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Kokako in Puketi State Forest, Northland. This bird's territory beside the Takapau ridge Kauri stand is in an area zoned for production under the 1983 Forest Service Kauri Management Review. Kokako remained officially undiscovered in Puketi until 1979. A moratorium on logging was then imposed, to allow study on the kokako. The moratorium expires this year.

101 kokako have now been recorded in Puketi which is by far the largest population in Northland. Many kokako occur outside the forests small ecological reserve in areas zoned

for production. They are known to be breeding and occupy territory sizes from 6 to 15 hectares. Kokako in Puketi are feeding closer to the ground than was found in studies at Pureora and in the Bay of Plenty. This may reflect the better forest understorey at Puketi where deer are absent, possums are in low numbers and Forest Service have an active goat control programme.

The future of our kauri forests and their wildlife is now under debate.

(See article page 14).

Photograph: Hugh Best

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Cover: Few dunes covered in native vegetation remain today. Pingao (*Desmoschoenus spiralis*) covered dunes once dominated Tautuku beach, South East Otago shown here, but pingao has now been ousted by introduced marram grass.

Photograph: A. F. Mark

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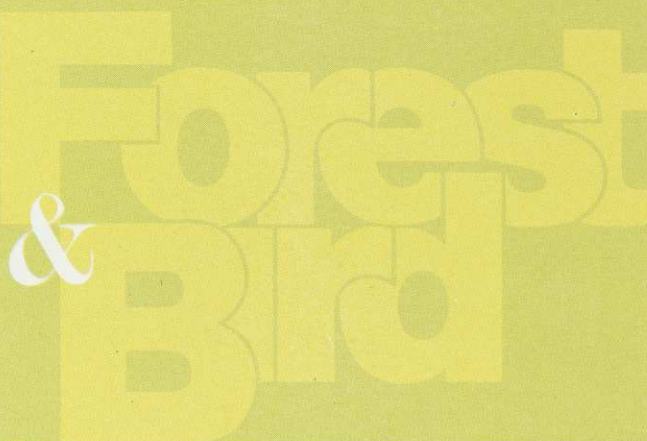
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Saving our heritage!

I write my first editorial as President of the Society in the midst of a general election campaign. By the time you read this there will be a new administration and possibly a change of Government. For the incoming Government there are significant nature conservation priorities.

Firstly they should recognize that preservation of our natural environment is not a selfish or narrow objective. By preserving nature we are protecting the key features of our country that distinguish us from the rest of the world. Our kauri forests, coastlines, forests, tussock grasslands, lakes and rivers occur nowhere else in the world. They deserve protection in their own right and are also a major attraction for visitors to this country who will leave behind nearly \$600 million in foreign exchange this year.

Preservation of a representative network of natural areas throughout the country is one of the highest priorities for nature conservation today. The scientific methodology for the programme has been developed by the DSIR's Biological Resource Centre and needs an adequate funding base. The test of the programme's effectiveness, however, must be whether reserve recommendations are implemented in the face of rapid change of natural ecosystems throughout the country by the expansion of forestry and agriculture.

The present imbalance in our reserve system urgently needs correction. Lowland forest areas are inadequately protected — Punakaiki, Waitutu, Karamaea forests, South Westland's kahikatea and Whirinaki are all areas of importance. Wetland protection is essential. Our wetlands of national and international importance

need permanent protection and the Government should adopt a wetlands policy as soon as possible.

Government funding which is accelerating the clearance of native forest and the drainage of wetlands on private land through Rural Bank loans and Forestry Encouragement Grants must be subject to environmental controls.

Non forested ecosystems including shrublands, tussock grasslands and natural dunelands are very poorly represented in our present reserves. The major responsibility to secure protection for all these areas rests with the Government. Crown lands encompass many of the threatened and poorly represented natural areas left in New Zealand. This issue of "Forest and Bird" focuses on some of the Crown owned areas that deserve protection. Protection of these areas could occur at little cost to the taxpayer yet with major benefits for nature conservation, recreation and tourism.

Nature conservation and protection on private land is also important and involves careful negotiation and consultation. The ultimate decision to reserve must always rest with the private land-owner. Crown purchase of all privately owned natural areas is unrealistic except for a few of the most important sites. However, incentives should be offered to make it attractive to private landowners to retain natural areas. Our Society will continue to encourage the protection of natural areas on private land through covenants such as the Queen Elizabeth II Trust open space, and through the provisions of the Reserves Act and by local authority planning procedures.

Dr A. S. Edmonds, President

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OUR DISAPPEARING NATURAL DUNELANDS

Pingao mantles the dunes of Sand Hill Point, Waitutu.

Photo: G. McSweeney

By Shannel Courtney
Botanist and Society Member

Our natural dunelands support a small but fascinating range of native plants and animals. Like many of our remaining natural areas, natural dunelands are threatened as a result of past and present development. Despite this, they are inadequately represented in our reserve system.

"To our left was the open ocean. To our right, mile after mile of low, rounded sandhills ... stretched out as far as we could see ... fringed with *Spinifex*, *Desmoschoenus* and other common arenarian plants".

This is an extract from Thomas Cheeseman's account of the dunes of Northland's Aupouri Peninsula in 1896. New Zealand has over 100,000 hectares of dune country bordering its coastline and therefore extensive natural dunelands covered with an array of distinctive indigenous species would once have been a common sight throughout the country. But to many early settlers New Zealand's dune systems were regarded as sandy wastes — unproductive unless developed. Unfortunately, such attitudes persist even today, and reflect our disregard for the protection of our remaining natural dunelands. They have been reduced to a fraction of their former extent. Together with lowland forests, shrublands, wetlands and tussock grasslands, they join the list of our most threatened habitats.

The dune environment

The dune environment is one of the most extreme and exacting habitats in New Zealand. This ecosystem supports a small group of highly specialized plants and animals.

These species must resist desiccation by unchecked onshore winds, and withstand the burning effects of salt spray. They must cope with large amounts of



At Mason Bay on Stewart Island's west coast prevailing westerly winds have formed 100 metre high dunes covered in rata-hardwood forest. The more recent dunes in the distance support pingao, some marram and red tussock.

Photo: M. Haykes

drifting sand and constantly struggle against burial and undermining. Plants and animals found here must also tolerate the sand's high temperatures, high reflectivity, low nutrient status and low capacity to hold water. If this is not enough, the plant species nearest the coast are periodically inundated by seawater during spring tides and storm surges.

Dune zonation

A typical dune system has a landward sequence of zones which runs parallel to the coastline. The strand line just above the high tide mark is the first of these zones. It is characterized by a collection of washed up flotsam including driftwood and seaweed. Directly behind the strand is the foredune zone. Here active dune building is occurring. Behind this is a complex system of reardunes which may exceed 100 metres in height and extend up to 4–5 kilometres inland.

Interspaced throughout the reardune zone are numerous deflation hollows where sand has been removed down to the watertable. Permanent lakelets may occur here.

On the more stable reardunes, vegetation may eventually be succeeded by coastal forest such as the dune podocarp forests of south Westland, the forests at the mouth of the Tahakopa river in the Catlins, and kauri forest on consolidated dunes in Waipoua State Forest.

A variety of habitats with their associated fauna and flora adjoin dune systems. These range from coastal turf meadows, estuaries and lagoons, to

swamps (eg Kaimaumau, Northland), red tussock grassland (eg Mason Bay, Stewart Island) and coastal scrub and forest.

Native plants of the dunes

The most widespread and successful plants of our natural dunelands are pingao (*Desmoschoenus spiralis*) an endemic sedge and spinifex (*S. hirsutus*) a grass also native to Australia.

Pingao is found from North Cape to Stewart and Chatham Islands. It's tufted shoots of arched orange-green leaves makes it the most colourful plant of the dunes. Often it can be seen growing sinuously down a dune face.

Spinifex occurs throughout the North Island and across the top of the South Island. Its slender network of stems criss-cross the dunes, every so often throwing up a sward of silver-haired leaves. Its flowers develop into starlike clusters of ripe fruit which are often seen dispersing their seeds as they blow along the foreshore.

Both pingao and *Spinifex* are true sand binding and dune building plants. Airborne sand is trapped amongst their spreading shoots. They grow upwards so as not to be buried as sand gradually accumulates around them. By this process a dune eventually builds up.

Sand sedge, *Carex pumila* creates dunes in a similar manner although not nearly as effectively. It spreads an open carpet over the moist sand of the strand zone and deflation hollows.

Sand convolvulus, *Calystegia solanella*, with its glossy heart-shaped leaves, and purple-pink trumpet flowers is found mainly on the foredune.

There are four other special plants of the foredune and strand line which, although widely scattered throughout New Zealand, have become quite rare. These are the shore milkweed, *Euphorbia glauca*, which has blue-green fleshy leaves and clusters of red flowers; *Pimelea arenaria*, the sand daphne; *Poa triodioides*, a sand tussock; and *Theleophyton billardieri*, a small mealy-leaved herb related to fathen.

Two ranunculi also occur on the sandy shore: *R. recens*, a small, hairy-leaved buttercup; and *R. acaulis*, which replants itself by turning the ripe fruit downwards into the sand.

One of the rarest plants in the world, *Gunnera hamiltonii*, of which there is one known wild specimen (a male) spread over



A marram grass control programme is underway to protect the natural dunes of Fiordland National Park.

Photo: M. T. Sykes



Pingao, *Desmoschoenus spiralis* traps drifting sand to form dunes — Manukau Heads, Auckland.

Photo: G. Loh



Sand convolvulus *Calystegia solanella* is a common native plant on the foredune — Anapai Beach, Abel Tasman National Park.

Photo: G. McSweeney

about 30 metres occurs at Mason Bay on Stewart Island at the interface of the reardunes and red tussock grassland and coastal forest.

Sand plants of the more stable rear dunes include the low growing, wiry-stemmed sand coprosma (*Coprosma acerosa*), the densely tangled pohuehue (*Meuhlenbeckia complexa*), and the heady smelling tauhinu (*Cassinia leptophylla*). A curious prostrate broom (*Carmichaelia appressa*) also occurs on semi-stable dunes, and is totally confined to Kaitorete Spit, near Lake Ellesmere, Canterbury.



These rear dune plants are less able to resist the advance of sand than true sand binders, but are able to produce the root systems necessary to ensure dune stability.

The more conspicuous plants of the moist sand hollows include jointed wire rush (*Leptocarpus similis*) which on its pedestal of roots and old leaf bases, may attain heights exceeding three metres; the northern pampas, (*Cortaderia splendens*), flax (*Phormium tenax*), knotted sedge (*Scirpus nodosus*), and the wire rush, *Eleocharis novae-zelandiae*.

Native animals of the dunes

The most diverse group of animals found on our natural dunelands are insects and spiders. Perhaps the best known is the katipo (*Latrodectus katipo*), one of our most poisonous spiders. Katipo are retiring creatures and may be found in dry places amongst driftwood or the tufts of sandbinding plants. Only the female is poisonous, and produces venom when she is incubating or rearing her offspring.

The sand dune hopper with its peculiar sand digging leg paddles, and the sand beetle with multi-speckled coat, are common inhabitants of the strand zone and seaward facing foredunes. They are both likely prey of the carnivorous beach centipede. They may also fall prey to the large native littoral earwig which is particularly common beneath driftwood along the strand.

Another common sand dweller is the nocturnal sand scarab beetle. The larvae resemble oversized huhu grubs, and spend most of their time buried in moist sand feeding on rotten driftwood, and the roots of pingao and spinifex. The adults have shiny armoured wings and are clothed below in golden downy bristles. They are weak fliers due to their sheer bulk, and at dusk their plaintive droning can often be heard across the dunes.

Moths and butterflies are also commonly encountered amongst the dunes. Some species of moth are entirely restricted to the dune environment. Spinifex, pingao, tauhinu and pohehue are important food sources for the larvae of both groups.

A number of native lizards range into sand dunes throughout the country, although none are restricted in distribution solely to dunes.

Our dunes support only a few native birds, unless they are adjacent to estuaries and lagoons and provide high tide roosts for a host of gulls and waders. The New Zealand pipit and banded dotterel often frequent the dunes, and can be seen racing along the strand line in search of sandhoppers and other morsels. The Australasian harrier is also a common dune resident and has been observed nesting amongst pingao. Dune country on spits and adjacent to river mouths, in Northland and Stewart Island, may sometimes support the rare New Zealand dotterel which breeds in this habitat.

Threats to our natural duneland

(a) Exotic conversion

When Europeans began colonizing New Zealand attempts were made to stock the more extensive dune country with sheep and cattle. The livestock grazed and

trampled the sparse vegetation cover. To control the resultant large scale dune erosion European marram grass was planted throughout the country, especially on the Manawatu and eastern South Island dunes. Eventually much duneland was stabilized by dense swards of marram and converted to pasture.

Extensive plantings of marram and tree lupin by the New Zealand Forest Service and private forestry companies have stabilized much natural duneland for pine plantations. Most of the Ninety Mile Beach dunes, dunes from Kaipara harbour to Muriwai, North Canterbury dunes and some of the Manawatu sand country have been stabilized and converted to exotics in this way.

Because of these plantings, marram has further spread both vegetatively and by seed to become the most widespread dune plant in New Zealand. It successfully competes with pingao and spinifex in most situations, and has supplanted much of the original vegetation.

Buffalo grass and kikuyu grass in the northern half of the North Island, gorse and lupin are also capable of stabilizing dunes and displacing the natural plant cover.

(b) Sand mining

To date, over 35 mining and dredging operations are extracting dune sand on Crown owned land, from South Westland to Northland. Many are extracting sand from natural dune systems such as those on Kaitorete Spit, Lake Ellesmere and Kokota Spit bordering Northland's Parengarenga Harbour. Although many of these operations are small, they are able to modify and in some cases destroy these dune systems over a relatively short period.

(c) Urban and recreational development

Most of the dune country close to major population centres has suffered from over-use. Reclamation of duneland for holiday houses, and damage incurred through horseriding, dune buggy and trail bike riding, have all contributed to the dunes demise.

Roading construction also poses a threat to some of our natural dunelands. The recent proposal to log Waitutu forest requires the construction of a coastal access road which would pass very close



to the pristine dune country at Sandhill Point.

(d) Introduced animals

Damage to our dunelands by stock has been largely unchecked. Even at Te Pahi Farm Park in the far north, which is managed by the Department of lands and Survey, cattle are allowed free access to otherwise unmodified dunescapes worthy of National Reserve status. At Spirits Bay cattle have almost eliminated the endangered Hibiscus (*H. diversifolius*) from the dunes — three plants now remain on these dunes.

Rabbits and hares are also frequent browsers of our duneland plants. Although much of the foliage of adult sandbinders is unpalatable to them, they create their own special problem in that they browse seedlings instead. Browsing pressure can be so high that seedlings never establish and sandbinders must rely on less effective vegetative spread.

The best known new Zealand spider, the katipo, is seldom seen. This shy animal is commonly found amongst dune vegetation. This female with her egg case was photographed at Waikanae beach near Wellington.



Photo: G. W. Gibbs



Native sand spurge, *Euphorbia glauca* at Sand Hill Point, Waitutu. DSIR studies in Southland found that this species survives today on only two of 25 Southland beaches.

Sand scarab beetle larvae. The large grubs spend much of their time buried in moist sand feeding on rotten driftwood and the plant roots.

Photo: G. W. Gibbs



Native shore earwigs can frequently be found beneath driftwood on the seashore.

Photo: G. W. Gibbs

Natural duneland distribution today

Our remaining natural dunelands are concentrated in Northland, the Cascade-Martin's Bay area, Fiordland and Stewart Island. Other areas of importance are Farewell and Kaitorete Spits, and parts of eastern Coromandel Peninsula, Manawatu and South Westland.

Of dune systems that have been highly modified, the most notable are along the coastlines of the Bay of Plenty, Manawatu-Wanganui, north Gisborne, Chatham Islands and the dune country along most of the east coast of the South Island. One may walk along many miles of these coastlines without encountering a single native plant.

Factors responsible for the decline in natural dunelands continue to operate and our natural dunelands are poorly represented in reserves. The few reserves that do support natural duneland are usually too small and often do not provide adequate protection. For example, the Kaitorete Spit Scientific Reserve, which was created to protect the Spit's dune system encompasses but a fraction of it

and does not include the important coastal parts of the dune sequence including most of the pingao communities. Some dune systems are protected by sheer chance, such as those within the Farewell Spit Nature Reserve and Fiordland National park, where the main reasons for protection have been to conserve other natural values.

Fortunately most of our remaining natural dunelands are on Crown owned land and could be given protective status by the stroke of a pen. However, it will also be necessary to devise management strategies to remove stock, to control introduced animals, control mining and in appropriate circumstances control the further spread of exotic weeds.

Our natural dunelands have not been acknowledged as an ecosystem with conservation values equal to those of other natural areas. Steps should now be urgently taken to ensure the protection of the natural dunelands, that remain. Unless this is done we will eventually lose another part of our native heritage which contributes to New Zealand's distinctive character.

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Cultivation and Use of Pingao

Pingao (*Desmoschoenus spiralis*) was widely used by the early Maori as a weaving material. The long, narrow leaves turn bright golden yellow when dry which provided contrast to red and black dyed fibres used in tukutuku panelling. With the recent resurgence in Maori crafts there is an increasing demand for pingao as a raw material. But it is no longer plentiful and has become locally extinct in many parts of the country.

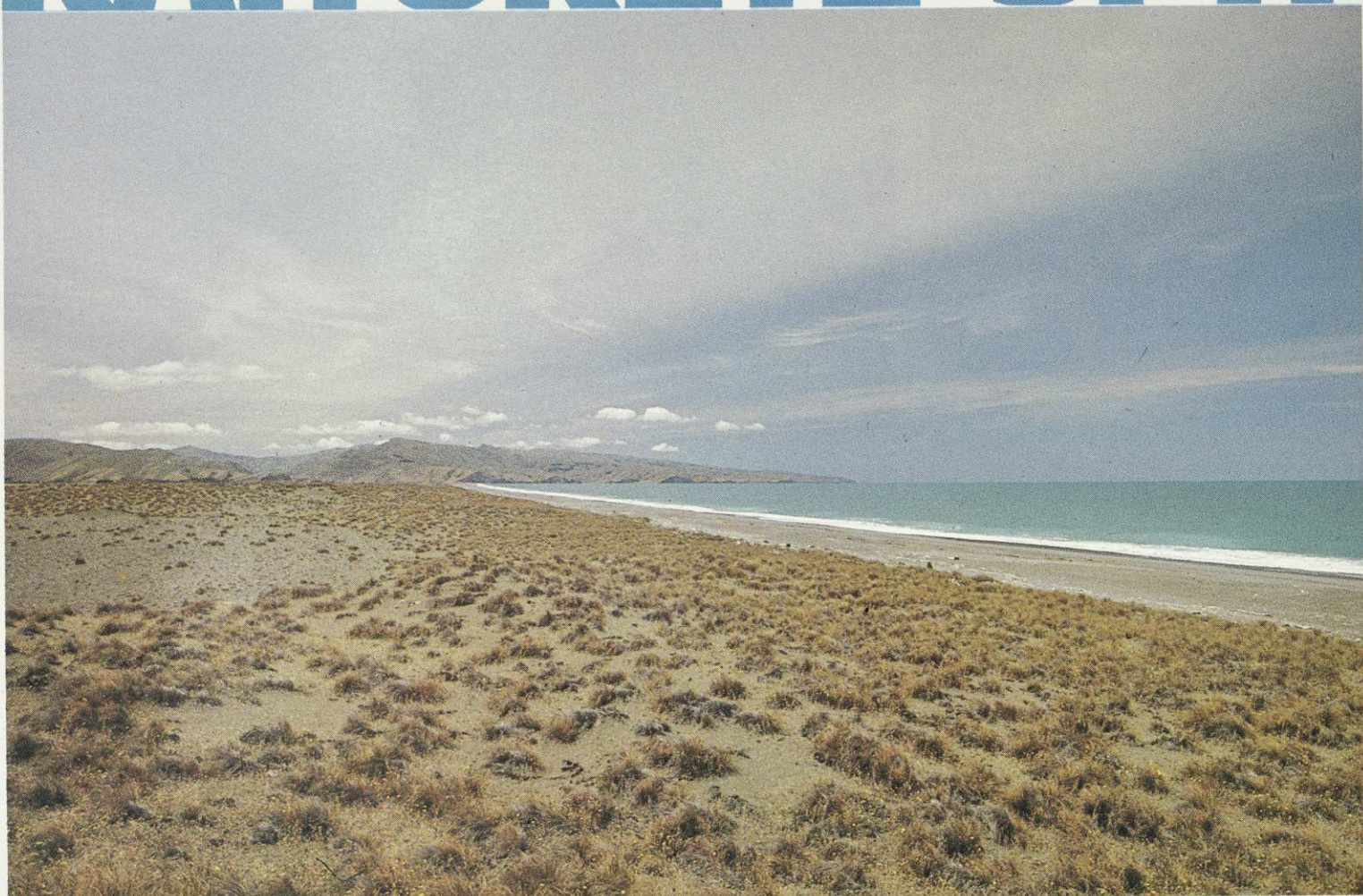
It is possible that the demand for pingao can be met by supplementary planting or re-establishment on modified dunelands.

Pingao is extremely difficult to raise from seed, but has been grown with some success by transplanting young healthy shoots.

These shoots are transplanted in late winter before the new season's growth begins. They must be planted so their growing tips are well within the moist sand zone and below the dry surface layer. Often this means burying the tufts so only the top quarter of their leaves are emergent. Pingao thrives best on unconsolidated sand which is free from marram grass.

Transplanting and artificial cultivation of pingao could provide a sustainable resource and would lessen the need to harvest from the dwindling natural populations.

KAITORETE SPIT



A unique sand dune area in need of protection

By Margaret Peace
Executive Councillor

Kaitorete Spit is south-west of Banks Peninsula in Canterbury. It is the largest remaining dune area in New Zealand where the vegetation is still dominated by pingao (*Desmoschoenus spiralis*) and where native plants are still a conspicuous component of vegetation.

The Kaitorete Spit extends 28 km south from Banks Peninsula in Canterbury and is the largest remaining dune area in New Zealand dominated by pingao.

Photo S. Courtney

During 1972–1973, I spent hundreds of hours on Kaitorete Spit studying plant species, climate and soils as part of my masters degree. This involved experiencing the Spit in all its moods, from blistering summer heat to winter temperatures well below freezing, dehydrating nor-westers and gale force southerly winds laden with salt. The time spent in that wild and desolate landscape provided me not only with an intellectual exercise but also a chance to appreciate a vast expanse of sea, sand and fascinating vegetation in complete solitude — a “wilderness” experience within only 50 km of a major city.

Formation of the Spit

Kaitorete Spit is a barrier beach formed by deposition of Rakaia river gravels along the coast commencing some 6000 years ago, with sand deposition commencing probably about 1000 years ago. Such gravel beaches with associated dune systems are extremely rare world-wide. Forming the seaward boundary of Lake Ellesmere, the spit measures 28 km long, being 3.2 km wide at its eastern end and tapering to 100 m wide at its western extremity (see diagram). The dune system is largely shaped by the onshore south west winds. In the western 8 km the shore line is

being cut back, foredunes measure up to 7.6 m in height and their seaward faces are continually wave-trimmed. For the next 13 km eastward the coastline is building out, and dune height decreases gradually to about 1.5 m. In the most easterly sector dunes are reduced to a mere scattering of sand over the gravel.

Dune profiles are gently contoured, characteristic of sand under pingao. Relicts of much older dunes are scattered over a sandy plain landward of the coastal dune complex. Large deflation hollows up to 200 m across form a prominent feature between the parallel ridges of foredunes and rear dunes.

A severe climate and poor soils

Climate and soils interact to make the spit an extraordinarily adverse environment for plants. Rainfall measurements on the spit indicate a mean annual figure of 515 mm (20 inches) and less than 400 mm in some years. Added to this, the water-holding capacity of the ground is unusually low, since as well as the high proportion of stones in the profile the sand itself is extremely coarse.

Very high evaporation rates prevail for much of the year because of the dry nor-west winds characteristic of Canterbury,

together with very high summer temperatures — up to 38 °C in the shade at surface level. As a consequence, dryness of the air affect plants for at least twelve hours per day for four or five months of the year. No doubt plants rely to some extent on moisture supplied by internal condensation of water vapour just below the surface, as well as dew, which is frequently heavy. Soil nutrient levels are low, even on the old dunes, indicating unusually slow soil development.

Vegetation uniquely adapted to harsh conditions

In spite of all these limiting factors, it appears that a remarkably stable vegetation cover was able to evolve on these dunes, partially persisting to the present day, though adversely affected by fires in Maori times and since 1850 by grazing management which also included deliberate burning up until 1948. Existing native species include thirteen shrubs, ten herbs, and seven grasses and sedges. Ngaio, akeake, and kowhai are represented by a few old specimens, presumably relics of a formerly more abundant shrubby vegetation which probably included kanuka. Ake ake (*Dodonea viscosa*) and *Meuhlenbeckia astonii* are found here at the southern-most limit of their distribution. The prostrate broom (*Carmichaelia appressa*) is a species found only on Kaitorete Spit. It is probably a key component of the ecosystem because of its role as a soil building nitrogen-fixer. It is also very important in providing a favourable micro-environment for less hardy species. However, the prostrate broom is under constant browsing pressure from hares, rabbits, sheep and cattle, the

last causing major damage by tearing off large branches. It appears that most of these plants are old and there is no sign of regeneration in spite of abundant seed production.

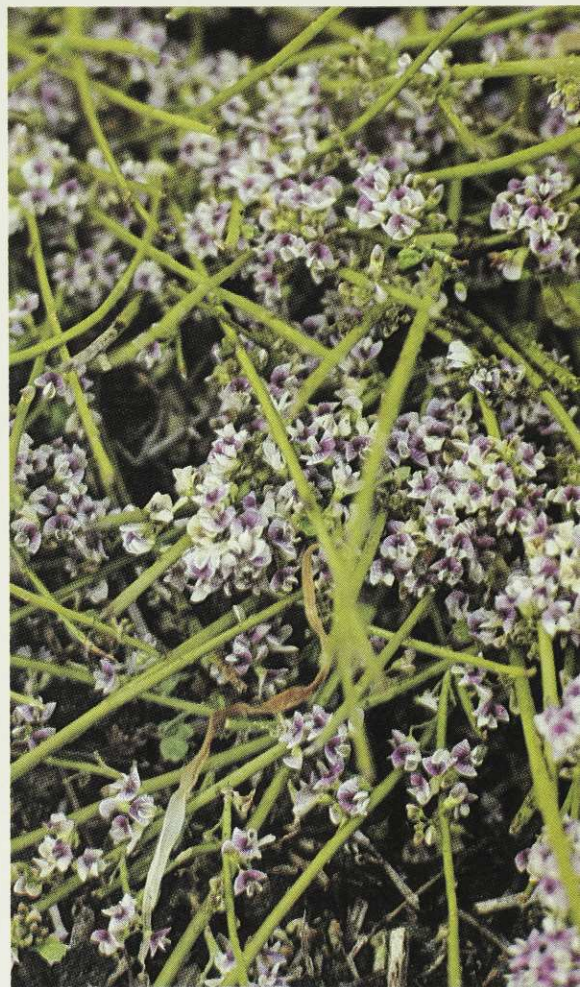
All the native species are perennials, able to survive and even grow throughout the driest part of the year — in contrast to the introduced plants which are mostly winter annuals exploiting the period of least water shortage between May and October. Catsear, sorrel and Australian sheep's burr survive as perennials, but their leaves wither in the summer drought.

A whole range of adaptations to dry conditions can be observed among the native plants. Some, like *Clematis afoliata* and prostrate broom are leafless. Leaves when present are generally very small, narrow, covered in a thick cuticle, (i.e. pingao), or covered with woolly hairs as in scabweed (*Raoulia australis*) and woollyhead (*Craspedia lanata*). All the native species have extensive root systems, to enable them to absorb and store all available water. Low mounds of scabweeds only a few centimetres high may have roots seventy centimetres long; Prostrate brooms only twenty centimetres high may have roots over three metres long.

The vegetation of the Spit is unique and enough of the native vegetation remains today to provide some idea of its primitive state.

Threats from weeds, grazing and mining

Unfortunately the introduced marram grass (*Ammophila arenaria*) was planted about twenty years ago on eroding dunes about half way along the Spit, and more has



Prostrate broom in flower — Kaitorete Spit.

Photo S. Courtney



Prostrate broom *Carmichaelia appressa* is found only on the Kaitorete Spit. The plant in this photo has an unusual erect form.

Photo S. Courtney



To cope with the drying, windy conditions of sand dunes, plants have developed special forms. Prostrate broom has no leaves, while woollyhead *Craspedia lanata* shown here is covered in hairs — Kaitorete Spit.

Photo S. Courtney

been planted at the site of a sand quarry near the eastern end. However it is virtually confined to these areas from which it could readily be removed. Several hundred pines, planted 15 years ago on the fore-dunes for about 2 kilometres, are now dropping their first cones. They are serving no useful purpose, are an incongruous element in the landscape, and should be eradicated before spreading further. No other introduced species appear to represent a threat to the native vegetation through competition.

Reserves at risk

In 1979, two areas of the Spit were gazetted as Scientific Reserves. The larger of these, comprising 169 hectares, was intended to constitute a core area representing some of the most interesting biological features. However, since then little effort has been made to protect the Reserve which is still being used for grazing sheep and cattle by the lessee of the adjoining Crown land block. Rabbits and hares, together with the stock, represent a most damaging factor in such a fragile ecosystem where the natural physical factors already impose severe limitations on the plants. It is also important to exclude four-wheel drive vehicles and trail bikes from the dunes. A draft management plan is due out shortly for public comment.

Mining

Since 1952, sand extraction from the



Sand mining operations by Habgoods Ltd have now destroyed 11 hectares of pingao covered foredunes at Kaitorete. The sand is used for concrete blocks. Photographed March 1984.

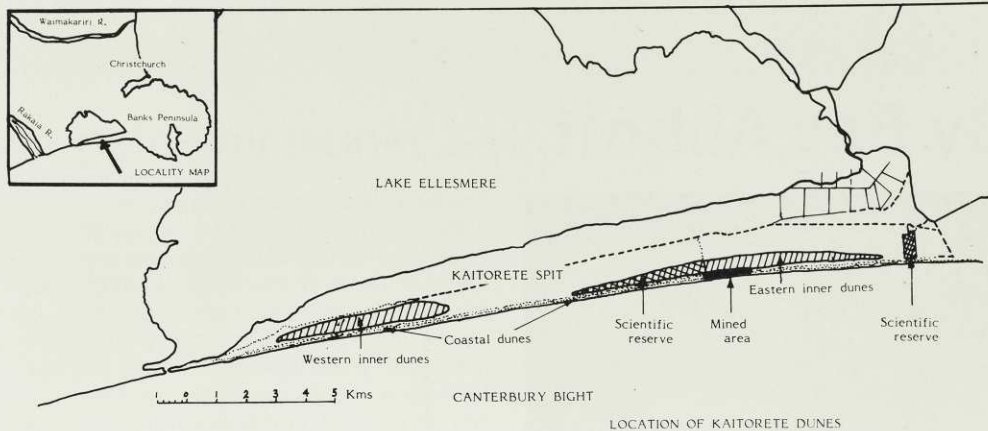
Photo M. Peace

eastern dunes has been undertaken by a contracting company, originally without any agreement or payment, but since 1964 under a renewable licence from the Lands and Survey Department. Currently a total of 11 hectares of pingao covered dunes have been removed along a 1050 metre stretch, a total of about 274,384 cubic metres of sand. Removal of sand from this dune system is quite unjustifiable. The natural process of dune rebuilding at this end of the Spit is minimal, the ecological damage is immense and alternative sources of sand do exist for the company's operations.

On 8 March 1984 the mining company, Habgoods Ltd, were given three months to apply for a licence under the Mining Act, which would give the public opportunity to object.

On 26 June 1984 Habgoods posted an application for a mining licence over a further 23.4 hectares of the Kaitorete pingao-covered dunes. Our Society is objecting to this application and we hope that the Department of Lands and Survey will also object.

A special study written by a Lands and Survey planning officer, J. D. Palmer in 1980 and made public by the Department concludes that "in view of the Kaitorete dunes natural, cultural, archeological and recreational values ... the present extent of reserve land is inadequate. The whole Crown land dune complex is worthy of reserve status".



Natural Sand Dunes Need Help

It is time to stop further damage and destruction of our remaining natural sanddunes.

We now recognise that these dunes and their special plants and animals are just as distinctive and important as our great kauri forests. We also know where our remaining natural sand dunes are and that few of them are adequately protected. The DSIR's Biological Resources Centre will document this information more fully as it works through New Zealand identifying opportunities for a representative reserve network. Unfortunately this work could take ten years or more and meanwhile modification and destruction of natural dunes will continue.

Fortunately many of our remaining natural dunelands are on Crown owned land. Their future lies in the hands of the Minister of Lands and his Land Settlement Board. If the dunes are given reserve status, their further destruction for forestry, farming, mining, urban and recreational developments will be stopped. Further grazing damage should also stop provided the reserves are properly managed.

The Royal Forest and Bird Protection Society is already active in advocating better protection for natural dunelands throughout the country, including:

- ☐ Pressing for removal of stock from the natural dunes of the Te Pahi Farm Park in the far north.
- ☐ Seeking a western extension of the Waipoua Forest Sanctuary to include kauri forest on dunes around the Wairau River.
- ☐ Seeking a halt to sand mining of the Crown owned pingao dunes of the Kaitorete Spit as well as control of stock.
- ☐ Seeking to prevent the construction of the Feltex logging road around the pingao covered dunes of Sand Hill Point, Waitutu.
- ☐ Advocating reservation of the podocarp dune forests of the Haast lowlands and for better controls on beach mining in South Westland.
- ☐ Appealing to the Land Settlement Board to give reserve status to the nationally important Crown owned dunes at Mason Bay, western Stewart Island currently under a pastoral lease.

Reserve status for natural dunes will not remove the threat of invasion by weeds such as marram, gorse and lupin. A programme of control, where feasible, by hand and through careful spraying will be needed. It is encouraging to see this work already underway to protect natural dune vegetation in Fiordland National Park and on Stewart Island.

Cultural use of pingao may become increasingly important to the Maori people. Provision must be made for a sustained supply of pingao for weaving and other cultural purposes. Obviously such a supply should not rely heavily on the vulnerable surviving pingao populations. Instead a programme of pingao revegetation should be encouraged to bring pingao back to marram blanketed beaches such as Brighton, Dunedin; Waimairi, Christchurch; Waikanae; Wellington and Muriwai, Auckland. Already some Maori groups have started growing pingao for cultural purposes.

For 140 years our natural dunelands have been disappearing from the landscape. We can't afford to lose any more of them. We need your support for our national campaign to protect our finest dunelands. You should also consider walking your local beach and if you find pingao plants, weed out any encroaching marram grass.

Dr Gerry McSweeney
National Conservation Officer



MAKING THE MOST OF

By Bev Abbott, N.Z. Mountain Safety Council.



Choose your trip to suit the capabilities of your party — walkways are good for short walks especially with inexperienced people.

Rick Hargreaves

The New Zealand outdoors offers wonderful opportunities for recreation. Each year more and more people are discovering the rewards of spending time in the bush. Some go on their own to find peace and solitude. Others go with their families or small groups of friends to enjoy fresh air and exercise. There are also special interest groups like branches of the Royal Forest and Bird Protection Society who go to study the plant life or animal life and the fascinating inter-relationships of living things and their environment.

Land managers in the New Zealand Forest Service, the Department of Lands and Survey and many local bodies have responded to this increased demand for outdoor recreation in many ways. One exciting development has been the rapid growth in the number of tracks and walkways. Accompanying this has been a vast increase in the amount of publicity about walks in newspaper articles, radio programmes and pamphlets. Every encouragement is being given to people to get out and enjoy New Zealand's natural environments.

There is however, another side to the story. Experienced bush users have long known that New Zealand's bush and mountains can be very unforgiving to the ill-prepared, the unaware and the careless.

What was intended as an easy, relaxing trip can quickly become very demanding, both physically and mentally if the weather turns cold and wet, if someone is lost or injured, or if the party lacks the necessary equipment, skill, fitness or leadership. All people going into the outdoors, even if just for a short afternoon's walk need to know about the potential problems they may have to face. They need to know how to prevent the preventable and how to cope with the unexpected.

There are probably three vital ingredients for successful and enjoyable trips; careful preparation, competent leadership, and overall, a spirit of cooperation between the people.

Planning

Pre-trip planning includes such tasks as planning the route, obtaining permission for crossing private land, checking that everyone knows what to bring, and leaving trip details with a responsible contact person. It's also important that the leader "knows" the party. An awareness of each individual's strengths and weaknesses may help the leader to anticipate and avoid situations where problems could arise. It may also indicate ways that the leader can organise the trip so that everyone has a more enjoyable time. Some leaders work

What can be an easy walk in good conditions can become much harder in bad weather — Tongariro National Park.

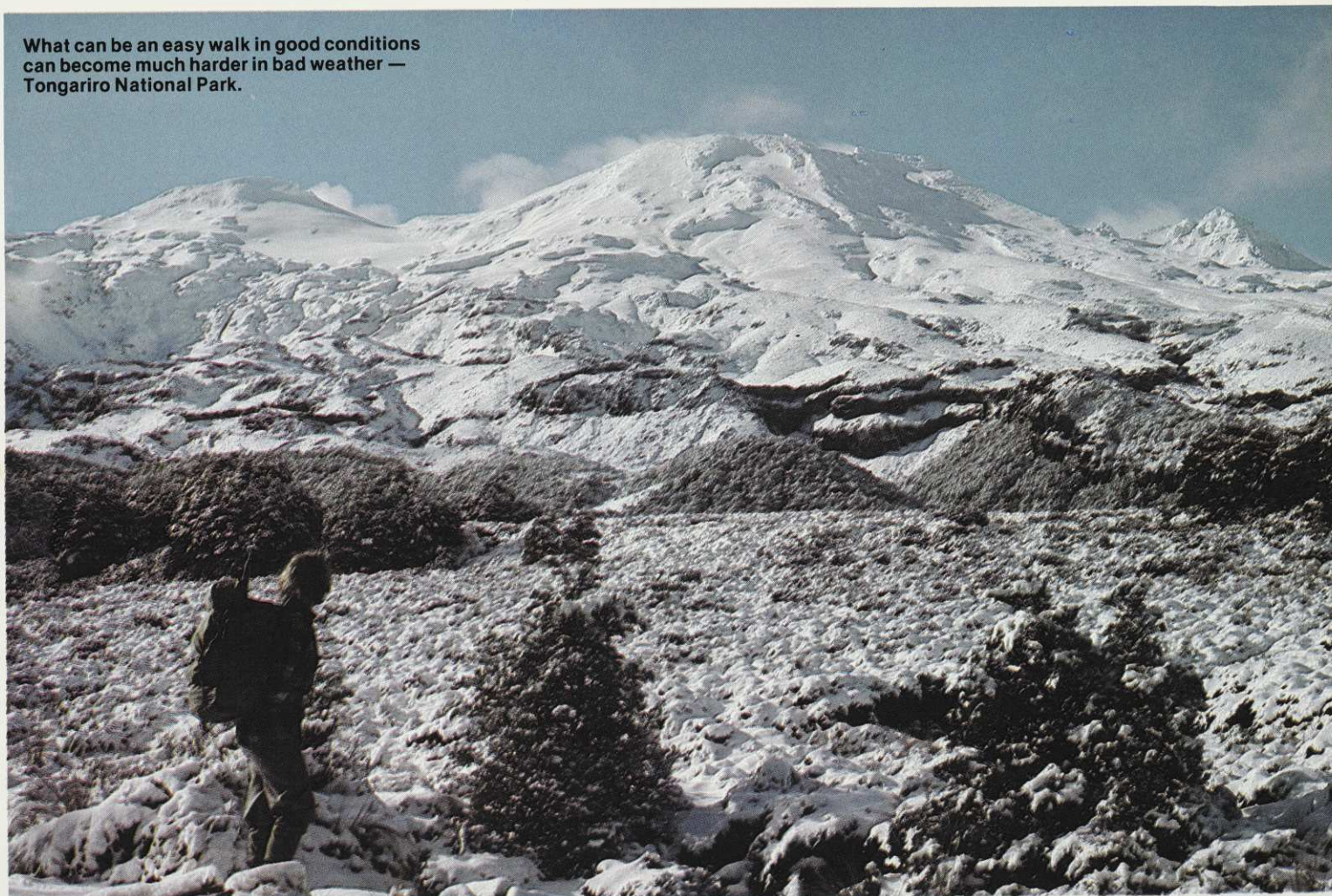


Photo: Colin Abbott

YOUR OUTDOOR TRIPS

on the philosophy that newcomers will soon learn from their mistakes, but there are kinder approaches.

An important part of trip preparation is making sure that each person has suitable clothing and footwear. Running shoes are fine on well-formed tracks, but on rough ground, boots give better support and protection. Wearing two pairs of socks decreases the chance of blisters, but it pays to put sticking plaster on any spots which are starting to rub.

A waterproof, windproof outer layer is essential. Light nylon parkas and padded jackets are windproof, but are not much use if it's really raining. Waterproof overtrousers keep out some rain and wind, but many trampers wear shorts in the bush, even in wet weather. Less vigorous parties usually prefer woollen, corduroy or tracksuit trousers. Shirts and jerseys should be warm and retain their insulating properties when wet. Wool is excellent, as is Dacron Fibrepile. This fast-drying synthetic, specially designed for outdoor use is however, not as windproof as wool. For trips above the bushline, or in cold weather, a hat is essential to minimise heat loss from the head.

Hypothermia can kill

Warm, waterproof clothing is important, not only for the comfort it provides in bad weather, but because it helps prevent hypothermia or exposure. Hypothermia has been the cause of many deaths in the New Zealand bush, even in recent years. It occurs if persons lose body heat faster than they can produce it. Improper clothing, poor leadership and bad weather are the main contributing factors, but body shape and general state of health also make some people more susceptible than others. If a party is well-equipped with the right clothing and high-energy foods, if all the members are healthy and fit enough for the trip, and if they act sensibly, then they can continue quite safely, even in appalling weather. But notice all those 'ifs'.

It's very important to watch for early signs of hypothermia — shivering, weariness, clumsiness and slow or atypical responses. If any person is showing any of the above signs, it is essential to take action. Arrange temporary shelter, have high-energy snacks, and put on more warm clothing. The party will also need to consider changing their plans to reduce the chances of people getting any colder. Options may include dropping to lower altitudes, turning back, heading for a hut or staying out of rivers. Prompt action may prevent a serious situation developing. It's much easier to prevent hypothermia than to treat it. People have died without even complaining of feeling cold.

Another important pre-trip task is to leave written details of the trip with a responsible contact person. There are all sorts of reasons why a party may be late back, even on short trips. If this happens,



Photo: A. P. Druce

Rain gear and warm clothing are essential on more extended walks — especially if you want to stop and botanise. Herangi Range summit — North Taranaki.

the contact person can then reassure anxious relatives in the short term, and contact the Search and Rescue authorities if the delay becomes more serious.

Leadership

Competent leadership in the field is the second vital ingredient for a party's well-being and enjoyment. It's easy to lead a small group of enthusiastic people on a well-formed track in fine weather. However, if the weather is bad, if the navigation is tricky, if the party is very large, or if people have differing expectations of the trip, then effective leadership presents much more of a challenge. Such time-honoured rules as setting a suitable pace, allowing time for rests, keeping the party together, and watching the weather have proved themselves over and over again.

Many of the leader's tasks are much easier in a small party. It takes less time to keep people informed of decisions and to give them information about the area they are passing through. People on large groups have often felt irritated at missing talks or descriptions when they hadn't caught up with the guide or leader, or when they were too far back in the crowd to hear properly. Competent, experienced leaders can manage large parties, but even they may feel the strain. Splitting a large party into groups of about 12 people under separate leaders may make the day more enjoyable for everyone.

Many people worry about having to cope with a major accident in the bush; others don't worry enough. Serious accidents are rare however, and walking parties are more likely to have to cope with cramp, strains and sprains, heat exhaustion, nettle poisoning or burns. But in the event of a heart attack or a near-drowning, such skills as cardiopulmonary resuscitation may save a life. Bush users with limited first aid experience would be wise to do a first aid

course and carry some first aid instructions. Federated Mountain Club's booklet, *Safety in the Mountains*, will fit into a parka pocket. A first aid kit is useful, though it's surprising what you can improvise with if you have to. Basic first aid supplies include sticking plaster, dressing strips, Panadeine, a crepe bandage and pins, sunburn protection cream and antiseptic cream. Larger parties will probably decide to carry a more extensive kit, and possibly a more detailed set of instructions like those in the N.Z. Mountain Safety Council's recent publication *Outdoor First Aid*. If the leader is not an experienced first aider, then it's important to discover during the pre-trip planning who will be able to take charge if an accident or medical emergency does occur.

If things go wrong

No matter how thorough the planning and preparation, and how careful the leadership, the unexpected can still happen. Such situations require calm and confident leadership. If there has been a serious accident, or if someone has been missing for some time and retracing the route has not located them, then the leader may decide to send for help. It's preferable that two people go, taking a written message. This should state what has happened, who is involved, where they are and what action has already been taken or is planned. The Search and Rescue Organisation really appreciate receiving lots of information. As there may be a delay before help arrives, it is up to the leader to help everyone remain calm. Remaining calm is also vital if you happen to be the one who is lost. Find shelter and do your best to stay warm and dry. This is much easier if you are carrying a survival bag or large plastic sheet. You can either curl up inside it or use it to construct an emergency shelter.

There's always more to learn

It's perhaps salutary every now and then, for persons who go into the bush to review their past trips; there may be important lessons to be learned for the future.

Consider questions like; did I have enough clothing; were my feet comfortable; was I up to the trip or did it leave me exhausted and irritable; did I create any problems for other people; if I'd become separated from the rest of the party would I have known what to do? Honest evaluation may help identify skills you should practise and knowledge you need to learn.

Leaders too can learn a lot by self evaluation. They can ask themselves: in hindsight, did I make all the right decisions; did I keep people informed or did I expect them to be mind-readers; could I have done more to help them enjoy themselves? Another helpful way of improving leading skills is to watch other leaders. It may be worth going out with totally different groups to see how they make decisions and organise their activities. There are many different styles of leadership and many different ways of doing things. It pays to be open to new ideas; some people have been making the same mistakes for years.

The New Zealand Mountain Safety Council produces a variety of instructional manuals and pamphlets to help people enjoy the bush and mountains. The new edition of the Bushcraft Manual is a useful reference for anybody who wishes to learn more about going into the bush and the skills and knowledge required. There are also local Mountain Safety Committees throughout the country and many of these run courses in bushcraft, outdoor first aid, and leadership. It takes time to build up the necessary skills and experience to be self-reliant in the bush, but it brings wonderful feelings of freedom. Being sufficiently competent to help others enjoy the outdoors is also richly rewarding. Why not arrange to go on another trip right now? 🐦

For copies of the publications listed below, write to:

New Zealand Mountain Safety Council
Department of Internal Affairs
Private Bag
Wellington

Bushcraft

Single copies: \$5.00 10 or more: \$3.50

Outdoor First Aid

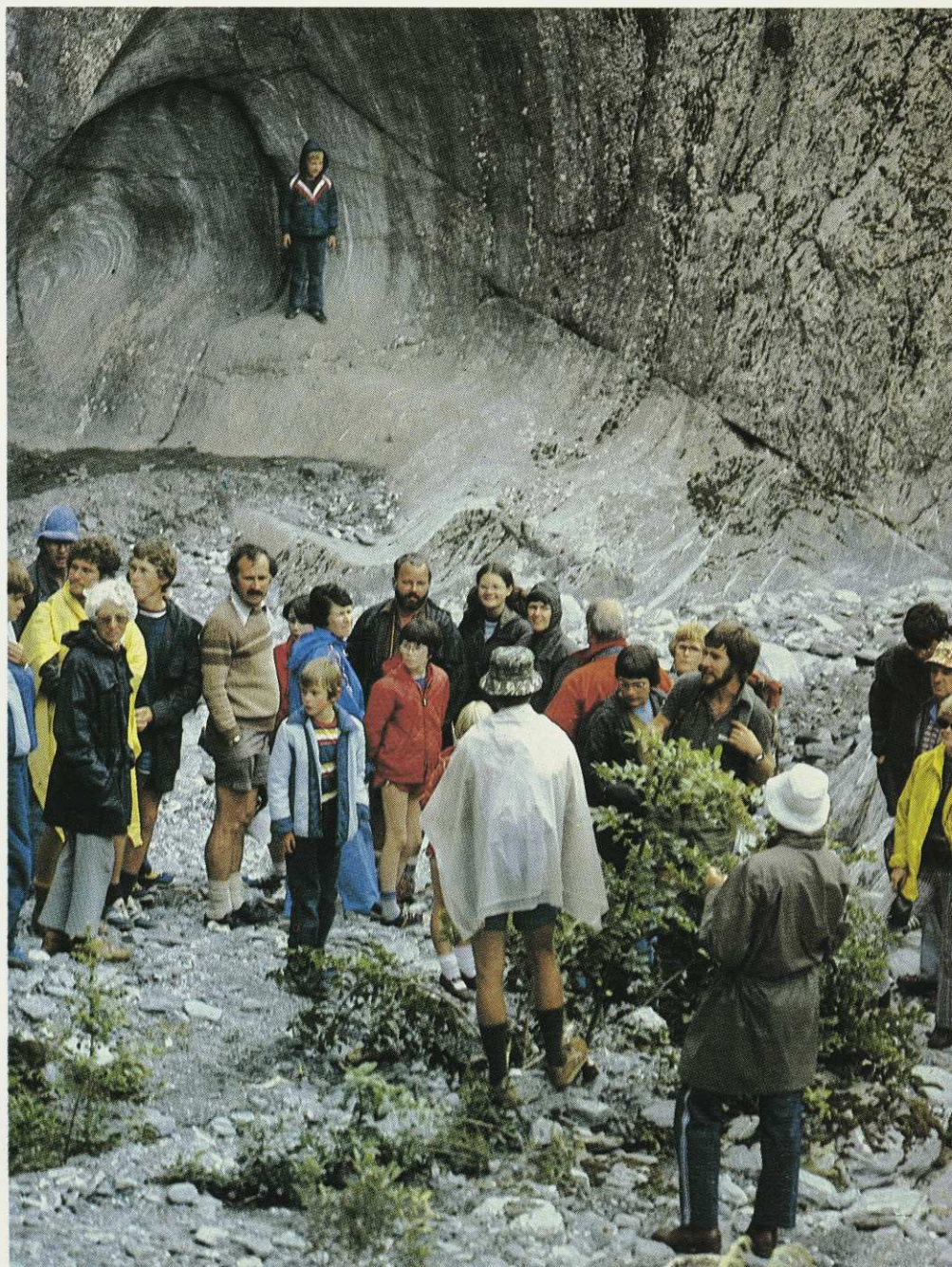
Single copies \$4.50 10 or more: \$3.00

Take regular breaks on your walks for rest and food — it makes the trip much more enjoyable.

Photo: Jack McConchie

Large parties can be particularly difficult to manage. The leader(s) must keep the group together and stop to let tail-enders catch up and join in the conversation — Franz Josef Glacier Valley.

Photo: G. McSweeney



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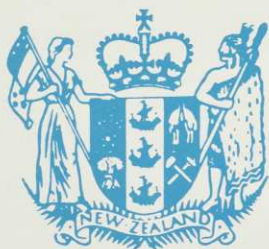
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What future for *kauri*?



By Mark Bellingham
Forest and Bird Northern
Regional Field Officer

Widespread public concern about kauri forest management and the destruction of Northland's very important forests have not been allayed by the New Zealand Forest Service's Kauri Forest Management Review.

The lack of adequate scientific reserves, salvage logging in protection and recreation zones, and the poor economics of kauri management will continue if the 1983 Review is adopted.

Kauri forests contain varied plant associations

Northern forests containing a kauri component once covered 1.5 million hectares, but less than 4% of this remains. These forests contain not only kauri forest, but podocarp-hardwood and hardwood forests which vary from pohutukawa forests on the coast to rimu-Hall's totara-

tawa forests on the tops of the ranges. Kauri forest makes up only 11% of the State Forest "kauri estate". These kauri forests vary considerably. They range from the kauri-tanekaha forests of eastern Northland, to the kauri-Hall's totara forests of Waipoua and the kauri-hard beech of South Auckland, the Coromandel and Kaimai ranges.

A sad history of exploitation

Northland's coastal and lowland forest was cleared in part by the Maori, however most was cleared by Europeans from 1840 to 1940. Kauri timber milling reached its peak in 1906 when 440,000 m³ of kauri was cut (today 1-2,000 m³ cut per annum). More than half the kauri forest was burnt off to clear land for agriculture. One of the greatest of these fires occurred in the vast Puhipuhi forest, south of the Bay of Islands.

A dense stand of kauri in Puketi State Forest.
Photo Ewen Cameron



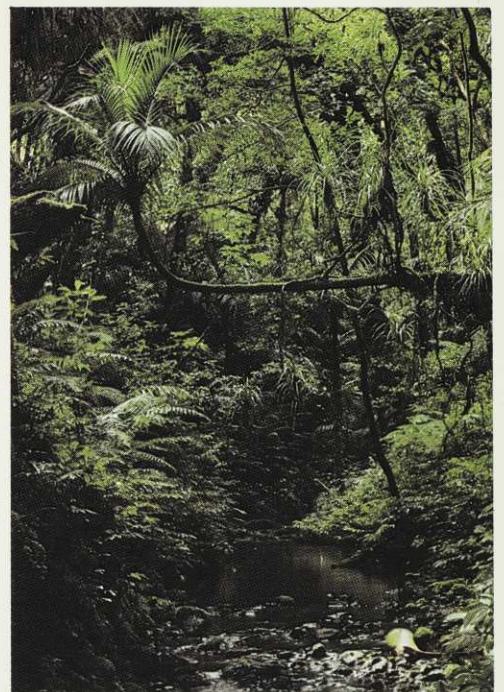
View across Puketi State Forest and the Waipapa valley from Pirau ridge. The kauris in the foreground are in a production zone.
Photo Guy Salmon

The carnivorous kauri snail (*Paraphanta busbyi* var. *busbyi*) is another special inhabitant of Northland's native forests. Surprisingly this species is unprotected and deserves to be added to the list of fully protected species.
Photo Hugh Best



Northland's larger kauri forests are outstanding wildlife habitat. They host kokako such as this bird in Puketi as well as kaka and parakeet. Smaller fragmented forest remnants are unable to support kokako, kaka and parakeet.

Photo Hugh Best



Kauri forests are our richest, most diverse native forests. They have important biological values worthy of preservation. They are also vital for soil and water protection. Many of Northland's rivers rise amidst kauri forest and are used lower down for irrigation for horticulture.

Photo Hugh Best

Nearly 7,000 hectares of virgin kauri forest was set alight and totally destroyed. The loss was estimated at over 1.5 million cubic metres of kauri which even in 1887 was valued at four million dollars.

Another fire killed Kairarau, the largest kauri ever measured, which was 2½ times larger than Tane Mahuta, the giant of Waipoua.

Despite the magnificent conservation campaign spearheaded by Professor Barney MacGregor in 1948 which resulted in the establishment of the Waipoua sanctuary, destructive kauri logging practices continued elsewhere. In the early 1970's there was a public outcry against the logging of mature kauri in Warawara State Forest in Northland and in Manaia State Forest in the Coromandel. Large areas of kauri were still being clearfelled and there was great concern for the few

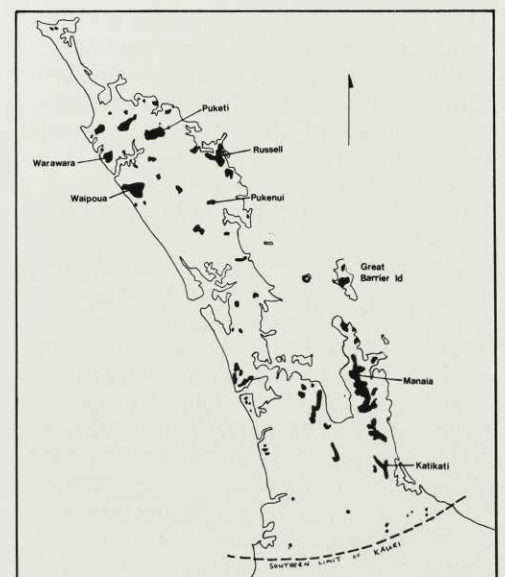
remaining mature kauri stands and the future of kauri as a species.

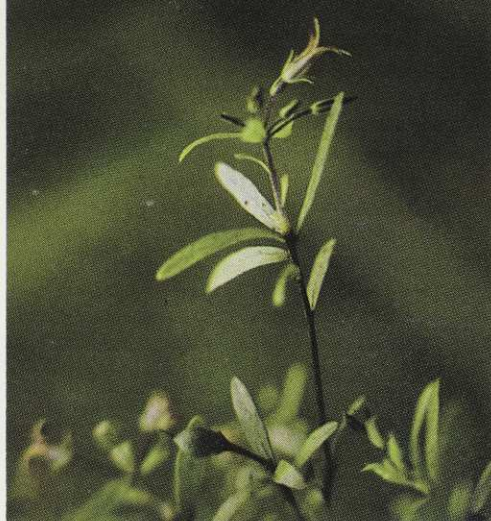
The 1973 Government Kauri Policy

In 1973, the Government adopted a Kauri Policy, which aimed to preserve and protect kauri, by reservation and through appropriate forestry management. New scientific reserves were established.

However, eastern Northland, south Auckland and Great Barrier Island still have inadequate kauri forest reserves and many of the existing reserves don't meet the Forest Service's own scientific reserve guidelines (Geden, 1983).

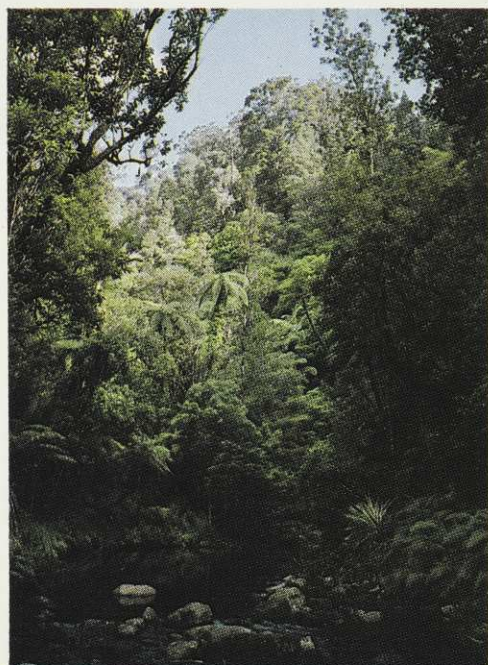
The 1973 policy proposed to acquire "substantial areas of kauri regeneration". This was never carried out (Sale, 1979), and this aspect has been further down-played in the 1983 Kauri Review. Large-scale land





Pittosporum pimelioides

Photo Mark Bellingham



Scientific reserves in kauri forests are inadequate. The Waipoua forest sanctuary should be extended west to include the Wairau river forests shown here including kauri forest zoned for management. This would protect mature kauri growing on sand dunes, coastal kauri forest and a colony of the endangered shrub *Pittosporum pimelioides*.

acquisition for pine planting continues at the expense of the acquisition of threatened native forests and the shrublands in which kauri is regenerating. There is wide-spread clearance for pine planting of the shrubland areas in which regenerating kauri could form great forests of the future.

Although the 1973 Kauri Policy was set up to allay the public fears for the small area of mature kauri forest that remained, mature kauri logging continued until 1981. Kauri logging at Puketi State Forest was finally stopped in 1979 when a large kokako population was discovered. Logging contracts were transferred to Herekino State Forest near Kaitaia until they expired in 1981.

A moratorium was placed on all logging in Puketi while a study of kokako was undertaken and this moratorium expires this year. However, some salvage logging operations have still gone on in Puketi despite the moratorium. Over 100 kokako have now been found in Puketi and this is one of the largest single populations of this species found anywhere in New Zealand. Half of the kokako in Puketi have territories outside the ecological reserve in areas zoned for forest management where they



Photo Guy Salmon

Kauri forests extend south of Auckland into the Coromandel and Kaimai Ranges. These young kauris are growing in the Hot springs road production zone of Katikati forest. Bay of Plenty people have been seeking permanent protection for this and other Kaimai-Mamaku forests for 11 years.

are vulnerable to any resumption of logging operations.

Today most State Forest kauri comes from regenerating kauri forests in Russell State Forest. Trees are felled and logging sites are cleared to aid visibility for the helicopter that usually lifts the whole log from the forest. This operation is only feasible with small sized kauri light enough for a helicopter lift.

1983 Kauri Management Review

The 1983 Kauri Management Review has put more emphasis on timber production. The 1973 Policy allowed 870 m³ per annum of kauri to be cut in State Forest. The 1983 Review wants the cut to equal the calculated growth throughout the forests zoned for management. This would mean a 14 fold increase in the current cut to 12,500 m³ per year.

Kauri management also involves planting kauri seedlings, a practice that evokes much public sympathy. But there are many places in which kauri have been planted where there is already good kauri regeneration and also in areas where kauri doesn't grow naturally. All the seedlings planted to date come from a few trees at Waipoua. Whether these seedlings will grow fast have straight trunks or thrive in climatic and soil conditions different to Waipoua is anybody's guess.

In the first four to five years of growth, kauri seedlings are "released" from the surrounding vegetation. Competing low vegetation is cut back and near by large trees are ring-barked. These include totara, rimu, tanekaha and many other forest canopy species. Natural forests are manipulated to produce an unnatural kauri mono-culture. The effects of this manipulation on nutrient recycling, tree health and growth, and wildlife is unknown, yet this unmonitored experiment is being carried out in thousands of hectares of forest. Obviously from a scenic and recreational viewpoint kauri management does change the character of the natural forest dramatically.

Towards representative kauri reserves

The 1983 Kauri Forest management Review fails to recognise the inadequacies of present reserves or timber management



Northland's native forests offer tremendous scope for recreational and tourism use compatible with their preservation. Provision of recreational facilities in the new Northland State Forest Park will be a major challenge to the Forest Service because few tracks presently exist. Most travel in kauri forest is along the easiest natural routes. River crossing, Waipapa stream, Puketi Forest.

Photo Ewen Cameron

practices. Our Society is currently documenting opportunities for a more representative kauri reserve system. We have already identified a range of areas as being of importance including the following:

Waipoua:

An extension to the west would give a continuous tract of protected forest from the top of the Tutamoe Range to the Tasman Sea. This extension would include mature kauri growing on old sand dunes, a colony of the endangered shrub *Pittosporum pimelioides* and coastal kauri forest.

Puketi:

The whole of Puketi Forest should be a sanctuary. This would protect the kokako population and preserve the giant kauri (including Te Tangi o te Tui, the fourth largest) which are in a proposed production zone.

Russell:

A larger reserve is needed here to represent the lowland and regenerating kauri forest associations of eastern Northland that have all but disappeared from this region.

Reserves are also needed with coastal and lowland kauri, and the various vegetation types associated with



Area cleared for helicopter logging, Russell State Forest. A large clearing is often needed for clear vision. The resultant effect is pock marked managed forest devoid of natural character.

Photo Guy Salmon

regenerating kauri forest. These are poorly represented in present scientific reserves.

Our alternative kauri plan

Future management of our remaining state owned kauri and northern native forests must recognize that these forests are just a shadow of their former extent. Their primary role must therefore be preservation to protect their unique plant and animal associations, to protect soil and water values and to maintain their distinctive scenic qualities.

Sensitive use of kauri forests for recreation and education is also compatible with their preservation. Such use benefits not only the people of Northland and Auckland but also provides an important attraction for Northland's growing tourist industry. The popularity of the recently constructed excellent nature walk in Puketi State Forest is clear evidence of public interest in kauri forests. These forests are unrivalled in size, grandeur and sheer diversity by any other forest in New Zealand and have a profound impact on visitors.



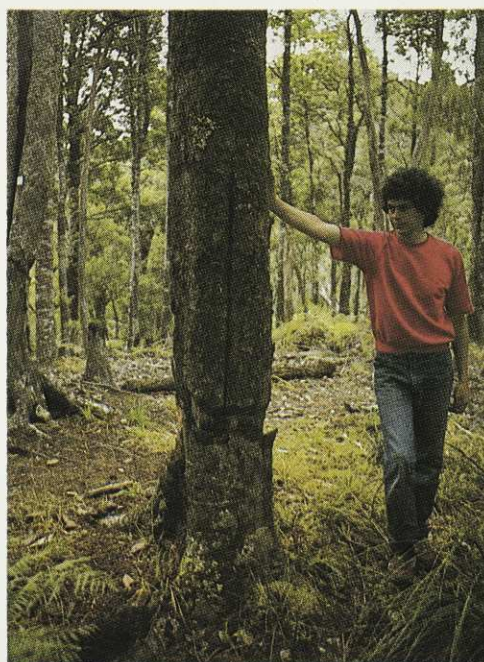
"Weeding" of the rimu tree lying on the ground and tree ferns is supposed to promote the growth of the young planted kauri in the foreground, Russell State Forest.

Photo Guy Salmon

In contrast to nature conservation and recreational use of kauri forests, timber production can be largely accommodated elsewhere. Exotic forestry is expanding dramatically throughout Northland. Management of these exotic forests is providing increasing employment in Northland and the forests can meet virtually all our timber needs. Kauri need only be used for limited speciality and snob uses.

Forest Service studies indicate that it is unlikely that the kauri market at this stage or in the foreseeable future will be capable of absorbing significantly more than the current level of kauri supply (895 m³ per annum). Instead their studies indicate that any increased quantities would only be used for utilitarian purposes. There is therefore no market justification for the major expansion in kauri production envisaged by the 1983 Kauri Management Review nor is such expansion justified on economic or ecological grounds.

The Joint Campaign on Native Forests has calculated that to provide the present state forest cut of kauri for speciality uses

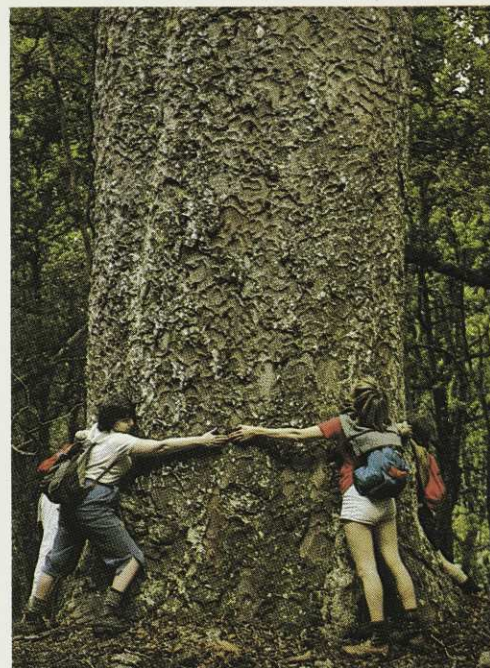


This taraire has been ringbarked to stop it competing with young kauri, Russell State Forest. Only 150 hectares of second growth kauri need be managed to meet the demand for specialty kauri timber.

Photo Guy Salmon

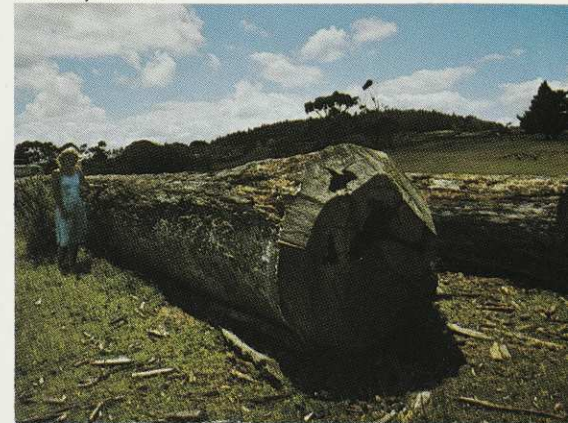
Kauri forests are unrivalled in size, grandeur and sheer diversity by any other forest in New Zealand and have a profound impact on visitors. A small kauri in Pukenui State Forest near Whangarei.

Photo Ewen Cameron



These two huge kauri were felled from Puketi to make Maori canoes but 7 years later lie rotting in a paddock near Kaitia.

Photo Guy Salmon

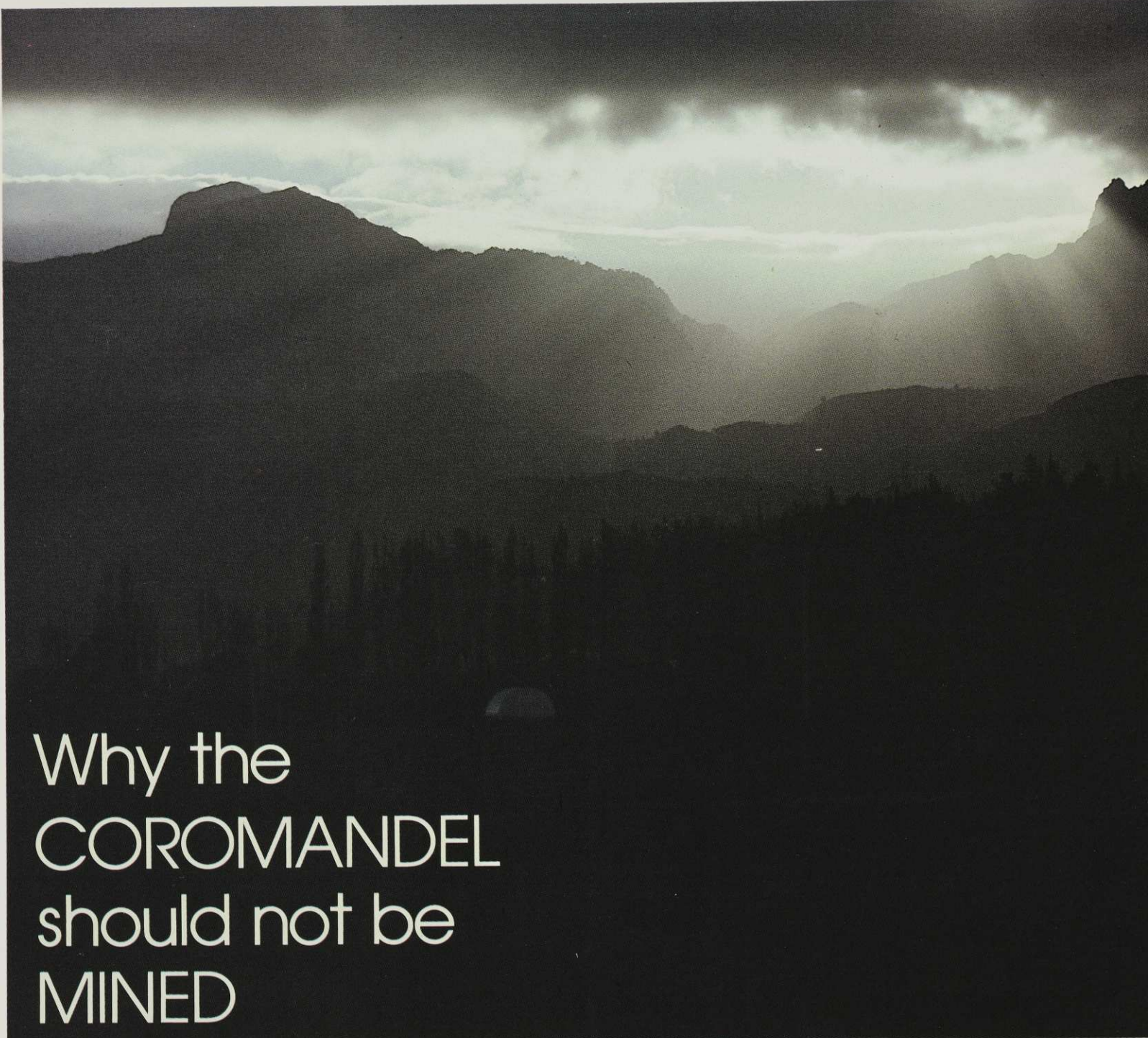


on a sustained yield basis less than 150 hectares of managed kauri forest is needed. Our Society has joined with other members of the Joint Campaign in calling for the deletion of all but 150 hectares from the proposed kauri management zone in Northland's State Forests. Any further expansion of kauri silviculture can be achieved by the acquisition and regeneration of shrubland.

The balance of our surviving state owned kauri forests in Northland, the Coromandel and the Kaimais in the Bay of Plenty deserve immediate permanent protection.

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Why the COROMANDEL should not be MINED

By Gary Taylor and John Morton

A radical platform it could indeed seem: to oppose mining altogether on the Coromandel Peninsula. Many will want to ask why. What would have happened to the world's technology and economy if environmentalists had wanted to conserve the Rand of South Africa, or the copper belt of Montana, or Broken Hill?

Without doubt there are precious and useful metals the world needs (... though in a rational world gold might not be one of them). These metals have been able to be won from land-masses that were huge, and arid, and generally uniform. With the earth's crust scraped for metals, there was little danger that water or land-slips would carry away tailings, or kill or poison fertile landscapes, or fill up the valleys or the arms of the sea.

But most of New Zealand is a different sort of terrain: small, narrow, diverse and coastal. Its landforms constantly change. Some are unique to the world: most are fragile and unstable.

The land has a living skin too, that is thin

and vulnerable. It is also green and self-renewing, with the farms and forests and natural communities, running off to shallow waters with productive fisheries.

If the whole of New Zealand is beautiful, the Coromandel is precious to the highest degree. An hour's distance only from crowded Auckland, it is a scenic joy: with its high-forested range, its pohutukawa-lined coasts, its sand and boulder beaches, its little farmed valleys, and its shallow Firth of Thames. The last is one of our richest commercial fishing grounds, and an unsurpassed habitat of wading birds. All these are at risk today as never before. One third of the Coromandel Peninsula is covered by exploration or prospecting licences from multi-national mining companies.

For almost 100 years the Peninsula was mined, by tunnelling along quartz reefs to extract the gold by pick and shovel. But the transnational giants of today are looking to open-cast mining: digging enormous pits several hundred metres deep. Even a

single open pit mine might move as much rock as 1,000 companies shifted by pick and shovel in 100 years. Modern mining depends for its availability on its giant scale. From a big enough mine, gold can be as thin as 2 gms. per tonne of ore processed. Huge quantities of tailings will result, a fine powdery material difficult to control, from ores containing lead, zinc, mercury and other toxic metals. Ground-water when acidified mobilises these toxic elements. Cyanide used in extraction is present too. All these things enter the streams, the coastal seas and the food chains: of plankton and shellfish: of snapper, of birds and of people!

The effect on forest landscapes is also immense. Whole landscapes will be altered or removed, turned into craters, internally terraced to provide access for 50 tonne vehicles. Valleys can be suffocated beneath millions of tonnes of overburden and tailings.

Some present ventures in the pipeline will greatly affect or obliterate communities



The rugged castellated outline of Tairua Hills at sundown.

Photo: G. Braithwaite

grove that Forest and Bird walking parties have enjoyed for many years. They now face competition from large truck and trailer units on their walks. Monowai ore would be transported to Maratoto further down the coast for processing.

The Crusader share prospectus envisages five such mines.

The Company has already antagonised the local residents by discolouring the stream that supplies the town's water. At one stage seventy and eighty year olds staged a picket at the stream ford, and a community action group is closely monitoring developments. Crusader's E.I.R. is also being prepared at the present time.

Further mining developments can be expected as prospecting programmes are completed. All of these will have significant and detrimental impact. Are the legal procedures adequate to identify and stop unacceptable proposals.

The law

Before a mine can begin operation — and a licence is usually for a period of 49 years — statutory consents include :

- ☐ water rights under the Water and Soil Conservation Act 1967
- ☐ a mining licence under the provisions of the Mining Act 1971

In addition, an Environmental Impact Report *may* be required. This is up to the appropriate Ministers to determine.

The E.I.R. is merely a description of the mine development and a preliminary assessment of the likely environmental effects. The hearing before the Planning Tribunal is critically important. It is the only opportunity to put the claims made by the mining applicant to the test of detailed cross-examination. Many are worried that the criteria or statutory considerations to which the Tribunal must have regard are themselves inadequate. They may not strike a reasonable balance between the needs of conservation and the demands for development.

There is further concern at the apparent pro-development disposition of the Tribunal itself.

The environment movement

From the beginning of the 1980's drive for mining, local activists have been strong. One of the multinationals has acknowledged a greater resistance on the Coromandel than they have encountered anywhere else in the world.

A coalition of local groups, knit together as the Peninsula Watchdog Organisation was able to generate the political heat required to get the Mining Act amended in 1981, and to make New Zealand aware of the gravity and extent of the threat.

Other active groups have been Auckland Minewatch, Waikato Watchdog, the Physical Environment Association of the Coromandel, and the Coromandel section



Descending into the Kauaeranga Valley from Crosbies Clearing.

Photo: G. Braithwaite

Crossing the Waiomu Stream.

Photo: G. Braithwaite

that Forest and Bird is deeply interesting in.

The end of the prospecting stage is moreover approaching. Phase Two is now beginning, with several actual proposals moving towards implementation. The biggest is at Waihi, where the giant U.S. corporation Amax plans an open-cast mine, in Martha Hill, right on the edge of town. A mining licence will be applied for later this year and an Environmental Impact Report (E.I.R.) is being currently prepared.

Options for tailings and overburden include dumping at sea (as supported by the Waihi Borough Council) filling a valley, or retaining on flat land. This last would use 110 hectares of productive farmland, covered to a depth of 35 metres.

A New Zealand company, Crusader Minerals N.Z. Ltd, formed by ex-employees of two of the multinationals, will seek permission later this year for an underground mining operation at Monowai, near Waiomu on the Thames Coast and within the State Forest Park. This would be in the next valley to the magnificent kauri



Hoffman's Pool Kauaeranga Valley a favourite swimming spot.

Photo: G. Braithwaite

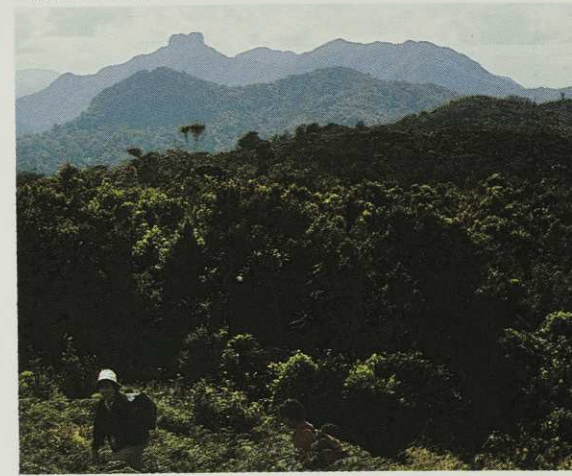
(now a branch) of Forest and Bird. In numerous court hearings involving water right and prospecting licence applications, these groups have been helped by Environment Defence Society (E.D.S.), as well as in submissions to Ministers and to parliamentary select committees. Currently, in addition to High Court proceedings over Kuaotunu, E.D.S. is involved in two other sorts of litigation: over exploration of the northern bush block on Great Barrier Island (geologically a part of the Peninsula) and Kauaeranga Valley, the gateway to the Coromandel State Forest Park.

Very recently, Auckland Minewatch has brought the various groups together, to form a Coalition to Save the Coromandel. This aims to stop gold, silver and other mining in the Forest Park, in coastal areas and water catchments. If funding is sufficient, it will appoint a full-time co-ordinator. Some funds are to be raised by sale of prints by the well-known artist, David Baker.



Crosbies Clearing looking northwards to Maumaupaki or the 'Camel's Back'.

Photo: Mike Milburn



The long flat top of our own Table Mountain is a dominant feature in the Coromandel Ranges.

Photo: Mike Milburn



Waiomu Kauri more appreciated today than in the past when gold mining and logging disturbed the forest.

Photo: G. Braithwaite

Kauaeranga Valley: a case study

The Mining Act 1971, requires the consent of the Minister of Forests to obtain a mining licence over land in a State Forest Park.

The Kauaeranga Valley is the gateway to the Coromandel State Forest Park. An especially beautiful part of the Peninsula, it is extremely popular for tramping and camping. Over 100,000 visit it annually — including recently about 80 Forest and Bird annual camp members.

Circular Quay Holdings Pty Ltd, an Australian mining company, have applied for two prospecting licences over about 5,000 hectares in the Valley.

Initially, the Coromandel State Forest Park Advisory Committee recommended that the Minister should agree to the licences being granted. After lobbying by Auckland Minewatch and E.D.S., they reversed that recommendation.

The Minister of Forests ignored his Committee's advice and consented to the two licences, though with some areas excluded.

Next came the hearing at the Planning Tribunal. A large number of objections — including one from the local council were all rejected.

Environmental Defence Society believes the Tribunal's decision was wrong and has appealed on various points of law to the High Court. A hearing date has not yet been set.

Coalition to Save the Coromandel

The Coalition and its Trustees are promoting a national fund-raising campaign with two "share issues" in "Coromandel Futures".

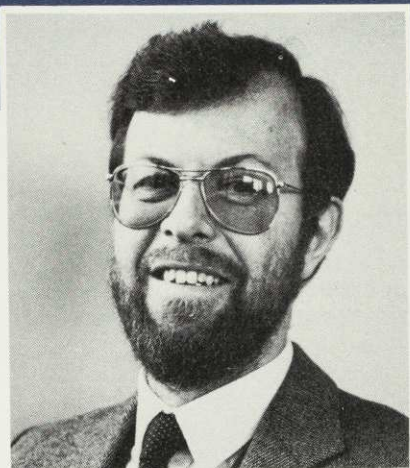
Ordinary Shares in Coromandel Futures at \$5.00 each with a printed share certificate.

Premium Shares in Coromandel Futures at \$30.00 each (delivery by ordinary post \$1.00 each or registered post (recommended) \$1.75 each. A limited issue of 1000 shares. Premium shares take the form of numbered prints from the painting *Bushline* by David Barker, commissioned by the Coalition. Following the sale of these premium shares/prints a draw will be held with one shareholder winning the original painting, valued by John Leech Galleries at \$4200. Orders must be prompt for these high quality prints being prepared under the personal supervision and control of the artist.

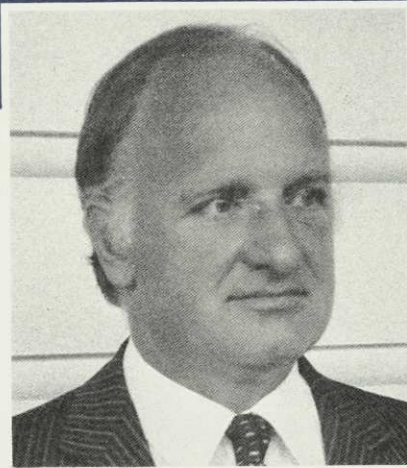
Send your order to The Coromandel Coalition, PO Box 260, Thames, including your name and address and enclosing payment in full. Please make cheques payable to 'The Coromandel Coalition'.

Organiser: Clive Monds,
PO Box 5221, Auckland 1

THE PRESIDENTIAL CHANGE-OVER



Dr Alan Edmonds, President



A. A. T. Ellis, Q.C. President 1976-1984

The new President of the Society

Dr Alan Edmonds was elected President of the Royal Forest and Bird Protection Society of New Zealand at our Council meeting held in Wellington on 9 June 1984. He becomes the Society's 10th president since its foundation in 1923 and replaces retiring president Tony Ellis, Q.C., a Wellington barrister, who held the office for the last 8 years.

Alan Edmonds, 43, is Reader in Biological Sciences at Waikato University Hamilton, and has research interests in the ecology of native plants and the physiology of agricultural plants. Dr Edmonds was previously on the staff of Lincoln College, Canterbury, and has worked at the Forestry Department, Oxford University, and at Ruakura Agricultural Research Centre.

Since 1979 Dr Edmonds has been a member of the Society's National Executive and has been national Deputy president since 1981. He has chaired the Joint Campaign on Native Forests, a coalition of New Zealand's major conservation organisations with interest in native forest conservation, since its inception in 1980. Dr Edmonds is Chairman of Trustees for the Coromandel Coalition, a member of the Pureora State Forest Park Advisory Committee, and has served on scientific advisory committees for National Parks, land use advisory committees, a working party of the Environmental Council studying environmental ethics, and has acted as consultant to the QE II National Trust, local authorities and government departments on the ecology and management of native forests. Married with 3 teenage children, Dr Edmonds is presently taking study leave from Waikato University. He is in Wellington for 8 months with the Queen Elizabeth II National Trust, preparing an ecological inventory procedure for describing properties covenanted to the Trust.

A valedictory given to Council by Professor John Morton, on the occasion of the retirement of the President Mr A. A. T. Ellis QC. 9 June 1984.

When Tony Ellis accepted the Presidency of Royal Forest and Bird in 1976, he could not have known he was in for such an interesting spell. The battles for the great forests were warming up, and all sorts of environment questions coming to the fore. Along with this, the Society's membership was to grow from 22,000 to 40,000.

From its internal debate that began the '80's, Forest and Bird came out stronger and clearly united. Not only New Zealand's oldest and wealthiest conservation body, it could bid fair to become one of the most radical.

To all this Tony Ellis brought a contribution that was not always realised while it was happening, or until the results were seen later. Neither a professional biologist, nor — by temperament — an activist, he brought qualities that were to make his term as President important, with leadership that staff, executive and

branches were constantly aware of.

As President, he presided superbly, just when it was needed. Council meetings that were strained and contentious and could have gone on being divisive, he handled from the Chair with wit and erudition and lightness of touch; but with a shrewdness that never lost direction or command. He had many of the attributes of a judge: but solemnity was never one of them.

Wise in affairs, he knew not just about statutes and standing orders, but about people. When it came to the great "merger" battle, he sometimes seemed to do little: but what a wrong conclusion that would be! Everyone then was a partisan — had to be if all sides were to be canvassed and advocated.

Above all, Tony had to judge what sort of a marriage would have worked between such strong parties. When the decision came, no one got all they had wanted; and the outcome we have today was perhaps closest to Tony's own insight. This was outstanding leadership, achieved neither by pushing nor aligning with so many determined people!

Through all his Presidency, Tony Ellis had some qualities not perhaps common in men of the law — or anywhere. He is young in heart, and immensely attracted by new things happening and the possibilities of creative change.

He is also genuinely kind, and hated that — during political debates or public occasions — people, particularly those serving the Society should be hurt. We saw this side of him often, even though from the Chair he could be effectively sharp where he thought it was needed.

Tony Ellis taught us, in effect, a lot about the way things should be done, when people are doing battle, not only about causes but even occasionally with each other.

It will be good to have him still with us on Executive for his post-presidential year, because — if our meetings over these years have been enjoyable, as well as strenuous — much of this has come about from our having in Tony Ellis a special human being and a good friend.



A FOREST PARK FOR TONGARIRO?

On 17 April a major public meeting in Owango was convened by King Country RF&BPS to discuss future management of the 25,700 hectare Tongariro State Forest. 150 people from throughout the region attended. Release of a Forest Service Land Use Study which identifies much of the forest as being suitable for pines and pasture, and the interim zoning of nearly half the forest for clearance has precipitated controversy throughout the region.

The meeting voted unanimously for the preservation of the State Forest in its present largely natural state and for its development as a Forest Park to benefit the King Country's growing recreation and tourism industry. A Tongariro Forest Park promotion committee was established including Forest and Bird, Federated Farmers, Taumarunui Borough and County Council, Outdoor Pursuits Centre, tramping, deerstalking, fishing and tourism representatives. This group has now presented submissions to Government supporting the Forest Park. Head Office Forest and Bird have also presented detailed proposals to the Forest Service recommending ecological reserve status for an additional 2,700 hectares of the forest.

The proposed Tongariro Forest Park would encompass both Tongariro and Erua State Forests. These forests include fascinating mosaics of cedar, matai, totara, rimu beach and tawa, which although logged in parts still contain important natural and recreational values. They occur at a much lower altitude than forests already protected in Tongariro National Park.

Anne Fraser, Councillor of RF&BPS King Country Branch stands beneath a huge rimu in Tongariro State Forest. This area lies within the Owango township water supply catchment, is mapped by Forest Service as "heavy scrub" and tentatively zoned for conversion to pines. These proposals have united King Country people to fight for their forests.

BAY OF PLENTY FORESTS FINALLY PROTECTED!

On 26 June the Government announced that it would fully implement the recommendations on the Kaimai-Mamaku forests made by the National Parks and Reserves Authority (NPRA). After reviewing all public submissions and Forest Service management proposals, the NPRA made eight detailed recommendations to Government. The most important of these was that the whole Forest Park and five important outlying native forests between Tauranga and Rotorua should be dedicated for permanent protection under Section 15 of the Forests Act. The NPRA also urged Government to encourage private landowners with native forest adjoining the park to give their forests permanent protection.

The battle to save the Kaimai-Mamakus has been an 11 year epic spearheaded by the people of the Bay of Plenty which also involved people from the Waikato to Rotorua. They all deserve congratulations from Society members on their success.

WHAT PRICE WATER EXPORT?

Triune Resources proposal to export fresh water from Deep Cove has not been well received in Southland. Triune envisages an export buildup to a level where up to two supertankers a day would call at Deep Cove. The majority of public submissions on the company's 300 page Environmental Impact Report are critical of the scheme. Economic benefits of the scheme were not spelt out in the E.I.R., while environmental and economic costs of the proposals are considered to be unacceptably high.

Deep Cove lies in the heart of Fiordland National Park. A major water export industry would be an intrusion into the grandeur and naturalness of this area. It would destroy the qualities sought by school children who visit Deep Cove Hostel for outdoor education courses. Fiordland Travel managing director, Les Hutchins, also considers it could destroy the valuable and expanding Fiordland tourist industry centred around Deep Cove and Doubtful Sound. Our Society is urging Government to identify alternative water sources for Triune with less impact on National Park values and the natural environment.

MAVORA LAKES PASTORAL PARK PROPOSAL IN SOUTHLAND UNSATISFACTORY

The Lands and Survey Department proposal to create 35,000 hectare pastoral park centred around Southland's Mavora Lakes in unsatisfactory. Public submissions closed on 6 July on Departmental plans for this important natural area which contains a representative sample of northern Southland's high country. The area includes the two Mavora Lakes, beech forest, extensive natural grasslands and wetlands of the Mararoa river and Winden Burn, all sandwiched between the impressive Livingston and Thomson mountains. It is also very popular for recreation. Mavora is in Crown ownership and meets all the criteria for a scenic reserve. As such it would be a prime candidate for national reserve status. A pastoral park, unlike a scenic reserve, offers insufficient protection to this important natural area. It seems designed to legitimise cattle grazing throughout the river flats and wetlands of the Park, grazing widely considered to be detrimental to natural values. The Mavora Lakes will be featured in our next issue of Forest and Bird which focuses on the South Island High Country and tussock grasslands.

BLUE DUCK SIGHTINGS REQUIRED

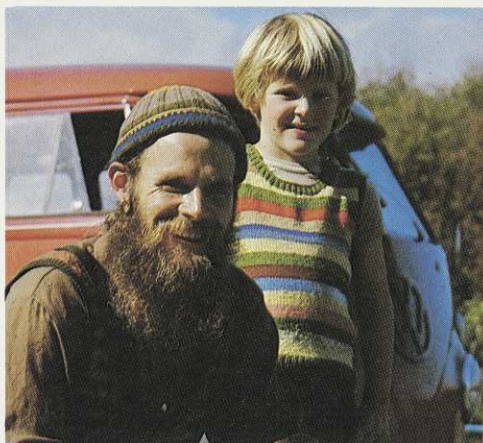
Duncan Cunningham, Wildlife Service, Internal Affairs, Wellington is surveying distribution of the elusive blue duck. Any readers who can provide sighting details together with dates and map grid references should contact Duncan.

BANKS PENINSULA FIRE HIGHLIGHTS SMALL RESERVE PROBLEMS

We are often criticised for seeking large reserves — measuring thousands of hectares and encompassing whole catchments as well as areas surrounded by buffer zones. The most important reason for seeking large reserves is that scientific studies and practical experience shows that usually only large reserves are biologically sustainable. Large reserves can support wide ranging bird species like kaka and parakeet. They are buffered from natural catastrophes such as disease, wind throw and drought simply because they contain a diversity of plant associations on a range of sites. Large reserves also minimise unnatural edge effects — dessication, wind, spray and fertiliser drift and even invasion by weeds like Old Mans Beard which thrive on forest margins and in modified forests.

Sadly many of our surviving reserves, although natural treasures are too small

and may not be sustainable. On 9 June, a disastrous fire struck one of the most valuable reserves — the 36 hectare Armstrong Nature Reserve behind Akaroa. A gorse burnoff on farmland next door was fanned out of control and burnt out nearly half the reserve. The worst damage was the total destruction of the only significant patch of regenerating cedar on Banks Peninsula. The fire also burnt all of the reserve's snow tussock grassland — one of only four significant patches reserved on Banks Peninsula — and many rare and special plants including the very rare peninsula mountain daisy *Celmisia mackau*. This tragedy must strengthen our resolve to secure large sustainable reserves wherever possible.



Budyong and Toro Hill who live near Punakaiki want a Punakaiki National Park, as do the majority of Buller people who recently wrote submissions on the Park proposal. National Parks Authority chairman, David Thom, considers "Punakaiki is one of the most scenically spectacular, ecologically important and unusually diverse areas in New Zealand".

BUSH PROTECTION, NATIONAL PARKS AND ANTARCTICA FOCUS OF JUNE COUNCIL MEETING

The June Society Council Meeting on 8–9 June included discussions of a range of key conservation issues. Progress in minerals regime negotiations for Antarctica were described by Catherine Wallace of the Antarctic and Southern Oceans Coalition. Professor John Morton presented the Sanderson Memorial Address on nature protection on private land. Gary Taylor of the Environmental Defence Society presented EDS kits on regional planning, bush and wetlands protection. Mark Bellingham and Gerry McSweeney discussed conservation problems in Northland and Government subsidies to destroy privately owned natural areas. Finally, Professor Alan Mark reviewed the National Parks and Reserves Authority's investigations of proposed National Parks for the Wanganui, Waitutu and Punakaiki areas.

Dr Gerry McSweeney
National Conservation Officer



Dark-grey kakirori (*Pomarea dimidiata*) held for banding and measuring. One of 24 known individuals.

Conserving the KAKIRORI

Rod Hay and Gerald McCormack*

Deep in a few remote valleys of Rarotonga, sharp staccato cries signal the presence of one of the world's rarest birds. The species is the kakirori, or Rarotonga flycatcher (*Pomarea dimidiata*), a member of the large family, the Muscicapidae. This group comprises 328 species in all, including our New Zealand robins and tomtits which this bird superficially resembles, with its large eye, whisker-like protruberances around the base of the bill, and confiding nature.

Colour polymorphism

The amount of raucous noise that these birds make belie their size. About a third the weight of a song thrush, the species comes in two colour-schemes. While most are slate-grey above with pale grey underparts, a small proportion (two out of sixteen seen recently) are a rufous or ginger colour giving them an appearance not unlike that

of an orange canary. Perhaps the species provides another example of the colour polymorphism seen in the black and pied forms of the fantail.

Though six kakirori were collected in the 1860s by Andrew Garrett, there were few others seen subsequently and it was clear that the species was rare by the early 1900s. In fact, the Dictionary of the Maori Language of Rarotonga, written in the 1940s by Stephen Savage, classified it as extinct at that time.

Not extinct after all

After sightings of five individuals by David Holyoak in 1973 and of the same single bird by Euan Cameron and by Graham Turbott in 1982 and 1983 respectively, English Ornithologist, David Todd last year trekked many of the valley systems of the island and made definite sightings of 21 birds,

Rugged forested interior of Rarotonga photographed from cultivated coastal strip of the island.



Valley bottom plant association characteristic of kakirori habitat.

All photos Rod Hay

including two pairs that were nesting. Now, the kakirori provides us with some hope for its continued survival. Because little is known of habitat requirements or behaviour, more study is urgently needed. With this in mind, we have colour-banded birds in one locality, to enable systematic data on nesting and habitat use to be gathered over the next breeding season.

Possible reasons for rarity

Why is the kakirori rare? Rarotonga's montane forests are largely unchanged by browsing mammals, fire or timber extraction. Perhaps, therefore, predation has had an effect, legacy of the almost Pacific-wide introductions of rats (Polynesian, Norway and ship species), cats or mynas. The ship rat (*Rattus rattus*) is an abundant feature of the forest and it has undergone dramatic fluctuations in numbers in the past. For example, in 1918, Rarotonga was experiencing a serious rat plague and Resident Commissioner reported paying out 600 pounds in "penny a tail" bounties but commented that "they are as numerous as ever". As in New Zealand, and on some of our offshore islands, rats may be an important limit to the bird's recovery.

Feral cats are found in moderate numbers according to locals. If, as on Little Barrier Island, they favour the drier ridges and spurs, then that could explain the current restriction of Kakirori to the bottoms of deep valleys. Who would have expected the dramatic recovery of stitchbirds after the removal of cats from Little Barrier when there had been no direct evidence of predation? Perhaps a similar situation exists on Rarotonga, an island which invites close comparison in vegetation and topography.

The Indian myna (manu kavamani), or "government bird", named after its early introduction to control insect pests) is easily the most abundant of Rarotonga's birds, occurring in remarkable densities on the cultivated coastal strip of the island. Mynas also occur in the forest, but not in such high densities. It has been suggested, that they will prey on nestlings and eggs of

other species and that they could be a major reason for the kakirori's decline.

The idea that habitat is restricted stems from the current distribution of the birds and from the fact that the coastal strip of the island is entirely cultivated. Perhaps they used to occur there. It appears, however, that this area has been cleared for hundreds of years and that the kakirori has undergone a decrease in numbers during European times in inland habitat that has remained essentially unmodified.

Though the foregoing explanations are speculative, they under-line the need for further research on this bird. What needs to be done and what is proposed? Firstly, volunteer assistants will follow the fate of nests during the current breeding season. Habitat use and area requirements will be studied in one catchment with reference to the eight birds that we have just colour-banded. Finally, survey of the few areas not so far investigated will be undertaken using playback of recorded calls to determine more accurately the size and extent of the population. It is not anticipated, however, that there will be many in excess of 30 birds.

Future work

It is gratifying that the International Council for Bird Preservation is considering funding a full study. Comparative work could then also be carried out on the other endemic Rarotongan species, the starling (*Aplonis cinerascens*), a bird whose reduction in numbers also gives cause for concern.

Officials of the government of the Cook Islands have shown enthusiasm for this type of work, and we understand that plans for development of parts of the island for growth of fuel-wood will not jeopardize those areas necessary for the survival of the important endemic birds.

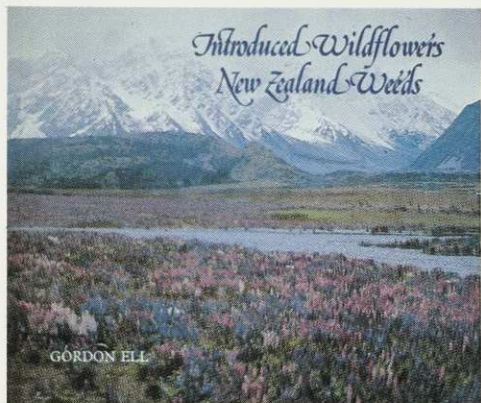
Acknowledgement must be made of the assistance given so far by the Cook Islands Government, particularly by the Permanent Secretary of Internal Affairs, Mr Tony Utanga, by the Department of Scientific and Industrial Research, South Pacific Regional Environment Programme, Forest and Bird and ICBP.

*Education Department, Cook Islands.

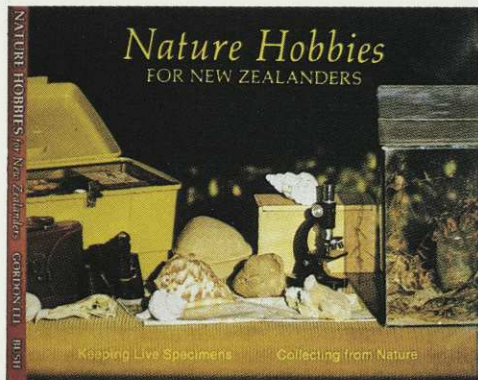
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Book Review

"Birds Forests and Natural Features of New Zealand" by Norman E. Dalmer. A limited issue of 1000 copies.

This important book is the definitive history of the Royal Forest and Bird Protection Society. It has been written to cumulate all the activities, the personalities and the policies of the Society from its inception in 1923 right through to its jubilee year in 1983.

Very readable in its 173 pages it is at the same time a mine of information which should interest keen members of the Society.

I can vouch for the painstaking research covering 8 years carried out by the author. It is authoritative as Norman Dalmer was National Treasurer and Deputy President of the Society during much of his search of old documents and interviews of past members.

The result has been a very balanced account of the problems that the Society has faced over its 60 years, by one who is eminently well placed to review the Society's history.

The book is unique because it is so thorough and it will be at least fifty years before a new history of Society would be contemplated.

The author has published the book as a service to the Society, and profits from its sale go directly to the Society's funds.

This review is to draw your attention to the availability of this book and the fact that by buying it you are at the same time supporting the Society.

A book not to be missed, strongly recommended to all keen members.

David G. Collingwood

N. E. Dalmer Publisher
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MUSHROOMS, TOADSTOOLS, and other FUNGI

by David Gregorie

Ink Cap Toadstools, *Coprinus* sp. slim graceful and almost transparent.
Photo Mike Aamodt



Orange Pore Fungus, *Favolaschia calocera*
Photo Mike Aamodt



Fly agaric, *Amanita muscaria*
Photo D Gregorie

Fairy Club, *Clavaria fusiformis*
Photo Mike Aamodt



Shaggy Ink Cap, Lawyers Wig, *Coprinus comatus*
Photo D Gregorie



You eat mushrooms and you don't eat toadstools, right? Not quite. There are many kinds of fungi you can eat besides mushrooms — truffles, boletes, puffballs, ink-caps and wood-ears are five of the better known kinds.

But it is very foolish to eat any fungus you are not absolutely sure about. Mistakes can be fatal. The bright red and white fly agaric, for example, will make you very ill if you eat it. But it can't hurt you in any other way, so if you find one don't destroy it. Admire it.

Fungi are most peculiar plants. If they are plants. They don't grow like plants and they don't behave like plants. They don't have leaves, or flowers, or fruit, or seeds. They don't have chlorophyll which gives plants their green colour. And they don't use energy from the sun to manufacture their food in the way that plants do.

Instead they feed off living plants or animals or the remains of dead ones, in much the same way that animals do. But they aren't animals either. They belong to their own special group that doesn't fit exactly into either the plant or the animal kingdom.

Mushrooms and toadstools are certainly not plants in the way that pansies and pine trees are. You can't grow them from seed, or plant them out or shift them from place to place. They have much the same job in life as the fruit and seedpods of ordinary

plants. They are what the scientists call the "fruitbodies" of a large spreading network of underground living material called mycelium. This is the main part of the fungus' body.

When two different sets of mycelium of the same species of fungus meet underground they mate and join together and then produce mushrooms, toadstools, puffballs or other kinds of "fruitbody" according to their species. The "fruitbodies" produce millions of tiny spores that wash away in rain water or blow away in the wind until they find a place where they can grow into a network of underground mycelium like their parents.

If you place an ordinary table mushroom right-side-up on a piece of white paper and leave it undisturbed for a day or so, you will find a brown pattern on the paper where the powdery microscopic spores have fallen from the gills on the underside of the mushroom.

Fungi come in so many shapes and sizes that we often don't recognise them for what they are. There are thousands of different kinds of toadstools, hundred of thousands of moulds and mildews, and hundreds of weird-looking fungi that look as if they have arrived from another planet.

Not all of them live on the ground. They can grow in or on plants or trees, or even in or on animals. Many common blights and

Violet Tobacco Pouch Fungus

Photo Mike Aamodt



Velvet Earthstar

Photo Mike Aamodt

A "Fairy Ring" of toadstools in the bush

Photo D Gregorie



diseases are caused by fungi that feed on plants or animals, often slowly killing them in the process. Athlete's foot, ringworm and thrush are three unpleasant skin diseases caused by fungi that grow on people. The mycelium burrows under your skin making it itch terribly; the "fruitbodies" growing in the dead and peeling skin scatter their spores around and infect other parts of your body and other people.

But some fungi can cure diseases instead of causing them. Penicillin, for example, is made from a kind of fungus called penicillium.

We use fungi in many ways. Yeast is a kind of fungus that has been used for thousands of years for making bread, wine and beer. It is also a popular health food.

Living yeast turns the sugar and starch in grapes or wheat into alcohol and carbon dioxide gas. We mix yeast into the dough when we make bread and the carbon dioxide it gives off makes the dough swell up into a light and puffy mixture instead of going hard and solid like a biscuit.

The yeast used in making wine and beer produces the alcohol that makes them intoxicating as well as the gas that makes them bubbly.

Another kind of fungus grows in blue-vein cheese giving it the special flavour that many people like.

So if your parents hold a wine and cheese evening, fungus will always come to the party.

For more about New Zealand fungi read *Mushrooms and Toadstools*, by Marie Taylor, one of the Mobil New Zealand Nature Series.

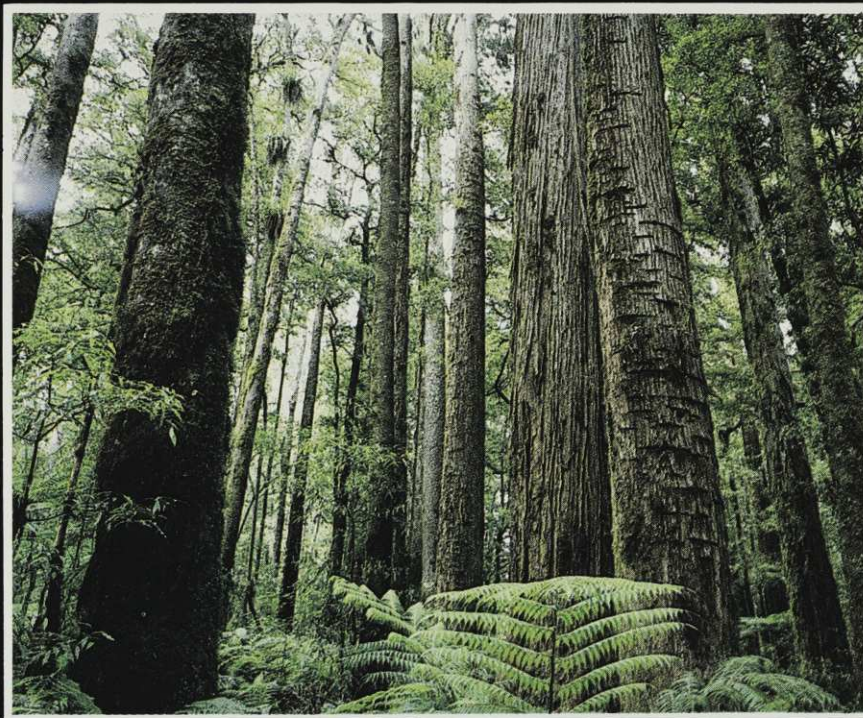
The sky-blue *Entoloma hochstetteri*

Photo D Gregorie

TO SAVE A FOREST WHIRINAKI

'This book . . . will take its rightful place alongside the other key documents of a truly civilised world'

David Bellamy.



This book is about the tallest, densest and one of the most beautiful native forests still left in New Zealand: Whirinaki forest. And the issues explored in this book are central to the current debate over almost all our remaining native forests.

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Bulletin

1

SOCIETY SUMMER CAMPS

COOPERS BEACH, Northland

The Far North Branch are holding a camp at Coopers Beach Youth Camp (bunk-house accommodation), from 26–31 January 1985. Cabins and camp-sites will also be available across the road.

Field trips are planned to Puketū Forest, Kaimaumau Swamp, East Beach, Ninety Mile Beach and the Whatuwhiwhi Peninsular. There will be guest speakers each evening.

The Far North has many unique plants and some of the best beaches in the country.

For application forms and more information write to:

John McBain, Te Ngaere Beach, RD, Kaeo, Northland.

Places will be allocated on 29 September, so do not delay. Sorry, no block bookings.

TURANGI, near Lake Taupo
Wellington Branch have arranged accommodation in the Turangi Holiday Motor Camp, where two berth cabins are available.

Trips will be in and around Tongariro National Park and Lake Taupo, and the dates are confirmed to 29th December to 6th January, 1984.

Enquiries to:

Mr A. Elliott, 49a Burgess Road, Johnsonville.

ELTHAM, near Mt Egmont
South Taranaki Branch have had to change the venue of their camp to the Presbyterian Camp in Eltham, plus caravan and tent sites in the Eltham Camping Grounds.

Those at the camping ground must cater for themselves and provide their own transport. There will be a talk every evening and an outing every day.

The dates are 6–12 January 1985, and for more details

please write to:

Mr John Burgham, 170 Bridge Street, Eltham.

TUATAPERE, Southland
Otago Branch have booked Waiiau College as the venue for the South Island camp, from 6–12 January 1985. Classroom accommodation is available, and people should bring their own bedding.

Trips include walking in Waitutu Forest, jet-boating down the Wairaurahiri River, caving, a two day walk to Port Craig, mapping pingao, fern-birds, etc.

Enquiries:

Tony Wood,
19 Forfar Street, Dunedin.

Classified

BULLER CONSERVATION GROUP have a collection of burn-off photographs, ready mounted and suitable for display use. These are available for loan to interested organisations for the cost of the return postage. Apply, Box 73, Westport or phone Westport 7777 evenings.

WILDLIFE HOLIDAYS
Wildlife safaris, 1–8 days duration featuring, seals, penguins, albatrosses, black stilts, sometimes even kiwis. Also, offshore islands, spectacular scenery, forests and historic places. Small groups, knowledgeable guide. For information write to Pagodroma Expeditions, P.O. Box 21079, Christchurch.

ENROL ANOTHER MEMBER!

The basic flaw in the Society's finances at the moment, is that we are spending more than we are receiving. We need to keep spending because there are so many important environmental issues that require our attention. The forests, wetlands, tussock grasslands, the natural habitat of our native birds and animals need our protection.

Increased membership is one of the best ways to provide the extra income to enable us to do this. The easiest way to increase membership is for every member to enrol one more member. This should be particularly easy now because so many people want to receive our new journal.

Please make sure that you use the enrolment form in this magazine, and if you need more, contact your local branch officer.

David Underwood, Society Treasurer

ABEL TASMAN NATIONAL PARK LAUNCH SERVICE

MV "MATANGI" AND MV "PONUI"

4 DAY GUIDED WALKS

The only walk in NZ where WE CARRY YOUR PACK. We also provide your meals and your own private accommodation at Torrent Bay, arrange your motel accommodation before and after the walk and provide a courtesy coach to and from Motueka.

4 Day Adult — \$265.00

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JOHN WILSON

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BIRDS, FORESTS AND NATURAL FEATURES OF NEW ZEALAND

including the growth of the Royal Forest and Bird Protection Society of New Zealand Incorporated.

173 pages of text with black and white historic photos and diagrams with a foreword by A. A. T. Ellis, QC, President of the Society.

The book comprises 25 sections ranging from the origins and formation of the Society, to its personalities and guiding lights over the years, native birds, noxious animals, erosion, the saga of Manapouri, etc.

Norman E. Dalmer, has drawn on a long and personal experience of the Society, being past Deputy President, and Treasurer, past Executive and past Branch Chairman.

He has written and published this the first history of the Royal Forest and Bird Protection Society to coincide with its Diamond Jubilee 1983/84.

Available direct from Forest and Bird Mail Order or through:

Mr N. E. Dalmer
The Avenue
Levin

Price \$8.95

SUPPLEMENTS

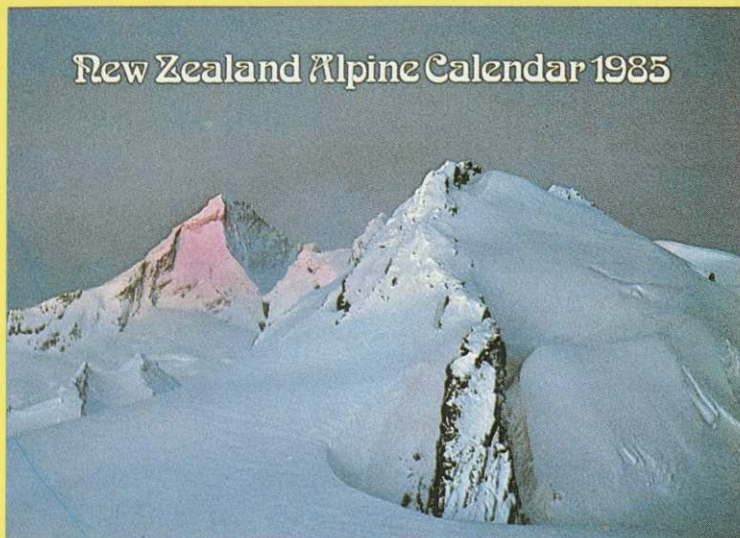
This issue includes a Mail Order supplement.

NEW SUBSCRIPTION RATES

At the Council meeting on 9 June 1984 it was decided to increase the subscriptions for 1985 in order to maintain our level of activity in the conservation field.

ORDINARY	\$20
FAMILY (Including children under 17)	\$20
SENIOR CITIZENS (over 60)	
Single	\$15
Family	\$15
JUNIOR (under 17 or at school)	\$10
SCHOOL GROUP	\$10
ORGANISATIONS	\$20
LIFE (per person)	\$250

New Zealand Alpine Calendar 1985



The New Zealand Alpine Calendar is recognised as unsurpassed in its portrayal of our mountain country. Striking colour photographs by some of New Zealand's best mountain photographers have been superbly reproduced to depict in each month of 1985 the ever-changing moods of the mountains of New Zealand

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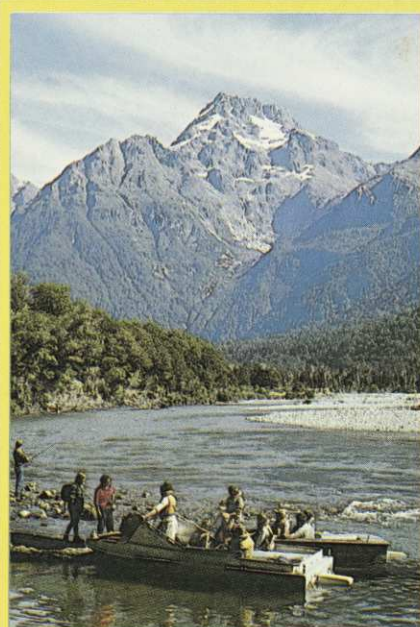
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LOGO

HOLLYFORD TOURIST & TRAVEL CO LTD

A Coalition to prevent mining on the Coromandel Peninsula

Mining and prospecting 1984-style bear no resemblance in method or scale to previous mining activity on the Peninsula.

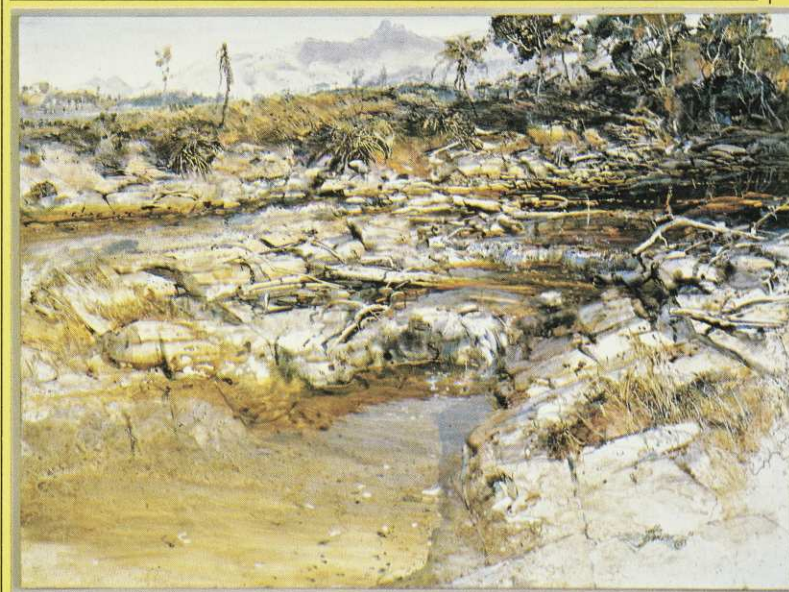
Previous methods have been damaging enough, but were never on the scale or manner now faced by modern low-grade ore-extraction technology.

Such technology leaves a long term legacy of massive volumes of tailings, or processed rock, to pollute the environment and our children's heritage. Massive environmental damage is created by large-scale open-cast mining which tears apart the landscape to extract the ore.

In response to the mining threat facing the Coromandel, a **Coalition to Save the Coromandel** has been formed by the following local and national conservation organisations:

Auckland Minewatch
Coromandel Forest & Bird

Original to be won



David Barker, *Bushline*, 68cm x 52cm. Acrylic on board, 1984.

The Coalition and Trustees are promoting a national fund-raising campaign with two "share issues" in "Coromandel Futures".

Ordinary shares at \$5.00 with a printed share certificate.

Premium shares. A limited issue of 1,000 at \$30.00 in the form of numbered prints from the painting, *Bushline*.

SHARE APPLICATION

I hereby apply for ordinary share(s) in Coromandel Futures at \$5.00 each.

Total \$.....

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I understand purchase of a premium share automatically places me in the draw for the David Barker original valued at \$4,200

I request delivery by ordinary post.

(p & p) \$1.00 ea.

I request registered post.

(Recommended) \$1.75 ea.

Name in full

PLEASE PRINT

Address

Signature

City/town

Please make cheques payable to The Coromandel Coalition P.O. Box 260 Thames.

Organiser: Clive Monds P.O. Box 5221, Auckland 1.

WHY YOU SHOULD JOIN THE SOCIETY

Membership in Royal Forest and Bird Protection Society will bring you

- The Quarterly Journal *Forest & Bird* (4 beautiful issues)
- Membership in your local Forest and Bird Branch and participation in its programme of meetings and exciting visits.
- The opportunity to visit Forest and Bird reserves and stay at

Society lodges and to attend annual camps of the Society

■ Special offers of books, gifts, posters and participation in the Society's Mail Order

■ The satisfaction of adding your voice in the historic mission — the protection of the birds and forests and the natural history and features of New Zealand.



Black stilt, Photo R. Pierce

SEE OVER

SOCIETY'S LODGES AND HOUSES



Bushy Park, Kai Iwi

24 km north of Wanganui. Fine old homestead, lovely grounds, 89ha of native bush.

Electric stove, hot water, and other facilities available. Bring your own rations. Bedding supplied. Linen and towels \$1.50 per bed*.

Fees: Members: single \$12 per night; double \$18 per night. Non-members: single, \$18 per night; double, \$25 per night. Children aged from 5 to 12 years, half rate. Day visitors, members and non-members, \$2; children under 12 years, 50c; family group of two adults and children, \$5.

Apply Custodian: C/- Bushy Park Homestead, Kai Iwi, R.D.8, Wanganui. Telephone Kai Iwi 879.

The park is closed to daytime visitors on Mondays and Tuesdays.

Patoka 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 Northe, 212 Kennedy Road, Napier, Telephone Napier 438-193.

Ruapehu Lodge, Whakapapa Village, Tongariro National Park

Ruapehu Lodge is now available for MEMBERS ONLY, and all bookings must be made with the Society's head office, P.O. Box 631, Wellington.

Fees: Winter season (1 June to 31 October) all members \$7.00 per night. Summer season (1 November to 31 May) Adults \$5.00 per night; Children \$2.50 per night. Securing deposit (per person) \$1.00 per night.

Full payment must be paid four weeks before occupation, (otherwise bookings may be forfeited) 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.

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 eight or nine people. Bring with you food supplies, bed linen, blankets, towels, tea-towels 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 surf beach and close to bush reserves and walking tracks in the Waitakere Ranges.

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

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

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

Waiheke Island Cottage, Onetangi, Waiheke Island

The cottage has comfortable bunk accommodation for eight people and has a stove,

refrigerator, and hot water.

Adjacent to a 49ha wildlife reserve, belonging to the Society it is in easy walking distance from shops and beach. It is reached by ferry from Auckland City (two or three return trips 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).

MEMBERSHIP APPLICATION

PLEASE TICK APPROPRIATE BOX

☐ JUNIOR
(under 17 or at school) Age
Single \$10 p.a.
Group \$10 p.a.

☐ ORDINARY \$20.00 p.a.

☐ SENIOR CITIZEN (over 60)
Husband & Wife \$15.00 p.a.
Single also \$15.00 p.a.

☐ FAMILY \$20.00 p.a.
(Husband & Wife,
with or without
children)
No. of Children
under 17 years

☐ LIFE \$250.00
per person

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MRS
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MASTER
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Cut along the dotted line and post, together with your cheque or money order to:

I APPLY FOR MEMBERSHIP IN THE FOLLOWING CLASS (and enclose my cheque or postal note)

PLEASE TICK APPROPRIATE BOX

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Group \$10 p.a.

☐ ORDINARY \$20.00 p.a.

☐ SENIOR CITIZEN (over 60)
Husband & Wife \$15.00 p.a.
Single also \$15.00 p.a.

☐ FAMILY \$20.00 p.a.
(Husband & Wife,
with or without
children)
No. of Children
under 17 years

☐ LIFE \$250.00
per person

MR
MRS
MISS
MASTER
(BLOCK LETTERS PLEASE)

ADDRESS

TELEPHONE No.

The National Secretary
Royal Forest & Bird Protection Society of N.Z. Inc.
P.O. Box 631, Wellington.



Many of New Zealand's sand dunes were formerly covered in native forest. Few native forested dunes remain today. The best remaining examples are the dunes of the Haast lowlands which are covered in kahikatea, rimu and silver beech forest. These two photos are of parallel dunes in Mataketake State Forest, north of the Haast River. This area is part of our proposed Paringa-Haast National Reserve.

Photographs: Guy Salmon



NOTORNIS MANTELLI.

'The Takahe'. This is a plate included in the Society's Facsimile publication of Buller's 'History of the Birds of New Zealand' 1st edition 1873. The plate is repeated as a gold embossing on the front of the rich leather cover.

Some of the Facsimile are still available and remain at the prepublication price of \$495. Apply to the Society Box 631 Wellington.