

Contributed papers

An unexpected pattern of molecular divergence within the blue penguin (*Eudyptula minor*) complex

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The blue penguins (genus *Eudyptula*) have been subjected to extensive taxonomic revision. In 1976, the genus was reduced from including 2 species to a single species (*Eudyptula minor*) with 6 subspecies, based on a morphometric analysis. Despite the later proposed rejection of the of subspecies in *Eudyptula minor*, following analysis of allozymes in some populations, the 6 subspecies have continued to be recognised in some popular and scientific literature. We compared the sequences of 3 mitochondrial gene regions (small ribosomal subunit, cytochrome oxidase *b* and the control region) from the 6 hypothesised subspecies to examine relationships within *Eudyptula*. We found evidence for 2 unexpected clades: the 1st consisting of Otago and Australian populations, the 2nd consisting of northern, Cook Strait, Chatham Island, and Banks Peninsula populations. Some support for these 2 clades was also found from a re-analysis of morphometric data and from a preliminary examination of vocalisations.

Full paper: Banks, J.C.; Mitchell, A.D.; Waas, J.R.; Paterson, A.M. 2002. An unexpected pattern of molecular divergence within the blue penguin (*Eudyptula minor*) complex. *Notornis* 49: 29-38.

Effects of intervention on the royal albatross population at Taiaroa Head, 1937-2001

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The northern royal albatross (*Diomedea sanfordi*), classified by the IUCN as endangered, breeds at a small publicly viewed colony at Taiaroa Head on the New Zealand mainland. The colony has been monitored since the 1st chick was reared successfully in 1937/38, and has been security fenced since 1964. Since 1951 various programmes to control the effects of introduced predators (cats, dogs, mustelids, and, more recently, blowflies) have been maintained. From a 100% immigrant breeding population in 1938, the proportion of breeding immigrants has declined to 8% today, with the balance having hatched at the colony. For the past 30 years various management practices have been used to maintain or improve productivity. Methods developed include the use of dummy eggs, hatching in an incubator to avoid fly strike, fostering of eggs and chicks, hand rearing, and the recovery of birds to the colony after a failed first flight into the Otago Harbour. The hatching rate is 60-62%. Without management intervention, the mean fledging would have been 54% of eggs hatched rather than the 74% achieved. A mean 75% of non-managed fledged chicks survived to the age of 5 years (pre-breeding), but only 60% of managed chicks survived over the same period. With significant climatic stress and introduced blowflies in the past 12 years, management intervention at the egg and chick stage (up to 100% of nests in some years) has ensured that productivity was raised to 72% from a probable 33% if those birds managed had been allowed to die. The cumulative effect of significant management interventions has ensured that the present population of the colony is 109 individuals instead of a probable 72 individuals, if the managed birds had been allowed to perish and their subsequent progeny had not been added to the population.

Full paper: Robertson, C.J.R. 2001. Effects of intervention on the royal albatross population at Taiaroa head, Otago, 1937-2001. *DOC Science internal series* 23. Department of Conservation, Wellington.