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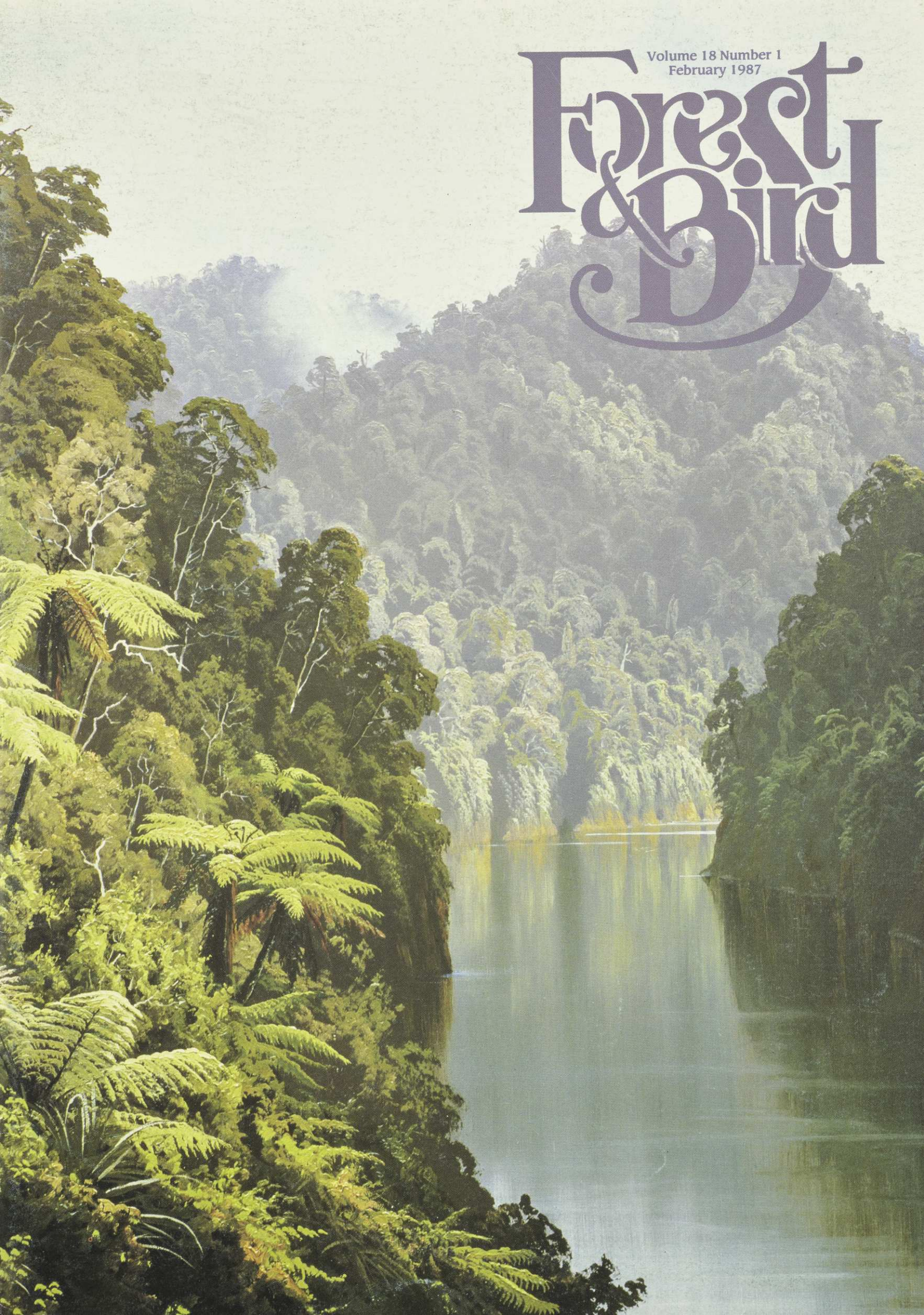
Forest & Bird



Wild and Scenic Rivers

The future of the wild and scenic rivers concept and the protection it could afford to Canterbury's Rakaia River (photo right), key nesting habitat for the wrybill plover (inset) now hangs in the balance.

In November 1986, acting on an appeal from Federated Farmers, the High Court ruled that a Conservation Order protecting the Rakaia River misinterpreted the intent of the 1981 Wild and Scenic River Amendment to the Water and Soil Act. Conservation and recreation groups have held high hopes of protecting our dwindling wild and scenic rivers by use of the amendment. Slow but steady progress has since been made in safeguarding rivers and lakes including the Motu, Rakaia, Ahuriri, Mataura and Lake Wairarapa.

The High Court decision could jeopardise that progress. Acclimatisation Societies have decided that the decision must be tested at the highest level possible and they are therefore appealing the High Court Rakaia decision at the Court of Appeal. The present Government came to power committed to protecting a schedule of the country's finest rivers and lakes in the revised Water and Soil legislation. This schedule has just been agreed on through consultation between development, conservation and recreation interests. Unfortunately the new legislation is now unlikely to be introduced to Parliament until 1988, after the next election.

Meanwhile there are strong moves from "free marketeers" to streamline and strip away planning controls like the Water and Soil Act (and the Town and Country Planning Act). Unless resisted these moves could introduce a new era of uncontrolled wetland drainage, water pollution and waterway destruction. *Photos: Rakaia: Graeme Loh. Wrybill plover: Craig Potton.*

Front cover: An article on page 2 of this issue marks the welcome addition of New Zealand's 11th national park, the Whanganui, to our park network. The painting on the cover is by well known artist Jonathan White and is reproduced with his kind permission. It strikingly depicts the ferns and bush-clad hill country of the upper Wanganui River gorge.

Heritage or Harvest?

1987 heralds the centennial of our national parks. It also heralds the establishment of the Conservation Department to safeguard our heritage, and the year when decisions will be made on the great southern forests within the proposed South-West New Zealand World Heritage Area.

The concept of protecting the public lands of New Zealand's South-West as a World Heritage Area has been championed by conservation, recreation and tourism groups since November 1985 when New Zealand signed the UNESCO World Heritage Convention. It makes sense to give our largest remaining intact natural area (stretching from Okarito to Waitutu) international recognition and protection.

The first cautious step towards the grand concept came in November 1986 when the Government announced UNESCO's acceptance of Fiordland and Mt Cook/Westland national parks as New Zealand's first two World Heritage areas.

Three key tests are now imminent of the integrity of the South West concept. At Waitutu, Longwood, Dean and Rowallan forests in western Southland, survival of the endangered yellowhead and a remarkable coast to mountains forest sequence depend on DOC advocating the preservation of the remaining virgin forests. Scientific studies show that yellowhead cannot survive in logged forests. Although Waitutu remains zoned for protection, Dean, Rowallan and Longwood presently form part of a small scale (6,000m³ pa) uneconomic beech industry. Should these virgin forests be protected, the industry can immediately switch to the region's burgeoning exotic supplies.

In the centre of the proposed World Heritage area, public submissions have overwhelmingly supported adding the Red Hills and surrounding state forests to Mt Aspiring National Park. The Red Hills addition should proceed forthwith, ending more than 10 years of indecision.

However, the greatest test of our commitment to heritage protection will come over the next six months when politicians decide the future of the great kahikatea forests lying south of the glaciers of Westland National Park. This tract of unmodified lowland forests, wetlands, sea coast and mountains is primeval New Zealand at its finest. The mosaic of kahikatea, kowhai, mistletoe and beech is also the stronghold of kaka, kiwi and blue duck and the nearest we come to the primitive forests of ancient Gondwanaland. Celebrated in our 1987 calendar and a soon-to-be-published Society book, these forests will be the focus of our campaigning efforts up to 30 June this year, when Environment Secretary, Roger Blakeley, reports to Government on their future.

At present there are no sawmills cutting in these publicly-owned forests. Rather the few scattered communities from Fox Glacier to Jacksons Bay are nurtured primarily by tourism, grazing, fishing and hunting. Outmoded concepts such as multiple use native logging have been overwhelmingly rejected by the public through the Maruia Declaration and campaigns for Okarito, Whirinaki, Pureora and Paparoa. The West Coast accord assures the nation of a sustained supply of native timber from North and Central Westland. Therefore logging — even salvage logging of so called 'overmature and senile' trees — has no place in the South-West wilderness. The whole area deserves protection, firstly to safeguard its intrinsic natural and wilderness values and secondly to promote sensitive tourism use from the Haast highway.

Many Society branches and members have expressed concern that former logging advocates from Forest Service have taken key jobs in DOC and they will be seeking reassurance that the 'poachers have turned gamekeepers'. However, DOC's new staff are committed to change and in 1987 will be able to demonstrate this. The beech forests of western Southland and kahikatea forests of South Westland will be a fitting test of the commitment both of DOC staff and you, the people it serves, to foster national pride by promoting the World Heritage Concept.

I can think of no better way of celebrating our National Parks Centennial.

Dr Alan Mark, President

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Articles

Departments

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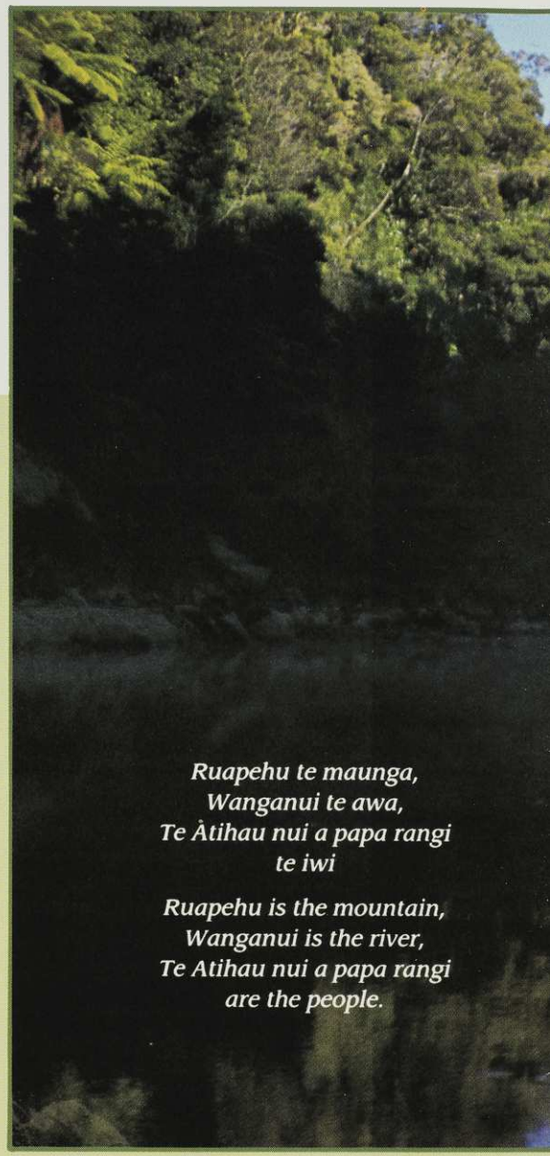
Whanganui National Park – a Celebration



Ruapehu te maunga,
Wanganui te awa,
Te Àtihau nui a papa rangi
te iwi

Ruapehu is the mountain,
Wanganui is the river,
Te Atihau nui a papa rangi
are the people.

THE LEGEND

Several mountains once stood, like noble gods, high above the land in the centre of the North Island. Tongariro, the greatest of them all, lived beside Ngauruhoe, Ruapehu and Taranaki, while nearby stood the lovely maiden Pihanga. With her cloak of deep green bush folded closely around her shoulders, Pihanga was an object of great beauty. All the mountain gods loved her, but the one she chose was the venerable white-haired Tongariro.

What had been a long, peaceful existence for the mountain gods was disturbed when Taranaki could no longer keep his feelings in check, and dared to make advances to Pihanga. A mighty conflict between Tongariro and Taranaki ensued, which shook the very foundations of the earth. The mountains belched forth their anger and darkness clouded the sky.

When peace finally came to the land Tongariro, considerably lowered in height, stood close by Pihanga's side while Taranaki, wild with grief and anger, tore himself from his roots with a mighty wrench and left his homeland. He plunged recklessly towards the setting sun, and upon reaching the ocean turned north, finally coming to rest in grand isolation, a mountain god in his own domain.

Great was his path of sorrow, for as he fled, Taranaki had torn a long, deep wound through the earth. Soon from the side of Tongariro there sprang forth a stream of clear water which filled and healed the wound Taranaki had made in the earth. Green forests, filled with the songs of birds, grew on the banks of this new formed river, which we know today as the Wanganui.

The middle and isolated reaches of the river valley are rich in wildlife. Whio or blue duck (pictured) are found in the headwaters and tributaries while bellbird, pigeon, tui and yellow-crowned parakeet are common. Several populations of native bats have been recorded in the national park. Photo: Alan Reith

The creation of Whanganui National Park on November 29, 1986, marks further acceptance of the idea that we should not set aside only mountainous areas for parks, but lowland regions as well, for it is over the latter that generally the economic sacrifices have to be made. With the imminent gazettal of Paparoa National Park this year, this trend continues.

As all those know who have tramped along the Whangamomona Walkway, explored the Mangapurua Valley or canoed the Wanganui itself, the new national park will have much to offer the visitor. If one seeks wilderness, in places continuous native forest stretches as far as the eye can see; if human history is your interest, the 74,000 ha national park is full of it.

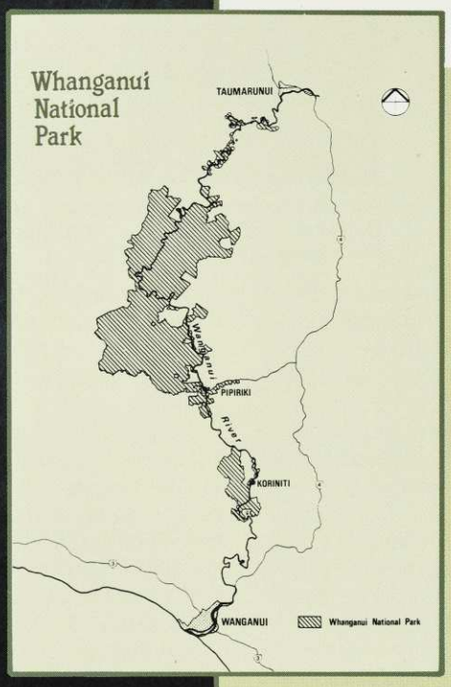
Of all our national parks, Whanganui National Park (only the fourth in the North Island) is most closely associated with human settlement, partly because it is a lowland park and partly because it contains within it the 329-km Wanganui River, the longest navigable river in New Zealand. At present the river does not belong to the park, subject to negotiations with Maoris whose traditional home is the Wanganui.

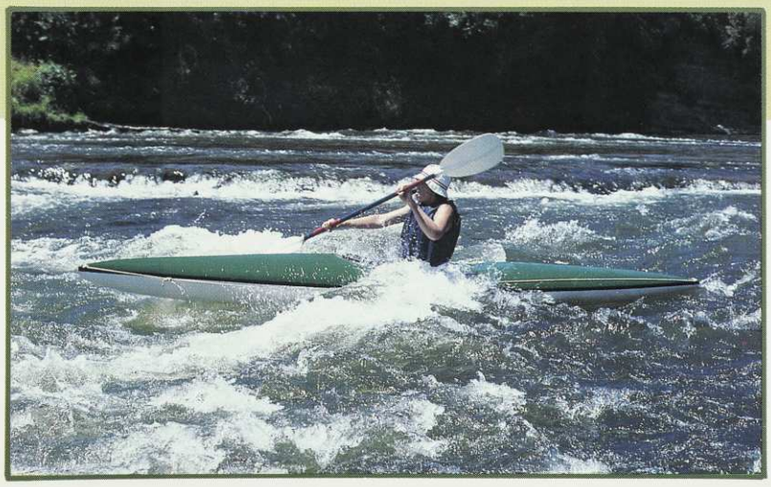
According to Maori genealogy, Maoris first occupied the river as long ago as 1100 AD, although it was not until 1350 that the people who were to become known as Te Atihau nui a papa rangi began drifting into the area to settle. Evidence of their past remains in the 147 archaeological sites recorded within the park, most along the river margins.

European explorers, missionaries, traders and farmers have played their part in the story of the Wanganui. It is a testament to the resilience of nature and the rugged aspect of the Wanganui hill country that in many instances only traces of this habitation remains.

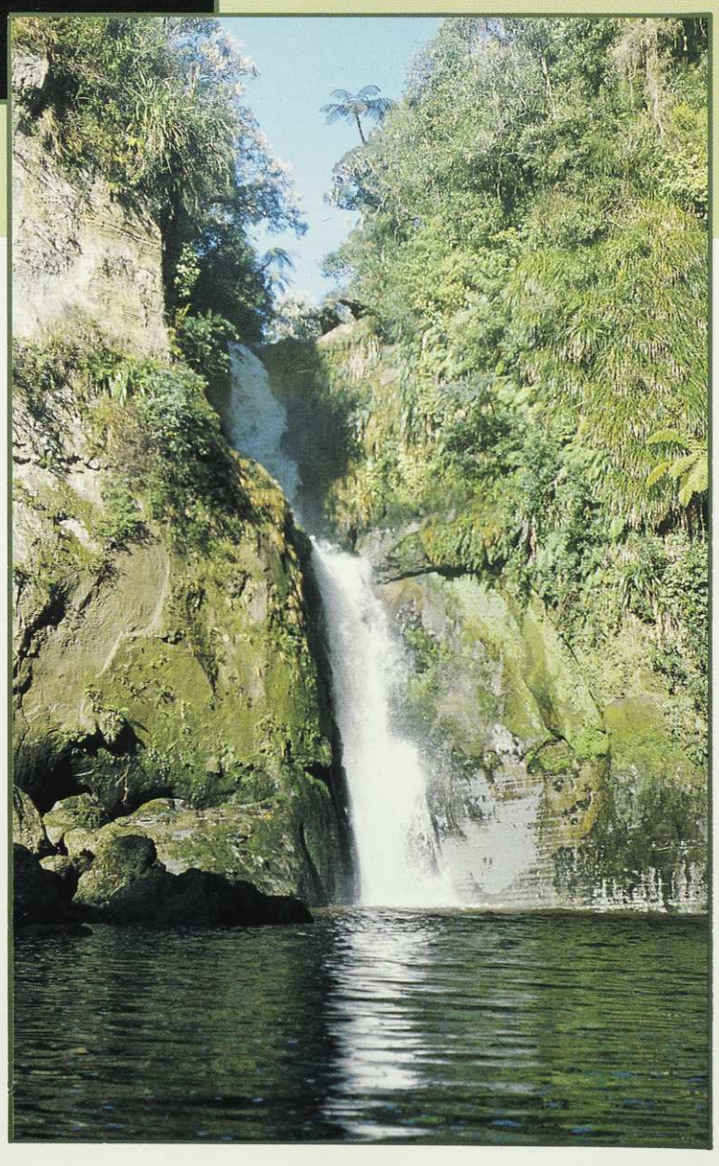
A new era for the Wanganui region has begun, in which people will not make their way into the hinterland in order to tame the land but rather to enjoy its scenic splendours.

The Wanganui River in one of its quieter moods. At 329 kms in length, it is New Zealand's longest continuously navigable river.
Photo: John Ombler





Between Taumarunui and the sea there are 239 named rapids, although the river's gentle gradient makes it a mecca for canoeists who can easily navigate the occasional turbulent stretch. Photo: John Ombler



Just upstream from Pipiriki lie the Puraroto Falls, which together with the nearby caves have long been an attraction for river travellers.
Photo: John Ombler

COASTAL WORKSHOP
THE NEW WAVE

by Mark Bellingham
Society Conservation Officer

For the first time in 150 years of European government in New Zealand, our coasts may receive proper administration and protection — certainly this is the best chance we have of achieving this.

Society Conservation Officer Mark Bellingham addresses the Forest and Bird coastal workshop on a hill overlooking Manukau Harbour. *Photo: Ken Spencer*

The above theme for Forest and Bird's recent Coastal Workshop in Auckland was also laid down as a challenge to participants who had come from regions as far off as Whangarei and Wellington, and included local Maori, Auckland Regional Authority and Harbour Board representatives, as well as many other concerned conservationists.

The morning's field trip started at Tahuna Torea Wildlife Reserve, an urban coastal area nestled in Auckland's eastern suburbs that was once destined to become a rubbish tip until locals forced a change in plans. We were accosted by ducks and pukeko, and were impressed by the large number of godwits feeding nearby. The reserve is also a stop-off point on an extensive coastal walkway.

From there we travelled up the Tamaki Estuary past thousands of moored boats (it is New Zealand's densest pleasure craft area) to the heart of Auckland's industrial belt. Ecologist Gordon Maxwell met us at the site of the Christmas 1984 ICI chemical fire, when five million litres of chemicals spewed out into the Tamaki Estuary. Gordon's ecological monitoring has shown the extraordinary resilience and recovery powers of marine organisms, but a long term heavy metal problem remains.

On Manukau Harbour, 80 years of heavy industry have made Mangere Inlet New Zealand's most polluted estuary. Chemical wastes still leach into the harbour and the largest mangrove area is "trapped" between the railway tracks at Westfield Railway Station.

A coastal field trip would not be complete without a visit to the Mangere sewage treatment plant! We viewed the world's largest treatment ponds from the safe perspective of the magnificent bush-clad cliffs of Waikowhai at Mt Roskill. But even there, Auckland's largest kohekohe and kowhai forest is threatened by housing sub-division.

The main theme of the speakers and workshops was to develop a new direction for coastal conservation.

Mrs Nganeko Minhinnick explained the tragedy of the tangata whenua of the Manukau — how they had been dispossessed of their kai moana and land, and how their culture was being debased by the sewage and industrial wastes which continue to pour into the Tainui foodbowl — the Manukau Harbour. She made a plea for respect of the coast and a recognition of Maori cultural values.

Society advocate on coastal issues Gary Taylor and the author echoed this by stating that when local authorities planned for water areas they had to accept an obligation to plan for permanent living systems

Department of Conservation

Kaitiaki of the Coastal Estate.

The following is an abridged version of an address made to the Auckland coastal seminar by the Director-General of the Conservation Department, Ken Piddington.

Thank you for your invitation to be here and to address you today. I applaud your concern for our coastal heritage which has brought us together on this unique isthmus. This workshop represents a turning point for the conservation movement just as the environmental administration represents in my view a maturing in our perceptions for the management of New Zealand's public estate, and in particular the coastal zone. Until the events of the last two years there was neither an environmental group nor a public administration focus on the coastal zone area as an entity in its own right.

What is the appropriate form of trusteeship to be afforded our commons? The coastal zone encapsulates all elements of and pressures of management of the commons. Its present state reflects the mismanagement of the past. But without the coastal assets that we take for granted what would our identity as New Zealanders be? I remember the mudflats and the mangroves of the Waitemata. I even caught snapper in the harbour, capsized my sailing dinghy and collected driftwood on the Northcote foreshore. After some 35 years the rhythm of the tides and the sunrise on the water still say powerful things to me.

The major problems really relate to our perceptions as a society and the stage of maturity (or lack of it) that we have collectively reached. In my view, if we go back — 10 or even 5 years ago — we find that New Zealand was not ready for conservation management of our public estate, our heritage — nga taonga katoa a Aotearoa. It is debatable whether or not we are ready now but I can report a wave of enthusiasm for DOC and what it represents. Different techniques have to be used and DOC will embody that element of the role of the Crown which is not one of ownership but one of *trusteeship*. DOC itself is a caretaker and owns none of the estate, in the case of the highly protected estate this function becomes one of *Kaitiaki* or Guardian.

Constitutionally I think it is important to test the model which Government in open consultation in 1984–85 arrived at.

The Government has given the Department of Conservation responsibility for the Marine Reserves Act and the Marine Mammals Act in the marine setting and for the coastal area, and responsibility for aspects of the Harbours Act. Except for commercial port areas, within which the Ministry of Transport will retain all existing functions under the Harbours Act, marine and coastal administration will be carried out on a functional basis. DOC will have responsibility for the allocation of space and managing the public interest — in other words, from the mean high water zone to the 12-mile limit, the foreshore and seabed will be administered by DOC under its stewardship role.

What then are the implications for coastal zone management? The most dramatic is the integration of activities under the DOC umbrella. DOC will be responsible for the promotion and management of reserves, from the mountain tops to outlying islands. This has particular significance for harbour and inter-tidal areas and allows for the management of broader but related groupings of habitats and wildlife.

Yesterday I visited Okiwi, an estuarine system on Great Barrier Island. It is a classic, and happily still intact example of the inter-relationship between land use and water quality. Since it contains the habitat of about 50 percent of the endangered brown teal population, it is a system of international importance. An area of farmland has been acquired by the Crown to act as a buffer for this habitat. It is typical of such conservation areas that they contain a

— inevitably this would mean restricting commercial developments that caused an adverse impact to these systems.

An important catalyst to the day's proceedings was Ken Piddington, Director-General of Conservation. He noted the coastal environment was part of the heritage of all New Zealanders and supported the feeling of the workshop that under any formula which allowed the coastal estate to be traded, market realism would lead to private and possibly foreign ownership of our property, presently held in common trust.

There was also a fundamental Maori objection to moving any component of the commons from the mana of the Crown, he said.

In essence, participants felt positive moves were being made towards coastal conservation, and hopes were high that coastal administrators and all New Zealanders would adopt a more respectful approach to the beautiful and finite resource that is our coastline.

Conservation Department Director-General Ken Piddington: ***"We all need to be involved."***

Conservation success on first maritime plan.

The four Auckland Forest and Bird branches have substantially changed the Waitemata Harbour Maritime Plan. It now reflects the conservation values of the harbour. Submissions presented by Gary Taylor, Mark Bellingham and many Society members have made sure that:

- 40% of the Waitemata Harbour now has zoning to protect natural features:
- All mangroves and saltmarshes are protected.
- Important bird feeding areas were added to conservation zones around bird roosts.
- The importance of natural values at Pollen Island were recognised as more important than its value as a container port site.

Despite these achievements Forest and Bird will be appealing some aspects of the decision. We are also concerned at the Auckland Harbour Board's approach to maritime planning. The lack of informal public involvement in planning resulted in many hours of tedious hearings. This is an especially important lesson which informal dialogue could have avoided for the forthcoming Manukau Harbour Maritime Plan, where the public have literally been shut out of the planning process. However, prospects could be brighter with newly elected harbour board members and environmentalists Max Purnell and Stella Penny heading the Manukau hearings.

mosaic of values. It is typical of the coastal zone that to give prominence to one value, say farm production, is to put others at risk. Where the estate is under DOC oversight, such outcomes can be avoided.

Another effect of DOC's role will be the involvement of a large number of professional staff around the coastline who will be able to inspect and monitor the coastal zone. DOC will be geared to deal with illegal activities throughout the public estate. In the upcoming review of the Harbours Act we will be particularly keen to see the provisions relating to prosecutions simplified and made more effective.

The integration of all DOC's functions and the implications of its mission are most significant. As far as we can ascertain, there has not been created anywhere in the world a department of state with such a logical mandate.

In the marine area the Department of Conservation has already signalled its intentions to pick up its responsibilities under the Marine Reserves Act with urgency. Early in 1987 the Ministry of Fisheries will hand over its work on Marine Protected Areas Policy, Marine Protected Areas Legislation and specific regional marine reserve proposals to DOC. We have proposed that this be by means of public comment on the documentation provided. I trust that many of you will take this opportunity to make submissions.

DOC's responsibilities under the Marine Mammals Act will begin with the immediate problems for which policy will be needed as a matter of priority. In particular the thorny question of live dolphin capture will demand attention. The development of the West Coast hoki fishery is bringing fishermen into conflict with the now expanding fur seal populations, in a development parallel to the Hooker sealion/squid fishing conflict. DOC will also need to develop policy to oversee the transfer of the marine mammal stranding rescue network from MAF to DOC.

A third major area of marine involvement is that of the role of Maori Authorities in fisheries/kai moana management. We will take an active role in discussions about Maori fisheries and will also work through Maori tribal authorities in relation to Marine Reserves legislation.

Fourthly, DOC will have much work to do in establishing an effective working relationship with the other principal actors in marine management — particularly MAF but also catchment authorities, the Ministry of Transport and Harbour Boards.

In the coastal context there will be a major effort in establishing appropriate policy to deal with Harbours Act responsibilities, including licensing activities for reclamation and harbour works (including marinas), application of environmental procedures, prosecution for (and rehabilitation of) illegal works, grants of control, management of coastal wetlands and salt marshes, beach and dune areas and esplanade reserves.

There will need to be a lot of work to integrate Maori interests into all areas of policy. DOC will have an active role in the follow up to the recommendations of the Manukau Treaty of Waitangi Tribunal, looking at such issues as the appropriate ownership and control of seabed and foreshore. There is also a large amount of work to be done restoring areas of coastal estate with prospects for such activities as the planting of pingao, etc.

Most of the principal statutes dealing with aspects of coastal management are due for revision within the first two years of DOC's inception, including the Harbours Act itself. This will require considerable effort. Again DOC will approach such tasks seeking public views and the close involvement of interested groups.

In all of these areas there is a common thread and that is that DOC is the trustee or guardian, as the case may be, for the coastal commons. In all its endeavours DOC will be seeking to involve the public to the fullest possible extent. The task is large, as is the estate. While DOC will have greater ability than the previous administration to monitor and manage this special heritage, its effectiveness will be enhanced by the assistance it receives from the public that you represent. Modern Western society has shown a pronounced trend towards institutionalising its responsibilities. This trend has to be reversed in the area of conservation management of the commons. We all need to be involved and I look forward to a new form of management throughout New Zealand, in close partnership with such local groups as yourselves. Together we should perhaps take out advertisements for the coastal estate proclaiming "Watch this Space."

Plastic – not so fantastic

Take a walk around any of our coasts, especially close to major cities, and you will be sure to see one of the prime scourges of our modern consumer society – plastic debris. This appears in a variety of forms from plastic granules, polythene films and bags, detergent and other containers, chunks of polystyrene, lost or discarded monofilament and polypropylene fishing nets and floats, to synthetic strappings and ropes.

Our awareness of the dangers posed by plastic has been raised by Fisheries Research Division scientists Martin Cawthorn (a biologist) and Robert Mattlin (fisheries), who have documented a number of cases where plastic has harmed birds and sea mammals. In one instance a juvenile minke whale died near Wellington and was discovered to have had a polythene bag in its oesophagus. The scientists also report on fur seals seen with plastic strapping around their necks.

Late last year a visiting American scientist, John Twiss, said that as many as 50,000 fur seals a year were being lost through becoming entangled in such rubbish, and anywhere between 300,000 and 700,000 seabirds a year were being killed.

This issue has placed the Society in a dilemma over the packaging of its magazine. A shift was made to plastic wrapping because it keeps the magazine in better condition, especially in rain, and because it is a good deal cheaper than manilla. If you feel strongly about this matter, please write to the Editor at PO Box 631, Wellington, with your views.

Northern branch shows the way

Our new Northern Branch at Whangarei has already emerged with two conservation initiatives to its credit. They successfully negotiated with a major trucking company to stop reclamation of an important stretch of mangroves on the city edge. Notices have now been erected prohibiting illegal dumping and the Harbour Board has been approached to revoke its approval for the reclamation over the sensitive area.

The branch has also joined with local Maori tribal elders and the Historic Places Trust in a bid to gain better management of a now heavily grazed 50-hectare island in the middle of the Whangarei Harbour.

A draft proposal from the groups has been put to the Harbour Board who own the island, seeking reserve status with a view to a community-sponsored restoration programme. This will involve protection of the island's numerous historical and archaeological features, and revegetation of the remainder for a public reserve.

Molesworth – who profits?

On January 22 the Deputy Prime Minister, Geoff Palmer, Conservation Minister Russell Marshall and Lands Minister Koro Wetere visited the 182,000 ha publicly-owned Molesworth Station in Marlborough to take a first hand look at this controversial area. Featured in our November 1986 magazine, Molesworth was one of a number of areas over which the Department of Conservation and Landcorp were vying for control. At the time of writing (mid January), it appeared that all but Molesworth were in the hands of Landcorp.

Recently the Society employed a professional accounting analyst to look at the financial overview for Molesworth, published in the Molesworth Strategy Plan and claiming a $6 million accumulated profit for the station.

The analyst described the overview as a "flight of financial fantasy" which was one of the "worst examples of creative accounting" he had ever seen. In claiming the $6 million profit, the overview was considered to break the golden rule of prudent accounting by anticipating profits on unrealised gains. It includes in its so called "profits" an increase in the value of the station itself, despite the fact that Molesworth is supposedly not for sale. If this is disallowed, the profits are more than halved.

Sinking feeling

In secret negotiations in December the last unprotected area of the Kaimaumau Swamp, in Northland, was handed to Landcorp and lost from public ownership.

The 600 ha block is an important part of the wetland complex, linking the internationally important Rangaunu Harbour with the Kaimaumau Scientific Reserve. A survey this summer has found a high density of the rare Northland green gecko in the block, the largest population left outside the Te Paki Farm Park. The block also has:

- the largest New Zealand colony of the rare duck orchid;
- an internationally unique wetland that grades from mangroves to gumland bog vegetation;
- populations of fernbird, marsh and spotless crake.

The block is semi-tidal, and if drained the peatland would shrink down. Most of this potential Landcorp farmland would then be below sea level!

Biological treasure trove

In January a scientific expedition to Southland's Eyre Mountains was led by Society President Dr Alan Mark and included Conservation Director Gerry McSweeney. Focusing on the 34,000-ha Eyre Creek-Canaird Crown land block, the expedition discovered an extraordinary biological treasure trove. Unfortunately, unless there is major public protest, the area will soon be under the control of Landcorp.

The greywacke Eyre Mountains are sandwiched between Otago's schist mountains and Fiordland, and have long been regarded as home to unusual plants and animals, but have been little explored scientifically.

A large population of rock wrens, one of the few recorded away from the Southern Alps, has been discovered, a large number of dotterel are present in the tussock lands and parakeet have been discovered in the extensive beech areas of the property. Rock wrens in particular are a species which are becoming increasingly rare.

Some of the plant distributions are rare; the mountain daisies *Celmisia philocremna* and *Celmisia thomsonii* are restricted to the Eyre Mountains within the Crown land block.

More than 60 percent of the block, which extends up to 2000m altitude, is severely eroded and eroding land where Government policy precludes grazing, while much of the balance has significant natural values. No land allocation should be made until all the area's values have been assessed.

Coromandel mining deal reneged.

A crisis has developed again over mining on the Coromandel Peninsula. The mining companies group, the Mineral Exploration Society, has repudiated an agreement to restrict mining north of Thames and Tairua.

This agreement late last year between conservation groups, the Mineral Exploratior Society, Mines Division and the Thames-Coromandel District Council sought to control mining in environmentally-sensitive areas on the Peninsula. Forest and Bird's Coromandel branch has actively supported the stand by the district council to control mining, through the district scheme.

With the breakdown in the agreement, Coromandel conservation groups have resolved to use passive methods to physically prevent mining in sensitive areas. The present inability of the Mining Act to take account of environmental problems is being exploited by the Mineral Exploration Society.

Conservation Staff

Unfinished Business in WESTLAND

by Society Conservation Director Gerry McSweeney, West Coast field officer Kevin Smith and Native Forest Action Council scientist Peter Grant

Last November in a decision welcomed by conservationists the Government approved the protection of 137,000 hectares of new reserves and Paparoa National Park. They also required the Director-General of Forests to call for public comment on a further 20 reserve proposals totalling 57,000 ha.

Because of confusion over maps, these reserves were not advertised for public comment in the preliminary Blakeley report as required by the West Coast regional scheme. However, most of them had earlier been well documented in Government and conservationist scientific reports or were the focus of major historical restoration and interpretation work by the Forest Service. The proposals were split into three categories:

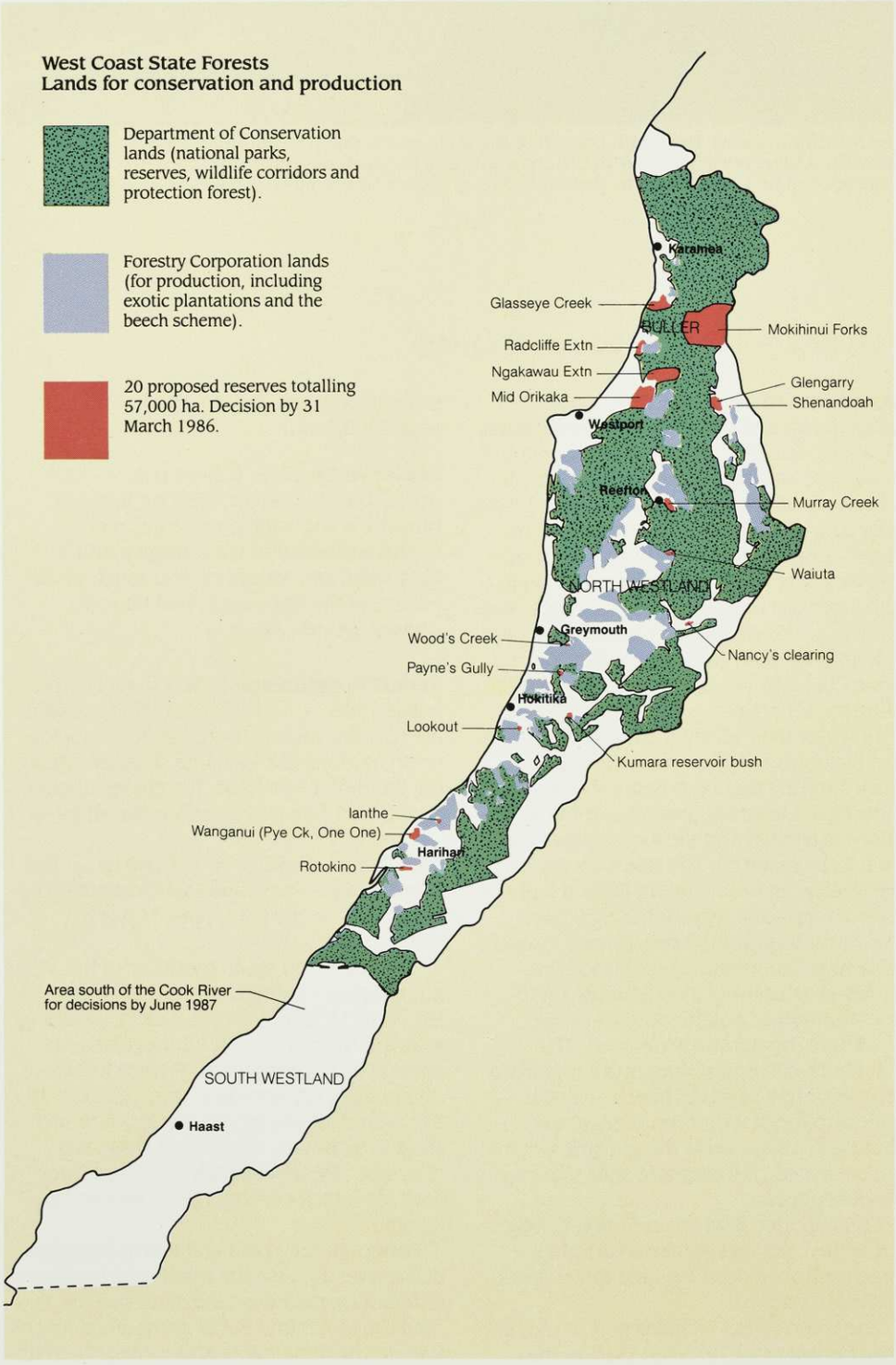
(1) **Native forests** in lowland valleys and on coal measures and limestone primarily in the Buller. First proposed as ecological reserves (ER) by the joint campaign on Native Forests, Wildlife Service and DSIR as early as 1977, reservation of these areas would complete representation of the diverse ecosystems of the region.

(2) **Wetland areas** mainly in Central and South Westland, sought for protection as wildlife management reserves (WM) by the Wildlife Service and conservation groups to safeguard our fast dwindling fertile swamps which have been largely destroyed elsewhere by farm drainage.

(3) **Historic sites and scenic backdrops.** These areas have been proposed by the Forest Service as amenity reserves (AR) to recognise and protect from insensitive development Westland's goldmining relics and scenic views behind main roads.

Many of the reserves include areas of intractable swamps and forest modified by past mining with no development potential. However, five of the reserves in the Buller region totalling 47,970 ha in area do contain some potential production forest. They are therefore likely to be controversial, even though the Government's West Coast Accord guarantee timber supplies for Buller sawmills from areas OUTSIDE the newly created reserves and the new reserves proposed here.

The Government is due to decide the proposed reserves' future by 31 March of this year. Public support will be crucial if these superb areas are to be protected. Otherwise they will be alienated to the Forestry Corporation and logged.



Just south of the Wangapeka Saddle in the Karamea region lie these limestone/mudstone plateaux, part of the fascinating Matiri Range in the proposed 37,000–ha Mokihinui Forks ecological reserve. The Misery Plateau here leads on to the Haystack (5076 ft); to the right can be seen the beginning of another plateau, the Thousand Acres Plateau. *Photo: Guy Salmon*

The Mokihinui Forks, the South Branch to the left and the North to the right. From here the Mokihinui River makes its way to the coast midway between Westport and Karamea; the Tasman Sea can just be seen in the distance. This is superb tramping country. *Photo: Guy Salmon*

The Reserves and their features

Ngakawau extension ER (3,700 ha — native forest and coal measure shrublands). This area was first proposed for reservation in 1977 as part of a large Ngakawau basin reserve including both state forest and state coal land. In 1986 the Government's Protected Area Scientific Advisory Committee (PASAC) approved reservation of the state forest portion of the basin. Perceived tenure complications dissuaded PASAC from considering the other portion, the Blackburn State Coal Reserve (BSCR) controlled by the Ministry of Energy.

However their recently completed coal exploration survey has confirmed earlier work showing that no areas of interest to State Coal Mines are present within the proposed extension and the way is now clear for it to be reserved. The BSCR covers half the Ngakawau basin and includes a flight of forested terraces. Nearest the Ngakawau river these support tall beech-rimu forests while vegetation on higher terraces becomes progressively more stunted up to rare unmodified pakihi swamps on the Blackburn/Ngakawau watershed. The Blackburn catchment supports a regionally unique variety of mixed beech — cedar — podocarp forest with rimu particularly abundant. This reflects the unusual wet and impoverished coal measure soils that cap the coal plateau.

Great spotted kiwi are common throughout while kaka and parakeet with their large territories need lowland forest areas like this to survive.

The reserve also includes part of the historic mining track between Lyell in the Buller Gorge and the Mokihinui coal mine near Seddonville.

Glasseye Creek E. R. (2,000 ha — proposed 1986 — native forest on lime and mudstone and habitat of a rare snail).

This extension to the Karamea Bluffs ecological area would protect much of the habitat of the large land snail *Powelliphanta lignaria lusca.*

Radcliffe extension E. R. (450 ha — proposed 1986 — native forest). This is a wildlife corridor linking two existing ecological reserves along the Radcliffe ridge overlooking the Buller sea coast. It includes uncommon beech-free podocarp hardwood forest.

Mokihinui Forks E. R. (37,000 ha — proposed 1981 — Lowland forest extending up to tussock on the flat topped Matiri plateau).

The north and south branches of the Mokihinui river join together in the broad valley of the Mokihinui Forks, before travelling seaward through the Mokihinui Gorge to emerge near Seddonville. Terrace forests of outstanding conservation value line the valley, with those bounding the South branch classed by Botany Division of DSIR as a "key site" for silver beech dominant forest with red beech and emergent rimu and kahikatea.

Forests in the North and South branches of the river are also the main habitat of two different carnivorous land snail species. Behind the Mokihinui Forks unmodified forest rises to the remarkable Matiri range with its conical peaks and layered ridges rising from great uplifted limestone plateaux. Formed under ancient seas in the Tertiary era, these plateaux have since been uplifted, eroded and broken by earthquakes into their present shapes. The Matiri Range forms the most outstanding landscape in New Zealand where calcareous Tertiary limestones and mudstones occur extensively above the bush line. This unique landscape with its broad tussock lands, shrublands, forests and herbfields supports 437 species of plants, more than any other area of comparable altitude in New Zealand.

Mid Orikaka E. R. (6,820 ha-proposed 1979 — Exceptional beech forests and stunted coal measure vegetation).

The Forest Service first proposed this area for protection and their recommendation was endorsed by their reserves advi-

sory committee. It included a complete sequence of forested landforms from the Lower Buller Gorge Scenic Reserve to the top of the Glasgow Range, along the entire length of the Orikaka River. The deletion of the central portion of the reserve, considered by PASAC in 1986 to be unnecessary in view of its other recommendations in the region, interrupts this reserve sequence and excludes two key features absent from other reserve in the region.

These include the exceptionally well developed communities of red, silver and hard beech (with and without podocarp species) in the mid Orikaka. These mixed beech forests have the highest biomass recorded by the Forest Service in the West Coast.

The other outstanding feature is the Tiger Pakihi, containing unmodified stunted vegetation on soils formed from coal measures. Elsewhere this stunted vegetation has been severely modified by coal mining on the Stockton plateau. Blue duck are present in the Orikaka as are all native forest birds including great spotted kiwi.

Shenandoah A. R. (50 ha); **Glengarry A. R.** (830 ha) are both forested hillsides near the junction of the Maruia and Buller rivers. They would protect scenic views alongside the Shenandoah highway, and were proposed by the Victoria Forest Park Advisory Committee.

Murray Creek A. R. (2,300 ha) and **Waiuta A. R.** (1,200 ha) are very important goldmining historical sites proposed as reserves by Forest Service. Goldmining tracks have been superbly restored by the Forest Service who have encouraged recreational use of these areas and fostered public appreciation of the hardships and highlights of quartz reef mining of bygone days.

Woods Creek A. R. (380 ha) covers goldmine workings near Greymouth with walks developed by Forest Service through a fascinating maze of trenches and tunnels now covered in a mix of regrowth and virgin rimu forest.

Nancy's Clearing E. R. (400 ha — proposed 1981). Kahikatea forest encircles a privately owned flax swamp known as Nancy's Clearing, which is outside the reserve proposal. Kahikatea forest and flax swamps are now very rare in the northern South Island because of farm development. Fortunately the Nancy and Ahaura rivers blocked access to these forests.

Unlike many kahikatea stands that are isolated and little more than museum pieces, this stand is continuous with beech forest on the range behind down to the river banks. The Wildlife Service recommended

reservation of this forest in 1981 as an important seasonal food source for forest birds and as a rare example of a once widespread wetland habitat.

Kumara Reservoir bush W.M. (830 ha — lowland podocarp/hardwood forest). This forest contains a mosaic of regenerating cutover terrace forest and unlogged stands of rimu, miro and kahikatea. The forest is rated by the Wildlife Service as a significant regionai wildlife habitat in a region where there is little such forest remaining after more than a century of bush clearance.

Lookout Forest W.M. (300 ha — terrace edge forest).

A small remnant of unmodified rimu — miro forest along an escarpment above the Hokitika River sought for reserve because of its wildlife and scenic values. It contains a range of common forest birds and a little shag colony.

Paynes Gully W.M. (240 ha — freshwater wetland).

A remnant of unlogged forest on hillslopes adjoining the Paynes Gully wildlife management reserve. The reserve covers swampland on a flat beside the Taramakau River.

Ianthe E.R. (230 ha — dense terrace rimu forest).

The only sizeable remnant of unlogged forest in the large lanthe Forest, the rest of which is now being clearfelled to meet contracts to mills at Hokitika and Harihari. The University of Canterbury Forestry School and the Forest Service are very keen to reserve this education area because it has been used since 1971 for ecological research by students from their nearby lodge. It also contains special ecological features including:–

- The only known locality of yellow silver pine *(Dacrydium intermedium)* between Hokitika and Okarito.
- The southern limit of a rare fern *Hypolepis distans.*
- It is a refuge for robin of particular importance because the rest of lanthe Forest is being clearfelled.

Wanganui W.M. (320 ha); **One One Creek W.M.** (810 ha); **Pye Creek W.M.** (30 ha — wetlands).

South Westland's rivers meet the sea in flax-lined lagoons surrounded by great kahikatea forests. The Okarito and Saltwater lagoons and the Waitangiroto white heron colony are the best known areas, however further north the Wanganui and Poerua river mouths are also a maze of flax swampland, virgin and regenerating kahikatea and kowhai.

In places along the Wanganui riverbank, kahikatea form a magnificent wall of closely spaced trunks — a rare sight in New Zealand today. The impressive view from the coast across forests to the Southern Alps is regarded by Harihari locals as one of

Looking south to Mt Berners across the Blackburn State Coal Reserve (Ngakawau proposed reserve). The unmodified pakihi (stunted shrubland) in the photo covers the flat topped divide between the Blackburn Stream and the Ngakawau River. Recent coal surveys have shown no deposits within this area, and depending on public support it should now be protected. *Photo: Guy Salmon.*

Glasseye Creek is the type locality of this beautiful striped land snail *Powelliphanta lignaria lusca*. It is restricted to the Northern Karamea bluffs, and the proposed Glasseye Creek reserve would maintain a viable population of this special snail, as well as link with other reserves to the south. This snail is about 60mm in diameter. *Photo: Kath Walker*

Not as exuberantly coloured as its relative, *Powelliphanta lignaria unicolorata* is a protected land snail confined to the wet, calcium-rich forest floor beside the South Branch of the Mokihinui River. It grows to about 40mm in diameter. Similar forests on the north branch of the Mokihinui are the main habitat of another giant land snail, *Powelliphanta lignaria ruforadida*. *Photo: Kath Walker*

the finest in the country. It is rivalled only by coast to mountain river mouth views further south which each of the respective local communities at Whataroa, Okarito, and the Glacier townships also regard as being the best in the world!

Many people use the Wanganui River mouth. They gain access by a County road to within 2km of the coast. From there the Forest Service have developed a superb walking track down river and south along the coast over a low moraine to the Poerua river.

Both rivers are important whitebait fisheries. The whitebait are dependent on the extensive swamps within the proposed reserve while swamps are important for wetland birds including bittern, fernbird and crake. Fruit and nectar eating tui, pigeon, bellbird and kakariki delight in feeding on kahikatea and kowhai in season.

PROPOSED RESERVES NEED YOUR HELP NOW

All these proposed reserves have been surveyed and comprehensively documented in scientific reports. However, they are not just "scientific" proposals. Each area also has immense scenic and recreational value. Already many of the areas, including the well developed historical areas, are well used by visitors and local people. The region's timber industry now has a guaranteed future in logging native forests outside the proposed reserves until exotics come on stream in the early 1990s and in expansion into a small scale beech scheme (from outside the proposed reserves).

There is no need therefore for any of the 20 proposed reserves to be logged to safeguard mills or jobs.

The Coast economy is expanding in tourism and recreation development spurred on by the new Paparoa National Park, World Heritage status for Westland National Park and the superb network of walkways and recreation areas throughout the province.

Protection of all 20 proposed reserves will add to the region's natural scenic and recreation attractions and is supported by the majority of New Zealanders who view our surviving natural areas as a heritage to be cherished.

DEMONSTRATE YOUR SUPPORT FOR THE RESERVES. ACCEPT THE DIRECTOR-GENERAL OF FOREST'S INVITATION AND WRITE TO HIM URGENTLY (N.Z. FOREST SERVICE, PRIVATE BAG, WELLINGTON) *BEFORE 28 FEBRUARY* SAYING WHY YOU WANT ALL THESE 20 AREAS PERMANENTLY PROTECTED. Please also send copies of your letters to us at P.O. Box 631, Wellington.

Mt Hikurangi

Alpine Bastion of the North

by **Ron Adams**

"Make it memorable". These words have stuck with me as the mark of a good school field trip. Pupils these days are privileged with a variety of outdoor experience — sports and cultural trips, adventure camps and field studies. Parents and pupils are asked often to dig deep to finance trips and may question the value of getting out into wilderness areas to experience and appreciate their diversity and beauty.

As New Zealanders we should have little trouble organising memorable field trips; our land still has many unique pristine habitats which can provide excellent once-in-a-lifetime memories. Uniqueness is a sound and basic idea in the presentation of conservation and exploring unique places makes trips memorable. Let me take you to such a unique place.

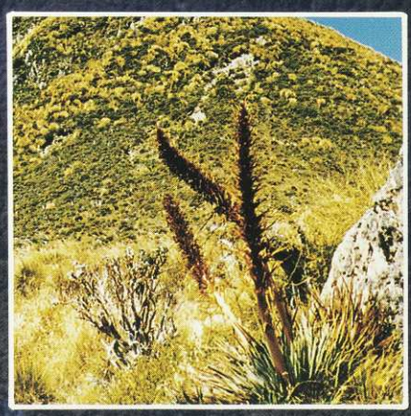
At the northern end of our mountain axis lies the fifth peak in the North Island, often assumed to be the first place in 'the world' to see the sun. This claim is based on the height of Mt. Hikurangi (1752m) and its nearness to the 180th Meridian and International Date Line. However, precise calculations taking into account longitude, latitude, elevation and time of year, suggest that high points on Mahia Peninsula and certainly some offshore islands (Chathams, Bounty and Antipodes) may see the rising sun first during the summer solstice.

Field trips provide young people with the conservation awareness that will help preserve special places such as Mt Hikurangi for future generations. Left to right: Justine Bird, Jason Walker, Philip Jones, Kelly Eagles, Debbie Bakker, Ritia Henry. *Photo: Ron Adams*

Fortunately the uniqueness of Hikurangi need not rest solely on this claim. None the less, the rising sun really does produce an imposing shadow reaching high into the western sky on a hazy morning, for Hikurangi is a tilted buttress that stands alone against a backdrop of the main Raukumara Range of which it is a part. The meaning of 'Hikurangi' is sometimes given as 'fishtail in the sky' (Hiku, tail of a fish; rangi, sky), a description similar to that given by Cook in October 1769 when he called it a 'remarkable double peak'.

Amazement stirred

As our school minibus enters the Tapuaeroa valley five bumps of land stand tall (and very distinctive when mantled in winter



The speargrasses *Aciphylla colensoi* and *A. squarrosa* have their northern limit on Mt. Hikurangi. They share this distinction with a number of other alpine plants. *Photo: Ron Adams*

Mt Hikurangi, 1752m, occupies an important position in Maori history. This impressive East Cape mountain was said to have been the first land to rise up to the light of day. According to a Tuhoe legend recorded by Elsdon Best, the canoe of Maui, named Aotearoa, lies on the summit of Mt Hikurangi. *Photo: Lloyd Homer, DSIR Geological Survey*

snow) above the surrounding lowland. They are Taitai (700m) in the foreground, Wharekia (1106m), Aorangi (1272m) the steep southern slopes of which form the Aorangiwai Scenic Reserve, and Honokawa (Whanokao, 1618m) which flank as it were, the more massive and central Hikurangi. The geology of this area is a source of intrigue and apparently not well understood; hard weathered sandstones overly the softer siltstone and mudstone (papa) sediments which typify the East Coast. The scenery looks unlike anywhere else in New Zealand.

An environment like this stirs up amazement and evokes the questioning mind — of young and old alike. Such thoughts are seeds that generate both the ideas necessary for a good field study and also the appreciation and conservation mindedness necessary to preserve these monuments for future generations.

The long walk up to the Gisborne Canoe and Tramping Club hut at 1100m from 200m in the valley below, is across land ex-

tensively farmed by Pakihiroa station. It is dominated immediately to the east by the sparsely vegetated conical rock and surrounding apron of unfenced indigenous forest which makes up Wharekia. Westward, the view of Whanokao bluffs and alpine shrubland colours slowly takes on an enormous silhouette as we rise above the low ridge separating us from that mountain. Above the 100m contour 4 km of northern rock face forms steep bluffs and scars interlaced with threads of leatherwood and speargrass. Half a kilometre of montane forest (100 percent silver beech canopy) separates the farmed land and the alpine scrub that predominates to the summit itself.

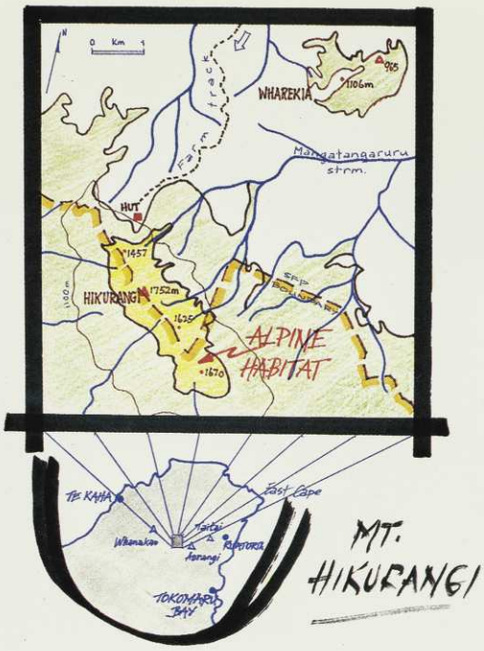
Our studies at Mt. Hikurangi centre on silver beech and mass movements of the rocks and soils, so we have occasion to climb the 200m to the timberline several times and also survey speargrass distribution and species diversity among the alpine shrubs (checking out statistical methods we learned in class). Living at this altitude, we are building up an affinity for the land and plants here. We readily sense differences in aspect and altitude ourselves, and have a birds-eye view of the surrounding land. We learn to interpret the land: the growth forms of plants and the shapes of valleys and ridges. We begin to see patterns in the ecology of these plants and movements of the land, and wonder if we are on the right tack. Finally we can do some counts (and measuring), have a closer look, and check ourselves out.

Writing by candlelight

Evenings see us crowded around the small table by candlelight for 2–3 hours writing it all up and reading material we have brought with us to help. Never did we each fill three quarters of a 1B5 Exercise book in three days before.

Steadily we are gaining an overall impression of the features which make our study area unique. Being the most northerly habitat for truly alpine flora in New Zealand (montane flora and some alpine species inhabit Te Aroha and Moehau further north) Mt. Hikurangi is the abrupt northern limit for many alpine species. Some of the large alpine flowers like the foxgloves *Ourisia macrophylla* and *O. caespitosa, Gentiana bellidifolia,* Edelweiss, the speargrasses *Aciphylla colensoi* and *A. squarrosa* have their northern limit here. Apparently the forget-me-not *Myosotis amabilis* is confined to broken shingle on the summit of Mt. Hikurangi. Leatherwood and snowgrass also have their northern limit here. So also do the montane plants *Olearia ilicifolia* and mountain beech.

Since Mt. Hikurangi is the place in New Zealand where the timberline reaches its highest altitude, and Latitude 38°S generally marks the southern limit of so many of the subtropical elements in our flora, it would not seem unreasonable to expect some of our northern species to reach their greatest altitudes on this mountain. According to botanist Peter Wardle, four of our beech trees (*Nothofagus fusca, menziesii, solandri, s. cliffortoides*) are found together on Mt. Hikurangi and the fifth (*N. truncata*) is present on the neighbouring slopes of Whanokao.



In view of these known records alone we are surprised that some form of permanent protection has not already been secured for this unique mountain.

No beech seedlings

We further check out the effects of humans on this part of the biosphere (as the form 7 biology prescription dictates) and are amazed by what we see. Beech trees normally have about two good seed falls every ten years and this season is an excellent one, yet on the forest floor we are hard pressed to find any beech seedlings at all from previous years' seed, even where there has been windthrow and sufficient light penetrates the forest floor. Cattle tracks are very evident throughout the silver beech and through the alpine shrubland. Through the leatherwood, cedar and divaricating coprosmas on the southern slopes of the mountain there is a maze of these tracks 20cm deep. Within 300m of the summit we disturb three sheep. Experience tells that such destruction of this unique alpine habitat will lead to accelerated erosion. Indeed, in 1947, a fire swept through most of the scrub on Hikurangi's western slopes. This caused such severe erosion that a tarn was completely silted up within four years. Unfortunately this author had hoped that if the Raukumara Range became a Forest Park (it was gazetted in 1979) all of its unique vegetation types be preserved from fire, and other damage.

In his description of a walk in to Hikurangi mountain in 1897, botanist James Adams relates "that the way up the mountain is over a landslip, and that save in the stream itself the soil is so loose that it makes the ascent difficult and the descent in some places really dangerous. The mountain itself seems to be rapidly falling away. Large slips appear on all sides of it, ending abruptly in precipices." The situation is not improved; the land here is very unstable, and depends on continued vegetation cover to remain intact.

In addition to the erosion being initiated by livestock, it is apparent that the alpine vegetation is also being selectively grazed, the more succulent plants being cropped and the less palatable ones gaining dominance. No fences separate the farmed land below 1100m from the forest or from the alpine vegetation. Further to this anomaly, the summit ridge of Mt. Hikurangi marks the boundary between the Raukumara State Forest Park to the southwest and the freehold land of Pakihiroa station to the northeast of the ridge. This must mean that half of the unique alpine ecosystem is legitimately grazed anyway.

Though no fence prevents cattle from entering the S.F.P., the NZFS has recently announced its intention to begin another wild animal control programme in the Park. It is acknowledged that "the cattle are having a detrimental effect on the forest understorey, notably in the . . . Tapuaeroa valley and Mt. Hikurangi." Reasons given why past culling of feral cattle was not continued were largely economic ones: "the meat was unsaleable" the article said.

Recently, however, the State Forests Scientific Reserves Advisory Committee have expressed concern about the damage being caused to vegetation by livestock and at the evidence of accelerated soil erosion probably caused by this grazing pressure. The committee has recommended ecological area status for the State Forest portion of Mt. Hikurangi and I have been assured that investigations with the landowners on various methods of protecting land above 1300m are being made.

The field work has come to an end. On returning home, young minds struggle to come to terms with conflicting ideas concerning a fleeting experience and lasting memories; concerning the grandeur of an ancient environment and the future rapid changes to that environment through continued grazing, possible clearing, erection of translators; concerning the enjoyment and learning experienced and the uncertainty that the same experience will be there for their children.

To all visitors of Mt. Hikurangi today, the flora, fauna and natural landforms are not only unique but are of national importance and represent a coveted part of our national heritage. To the Ngati Porou of the East Coast, Hikurangi is also their mountain, their mana and much of their legendary past.

The name Hikurangi is an ancient one that occurs in mythology; in the paridisial land of Hawaiki there is a mountain named Hikurangi which the light rests upon, a place of eternal life where death is unknown. In Aotearoa many prominent peaks were called after this first tapu mountain, with the mythic Hikurangi and the local one being closely associated or perhaps completely identified. Certainly this happened with Mount Hikurangi on the East Coast . . . In the 1930s a Pakeha trader travelling near this mountain found that the countryside round about was so seldom traversed as to be pathless, its only inhabitants innumerable birds and lizards that were believed to be spirits. As well, the summit was thought to be the home of a solitary moa, which stood there on one leg and fed on only the wind. (from The Natural World of the Maori, *by Margaret Orbell (Collins).*

I write this with anticipation that some form of permanent protection such as the maintenance of adequate fencing adjacent to the indigenous forest or adequate boundary fencing at least can be agreed upon and be assured for this northern bastion of New Zealand's alpine plants.

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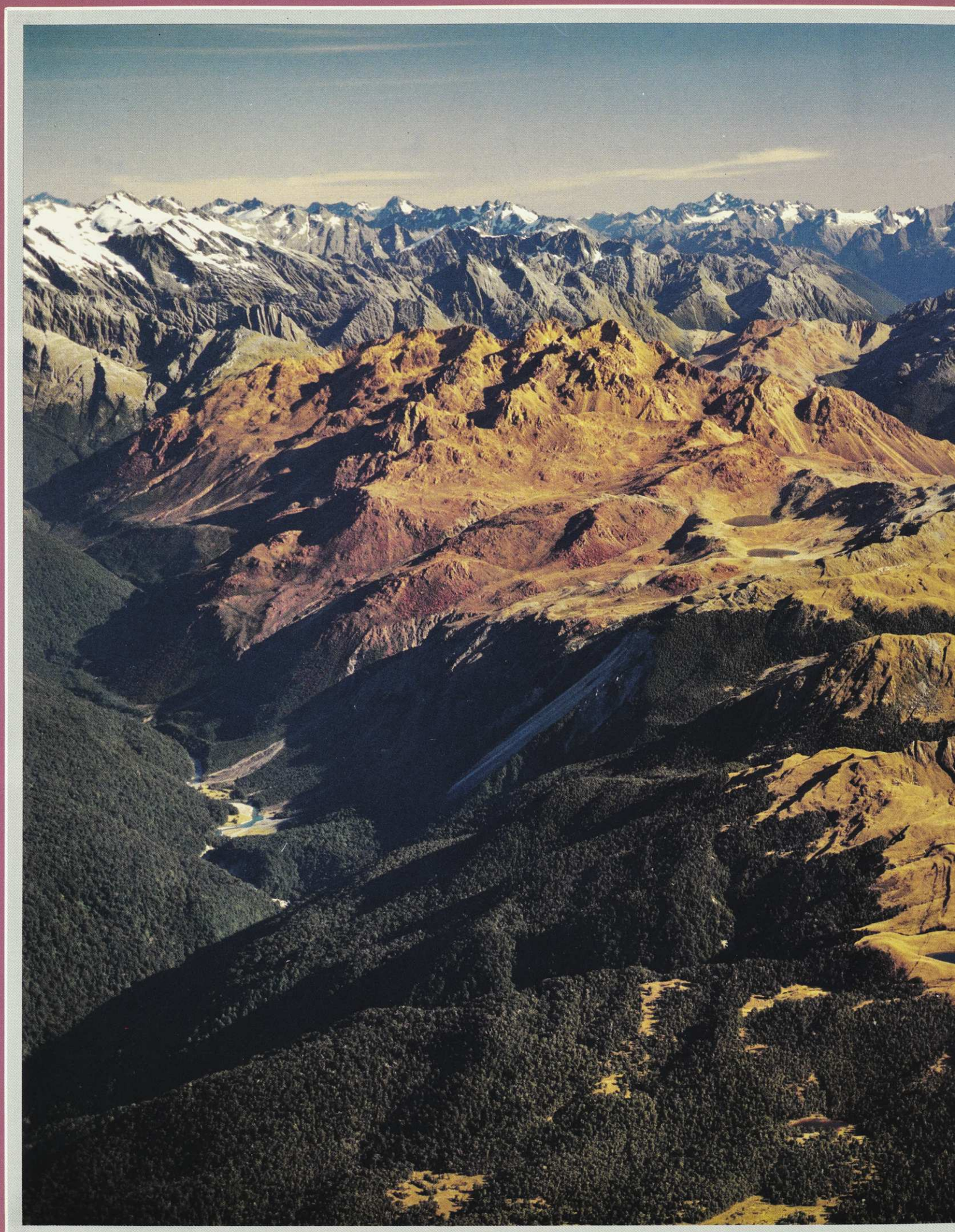


Long sought after as an addition to the adjoining Mt Aspiring National Park, the Red Hills fascinate scientists and adventurers alike. In the early 1970s a mining company attempted to push an illegal road into the area in search for asbestos, but a public outcry led by Federated Mountain Clubs halted it. The Upper Cascade River is to the left and Mt Tutoko (2746 m) to the right. *Photo: Lloyd Homer, Geological Survey, DSIR*

The RED HILLS

The final round?

In mid-October 1986, the Department of Lands and Survey released its "Resources Report on the Red Hills" — four years after the National Parks and Reserves Authority asked it to investigate the proposal to add 27,000 hectares of the spectacular Red Mountain and Northern Olivine Range area to Mt Aspiring National Park. The Society shares the concern of Federated Mountain Clubs that this unique landscape needs national park protection.
Les Molloy, ***long-time recreational and scientific advocate for the conservation of the area brings readers up-to-date on the issue.***

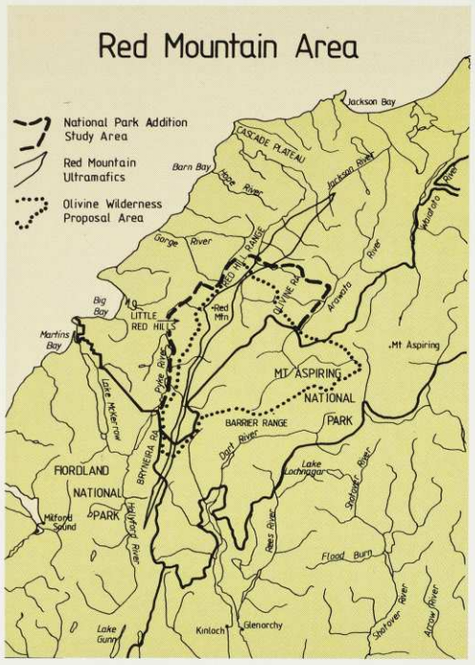
Mount Aspiring National Park, New Zealand's 10th national park, was formed in 1964 after an intensive campaign by Otago citizens for a park which protected the schist mountains in the north-west of the province. The Otago section of the NZ Alpine Club, and the Federated Mountain Clubs of New Zealand, played a major role in this campaign. It was hardly surprising then that the initial park was confined to the most spectacular parts of the schist mountains of the Southern Alps — from Haast Pass in the north-east to the Humboldt Mountains at the head of Lake Wakatipu.

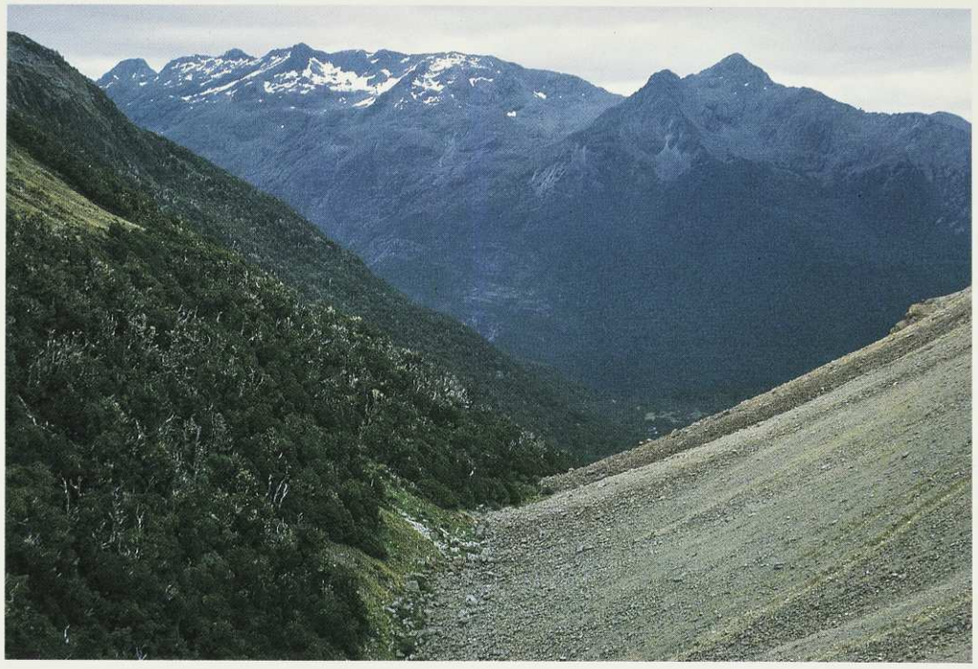
These original park boundaries were chosen to avoid any possible conflicts with other land use interests, such as:

- **pastoral runholders** in the adjoining Dart, Reed, Matukituki, Makarora and Arawata valleys;
- **The Forest Service** who administered large areas of montane and lowland forest to the west (Arawata, Cascade and Pyke State forests).
- **The mining industry** which was interested in continuing prospecting for minerals in the Red Mountain area to the west of the Olivine Range.

Previous additions to Mt Aspiring National Park

To the disappointment of the park advocates, the 200,000 ha park designated in 1964 had a rather unsatisfactory western boundary, which stopped about 5km short of the 'mineral belt' and thereby excluded any of the ecologically interesting ultra-





The dramatic contrast between ultramafic rocks and schist is demonstrated in this photograph, showing silver bech on schist (left) and ultramafic scree (right). *Photo: Les Molloy*

mafic rocks, soils and vegetation.

The park also insufficiently represented the grasslands of the main valley floors and the diverse lowland forests of the western slopes. Subsequently significant areas of montane beech protection forest were added however, and brought the park up to 287,000 ha by 1971; but the park board and the departmental administration were still dominated by the thinking of Otago mountaineers, for they were still slow in getting the park extended to the extent that it protected the full range of ecosystems and habitats in NW Otago and Westland south of the Haast River. 'Scenic grandeur' was still considered to be the predominant criterion in deciding whether or not to confer national park status. Unfortunately, the board and the department lacked the scientific resources to document the case for an ideal park, truly representative of the landforms, vegetation and wildlife of this remote corner of the South Island. Nevertheless, there have been some valuable piecemeal additions to the park since then:

- a small 2000 ha sector of the mineral belt around Fiery Peak in 1972;
- the compulsory resumption from the Mt Earnslaw pastoral run of the magnificent Mt Earnslaw and the Forbes Range in 1973 (9250 ha);
- the west bank of the Dart in 1982; and
- the Haast Range (only down to 200m, thereby excluding the floor of the Arawata Valley) in 1986.

The Call of the Wild

In addition to the spectacular red mass of Red Mountains, the proposal includes some outstanding mountain and valley scenery:

- the rocky spine of the northern Olivine Range between the Retreat Pinnacles and Bald Mountain;
- the wild upper reaches of the Cascade River, including its source in the Limbo Glacier, the Cascade Gorge and the impressive Durward Falls where the entire river plunges 50m over an escarpment formed by the Livingstone Fault;
- the rolling tussocklands of the Gorge Plateau at the northern end of the Red Hills Range; the plateau is covered with tarns and parallel slumps caused by fault movement along the adjacent Alpine Fault which can be seen as a great rent in the landscape running south from the escarpement along the Duncan River.
- the hanging valleys of the Trinity, Sealy, Crescent, Barrier, Diorite and Olivine tributaries of the Pyke River.
- the tall podocarp forest and wetlands of the middle reaches of the Pyke River (including Lake Wilmot).

Olivine Wilderness Area

Most of the area has superb wilderness character and is an integral part of a long-standing proposal for an Olivine Wilderness Area. This wilderness area was first proposed in 1959 by the NZ Alpine Club and FMC, and eventually incorporated into the Mt Aspiring National Park management plan. The full proposal for a 44,000 ha Olivine Wilderness Area (approximately 50:50 inside/outside the current park boundaries) was formally proposed by FMC at the 1981 Wilderness Conference (Molloy, 1983b). The proposal has wide support in recreation, park management, and government circles; it is centred on the Olivine Ice Plateau and is well buffered in the west by the middle reaches of the Cascade and Pyke valleys. The boundaries of the proposed Olivine Wilderness Area are shown on the map. This is one of a small number of wilderness areas which have been proposed to try and keep at least about two percent of New Zealand's landscape in as primaeval a state as possible. People are free to recreate in wilderness areas — but on nature's terms, without huts, tracks, bridges and mechanised transport.

The Red Mountain/Northern Olivine Range Proposal

With the passing of the new National Parks Act in 1980 the emphasis shifted from scenic grandeur alone, to also include scientific importance and ecological representativeness as criteria for additions to existing parks. The way now seemed clear for the new National Parks and Reserves Authority (NPRA) to evaluate the earlier Red Mountain/Olivine Range addition proposals which had been put to the former National Parks Authority (Molloy 1977, 1979). Additional support was provided by the release of the Mt Aspiring National Park management plan in 1981, for the plan supported the extension of the park to the west. But once again the idea began to founder on the rocks of mining industry intransigence, regional/central government rivalries and Ministerial ineptness (Molloy 1983a). Eventually the NPRA called for a full investigation of the addition proposal at its September 1982 meeting; this "section 8 investigation" was of some urgency and was to involve the public fully in the evaluation of the proposal.

Departmental Resource Report

Once again, however, the Red Mountain saga had to involve another chapter, with the main characters having to journey off into the wilderness of more urgent, and controversial, national park issues — particularly Okarito/Waikukupa, Waitutu and Paparoa/Punakaiki. Now, over four years later, the resource report on the Red Hills addition proposal has been released for public comment (Lands and Survey, 1986). Although the report is fairly balanced it is

Looking north along Gorge Plateau and the alpine fault down the Cascade River, with clouds spilling over from the Jackson River. *Photo: Les Molloy*

curiously out of date in its failure to appreciate that most of the lands of the Crown that are involved in the proposal will now be administered by the new Department of Conservation. Consequently arguments such as excluding the Pyke Valley from the national park in order "to avoid dual administration" (Forest Service/Lands and Survey) just don't apply any more.

The departmental report does not cast any doubt on the NPRA's view that the land in question is of national park quality. It concludes that the "bulk of the study area is suited only to protective and recreational uses," and that "a high level of protection is appropriate for this large part of the study area". On the basis of the known interest group constraints and preferences, it evaluates seven possible boundary options; unfortunately six of them result in additions smaller than the 27,000 ha proposal. Nowhere does the report objectively try and assess whether a larger addition involving state forest (such as, including the Skippers Range and Awarua Bay) would be preferable.

Society members can make up their own minds on the ideal boundary for the proposed addition. The scientific and recreational points of interest in the proposal addition are summarised opposite. Submissions on the report should reach the Commissioner of Crown Lands, Department of Lands and Survey, P.O. Box 896, Dunedin, by 23rd February 1987. Late submissions will be accepted.

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A Unique Landscape

The term "ultramafic" is used to describe the geology of unusual areas where the rocks contain high concentrations of magnesium and iron. These ultramafic rocks are often associated with deposits of minerals containing the metals chromium, nickel, cobalt, and platinum; hence the interest of the mining industry in ultramafic deposits.

Chromite deposits are found on Red Mountain, and indeed, were mined earlier this century on Dun Mountain, beyond Nelson, but no metallic deposits of economic importance have been found on Red Mountain. However, recent and present prospecting has concentrated on deposits of a non-metallic magnesium-bearing mineral — chrysotile asbestos. Whereas the other minerals appear to be diffused thinly throughout the entire ultramafic belt, the asbestos is more localised, with the most important deposit lying on the slopes of the Little Red Hills Range above the upper Pyke River.

Today Dun Mountain in Nelson and Red Mountain in South Westland stand at opposite ends of the Southern Alps axis, providing one of the most interesting markers of our geological history. Hundreds of millions of years ago the Red Mountain ultramafic belt was intruded from deep within the Earth's mantle at a point where the Pacific and Indian-Australian crustal plates were grinding past each other. We now know of this great zone of geological contact as the Alpine Fault of the South Island. Of major scientific and education significance is the lateral movement that has occurred along the Alpine Fault over these hundreds of millions of years to the extent that this ultramafic rock has been wrenched apart a distance of 500 km.

The soils derived from ultramafic rocks are generally stony and shallow. In addition to these factors, which adversely affect plant growth, there are levels of exchangeable nutrients (particularly magnesium) which are toxic to many plants. Consequently, ultramafic soils support very distinctive flora. The striking transition from mature silver beech forest on the surrounding schist to "serpentine scrub" or a depauperate tussock/herb field on the ultramafics can occur over just a few metres. Such a contact zone is particularly obvious in Simonin Creek, which follows the Livingstone Fault.

The Red Mountain area provides the opportunity to study ultramafic vegetation over the widest altitudinal range within New Zealand (nearly 1400m). Most strikingly, ultramafic vegetation is stunted and has a limited range of species. The Red Mountain ultramafic belt supports only about 50 percent of the species growing on the adjacent schist and growth rates are only about two-thirds of that on the schist. (Lee *et al,* 1983).

Investigations so far have not identified any plants that are endemic to the Red Mountain ultramafic belt, unlike the Dun Mountain region, which supports two endemic plants. However, populations of the streamside Portulacea *(Montia australasica)* and the woodrush, *Luzula crinita* var. *petriana*, are genetically adapted to the ultramafic soil conditions in the Red Mountain area. (Lee *et al,* 1983).

To Catch a Kiwi

Relocating kiwi threatened by clearance can be a dismal business. For a start, you can never be sure that the captured birds will safely settle into a new home, and you are always left with lingering doubts about whether you have rescued every kiwi. But the overwhelming feeling is one of futility as prime native habitat and unique animals are swept away — for what? Farmers saddled with high interest rates producing goods the world doesn't want. Here North Taranaki branch chairman and farmer* Peter Winter *takes a wry look at his recent involvement in kiwi relocation.

By torchlight the crown of a ponga at one's feet gives the illusion of solid ground. The noise created by proving it is not could convince a kiwi it is time to go. The accompanying fall is rarely direct, but is cushioned by spiky branches, dead fronds, bush lawyer and finally lycopodium and copious dust or water, depending on the state of the weather at the moment.

In August, 1981, I was invited to take part in an attempt to relocate kiwi from a mere 50 hectares of manuka on Mohakatino Station, a Lands and Survey farm development block in North Taranaki. A Wildlife officer gave me a canvas bag to carry the kiwi.

The capture area was a delightful spot above a waterfall where the steep hillsides were clothed in manuka nearing the end of its natural life-span. In the gullies and wet areas were masses of tree ferns including an impressive group of *Cyathea cunninghamii,* while on the ridges tiny orchids — *Caladenia, Pterostylis, Thelymitra* — were in flower and sun dew set its sticky globules to catch insects, thus giving it nourishment to survive in the nitrogen-poor soil. Most of the ground was carpeted in lycopodium tall enough for a kiwi to stand unseen.

On the first night the objectives were to establish the presence of kiwi and estimate their numbers. The estimates ranged from seven to 12. We settled on nine, about half of them females, as a reasonable compromise, but it was likely there were pairs of birds in their own long-established territories. We drove home in the dawn.

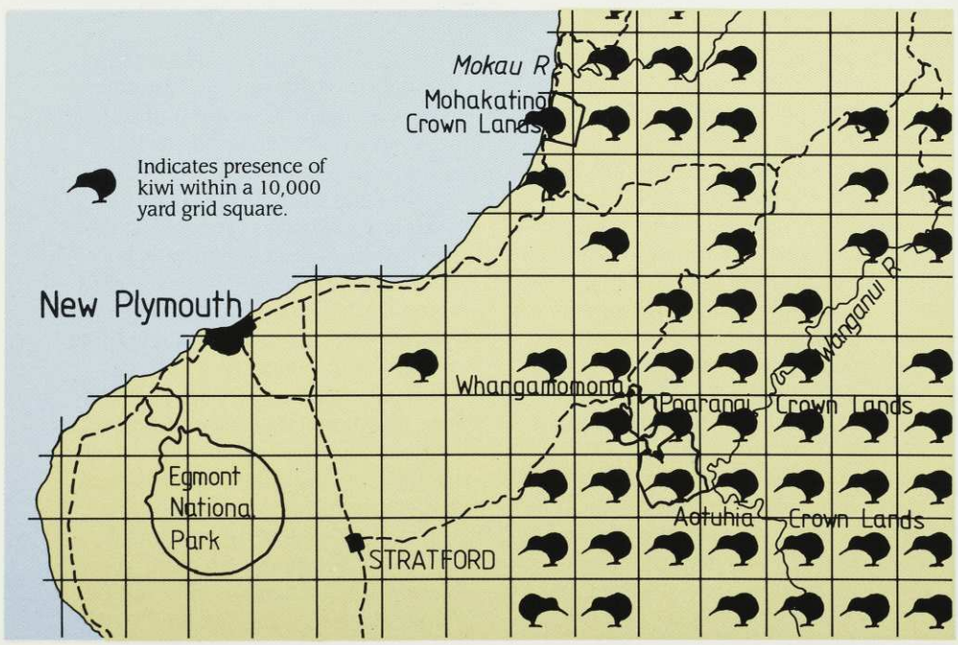
A peaceful setting for the land clearance that was to take place soon after. The photograph shows the waterfall at the entrance to the clearance site at Mohakatino, just south of the Mokau River. *Photo: Peter Winter*

No one broke a leg

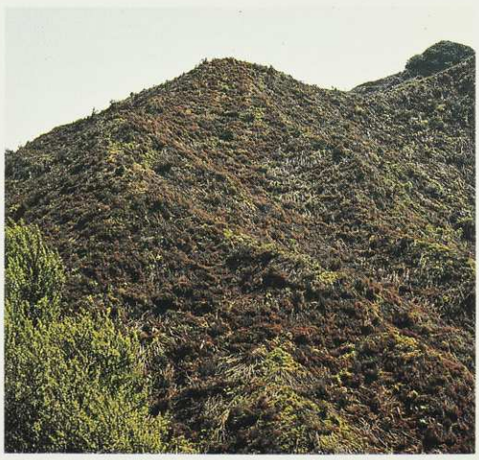
We made five visits in all. The number of kiwi-catchers ranged from 10 on one night to four. We used our own initiatives and theories, we mimicked kiwi calls and learned to distinguish the real from the false, but we did not catch kiwi. In fact nobody even saw one. It was surprising given the terrain and darkness that no one broke a leg, or a neck.

It was cold in the spring of 1981 and sometimes wet, but there was an abundance of manuka firewood to hand. The locality of each waiting, listening group was identifiable by the position of its fire, while forays in search of birds were visible because of bobbing torchlight which vanished and reappeared.

Since our visits were at weekends or at night we did not see the scrub-cutters and in spite of the evidence of their presence never really came to terms with what was about to happen. We made jokes about being careless with our fires and "cutting out the middle man", but as we watched the small birds, pied tits, fantails, greywarblers and occasional bellbirds and tuis it did not occur to us they too would die in the flames.



Map based on The Atlas of Bird Distribution in New Zealand, Wildlife Service and DSIR surveys (1981 and 1985 respectively).



Prime kiwi habitat at Mohakatino after the scrub cutters. *Photo: Peter Winter*

I can remember returning a peripatus to its home in a rotting log. I may as well have crunched it under my heel.

On election night, 1981, some of our party stayed at a sort of base camp under a gnarled mahoe with a portable radio, but

most of us did not know the results of the polling until long after midnight.

A group of people experienced in kiwi catching came from Otorohanga bringing with them two labradors, but they met with no success. With them came farmer-environmentalist Arthur Cowan. "If they farmed the land they've got properly there'd be no need to clear more," he muttered.

I took my cattle dog with me on my next visit, but she was quite unable to decide what was required of her. She raised her hackles and emitted a challenging growl to something in the wet darkness, but did not react to kiwi calls. I was indignant, but too polite to complain when one of my companions decided he had more right than her to space out of the rain under my tent fly.

Uncanny skill

One of the party on this very wet night was a newcomer. He left us to go up the ridge "for a look around". During the night I watched the progress of his torch through the valleys and across the ridges. He did a wide circuit and shortly after midnight I saw him pass beneath us along the track back to the cars. None of the rest of us possessed such uncanny skill at travelling across steep, unfamiliar shrubland in the dark.

He was drinking tea from a thermos when I reached the vehicles. I went over to express my admiration for his bushcraft.

"Gee, I was lost!" he admitted.

We asked permission to be present at the time of the burn-off to take photographs and assess for ourselves the life expectancy of kiwi or for that matter of other birds.

Understandably we were not informed. It was a wet autumn and the operators had to take their chances when they came. Besides, burn-offs are exhilarating occasions with helicopters and napalm-type accelerants. No one wants the spectacle marred by questions about what is dying in the flames.

I returned in 1983 to photograph the orchids. It was a dismal scene. Blackened manuka stems interlaced across the hillsides in an impassable tangle, an abandoned utility vehicle was rusting out in the stream below the waterfall, but the orchids survived on the ridges where the fire found nothing to burn.

I returned again in 1985. There were fences now and mustering pens, but the manuka skeletons still littered the ground. There was a yellowhammer or two and some chaffinches, but no bush birds. The orchids had gone, but manuka seedlings were enthusiastically beginning the cycle all over again.

By the spring of 1985 when questions were being asked about kiwi in the Aotuhia farm settlement block I had made a personal decision that relocating kiwi was not an option. The wise course was to preserve both birds and habitat.

Bitter argument about kiwi being burned in shrubland clearance was unresolved. I sought permission from the Commissioner of Crown Lands, Alistair McIlroy, to camp out and listen. His only stipulation was that I get the consent of the farm managers.

I had my doubts about the Aotuhia telephone number. The manager's house was new and I had a notion the link was by radio-telephone. However I found the number in the directory.

"You're one of those greenies. I'll cut everything I can. You blokes give me the shits. I wouldn't waste my time talking to you." He cut me off. It was not Pat Ford, manager at Aotuhia. As I suspected, his number was new and unlisted.

Under the circumstances I decided against Aotuhia for that weekend. However, the next block due for crushing was at Poarangi, a part of the Aotuhia settlement plan. Nick Hendricks, the manager, gave his consent freely.

We could not have chosen a more pleasant day. After a walk of two kilometres along the old Whangamomona Road we reached the 25 hectares chosen for clearing. As soon as we entered the shrubland we were greeted by birds. North Island robin, pied tit, grey warbler, fantails in dozens and silver eye. In the distance a bittern boomed. A morepork came to our camp at dusk and bellbirds supplied the dawn chorus.

On the ridgetop two bulldozers and a huge roller were poised ready to recommence crushing operations.

By midnight not one kiwi had made its presence known, but by morning we had identified calls from five birds. The last was at daybreak.

After our next monthly meeting we sent a telegram signed by all to the Prime Minister. The DSIR did a three-day kiwi check and estimated a population of one pair to 10/15 hectares. A more extensive survey was planned for the winter months, but this has not taken place.

Left: **This area near Aotuhia, inland from Stratford, was earmarked for a reserve and walkway in 1978, but flattened in 1985 by a crusher as part of the ill-directed farm expansion programme.** *Photo: Terry Fitzgibbon*

Right: **North Taranaki branch deputy chairman John Clark has a close encounter with the crusher used so effectively on the Poarangi farm block.** *Photo: Peter Winter*

A Society View

There is still controversy at Aotuhia. Any further development depends on public reaction to a management plan long promised for the Aotuhia and Poarangi blocks which lie 70 km to the east of Stratford amidst rugged hill country.

Our Taranaki branch sees no sense in further clearance at Aotuhia. It is economic nonsense today to proceed with a scheme planned under unrealistic subsidised farming of the late 1970s/early 80s.The present realistic farming climate should prevent further clearance, particularly when existing cleared land closer to Taranaki population centres and markets has had no fertiliser in two years and is reverting.

Equally important, as Peter Winter's article shows, Aotuhia's shrublands are not a biological wasteland but rather a haven for wildlife.

Future shrubland clearance depends on those who will control these natural lands — the Department of Conservation or Landcorp (although one would hope that even the commercially accountable corporation would not undertake clearance at Aotuhia either). Indigenous forest surrounding the farm settlements will go to DoC, with some placed in the new Whanganui National Park. The balance of the blocks covers about 5000 ha, 1100 of which is presently farmed.

Preliminary land allocation for the remaining 3900 ha of shrublands, zones 2300 ha for crushing and burning and 1650 ha for erosion control and wildlife purposes.

All natural areas should go to DoC, and only the presently farmed lands to Landcorp. Any subsequent division of the shrublands between Landcorp and DoC must take into account: *the results of the DSIR's shrubland kiwi survey; *the Government's 1985 revised indigenous forest policy precluding the clearance of seral shrublands regenerating into high forest; *a review of the economic viability of Aotuhia farm development; *the Aotuhia management plan and public comment on this.

Until then the politicians on the Government's state owned enterprises Cabinet committee should not pre-empt due process by carving up Aotuhia and handing title over to Landcorp. We will be waiting and watching . . .

Gerry McSweeney, Conservation Director

Snipe and the sword of Damocles

By Colin Miskelly*

Male Chatham Island snipe, South East Island. About the size of a starling, this sub-species of snipe is now quite common on South East Island, and has been re-introduced to Mangere Island.

Few New Zealand birds are as unfamiliar to the public as our native snipe. Confined to isolated southern islands, snipe are usually overlooked by researchers and film crews, who focus their attention on larger and more conspicuous neighbours such as penguins, albatrosses and sealions. Yet these 'living fossils', far removed from other snipe species, are one of our most interesting endemic birds. Their present distribution symbolises the vulnerability of New Zealand's ecosystems to modification by man and his camp-followers.

New Zealand snipe belong to a large family which includes godwits, curlews, sandpipers and woodcocks. Most members of the family breed in the Northern Hemisphere, although many migrate to southern latitudes during the non-breeding season. The New Zealand snipe is the only species of the group that breeds in the Australasian region. It is thought to be a relict stock of a formerly widely distributed form, from which both modern snipe and woodcock arose. New Zealand snipe are considered the most primitive of the snipe-like birds.

Fearlessness is downfall

Shorter in leg and tail than other snipe species, New Zealand snipe look more like small woodcock than true snipe. Each island group holds a separate subspecies, the forms differing in size and plumage. The Chatham Island snipe is smallest, being about the size of a starling, while the others are thrush-sized. They are all attractively marked with buff, russet and dark brown. The sexes are similar, but females are larger.

New Zealand snipe are confiding, usually flying only when pressed, and are easily caught with a handnet. During the day they are typically found among dense growth on the forest floor, or among tussock. Snipe are most active at night, when they venture into more exposed habitats to probe for worms and insects.

Some incubating birds are so tame that they remain sitting while their eggs are inspected. This fearlessness, and their low reproductive rate explain why snipe disappear so quickly following introductions of rats, cats and wekas.

Formerly widespread

Subfossil remains indicate that New Zealand snipe occurred throughout the three main islands and the Chatham Islands, as well as on The Snares, Auckland and Antipodes Islands. Mainland snipes were presumably wiped out by kiore and kuri following Polynesian colonisation, as the only historical record is of a bird caught on Little Barrier Island in 1870 (before cats became established).

The Stewart Island snipe survived on offshore islands well into the 20th century, where it was observed by some of our early naturalists, including Guthrie-Smith, Edgar Stead, and Lance Richdale. The populations on Jacky Lees and Herekopare Islands, off Halfmoon Bay, disappeared during the 1920s following the introduction of wekas by muttonbirders. Several writers of the time commented on the vulnerability of snipe to introduced vermin. The prophetic words of Guthrie-Smith:

> *"though always hangs overhead the sword of Damocles; should rats obtain a footing, farewell to Snipe, Robin, Bush Wren and Saddleback, none of which species are able to adapt themselves to novel conditions",*

were horribly realised when ship rats reached Big South Cape Island. Rat numbers reached plague proportions in 1963,

The Snares Island Nature Reserve, the least modified and most vulnerable of the remaining island groups that hold snipe populations.

and no snipe have been reported on Big South Cape since September 1964.

Chatham Island snipe were confined to the southern islands of the group by 1870, when collections were first made. They disappeared from Mangere Island during the 1890s following the establishment of rabbits and cats. Burning and grazing on South East Island reduced the only remaining population to very low numbers. There has been considerable regeneration on South East following the removal of stock in 1961, and snipe are now common there.

Cats and rabbits had died out on Mangere when it was purchased by the Crown, with the assistance of the Royal Forest & Bird Protection Society, as a flora and fauna reserve in 1966. Mangere has only four hectares of forest, although extensive planting of akeake and flax should increase the regeneration rate of former pasture on the rest of the island. Twenty three snipe were reintroduced to Mangere from South East Island by the Wildlife Service in November 1980, soon after stock were removed. This introduction coincided with a heavy infestation of grass grubs, and snipe rapidly spread over the whole island, even colonising neighbouring Little Mangere Island. Now the exotic grassland on Mangere is so rank and impenetrable that snipe are largely confined to the robin bush.

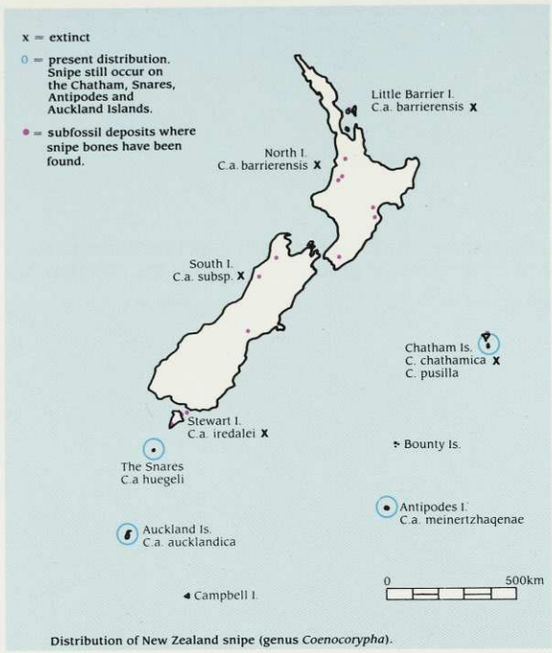
Even the remote southern populations of snipe have not escaped the effects of introduced predators. The Auckland Island snipe had disappeared from the main island of the group by 1840. Cats and pigs were established on the island then, and still occur, along with goats and mice. Auckland Island snipe are found in good numbers on unmodified Adams and Disappointment Islands, and on Ewing Island in Port Ross. On nearby Enderby Island, snipe are uncommon because cattle and rabbits have modified the habitat.

The only introduced mammal on the isolated, tussock-covered Antipodes Islands is the house mouse. Although mice have probably affected insect and plant species, snipe still abound on the main island and several of the offshore stacks. This ability to survive in the presence of mice is important for the long-term. If pigs and cats could be removed from Auckland Island, and pigs, cats and wekas from Pitt Island (also rat-free) in the Chatham group, then these large islands may prove suitable for re-establishment of snipe. (There have been several recent reports of snipe on Pitt Island.)

One unmodified population

The only subspecies of New Zealand snipe that has escaped any major habitat modification or introduction of exotic mammals is the Snares Island snipe. The Snares are a small group of two islands and a number of stacks that lie about 100 km south of Stewart Island. Administered by the Department of Lands & Survey, they were designated a National Reserve in 1983 in recognition of their international importance as an unmodified ecosystem, and as breeding grounds for vast numbers of seabirds and seals.

Although only 330 hectares in area, The Snares are home to over three million pairs of muttonbirds, which have burrows under the central *olearia* forest and surrounding tussock grasslands. Snares crested penguins march inland from the few places that they can clamber ashore, following muddy highways to their noisy colonies under the forest. Buller's mollymawks sit



Distribution of New Zealand snipe (genus *Coenocorypha*).


Snipe prefer moist areas for feeding, where they can probe into the soil for their favourite foods such as worms. The grid below is 0.1 m² large.

on mud-pillar nests near the clifftops, their weird calls echoing across the bays, while black and white Cape Pigeons cackle from cliff ledge nest sites below. Inquisitive fernbirds and black tits forage for insects from the top of the island to the tideline, and the indomitable skuas dive, screaming, at anyone who approaches their nests or chicks.

Fur seals breed among rock tumbles below the granite cliffs, and huge Hooker's sealions lumber into the forest to lie in wait for unwary naturalists.

Noisy enough during the day, the wildlife can be deafening after sunset. The braying of penguins is overwhelmed by the shrieks and moans of muttonbirds and the softer cackles and croonings of prions and diving petrels. Mottled petrels indulge in aerial chases over the clifftops, giving vent to hysterical giggles or long drawn-out wails. Smaller animals are also more active at night – weta scavenge at seabird carcasses, while large, flightless weevils and beetles feed on the large-leaved punui. Leeches, up to 10cm long, come out of hiding to feed on muttonbirds, penguins, mollymawks, sealions, or even the occasional snipe researcher.

Snipe occur over the two main islands and the largest offshore stack, with a total population of about 1000 birds. Densely vegetated areas are preferred; few snipe are found in the interior of the island, where the activities of the muttonbirds keep the forest floor bare.

High densities, low productivity

In favourable habitats on The Snares, snipe occur at densities of 2.5 pairs/ha, far higher densities than recorded for Northern Hemisphere snipe. Mortality rates are much lower than those for relatives in North America and Europe. Annual mortality for Wilson's Snipe in Canada is around 50 percent, with a longevity record of 12 years. Far less banding has occurred in New Zealand, but we already have one bird known to be over 14 years old, and The Snares population has an estimated annual mortality of 22 percent.

High mortality in Northern Hemisphere snipes is due to a combination of predation, shooting, and the stress of migration. Natural predators are virtually absent for New Zealand snipe, although skuas and harriers occasionally catch adults that stray from cover during the day, and I have one record of a red-billed gull consuming a snipe chick on The Snares.

Compared with their relatives, New Zealand snipe have smaller clutches and slower growth rates, possibly because there is less food for them – as the result of the inhospitable climate in the southern seas and high snipe densities.

Nests are depressions under overhanging vegetation, or in the centre of grass or sedge clumps, and are lined with grass, leaves or fern fronds. On The Snares nests are usually situated under solid wood or fern stems, to give protection from crash-landing muttonbirds.

Both sexes of New Zealand snipe incubate, and the adults each care for one of the chicks independently. Only females incubate in other snipe species, but care of young is usually shared.

Snipe chicks have disproportionately large legs and feet at hatching, and are capable of following their parents away from the nest soon after they are dry. Chicks are fed by the parent birds until their bills are long enough for efficient probing. They can become independent when about eight weeks old, though some remain with their parents for longer periods.

One feeding method

Snipe get all their food by probing in soft soils, so occur most abundantly in moist areas. A wide variety of prey is taken, but important items include earthworms, amphipods, adult and larval beetles, and fly larvae.

They are vigorous feeders, probing almost continuously during feeding periods, and moving rapidly between feeding areas. I have counted 344 probe holes in an area 30 x 30 cm. Favoured feeding sites include among dense mats of low vegetation and the bases of tussocks.

Adult snipe hold food items in the tip of the bill when feeding young, and the same method of food transfer is used during courtship feeding.

Only male snipe defend territories, which are about 0.4 ha in area on The Snares. The territories are only defended against other males that call within them; birds that do not call can feed unchallenged alongside the territory owner. This system appears to ensure that other males cannot mate with the female, but the food resource within the territory is not defended.

The birds cease defending territory when the eggs hatch, and the territory is taken over by one or more territorial males, which are mainly one-year-olds. These birds occasionally breed, so a territory may be used sequentially in one season by two different pairs.

The original territory owner usually regains his territory by the following breeding season. Mates are also generally retained from year to year.

Management attempts with New Zealand snipe have met with mixed success. Following the rat invasion of Big South Cape Island, two snipe were caught during August-September 1964. Unfortunately these birds perished when rough weather delayed attempts to move them to another island.

Snipe require a constant supply of live food, as they feed almost continously. Methods of keeping snipe in captivity were perfected before the successful transfer to Mangere Island in 1970, but food collection requires a huge investment of time and energy. Attempts by the Wildlife Service to raise Chatham Island snipe from eggs have not been successful to date. These experiments with the relatively accessible Chatham Island snipe population should continue, and will prove invaluable if rats or other vermin colonise any of the snipe's more distant retreats, where we won't have the time necessary to perfect management techniques.

We must understand the ecological requirements and life history of any species before forming a successful management plan. Much of the data collected during the present study of New Zealand snipe will prove invaluable for attempts at captive-breeding or island transfers. Important information already obtained includes habitat and dietary preferences, how to

Female Snares Island snipe with a day-old chick. The chicks leave the nest within a few hours of hatching.

distinguish the sexes, age of first breeding, and chick growth rates. Continuing research should reveal factors that limit population density and those that contribute to breeding success.

Populations at risk

As a species, the New Zealand snipe is presently found in four island groups, on at least 15 islands and stacks; yet each of the distinctive subspecies is vulnerable to extinction should rats, cats, wekas or other vermin become established on their island retreats. Four populations have been eliminated in the last 120 years (although the population on Mangere Island has been re-established).

The animal that presents the greatest threat to remaining snipe populations is the ship rat. The biggest worry is the possibility of a large rat-infested vessel being wrecked on any of the islands. Of particular concern are the squid boats currently working south of New Zealand.

The threat of rat invasion from small coastal fishing vessels mooring close offshore is well publicised for The Snares, but is of equal concern for populations on the Chatham Islands. Ensuring that these boats remain rat-free requires the co-operation of their operators, including maintenance of bait stations and precautions to prevent rats getting aboard before departure for the fishing grounds.

The third possible means by which rodents could reach snipe islands is among expeditions stores. All the islands supporting snipe are administered by the Department of Lands & Survey, and landing permits include strict controls to prevent the introduction of alien plants and animals. It is the responsibility of the expedition leader to ensure that the permit conditions are satisfied.

The Future

The first objective of any management policy concerning snipe should be to ensure their survival as members of the unmodified ecosystems to which they belong. However, the small and vulnerable population of Snares Island snipe could disappear very rapidly if alien predators ever become established on The Snares. Efforts should be made to establish further populations of this snipe on suitable islands off Stewart Island. It is easier to catch snipe *before* rats or other predators get a chance.

The only introduced mammal that snipe are known to be able to maintain a healthy population alongside is the house mouse. This greatly reduces the number of islands that are suitable for snipe transfer, as even those islands supporting kiore populations must be excluded. Weka eradication schemes may allow reintroduction of snipe to some islands where they were known or thought to occur, e.g. Jacky Lee and Solander Islands.

Keeping snipe in captivity may be a safeguard against colonisation of snipe islands by predators, especially if there is a time lapse between the establishment of the predator, its discovery, and the commencement of rescue operations. Captive rearing is also the only feasible way that members of the public could observe these fascinating relicts of our prehistoric biota.

Colin Miskelly is carrying out research towards a PhD, based at University of Canterbury, and has been studying snipe on The Snares and Chatham Islands for the past four years. Colin has been an active member of the Ornithological Society for over ten years, and has carried out fieldwork throughout New Zealand and its offshore and outlying islands. His work is funded by the Department of Lands & Survey, with assistance from the Forest & Bird Society.

The Retreat of COOK'S SCURVY GRASS

by Wildlife Scientist Colin Ogle

Nau to the Maori, *Lepidium oleraceum* is well-known by the name Cook's scurvy grass, but few people have the chance to see plants in the wild these days. Even in cultivation scurvy grass is uncommon, perhaps because the plants have a rather weedy appearance and, although their leaves are edible, they have a strong odour and flavour.

Scurvy grass received its common name in 1769 on Captain James Cook's first visit, when it was eaten as a green vegetable to prevent scurvy. Actually it is not a grass but a relative of cresses, in the cabbage-radish family (Cruciferae). At Tolaga Bay Cook's crew gathered "as much Sellery [*Apium* spp.] and Scurvy grass as loaded the Boat", and also took quantities around the shores and islands of Queen Charlotte Sound on each visit. Today, scurvy grass is almost confined to islands; Dr David Given (DSIR) (1981) regards it as a threatened species, with a "vulnerable" status.

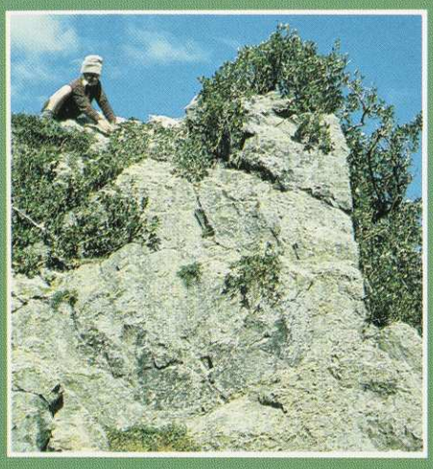
At least some of the major decline in scurvy grass on the mainland occurred last century. Botanist Thomas Kirk (1899) noted that it was "restricted to small islands in the north [and] has become very rare. The plant is everywhere destroyed by cattle and sheep". Thomas Cheeseman (1906) also blamed cattle and sheep for its extinction in several places where Captain Cook had recorded it. In 1982, Hugh Wilson stated that around Stewart Island, where scurvy grass was formerly common, it was now very local and confined to islands free of introduced mammals.

In September 1984, the re-discovery of scurvy grass in one site on Mana Island showed that it still retains a tenuous hold near Wellington. More than 80 years ago it was on the mainland nearby, at Titahi Bay, Ohau Bay, Ocean Beach (between Ohiro Bay and Sinclair Head) and Cape Turakirae (Buchanan 1873, Aston 1909, Zotov *et al.* 1938). Michael Meads (DSIR) had found it on Mana Island in 1975, but early in 1984 an intensive botanical survey of the island failed to find it at his recorded site. Its present habitat is on the opposite side of Mana to Meads's site, in a shallow soil pocket on a rock which is also a gull roost. When found, the six or so scurvy grass plants were spattered with bird droppings.

Mana Island had both sheep and cattle until quite recently, but the site where scurvy grass occurs would have been inaccessible to livestock. Similarly, on Stephens Island scurvy grass remains on steep cliffs out of reach of the island's sheep and cattle.

Because there are plenty of places on the mainland's coasts which have always been stock free it seems overly simplistic to place all the blame on cattle and sheep for the losses of scurvy grass. Perhaps wider-ranging browsers such as rabbits, hares, or possums have contributed to mainland extinctions of the plant? These mammals were never on farmed islands which retain scurvy grass, such as Mana and Stephens.

Dr Given (1981) suggested that the white butterfly might have been partly responsible — certainly its larvae have totally defoliated some of my pot-grown specimens — but scurvy grass was probably rare on the mainland before 1930 when white butterflies established in New Zealand. Many other garden pests of Cruciferous vegetables attack Cook's scurvy grass in cultivation, including diamond-backed moth, leaf miners, aphids, garden snails and the parasitic white fungus, *Albugo*. They are likely to occur on inshore islands at least, particularly inhabited ones, so that the presence of scurvy grass on Mana and Stephens Islands, and islands close to cities such as New Plymouth and Dunedin, is in apparent defiance of browsing invertebrates and parasitic fungi.



Dr Ian Atkinson points out a patch of Cook's scurvy grass plants on a gull roost, Mana Island. This once-common mainland plant, used by Captain Cook to ward off scurvy, has retreated to offshore islands as it appears to require guano and the absence of grazing animals. *Photo: C.C. Ogle*

Nitrogen-rich soils, probably with a high pH (low acidity) level, are characteristic of at least some places with scurvy grass. Brian Bell of the Wildlife Service knows it in the Chathams group but only on small islands with many roosting and burrowing seabirds, and Dr Ian Atkinson of DSIR reports it around gull roosts on islands off Northland's coast. In the late 1950s, Dr Mary Gillham (1960) found that scurvy grass was one of several native and introduced species which thrive around seabird colonies. Others include the native iceplant (*Disphyma australe*), sea celery (*Apium* spp.) and shore groundsel (*Senecio lautus*), plants which are still common and widespread around our coasts but which seldom, if ever, achieve the luxuriance of plants of the same species on guano-enriched sites. Some other species which Dr Gillham found growing well on soils around bird roosts on islands are rather local on the mainland's coasts, and in some places have certainly declined. *Crassula moschata, Einadia* (*Chenopodium*) *allanii, Asplenium obtusatum* and, of course, Cook's scurvy grass, are some of these.

After propagating a plant of scurvy grass from a small twig from Mana Island, I attempted to reproduce its natural situation by growing the rooted cutting in a mixture comprising one half sandy loam with additional gravel, and one half poultry manure. The scurvy grass grew into a much-branched sub-shrub which flowered and fruited just over a year later. More plants have been grown from this plant from cuttings and seed, the latter being used to obtain some genetic diversity in cultivated stock. Transplanting of these plants to other locations on Mana Island now awaits action on the island's management plan.

In cultivation, rapidly growing scurvy grass plants are more resistant to garden pests than those which are pot-bound or in poor soil. This suggests another reason why scurvy-grass grows where the soil is made very fertile by seabirds. Because of human disturbance and predators on the mainland, seabirds now tend to use islands for roosting and nesting. As a result, the soil of mainland sites which previously supported scurvy grass is likely to have become less fertile and therefore unable to promote rapid growth which would have allowed scurvy grass to survive browsers and parasites.

Whatever the reason, or combination of reasons, for the national decline in Cook's scurvy grass, it is clear that islands, including suitably managed islands like Mana Island, will be important in conserving wild populations of the species.

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Tracks

Summertime spells opportunities to explore the natural areas around our homes or the places that we visit. Sometimes when we are out and about we may see the colourful wings of a butterfly flicker past. However, our understanding of New Zealand's native butterflies is limited and they have only recently been studied in depth.

I trust these two pages will spark your interest to learn more about these fascinating "flying flowers" as Walt Disney called them. We've even included an interesting butterfly competition with first prize a 3-colour kiwi T-shirt such as Malvina is wearing in the photo to the right.

Choosing a title for this item on butterflies was fun . . . for without a doubt our butterflies are regarded as the regal and commanding leaders of winged insects. They have also captured the eye of painters and photographers and the imaginations of so many poets and storytellers . . .

I hope they capture your heart too . . .
Editor

Monarchs, admirals, coppers n' blues

There is a tale which tells of Aotearoa being inhabited by giant green butterflies with fluted wings. These butterflies bravely put out the molten fires of a huge volcanic eruption by smothering the burning embers of the forest with their wings. Sadly all of them perished in the flames. To this day, so the story goes, the memory of those brave butterlies lingers in the waving green fronds of the beautiful ponga tree ferns.

Butterflies, like most other insects, have six legs, two antennae or "feelers", two big eyes, and a body divided into 3 parts — head, thorax and abdomen. Their crowning glory is of course the two pairs of wings which grow from the thorax or middle section of the body. The wings are covered with rows of tiny coloured scales like tiles on a roof. This is why butterflies and moths are called *Lepidoptera* which means scaly-winged. Some of those scales may stick to your finger if you touch a butterfly's wing very gently. When a butterfly settles it usually folds its uppermost bright colours away and its undersides blend with the surroundings to help hide it from its enemies.

Despite the fact that there are many thousands of different species of butterflies throughout the world only 24 species are known to have lived in New Zealand. Of the 24 species, 12 are found only in New Zealand, two are common to both Australia and New Zealand and three have established themselves since European settlement. The remaining seven species do not breed here, but migrate from Australia.

One well known self-introduced butterfly is the elegant orange and black Monarch butterfly whose original home was in North America. They have been known to travel in swarms for thousands of miles darkening the sun in their path. Monarchs lay their eggs on plants with milky sap, such as a swan plant. After about five days the eggs hatch into tiny caterpillars which quickly grow, moulting their skin several times. Two weeks later they become fat tiger-coloured caterpillars about 5cm long. They then hang head downwards and moult into a beautiful pale green chrysalis beaded with black and gold. For two weeks the adult butterfly slowly forms inside the chrysalis. A fully fledged butterfly then emerges to fly off, mate and begin the whole cycle again.

Most butterflies live for only a few days or weeks. Many are eaten by birds or other animals. Some, like our native Red Admirals can live for up to six months spending the winter sheltering in places such as under the bark of an old tree. You can tell the ones which have hibernated by their faded or tattered appearance. The Maori called them Kahakura, meaning red garment.

Yellow Admirals, like their red cousins, lay their eggs on stinging nettles which are eaten by their caterpillars. They also bind the nettle leaves together to make protective shelters. Take care if you intend looking for them!

Other common butterflies in New Zealand are the "coppers" or "blues". Both of these families of butterflies have different patterns and shades of colour which vary slightly from region to region. They generally like dry spaces like stony riverbeds or sand-dunes. Their caterpillars munch on *muehlenbeckia* which is also known as pohuehue.

The mountainlands of the South Island are home to two black mountain butterflies and three tussock species which blend in well with their natural surroundings.

In our forest glades, you may spot the rarer beech forest butterfly whose caterpillar feeds on native sedge grasses.

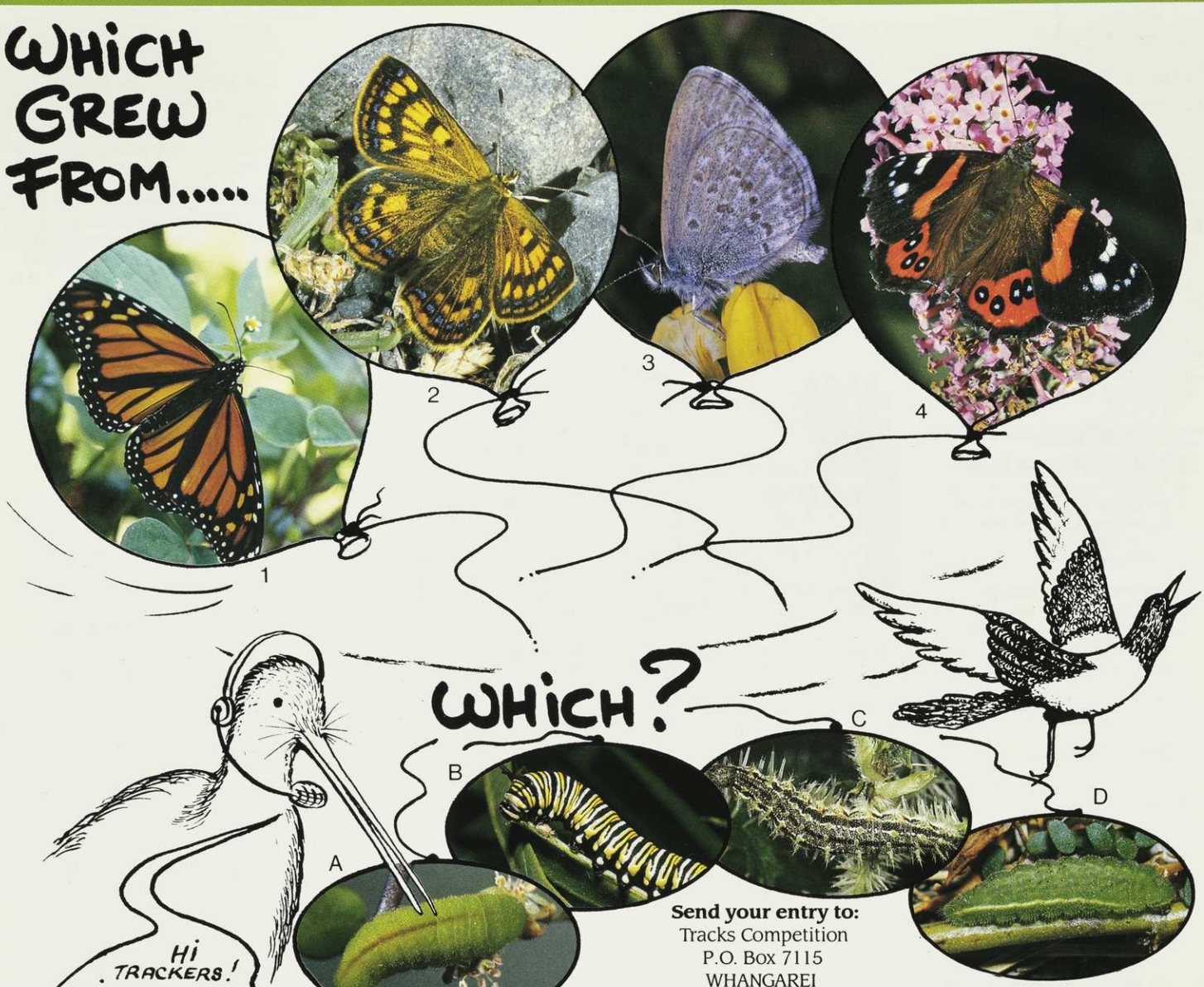
The most well known butterfly is the Small White which was accidentally introduced to New Zealand in the 1930s. Like many other exotic species it has become a pest as its caterpillars destroy valuable crops. You'll probably see it on your cabbages laying eggs which soon develop to large green caterpillars.

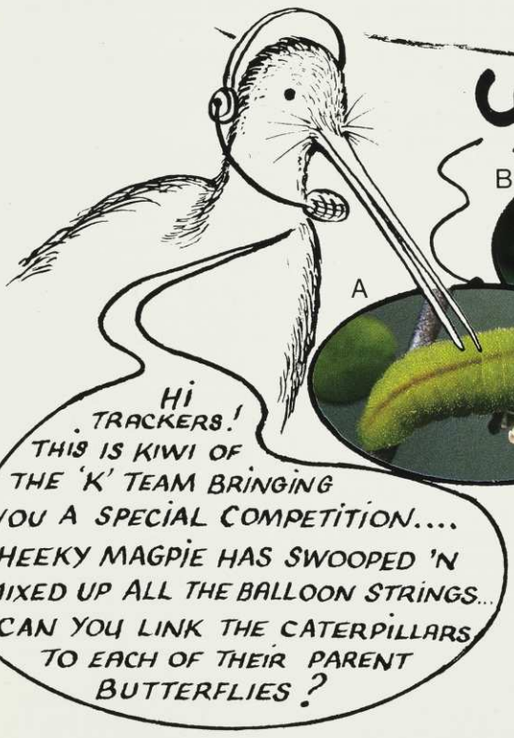
If you would like to learn more about butterflies you can send for a giant poster featuring 30 butterflies with notes about them and where they live to Mrs S. Millar, Secretary, N.Z. Entomological Society, 8 Maymorn Road, Te Marua, Upper Hutt, enclosing your return address and a postal note or cheque for $3.50.

You may also ask your librarian for a loan of the book *New Zealand Butterflies* by Dr George Gibbs which gives a detailed and up-to-date account of the various species known here.

Dr Gibbs supplied the photographs on the next page and he suggested that we should all get to know a lot more about our butterflies particularly since there are not many of them. He also said that we should not clear the shrubs from all the so-called "untidy spaces" around towns — those little gullies and forgotten corners which are regenerating with pohuehue and other natives. These are the favourite haunts of many of our butterflies.

WHICH GREW FROM.....





WHICH?

Send your entry to:
Tracks Competition
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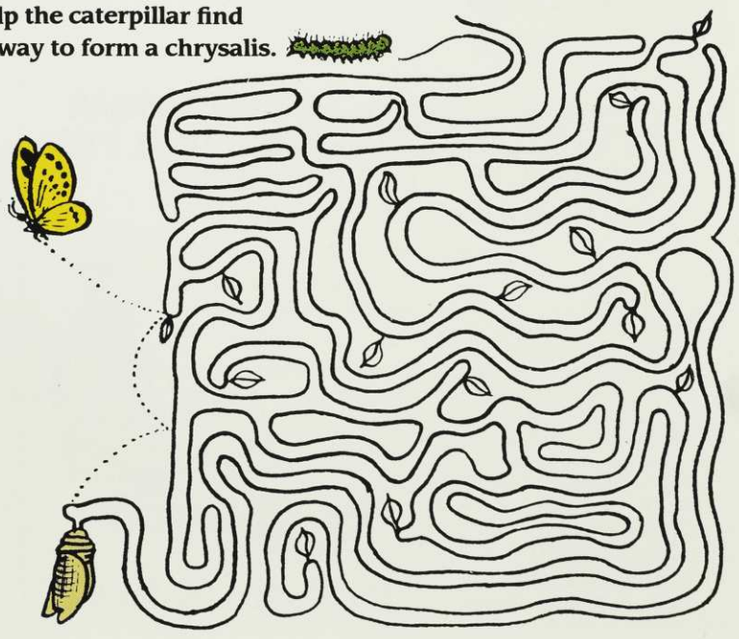
The first correct entry drawn out of the bag on the closing date — the 31st March 1987 — wins one of those new-styled T-shirts as pictured on page 28 top right. Please send your T-shirt size (6, 8, 10 or 12). Entries are restricted to Forest & Bird Junior members under 13 years of age. The prizewinner will be published in the August journal.

Help the caterpillar find its way to form a chrysalis.



Do you know how to tell the difference between butterflies and moths?

1. _____ are generally more brightly coloured than _____

2. _____ fly mostly at night whereas _____ usually fly in bright sunlight.

3. _____ have small nobs on the end of their feelers whereas _____ have simple comb-like feelers.

4. _____ spread their wings flat on either side of their bodies whereas _____ rest with their wings together over their bodies.

FOR ANSWERS, turn page upside down

(1. B/M, 2. M/B, 3. B/M, 4. M/B)

New Telephone Lines

Head Office now has three main lines all on the *one number* — (04) 728–154. All members please take note.

In the Rainforest

Anyone whose interest was stimulated in the excellent book *In the Rainforest* by Catherine Caufield (reviewed in our November 1986 magazine) will be pleased to know it can be bought in paperback (Picador) for $13.95. This is somewhat of a reduction on the hardback price.

Queen Elizabeth II Scholarships 1986

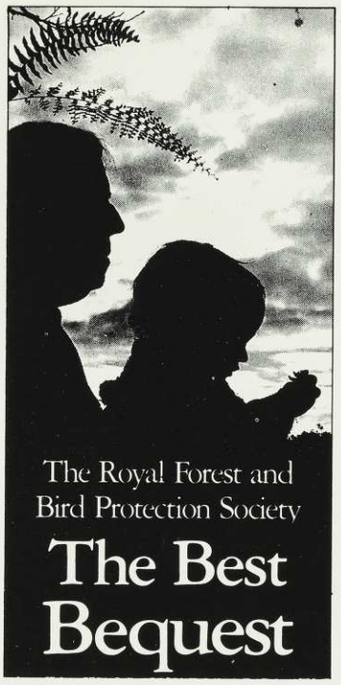
The Society has granted a total of $4,000 to five post-graduate students to help them with their expenses in researching conservation projects.

Sean Weaver and **Ian McDonald** are studying species regeneration after native logging in Fiji, and the dynamics of species in unlogged forest. These studies are particularly topical as the Society moves into conservation in the South Pacific.

Andrew Young is researching the effects of breaking up large areas of continuous lowland forest into small, scattered fragments. This work should make a significant contribution to our practical knowledge of how best to conserve lowland remnant habitats.

David Allen, in preparing his thesis for his Masters degree, is studying the behaviour of the whitehead in order to provide a greater understanding of the bird's management. He will be working on Little Barrier Island; the scholarship will help with travel costs.

Terry Green, also working on Little Barrier Island, is studying the ecology of the red and yellow crowned parakeets. Although the populations in the wild are not in immediate danger, their numbers are small and their range restricted.



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Give your children and grandchildren the best bequest of them all: the preservation of New Zealand's native plants and animals.

Bequests to the Society are one of the best methods of support it has had. Now, to make it easy to find out how to give a donation or gift in your will, the Society has prepared a clear and concise pamphlet. *Write to the Secretary, RF & BPS, PO Box 631, for your free copy.*

Joint Campaign Easter Gathering

This year's Easter Gathering (April 17–20) is to be held in the scenically spectacular Glacier Region of South Westland. There you will have the chance to view the great kahikatea forests, fur seals, penguins and many other natural wonders that we want to see protected as a World Heritage site for the South-West of New Zealand. Book now as the Easter Gathering is always very popular. Write to PO Box 756 Nelson for details.

Erratum

Biologists, some unkind people have said, are those who cannot handle the mathematics of other scientific disciplines. Well, it looks as though I have added fuel for their points of view.

Astute readers of "Native bird management" in the November issue of *Forest & Bird* will have noticed that, in the script alongside the graph showing the number of native bird species in forests of different size (page 9), I refer to Little Barrier Island as being 30,000ha in size. In fact, Little Barrier Island is 3,000ha, not 30,000.

When I wrote the article, the figure of 30,000ha was firmly in my mind. It led me to draw the conclusion that, for North Island kokako, there are no single tracts of forest remaining in which they are likely to survive long-term. That remark should now be qualified, and the emphasised sentence in the first paragraph of page 8 should read "For North Island kokako, there may be no such areas left".

I use the words "may be" deliberately. Present forest tracts like Pureora (24,000ha) and Whareorino (30,000ha) are large enough to sustain kokako on the evidence of island biogeographic studies. However, the presence and effects of introduced competing animals are enough to suggest that the minimum area required to sustain kokako long-term is much larger than island biogeographic studies predict. One simply cannot be confident that remaining North Island forests are large enough.

Apart from this point, my conversion error does not impinge upon other statements within the article. I hope that readers will accept my apology with a knowing smile and a tut! tut! and further ponder the questions my article sought to raise.

Murray Williams,
Wildlife Scientist

Discover the great southern forests

This summer our West Coast conservation officer Kevin Smith will be leading three superb week-long natural history field trips organised specially for North Island people. These non-profit-making trips are being offered by Forest & Bird to show people the wonders of South Westland's untouched kahikatea forests, flax swamps, sea coast seals and penguins and seek your support to protect them.

Tour costs of approximately $500 from Wellington and $650 from Auckland include return air travel to Hokitika, tour coach, motel and lodge accommodation, all meals and expert guides.

Tour 1 2– 7 March
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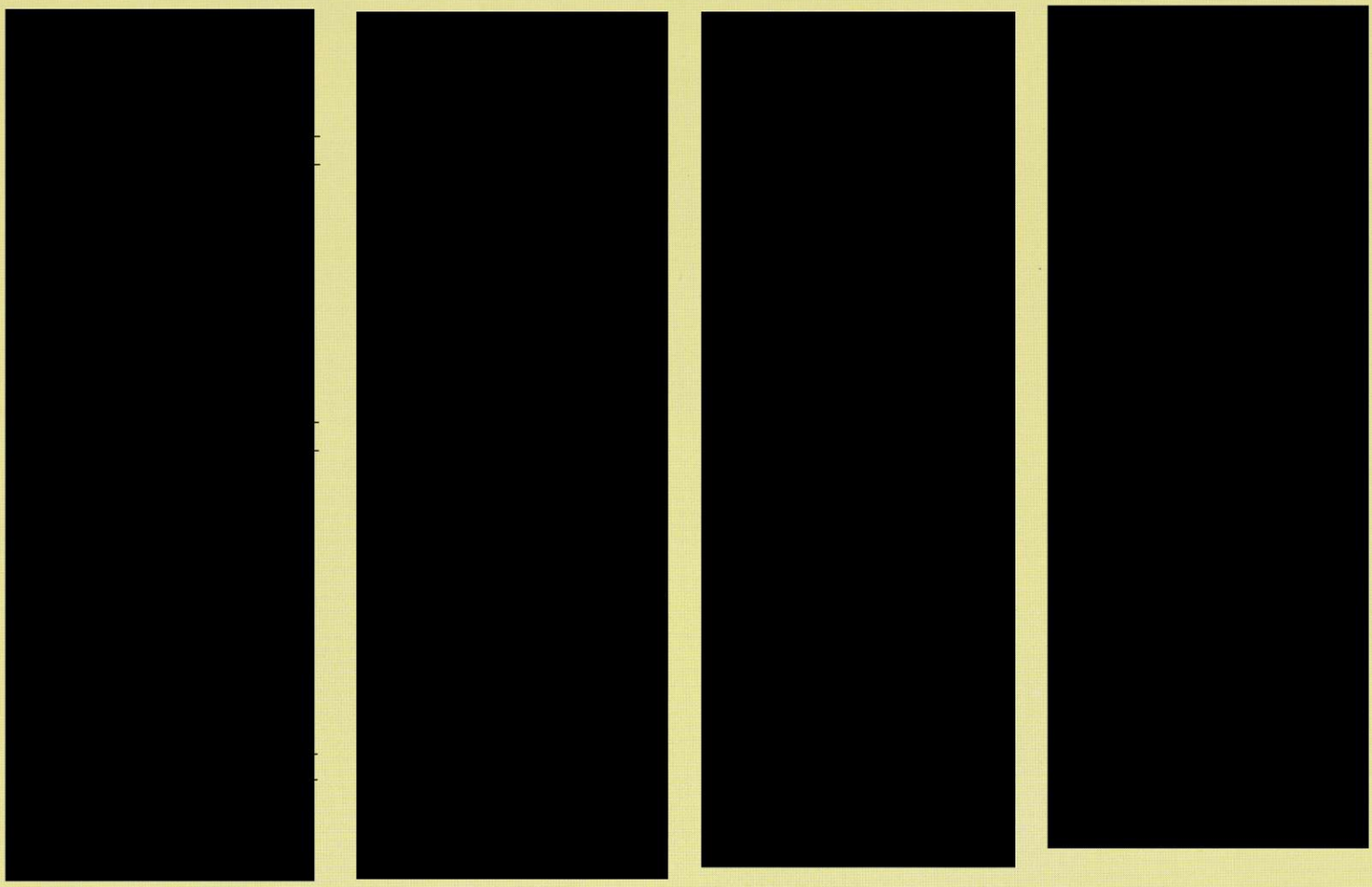
Numbers are strictly limited to a maximum of 30 for each tour so please write urgently to Kevin Smith, Royal Forest & Bird Protection Society, Box 57, Hari Hari, South Westland. Phone 33 090.



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

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William Hartree Memorial Lodge, Hawke's Bay

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

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

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

For rates send a stamped addressed envelope to the Booking Officer, June Norther, 212 Kennedy Road, Napier, Telephone Napier 438 193.

Ruapehu Lodge, Whakapapa Village, Tongariro National Park

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

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

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

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

No animals or pets are allowed in the lodge or the National Park.

There is no key at the lodge, but one will be posted ten days before occupancy. No member may occupy the lodge without first booking through Head Office, Wellington.

Tautuku Lodge, Coastal Otago

Situated 72km from Balclutha on State Highway 92, Tautuku Lodge on the Society's 550ha bush-clad Lenz Reserve in coastal south-east Otago.

The lodge is fully equipped and accommodates 15/16 people in two cabins. Bring food, bedding, linen etc.

For rates apply to the Booking Officer Miss M. Roy, Papatowai, Waipati, RD, Owaka, enclosing a stamped addressed envelope.

Turner Cottage, Stewart Island

Turner Cottage, is on Stewart Island and is a two-roomed dwelling furnished for three people.

For details write, enclosing a stamped, addressed envelope, to: "Turner Cottage", C/o Mrs N. Fife, P.O. Box 67, Halfmoon Bay, Stewart Island.

Tai Haruru Lodge, Piha, West Auckland

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

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

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

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

Waiheke Island Cottage, Onetangi, Waiheke Island

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

Different rates apply for winter and summer. For rates send an addressed envelope to the Booking Officer, Mrs R. Foley, 23 Stoddard Street, Mt Roskill, Auckland. Telephone Auckland 696-769 (evenings).

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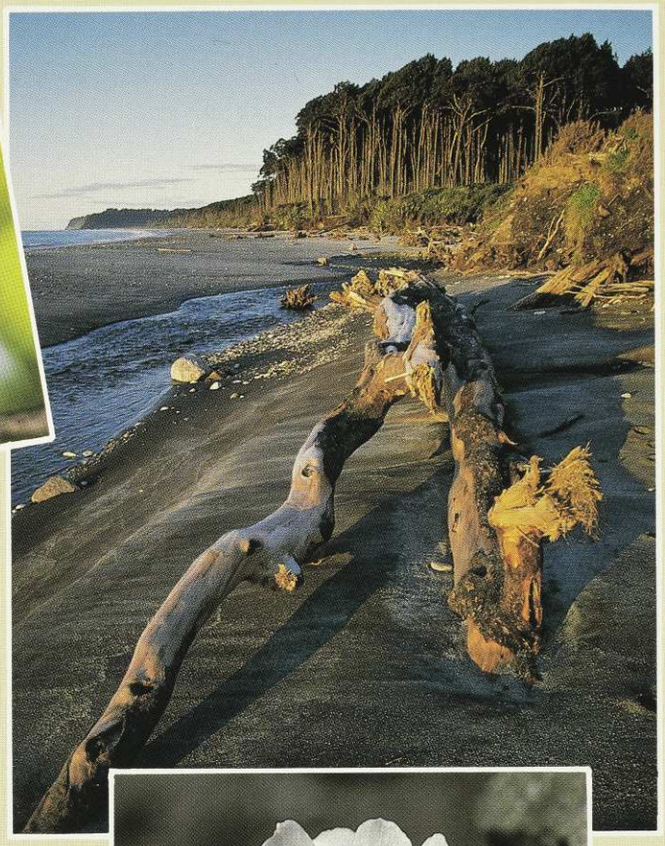

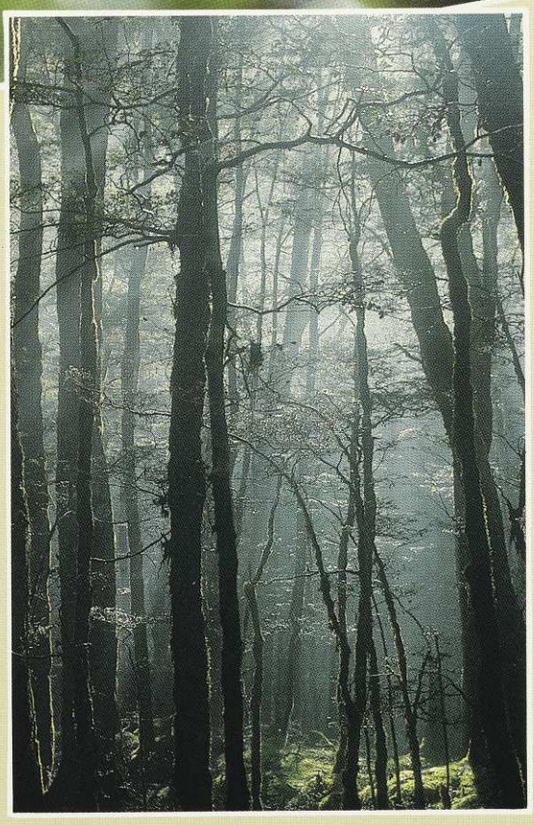

As part of our campaign to secure World Heritage status for the whole of the South-West of New Zealand, the Society is to publish the *South-West New Zealand World Heritage* book. Taking in the area from Okarito in the north to Waitutu in the south, the book will be produced to the same exacting standards of our much-acclaimed South-West World Heritage Calendar. Features of the book include:

- ★ Informative, exciting text written by well known conservation essayists — Craig Potton, Les Molloy, Kevin Smith, Gerry McSweeney, Colin O'Donnell, Guy Salmon, as well as famous writer Keri Hulme of Okarito.
- ★ Scenic and wildlife photos by NZ's foremost natural history photographers.
- ★ Explanatory maps and diagrams
- ★ Soft cover, A4 full colour throughout

This book will not date. As a celebration of the most pristine area of New Zealand, it will touch on a number of themes — geology, vegetation, wildlife, Maori settlement, European discovery, recreation — that have never been brought together in one publication before.

Exclusive offer to Forest and Bird members

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Photo by courtesy of Wildlife Service

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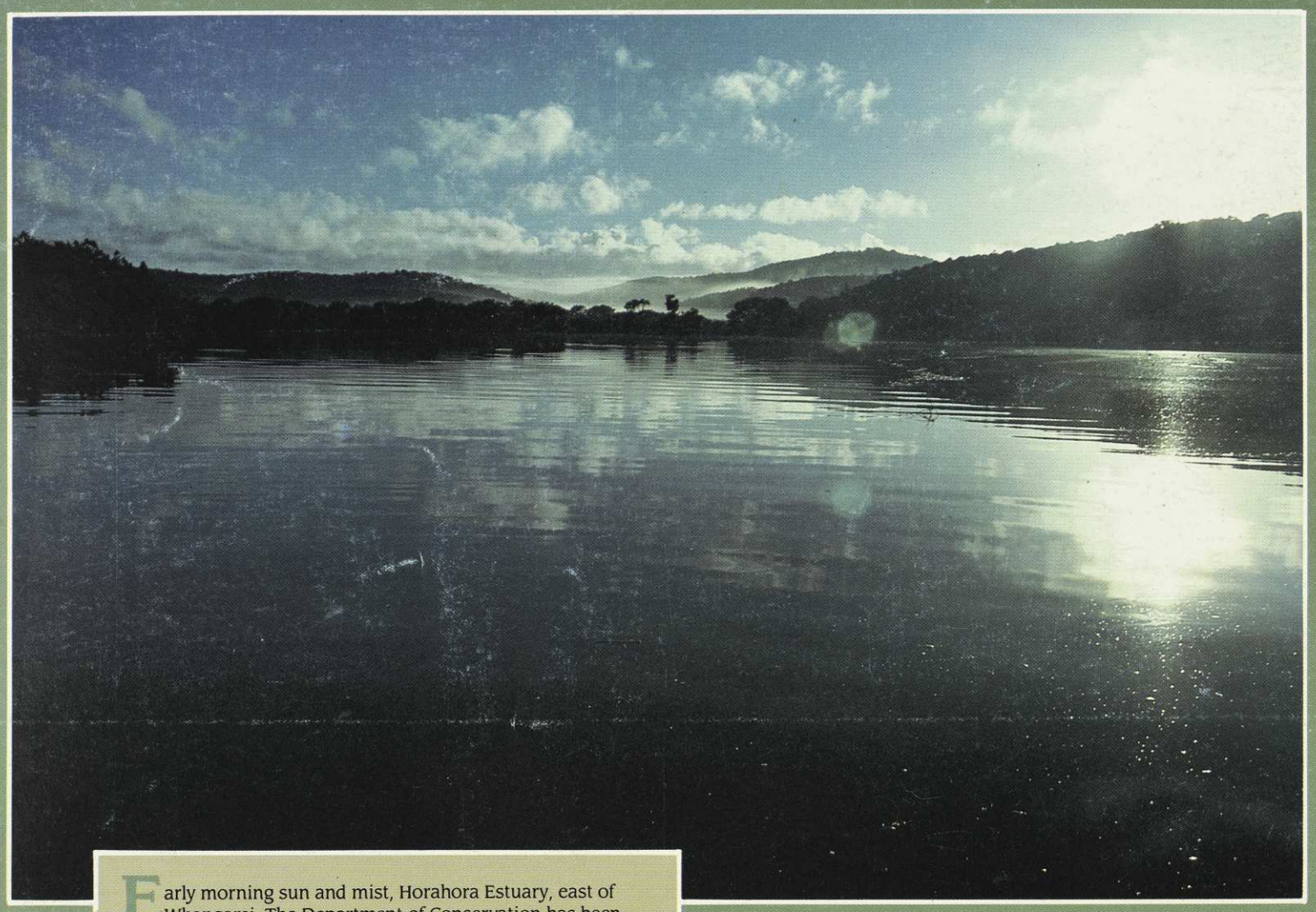

Early morning sun and mist, Horahora Estuary, east of Whangarei. The Department of Conservation has been granted responsibility for safeguarding our coastlines and foreshores, including such pristine mangrove estuaries as this. On page 4 of this issue we bring you up to date with our latest coastal initiatives. *Photo: Terry Fitzgibbon*