# Abstracts of papers presented at the Ornithological Society of New Zealand AGM and Conference, 5 June 2005, Hamilton, New Zealand

## Distribution, movements and nesting success of Waikato tui

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Tui (*Prosthemadera novaeseelandiae*) occur in all large native forests around the Waikato. On average, there were 1.1 tui per 5-min count in 16 forests in 2002 ($n$ = 298, *sd* 0.8, range 0 - 2.3), but tui are rare visitors to Waikato towns and rural areas distant to these forests. Public reports and our surveys confirmed that tui are winter-spring visitors to the central Waikato. In the non-breeding season between May and October they undertake apparently habitual journeys to alternative food sources on farms and residential properties. Ten plant genera supplied 74% of reported diet in urban-rural areas: (from most to least reported) *banksia*, kowhai, flowering cherries, camellia, eucalypts, flax, bottlebrush (*Callistemon*), kahikatea, tree lucerne and red hot poker (*Kniphofia*); all supplied nectar except kahikatea - fruit). In October 2004 we put radio transmitters on 25 tui in urban areas to see where they went for the breeding season. Most flew 7 - 16 km back to nearest native forests, as expected, although one pair unexpectedly attempted nesting in exotic parkland near Hamilton. Nests were hard to find; only 3 (27%) of 11 monitored attempts successfully fledged any young. Predators (ship rat, possum, harrier) ended most attempts. Controlling ship rats and possums annually to low levels in nearest native forest nesting areas will quickly increase the number of tui that visit rural-urban areas. However, further initiatives may be required to get them to nest there.

## The translocation of North Island tomtit (miromiro) to Tiritiri Matangi Island in 2004

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Translocations are now a standard tool in restoration biology in New Zealand. Nowhere is this clearer than on Tiritiri Matangi Island in the Hauraki Gulf, which has been progressively populated with translocated species from the mainland and other islands. Most of the species involved have been rare or endangered species, but to recreate the full suite of species formerly found in North Island forests also requires the establishment of some commoner species. In April 2004, North Island tomtits (*Petroica macrocephala toitoi*) were translocated from the Hunua Ranges, south Auckland, to Tiritiri Matangi. The translocation project was a joint venture involving an Auckland teacher on a Royal Society Teacher Fellowship, the Supporters of Tiritiri Matangi, Department of Conservation, Auckland Regional Council, and an international intern student. Previous attempts to translocate tomtits have met with limited success, with small numbers of birds captured and a male-biased sex ratio. The translocation captured 32 tomtits (19 males, 13 females) in less than 9 hours of mistnetting. This rapid capture was possible due to six months of pre-feeding with mealworms (*Tenebrio molitor*). All birds were apparently healthy at release and one male is known to have subsequently returned to the Hunua Ranges. Post release sightings have been occasional, and breeding has yet to be detected on Tiritiri Matangi. This presentation will focus on the role of pre-feeding and habituation in the successful capture of tomtits for translocation.

## Hybridisation of Forbes' parakeet (*Cyanoramphus forbesi*) in the Chatham Islands: a molecular geneticist's view

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Hybridisation between Forbes' parakeet (*Cyanoramphus forbesi*) and the closely related Chatham Island red-crowned parakeet (*C. novaezelandiae chathamensis*) is a long-standing

conservation problem. Apparent hybrids can be identified by the presence of red feathers in the yellow portion of the crown plumage. However, it is not known whether crown morphology accurately reflects the underlying genetics. In our study, we tested the correlation between crown morphology and genetic identity as judged from microsatellite DNA markers and mitochondrial DNA sequences. We found that extra red feathers do generally indicate hybrid status. However, a large proportion of birds (78%) with typical Forbes' parakeet crowns are cryptic hybrids. We therefore propose that birds need to pass both genetic and morphological tests to be considered as "pure" Forbes' parakeets. Applying these tests to 169 samples collected from Mangere Island during 1999-2003, 18% are considered "pure" Forbes' parakeet, 1% considered as "pure" Chatham Island red-crowned parakeet, and 81% are hybrids. The results indicate that hybridisation has been extensive, and there may not be any genuine Forbes' parakeet without a hybridisation history, but there are still plenty of individual birds which are both genetically and morphologically distinct from Chatham Island red-crowned parakeet and merit conservation as a distinct *C. forbesi* taxon.

## Rats on islands: what they do to birds and what we do to them

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Isolated islands worldwide are characterised by species that have evolved in the absence of mammalian predators. New Zealand is no exception. Before the arrival of humans the only terrestrial mammals present in New Zealand were bats; instead their ecological niches were filled by birds, reptiles and insects. After the arrival of Polynesians around 1000 years ago many bird species in New Zealand went extinct. Some of these extinctions were due to hunting and habitat loss; others were due to predation by, and competition with, kiore (*Rattus exulans*). Further extinctions occurred following the arrival of Europeans in 1769. As well as dramatically altering the habitat in New Zealand, European travellers brought with them a suite of predatory mammals, including ship and Norway rats (*R. rattus* and *R. norvegicus*), that had a devastating effect on bird species. The combination of predation and habitat loss means that most of the mainland has until recently been unsuitable for the conservation of native bird species. Instead, bird populations have been translocated to predator-free islands, either in the true sense of the word or mainland islands including predator-proof fences. There are many examples of increased breeding success and survival of rare birds once predators have been eradicated. Methods pioneered and perfected in New Zealand mean predator populations can be eradicated quickly and effectively from islands but only those more than 1 km from shore are used for bird translocations as the reinvasion of predators is considered inevitable on inshore islands. Many inshore islands could potentially provide excellent habitat for native bird species if predators, particularly rats, could be kept off them. The process by which rats invade islands is the focus of a project involving researchers from the Universities of Auckland and East Anglia and some of the work being undertaken is discussed.

## Pateke/brown teal: the fall and rise of a "cute wee brown duck"

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Pateke (*Anas chlorotis*) are a New Zealand endemic duck that were once widespread throughout the North Island, and parts of the South Island. An objective of present recovery actions is to establish breeding populations of pateke outside their existing strongholds of Great Barrier Island, and mid-eastern Northland. Port Charles, at the northern end of the Coromandel Peninsula supports a small wild population of approximately 50 individuals. Since June 2003, two annual releases of 40-50 captive-bred birds (all carrying radio transmitters) have been made into a predator controlled area of approximately 5000 ha. Survivorship has been measured under a consistent management regime of predator control for mustelids and cats, public relations to minimise vehicle strikes, and community involvement. Released bird survival was 48% in Year 1, with most losses attributed to cat predation. Released bird survival in Year 2 is currently 85%.

## Some preliminary results from the Wellington OSNZ's bird counts at Pauatahanui Inlet

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Monthly counts of all birds over Pauatahanui Inlet were made during three surveys, each of two-years duration: 1982-84, 1992-94 and 2002-04. Counts were held during weekends at mid to low tide. Graphs of the results for the more numerous shag, wader, waterfowl and gull species, plus a few others will be presented. Species that have declined during the 20-year period include black shag, little shag, mallard and black-backed gull. Those that have established and/or increased were royal spoonbill, variable oystercatcher, spur-winged plover, Canada goose, and paradise shelduck. Reasons for seasonal changes in abundance, and for changes in abundance between the surveys, will be discussed.

## Characteristics of white-chinned petrels (*Procellaria aequinoctialis*) in New Zealand waters

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Current taxonomy of the white-chinned petrel suggests that all populations are similar enough to be a single global taxon, *Procellaria aequinoctialis* Linnaeus. This study challenges that view with an analysis of morphological characteristics of white-chinned petrels from fisheries bycatch in New Zealand waters. Our morphometrics included standard external measurements (head, bill, tarsus, wing and tail measurements) and descriptions (area of white on the chin and bodily descriptions) of a sample of 723 bycatch white-chinned petrels. We also measured 25 white-chinned petrel study skins from breeding islands in the south Pacific, Indian and Atlantic Oceans, and 29 study skins from birds caught off Chile. We found two groups of bycatch white-chinned petrels, the 'Antipodes Island cluster group' ($n$ = 105) which was significantly larger in most external measurements than the 'Auckland Island cluster group' ($n$ = 45). Using discriminant analysis we could differentiate 93% males of the 'Antipodes Island cluster group' versus the 'Auckland Island cluster group' based on culmen and tail length. We could also differentiate 92% of females from the 'Antipodes Island cluster group' versus the 'Auckland Island cluster group' based on head and bill length, culmen depth at the base and wing length. Discriminant analysis indicates that the Antipodes Island population male and female white-chinned petrel study skins related closest to the 'Antipodes Island cluster group' and the Auckland Island, south Indian Ocean, south Atlantic Ocean, and Chile male and female white-chinned petrel study skins related closest to the 'Auckland Island cluster group'. The results suggest that, globally, the external morphology of white-chinned petrels can be used to identify two taxa: *P. aequinoctialis* Linnaeus, the smaller sized white-chinned petrels which comprise the Auckland Islands, the south Indian Ocean, and the south Atlantic Ocean populations; and *P. steadi* Mathews, the larger sized white-chinned petrels which comprise the Antipodes Islands population. Further, most white-chinned petrels caught off Chile are likely to be from the Auckland Island breeding population.

## Long-term monitoring of black petrel (*Procellaria parkinsoni*) on Great Barrier Island

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The black petrel (*Procellaria parkinsoni*) is a medium-sized endemic seabird that breeds on Little and Great Barrier Islands, New Zealand. The main breeding area on Great Barrier Island is around the summit of Mount Hobson (Hirakimata). This population is part of an ongoing long-term monitoring study on Great Barrier Island, which began in the 1995/96 breeding season. This study investigates causes and timing of mortality, breeding success, estimating population size, current population trends, foraging and recruitment in relation to fisheries interactions. Black petrels feed in areas where there is long-lining for many months of the year, and migrate to South America where by-catch of unknown cause has occurred. In New Zealand waters they have been hooked in both commercial and recreational fisheries. Observer coverage of the

fisheries that potentially interact with this species has been poor, and it is suspected that more black petrels are taken incidental to fishing than are reported. No reliable long-term population data exists for the black petrel. Before a maximum level of fishing related mortality can be set, survival, recruitment and population size must be known. The breeding population on Great Barrier Island has been monitored for ten years (1995/96 to 2004/05 season). Over this period up to 361 study burrows have been intensively monitored; use by breeding birds varied from 60 - 70%, by non-breeding birds from 20 - 25% and the remaining burrows have been empty. Several factors affecting the black petrel breeding success have been noted. Breeding success rates ranged from 69 - 84%. Nine census grids were monitored within the study area and account for 139 of the inspected burrows. Extrapolating from these grid burrows, the black petrel population estimate around the peak of Mount Hobson (30 ha) ranges from 2936 to 4690 birds. Over 900 adults and 600 chicks have been banded during this study. There have been 31 'chicks' from earlier breeding seasons recaptured within the Mount Hobson colony. 'Chicks' banded during this study have also been recaptured in Australia and Peru.

## Ecological requirements of the New Zealand bush falcon in plantation forestry

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The New Zealand falcon (*Falco novaeseelandiae*) is an endemic species that is currently thought to be in decline. The bush form is historically known to have bred widely through the podocarp dominated forests of the North Island. Recently, bush falcons have been discovered breeding in the pine plantations of the Central Plateau. The role that pine plantations play in the biology of New Zealand bush falcons is largely unknown, and this represents a serious gap in the knowledge required to assess the long-term future of the species. The biology of bush falcons is being studied in the Kaingaroa pine plantation as part of a PhD thesis. During the first two breeding seasons monitored, 21 and 33 falcon nests (in 2003 and 2004 respectively) were located. Preliminary results and the significance of this research will be discussed.

## An overview of the role of the New Zealand Wildlife Health Centre at Massey University

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The New Zealand Wildlife Health Centre is a grouping of Massey University researchers from the Institute of Veterinary, Animal and Biomedical Sciences. The overall mission is to promote and implement collaborative investigation and management of wildlife in support of the conservation of New Zealand native fauna. The functions of the centre include teaching in ecology, wildlife health and captive husbandry; a wildlife clinical service; a diagnostic pathology service; terrestrial wildlife and marine mammal research groups; consultancies to DOC and MAF; and an oil spill wildlife response service. Recent contributions the centre has made to New Zealand conservation and plans and opportunities for future work and collaborations will be discussed.

## Pipit (*Anthus novaeseelandiae*) detection and site use in Northland

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Pipits (*Anthus novaeseelandiae*) are recorded in the recent literature as a common bird in Northland, and have been regarded as not at risk. However, what does "common" mean? Pipit numbers and distribution were followed at four sites near Whangarei, Northland. Surveys conduced on foot located significantly more pipits than those carried out from a car travelling at *c*.30 km per hour along Ormiston Road. Car-based surveys still identified Ormiston Road as a pipit region 97%, 72%, 45% and 76% of the time in summer, autumn, winter and spring, respectively. Pipits calls and behaviour indicated that they were likely to breed between August to February, however all young were seen after December. No young pipits were fledged by 3 pairs in the 1998-99 season, and *c*. 0.42, 0.66, 0.42 and 1.00 young/pair were raised by 7, 3, 7 and 3 pairs in 1999-00, 2000-01, 2001-02 and 2002-03, respectively. The majority of adults were less conspicuous at their breeding sites or dispersed during autumn. Post-breeding flocks were small (<8 birds) and used areas with 1 - 8 ha of bare ground and patchy low cushion vegetation. These sites were not used after they were overgrown by higher vegetation.

## Movements of Arctic-breeding waders in New Zealand: the first year's results

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In 2004 the Ornithological Society of New Zealand started a 3-year project, funded by the Department of Conservation, to study the movements of Arctic-breeding wading birds in New Zealand. The project aims to assess how site-faithful non-breeding bar-tailed godwit (*Limosa lapponica*), red knot (*Calidris canutus*) and ruddy turnstone (*Arenaria interpres*) are, and through this to determine whether birds use networks of estuaries and harbours. Varying numbers of birds have been individually colour-banded at sites near Auckland (Kaipara and Manukau Harbour, Firth of Thames), in Golden Bay (Totara Avenue), Tasman Bay (Bells Island and Rabbit Island, Nelson), the Avon-Heathcote Estuary (Canterbury) and Awarua Bay (Southland). Resighting efforts have been made both at banding sites and at other sites as widely as has been practicable thus far. Relatively few inter-site movements have been detected in godwits. Around Auckland, a small number of sightings have linked the Manukau Harbour, estuaries on Aucklands southeast coast (Whitford and Mataitai), and the Firth of Thames. Longer-distance movements have included from the Firth of Thames to Coromandel Peninsula, the Bay of Plenty, Kawhia Harbour and the Far North. No long-distance movements have been detected within the South Island; all sightings have been local (e.g. Avon-Heathcote Estuary to Lyttleton Harbour, Lake Ellesmere and the Ashley Estuary; Waimea Inlet to Nelson Haven, Nelson). Two inter-island movements have been recorded. A first-year bird from the Avon-Heathcote Estuary moved to Lake Ellesmere and from there to the Manukau Harbour, and another first-year bird banded in the Firth of Thames was seen on the New River Estuary near Invercargill, Southland. In contrast, knots have proven extremely mobile. Most birds were banded in the Firth of Thames, including 40 'overwintering' birds caught in June 2004. Most of these 40 shifted away from the Firth of Thames that winter, being seen in the Manukau Harbour, Kaipara Harbour, Parengarenga Harbour (Far North), Farewell Spit (NW Nelson) and Tasman Bay. One bird is known to have moved from the Kaipara Harbour to the Firth of Thames overnight. The success of a project like this depends on having wide enough resighting effort around the country. While efforts in some regions have been good, many regions lack birdwatchers able to invest time into searching for banded birds. This is a particular issue in the Far North of the North Island, a region for which it is unclear whether birds from other regions stage there before departing on northward migration.

## The OSNZ bird distribution atlas 1999-2004

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The atlas project is designed to record the recent distribution of birds in New Zealand, with the added requirement for this project of recording a general habitat description for each species, and an attempt to visit each square at least once in each season over the five-year survey period. The OSNZ undertook a previous 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. This time, approximately 32,000 data sheets were contributed. With preliminary data entry due to be completed in June 2005 the total coverage of the 10,000 metre squares for the country will again be about 98%. Though there will now be an extensive checking stage it is likely that a draft for printing will be possible by the middle of 2006. A shorter web version will be published at a later time. As in previous years, a range of species will be used to demonstrate comparative distributions and changes, along with statistics from the project so far. The achievements of more than 1000 contributors will clearly demonstrate the vast voluntary effort involved.

## Correcting for sampling effort in the atlas of bird distribution in New Zealand

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The species counts of birds in grid squares containing islands from the *Atlas of bird distribution in New Zealand* (Bull *et al.* 1984) were found to be significantly related to the sampling effort invested in each grid square (measured as cards returned). This has significant ramifications both for studies utilising the data presented in the atlas, and for prospective efforts currently being made for the forthcoming updated atlas of bird distribution in New Zealand. To correct for this it was necessary to

adjust the data using a linear model estimate of the contribution of sampling effort to the final counts of species present in each grid square. Subsequently the corrected estimates (measured as residuals about the mean) can be used as more accurate measures of bird species richness between each grid square. The accuracy and applicability of this method is also discussed.

## The scientific recording of rare birds and bird distribution in New Zealand: where to now that the atlas is over?

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It is clear from the constitution of the Ornithological Society of New Zealand that the society was specifically established "to encourage, organise and promote the study of birds and their habitat use particularly within the New Zealand region" and "to assist the conservation and management of birds by providing information, from which sound management decisions can be derived". When the first atlas was set up in the late 1960's the word biodiversity wasn't even coined and no one was interested in "Biodiversity Strategies". But now the New Zealand Biodiversity Strategy (NZBS) is a crucial cog in governmental thought processes The NZBS identifies the monitoring of New Zealand bird abundance and population trends as an essential tool in monitoring the health of the New Zealand environment, and government (and quasi-government) agencies are actively looking at ways to jump on the bird monitoring bandwagon. In this talk I discuss and suggest a way forward for the scientific recording of bird distribution and abundance in New Zealand, now that the second atlas has been completed.

## New directions in the New Zealand national bird banding scheme

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The New Zealand national bird banding scheme is managed by the Department of Conservation in Wellington. Following a restructuring of the Department's science units in 2004, bird banding is now included in a section which aims to make improvements in the area of banding and marking. The strategic direction of bird banding within the Department of Conservation will be examined over the next 18 months with consultation with a full range of stakeholders. A number of changes have begun including a change in personnel with Graeme Taylor taking over as manager of the banding and marking office. Increasingly, it is my intention to change from a paper-based recording system to an electronic storage system for records. Electronic templates have prepared for most banding forms and further changes will be made if funding is obtained for converting nearly 1.5 million bird banding records stored on paper schedules over to an electronic format. There is also an increasing need to ensure that improvements are made in training of banding operators (bird capture and handling techniques, banding and bird processing standards and record management). A new banding permit system has been created with new permits needing to be renewed each April, to ensure better management of banding records. I also intend to convene a banding liaison committee with representatives from different organisations including OSNZ to assist with developing new improvements in banding and marking practises in New Zealand. The banding and marking office will continue to manage band recoveries from the public, provide metal bird bands and will have some other banding supplies in stock. Research and development of other marking techniques will be expanded into the role.