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Papers

Kaharoa kokako (Callaeas cinerea wilsoni)

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Public concern about destruction of kokako habitat near Rotorua resulted by 1984 in Crown purchase and protection of 381 ha of 'cut over' forest locally known as "Aislabie's". A 1982 survey had found 31 kokako. Kaharoa (Aislabie's) was 1 of 3 forest areas intensively studied between 1990 and 1997 as part of a Research by Management programme; the outcome indicating that mammalian pests, particularly possums (Trichosurus vulcepula) and ship rats (Rattus rattus), were the primary causes of kokako population decline. There were 26 kokako at Kaharoa, and no chicks had been reared for 2 breeding seasons before 1997 when the Kaharoa Kokako Trust (KKT) was established. The KKT uses funds from a range of sources to actively manage this kokako population, in particular by controlling mammalian pests. The Trust relies heavily on voluntary efforts of the local community. The success of the initial efforts has led to an extension of the Trust's activities into surrounding protected forest and to a focus on whole ecosystem management. The results of monitoring of the kokako population and the abundance of pest mammals provide a basis for the Trust's management decisions and are communicated to sponsors and volunteers in a feedback loop that ensures an ongoing commitment from the community.

Kokako (*Callaeas cinerea wilsoni*) dialects and management implications

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The North Island kokako is an endemic forest passerine that uses song (duetting) to help maintain territory all year round. Collectively kokako have distinctive dialects which have delineated boundaries. Adults do not change dialects but young may, and soon abandon all natal song phrases. There have been problems when attempting to introduce new blood lines to a failing kokako population. The new birds with different dialects have not formed pairs with the established birds, regardless of the age of the introduced birds. With the introduction of kokako to Kapiti Island it was noted that birds from different sources did not form pairs but that the young born on the island would. It has also been observed that kokako have a homing instinct which complicates mainland translocations. To overcome the homing instinct, kokako have been kept in aviaries at Mt Bruce and Boundary Stream with the chicks bred at the sites to be eleased to the surrounding reserves. These birds should be site specific. At Mt Bruce provoking song and encouraging duetting overcame problems experienced with captive rearing from forced pairings of birds with different dialects. The resulting song was played back and bonding behaviour was then observed. Subsequent mating produced offspring thus preserving the rare Taranaki gene pool. I thank Dr. Joe Waas, University of Waikato, for his contributions on song characteristics.

Impact of management on the nesting success of northern NZ dotterel (*Charadrius obscurus aquilonius*) on Matakana Island

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The nesting success of northern New Zealand dotterels on Matakana Island, Bay of Plenty, was determined over 8 seasons (1992/93 to 1999/00) in managed and unmanaged areas. Management to enhance nesting success included shifting nests to reduce the risk of flooding during spring tides and storms, and reducing predator populations (possum, cat, Norway rat, stoat, and black-backed gull) at dotterel nesting areas. In addition, a variety of measures was taken to reduce the incidence of disturbance by people on nesting dotterels. Overall, 35.6% of 278 nesting attempts resulted in

broods hatching. The 5 main causes of nest failure during incubation were flooding by high tides or storms (22.3%), unidentified predators (14.0%), black-backed gulls (13.4%), cats (11.7%) and people (10.1%). The proportion of eggs that hatched was fairly stable during the 1993/94 to 1997/98 seasons at 27.8 to 31.7%, but was 72.5 and 53.7% in the past 2 years. This sudden improvement in nesting success was attributed to the increased duration of pest control. Nesting success during incubation in managed habitat (47.2%) was significantly greater than in unmanaged habitat (19.5%), mainly as a result of fewer losses by flooding and predation. Overall, 52.6% of hatched chicks fledged. The number of chicks fledged per season (5-33), and fledglings produced per breeding pair (0.26-1.08) increased through the study. However, although fledgling productivity was greater in managed habitat (57.2%) than unmanaged habitat (47.5%), the difference was not significant.

State of the play with hihi (stitchbird) (Notiomystis cincta) recovery

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Recovery of hihi is currently at a standstill. Only 1 population, on Little Barrier Island, is self-sustaining and 20 years of effort to establish other self-sustaining populations has failed. Three translocated populations have gone extinct and the 3 surviving translocated populations along with the single captive population all require intervention to persist. Hihi are therefore still at risk of extinction from a single catastrophic event such as the introduction of predators or disease to Little Barrier Island. A synopsis of the hihi recovery programme is given, with particular attention to the question of why translocated hihi populations have failed to establish. Research questions that still need to be answered are outlined and future management options that might answer some of these questions are proposed.

UV reflectance, bill colour, and territory defence in blackbirds (*Turdus merula*)

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The visual properties of conspicuous male ornaments may be important in social-signalling during intra-sexual

interactions. In this study, we used intruder models to examine the effect of altering the UV reflectance and colour of a single male ornament on intra-sexual interactions of the blackbird, Turdus merula. We presented stuffed models of male blackbirds with brown, yellow, or orange bills to residents in their natural habitat, and altered UV reflectance from the bills by applying nail varnish. We found no evidence to suggest that UV reflectance from the bills of male blackbirds affected the response of resident males to a simulated territory intruder under natural signal and viewing conditions. However, models with brown bills received less attention from resident males than models displaying carotenoid-based colouration (yellow and orange). The brown bill is typical of first year males and may be an effective signal of subordinate status, reducing aggression from adult males. Furthermore, resident males came closer to orange-billed than to yellow-billed models during presentations, suggesting that orange-billed models may be perceived by residents as more of a threat to territory ownership. Bill colour may be a reliable status signal used for revealing competitive ability between as well as within age classes of blackbirds, but UV reflectance does not appear to play an important role during intra-sexual interactions.

Post-fledging mortality in blackfronted terns (*Sterna albostriata*): does fledging equal success?

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Black-fronted terns (*Sterna albostriata*), are listed globally as endangered and are in decline primarily as a result of the impacts of introduced mammalian predators. Mortality rates are high for black-fronted tern eggs (60%) and chicks (70%), but little is known about the impact of predation at other lifestages. In this study, I attached radio transmitters to black-fronted tern chicks before fledging to monitor rates and causes of mortality in the immediate post-fledging period. Minimum mortality rates for the first month after fledging were 31% (n=13), 22% (n=18) and 13% (n=32) in the 1998, 1999, and 2000 breeding seasons, respectively. Introduced predators such as feral cats (*Felis catus*) and Norway rats Ten years studying grey-faced petrel (*Pterodroma macroptera gouldi*) at Mauao/Motuotau

We investigated whether Norway rats (*Rattus norvegicus*) were responsible for a minimum of 75% of all deaths. Additional causes of mortality included starvation and necrotising enteritis. All except 1 of the juveniles that died did so within the first week after fledging, all other juveniles survived until they dropped

their transmitters or left the area. Some newly fledged juveniles could be easily recaptured by hand after they were seen flying, suggesting that although they were capable of flying, they took several days to rely on flight as their primary mechanism of escape from predators. These results indicate that mortality initially remains high post-fledging and that fledging rate alone is not anaccurate measure of productivity in this species.

Ten years studying grey-faced petrel (*Pterodroma macroptera gouldi*) at Mauao/Motuotau

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Two breeding colonies of grey-faced petrels (*Pterodroma macroptera gouldi*) in Bay of Plenty were studied during 10 breeding seasons, 1991/92-2000/01. One colony was on the mainland at Mauao (Mt Maunganui) and the other was on Motuotau Island *c*.1 km from the mainland. More than 5,700 birds were banded and estimates of population size were made. Burrow occupancy and breeding success were measured during 4 breeding seasons. For 2 years at Mauao losses of chicks from September to December were >70%, but in the succeeding 2 years when predator control was in operation losses were <20%. Data were collected on inter-colony movements and on the age at which young birds returned to the colonies after fledging from them.

On petrels, fallout from catastrophic eruptions, and ice ages — an unparalleled record from Te Waka in inland Hawke's Bay

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The fossil site at 900 m asl called Te Waka #1 was discovered in 1957 by W. H. Hartree on the limestonecapped Te Waka Range that rises to 1021 m near Te Pohue on the Napier-Taupo road. His excavations there and elsewhere (1957-1960) provided much data on the past avifaunas of inland Hawke's Bay. Excavations by us in 1999 and 2000 have resulted in the most diverse fauna from a cave site in the North Island (2111 identified bones representing 39+ species birds, 5 lizards, 3 bats). The site is unique in having preserved a continuous and diverse vertebrate fauna from before the last glacial maximum to the present. A series of identified tephras from the Taupo Volcanic zone, about 70 km to the northwest, provide excellent stratigraphic control. Seven radiocarbon dates on bones and eggshell, and a uranium series date on a speleothem, provide additional time control. A distinct glacial fauna was deposited between the 22.6 kyr Kawakawa tephra and about 14,000 yrs B.P. after which the wetter and warmer conditions of the Holocene changed the deposition regime in the site and a forest fauna was deposited. Open country taxa were then absent until the very youngest deposits associated with Polynesian land clearance. Bones accumulated mainly as the result of predator activity. The mottled petrel Pterodroma inexpectata and the Cook's petrel P. cookii are the most common species in the site particularly in the earlier levels.

Prion problems alleviated. An update on research toward the conservation of the endangered Chatham petrel (*Pterodroma axillaris*)

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The endangered Chatham petrel Pterodroma axillaris now breeds on a single island where up to 70% of breeding failures are caused by interference from the locally abundant, broad-billed prion Pachyptila vittata. We have developed a burrow entrance flap that has significantly reduced interference by prions. Neither species likes to enter through the neoprene flap but the petrel with a chick inside will enter while it deters prions with no prior attachment to that burrow. Now that known Chatham petrel burrows are protected there a 2nd Chatham petrel population can be established. We identified habitat preferences of both Chatham petrels and broad-billed prions. We are also studying the feeding frequency, meal size, and chick development in an analogue species Pycroft's petrel Pterodroma pycrofti. In this paper we discuss the success of the burrow flap, and the application of our habitat and chick growth studies in enabling the establishment of new petrel populations.

Development of translocation techniques for *Pterodroma* petrels

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Since 1995, a programme to develop translocation techniques for Pterodroma petrels has been carried out on 2 species, grey-faced petrels (P. macroptera gouldi) and Pycroft's petrels (P. pycrofti). The grey-faced petrel project initially involved the transfer of eggs and chicks to a captive rearing facility in 1995 and 1996. Diet problems were encountered in these first 2 seasons, in particular a deficiency of calcium. One chick was successfully reared from a fresh egg to departure in the wild in 1996. Diet samples were collected from adults and chicks at a wild colony in 1997. The analysis of the diet by nutritional experts at Massey University recommended feeding hand-reared petrel chicks a commercial cat food and vegetable oil. This new diet was tested in 1999 on wild grey-faced petrel chicks at Mount Maunganui. Some chicks were successfully reared but the project revealed that the recommended diet was deficient in water. In 2000, 12 grey-faced petrel chicks were again taken to a captive facility and fed 3 different diets (cat food, sardines, and fresh squid and fish). The chicks raised on canned sardines, salt water, and cod liver oil had the best growth rates and were successfully transferred back to the wild for fledging. Trials on Pycroft's petrels using the sardine diet were field tested in March 2001. Thirty chicks were successfully transferred without any losses from Red Mercury to Cuvier Islands.

Antarctic wildlife slide presentation

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I have spent a total of about 4.5 years working in Antarctica, mainly with the British Antarctic Survey. Mostly I have been working as a chef on the scientific stations, but have always been keen to get involved with any work going on concerning birds or seals. More recently I have been working as a lecturer on Antarctic cruise ships, work which I hope to continue in the future. This presentation is not a record of any specific study, just a photographic celebration of the region's spectacular and fascinating wildlife, mixed with a few (hopefully) entertaining anecdotes from my time "south".

Moult workshop

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The workshop aims to de-mystify moult studies, thereby encouraging a greater participation in the Society's Moult Recording scheme. The value of studying moult will be highlighted. Participants will be introduced to the basic principles of recording data on OSNZ Moult Cards during a practical session using specimens.

Posters

Attracting endangered species to 'safe' habitats: responses of fairy terns (*Sterna nereis davisae*) to decoys

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The New Zealand fairy tern (Sterna nereis davisae) is considered an endangered subspecies. The aims of this study were to quantify fairy tern responses to decoys and sound recordings and determine the viability of decoys as a technique for re-establishment of this species in protected habitat. Sixteen decoy trials were conducted in an area suitable for nesting from 9 September to 2 October 1999 at Papakanui Spit, New Zealand (36°26´S, 174°13´E). The decoy models were effective in attracting fairy terns to a specific area. There was a significant effect due to decoys with >80% of landing episodes occurring in the decoy plots. A planned contrast between decoys with and without recordings showed no significant difference. The behaviour of the fairy terns towards the decoys included erect postures, one aggressive response, and a possible courtship feeding. Despite low numbers, the response to the decoys was highly significant. We suggest that decoy techniques could be used as a simple and effective management tool for a wide range of groupliving species. Such techniques will become particularly important as the availability of suitable habitat declines due to anthropogenic effects. Finally, regardless of whether the attraction of fairy terns towards these decoys encourages residence and nesting in this area, the effectiveness of attracting terns to a specific location results in a safe and efficient means of trapping adults away from the nest and/or outside the breeding season.