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GUEST EDITORIAL

To Value or not to Value?

As part of my study towards a Masters degree (applied) in environmental studies I have been working as a research assistant for the Department of Conservation for the last three months. My task was to find out what's going on in terms of values and attitudes of New Zealanders towards green issues and in particular towards conservation. I began with an analysis of the latest opinion polls, did a literature search and contacted councils, research firms and universities. Now I am inviting you to give some thought to this topic.

The purpose of my placement was to gain some insight into real life and indeed I got a good glimpse of what it is like to work as a professional social scientist. In the process I extensively explored my inner self for hidden reserves of strength to cope with the frustration I encountered while talking to people about a topic that was either rather neglected in research or even unheard of. Was it the somewhat esoteric nature of my research topic inhibiting research, chronic underfunding or merely lack of interest? Apart from getting a free introduction to the whole range of the latest pipe music used by organisations to keep me entertained while waiting on the phone, my mission was not very successful. As a matter of fact it reminded me a bit of deep sea diving: the deeper you dive, the muddier it gets. Such a diving expedition may also take you into total darkness when you ask yourself about your own values towards the natural world.

The questions then arise as to what it is that we actually value, why we value it and how well we look after what we think is valuable, which is culturally determined and strongly influences our environmental attitudes. So, at the end of my research I ended up with more questions than before and I had found very few answers.

Could it possibly be that the fear of knowing about people's values, which would almost inevitability result in the need of designing new political strategies in line with sustainable growth and development, kept values research suppressed? Certainly, most groups I contacted did not see research into values (including staff values) as part of their mandate.

Despite the general organisational apathy, several large surveys have in fact been conducted to produce answers for these questions. Although conservation generally does not appear to be a very well understood concept, all surveys found that most New Zealanders are in favour of environmental protection and conservation. However, the Heylen Research Group (1992) states that only 9%

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Department of Conservation
Te Papa Atawhai

of all their respondents were really committed to conservation (though the Heylen researchers do not explain what is understood by real commitment).

When researchers ask people to identify their immediate concerns, the economy and unemployment assume first priority before the environment. On the other hand, when asked about future concerns the proportion of people who believe that environmental matters rank first in urgency increase dramatically.

The majority of people also seem to be great believers. Most of us hope that somebody else might solve the environmental problems for us, ignoring that through our own attitudes and actions we actively take part in creating this global crisis. For instance, 64% of respondents of the International Social Survey Programme (1993) believed that the government should introduce stricter laws to protect the environment, even if these conflict with economic growth. Will only a "green dictatorship" solve our problems and how much of our comfort and security are we really willing to give up for a sustainable future?

Attitudes and behaviour are often contradictory. According to current research (Heylen Research 1992, Colmar Brunton 1993, International Social Survey Programme 1993, James 1993) there is a significant divergence between intent and action. It cannot be ignored that at the heart of the problem lies a troubling paradox. The willingness to promote conservation and environmental protection seems to be widely supported by the general public as long no individual sacrifices have to be made.

The most important question therefore remains: how to convert positive attitudes into behaviour? Environmental organisations such as DoC have to reflect on their own role in this transformation, particularly when it comes to education, information and advocacy. These are also the three areas where the public would like to see more DoC involvement (Heylen 1992: 41-42).

But is this occurring? DoC like many other organisations seems to expect that others — teachers, iwi, community groups and councils — will do this kind of work for them. The Public Awareness Strategy (1992) for instance does not mention school children and young people who should be educated about conservation because they are the future.

However, DoC's involvement in these matters is problematic. Considering staff shortages and chronic underfunding, education and advocacy is certainly a controversial issue. Some DoC staff would probably prefer to solely concentrate on biodiversity and the protection or preservation of habitats, New Zealand flora and fauna.

Conservation however, cannot be separated out from the general discussion about green issues. Conservation is interconnected with and dependent on the rest of the natural environment, including humans and their decisions on how to manage the natural world. In the end, it all comes back to the original question of "to value or not to value".

Ina Holst-Stoffregen
Victoria University of Wellington

REPORTING BACK

First international albatross conference

In recent years, albatrosses have come into the limelight, with the realisation that large numbers of some species have been caught accidentally during fishing operations, particularly by tuna long-liners. So, it was high time that albatross workers and interested parties got together to share knowledge and discuss conservation issues.

Recently Peter Moore was part of a DoC contingent which attended the First International Conference on the Biology and Conservation of Albatrosses, *hosted by the Australian Antarctic Division and National Parks & Wildlife Service (Tasmania) in Hobart.*

The organisers sought a wide coverage of different groups and countries, and a testimony to their success was an attendance of 120 people from 11 countries and seven vocations, ranging from albatross biologists to fishermen. Inevitably though the attendees mainly came from the former group. Three days were devoted to 38 oral presentations and a similar number of poster papers, and without being able to summarise every presentation, a few highlights for me are given below.

The most detailed information on albatross population dynamics, foraging and effects of bycatch came from the long-term British studies at South Georgia (talks by John Croxall and Peter Prince) and French studies at islands such as Crozet and Kerguelen (talks by Henri Weimerkirch). Most of the French albatross species have declined markedly in numbers, however, for Wandering Albatross (a species considered most at risk from bycatch), the decline occurred mainly in the 1970's, and subsequently there has been an increase. Satellite tracking clearly showed an overlap of foraging ranges with longline fisheries, and the slow recovery of Wanderers is probably due to a decrease in fisheries effort in these zones. The picture was less rosy for the albatross of South Georgia, which are all declining, e.g. Wandering Albatross began declining in the late 1970's, with a 1% decrease in adult survival and 6% drop in post-fledging juvenile survival.

A burst of activity on albatross research recently, saw a good Kiwi contingent at the conference. Chris Robertson with a talk on the speciation of New Zealand albatrosses, followed in a similar vein for the world by Gary Nunn (a Brit. based at the American Museum of Natural History), set the ball rolling for the conference. New groupings suggest two lineages, the north Pacific mollymawks and great albatrosses, and southern mollymawks and sooty albatrosses. This was well received, although later in the conference a few workers were a little perturbed that their favourite birds were to receive new common names also! Talks on the decline of mollymawks on Campbell Island by Peter Moore (accompanied by a poster paper on their population biology by Susan Waugh, NIWA), and population biology and foraging ranges of Auckland Island Wandering Albatross by Kath Walker and Graeme Elliot were also well received. Kath ably demonstrated the difficulties of research in much of the New Zealand subantarctic with graphic photographs of difficult terrain and primitive tent accommodation, not to mention the 700 m climb to the study area each day. Sandy Bartle (MONZ) gave a typically enthusiastic talk on the effects of tuna-longlining on New Zealand seabird populations, suggesting that the scale of bycatch must be contributing to declines of species. Talbot Murray (MAF) showed that tuna long-lining has decreased since 1989,

as has the bycatch. Kim Duckworth (DoC-MAF) gave an interesting talk on modelling of fisheries observer data to find important factors which influence the rate of bycatch. Factors decreasing bycatch included locality, setting lines at night, and having low, long tori lines (bird scaring devices).

There were a number of good Australian papers. Nigel Brothers (Parks & Wildlife Service), one of the first workers to highlight the bycatch problem, discussed practical solutions to the problem. Tom Polacheck (CSIRO) illustrated the change in effort of the southern bluefin tuna longline fishery. The peak in Japanese effort was during the 1980's with over 100 million hooks set per year, with a subsequent decline. A recurring theme of the conference was the realisation that the only detailed information on the fishery came from the Japanese, yet the increasing Taiwanese effort was virtually unknown. From the other end of the spectrum came a talk by John Gunn (CSIRO) on the Southern bluefinned tuna themselves, which had decreased in standing stock by over 90% since 1965. About 200 archival tags worth $1000 a piece were deployed to estimate movements of fish, and to date three had been returned by fishermen for down-loading!

Of great interest was the less well-known work being done in different parts of the world. A contingent of South Americans, including Raul Vaz-Ferreira and Adrian Stagi from Uruguay and Tatiana Neves from Brazil described their efforts to quantify and rectify the problem of seabird bycatch. It was apparent from these and other talks that the south-east coast of South America is a hot-spot for albatross foraging and bycatch.

Some innovative work was described by Hiroshi Hasegawa to save the endangered short-tailed albatross on Torishima, Japan, including erosion control on volcanic ash slopes and impressive decoys to lure albatrosses to new localities. Those in the audience more used to the inclement subantarctic climate were bemused by the talk by Elizabeth Flint (USA) about the Laysan and Black-footed albatrosses of Midway Atoll. These birds were dotted in huge numbers around the military buildings and runways of the island. Although not as in vogue as bycatch related research, Jim Ludwig (Canada) talked about the effects of contaminants on albatrosses, and a bizarre aside, estimated there were about 1 million cigarette lighters ejected by the birds onto Midway Island as part of the myriad of plastic waste ingested at sea.

It was a thoroughly enjoyable conference, and small enough to easily mingle with many of the attendees. A few of the more famous scientists like John Croxall were in high demand for a chat about various research projects. Following on from the conference, there was a two-day workshop on albatross conservation issues. Various working groups got together to discuss themes of land-based research, mitigation measures to reduce bycatch and to come up with measures and protocols to approach international organisations and governments with.

Peter Moore
S&R Division, Tory Street

RESEARCH IN PROGRESS

Experimental restoration of seagrass beds in New Zealand

The loss of natural habitats on land, in freshwaters and in the coastal marine area is a continuing and sometimes inevitable consequence of human activities. The Resource Management Act (1991) places an obligation on those responsible for developments to avoid, remedy or mitigate any effects on the natural environment. As a result, restoration of natural habitats that have been degraded or destroyed has become an increasingly important tool in conservation and, for developers, in complying with the RMA.

Restoration as a management tool

Restoration may be achieved through natural processes of recolonisation or with active human involvement. Overseas examples of restoration of marine habitats include re-establishment of kelp-beds, transplanting of live corals to restore damaged reefs and restoration of intertidal mangrove forests by active planting.

Decline of seagrass-beds

Beds of seagrass (marine flowering plants) are common habitats in shallow, tropical and temperate coastal waters throughout the world. They are recognised as important habitats for a diverse range of animals, including the juvenile-stages of many commercially important species of fish and crustaceans (e.g. crabs, shrimps). They are important sources of organic matter and play a significant role in the deposition and stabilisation of sediments.

Through much of their range, seagrasses have shown declines in distribution and abundance from natural causes, from specific human causes (such as the construction of ports, marinas, etc.) or from degradation of water-quality (especially reduction in water-clarity, which impairs the plants' ability to photosynthesise).

Their widespread decline, coupled with their demonstrated ecological importance, has made seagrass habitats frequent subjects for restoration in North America, Europe, Japan, Australia and other countries. Although the loss of areas of seagrass has been documented in New Zealand, there has been no work yet on their restoration in this country.

Figure 1 A seagrass 'sprig'.

Restoration of seagrass-beds

Restoration of intertidal beds of seagrass (*Zostera* sp.) is the focus of an experimental study in the Manukau Harbour, near Auckland, by scientists at the National Institute of Water and Atmospheric Research Ltd (NIWA), Hamilton.

Careful selection of an appropriate site (e.g. on the basis of the historical presence of seagrass) and preparation of a site will determine the success of any restoration project. Removal of the original cause of damage is an obvious prerequisite of successful restoration. In many

Figure 2 Seagrass sprigs at time of transplanting in February 1995.

cases, however, such as the Manukau Harbour, the cause is unclear and often presumed to be a general decline in environmental quality.

Preliminary restoration trials in the Manukau

Numerous methods of transplanting seagrasses have been used in overseas studies, including transplanting of large sections of turf, planting of individual pieces of seagrass rhizome and the use of seeds. Trials during the present study indicated that transplanting of individual sections of rhizome ('sprigs') was the most cost-effective method in terms of the likelihood of success in relation to the labour required. In our initial transplants, 60 sprigs (15 cm-long pieces of rhizome bearing 4–5 shoots) were planted in plots measuring 2 m by 2 m. Several replicates of these and unplanted, 'control' plots were established at four sites within the Manukau Harbour in November 1994. Plants were collected from a natural seagrass bed within the Harbour.

Figure 3 Seagrass sprigs after 10 months (December 1995).

The results of the experimental restoration to date have been mixed. The transplants showed good growth and survival during the first few months, indicating that the process of transplantation had not been unduly stressful. Since then they have declined and disappeared at all but one of the sites. None of the obvious environmental factors (e.g. availability of light, current-velocity, sediment stability, differences in plant-physiology) appears to provide an explanation for the declines.

Monitoring of restored areas

Many early attempts at restoration of seagrass-beds overseas put considerable effort into the process of transplanting, but little into subsequent monitoring of the success of the operation other than following the survival of the plants. The most critical measure of success is whether functional as well as structural equivalence with the original habitat has been achieved. In other words, the restored area should not just look like the original seagrass-bed, it must also function in the same way ecologically.

Dynamics of seagrass-beds

To achieve successful restoration requires good background knowledge of the ecology of seagrass habitats and their natural patterns of change in space and time. In New Zealand, very little such information exists. Consequently, a very important second focus of the present study is the documentation of changes in the size,

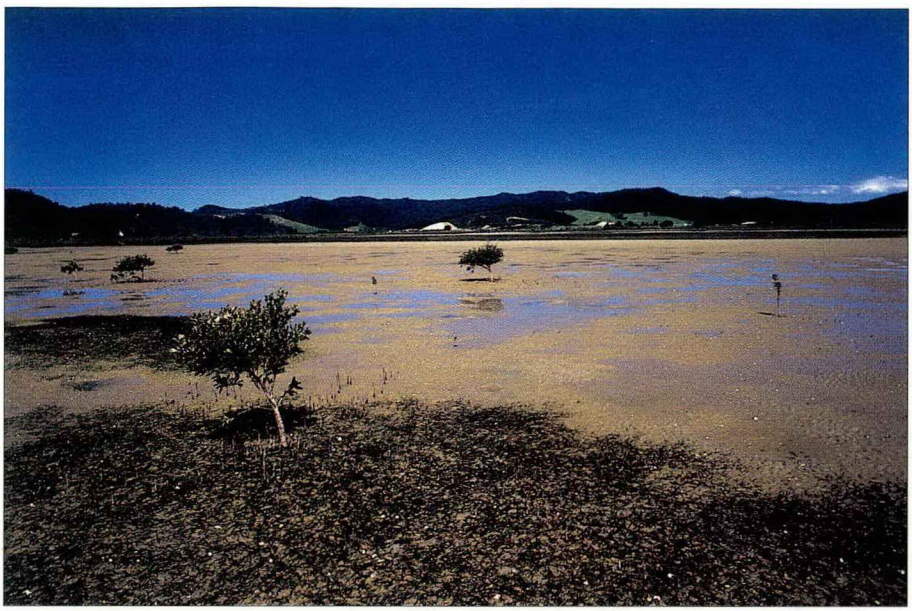

Figure 4 Natural seagrass patches in Whangapoua Harbour, Coromandel Peninsula.

shape and spatial relationships of natural patches of seagrass through time, and associated changes in growth and density of the plants and abundances of animals within the patches. This work is being done at three sites with natural seagrass-beds: two in the Manukau Harbour and one in Whangapoua Harbour on the Coromandel Peninsula.

During the first year of the study, the patches of seagrass increased in size at all three of our sites. Since then, however, patches at one of the Manukau sites have all but disappeared, again for no known reason. In addition to illustrating the natural variability of these habitats through time, these observations also indicate the importance of timing of restoration projects. It may be that attempting to restore areas during periods of natural decline (whether these are seasonal or of any other periodicity) is unlikely to be successful. The relevance of information about the natural dynamics of these habitats is clear.

This ongoing study is providing basic information on the ecology of seagrass-beds in New Zealand. In addition to filling some major gaps in our knowledge of these important and productive native habitats, the study is also providing information and trialling methods that will eventually allow us to manage them more effectively and to restore them when management fails.

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NOTES AND NEWS

More New Staff

Another new staff member for S&R, based outside of Tory St.

Geoff Rogers recently jumped the Landcare Research ship and set the compass for DoC Dunedin. He has life-lines to Tory Street and the Otago Conservancy, but so far the anticipated double dipping for resources has failed. For the first two weeks though, he was full time spending his establishment budget (mostly on shorts, sandals, and sunglasses), but he's been warned: it's feast this year and famine the next.

Of a plant ecological bent, Geoff graduated from Victoria University in 1988, did a post-doc with the Hellaby Grasslands Trust help and finally scored a job by the skin of his teeth with FRI at Rotorua in early 1990, when science establishment levels in New Zealand were declining. The commercial realities of the modern science climate in crown research institutes had him working alongside DoC on several conservation biology problems in the North Island, such as the impacts of Kaimanawa feral horses, the origins and land use history of central North Island tussock grasslands, their rates of shrub invasion, the place of heather (*Calluna vulgaris*) in those successions, why kaikawaka and Hall's totara appear so unthrifty, and work on a rare plant or two. This applied conservation biology and its associated knowledge transfer suggested a job with S&R was a natural career progression. Now he is in Dunedin to share the research load on rare plants and their ecosystems with Peter de Lange. Geoff has also published works on vegetation history and climate change as interpreted from pollen diagrams and ash layers in peat bogs, on plant biogeography, on the impacts of possums on vulnerable forests, and on the utility of remote sensing for mapping forest vegetation and health. He thought Dunedin was off the beaten track, reducing his accessibility and increasing paper writing opportunities, but the rate of arrival of phone calls and e-mail messages suggests the DoC family is well informed!

New Zealand wildlife graces latest stamp issue

Some of New Zealand's most cherished wildlife are captured in all their magnificence on the latest 1996 New Zealand Wildlife stamp issue.

The aquatic birds and marine mammals featured in this issue live in a variety of coastal areas around the country. While the bottlenose dolphin and fur seals can be found in several places along our coastline, the white heron have claimed their own unique spot at Okarito—South Westland, as have the royal albatross at Tairoa Head—Otago Peninsula; the only mainland based albatross colony in the world.

"The wildlife depicted here have captivated the attention of visitors throughout the country," says Stamps Business Manager Russell Watson. "Whether you swim with the dolphins in the North or watch the first flight of royal albatross chicks in the South, the experiences are unforgettable and have now become 'must see' attractions for visitors to New Zealand".

Treasured New Zealand wildlife included in the 1996 stamp issue are the yellow-eyed penguin (40 cents), the royal albatross (80 cents), the white heron ($1.00), the sperm whale ($1.20), the fur seal ($1.50), and the bottlenose dolphin ($1.80).

The stamps are designed by Sea Sky Design of Paraparaumu and printed by Southern Colour Print in Dunedin by Lithography.

Possum browse on Toru, Aorangi Mountains, Wairarapa

During a field inspection of the forest at Aorangi to assess the reasons for massive canopy die-back of black maire (*Nestegis cunninghamii*) I came across a disturbing possum impact.

Toru (*Myrsine salicina*) is a beautiful, small, second-canopy tree at mostly montane altitude. It occurs throughout North Island but reaches only the wetter, northern part of South Island. In my experience it is never particularly common. Its attractiveness lies in the smooth, light green leaves, often pinkish underneath and the clean trunk with regularly spaced radiating branches. It can bear masses of small fleshy fruits on the naked stems below the terminal leaf clusters. Clearly the fruits form food for small birds.

In the area of the Aorangi park that I visited, toru is extremely uncommon. This may be because it is at its southern limit in eastern NZ and can hardly survive the dry summer and cold winters. It grows mostly in groves of a few trees together. None that I saw was particularly healthy. Indeed one grove consisted of several dead trees and others nearly dead. The cause of death was obvious: the leaves are severely browsed by possums, in the typical manner shown in the figure to the left.

There are rather few signs of possum browse in the Aorangi bush. Deer impact is generally more evident. In the case of toru its rarity and palatability make it a prime target. I have little doubt that it will be extinct in the area soon. It is this subtle loss of species at the edge of their distribution that makes possum impact serious, not so much from an overall forest process point of view in this case, but form a biogeographic viewpoint. Toru is not listed as a priority species in the Wellington Conservancy CMS, but it is an example of the insidious and local loss of a widespread species. Soon we will not be able to know the position toru once played in Aorangi and we will lack a template for restoration. People will miss the joy of beholding this beautiful treasure.

Philip Simpson,
S&R Division, Tory Street
30 November 1995

ABSTRACTS

Department of Conservation Visitor and Information Centres: Understanding Visitor Satisfaction

A thesis submitted to Victoria University of Wellington, for the degree of Master of Arts (Applied) Social Science Research, 1995.

We are reliably informed that this research thesis is of considerable value to DoC.

This research attempts to measure visitor satisfaction with Department of Conservation information and visitor centres. Specifically the study aims to discover what type of visitor the centres are receiving, how particular visitor groups differ in regard to their need for services from centres, the level of satisfaction associated with each visitor group, with each group of visitor and information centres and over all information and visitor centres, and what visitor and information centre attributes contribute to satisfaction. Visitor satisfaction was measured by the evaluation of three variables; what visitors thought overall of the centres, visitor satisfaction with individual centre services, and how well visitors thought they were provided for by the centres.

Research data was collected through the use of an interview-administered questionnaire. A sample of twenty visitor and information centres were used in the research. These were to be representative of all the department's centres with regard to size, number and kind of visitors, geographic location, involvement in the Visitor Information Network and park/rural urban bases. The interviewers used for the research were "Tourism Green" temporary employees.

A total of 2803 questionnaires were completed. Results from the research strongly indicate that overall visitors were very satisfied with the visitor and information centres. However, there were differences in the level of satisfaction between particular visitor groups and between visitors to particular types of centres. These differences can be accounted for in terms of visitor behaviour, (which is out of the control of managers), and the different needs of certain visitor groups. In particular the greater need for information expressed by overseas and under 40 year old visitors was identified as contributing to the lower satisfaction levels of these groups. A series of recommendations are made at the end of this report.

Paul Westerbeke
S&R Division, Tory Street

NEW PUBLICATIONS

From Science and Research Division

Meylan, R. 1996. Evaluating displays and on-site panels: A guide for Department of Conservation staff. *Department of Conservation Technical Series No. 9.*

The visitor, as client, has a critical role in the design of displays. Looks at how to tap into clients as consultants, and use the information for the maintenance of effective displays.

Smale, M.C., Hall, G.M., and Gardner, R.O. 1996. Monitoring condition of sand dune kanuka forest at Woodhill. *Science for Conservation: 26.*

Exclosure plots established in 1983 were remeasured to assess the impact of fallow deer. Long-term it is likely a variety of broadleaved trees will invade kanuka stands and develop a tall, semi-coastal forest.

Buxton, R.P., Johnson, P.N., and Espie, P.R. 1996. Sphagnum research programme: The ecological effects of commercial harvesting. *Science for Conservation: 25.*

Harvested plots were reharvested to assess biomass production. Seedling densities were surveyed in non-harvested plots for comparison with harvested lowland sites. Harvesting guidelines are suggested.

Warburton, B. 1996. The potential effectiveness of aerially sown 1080 baits for controlling low-density possum populations. *Science for Conservation: 24.*

Most possums will accept some bait material, even when natural foods are not limited. Test results indicate successful kills should be attainable provided baits ingested contain a lethal quantity of toxin.

Allen, R.B., Basher, L.R., and Comrie, J. 1996. The use of fire for conservation management in New Zealand. *Science for Conservation: 23.*

A literature review, with recommendations on fire management, and the use of prescribed fire in New Zealand protected natural areas. Caution is advised in planning and application of fire as a tool.

Efford, M., Darby, J., and Spencer, N. 1996. Population studies of yellow-eyed penguins. 1993-94 progress report. *Science for Conservation: 22.*

Initial analyses using a newly constructed database of breeding and banding data. Annual survival and recruitment rates from Otago Peninsula data, and measurements for sexing of adults.

Spurr, E.B. 1996. Impacts of 1080-poisoning for possum control on non-target invertebrates. *Science for Conservation: 21.*

In the Titirangi Scenic Reserve, Wanganui, there were no significant differences in the immediately pre- to post-poison population trends of the invertebrate species monitored.

Meylan, R. 1995. Development of a comprehensive evaluation strategy for displays at Department of Conservation visitor centres. *Science for Conservation: 20.* 135 p.

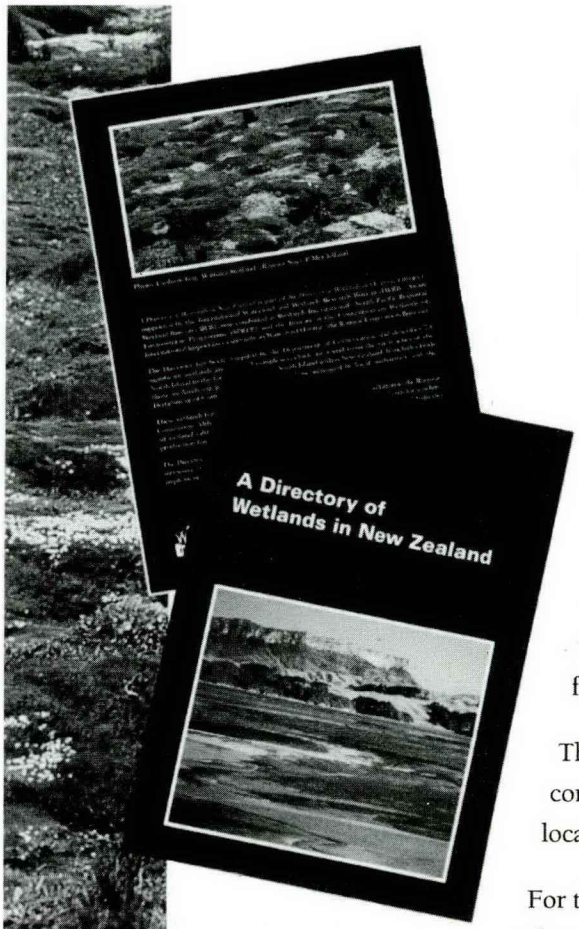
Developing research methodology and recommendations for the introduction of a viable evaluation strategy of interpretation displays and on-site panels at all stages of the design process.

From Threatened Species Unit

Native Frog (*Leiopelma* spp.) recovery plan. *Threatened Species Recovery Plan No. 18.*

Brown Teal (Pateke) *Anas chlorotis* Recovery Plan. *Threatened Species Recovery Plan No. 19.*

Kea (*Nestor notabilis*) captive management plan and husbandry manual. *Threatened Species Occasional Publication No. 9.*



A Directory of Wetlands in New Zealand

The Directory is a technical publication describing 104 significant wetlands found throughout New Zealand.

Its main focus is on the importance of wetlands for wildlife yet includes other wetland values such as water storage, flood control, coastal protection and fisheries production.

The Directory may be of interest to the conservation community to set priorities for conservation action or to local governments, developers and communities.

For these groups it provides an indication of those sites where future activities will require attention to environmental impact assessment and to design and implementation of appropriate conservation measures.

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