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My 20 years off Kaikoura

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Garry Melville has skippered Oceanwing/Albatross Encounters boats off Kaikoura for the past 20 years. In this presentation, he talks of his experiences over this period of time and gives members an overview of the species likely to be viewed during pelagic trips in this area of the country.

A brief introduction to some bird studies at Kaikoura

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A brief summary of the work of OSNZ members around the Kaikoura area is presented with comments on interesting observations made while observing and banding variable oystercatchers, white-fronted terns, little penguins and silvereyes.

Tracking breeding white-capped albatrosses using GPS technology

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In New Zealand, white-capped albatross breed principally at the Auckland Islands, with the vast majority of pairs situated at Disappointment Island and at South West Cape, main Auckland Island. Apart from a few population estimates, very little is known about the biology and ecology of this species, although it is often assumed to be similar to the shy albatross, which is confined to Tasmanian islands. GPS loggers, with 3 minute sampling intervals, were deployed on, and recovered from, 19 breeding white-capped albatross from South West Cape. These tags produced highly-resolved location data during 24 foraging trips. We characterise these foraging trips based on behaviour, flight speed, and time of day. Furthermore, we compare the habitat use patterns of foraging and non-foraging locations with respect to depth, bathymetric slope, distance from shelf edge, sea surface temperature, ocean productivity, and wind speed and direction.

Using satellite telemetry to track the movements of bar-tailed godwits in the Pacific region

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Last year, we reported on the first satellite tracking of bar-tailed godwits (*Limosa lapponica baueri*) from New Zealand, some of which had been tracked via Asia to Alaska by the time of the OSNZ conference. Exceptional battery life of some transmitters meant that the project continued to gather information well beyond expectation. In particular, 4 birds were still transmitting when they embarked on southward migration towards New Zealand. The first of these, E7, became internationally renowned upon completion of an 11,700 km flight from Alaska to New Zealand, a flight that had previously been predicted to occur (based on indirect lines of evidence). The other birds deviated to the west and made landfall on islands in the western Pacific. One was subsequently seen in New South Wales in Dec before returning to her banding site in the Firth of Thames. These findings accord with the presence of New Zealand-banded godwits on the east coast of Australia during southward migration in 2006 and 2007. Male godwits had been tracked with lightweight external-mounted transmitters. There was clear evidence of an impact on their migratory performance, making implanted transmitters the

only viable satellite-tracking option for birds making such long flights. These were used on 3 males and 6 females from Miranda in 2008; results confirmed that males make similar flights to those of females.

Temporal and spatial variation in grey-faced petrel *Pterodroma macroptera gouldi* distribution at sea during the breeding season

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Gadfly petrels (*Pterodroma* spp.) have adapted life history traits, behaviours, and physiologies to cope with food resources that are patchily distributed over enormous (millions of square kilometres) pelagic habitats. However, the relative importance of different oceanographic features and conditions (e.g. bathymetry, biological productivity and wind speed) in determining the distribution of gadfly petrels at sea is not known. One reason for this is that our current knowledge about the distribution of *Pterodroma* petrels at sea is limited to results from opportunistic observations of birds from ships and indirect measures of dietary composition of chicks. Our study focuses on understanding the at-sea distribution of *Pterodroma macroptera gouldi*, the grey-faced petrel, which is a culturally significant species to the Maori iwi (tribes) of Hauraki and Ngati Awa in New Zealand. Using satellite tracking devices, we determine: (a) the extent of the at-sea distribution of grey-faced petrels during the breeding season; (b) the degree of spatial overlap or association among individual birds within years; (c) temporal variation in the locations of high use areas (hotspots) during the breeding season; and (d) the extent and variation in the use of New Zealand's and Australia's exclusive economic zones (EEZs) versus international waters.

When species merge – hybridization between grey duck and mallard in New Zealand

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Introduced species can cause conservation problems in more ways than by preying on wildlife or destroying habitat. Some introduced species threaten the genetic integrity of native species by extensive interbreeding, which may lead to the extinction of the native species. Such extensive hybridisation occurs between the introduced mallard (*Anas platyrhynchos*) and the native grey duck (*A. superciliosa*) in New Zealand. Mallards have spread around the country since their introduction in the 19th century and hybridisation with grey ducks has become ubiquitous. The exact spatial and temporal structure of the hybridisation remain poorly understood, as do the underlying patterns and causes. A survey along the West Coast of New Zealand allowed an assessment of the current relative numbers of individuals of grey duck, mallard or hybrid phenotype. The results presented here show low proportions of grey ducks, with virtually none in Nelson and Christchurch, and few in the northern parts of the West Coast. Populations of noteworthy numbers are restricted to south of the glaciers. Causes and consequences of the hybridization are discussed, taking into account new data on possible influences of factors such as mate choice patterns, sexual selection, differential survival of parental species and hybrids and differing habitat preferences. Assortative mate choice patterns and differential reproductive potential appear to exert a crucial influence, while hybrid health and habitat preference are of low importance. In particular, the latter is unlikely to protect remnant populations of the grey duck from hybridization, and the species might well be extinct in New Zealand a decade from now.

Hutton's shearwater - how research affects management

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Security of the remaining 2 colonies of Hutton's shearwater is threatened by various factors. Research in the larger Kowhai Stream colony showed that predation by stoats was less of a threat than that posed by any invasion of feral pigs and trampling of burrows by deer and chamois. Population modelling showed the colony to be stable. Control of ungulates and the establishment of a new colony have been the priorities for management at this site. More recent research at the smaller Shearwater Stream colony suggests that stoat predation here could be a significant factor. Predator control in this mountainous and privately owned land poses some challenges.

The future of whio in Fiordland National Park: Is linear stoat trapping sufficient to ensure persistence?

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The blue duck (whio - *Hymenolaimus malacorhynchos*) is a unique riverine waterfowl species that is endemic to New Zealand. Whio were once widespread throughout both the North and South Islands but are now restricted to fragmented populations, mostly in the headwaters of rivers in the central North Island and western South Island. These declines have been largely attributed to predation by introduced mammals and they are currently listed as "nationally endangered". A 6-year study was conducted by the Department of Conservation in Fiordland National Park to investigate the productivity and survival of whio and assess the impacts of predator control. Whio populations in the Clinton, Arthur and Cleddau catchments were surveyed and time-lapse video cameras were used to monitor disturbance and predation events on nests in valleys with and without linear stoat trapping. Nest failure was strongly associated with stoat predation in the absence of trapping. Eggs, ducklings and adult females were all susceptible to predation. Stochastic population modelling indicates that the persistence of these populations is dependent on high nest survival, only presently occurring in trapped valleys. We discuss the management implications of our results.

Results of breeding population census of shags in the Marlborough Sounds

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A survey was undertaken of the entire 1500 km coastline of the Marlborough Sounds to census all shag colonies. The results have shown that all species have either stable or increasing populations. There are a total of 48 pied shag colonies with a breeding population of 440 pairs. Counts carried out between the 1950s and 1980s indicate that the number of colonies, colony location and population numbers have changed little. Many of the colonies are shared with little shag which has 24 colonies and 230 breeding pairs. Little shags also show little change in colony location and numbers. Spotted shag is the most numerous species present in the Sounds; with 1250 breeding pairs being recorded, in 193 colonies. Most colonies are small with 3-10 pairs. Although there has been no systematic count of colonies previously, many colony locations have been recorded. Between the 1970s and present there has been a 3 fold increase in the number of colonies; indicating significant population growth during this time. King shag breeding is restricted to the Marlborough Sounds and overall counts were similar to that recorded by Rob Schuckard, although 2 new colonies where found. These colonies have probably been started by 1 colony shifting, and birds emigrating from another colony which showed some decline in numbers.

Population estimations of wild kea (*Nestor notabilis*)

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Establishing accurate numbers of individuals within wild animal populations can be extremely difficult. Kea *(Nestor notabilis)*, a species that covers an extensive and largely inaccessible range, and which at specific life stages are behaviorally cryptic, are particularly problematic. As an threatened species however it is vitally important to identify population status and numbers to ensure that they are assigned the appropriate level of conservation priority. Kea numbers have been estimated at between 1000-5000 (Anderson 1986) and 15,000 (Bond & Diamond 1992; and Jackson 1960). However until systematic banding and surveying of populations in more remote areas can be carried out, neither estimate should be accepted as an accurate reflection of total kea numbers (Bond & Diamond 1992). Additionally it is agreed that very little is known about the ongoing status and stability of kea populations (Seal *et al.* 1993). Because of this continuing uncertainty, the Kea Conservation Trust seeks to provide a more accurate estimate of kea numbers and ultimately kea population status to ensure appropriate conservation priority. This will be achieved using a combined winter (Jul 2008) and summer (Jan 2009) survey across the species range (funded by T-GEAR Trust and NZ Lottery Board respectively) and across years. In order to maximize

the outcome of these studies, buy-in, support and expertise from related conservation organisations, individual specialists, tertiary institutions and, local and regional community groups, is considered essential.

New Zealand Garden Bird Survey 2007

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A nationwide garden bird survey was undertaken between 14 and 22 Jul 2007. Participants spent 1 hour watching birds and recording the highest number of individuals of each species seen at once. A total of 2064 valid survey forms were returned. Of these, 1954 were from home gardens, 78 from local parks, and 32 from school grounds. In total, 90 species of birds were recorded (average 7.6 species per home garden, 8.9 species per park, and 6.5 species per school ground). One participant recorded 24 species and 2 participants none. Blackbirds were recorded in 90%, house sparrows 86%, silvereyes 81%, starlings 61%, song thrushes 52%, and other species less than 50% of home gardens. Silvereyes were recorded in the greatest numbers (average 10.2 per garden). House sparrows averaged 9.4, starlings 3.1, blackbirds 2.7, greenfinches 1.2, and other species less than 1.0 per garden. Sixty-eight percent of participants put out food for birds. Bread, fat, seeds, and fruit were each provided by 20–24% of participants, and sugar-water by 11%. In general, more birds were recorded in gardens where supplementary food was provided than where it was not (e.g. silvereyes 14.9 v 4.7 per garden and house sparrows 11.5 v 7.1 per garden). Parks had similar results to home gardens, except they had fewer silvereyes and house sparrows and more blackbirds, ducks, gulls, and rock pigeons. School grounds also had similar results to home gardens, except they had fewer birds such as silvereyes, dunnocks, and grey warblers, and more ducks, gulls, and rock pigeons. The next survey is planned for 12–20 Jul 2008.

Conservation of the blue penguin *Eudyptula minor* on the West Coast, South Island, New Zealand

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This community led project was initiated by concerned local West Coast members who noticed a decline in numbers of blue penguins (*Eudyptula minor*) throughout areas of the West Coast. Evidence for this decline was mostly anecdotal and distribution surveys were small and few. It was therefore difficult to determine if this decline was real. Since 2004, the West Coast Blue Penguin Trust in conjunction with Lincoln University has surveyed 310 km of the 450 km long Westland coastline. The outcome of the study has shown a number of small colonies along the coastline with penguins missing from large areas of what seems to be suitable habitat. Monitoring of selected colonies began in 2006 and Aug 2007 and control of introduced predators began at some of these colonies. Threats to penguins vary between colonies with major threats being introduced predators, road kills, dogs and land development.

Kereru Conservation in an urban/rural landscape on Banks Peninsula

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The kereru (*Hemiphaga novaeseelandiae*) is an endemic fruit pigeon whose natural habitat is the podocarp/hardwood forest of primeval New Zealand. The kereru is one of few endemic birds that survives, but does not thrive, in rural and urban habitats. Kereru play an important role in the dispersal of native seeds between forest remnants and are considered a *taonga* (treasure) by both Maori and Pakeha. There are both ecological and social reasons to increase kereru numbers. We have studied movements, habitat use and foods of kereru in a mosaic of farmland, village, regenerating native and exotic forest on Banks Peninsula. Home range size varied greatly with birds in one area remaining within a kilometre diameter range for the entire 13 month study, while in other habitats individuals moved up to 15 km. In previous studies breeding had occurred only when fruit was available, but we found birds breeding while eating new leaves

of introduced deciduous trees. In New Zealand's native evergreen forests there is no seasonal flush of new leaves. Cats appear to be the major predator. The next phase of our research is to determine the options for reducing cat predation in habitats where both feral and pet cats are common. This research is part of the Kaupapa Kereru project and has strong public support which we utilised to map kereru distribution on Banks Peninsula. The results of this mapping exercise are reported.

Avifauna of Motu Kaikoura, Great Barrier

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Motu Kaikoura, located on the western side of Aotea/Great Barrier Island in the Hauraki Gulf, was purchased as a scenic reserve for the public of New Zealand in 2004. The island has a rich history of human occupation with an associated legacy of ecological degradation. Much of the 564 ha island is covered by a relatively low, but dense, canopy of kanuka, manuka, gorse and hakea, with emergent pines dominating the south-eastern slopes. The low vegetation diversity of the island is the result of failed farming ventures and the impact of at least 70 years of browsing by deer, pigs and goats. Rats, mice and feral cats are also present on the island. Surveys and observations carried out in 2006 and 2007 indicate that the bird diversity and abundance is low on Motu Kaikoura. A comparison with the avifauna of other Gulf islands at a similar pre-restoration stage suggests that this low status of bird diversity can be attributed largely to the impact of fallow deer. The surveys were part of the establishment of baseline biodiversity data for the island prior to the progressive eradication of pest mammals during 2008.

Impact of introduced mammals on the genetic diversity and conservation status of New Zealand snipes (*Coenocorypha* spp.)

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Snipes of the genus *Coenocorypha* were the most characteristic birds of the New Zealand biogeographical region. At least 4 taxa became extinct following the introduction of predatory mammals, with the most recent extinction in 1964. Three further snipe taxa suffered massive mammal-induced range reductions, with Campbell Island snipe (*Coenocorypha* undescribed sp.) and Chatham Island snipe (*C. pusilla*) both disappearing from over 99.7% of their ranges. Although the Auckland Island snipe (*C. aucklandica aucklandica*) was extirpated from nearly 83% of its range, it persisted in large numbers on unmodified Adams Island (10,119 ha) plus 2 other much smaller islands. We compared the genetic diversity of snipe that persisted on 19 ha Jacquemart Island (Campbell Island group), 218 ha Rangatira Island (Chatham Islands), and Ewing Island and Adams Island in the Auckland Islands. Using blood and feather samples obtained from 6 *Coenocorypha* snipe populations, we isolated 9 polymorphic dinucleotide microsatellite loci from a DNA library enriched for repeats. We also amplified and sequenced portions of 4 mitochondrial DNA (mtDNA) protein-coding genes (ATPase6 and 8, COI, COII) for a total of 1980 base pairs. We conclude that predation by introduced mammals combined with habitat disturbance by farm stock (on Rangatira Island) led to almost total loss of measurable genetic variation in Chatham Island and Campbell Island snipes. Auckland Island snipe confined to 57 ha Ewing Island lost 52% (microsatellite) to 89% (mtDNA) of their genetic variation compared to the vastly larger population that persisted on Adams Island 40 km to the south. The measurable loss of genetic variation within Auckland Island snipe provides a model for identifying the likely cause of the extremely depauperate genomes of both Chatham Island and Campbell Island snipes, both of which passed through extreme population bottlenecks. The almost complete lack of genetic diversity in 5 of the 6 *Coenocorypha* populations assessed has ongoing management implications in the face of such potential major environmental perturbations as global warming and introduction of avian pathogens.

Launch and demonstration of New Zealand eBird Monitoring System

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OSNZ's new eBird computerized bird monitoring system was launched and demonstrated.