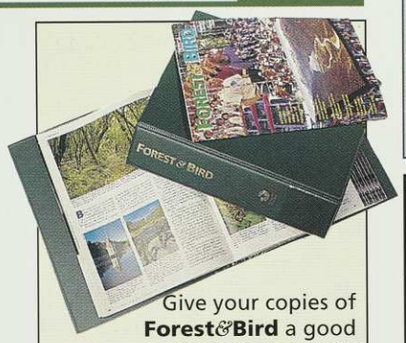

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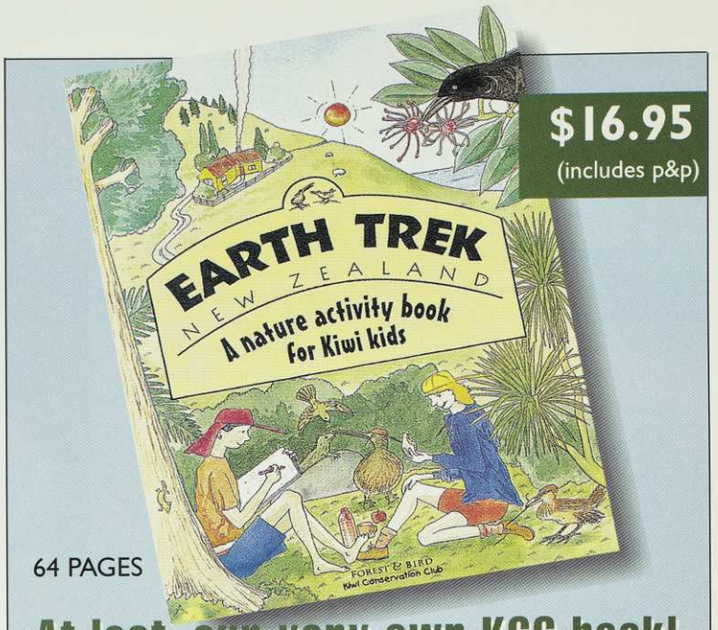

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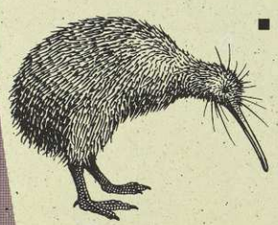

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