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EDITORIAL

Goodbye to all that ...

I have been editor for the Science & Research Unit newsletter for 12 years, and this is my last issue.

Great changes are in train. DOC now has two Regional Operations Managers with a small staff of advisors to replace the three Regional General Managers of the last seven years.

Science & Research Unit came to an end on 10 January 2005 after 17 years and 10 months, but while it is a time for reflection, this is not a sad ending. SRU is now integrated into a new and larger body entitled Research, Development & Improvement Division, where scientists and technical support officers work together for the same managers to achieve common aims. Directing the new division is John Ombler who has extensive experience at every level of DOC.

This is a larger and more radical vision than that of the Science and Technical Communication Programme with which I have been involved for the last five years: first under the direction of Elaine Wright who was principal Regional Scientist Southern, then Warren Anderson and Lynne Barr as project managers. I, personally, am happy to see this larger and more robust development of the integration of science and improvement.

I have enjoyed working for DOC and editing this newsletter, but like SRU, it is time to move on, and to wish the new division every success.

Kaye Green
Editor, ConScience News, 1992–2005

Department of Conservation
Te Papa Atawhai

OTARI/WILTON'S BUSH

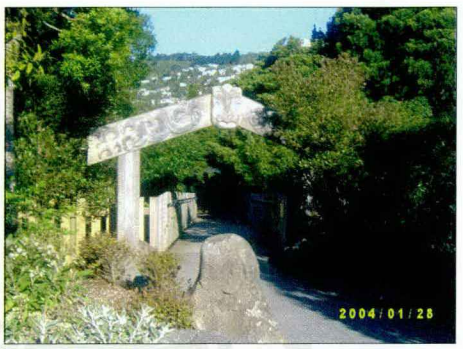
I like walking through Otari/Wilton's Bush Native Botanic Garden—being welcomed at the gate and ushered onto the treetop boardwalk. In some reserves I feel constrained to maintain a dour and respectful distance. At Otari people and their stories seem welcome. The stories do not require me to be an expert, but they gently entice me in.

Tony Nightingale's response to Otari is a fine example of the ability to see the natural and historic aspect of conservation as one unified field. Tony spent three years as a historian in the Science & Research Unit before joining the Office of Treaty Settlements in 2004.—Editor

In 1840 the valley was a place of trails and cultivations where areas were already bare. Our picnic spot was being used by people from Wellington in the 1850s. The Otari Scenic Reserve was one of the first, and it is now part a larger reserved area, although the boundaries for me are created by Cockayne's vista and not the impersonal details of the gazette notice.

When the first reserve land was purchased from Ngati Tama in 1906, the hills around Wellington were bare. This land has been reserved for nearly 100 years—although the area in bush is now much greater than the 5.5 ha of Wilton's bush that had substantial trees on it then. Nearly all the hills in view are now bush-covered, and the valley is a food source for wood pigeons and tui.

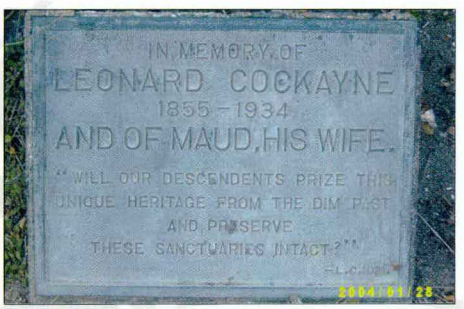
What do we reserve? Is it the flora and fauna, or is it our relationship with the place? The founders of Otari certainly had aspirations for the reserve that were different from ours, but the intense relationship remains.



Gateway to the Canopy Bridge, Otari.

Otari has been a 'botanic garden, a reserve, and a sanctuary'. Leonard Cockayne established his 'Open Air Plant Museum' at Otari. It is not described as a museum today.

There are 12 definitions of the word 'reserve' in the Act, but they are sterile in a way that this place is not.



The immaculately presented lawn of the Native Botanic Garden leads to my favourite place in the display: the founder's grave. Leonard and Maud Cockayne lie there and look out; their epitaph still apt, 70 years on:

'Will our descendents prize this unique heritage from the dim past and preserve these sanctuaries intact?'

Tony Nightingale

Entrance from the carpark, Otari.

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

A FEATHER BY ANY OTHER NAME

As spring approaches, the kotuku (white heron or great egret) grows an elaborate wedding train—a plume of delicate white feathers which it uses to attract a mate.

Story by Kevin Cudby, based on 'The White Heron: Ardea alba, Egretta alba, *or* Casmerodius alba*? A review of the evidence', an unpublished manuscript by Craig Miller, former Conservation Advisory Scientist, Southland Conservancy, Department of Conservation.*

Unfortunately, these nuptial feathers were also prized by humans as decorations, and for plumes on fashionable women's hats. By the early twentieth century the kotuku and its American cousins, the great egrets, were almost extinct.

The kotuku has had several scientific names. Which one is correct? Built like a heron, but with the nuptial feathers of an egret, the kotuku was originally put into an intermediate group: *Casmerodius*. Hence the nineteenth-century scientific name, *Casmerodius alba* (or *albus*).

Modern scientists classify birds according to their evolutionary background. Because of its nuptial feathers (aigrettes), mid-twentieth-century ornithologists renamed the kotuku *Egretta alba*. However, early DNA testing suggested its wedding train evolved independently. It is now classified as a great heron: *Ardea alba*. Because science is a process of continual refinement, there is always a chance the kotuku's scientific name may be changed again.

Kotuku no longer die for their wedding dress, and thanks to careful conservation they have so far escaped extinction. Because of this, their courtship display will continue to delight future generations of kotuku and humans alike.

White heron colony nesting in trees, at Okarito Lagoon. Chicks can be seen in the nest (lower left), and a mating display (upper right). *Photo: Crown Copyright, Department of Conservation Te Papa Atawbai (1974)*

A RECIPE FOR KAKA

Visit any kaka aviary and there's a good chance you'll find a crowd of spectators. Kaka are natural entertainers: swinging by their beaks, hanging by their feet, swooping and turning like aerial ballerinas, they delight everyone who meets them.

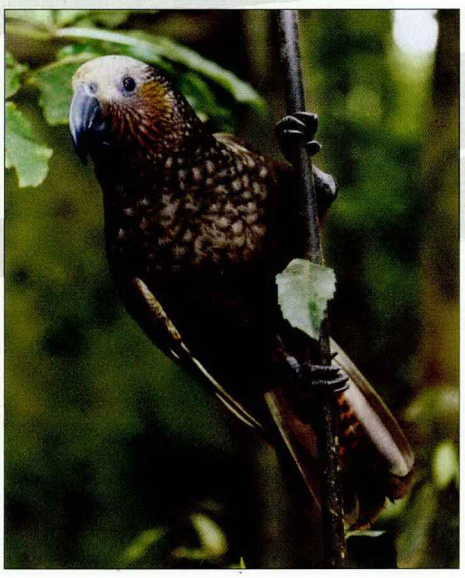
Story by Kevin Cudby based on: Research summary and options for conservation of kaka (Nestor meridionalis) *by T.C. Greene, R.G. Powlesland, P.J. Dilks and L. Moran.* DOC Science Internal Series 178. *26 p.*

Kaka like lowland forests. New Zealand has many tracts of remnant and regenerating forest that should make ideal homes for them, but these vigorous, assertive birds have become confined to remote, inaccessible forests and offshore islands. Unless something changes, they will disappear completely. The trouble was that no-one could explain the kaka's problem. This has changed: now we know what's eating them!

Who is entertaining whom? Spectators at Mt Bruce. *Photo: Jaap Jasperse, DOC*

Introduced animals have been taking advantage of the kaka's domestic arrangements, which have evolved in an environment without four-footed predators. When it comes to avian building standards, parrots go for cavity nests: kaka usually choose a hole in a tree-trunk.

During the breeding season, the female stays in the nest until her chicks leave home. Dozing in a state of torpor, trapped in a hole with only one way out, the unfortunate female is exposed to any home invader. Introduced predators have been known to kill more than 80% of the breeding females in a single season. Now, scientists have positively identified two of the culprits: stoats and possums. No-one was surprised about the stoats, but possums? Omnivorous, it seems they find kaka as tasty as rata leaves.



Nestor meridionalis—the inquisitive kaka, at large on Kapiti Island. *Photo: Crown Copyright, Department of Conservation Te Papa Atawhai (2004), Photographer: Ross Henderson*

Until recently, this state of affairs went un-noticed. Kaka live for 30 years or more. The males' raucous concerto would be heard long after the females had gone. Eventually the bachelor males would die, leaving little evidence to explain the loss.

Besides killing females, introduced predators also ravage young kaka, which remain vulnerable for three to four months after leaving the nest.

Not every year is a breeding year, because kaka try to breed only if their favourite trees produce a healthy crop of seeds. This probably makes life easier for the males, who forage for the entire family.

With this knowledge, there is now a recipe for kaka conservation. For 6–8 months from the start of a breeding season, pests must be practically eradicated. To check that pest control is working, it is important to monitor the kaka population, especially the ratio of females to males.

While some details of the recipe are still being worked out, staff at Pukaha/Mt Bruce know it works. After releasing a group of kaka into the wild, they found that these kaka could not breed successfully until possums, rats, and stoats were brought under control.

RESTORING DUNES TO HELP THE CHATHAM ISLAND OYSTERCATCHER

People can be forgiven for thinking New Zealand's beaches are the natural home of marram (*Ammophila arenaria*), so well has it displaced the native vegetation that formerly covered our dunes. Imported from Europe to protect farmland from sand encroachment, marram spread widely and is now a serious and widespread weed problem. It efficiently binds sand and forms tall dunes with steep fronts created by storm waves cutting into them.

Despite their isolation 800 km east of New Zealand, the dune lands of the Chatham Islands suffered the same fate. This is bad news for the endangered CI oystercatcher (*Haematopus chathamensis*), because in many areas they now have a much narrower zone between high tide and the dune in which to nest, and here they are vulnerable to storm seas. The birds prefer to nest in open areas where they can view their feeding territory, defend it from neighbouring oystercatchers, and easily escape predators, and therefore the tall and dense dune vegetation created by marram is unsuitable for them.

Alison Davis planting akeake. The steep-fronted dune created by marram can be seen behind the beach (*upper right*).

One of the long-term goals of the CI Oystercatcher Recovery Plan is to restore the coastal ecology so that less intensive management is required—currently, nests in managed areas are shifted away from the high-tide mark to the back of the beach or onto a cleared patch of foredune. With the long-term goal in mind, a regional project is restoring the dune vegetation at oystercatcher territories on the northern coast of Chatham Island. The idea sprang from a similar programme which is improving nesting opportunities of snowy plover (*Charadrias alexandrinus*) in USA (*Conservation Science Newsletter 36*, February 2000).

The aim of the study is to provide a more suitable nesting environment for the oystercatchers by removing marram, creating a wider area of bare sand, and a more sparsely vegetated and gently sloping foredune. After local consultation in 2001, two sites (approx. 100 m long by 40 m wide) were chosen at Wharekauri (Crown-owned marginal strip) and Maunganui (privately owned). These areas had existing stock fences, were being managed for oystercatchers (mainly through predator trapping), and had relatively flat dunes which posed a minimal risk of sand being destabilised when we removed the marram.

Over the next three years in spring and autumn we sprayed and cleared marram, sprayed the stubborn regrowth, pulled and grubbed out weeds, and replanted with native plants. A number of local and visiting DOC staff, contractors, and volunteers were commandeered to help along the way. By April 2003 we had planted 2500 pingao (*Desmoschoenus spiralis*) at the front of the foredune and

CI oystercatcher nest scoop with two eggs, in the shade of a pingao plant.

smaller numbers of herbs and shrubs (e.g. 230 forget-me-nots *Myosotidium hortensia* and 375 *Corokia macrocarpa*). Towards the back of the dune we planted a hedge of 4500 akeake (*Olearia traversii*) seedlings to shade out the marram and complete the succession from the beach to coastal forest.

Within the first year we had visibly transformed the trial areas and halted the march of marram down towards the water's edge. The oystercatchers responded by nesting at the edge of the restored areas, where formerly there were thickets of marram, rather than near the high-tide mark. One pair nested beside one of our new pingao plants in the 2002/03 breeding season but in 2003/04 moved back onto a newly forming beach crest. At the other area the oystercatchers nested amongst sparse *Carex pumila*, which had spread from existing patches to cover the newly-enlarged area of bare sand. Each year this pair nested progressively further back from the storm tide zone.

With a relatively small amount of effort, we have shown positive benefits for threatened dune communities—plants and birds included. Building on this success the Chatham Area Office is planning a step-wise restoration of further sections of dune.

This would have pleased the botanist Cockayne who, in 1902, lamented the demise of the iconic Chatham Island forget-me-not: 'the long line of this plant on the sea-shore, with its huge shining green leaves and great heads of blue flowers, is lost to the world for ever'. Perhaps in years to come the dunes will again show some of their former glory.

Peter Moore, Science & Research Unit, DOC, Wellington
Alison Davis, Chatham Island Area Office Manager

Pingao plantings in the foreground, with forget-me-nots on the left and akeake to the rear.

ALBATROSSES AROUND LONG-LINERS' NECKS

Numbers of albatrosses may still be down, as a result of many being killed as bycatch of the long-line fishing for southern bluefin tuna in the 1980s, a recent study has found.

Story by Jaap Jasperse, based on: Moore, P.J. 2004: 'Abundance and population trends of mollymawks on Campbell Island.' Science for Conservation 242. *62 p. DOC, Wellington.*

Peter Moore, a bird scientist with the Department of Conservation (DOC), has just published a study on two species of small kinds of albatrosses, the mollymawks. He compared numbers in the 1940s and the 1980s on Campbell Island in the subantarctic.

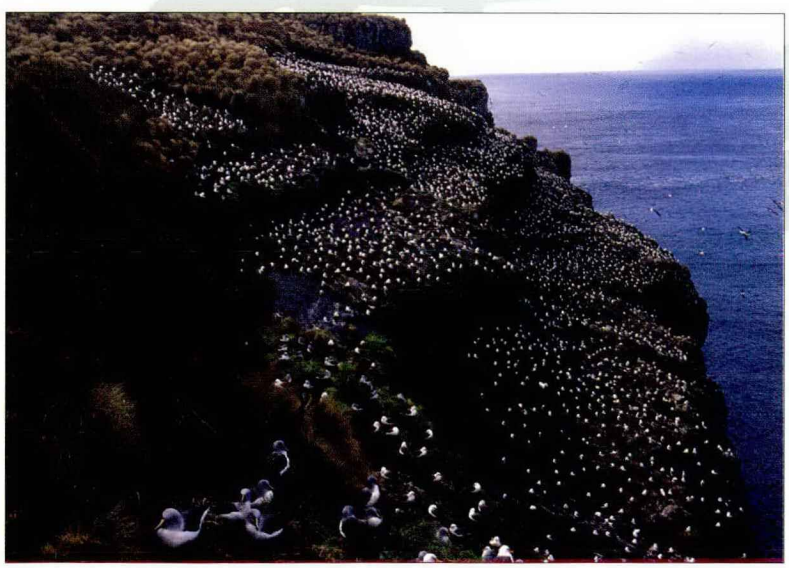
By counting nests on detailed island photographs taken by Sorensen in the 1940s and repeated through to the 1990s, and by doing actual counts on the island in 1995-97, some disturbing trends emerged.

One colony of Campbell mollymawk (*Thalassarche impavida*) had shown an increase of 11% in nest numbers between the 1940s and 1966. But then, a decrease of 47% emerged by the 1980s, followed by a gradual recovery of only 3% per year. The large decrease in the late 1960s to early 1980s coincided with the peak in long-line fishing for southern bluefin tuna in the southern oceans near New Zealand. Albatrosses are attracted to the bait on the millions of hooks that are trailed behind longliners, and so can be accidentally caught and drowned.

Peter calculated there were about 31,300 Campbell mollymawk nests in the 1940s, down almost a quarter to 24,600 nests in 1995-97 (21,000 with eggs during mid October). The good news is that there are signs this population is recovering. This is likely to be because fishing effort decreased in the 1980s and 1990s, once tuna stocks diminished.

For grey-headed molloymawks (*Thalassarche chrysostoma*), the situation looks much worse. Between the 1940s and 1990s there was a continuous 82%-88% decrease in nest numbers at three colonies. In the 1940s, there may have been as many as 43,000 grey-headed mollymawk nests per year. But in 1995-97, Peter recorded only 7800—that is down to less than one-fifth over 50 years! The long-term decline is most likely caused by environmental changes that have an effect on the birds' food supply.

While longlining practices have improved considerably, the impact of the reckless bycatch of albatross in the 1970s and 1980s is still felt today, and the overall food supply for birds is down. Fortunately New Zealand fisheries are now developing methods that reduce the accidental capture of seabirds, but as albatrosses roam the southern oceans in their search for food, they also overlap with unregulated fisheries in international waters. Peter recommends testing any links between environmental change and mollymawk population trends in future. This is best done through an approach in which several research institutes work together to analyse bird, fish, and climate data. Regular monitoring of the various species of mollymawk is needed for at least three consecutive years every decade.



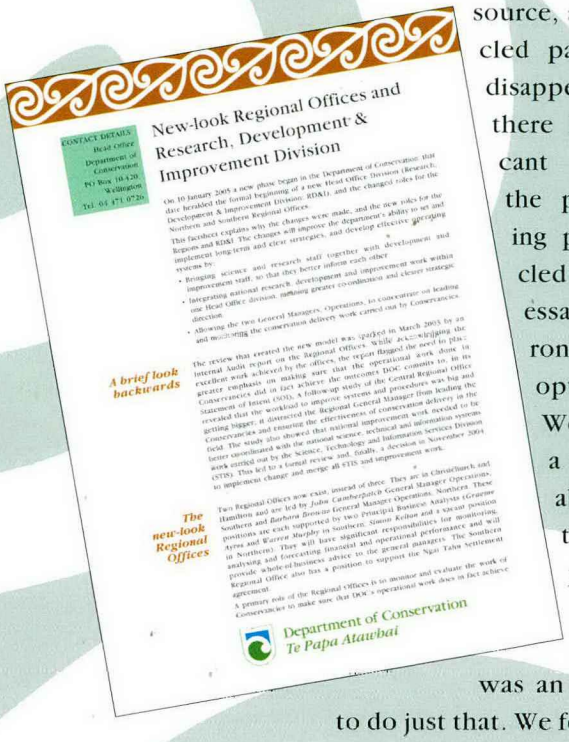
Bull Rock South mollymawk colony, on Campbell Island, 8 October 1995. *Photo: Peter Moore, DOC*

NEW PUBLICATIONS

Re-vamping an old favourite

Last year saw some significant changes here at DOC Science Publishing. Early in the year we updated the design of our monthly 'New Science Publications' memo. For many years this was a single A4 sheet of vegetable-dyed recycled paper.

For quite a while recycled paper has been increasingly difficult to source, and coloured recycled paper has virtually disappeared. In addition, there have been significant improvements in the paper manufacturing process, and recycled paper in not necessarily the most environmentally friendly option.


New-look Regional Offices and Research, Development & Improvement Division

A brief look backwards

The new-look Regional Offices

Department of Conservation
Te Papa Atawbai

We have also wanted a way to tell people about our new initiatives and improvements, and realised that our monthly memo was an ideal opportunity to do just that. We felt it was time for a more eye-catching design, and more space so that we could include more information about individual publications.

Now the memo includes a short front-page article about developments in the publishing unit or on the web site, expanded details about individual titles in the *Science for Conservation* series, and a new category 'Retrospectives on the Web' which lists older titles for which we have now created a pdf file on the DOC website.

Feedback on the redesigned memo has been so encouraging that what was originally a one-year trial, has now become a 'standard feature'. Each monthly memo is put on the DOC website, and the pdf is included with the monthly list-server notice, but we still post hardcopy to anyone interested. If you are not currently receiving it, and would like to, just drop us a line and we'll add you to either list.

As you will see from Kaye's editorial in this issue, the Regional Offices and the old Science, Technical and Information Section of DOC have been restructured. As a consequence DOC Science Publishing has become the Science and Technical Publishing Section of the new Research, Development & Improvement Division (RD&I). However, who we are and, essentially, what we do remain unchanged, so do continue to email and phone us with your science publications enquiries.

A leaflet detailing the new RD&I structure has been prepared and is available from the DOC website at www.doc.govt.nz > Publications > Science and Research > Pamphlets.

Conservation Science Newsletter was issued by Science Technology and Information Services, Department of Conservation, PO Box 10-420, Wellington.
Editor—Kaye Green (pictured with her editorial on page 1)
Layout—Ian Mackenzie (Yes, that's him conversing with the kaka on page 4)