

NZ Storm petrel – Far North at-sea captures

The Birds NZ Research Fund (BNZRF) grant received in 2020 was for the purpose of capturing New Zealand storm-petrels (*Fregetta maoriana*) (NZSP) (Nationally Vulnerable NZTCS 2016, Critically Endangered IUCN Red List) at sea well outside the Hauraki Gulf where they had been captured before. By targeting NZSP in areas a considerable distance from their only known breeding location (i.e., Hauturu-o-Toi/Little Barrier Island), blood samples collected will contribute to a genomic study. The aim is to determine whether a new genetic population exists indicating another breeding island or islands.

Two capture expeditions were undertaken: the first 19-22 February, and the second 1-5 May 2021. The main search areas were the shelf areas north of Cape Karikari and east of North Cape, colloquially known as the 'Garden Patch' and the 'Parengarenga Canyons'. On the last day of the second expedition, we also captured NZSPs at the Ninepin Trench near the shelf edge north of the Bay of Islands. Deteriorating weather conditions during the first expedition meant capturing attempts were limited to one and half days, after which conditions became unsafe to use the zodiac catching craft.



Processing captured NZSP on board *Manawanui*
Photo by Chris Gaskin

Captures were made using a net gun. This version of net gun, a modified whale tagger base unit couple with custom-made net gun barrel heads and using compressed air as the propellant, had been used successfully to capture black-capped petrels in Gulf Stream waters off Cape Hatteras, USA. In addition to the NZSP captures, zooplankton tows and night-lighting were conducted to ascertain what prey could potentially be available to NZSP in the capture areas.

Twenty-nine NZSP were captured during the two expeditions, 12 during the first expedition, and 17 across four days during the second. Details collected from birds captured, included: date and time of capture, band numbers, morphometrics, brood patch (BP) status, blood and feathers samples taken and condition of birds on release. No birds were injured during this project and all released safely. NZSP blood and feather samples, along with samples from the zooplankton tows and night lighting are currently in storage at the Auckland Museum awaiting analysis.

A key objective of the NZSP working group is to determine whether there is another breeding colony of NZSP that may provide some reassurance that the species is at lower risk of extinction than if they do indeed breed only on Hauturu. Moreover, this information will feed into a revision of the conservation status of the species. The NZSP project working group have received a further grant from the BNZRF in the 2021 funding round to address both the overall population structure and level of genetic diversity of NZSP. This will be done by using a genomic approach termed genotyping by sequencing (GBS) to identify and genotype molecular markers distributed across the genome in 73 NZSP individuals. DNA will be extracted from NZSP captured on Hauturu in 2014 (n=22) and at sea, 1/ in the Hauraki Gulf in 2012 and 2013 (n=22), and 2/ in the Far North in 2021 over 300 kilometres from the Hauturu population (n=29).

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