

# Population studies of Buller's albatrosses at The Snares

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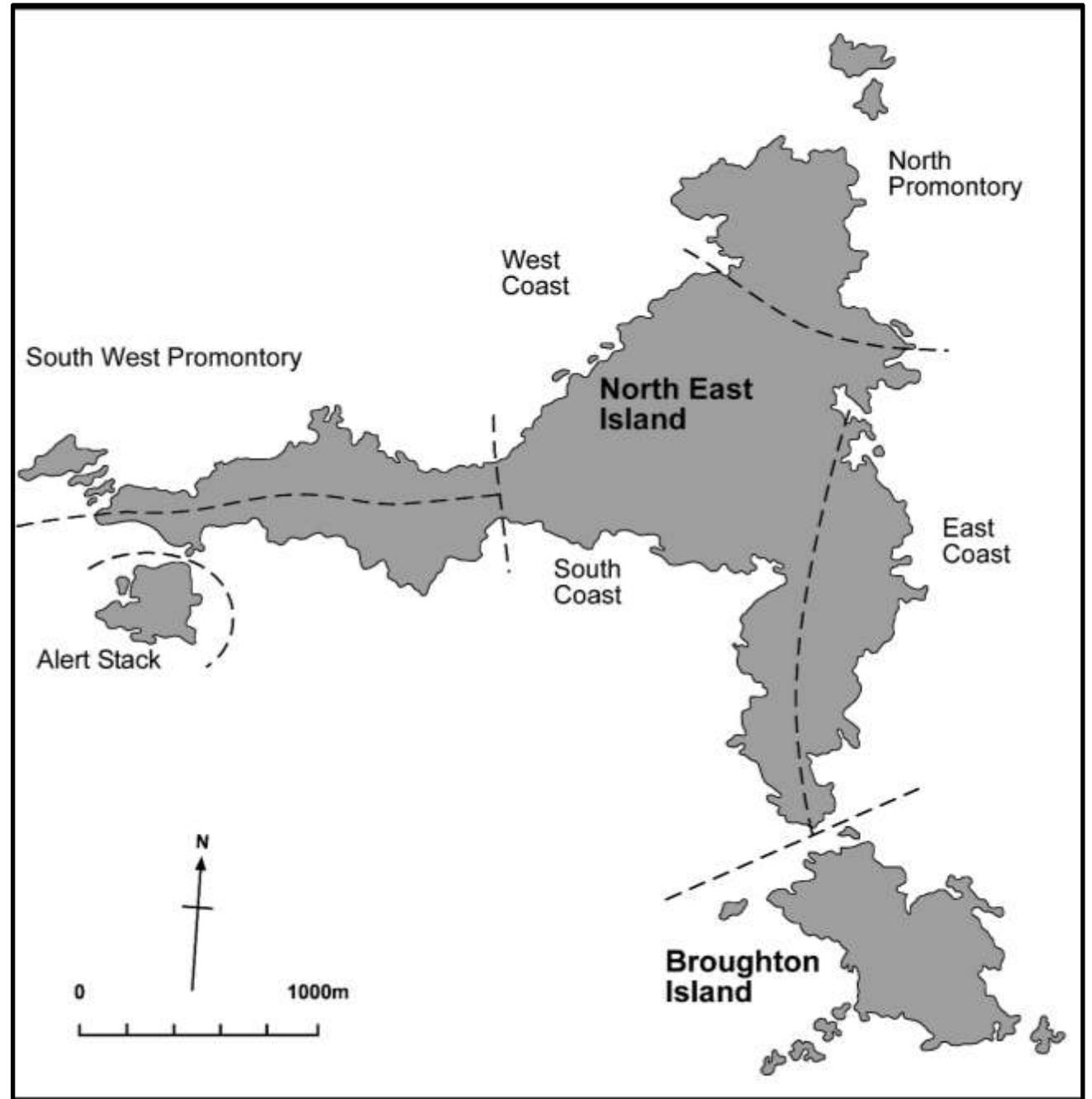
# Population studies of Buller's albatrosses at The Snares

- Complete an island-wide count of breeding albatrosses.
- Resurvey three established study colonies.
- Establish the numbers of pairs breeding in the three established study colonies
- Establish annual survival of banded birds from recapture data



# Methods - 1

- Counting on North East Island completed 24-28 Feb 2014 and on Broughton Island on 4 March 2014. Therefore, timing of counts close to the end of egg laying.
- When counting incubating birds we followed the procedure used in 1992, 1997, and 2002, which was similar to that used in the first-ever count in 1969.
- The islands were divided into sections based on maps prepared from aerial photographs and each section was covered systematically for breeding albatrosses.



## Methods -2

- Ground counts completed wherever access to nests was possible, in such situations one person used a tally counter to keep a running total of nests counted by other members of the team.
- Ground counts included birds incubating an egg (assumed to be birds sitting tightly on the nest mound), plus nests with abandoned or broken eggs.



# Methods - 3

- Vantage point counts were made of birds breeding in inaccessible areas, using binoculars.
- In the majority of such situations counts were made by 3 observers independently and averaged.
- Care was taken to ensure that all observers counted the same area; these were usually defined by obvious physical features, such as lines of exposed rock.
- Where vantage point counts of >100 occurred the total counted by each observer had to be within 10%, where <100 occurred it had to be within 5%.
- Abandoned or broken eggs could not be counted by vantage point counts, and so represent the minimum number of breeding pairs
- On Broughton Island, ground & vantage point counts were not possible along the SE coast, and so digital photos were taken when *Tiama* was 300m offshore. Counts from these were made by using landmarks to define non-overlapping areas when the photos were downloaded to a PC.



## Methods - 4

- Each of the 3 study colonies was visited twice.
- On the first visit all nests were inspected and the contents recorded. Band numbers of all birds associated with nests were recorded, and any unbanded birds incubating were captured and fitted with a uniquely numbered stainless steel band.
- All adult birds handled on this first visit were marked with blue or green raddle so that they were not disturbed on the subsequent visit.
- On the second visit all nests were checked again and any unmarked birds were captured.
- In addition, on each visit an attempt was made to recapture as many as possible of the banded non-breeding birds that were loafing in the colonies.



# Results: whole-island counts

Area/Year	1969	1992	1997	2002	2014
North Promontory	509	1108	1400	1643	1508
West Coast	121	262	317	205	146
North side, South-West Promontory	305	785	520	739	427
South side, South-West Promontory	763	1236	1410	1025	1201
Alert Stack	112	193	223	267	305
South Coast	1425	2095	2161	2554	2425
East Coast	789	1465	1693	1732	1733
Total North East Island + Alert Stack	4024	7144	7724	8165	8047
Broughton Island	NC	539	518	NC	657
Totals	(4448)	7683	8242	(8713)	8704

# Results: whole-island counts - North-East Island + Alert Stack

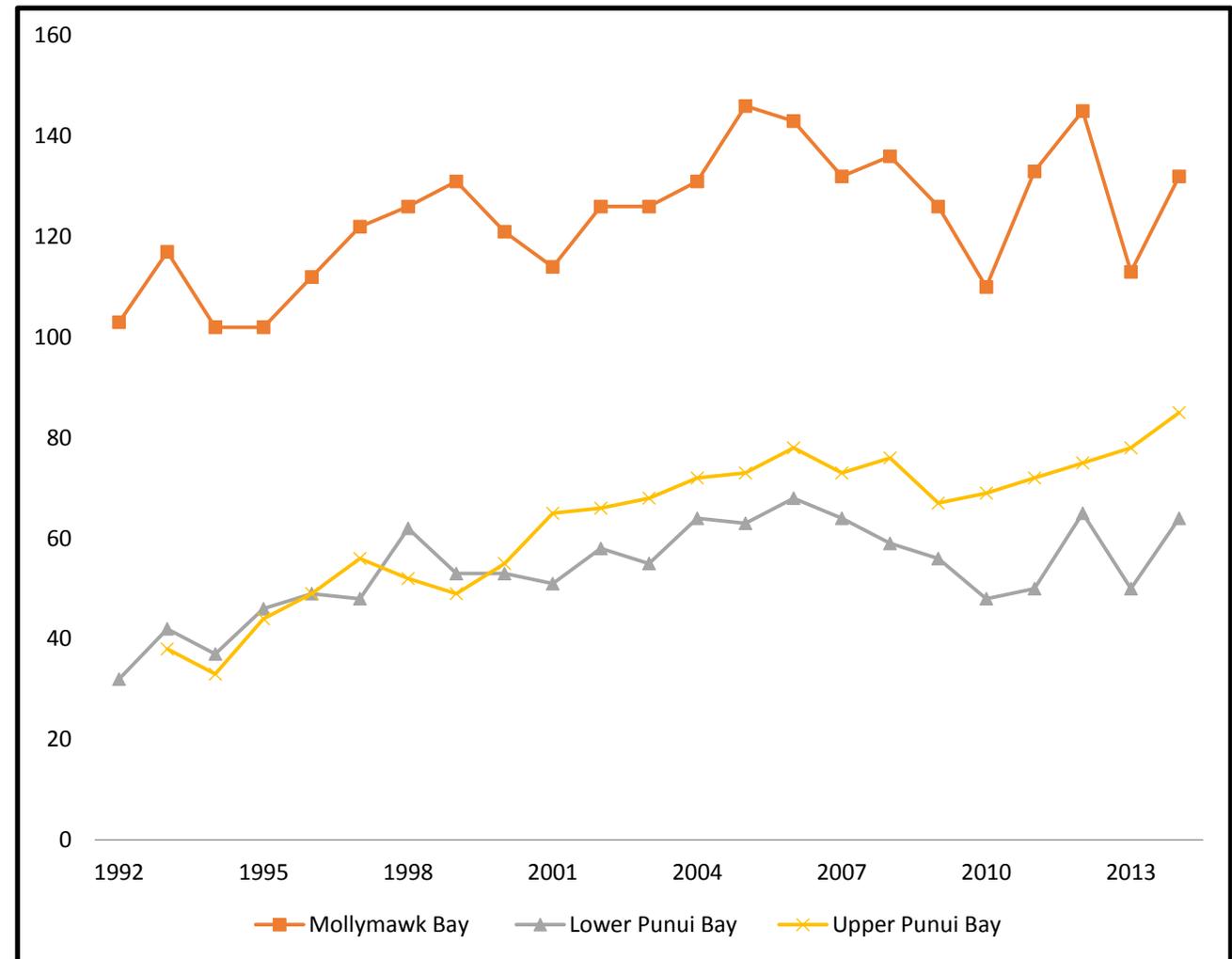
Year	Ground-count total	Vantage-point total	Whole-island total
1992	3779 (53%)	3365 (47%)	7144
1997	4332 (56%)	3392 (44%)	7724
2002	4855 (59%)	3310 (41%)	8165
2014	4971 (62%)	3076 (38%)	8047

## Results: whole-island counts

- A total of 8047 occupied nests (assumed to equate to breeding pairs) was estimated for North East Island and Alert Stack, with a further 657 estimated on Broughton Island, for a combined total of 8704 occupied nests in 2014.
- The total for North East Island and Alert Stack comprised 4971 from ground counts and 3076 from vantage point counts.
- Over the period 1992-2002 vantage point totals remained similar, but decreased by 2014. In contrast, ground count totals increased over the period 1992-2014.
- Most vantage point counts were made by 3 observers, with individual totals of 2414, 2507 and 2560 occupied nests. The remaining vantage point counts were made by 1-2 observers. The total for Broughton Island comprised 432 from ground counts, 79 from vantage point counts and 146 from at-sea photos; vantage point counts from all 3 observers were 79, 79 and 78 occupied nests.

# Numbers of breeding pairs of Buller's albatrosses in 3 study colonies 1992-2014

- The totals for 2014 represent increases, relative to numbers counted in April 2013, of 17%, 28% and 9% in the Mollymawk Bay, Lower Punui Bay and Upper Punui Bay study colonies, respectively.
- These trends show a consistent pattern, with numbers of breeding pairs in Mollymawk Bay and Lower Punui Bay changing similarly between years, whilst those in Upper Punui Bay show a steady increase.



# Results: capture-recapture

- 320 birds banded as breeding adults of unknown age were recaptured.
- 39 breeding birds were banded within the study colonies
- 159 birds banded as chicks near fledging in the study colonies and adjacent colonies 1992-2004 were recaptured
- Of 1991 birds banded as chicks in the study colonies 1992-2004, 469 (23.6%) have been recaptured.
- Of 859 well-grown chicks banded at various colonies in 1972, 4 were recaptured this year – at 42 years of age.



# Discussion - 1

- There have now been 5 whole-island counts of the numbers of breeding pairs of southern Buller's albatrosses at The Snares, covering the years 1969-2014.
- These show that the population increased markedly and more than doubled between 1969 and 2002.
- Average annual rates of increase were 3.4% (1969-1992), 1.6% (1992-1997), 1.1% (1997-2002), and -0.12% (2002-2014). However, the latter value is well within the margin of error of the vantage point counts.
- Information from the 3 study colonies overall suggests that the breeding population peaked 2005-2006, trended down until 2010, and then has been variable in Mollymawk Bay and Lower Punui Bay with marked annual decreases and increases. Numbers in Upper Punui Bay have tended to increase most years.

# Discussion - 2

- Numbers in all 3 study colonies in 2014 are broadly similar to those recorded in 2002, the year of the previous whole-island count, indicating that the annual counts of breeding pairs in the study colonies provide an index of numbers breeding on North East Island as a whole.
- Apparent recent declines in annual survival of breeding birds and reduced recruitment of known-age birds could lead to a decline in overall abundance. Therefore, incorporation of these latest whole-island count data and mark-recapture data from the 3 study colonies 2008-2014 into an updated SEABIRD model analysis will provide a more robust estimation of population trend.

# Acknowledgements

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Mo Turnbull and James Scott showed us how to tell schist from granite



Photo: Tamar Wells