

Abstracts of papers presented at the Ornithological Society of New Zealand AGM and Conference, 6 June 2004, Oamaru, New Zealand

Nesting effort and success of feral pigeons (*Columba livia*) in Wellington – preliminary results

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Although the feral pigeon (*Columbia livia*) is reasonably common, particularly in cities, towns and grain-growing districts, just three papers reporting New Zealand studies have been published. We are studying this species in central Wellington to determine nesting effort, nesting success, mate fidelity, nest-site fidelity, and recruitment. From December 2002 to April 2004, we checked nest sites weekly and monitored the outcomes at 100 nests. While clutches were laid in most months, the main nesting period was from August to January. The nesting effort of 31 pairs varied from one to four attempts during the 12 months from March 2003 to February 2004. The most successful pairs had a maximum of three successful nestings, or reared five fledglings. Mean nesting effort was 2.3 nests per pair, and mean nesting success was 1.8 fledglings per pair. We will describe how nesting effort and success varied with season, and compare our results with those from other studies. Mean clutch size was 1.92 eggs. Mean brood size at hatching was 1.33 (69.5% hatching success), and mean brood size at fledging was 0.78 (58.6% of chicks fledged, 40.7% of eggs eventuated as fledglings). The reasons for egg and chick mortality will be discussed.

Factors which may affect mohua (*Mohoua ochrocephala*) carrying capacity

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For nine years, mohua (*Mohoua ochrocephala*) breeding territories have been mapped in a 1 km²

study site at Lake Sylvan in the Dart valley. Favoured areas have been used every year and some areas are never used. It appears that even after 70 years the effects of logging are still having a negative effect on mohua; a critical effect of logging being a lack of understorey. Possible reasons for the importance of understorey are explored and the way these findings relate to previous studies which determined that old red beech forest is a preferred habitat will be presented.

The native forest birds of Stewart Island/Rakiura: distribution, status and recent extinctions

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The status of native birds of Stewart Island /Rakiura was last compiled in 1926. This review uses published records, Wildlife Service and DOC reports, and five-minute bird counts to compare and contrast the relative status of forest birds on Stewart Island with the southern South Island and islands of Stewart Island. Several species have become extinct on mainland Stewart Island in the past 80 years. Mohua (*Mohoua ochrocephala*) went extinct in the 1950's. Kokako (*Callaeas c. cinerea*), falcon (*Falco novaeseelandiae*), brown teal (*Anas chlorotis*), Stewart Island weka (*Gallirallus australis scotti*), rifleman (*Acanthisitta chloris*) and possibly yellow-crowned parakeet (*Cyanoramphus a. auriceps*) are no longer present. Rifleman, yellow-crowned parakeets and weka are still present on some offshore islands. There have been substantial declines of kaka (*Nestor m. meridionalis*) and kereru (*Hemiphaga novaeseelandiae*). Stewart Island robin (*Petroica australia rakiura*) and brown creeper (*Mohoua novaeseelandiae*) have isolated populations associated with manuka or subalpine shrubland. The remaining kakapo (*Strigops habroptilus*) were removed to offshore islands in the late 20th century. As mustelids (*Mustela* spp.) are absent from Stewart Island and large-scale habitat destruction has not taken place, these extinctions and declines are

intriguing, as they largely mirror declines in species numbers in similar forest on the South Island. I discuss the probable reasons for the extinctions and declines and implications for the South Island native forest bird populations.

Kaupapa Kereru: Ecology of kereru (*Hemipaga novaeseelandiae*) in a rural habitat mosaic on Banks Peninsula.

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Kaupapa Kereru was initiated by Ngai Tahu who wished to investigate the status and ensure the well-being of kereru (*Hemipaga novaeseelandiae*) on Banks Peninsula, a desire shared by the wider Peninsula community. It is a collaborative project between Ngai Tahu, Lincoln University, Department of Conservation (DoC) and Landcare Research. Kaupapa Kereru has two parallel areas of endeavour, ecological research and community involvement. The research is undertaken by graduate students at Lincoln University with guidance coming from the University, Landcare and DoC. The research, while independent from DoC programmes, complements their studies as no other research is being conducted in a mosaic of rural, village and regenerating forest habitats. The community involvement is coordinated by the Kaupapa Kereru project coordinator, employed by Ngai Tahu. During the last two years we have distributed a calendar, illustrated by local school children with text on kereru ecology and Ngai Tahu lore and values contributed by the project coordinators. The calendar has survey sheets where the public can report kereru sightings and other information. Several hundred returns have been received.

Our research findings and other information on kereru are reported back to the schools and the wider community by the Kaupapa Kereru coordinator. In this presentation we will discuss the Kaupapa Kereru project and present some preliminary research findings.

Investigating trends in the abundance and distribution of the rock wren (*Xenicus gilviventris*) in the South Island

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The rock wren (*Xenicus gilviventris*) is a seldom-seen and little-studied alpine species confined to the Southern Alps of New Zealand's South Island. It is restricted to regions of relatively inaccessible terrain where its rigorous study presents significant logistic difficulties. The rock wren belongs to the Acanthisittidae, the New Zealand wrens, an ancient and taxonomically significant family once comprising at least seven species in five distinct genera. Now, as a result of habitat destruction and predation by introduced mammals, only the rock wren and its forest-dwelling confamilial, the rifleman (*Acanthisitta chloris*) remain. Over the last decade, anecdotal reports have suggested that rock wren numbers are declining in many areas of the South Island. Since no rigorous analysis of either the bird's distribution or its current status have been conducted previously, the present study (still in progress) aims to examine records of rock wren sightings over the last 50 years in order to elucidate past and present distribution patterns and any evident trends in their numbers. Study methods are outlined, difficulties in analyses described, evident trends presented; more rigorous field census investigations, and some immediate management strategies are proposed. The presentation of this paper will conclude with an invitation to conference delegates to comment on present and proposed methodology and to discuss possible techniques for more accurately reckoning the status of this important New Zealand endemic.

The current status of Chatham petrels (*Pterodroma axillaris*) on Rangatira Island, Chatham Islands

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The Chatham petrel (*Pterodroma axillaris*) population on Rangatira Island, Chatham Islands, has been in decline due to intense competition for

breeding sites with the very abundant broad-billed prion (*Pachyptila vittata*). Burrow competition has had a negative impact on the breeding success of Chatham petrels. In 1993, the Chatham petrel population was estimated to be 800 birds (± 200) and about 200 breeding pairs. A recovery programme was begun in the early 1990s and included measures such as converting natural burrows to artificial nest chambers to stabilise nest sites, blocking off burrow entrances during the non-breeding season of Chatham petrels, culling prions that attempt to claim the nest sites, and more recently, installing neoprene flaps at the burrow entrance to exclude prospecting prions. These measures have resulted in high nest and pair fidelity and greatly increased breeding success (up to 80%). In February 2004, an estimate of the Chatham petrel population, using mark-recapture techniques, was 1000 birds (± 100) with a breeding population of 250 pairs. The minimum annual survival rates of adults in 107 stable breeding burrows over the period 2000-2004 ranged from 91.6% to 97.2% with a three-year mean of 94.7%. About half the banded petrels likely to be alive occur in 130 known breeding burrows. This is likely to be the first Chatham petrel population increase since human contact with the Chatham Island group 400 years ago.

Foraging ecology of the Snares crested penguin (*Eudyptes robustus*)

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In an effort to determine the foraging range and diving behaviour of the Snares crested penguin (*Eudyptes robustus*) during incubation and early chick rearing phases of the breeding cycle, we attached global position system (GPS) recorders and dive loggers to penguins at their nest sites. We also stomach flushed returning penguins to determine diet. During the incubation phase, males made trips of 10-16 days duration, diving between 230 and 580 times a day to mean maximum depths of 40-80 m (max. 123.5 m) and spending 30-70% of their time underwater. During the three-day battery life of the GPS devices the males travelled minimum distances of 96-216 km east of The Snares Islands. Returning males generally had few items in their stomach (mean 20.7 g), indicating that feeding occurred at some distance from the island.

Prey remains comprised fish (~90%), mainly benthic species such as red cod (*Pseudophycis bacchus*) and redbait (*Emmelichthys nitidus*), and cephalopods (~10%). Females during the incubation phase made trips of four-eight days duration, diving between 490 and 750 times a day to mean maximum depths of 20-45 m (max. 70 m) and spending 30-50% of their time underwater. Few diet samples were obtained for incubating females, but foods were similar to those of males. No GPS data was obtained for incubating females due to device loss and failure. During the chick guard stage, females left for short-term overnight trips (up to 1850 dives per trip) or day trips (between 340 and 900 dives). Foraging effort on either of these trips was similar with birds spending on average 57% of their time underwater. Due to intensive diving behaviour few daytime GPS fixes were obtained, however females ventured overnight 40-60 km to the north of the island. Females returned to the island with an average prey remains of 82.4 g, a single species of krill (*Euphausia lucens*) being the most important diet component (~55%), with fish (~23%) and cephalopods (~22%) comprising the remainder.

Comparison of population numbers of yellow-eyed penguins, (*Megadyptes antipodes*) on Stewart Island and on adjacent rat-free islands

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During comprehensive surveys in 1999, 2000 and 2001, we investigated the number of breeding yellow-eyed penguin (*Megadyptes antipodes*) pairs on Stewart Island, where cats are present, and on adjacent cat-free islands. We found 79 pairs breeding in 19 locations on Stewart Island (4.2 pairs per location), and 99 pairs breeding in 10 locations on all cat-free islands (9.9 pairs per location). Large-scale human-induced habitat modifications have not occurred on Stewart Island, nor on any of its adjacent islands. While the extensive coastline of Stewart Island (673 km) offers potentially large areas of breeding habitat for penguins, the highest number of breeding pairs was found on the smaller, predator-free Codfish Island (25 km coastline), where 61 breeding pairs were recorded. On Stewart Island, where mustelids (*Mustela* spp.) do not occur, only feral cats (*Felis catus*) can pose a serious threat to penguin offspring. Results from this study

suggest that feral cats may prey on yellow-eyed penguins on Stewart Island. Further work is necessary to investigate whether the low numbers of yellow-eyed penguins on Stewart Island are caused by feral cat predations. If so, it may be possible to develop appropriate measures to protect this penguin population.

The effect of high densities of burrowing seabirds on forest regeneration, South East Island (Rangatira), Chatham Islands

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South East Island (218 ha) is a globally significant bird sanctuary. The rare and endangered terrestrial and marine bird species that breed on the island are dependent on the quality of the forest habitat for their ongoing survival. However, with more than three million burrowing seabirds and a loss of suitable breeding habitat elsewhere in the Chatham archipelago, the forests' long-term viability may be under pressure. Most seabird island research has focused on the positive effects of high marine nutrient inputs by seabirds but little quantitative work has been undertaken to assess the negative impact that burrowing seabird disturbance has on forest dynamics. We surveyed the forests to: (1) describe the current forest structure and composition, (2) examine the impact of seabirds on seedling regeneration, and (3) examine the role of canopy gaps in forest regeneration. Five forest communities were described using cluster analysis from forty 10 × 10 m plots randomly located in forests across the island. Increment cores indicated that most of the present forest had regenerated after farming ceased in the 1960s. Exclosures (0.25 m²) to exclude seabirds were established in 30 of the forest plots and woody seedling density was measured after nine and 24 months. Seedling density was significantly higher in the exclosures than in the adjacent control plots, showing that seabirds inhibit seedling establishment. A canopy gap survey identified 14 small canopy gaps. Seedling density was significantly higher in gaps than in adjacent non-gap plots but burrow density was significantly lower in gaps. These results suggest that canopy gaps allow forest regeneration despite the negative impacts of seabird burrowing. However, the size and low frequency of gaps may have implications for the forests and its rare inhabitants.

Conservation of birds in the Juan Fernandez Islands

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Santa Clara Island is a small island off the south-west coast of Mas a Tierra, the main island in the Juan Fernandez archipelago. The author visited Santa Clara in February 2004 at the invitation of the Juan Fernandez Conservancy, a non-profit U.S.-based organization. Santa Clara has recently had goats and rabbits removed after 350 years of devastation. Whilst I was primarily looking at pink-footed shearwater (*Puffinus creatopus*) foraging ecology, I also found time to examine other conservation problems on the Juan Fernandez Islands some of which are remarkably similar to New Zealand, and others remarkably different. For example, *Vespula* wasps have recently invaded the island. Erosion is the biggest problem affecting pink-footed shearwater conservation while feral dog and coati (*Nasua nasua*) are the major predators. Bio-security on the off-shore islands is neglected.

Colour-band alert: New projects on the movements of Arctic-breeding waders in New Zealand

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Two new projects have recently started which involve colour-banding of Arctic migrant waders in New Zealand. One is a university-based project measuring seasonal and annual survival rates of bar-tailed godwits and knots at the Firth of Thames, near Auckland. The other is research the OSNZ is undertaking for the Department of Conservation on habitat networks of Arctic-breeding waders while in New Zealand. This will also focus on godwits and knots, but will have a wider geographical scope than the previous project, and we hope to extend banding efforts to the Manawatu, Nelson, Canterbury and Southland regions. The net result is that there should soon be a large pool of individually marked birds for re-sighting by OSNZ members. There is one important difference in the banding scheme being used from those OSNZ members will be used to – in addition to the two colour-bands on each tarsus (lower leg) there will

be a white leg-flag that is also part of the combination. The flag can be in any of eight positions (on either tibia (upper leg), or on a tarsus either above the colour-bands, between them or below them). This is a new marking scheme for the East Asian-Australasian Flyway, and will ensure that there are plenty of individual combinations available without having to use confusable colours. Instead, all bands will be yellow, white, red or blue. It also means that birds still keep the New Zealand identifying mark of a white flag (and two godwits have already been seen on migration in Asia). Examples of the marking scheme will be illustrated, stunning photographs shown, and hints for easy field recording of the bands given.

Migratory waterbirds and avian influenza in the East Asian/Australasian Flyway

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The epidemic of avian H5N1 influenza in chickens in East Asia in early 2004 has resulted in widespread speculation that wild birds may have spread the disease. Wild birds, in particular waterfowl and waders, are natural reservoirs of avian influenza A viruses. The viruses have been isolated from several species of waders in the East Asian - Australasian Flyway but at much lower levels than recorded on the east coast of the USA. There is a need for increased virus surveillance of wild birds.

From the ground up: a different perspective on restoration of biodiversity

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The present system of mainland islands is a major initiative in maintaining and restoring biodiversity on the North and South Islands. However, the emphasis on "top end" species may not yield the desired results, even for those taxa. There is increasing evidence that the terrestrial ecosystems in much of New Zealand depended, to a greater or lesser extent, on allochthonous nutrient sources. It would be a natural extension of present management practice to include the basis for the

food webs as well as the more iconic "top end" species. Suggestions are made for applying new and existing technology to develop sustainable ecosystem restoration in predator-free or predator-controlled areas.

Possibilities for enhancing populations of weka, tui, and titi on Banks Peninsula

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This paper explores the feasibility of restoring or enhancing populations of buff weka (*Gallinallus australis hectori*), tui (*Prosthemadera novaeseelandiae*) and titi (sooty shearwater; *Puffinus griseus*) to parts of Canterbury as part of a Ngai Tahu initiative in collaboration with the Department of Conservation. Buff weka disappeared from Canterbury by about the early 1900s. The only remaining buff weka population is on the Chatham Islands. Weka are the most translocated animal in New Zealand, but attempts to move weka have almost always failed on the mainland. There is currently one translocation attempt underway in Otago plus some small captive populations in Canterbury. The next logical step to reintroducing weka to Banks Peninsula is to identify suitable locations. Tui disappeared off Banks Peninsula about 15 years ago, probably due to habitat loss and predators. Much has changed recently on the Peninsula, probably making conditions more favourable for tui. However, they may not be able to recolonise the Peninsula on their own. The next logical step to restore tui to Horomaka would be a phenology assessment to determine if there are currently adequate food supplies year round to support them, followed by further investigations into the likelihood of tui being able to re-establish themselves. Titi have virtually disappeared from Canterbury; they remain in numbers only on Motunau Island. A survey in December 2000 confirmed there are very few, if any, sooty shearwater breeding on near-shore islands or rock stacks around Banks Peninsula. The only known mainland burrows are found along a cliff edge at Stony Bay where they declined to two pairs in 1997. The landowner erected a predator deterrent fence and initiated a predator control program. Numbers have increased to 16 active burrows with most birds on eggs. The two main options for titi in Canterbury are to protect the existing colony and/or create new colonies.

Five minute bird counts in New Zealand

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Researchers have been doing five minute bird counts in New Zealand forests for nearly 30 years as a way of monitoring bird populations. It all started with David Dawson and Peter Bull's 1975 paper in *Notornis* which set out a standard method. That method has been used for everything from monitoring the impacts of logging and 1080-poisoning operations to a way of ranking forests for their importance to birds. For the last year I have been working for the Department of Conservation tracking down counts from all over the country and entering information about each study in a database. I will talk about the history of the technique and why it is used so much despite acknowledged limitations. I will also summarise

the studies I have located including where studies have been done and when. Finally I will talk about the future of the project.

Bird distribution atlas scheme 1999-2004

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The OSNZ undertook an atlas project over 10 years from 1969 - 1979 that was published in 1985. In that time 98% of the 10,000 yard squares for the country were covered and almost 19,000 data sheets were returned. The new atlas project is designed to record the current distribution of birds in New Zealand, with the added requirement of recording a general habitat description for each species, and attempting to visit each square at least once in each season over the five-year period. Progress thus far has been excellent with over 24,000 record sheets returned by the end.