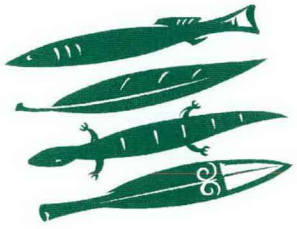

ConScience

CONSERVATION SCIENCE NEWSLETTER

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CONTENTS

GUEST EDITORIAL

In this issue we feature a guest editorial by recently retired DOC scientist, Bruce McFadgen. He wishes to share with us his concerns about the effects on the conservation of natural and historic resources, arising from a catastrophe generated by earth forces. Bruce has been awarded the Stout Fellowship at Victoria University of Wellington for 2003. During his tenure he will write a book on the topic of this editorial.—Editor

Sure, the earth moves—for me!

New Zealand is the child of the tectonic plate and the volcano. Over the 60 million years since New Zealand was set adrift from Gondwanaland it has effectively suffered every form of land change that it is possible to visit upon a small group of islands. We all know from day-to-day life the havoc that can be wreaked by even the smallest weather change to which we are subject every Christmas. However, we do tend to think that the really big global catastrophes happen only rarely, and then not to us. But this is not the case. It is only 5 years since a tsunami hit the Sissano Lagoon in New Guinea on a warm summer evening killing more than 2000 people.

Closer to home, Korapuki Island in the Mercury group off the Coromandel Peninsula shows signs of having been almost over-topped by huge waves within the last few thousand years, and probably within the last few hundred years. Local tsunamis are not uncommon. A tsunami with a 32-metre run-up struck Northland less than 600 years ago and overwhelmed early Maori settlements. Maori traditions in other parts of New Zealand refer to big waves and sand sheets overwhelming coastal gardens and villages. Such events underline the risk of living in coastal areas.

Tsunamis only affect the coast. Earthquakes are felt far more widely and have a much wider range of impacts. The 1855 Wellington earthquake raised the land around Wellington Harbour by 2 m on the eastern side and slightly less on the western side. Coastal lakes and lagoons were drained, streams and rivers clogged up with debris, and about a third of the vegetation fell off the western slopes of the Rimutaka Ranges. Fortunately Wellington was then only a young town. Damage in the town was not catastrophic and only one person was killed. But the waters of Cook Strait and Wellington Harbour swept and slopped over the Kilbirnie Isthmus, and a 10-metre-high tsunami ploughed into Palliser Bay.

An earthquake on the Wairarapa coast during the mid-15th century drained coastal lagoons, clogged streams and rivers, and devastated shellfish beds. A tsunami at about the same time inundated the coast, killed coastal forest, washed away Maori settlements, and swamped Maori gardens. Unlike the later 1855 earthquake the people living on the coast had fewer resources

Department of Conservation
Te Papa Atawhai

Opinions expressed are those of the contributors, and do not necessarily represent the policy of the Department of Conservation

to fall back upon, and the effect was that they abandoned the coast and moved inland.

Interesting as these events might be, what do they have to do with conservation? They have implications for two main areas: protection of threatened species, and protection of users of DOC-managed lands. We regularly put many of our protected species onto off-shore islands to keep them away from introduced animal predators, but in doing so, often place them fairly and squarely in the path of tsunamis. Korapuki Island has already been mentioned, and potentially, all low-lying islands and coastal areas are at risk. Mana Island, for example, in the northern approaches to Cook Strait, has a threatened skink living on the coastal platform, right in the way of the next tsunami. Its chance for continued existence will be enhanced when the island is vegetated enough for the skinks to move to higher ground, but in the meantime it is living in a precarious habitat.

For the users of DOC-managed lands, the risk is slightly different. Major faults run through the National Parks of the North and South Islands. The Alpine and Wellington Faults, when they move, could produce earthquakes of magnitude 7.5 or greater. We can expect hillsides to slip, vegetation to fall, and rivers and streams to dam up with the risk of later floods. And what will replace the vegetation on denuded hillsides—the aggressive exotic weed, or the declining threatened native? If a catastrophic event happens during a weekend in summer—whether tsunami, earthquake, or whatever—how will the many people using the parks cope? Consider a tsunami striking the Abel Tasman National Park. At Totaranui the visitor centre is located just a short distance from high-water mark. Totaranui is also one of the best examples of wetland in the Cook Strait area which preserves evidence of that mid-15th century tsunami: the one that roared through Cook Strait possibly affecting most beaches between Cape Palliser and Farewell Spit, and overwhelmed the northern end of Kapiti Island as a wave at least 11 m high!

The Alpine Fault, late winter 1974, Land Satelite photo. *Image PEL 104*

What are the odds of such events happening again in the foreseeable future? Actually, the odds are pretty good. The prediction for the next major movement on the Alpine Fault, for example, is about one in six for an event in the next 50 years, or one in twelve for an event in the next 20 years. It will not necessarily produce a tsunami, but the shaking could be severe, and the Alpine Fault is only one of several major fault lines that could move.

There are steps that DOC could take to minimise the risk from catastrophic events. To mitigate the effects of tsunamis it would help to shift structures such as the Totaranui visitor centre away from beaches, or raise them on poles. The survival of threatened plants and animals would be enhanced if populations were duplicated on several well-separated offshore islands, or in mainland islands. To mitigate the effects of major earthquakes on visitors to DOC-managed lands there is a need for a hazard management plan that addresses public education and the likelihood of having to rescue people trapped, and possibly badly injured, by landslips and fallen trees.

New Zealand is tectonically active, and like it or not, we must live with it.

Bruce McFadgen
Stout Fellow for 2003, VUW

Bruce McFadgen

Bruce McFadgen retired from DOC after a career that started 42 years ago with the Department of Lands and Survey in Wellington, where he began as a draughting cadet, and left in 1968 with a BA degree and qualified as a land surveyor. Bruce went to the University of Otago to continue studies in archaeology. His training in science and surveying was the best background he could have had for his future career. He completed a PhD in geology from Victoria University of Wellington under Harold Wellman, Colin Vucetich, and Ross McQueen on the topic of Environment and Archaeology in New Zealand.

As his PhD topics indicate, Bruce was an archaeologist with an interest in the matrix of human settlement, the earth, and what climate and environment can tell excavators about the conditions of the past.

His first job as an archaeologist was with the New Zealand Historic Places Trust as Staff Archaeologist in a unit set up to administer the archaeological provisions of the Historic Places Act 1975. The ten years with the Trust saw him visit places all around New Zealand, including Chatham Islands and Auckland Islands, and carry out a major excavation at Ruahihi, one of the first in New Zealand to make extensive use of earthmoving equipment. With other members of the Archaeology Unit of the Trust, he moved to DOC Science & Research Division when the Department was set up in 1987. During his university studies Bruce developed an interest in radiocarbon dating and this led to several major publications in inter-national journals dealing with radiocarbon calibration and the date of human discovery and settlement of New Zealand. This was also a period ofcollaboration, notably with Atholl Anderson on early Pacific voyaging, with Fred Knox on radiocarbon dating, with Nancy Beavan-Athfield and Rodger Sparks on dietary carbon, and with James Goff on catastrophic seismic-related events and their impact on human occupation of New Zealand.

When Bruce was asked to nominate the papers he thought were his most significant, his nominations were all from this DOC period and all co-authored, emphasising Bruce's success in multidisciplinary research.

Bruce clears out his DOC office, prior to moving to the Stout Research Centre.

His interest in catastrophic events has led to his retirement from DOC. In early March he took up the Stout Research Fellowship for 2003 at the Stout Research Centre for New Zealand Studies, Victoria University of Wellington, where he will be writing a book on catastrophic events and Maori prehistory. At his farewell, science manager Ian West remarked on Bruce's career that 'things take time. Innovative, paradigm-changing scientists take time to mature, and they often mature best when cross-cultured with other disciplines'.

TE AO HURIHURI
PAPERS FROM THE
2002 SCIENCE
SEMINAR SERIES

Opepe Scenic and Historic Reserve

Looking at interpretation

E mihi ana ki te rangi
E mihi ana ki te whenua
E mihi ana ki a koutou i roto i nga tini ahuatanga o te wa

This seminar was delivered by Tony Nightingale on 8 August 2002.

I am currently an historian with the Science & Research Unit. The job's brief includes developing strategies for the interpretation of historic sites. Successful interpretation is a process that includes looking at what is physically on a site, as well as researching and collecting as many as possible of the stories that could be enhanced by being told there. It also necessitates getting to know and discuss with community groups possible interpretation strategies. Ultimately site interpretation should provide a unique visitor experience by telling the most significant stories about the most significant remains in such a way that supports current cultural relationships with the site.

Site interpretation occurs within the department's fundamental responsibilities to tangata whenua under section 4 of its Act to 'give effect to the principles of the Treaty of Waitangi.' There has been a lot of debate about what are the principles of the Treaty of Waitangi. The principles arrived at by the High Court in *New Zealand Maori Council v. Attorney General* [1987] 1 NZLR 641 CA are still the most accessible. These are first that the Crown should act 'reasonably and in the utmost good faith' in partnership. Secondly this partnership should involve consultation at the earliest phase of any initiative. Finally the Crown has a duty of active protection of tangata whenua interests—akin to a fiduciary relationship. There are many people in DOC involved in establishing a partnership with tangata whenua and all that I intend here is to look at my experiences of consultation with tangata whenua associated with the Opepe Scenic and Historic Reserve, 16 km east of Taupo in the Taupo-Napier road.

The Armed Constabulary Stockade at Opepe 1870-1885 was one of a series erected to maintain Crown access to the central North Island. *Copyright Alexander Turnbull Library. PA7-31-24*

The reserve includes an Armed Constabulary stockade site occupied during 1870-1885 to protect Crown access to the central North Island, kainga, and urupa sites. It also includes the graves of 9 Tauranga and Bay of Plenty Cavalry Volunteers killed on 7 June 1869 by Te Kooti's forces. There have been interpretation signs on site since 1917 and the site became a scenic and historic reserve in 1972. Redevelopment seems appropriate given that the interpretation is still the original, much of the historic site is overgrown and the conservancy are keen to develop a nature walk through the remnant bush. There is also a proposal to provide toilet facilities adjacent to the State highway.

The Kaupapa Atawhai managers, the late Hemi Kingi and his successor Jim Maniapoto, have established a management advisory group of five

New Zealand **Biosecurity** Institute

Vertebrate Pest Management Institute of New Zealand Inc. VPM INZ

The New Zealand Biosecurity Institute Inc. in association with

The Vertebrate Pest Management Institute of New Zealand

Invites you to the National Education and Training Seminar

"Biosecurity at the Centre of New Zealand"

At the Rutherford Hotel, Nile St, Nelson.

9–11 July, 2003

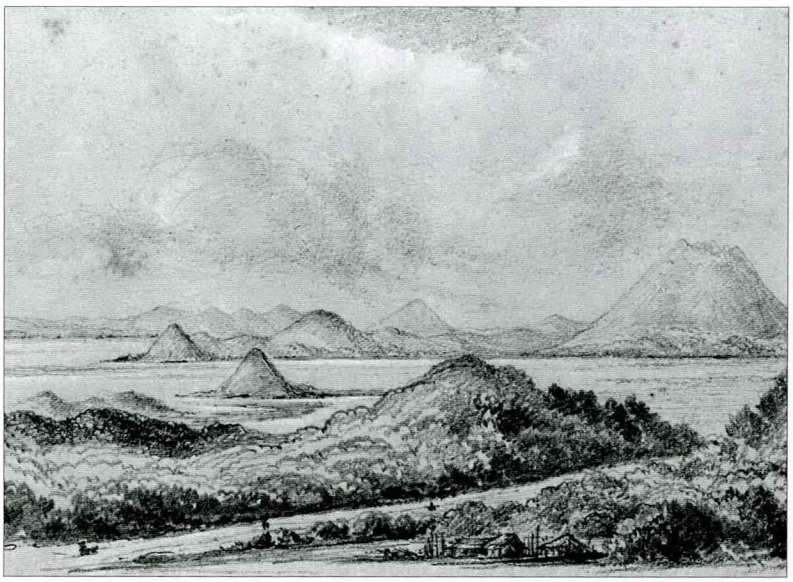
The Nelson region reflects the diversity of primary industries for which New Zealand is famous: seafood, forestry, pip fruit, kiwifruit, viticulture and dairying, while nearby lie two of New Zealand's most popular National Parks, Abel Tasman and Kahurangi. What better place to hold the annual gathering of all those who are concerned about the protection of our primary industries and natural heritage from exotic plants, animals and diseases?

If you are interested in:

- Getting the biosecurity message across
- Learning new techniques and developments
- Knowing how to do the job better at the front line
- Improving internal biosecurity e.g. how we can keep the South Island free of North Island pests?
- Preventing the exportation of pests as well as products from New Zealand
- Understanding the biosecurity needs of industry

Then you should be there!

As well as formal presentations, there will be ample opportunity for informal discussions and a choice of several field trips. There will also be an opportunity to visit the Abel Tasman National Park immediately after the conference. Another circular will be released in March containing registration information, more details on the programme and field trips. For further information, offers of papers, or suggestions regarding speakers etc. please contact Mike Taylor (michael@cawthron.org.nz).



Swainson's 1850's drawing is looking west from Opepe. The kainga is in the foreground, Mount Tauhara and Lake Taupo in the background. *Copyright Alexander Turnbull Library, ATL1436½*

kaumatua: paramount chief of Tuwharetoa Tumu Te HeuHeu, Jim Biddle, Emily Rameka, Whakapumautanga (Darkie) Downs, and Chula Wall. They have close associations with the Tauhara Middle block and the Opepe Farm Trust whose lands surround the reserve. One of the first things the group discussed was the hapu associations with the Tauhara Middle block—Tutemahuta, Rauhato, Ngati Teurunga, Tutetawha, Hinerau and Hineure. We have also spent a considerable amount of time researching and discussing the traditional use of resources at Opepe and its strategic significance within the Tuwharetoa rohe. This material now forms the basis of a co-written first draft chapter.

How have we attempted to demonstrate partnership? The advisory group was established at the outset and it became clear that the group wanted the tangata whenua associations told, rather than just stories about flora and fauna and/or Te Kooti's forces surprise attack. There are sensitivities about stories associated with Te Kooti and the Armed Constabulary. It was agreed, therefore, that we would first and foremost collect as many stories as we could, and that we would aim for a publication on the Opepe reserve. Once this was achieved, then we could begin to discuss site interpretation. The consultation has included regular meetings throughout 2002 and a commitment that this relationship will be ongoing. The same people have been involved in the process and all research and drafts have been gone through. At this time we have a 30,000 word draft that includes the separate first chapter on tangata whenua associations with the site. Once this section is at an appropriate level of draft then the whole of the material will be presented to a wider hapu group.

While the work on interpretation is one aspect of the administration of the reserve, there are others. As well as the kainga, urupa, and stockade remains, there are also remains of the former roadway, telegraph, and house sites at Opepe. There is regenerating remnant forest and endangered flora species such as *Dachtylanthus taylorii*. The kaumatua group has been asked for input on ongoing maintenance and all planning. This has been forthcoming and the working relationship is a positive one.

Conclusion

This process has been a learning one for me. Partnership here involves trust and consistent effort by all concerned. The Conservator, conservancy staff, and particularly the Kaupapa Atawhai managers, have been vital to the process. The relationship is primarily at the conservancy level and while some-one from head office can be involved, ultimately the day-to-day relationship with the conservancy holds sway. The group has an agreed process, and has been open-minded in the collection of stories that could be part of the on site interpretation; however, we have not yet begun the interpretation.

Tony Nightingale
SRU

RESEARCH IN PROGRESS

Mainland petrel breeding as a driver of terrestrial ecosystem processes

The popular ecological view of New Zealand is of a low nutrient environment, with low nutrient levels and high biodiversity. Supporting such a view are water quality measurements which show (for example) that the nitrate concentration in 90% of New Zealand rivers is below the global median. However, much has happened to the New Zealand environment since human contacts began.

While most attention has focused on the demise of megafauna such as the various moa species, fossils recovered from caves and from predator deposits of the laughing owl and New Zealand falcon have shown that a great diversity of petrels previously bred in many inland areas of mainland New Zealand. Species include common diving petrel, mottled petrel, Cook's petrel, fairy prion, black petrel, various storm petrels, Hutton's and fluttering shearwaters, and the extinct Scarlett's shearwater. These seabirds have progressively disappeared (the smallest species apparently first) over the past 2000 years. Only four medium-to-large species—grey-faced petrel, sooty shearwater, Hutton's shearwater, and Westland petrel—nest in significant numbers on the main islands today. All are threatened on the main islands where they are confined to only a few colonies.

Breeding seabirds reverse the usual seaward flow of nutrients from terrestrial to marine ecosystems, so that a considerable 'marine nutrient subsidy' existed in pre-human New Zealand. Petrel breeding colonies have a high population density, and each bird excretes considerable quantities of guano. Together with the substantial area of New Zealand hill country suitable for take-off sites, this indicates that the marine nutrient subsidy would have been highly significant. High nutrient inputs are likely to have affected the soil microbial community, favouring nitrifiers which can live in the acidic soils typical of New Zealand. Some invertebrate species live on or in seabird faecal deposits, and it is likely that lizard and insectivorous bird populations would have been very high. Consistent with this are informal observations from petrel breeding areas on predator-free islands where high densities of other birds have been noted. Conversely, breeding petrels suppress the forest understorey, resulting in decreased plant biodiversity and biomass in the colony areas. However, some plant species thrive in the disturbed, nutrient-rich conditions.

Soil chemistry studies in New Zealand have shown that soil fertility remains high for many centuries after petrel colonies have gone. An example of a plant group that may have depended on seabirds (and coastal marine mammals) is the genus *Lepidium* (the 'scurvy' grasses). The present rarity of *Lepidium* species may be a result of the decline in coastal seabird and seal populations. *Lepidium* is also interesting because significant populations (sufficient for Cook's sailors to harvest) remained long after the petrel colonies went extinct and seals disappeared. The slow decline of soil nutrients implies that other vegetation communities presently found in localities affected by former seabird breeding may also be relicts.

However, we need to look further afield than the colonies themselves. Most petrels need elevated take-off points, so they would not have been abundant on valley floors or alluvial plains. So, how far did the chemical and ecological effects of petrel colonies spread from the hill country breeding sites? North American studies have shown that spawning

salmon contribute significant nutrients to terrestrial plants and animals c. 400 m uphill of the streams in which they die. However, direct inputs from salmon are confined to the stream proper; by contrast, petrels deposit guano in the soil of their breeding colonies from where the nutrients can be removed to lowland areas.

Our present research is to investigate how much the small Westland petrel colonies near Punakaiki affect the stream biota. Our study, carried out in collaboration with Jon Harding and Mike Winterbourn from the University of Canterbury, uses stable isotopes to trace nutrient flow. The method relies on the enhancement in the 'heavy' isotopes of carbon and nitrogen (^{13}C, ^{15}N) in the soils of seabird colonies. The enhancement is due to the enrichment of ^{13}C and ^{15}N found in marine organisms, plus soil processes which selectively volatilise ^{14}N-ammonia. We are analysing invertebrates, benthic plants, stream particulates, and the dissolved material from the stream water itself. Preliminary results have shown all of these are clearly enriched in the heavy isotopes some distance downstream from the breeding colonies. The level of enrichment implies that the petrels significantly influence downstream biota and biogeochemistry.

New Zealand conservation policy aims to protect both critically endangered species, and overall biodiversity. The present total populations of many petrels are much greater than some of our critically endangered birds. However, we think that conservation managers need to look at the potential long-term effects on plant and animal communities when developing priorities for the protection of remaining mainland petrel colonies. These remnant populations may be the only places left which are functioning as they were before humans first saw New Zealand.

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STAFF NEWS

Fraser Maddigan and Derek Brown are Christchurch's fastest commuters!

Cyclists ruled the day in Christchurch's inaugural Commuter Challenge. Starting from four suburban locations around the city, people travelled to Cathedral Square by bus, bike, and car. The aim was to determine the most efficient way to travel to work. Three out of the four routes saw cyclists comfortably arriving first. Science & Research stalwarts Fraser and Derek took overall honours on the day, crossing the finish line 8 minutes and 30 seconds after starting their trip to work (legally parking their bikes, and without running red-lights).

So not only are bikes fastest, but they are powered by toast and coffee.

FUTURE RESEARCH DIRECTIONS

Future research directions for the Species and Ecosystems under Threat Portfolio, 2003 onwards—Part 3

(Continued from *ConScience News 46*, pp. 6-11)

7. Priority recommendations

- Identify priority places for biodiversity conservation (NHMS research, Priority Action G).
- Test adaptive management systems for threatened taxa and ecosystems on private land and the conservation estate (test efficacy for threatened species programmes in relation to iwi and community aspirations and participation and the cost-benefit of the approach). Include work on cost-effectiveness of multispecies and site management (Priority Actions E, F, G; integrate with work in both the People & Conservation and Terrestrial Restoration Portfolios).
- Assess critical threat processes to biodiversity in non-forest environments (e.g. lowland & coastal alluvial systems). Include long term monitoring of benchmark sites. Include research on trajectories for management and thresholds for outcome success (Priority Actions C, D, E, F, G; integrate with work in the Terrestrial Restoration and Pests Portfolio).
- Continue development of the fragmentation research (Priority Actions A, B, F, G; integrate with freshwater wetland issues, investigate influence of fragmentation on taxonomic groups other than birds and ecosystem types other than forest.
- Investigate poorly understood threatening processes (e.g. human induced and stochastic threats and interactions among critical factors influencing long term viability of taxa, sites, and ecosystem types (Priority Action F).
- Define security of threatened taxa and appropriate conservation management units and increase our understanding of effects of demography of threatened populations on long term viability (Priority Actions A, C, G).
- Test conservation biology principles and techniques (Priority Actions A, B).
- Develop innovative tools for monitoring sites and cryptic species (Priority Actions D, G).

Colin O'Donnell
Portfolio Group Leader

Strategic Projects arising from the new directions in research

INV. NO.	SUBJECT	FINISH DATE	LEADER	AGENCY
3351	Defining conservation management units and maintaining genetic diversity in threatened species	30/12/01	Colin O'Donnell	DOC
3482	The consequences to threatened plants and insects of fragmentation of alluvial plains podocarp forest	30/06/04	Bill Lee	Landcare Research
3485	Rural fire control: fire behaviour and risk management	Ongoing	Grant Pearce	Forest Research
3490	Genetic integrity, gene flow and viability of isolated populations of threatened plants and the implications of this for conservation management using Napuka/titirangi	31/08/02	Tristan Armstrong	Landcare Research
3574	Identifying priority sites for maintaining and restoring biological diversity in New Zealand	30/06/03	Colin O'Donnell	DOC

3575	Identification of appropriate conservation units for threatened taxa	30/06/07	Greg Sherley	DOC
3577	Management of disturbance regimes to ensure the survival of threatened plants occupying seral communities—a scoping study	30/06/03	Bill Lee	Landcare Research
3489	Real and perceived animal welfare implications of marking-tagging methods	02/12/02	David Mellor	Massey University
3579	Pollination and seed dispersal processes in fragmented landscapes: a case study using kereru and tui	30/06/08	Ralph Powlesland	DOC
3580	Determine best management practices for dune-slacks and dune wetlands to ensure survival of their threatened species	30/06/04	Peter Johnson	Landcare Research
3582	Relationship between animal pests and condition of vulnerable forest types: red beech collapse and mortality of *Libocedrus bidwilli*	30/06/03	Rob Allen	Landcare Research
3576	Role of in-breeding and genetic diversity in maintaining long-term viability of threatened species	31/12/07	Ian Jamieson	University of Otago
3578	Chytred disease in native frogs: susceptibility, impact and analytical tools	30/06/04	Bruce Waldman	University of Canterbury
3581	Utility of population viability analysis in conservation planning: exploring multispecies PVA for threatened braided river birds (pilot study)	30/06/03	Colin O'Donnell	DOC
3685	Ecology, epidemiology and disease management of the Oomycete *Albugo candiola* (white rust) in coastal cress population	30/06/03	Tristan Armstrong	Landcare Research

Conservation through international co-operation

Our vision: widespread adoption of seabird-safe fishing practices throughout the Southern Ocean.

Project Manager: Janice Molloy, jmolloy@doc.govt.nz

First six months

It's been six months since Southern Seabirds Solutions formed and over this period our main focus has been getting word out that we exist. We have:

- Distributed a colour booklet that describes the group's purpose, and profiles some of the participants. This has been circulated to fishing industry representatives, environmental groups, and government departments in key countries.
- Announced the formation of Southern Seabird Solutions at the most recent meeting of the International Coalition of Fisheries Associations (http://www.icfa.net/) in Iceland. The meeting passed a resolution encouraging fishing industry associations around the world to support the initiatives of Southern Seabird Solutions.
- Announced the formation of Southern Seabird Solutions at the International Fishers Forum held in Hawaii in November 2002. The profile of the group was raised further when one of its members won the Golden Albatross Award in acknowledgement of his commitment to eliminate capture of seabirds on his vessel.
- Been invited to speak about Southern Seabird Solutions at the North Pacific Albatross Working Group meeting, the South American Albatross Conservation meeting, and an Asian Seabird Mitigation Technical Workshop.
- Prepared media releases and stories about the activities of Southern Seabird Solutions which have appeared in newspapers, on television and in stakeholder magazines.

Reprinted from Southern Seabird Solutions Newsletter 2, *February 2003.*

BIOSECURITY UPDATE 4

Report from DOC's Biosecurity Group

Protect New Zealand
Tiakina Aotearoa

Who has a sick parrot?

MAF is asking bird owners and enthusiasts to report any sick parrots that show signs of psittacine (parrot family) poxvirus, to help identify how far it has spread.

Psittacine poxvirus has been diagnosed in New Zealand for the first time, although other strains of avian poxvirus occur here. Experts believe that the disease could establish in New Zealand and cause high death rates amongst caged and wild introduced parrots, when factors combine to cause disease outbreaks. Of even greater concern to New Zealand, however, is the potential effect on indigenous parrots such as the critically endangered kakapo, the threatened kaka and kea and the kakariki. The susceptibility of native parrot species is not known, but experts have cautioned to assume susceptibility. If native parrots are susceptible, the disease could be spread to them from introduced wild parrots, through transfer of contaminated items or by biting insects.

Disease outbreak and investigation

In July 2002 two rosellas were presented to an Auckland veterinarian. The birds subsequently died and psittacine poxvirus was diagnosed. MAF eventually traced the birds to an Auckland aviculturalist, on whose property there appears to have been a large number of bird deaths. Up to 200 rosellas caught from the wild were being prepared for export, along with other birds from a large number of sources. The mortalities appear to have largely been among rosellas, and the birds were disposed of without the event being reported. Depopulation and decontamination has been undertaken on three Auckland properties linked to the outbreak.

Investigating the disease outbreak has been made difficult for MAF because of the non-cooperation of some of the parties involved. The poxvirus may have come from an untraced caged bird source, however, evidence to date is inconclusive. Investigations involving other suppliers of birds to the outbreak facility continue.

Report birds showing signs of the disease

MAF wants to find out how widespread the disease is. To do this, they need samples from sick parrots, particularly rosellas, galahs, lorikeets, cockatiels and budgerigars that show signs of poxvirus infection. An information sheet has been distributed to the bird fanciers community in New Zealand and posted on MAF's website at http://www.maf.govt.nz/biosecurity/pests-diseases/animals/psittacine-pox/index.htm.

Reports of suspect disease can be made to a veterinarian or the MAF Exotic Disease Hotline (0800 809-966). MAF will send information and forms to help veterinarians collect appropriate samples for testing. Diagnosis can only be confirmed by laboratory tests.

In the meantime, MAF is also tracing sources of birds to try and identify the source of infection. Birds are being checked for infection and, where necessary, properties are being disinfected. MAF is also working with the Department of Conservation (DOC) and the Aviculture Society's Avian Disease Management Council to develop plans for managing further cases. DOC is assessing a number of contingency actions, including:

- Increasing biosecurity measures at important sites
- Instructing staff to be vigilant for signs of the disease

- Evaluating contingency measures to protect at-risk parrot populations, given that there is a risk that the virus may already be established in the wild
- Possible review of hygiene protocols, associated with parrot conservation management and disease screening procedures, along with the recovery plan for threatened parrot species
- Possible temporary restrictions on the transfer of parrots from the greater Auckland region, until more is known about the spread of the poxvirus in the wild
- Increased enforcement under the Biosecurity and Wildlife Acts, to discourage illegal parrot liberations

Signs of disease

Psittacine pox can occur in various forms.

A cutaneous form (skin form, sometimes called 'dry' form by budgie fanciers) causes nodules on the unfeathered parts of the skin, the ceres, around the eyes and the feet. The nodules form blisters that erupt to scabby erosions. Secondary infections with other organisms may delay healing, but the mortality of birds affected with this form is low.

A diptheritic form (sometimes called 'wet' form) causes lesions on the mucous membranes of the mouth, eyes, and throat. White plaques will be seen on affected surfaces, with fluid effusions. The disease may become systemic, with internal lesions in the throat, gastro-intestinal tract, lungs and air sacs causing birds to be very ill and depressed. Mortality can be high with this form.

Birds affected with either form of the disease may appear weak and emaciated. In some cases there may be no or few outward signs, other than general depression, illness and death. There is no specific treatment or effective vaccine for psittacine pox.

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Sign!

Did you know that the deaf have a signed language that is the equal in all respects to a spoken language?

Did you know that New Zealand has its own sign language?

Staff in Science & Research began a 10-week course in New Zealand Sign Language (NZSL) in May. Our teacher is Karen Mahanga, a profoundly deaf woman who has just completed her training in Deaf Studies at Victoria University.

Maybe you can think of situations in your area where knowing some NZSL would help our customers or other DOC staff.

Want to know more?
Contact Kaye Green, VPN 8283 or (04) 471-3283 (DD)

New DOC Science Publications

In *Conscience 46* we reflected that 2002 had been a good year for DOC Science Publishing, with the production of titles covering some really interesting topics.

So far 2003 promises to be equally good. At the time of writing (March), we have already had three distributions of new titles this year, including 9 issues of *Science for Conservation*, and 15 issues of *DOC Science Internal Series*.

Marine reserves, and their establishment around the coastline, are of intense interest to many people in New Zealand. 'Social impacts of marine reserves in New Zealand' (*Science for Conservation 217*) starts with a review of relevant literature published before November 2000, before going on to look at three case studies: Cape Rodney-Okakari Point Marine Reserve, Tonga Island Marine Reserve, and Pohatu Marine Reserve. In each case there are sections dealing with establishment and management issues, and community interactions and attitude changes. Section 4 of this paper then looks more generally at the social impacts of marine reserves, using the case studies but supplementing them with other research and literature, while issues surrounding the establishment and management of marine reserves are examined in Section 5.

The paper's conclusions are interesting: While initial attitudes towards the creation of a marine reserve may be negative, these tend to become more positive once a reserve is created. However, it clearly states the importance of a full and sensitive consultation with local people, as well as with those of wider interest groups. In addition it makes the point that the creation of a marine reserve often leads to an increase in certain kinds of activities in an area which can lead to possible problems, for example, of litter and effluent disposal (to name just two); these need to be satisfactorily catered for. The impact of even the positive results that may be experienced, for example new employment opportunities in a local community, should also be carefully considered.

Given that a Government Select Committee is currently hearing submissions on the Marine Reserves Bill, the publication of this interesting paper is a positive contribution to informed public debate on the topic.

C.N. Taylor; B. Buckenham 2003. **Social impacts of marine reserves in New Zealand.** *Science for Conservation 217*. 58 p. $30.00.

Available from DOC Science Publishing, tel: (04) 471-3285, or email science.publications@doc.govt.nz.

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