Agreement on the Conservation of Albatrosses and Petrels

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Albatross population estimates at the Chatham Islands, New Zealand

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SUMMARY

Three albatross species have important breeding populations at the Chatham Islands, New Zealand: Chatham albatross, northern royal albatross and (northern) Buller's albatross.

During the 2016/17 breeding season a series of population estimates were undertaken using different methods at different sites:

- A ground count of Chatham albatross was made at The Pyramid.
- Ground, aerial and satellite counts were made of northern royal at the Forty-Tours and The Sisters.
- Ground and aerial counts were made of Buller's albatross at the Forty-Fours.
- Aerial counts were made of Buller's albatross at The Sisters.

These counts provide updated estimates for these important populations, as well as allow a comparison between different monitoring methods.

The resolution of satellite images meant this method was only used for northern royal albatross. Weather conditions prevented a boat landing at The Sisters, so only aerial/satellite methods were used at that site.

A summary of each survey is provided, together with links to full reports.

1. NORTHERN BULLER'S MOLLYMAWK AND NORTHERN ROYAL ALBATROSS POPULATION CENSUS ON MOTUHARA (FORTY-FOURS), 2016.

1.1. Abstract

Motuhara (Forty-Fours) is Maori Land and we are very grateful for the permission of the island owners to camp on the island to undertake this research.

A field team of three (Dave Bell, Dave Boyle and Hamish Tuanui-Chisholm) camped on the island from Dec 5th until Dec 9th 2016.

A full census of Northern Buller's Mollymawks on the island counted 17,682 nests sites. This total is higher than previous counts (2007-09 average 14,699 nests) and is likely to be a result of improved methodology rather than an increase in numbers.

A full census of Northern Royal Albatross on the island counted 1,400 birds incubating eggs. This is significantly lower than that recorded using aerial photography in 2006-2009: average of 2,209 breeding pairs (range 1,879-2,692 pairs). As Northern Royal Albatross are a biannual breeder, without knowing the productivity from last season, it is difficult to determine if this represents a true decline. However, it seems most likely that Northern Royal Albatross on Motuhara are declining.

1.2. Citation

Bell, M.D.; Bell, D.J.; Boyle, D.P.; Tuanui-Chisholm, H. 2017. Motuhara Seabird research: December 2016. Report prepared by Wildlife Management International Limited for the New Zealand Department of Conservation, Wellington.

Full paper will available here once finalised: http://www.doc.govt.nz/our-work/conservation-services-programme/csp-reports/

2. SEABIRD POPULATION RESEARCH, CHATHAM ISLANDS: 2016/17 AERIAL PHOTOGRAPHIC SURVEY.

2.1. Abstract

Northern royal albatrosses *Diomedia sanfordi* and northern Buller's albatrosses *Thalassarche bulleri platei* are endemic to New Zealand, with 99% of the population of both taxa breeding in the Chatham Islands (ACAP 2009a, 2009b). Within the Chatham Islands, both species breed principally on the Forty-Fours and The Sisters, two island groups that are privately owned and difficult to access. Because these islands are isolated, there have been few population counts undertaken for both Northern royal albatross and Northern Buller's albatross.

In November and December, 2016, we used aerial photography and satellite imagery to determine the population size of northern royal albatross and northern Buller's albatross breeding on the Forty-Fours and The Sisters, and compared the estimates derived from these techniques with ground counts. In addition, we also used the opportunity to test the feasibility of using aerial photography to estimate population size of northern giant petrels (Macronectes halli), which also breed on the two island groups.

Aerial photography was undertaken on 23 November, using a a single-engine Cessna 207 fixed-wing aircraft, and timed to coincide with the end of egg laying/ early incubation period of

both albatrosses. Ground counts were undertaken on The Forty-Fours on 8 December 2016, 15 days after the aerial survey was undertaken. No ground counts on The Sisters were undertaken. Very High Resolution (VHR) WorldView-3 optical satellite images of both the Forty-Fours and The Sisters were acquired on 20 December 2016, which was 27 days after the aerial survey was undertaken, and 13 days after the ground count. This timing of all surveys was not ideal for the giant petrel, which were in the late incubation/ early chick provisioning stage of breeding in November/December.

The flight to obtain aerial phots was conducted in calm conditions and fine weather. We were able to obtain clear photographs of all colonies at both The Sisters and the Forty-Fours.

The estimated annual count of royal albatross derived from aerial survey after adjustment to account for the presence of loafing birds in the colony was of 4,772 annual breeding pairs after correction using aerial close-up photos (correction factors 0.068 – The Sisters, 0.057 – The Forty-Fours), and 4,406 annual breeding pairs after correction using ground counts (correction factor 0.136). The count derived from satellite imagery for The Sisters and The Forty-Fours was 2,578 and 2,533 Apparently Occupied Sites, respectively, which was 21% lower than the raw aerial count for The Sisters (3,269 birds) and 38% higher than the raw aerial count for the Forty-Fours (1,830 birds). The ground count for the Forty-Fours was 1,404 annual breeding pairs.

The estimated annual count of Buller's albatross derived from aerial survey after adjustment to account for the presence of loafing birds in the colony was 17,969 annual breeding pairs after correction using aerial close-up photos (correction factors 0.017 – The Sisters, 0.022 – The Forty-Fours), and 16,138 annual breeding pairs after correction using ground counts (correction factor 0.121). Most birds (85.3%) were breeding on The Forty-Fours. The ground count for the Forty-Fours was 16,492 annual breeding pairs, which included an estimate of 3,445 nesting attempts that had failed. Adjusted aerial counts for The Forty-Fours were 7.1% and 16.5% lower than the ground count, although a direct comparison is difficult due to the 14-day difference between the ground and aerial counts, and the inclusion of failed nests in the ground counts, which would not have been detectable from the air. There were no counts derived from satellite imagery for Buller's albatross as the resolution of the imagery is unsuitable for counting this species.

Aerial counting of northern giant petrels was not effective at either The Sisters or The Forty-Fours. Birds were not clearly visible in most images and detecting birds was difficult. An aerial count of 370 chicks at The Forty-Fours, was 30% of the 1,235 giant petrel chicks counted on the ground.

The use of WorldView-3 satellite imagery to count albatross populations is a new phenomenon which has potential application to the other greater albatross species. The mixed results obtained in this study indicate there may be more to be learnt to refine the technique. At this stage use of either aerial photographic surveys or on-ground counts remain the preferred methods for estimating population size and monitoring in the Chatham Islands.

2.2. Citation

Baker GB, Jensz J, Bell M, Fretwell PT, Phillips RA. 2017. Seabird Population Research, Chatham Islands: 2016/17 aerial photographic survey. Report prepared by Latitude 42 for the New Zealand Department of Conservation, Wellington.

Full paper will available here once finalised: http://www.doc.govt.nz/our-work/conservation-services-programme/csp-reports/

3. CHATHAM ISLAND MOLLYMAWK RESEARCH ON TE TARA KOI KOIA (THE PYRAMID), 2016.

3.1. Abstract

Te Tara Koi Koia (The Pyramid), the sole breeding site of the Chatham Island Mollymawk, *Thalassarche eremita*, is privately owned by the Daymond Whanau and we are very grateful for their permission to camp on the island to undertake research on Chatham Island Mollymawk.

A field team of two (Dave Bell and Dave Boyle) camped on the island from Nov 9th until Nov 14th. A full census of the island counted 5296 nests sites of Chatham Island Mollymawk. This result is very similar to previous counts, with the average from 1999-2016 being 5,294 nest sites (range 5,194-5,407, n=11). However, the long-term trend suggests that the population could be in gradual decline. Most nests contained breeding birds, with 63.1% of nests containing eggs, 10.8% a chick and 22.6% had already failed; only 3.5% of nests were classified as empty. Chick hatching had only just started during this field trip. A review of nest occupancy recorded during field trips since 1997 clarifies the breeding timetable of Chatham Island Mollymawk. A total of 310 band recoveries we made of Chatham Island Mollymawk, this included 3 dead adults, 196 adults incubating eggs, 47 adults guarding a chick, 29 adults on a failed nest, 14 adults on an empty nest, and 21 adults caught away from nests where breeding status could not be determined. A total of 65 study nests on the Camp Flat and Slopes had birds breeding in them, containing either an egg or chick. A further 9 marked nests were occupied by birds, but were empty.

3.2. Citation

Bell, M.D.; Bell, D.J.; Boyle, D.P. 2017. Chatham Island Mollymawk research on Te Tara Koi Koia: November 2016. Report prepared by Wildlife Management International Limited for the New Zealand Department of Conservation, Wellington.

Full paper will available here once finalised: http://www.doc.govt.nz/our-work/conservation-services-programme/csp-reports/