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Papers

Developing translocation as a tool for blue duck (*Hymenolaimus malacorhynchos*) recovery – experiences from Egmont National Park

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Blue duck (*Hymenolaimus malacorhynchus*) populations continue to suffer serious declines nationally, such that the species is regarded as Nationally Endangered. Securing the future of blue duck requires conservation measures to be taken on mainland New Zealand. Since 1999, a programme has been underway to translocate ducks to Egmont National Park with the aims of establishing a new population and trialing techniques for the translocation of wild and captive-bred blue ducks. The latter is particularly important given that many populations are unlikely to recover without intervention. The first release (1999) suffered from high mortality (*c.* 70%) as a result of predation by mustelids and an inability of captive-bred birds to cope in the wild. Subsequent releases have seen far lower mortality (30% in 2001/02, 23% in 2002/03). Improved rates of survival result largely from better preparation of captive birds for release and a programme of mustelid control. Several important lessons have been learned that should improve the use of translocation as a tool for securing blue duck populations nationally.

Why do kereru (*Hemiphaga novaeseelandiae*) eat what they eat?

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A brief overview is given of fruit availability in the Auckland area and the species that New Zealand pigeon (kereru: *Hemiphaga novaeseelandiae*) seem to prefer. Nutritional analysis of the fruits revealed that kereru target particular types of nutrition throughout the annual breeding cycle. The amount of fruit available in areas with mammalian pest suppression was compared to those where possums (*Trichosurus vulpecula*) and rodents are not targeted.

The rise and fall of mohua (*Mohoua ochrocephala*) on Mt Stokes

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A small relict population of yellowhead (mohua: *Mohoua ochrocephala*, yellowhead) was discovered on Mt Stokes, Marlborough Sounds in 1985. This

was the only extant population north of the Hurunui catchment, in Canterbury. Subsequent work showed that there were *c.* 6 pairs and that they were confined to silver beech (*Nothofagus menziesii*) forest along a 7km length of the Mt Kiwi-Mt Stokes-McMahon massif above 1000 m. Since that time, the area has been a focus for relatively intensive control of pest animals with a view to not only preserving the mohua, but also *Powelliphanta* snails and botanical values. Stoats (*Mustela erminea*) were trapped. Nests were physically protected in most years, which was regarded as being effective management of the mohua population, as numbers increased gradually until 1999, when there were >90 birds present. During 1999 and 2000 numbers decreased to the point where no birds could be located in Dec 2000. The demise of this population coincided with the sudden arrival of ship rats (*Rattus rattus*) within this high altitude forest. Four birds were translocated from Mt Stokes to the rat-free island of Nukuwaiata in Nov 1999. The extinction of a vertebrate population is rare, and it is hoped that in this instance there is sufficient information to explain why it occurred and what lessons may learnt for future species management in beech forests.

Bellbird (*Anthornis melanura*) transfers to Karori Wildlife Sanctuary

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Fifty-nine bellbirds (31 ♂♂, 28 ♀♀) were transferred to Karori Wildlife Sanctuary between Aug 2001 and Nov 2002, with most birds being transferred from Kapiti Is in Aug 2001 and May 2002. Two birds were transferred from the Akatarawas in Aug 2002. Measurements made at capture included tarsus length and head-bill length and, with 1 exception, formed 2 discrete clusters corresponding to sex based on plumage coloration. Bellbirds were housed temporarily in an aviary before transfer, males being kept separate to females. The males gained weight during captivity, with greatest gains in May. However, females lost weight in captivity, with a greater weight loss in May than in Aug. Breeding was recorded at the Sanctuary for the 1st time during the 2002/3 breeding season, the 1st time breeding has been documented in a transferred population. Two pairs were monitored. Nesting began in Sep and each produced 4 clutches of 3-4 chicks clutch^{-1} (13 chicks pair^{-1}), with the last chicks fledging in late Feb.

Black-fronted terns (*Sterna albostriata*) and braided rivers: predation, productivity and population trends

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The ecology and population trends of black-fronted terns (*Sterna albostriata*) are not well understood although concerns have long been held about the species' status. Recent completion of a 4-year research project into black-fronted tern breeding biology, ecology, and causes of mortality on the Ohau River suggest those concerns are valid. Black-fronted tern productivity is low with <12% of all eggs hatching and surviving through to post-fledging. Mortality across the different life stages was caused primarily by cats, rats, and hedgehogs in the Ohau River, but additional evidence suggests stoats are important predators in other rivers. Data collated on population size and trends show the population is probably >10,000 individuals and is probably declining, but no system is in place for accurately detecting trends or estimating the total population size. Computer modelling of the population suggest the population is almost certainly in decline and that predator control is likely the best option to increase productivity. Black-fronted terns depend on braided river habitat for survival but are not the only braided river species that need urgent management to ensure survival. Black stilts (*Himantopus novaezelandiae*) are critically endangered and would face extinction in absence of the current management; wrybills (*Anarhynchus frontalis*) are declining and affected by predators, and other species such as the black-billed gull (*Larus bulleri*) and the robust grasshopper (*Brachaspis robustus*) are not well studied in the braided river system but are also facing serious threats. The best option to ensure continued survival of a range of braided river species is to implement a wide scale, collaborative research by management project with the goals of prioritising current braided river research and restoring the habitat to protect as many species as possible.

Flight paths used by Hutton's shearwaters (*Puffinus huttoni*) between their colony in the Seaward Kaikoura Range and the coast

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Ten adult Hutton's shearwaters (*Puffinus huttoni*) were fitted with 10 g radio transmitters (2.5% body weight) taped to their back feathers. The birds were monitored over a 10-day period 11-20 Sep 2001 by a team of OSNZ volunteers and Department of Conservation staff. Eight of the birds were tracked on 21 flights from the coast to the colony, *c.* 18-20 km inland and 1250 m asl at the head of the Kowhai River, Seaward Kaikoura Range. The birds all flew in from the sea over a zone 10 km north or south of the Kaikoura Peninsula but the flight paths narrowed to a 6 km-wide front between a bend in the river at Swyncombe and the summit of Mt Fyffe, after which all birds followed the river up to the colony. The birds took 30-50 min to fly between the coastline and the colony with flight speeds averaging 34 kmh^{-1} on the uphill climb. On departure form the colony at dawn on 16 Sep, 6 birds flew out directly over the Mt Fyffe ridge and then fanned out to sea north and south of the Peninsula. These birds took 7-20 min to reach the coast and attained maximum flight speeds of 154 kmh^{-1} in what was effectively a power dive from high altitude to sea level. A site for establishing a 3rd colony at lower altitude was identified from the results of this project.

An estimate of Hutton's shearwater (*Puffinus huttoni*) numbers: results of a joint DoC/OSNZ project

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A mark-recapture experiment to estimate the number of Hutton's shearwater (*Puffinus huttoni*) was undertaken as a joint Department of Conservation/OSNZ project in late Sep 2002. Between 16 and 20 Sep birds returning to the colony at night were marked using red (1860 birds) and yellow (217 birds) enamel paint. The ratio of marked to unmarked birds was then counted by OSNZ member and DoC personnel off the Kaikoura Peninsula between 21 and 29 Sep. The ratio of birds seen that were marked compared to those unmarked gave us an estimate of the population of Hutton's shearwater using the seas off the Kaikoura Peninsula. The accuracy of this estimate was discussed. Interesting data on shearwater foraging behaviour was also gathered and is discussed.

Sizing up shearwaters: morphological variation in the genus *Puffinus*

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The shearwater genus *Puffinus* was used to investigate how the interactions between an organism and its environment are manifested in its morphology. Three levels of morphological variation were investigated: interspecific differences between species; sexual size dimorphism between the sexes; and intraspecific geographic variation over a species range. Both morphological and behavioural differences exist between *Puffinus* species, which may act to reduce intraspecific competition. *Puffinus* exhibit low levels of sexual size dimorphism, and only in the bill depth dimensions: male bills are deeper. The spatial distribution of colonies and associated climates do not explain the patterns of geographic variation exhibited by *Puffinus assimilis*, *P. pacificus*, and *P. lherminieri*. It appears that food, through its influence on competition, dispersal, growth, fecundity and survival, may be playing an important role in the relationship between the morphology and

ecology of *Puffinus* individuals at the 3 levels of morphological variation that were examined.

Restoring fairy prions (*Pachyptila turtur*) to Mana Island

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The Friends of Mana Island and the Department of Conservation are attempting to re-establish a breeding colony of fairy prions (*Pachyptila turtur*) on Mana Is, Wellington as part of a comprehensive restoration programme for the island. Near fully-grown chicks from Takapourewa (Stephens Is) were transferred to Mana Is, where they were hand-fed until they fledged. Forty chicks were transferred on 13 Jan 2002, and a further 100 on 14 Jan 2003; all birds were placed in artificial burrows, and restrained by fences at the burrow entrance for at least the 1st 2 nights. Half the chicks in 2002 were fed a krill-based diet daily, while the other 20 received a sardine-based diet. All 100 chicks received a sardine-based diet in 2003, but 2 different brands were compared. All 140 chicks transferred fledged successfully 2-21 days after transfer. No problems occurred with any of the diets trialled, but birds fed on sardines in soya oil fledged in the best condition. All other aspects of the project on Mana Is ran very smoothly, apart from the very long days required initially to feed 100 chicks. The assistance and enthusiasm of Ngati Koata, Ngati Toa, and the teams of volunteer feeders (organized by the Friends of Mana Island) contributed enormously to the success of the project. A 3rd and final transfer of 100 chicks is planned for Jan 2004. The 1st birds are expected to return to Mana Is later in 2004.

Conservation of the Chatham petrel (*Pterodroma axillaris*): an update of current management techniques

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The Chatham petrel *Pterodroma axillaris* is the focus of an intensive, long-term recovery programme implemented by the Department of Conservation. I present an overview of current annual management employed for the single population on South East Is, Chatham Is, and incorporate a progress report. Several components of the programme are described briefly, including burrow location, preservation, monitoring, and protection, and the initiation of an artificial burrow site on the island to concentrate breeders at a manageable site. The success of these operations in increasing burrow fidelity and, in turn, overall breeding productivity, has provided a pool of chicks large enough to support chick translocations in recent seasons, to establish a second colony for the species. Secondly, details of the refinement of chick selection criteria and feeding regimes during 2 transfers to Pitt Is are outlined. I describe an observational method used to realistically assess an individual chick's stage in development. The technique accounts for chicks fledging across a range of sizes and ages, and allows feeding regimes to be tailored to meet the requirements of individual chicks.

Cook's petrel (*Pterodroma cookii*) historic distribution and breeding biology on Little Barrier and Codfish islands

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Cook's petrel (*Pterodroma cookii*) formerly bred at at least 11 sites on mainland New Zealand, where they are long extinct. Locations are shown and common features identified. Results of studies on breeding biology on Little Barrier Is (1971-2003) and Codfish Is (1982- 2003) are presented; particularly laying dates and breeding success. Complex interactions between feral cats, rats and these petrels on Little Barrier Is are discussed. Since cats were eradicated, Pacific rats (*Rattus exulans*) have become a very serious threat to this colony. On Codfish Is the positive effects of the removal of Pacific rats are already evident. A curious correlation between El Niño Southern Oscillation and breeding success at higher elevations on Codfish Is before rats were removed is mentioned.

Body size, fat loads, and flight ranges of bar-tailed godwits (*Limosa lapponica*) before northward migration from New Zealand

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We analysed the body composition of 35 adult bar-tailed godwits (*Limosa lapponica*) that had been shot illegally during fuelling for migration in Northland in Mar 1992. Judging by their fat loads (30-45% of total mass), many birds were close to departure. We assessed how body mass and fat load varied with body size, both between individuals, and between 2 subspecies (*baueri* in New Zealand; *taymyrensis* in The Netherlands). Whereas lean mass and body size varied similarly, *baueri* deposited much more fat for their body size than equivalent-sized *taymyrensis*. Based on estimated travel costs for *taymyrensis* flying from Europe to Siberia, predicted flight ranges for *baueri* ranged from 5,500-9,000 km depending on whether wind assistance is assumed. This suggests that direct flights to South-east or eastern Asia are possible (e.g., Philippines 7,200 km; Japan 8,700; South Korea 9,100 km). Body composition and moult data suggest that 2 subpopulations of male godwits may occur.

Baseline survey of the intertidal benthos of Farewell Spit, Golden Bay

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The intertidal areas of Golden Bay, New Zealand, support internationally important numbers of waders, including bar-tailed godwit *Limosa lapponica*, red knot *Calidris canutus*, and South Is pied oystercatcher *Haematopus finschi*. Farewell Spit and the adjacent intertidal flats (total area 11,388 ha), were designated as a 'Wetland of International Importance' under the Ramsar Convention on 13 Aug 1976, the area being important as a staging area for migratory shorebirds. The OSNZ has been monitoring wader numbers at Farewell Spit since the 1960s. A recent review of these data, together with data from other sites in Golden and Tasman Bays, has revealed a long-term population decline in red knots, whereas numbers of bar-tailed godwits have remained more or less unchanged. Numbers of South Is pied oystercatchers at Farewell Spit have increased, in line with the national population, but populations elsewhere in Golden Bay and in Tasman Bay have declined. The reduction in red knots is of particular concern in view of their limited distribution in New Zealand and the importance of Farewell Spit to this species: some 7% of the East Asian-Australasian Flyway population occur at Farewell Spit. The overall objective is to provide baseline information on the distribution and abundance of intertidal macro-benthic organisms, with particular reference to prey species for shorebirds. The specific objectives are to make baseline surveys of the intertidal macro-benthic organisms, the distribution of *Zostera*, and the sediment characteristics of the intertidal flats at Farewell Spit Nature Reserve and adjacent flats.

Late migratory departures of red knots (*Calidris canutus*) from North-west Australia

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In general, migratory waders from Australasia depart the non-breeding grounds in Mar (New

Zealand) to mid-Apr (NW Australia). Here we provide evidence from radio-tracking and visual observations that many red knots *Calidris canutus* do not leave Roebuck Bay, North-west Australia until early or mid-May. The presence of the majority of the radio-tagged red knots until early May, and the departing flocks in mid-May suggest that substantial numbers of red knots from North-west Australia depart extremely late on northward migration. Late-departing red knots probably belong to the subspecies *piersmai*, which breeds on the New Siberian Is. Temperatures on the New Siberian Is in May and Jun are similar to those of Taimyr Peninsula, where knots arrive in mid-Jun. Birds leaving Australia in early to mid-May may therefore have until early Jun (3-4 weeks after departing Australia) to reach the breeding grounds. This implies a rapid fuelling episode, probably in the Yellow Sea, China, en route to the breeding grounds 10,400 km away.

Pelagic birding around New Zealand: how much do we know?

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As yet, we understand little about the identification and seasonal distribution and trends of seabirds in New Zealand waters. Pelagic trips have been running regularly out of several Australian ports since the early 1980s, and there has been a proliferation of at least quarterly trips out of several other ports more recently. These have revealed much about the distribution and identification of seabirds found within Australian waters. However, in New Zealand the only regular pelagic birding trip that has made its observations available, has been the *OceanWings* pelagic out of Kaikoura. More recently however, pelagic trips have been organised out of several other New Zealand ports, with the aim to increase our knowledge of the species present, and in the hope of aiding in the identification of difficult groups of birds, such as the 'Cookilaria' petrels. Knowledge gained so far substantiates the fact that we know very little, with sightings of several species that constitute rarities in New Zealand. Photographs taken of the large numbers of 'Cookilaria' petrels seen off Tolaga Bay in February, although of a high standard, reveal birds with plumages that are not consistent with either Cook's (*Pterodroma cookii*) or Pycroft's petrels (*Pterodroma pycrofti*), although the birds appear to be of these species. On 25 January 2003, during a pelagic birding trip off the Mercury Islands, Coromandel Peninsula, a strange storm-petrel was observed and photographed. Although initially thought to be a black-bellied storm-petrel (*Fregetta tropica*) the bird is unlike any individual seen before. Indeed the photographs show a bird strikingly similar to the museum specimens of New Zealand storm petrel (*Oceanites maorianus*) thought to be extinct for more than 150 years. A thorough investigation has been conducted since the sighting, with several seabird experts now convinced that the species has been rediscovered. Official rediscovery of such a species, however, is only going to be possible by finding a breeding location and capturing an individual. This all suggests that as yet we know very little about the species that frequent New Zealand's waters, let alone the identification of many of them. It is only through regular pelagic trips, with good records of observations, that our knowledge will be extended.

Title only

UPDATE ON THE OSNZ ATLAS SCHEME

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