CONservation SCIENCE newsletter

Number 7, April 1994.
ISSN 1172-2606
Published by
Department of Conservation

CONTENTS

Conservation Science Newsletter is issued six times per year in Feb., Apr., Jun., Aug., Oct., and Dec. Contributions should reach the Editor by the 1st of the month in which they are to appear.

EDITORIAL

My last editorial prompted a quick reply from Dr Moller, whose letter is in the next section. Dr Moller would like to invite debate on the issue of sustainable management of wildlife and indigenous control and management of wildlife. My purpose in writing the last editorial was to point out that the methods in use in parts of Africa are not **traditional methods**, and citing the success of such methods as support for indigenous control and management of wildlife is misleading.

Given our Treaty partnership, it is important to debate "What is an indigenous method?" And once identified: "Will it lead to sustainable wildlife management?" I will print any contributions on these points and any others that readers feel are relevant to the issues. Let's hear from you.

K. Green

Editor

LETTERS

Dear Editor, I was delighted that you featured the customary use debate in the editorial for your February issue of *Conservation Science Newsletter*.

Attached is a copy of the press release that triggered some of the debate. I would be extremely grateful if you could publish it in full in your next issue (it sank virtually without trace in the "external media"). I am unsure if you take offerings from non-DoC people, but I would happily contribute a point of view if it were welcome. Are there other "in-house" magazines in DoC that I could use to spur the debate along?

I was pleased that you mentioned the Fish and Game Council model in your editorial - I had that lined up as my second example after the Zimbabwe case, but got cut-off by the interviewer.

Yours sincerely
Dr Henrik Moller

I have not printed the press release which most workers in the conservation field have seen, but I have included for readers' information (see below) the ***draft*** *of a conference document which addresses the relationship between indigenous people, land, and wild resources.* – *Editor*

CONSERVATION THROUGH SUSTAINABLE USE: INDIGENOUS PEOPLE, LAND AND WILD RESOURCES

Draft developed at Conference on Conservation through Sustainable Use, Queensland University, February, 1994.

RECOGNISING that indigenous people must be fully involved in wildlife management and utilisation and there are numerous instances in Oceania where they are not;

ACKNOWLEDGING the progress which has been achieved through existing programmes towards enhancing the sustainable use of wildlife by indigenous people;

RECOGNISING, too, that the principles of conservation through sustainable use underlie the existing relationship between indigenous people and the wild resources they use for food and the maintenance of culture and tradition;

AWARE that the values which indigenous peoples place on wild species of flora and fauna (e.g. food, clothing and medicines) are often diametrically opposed to the values that many non-indigenous people assign to the same species, and that these differences have not been adequately catered for in government policies;

NOTING that much of the knowledge held by indigenous peoples about wild species has been misappropriated and is also rapidly disappearing;

NOTING, too, that many indigenous people have been forcibly dispossessed of their lands alienated from the wild resources which were fundamental to their culture;

CONVINCED that the contribution that indigenous peoples are making to conservation would be further enhanced and that this, in turn, would further increase the benefits indigenous peoples themselves would derive from wild resources.

THE PARTICIPANTS, RECOGNISING THAT FEW OF THEM WERE

INDIGENOUS, IN THE CONFERENCE ON "CONSERVATION THROUGH SUSTAINABLE USE" HELD AT QUEENSLAND UNIVERSITY FROM 8-11TH FEBRUARY 1994 RECOMMEND THAT, IN WORKING TOWARDS THEIR GOAL OR SUSTAINABILITY,

I. Indigenous peoples' rights over wild resources in appropriate areas should be established and strengthened;

II. Use of wild resources for subsistence should be a basic right of indigenous peoples;

III. The types of use and the range of species used by indigenous peoples should be progressively expanded;

IV. The cultural and economic values of wild species should be further promoted;

V. As a matter of extreme urgency, traditional knowledge of wild species should be permanently recorded by people deemed appropriate by indigenous people and the ownership of this knowledge retained by indigenous people;

VI. Mechanisms must be developed which ensure that indigenous peoples realise an equitable portion of the returns from commercial products whose development has resulted from their special knowledge of wild species;

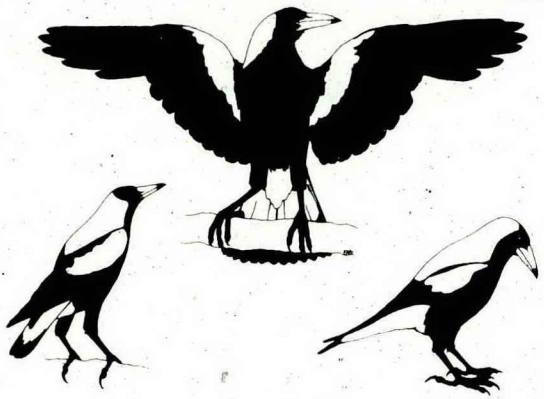
VII. The programmes to bring about these improvements should be expanded and given significant additional funds and, in particular, should address issues of dispossession and alienation.

Behaviour/Ecology Workshop

10 – 13 May 1994

Kawhatau Outdoor Education Centre

(Near Taihape)



The idea of the Behaviour/Ecology Workshop is to provide a setting where people can bounce ideas off each other about their various research projects. It is especially targetted for postgrad students, but is open to anyone doing research in behaviour and ecology.

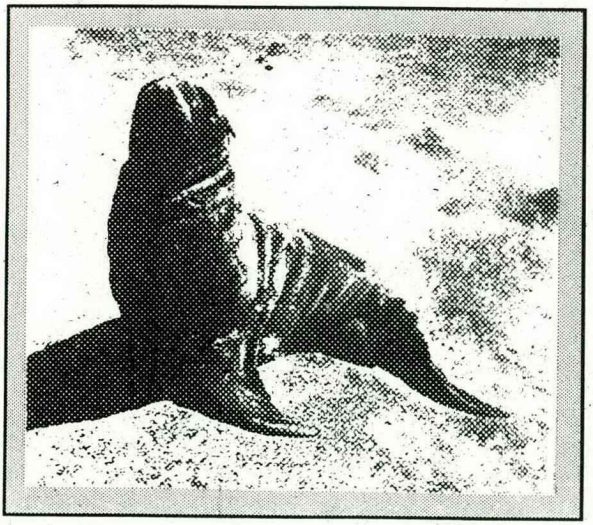
Contact: Doug Armstrong (D.P. Armstrong@Massey.ac.nz)
Dept. of Ecology, Massey University, Private Bag 11222, Palmerston North.
Phone: (06) 356-9099, Fax: (06) 350-5623

REPORTING BACK

Hooker's sea lion research hots up

When you start in a new job its important to make a big impression on those you work with to show that they made the right decision in choosing you from all those other hopeful candidates. As I stood amongst the smouldering ruins of our living hut on Enderby Island it occurred to me that this event would certainly make a big impression, but perhaps not the one I had hoped for.

"I never thought it would happen to me" is one of those cliches that they use in advertising to scare you into getting every aspect of your life covered by some expensive insurance policy, but it was those words that were running through my head when the reality of that fire hit me. It was 29th December 1993 on a fairly pleasant day in the New Zealand sub-antarctic. This was the first day of what was to be a five week field trip during which we were to learn much of the habits of the endemic Hooker's sea lions. We had arrived at 3:00 am after an incredibly calm voyage from Bluff on the Marine Countess and after a hearty breakfast we had set about the task of lugging all our field gear ashore. By about 9:00 am we had filled the main living hut with all the food, scientific equipment and our own personal items and sat down to a well earned cup of coffee. After our break we all set about our various tasks and three of us headed down to the beach to do the first count of the number of pups. In between dodging angry, dominant sea lion bulls which are four times our size and move almost as fast as us I looked back up towards the hut and saw the smoke pouring out from under the eaves of the kitchen hut. By the time we sprinted back to the fire it was all but over. For several of us the fire had claimed everything we had taken except the clothes we were wearing. Some in our party were luckier as they had nominated to move into one of the other huts and kept their own gear in tact. But for all of us the sense of loss was very high. The field trip was over after just nine hours on the island and we were to head home feeling very sorry for ourselves.



We don't know what started the fire. There was nobody in the huts at the time. The most likely cause seems a leaking gas stove, which caused a build up of gas on the kitchen cabin floor. This eventually ignited on the coals from a solid fuel

heater that had been burning earlier in the day. Piecing together the events of the first day of any field trip is never easy as it is always such a chaotic time. That in itself makes it perhaps the most dangerous time in terms of vulnerability to accidents. This fire has left those involved with an even higher level of paranoia about the risks of fire. I would encourage anyone else to stoke up their own levels of paranoia against such things.

However, "from the ashes of disaster, come the roses of success" as they sang in Chitty Chitty Bang Bang (I have a son who watched the video several hundred times, so anyone who wants the full words to all the songs should write to me). Many folk have rallied since the fire and the Hooker's sea lion programme is getting back on the tracks. The Navy have added their helping hand and during April we will be making a quick trip to Enderby aboard HMNZS *Canterbury* during which time we will erect a new hut and do some aerial photography work that I had hoped to get done in the summer. All staff in DoC have been very supportive and we are now well under way to replacing much of the gear lost in the fire. With luck I will be able to write a very different article to this one next year about the exciting new discoveries we have made on Hooker's sea lions and the single lack of a catastrophic fire or any other such event.

Nick Gales
S&R Division, Tory Street

NOTES AND NEWS

Titi Harvesting Study

Rakiura Maori have initiated a long-term study of the ecology and harvest of titi (muttonbirds).

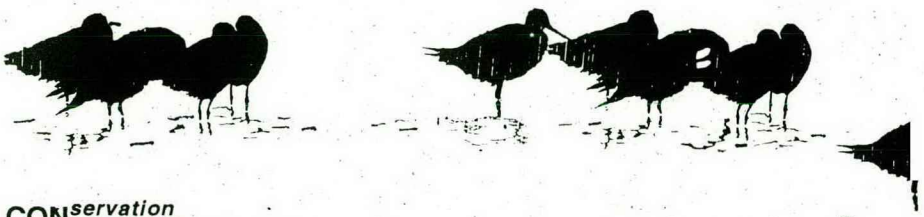
"We want to make double sure that the birds are still plentiful for our grandchildren to harvest" said Mrs Jane Davis, a spokesperson for the Rakiura Titi Committee. "Our traditional knowledge and methods confirm that titi continue to flourish, but we welcome partnership with a western ecological science team from the Zoology Department of the University of Otago to help guide sustainable harvest of the resource" said Mrs Davis.

The overall direction of the University's research will be guided by Rakiura Maori. Dr Moller is the ecologist who will co-ordinate the University research team. "The research is expected to take at least ten years before it can accurately predict sustainable yields of titi" said Dr Moller.

"Several birders have offered to assist the research by banding the birds" said Mrs Davis.

"Rakiura Maori will take over the research and maintaining of the harvest as soon as research methods have been proven and our own people have been trained in the necessary skills" said Mrs Davis.

For further comment or information please contact: Mrs Jane Davis, Phone: 03 234 8745 (Riverton).



Another Busman's Holiday: Vascular Flora of Motuihe Island

On a recent "holiday" my wife and I took the time to survey the vascular flora of Motuihe Island (Inner Hauraki Gulf Islands Ecological District). The flora of the island was last investigated by Alan Esler (published in the *NZ Journal of Botany* in 1980 (18): 15–36), who recorded a total flora of 220 taxa, of which 96 were indigenous and 124 adventive. With the benefit of a week long stay Gillian and I undertook a thorough survey of the island including the various homesteads with their gardens. We recorded a flora of c.466 taxa distributed as follows: 152 indigenous, 220 adventive, 89 exotic species not naturalised, and 5 indigenous species planted and not natural to the island (e.g. akiraho (*Olearia paniculata*).

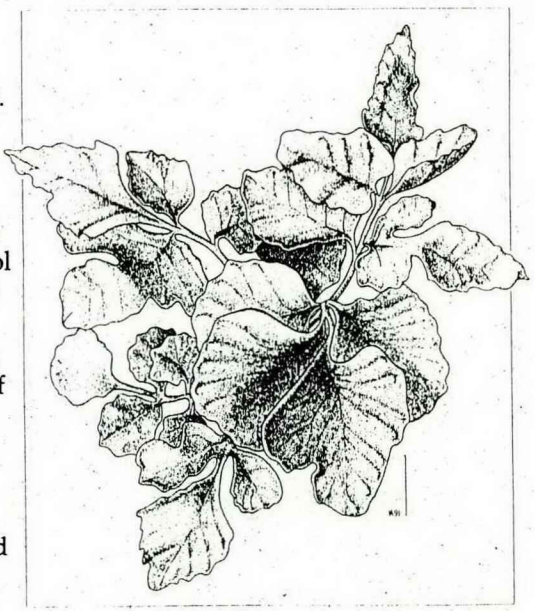
Motuihe occupies a pivotal place in the restoration of the inner gulf islands because it is the centre for dispersal of such serious gulf weeds as evergreen buckthorn (*Rhamnus alaternus*) and african olive (*Olea europaea* subsp. *africana*). Both species were first planted on Motuihe, and the buckthorn in particular has rapidly spread to become a major nuisance on Motuihe, Motutapu, Rangitoto and Papakohatu. Obviously any control will need to include the major seed source which is Motuihe.

Although we added 245 taxa to the list made by Esler (loc. cit.), most of the gains were of exotic and/or naturalised species, while most of the indigenous additions were either ferns or small herbaceous species. Many of the indigenous species are close to being extirpated from the island, for example tawa (*Beilschmiedia tawa*) is known from only a single tree in a heavily browsed paddock, while only three whau (*Entelea arborescens*) and two wharangi (*Melicope ternata*) survive in a precarious state on the southern end of the island.

While the large number of rabbits have had a serious impact on the indigenous flora they have helped prevent the establishment of boxthorn (*Lyceum ferocissimum*) on the island, and have prevented brush cherry (*Syzygium australe*) and sweet pea bush (*Polygala myrtifolia*) from spreading beyond their planted situations.

A more detailed account of the survey is being written up for the Auckland Botanical Society Bulletin series.

Peter de Lange
S&R Division, Auckland



RESEARCH IN PROGRESS

Asplenium pauperequitum – Poor Knights Fern in Poor Condition!

In 1982 a new species of *Asplenium* was discovered on the Poor Knights Islands, at Tatua Peak, Aorangi. In 1984 this was described with the epithet "*pauperequitum*" to reflect its then only known location of the Poor Knights Island group.

Scattered populations were reported from the two main islands of the group, Tawhiti Rahi and Aorangi, and with the small number of plants known, and the fact that it appeared impossible to cultivate, the *Asplenium* made its way on to the 1987 DSIR Threatened Plant List as "vulnerable". Since then the fern has see-sawed from "endangered" to "vulnerable" depending on different accounts of its status provided by various visitors to the island group. In early 1987 following the ravages of Cyclone Bola it was reported that the largest population on Aorangi, Tatua, had collapsed through the effects of salt burn. At that time the presence of brown scale - a serious introduced sucking insect pest of many ferns, was recorded from Tatua, where it had previously been unknown. Since 1987 at least two further visits have been made and more thorough inspections report that although no recovery had occurred at Tatua the fern was doing well at all of the other known populations. In 1993, following a published account of this visit, the conservation status of the fern was dropped from the 1991 status of "endangered" to "vulnerable" by the N.Z. Threatened Plants Committee.

So what do we know about *A. pauperequitum*? Simply stated: Not a lot! but there have been some advances in our knowledge which are worth sharing.

1. *Asplenium pauperequitum* appears to have very precise habitat requirements. Plants favour dark holes on rhyolitic saprolite, never directly on rock. Associated species are usually cryptogamic and include the blue green alga *Nostoc*, and small filamentous green algae. In several sites plants are associated with *Asplenium haurakiense*, where they typically grow beneath this fern - again in dark sites.
2. The most favoured sites are the least exposed, where air movement is minimal, humidity high, and the substrate fertile through the constant rain of guano from adjacent petrel colonies and leaf litter.
3. The Tatua population is anomalous, it, along with a similar one on Tawhiti Rahi, appear to have originally established under a mature pohutukawa forest, i.e., in shade. This forest has since collapsed, and the mature plants have survived only as stressed remnants in suboptimal habitats.
4. In 1984 it was suggested that *A. pauperequitum* was a relictual species of tropical origin. Our studies of its morphology, sporangia development, and spore release mechanism, confirm that this fern has no close relatives in New Zealand. Its scarcity in New Zealand may therefore be natural, as a relictual species of tropical affinity at the edge of its tolerance range.
5. The sporangia of *A. pauperequitum* have a weak dispersal mechanism. The annulus barely functioning so that spores are primarily liberated through gravity, trickling out over a long period of

time. In this way small populations develop within favoured sites, particularly as the favoured habitats have minimal air movement so the spores are unable to disperse far from source.

6. Brown Scale is an introduced pest. Its presence on Aorangi and absence on Tawhiti Rahi suggest it may have been introduced there. If this is so it is quite likely that scale was introduced from plant material brought to the island, although visitors to the site could also have been responsible. Either way it highlights the **need for taking extreme care in visiting all offshore islands, ensuring that all field equipment, clothing and body are as clean as possible.**

7. *Asplenium pauperequitum* with its naturally small populations is extremely vulnerable to predation - including over collecting by botanists. Since 1982, one site (Tatua Peak) has been repeatedly collected from, collections including whole plants and duplicates for distribution to other herbaria. This level of collecting was unnecessary and has probably contributed to the decline of the species at this site, and possibly at others on the island group.

Further research is needed to elucidate why the populations of *A. pauperequitum* appear to fluctuate so widely, what the exact habitat preferences are, and what are the keys to successfully cultivating the species.

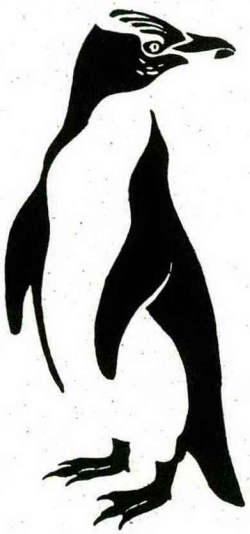
I would like to thank Keith Hawkins, Paul McArthur, Lisa Forester, Jeff Ange, Sandra Van der Mast, Ray Pierce, and John Beachman for their company in the field and/or helpful comments about *A. pauperequitum*.

Peter de Lange
S&R Division, Auckland

Yellow-eyed Penguins all at sea

This summer was the fourth breeding season that S&R Division and Otago Conservancy have been studying the foraging of YEP. The work was not as intensive as the previous two years as we did not radio-track birds (see ConScience 5 for a report).

My main task was to continue the dive-depth study that we started last year. We have two recorders from Platypus Engineering (now dealt with by Zelcon Technic, Hobart) and two from Wildlife Computers (USA). The latter are quite swept up, being almost neutrally buoyant and with an array of software to process the voluminous data. Surprisingly though, no allowance was made for streamlining, so we made nose cones to help reduce drag for the penguins. Gluing directly to the feathers of the lower back with "Loctite 401"



contact adhesive has been very successful, with no recorders lost to date.

At Otago Peninsula, six YEP had recorders attached during one to three stages of the breeding season. Although maximum depth as a statistic can over-represent unusual dives, it is useful as a first look at the data. Maximum depth attained at Otago was 93 m (66 m last year) and the mean maxima for 65 foraging trips was 54 m (56 m last year). Individuals were regular in their habits; e.g. one bird which has previously been an inshore feeder and had a mean maximum depth per foraging trip of 46 m during one stage of last season, had means of 45, 44 and 45 m during the three stages of this season.

At the Catlins, late in chick rearing, three YEP dived to a maximum depth of 107 m (128 m last year) and the mean maximum depth for 32 foraging trips was 75 m (104 m last year). The lower average was caused by an inshore feeder which, at most, dived 65 m, which can be reached within 2 km of the coast. This explains why it usually made two trips to sea a day, and once made three trips, whereas the deeper divers were out all day.

Fortunately for YEP, there has not been a repeat of the disastrous period in 1990, when about 150 adults died mysteriously around Otago Peninsula. If another bad season in terms of poor chick and\or adult survival occurs next year, we will repeat the radio-tracking, dive depth and diet work to find out what changes there are in foraging ranges and activity. The hard part will be recognising the signs early enough.

Peter Moore

S&R Division, Tory Street

The National Seabird Conservation Strategy

In an international context, New Zealand's seabird fauna is very significant. Despite this little is known about population trends of New Zealand's seabirds, and the biology of several species has not been studied. Work that has been carried out has occurred without any clear national priorities in place. Seabird work tends to be expensive because of the long time period required to collect useful data (seabirds are mainly long-living) and because of transport costs to offshore islands. Having a strategy will:

1. ensure programmes are initiated on priority species not currently receiving attention
2. ensure a co-ordinated approach is taken with species which occur in more than one conservancy
3. stimulate and direct post-graduate research.

The main objectives of this one-year project are:

1. to determine priority seabird species for conservation
2. to describe the threats faced by these species
3. to outline the monitoring, research and management requirements for priority species.

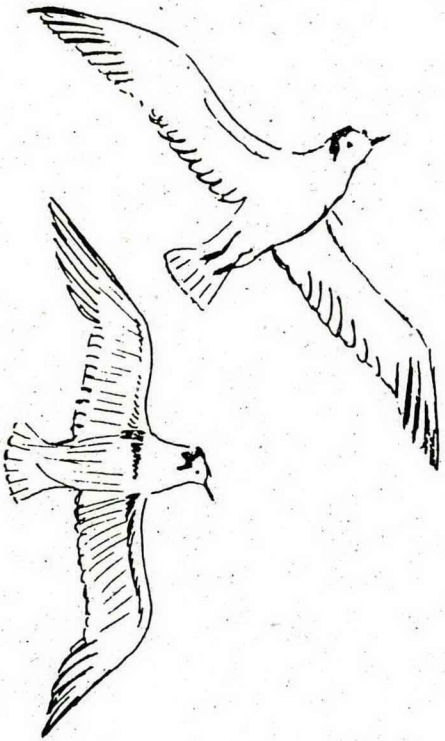
New Zealand has 88 species or subspecies of breeding seabirds, with which this study is concerned.

I have prepared a prioritising classification for the conservation of these seabirds based on 11 criteria: level of endemism; number of breeding sites in New Zealand; population size; population trend; present versus historical numbers; status of human exploitation; vulnerability to introduced predators;

vulnerability to fisheries by-catch; vulnerability to habitat change; value to people; state of knowledge of population status. This classification enables potential scores of 0 to 85.

The realised scores have ranged from 10 to 66: from Black-backed Gull to Chatham Taiko. There are 20 high priority seabirds with scores of 45 upwards; these might be further divided into two categories. Close behind these is a group of 9 seabirds that need to be watched and monitored as they risk moving into the top priority group, though they seem safe at present.

The top priority seabirds occur in only 7 Conservancies, including all in the South Island, and two Conservancies - Canterbury and Southland - have the heaviest burdens with 7 and 8 respectively. Only 5 of the top 20 seabirds occur in more than one Conservancy, and only one (Yellow-eyed Penguin) in more than two. Chatham Islands Field Centre has the responsibility for 6 of these top 20.



The threats that each priority species faces are now being described, and proposals for management considered. Fourteen of the top 20 seabirds are currently under management or being monitored. Not all of these species may require management: e.g. the Black Petrel has been actively managed in the past (eradication of cats from Little Barrier I.; transfers of fledglings from Great Barrier to Little Barrier), and now requires only monitoring with some cat-trapping occasionally on Great Barrier when predation incidents occur. For many of these seabirds, monitoring of their populations will be sufficient. I expect that only about 10 of them will need some form of management, on land or at sea (changes to fisheries practices).

Discussions of this strategy with concerned Tory Street and Head Office staff have taken place. A meeting with affected Conservancies' staff will take place in May/June when the draft will be considered. The final draft of the report should be in the publication pipeline by 30 June.

Mike Imber
S&R Division, Tory Street

NEW SCIENCE & RESEARCH PUBLICATIONS

REPORTS

Copies have been sent to all CAS, to librarians and to the Head Office library.

Ogle, Colin 1994. **Recognition of ephemeral wetlands from their plant species assemblages.** *Science & Research Series No.67.* 16p.

Comparisons of the plant lists for two sites in the Manawatu with a national list of wetland plants showed the sites had similar floras of plants acknowledged to be wetland species.

Powlesland, R., Grant, A., Flux, I., and Dilks, P. 1994. **Some aspects of the ecology and breeding biology of parea on southern Chatham Island, July 1992–April 1993.** *Science & Research Series No.66.* 33p.

Results from the second year of research on parea (Chatham Island pigeon). Includes diet records, census counts, breeding performance, and predator (rat) index trapping.

Bulmer, Susan 1994. **Sources for the archaeology of the Maaori settlement of the Taamaki volcanic district.** *Science & Research Series No. 63.* 76p.

Comprehensive list of all written material on the archaeology of the Taamaki district. Includes the Auckland Volcanic Field and nearby non-volcanic lands. Includes updated radiocarbon dates for the sites.

CONSERVATION ADVISORY SCIENCE NOTES

Copies have been sent to all CAS, to librarians and to the Head Office library. Further copies are available from Science Publications, at $2.25 (incl. GST) per copy.

Stephenson, G. 1994. **Macroinfauna of Wainui beach south of the Hamanatua Stream: an assessment of changes associated with beach erosion.** *Conservation Advisory Science Notes No.38.* DoC, Wellington. 21p.

NEW CONTRACT REPORTS

Copies have been sent to all CAS, to librarians and to the Head Office library. (Limited further copies may be available from this office, but please go to your conservancy librarian or CAS first.)

Hall, J., Hawes, I., and Wells, R. 1993. ***Hydrodictyon reticulatum*: An assessment of potential impact on wetland ecosystems and evaluation of possible control options.** Final Report. Prepared for Dept. of Conservation by NIWA, Hamilton. 16p.

Sagar, P.M. 1993. **Habitat use and models of abundance of maturing inanga in South Island, New Zealand, streams.** *New Zealand Freshwater Miscellaneous Report No.104.* Prepared for Dept. of Conservation by NIWA, Christchurch. 29p.

Hicks, B.J. 1993. **Investigation of the fish and fisheries of the Lake Wairarapa wetlands.** *New Zealand Freshwater Fisheries Miscellaneous Report No. 126.* Prepared for Wellington Conservancy, Dept. of Conservation by NIWA, Christchurch. 77p.

SCIENTIFIC PAPERS

LIMITED DISTRIBUTION to DoC libraries and CAS ONLY! (With the permission of the Copyright Holder.) Others please consult your library.

Mills, J.A., Lavers, R.B., Lee, W.G., and Mara, M.K. 1991. **Food selection by Takahe *Notornis mantelli* in relation to chemical composition.** *Ornis Scandinavica* 22: 111–128.

CONFERENCES 1994

AUSTRALIA

29 June–2 July 1994

Coast to coast '94 (A national coastal management conference)
Theme: Sustainable management and development of the coastal zone in Australia.
Venue: Wrest Point International Convention Centre
Hobart, Tasmania, Australia
Contact: Karen Anutha
Planning Division
Dept of Environment & Land Management
GPO Box 510E
Hobart, Tasmania 7001
Australia
Ph: 0061 002 333963
Fax: 0061 002 348730

20 June–15 July 1994

Resource and Environmental Management Course
Venue: Canberra, Australia
Contact: Mr George Collet
ANUTECH Ltd.
GPO Box 4
Canberra, ACT 2601
Australia
Fax: 616 2495875

10–12 July 1994

AIDAB Post-Graduate Course in Environmental Management
Venue: Adelaide, Australia
Contact: M. Atchia
Environmental Education & Training Unit
University of Adelaide

NEW ZEALAND

9–13 May 1994

New Zealand Archaeological Association Conference
General Conference and archaeology in Northland
Venue: Whangarei
Contact: Joan Maingay
DoC Conservancy
WHANGAREI
Ph: (04) 385 8019

INTERNATIONAL

2–5 June 1994

IV International Conference towards the World Governing of the Environment
Venue: Venice, Italy
Contact: ICEF Director
Judge Amedeo Postglione
Corte Suprema di Cassazione
Piazza Cavour 1
00193 Rome
Italy
Fax: 68 300783

19–22 June 1994

1st International Symposium on Ecosystem Health and Medicine: New Goals for Environmental Management.
Venue: Ottawa, Canada
Contact: Reno Petrongolo
Symposium Manager
Office of Continuing Education
159 Johnston Hall
University of Guelph
Guelph
Ontario, Canada
Fax: 767 0758

24 June–3 July 1994

Global Forum '94–Cities and Sustainable Development
Venue: Manchester,
United Kingdom
Contact: Global Forum '94
PO Box 532
Town Hall
Manchester M60 2LA
UNITED KINGDOM
Fax: 234 3743

4–9 July 1994

1994 International Conference
Environmental Strand: Impact of Technology, commerce and Development upon the quality of a population's environment
Venue: California, USA
Contact: Dr James Santucci
1994 International Conference
California State University
Fullerton, CA 92634
USA

DEPARTMENT OF CONSERVATION
PO BOX 10-420, WELLINGTON, NEW ZEALAND