Conservation Services Programme (CSP)

POP2025-09 Campbell Island Seabird Research Project

Report prepared by Claudia Mischler, Holly Thompson, Kaitlyn Hamilton, Maria Düssler

Department of Conservation
Te Papa Atawhai

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Grey-headed albatross feeding its chick. Image taken by Claudia Mischler.

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Any questions can be directed to: csp@doc.govt.nz

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Executive Summary

This trip was the third year of a follow-up project from initial work completed on Campbell Island in March 2020 and February 2023 to primarily determine population trends for southern royal albatross (*Diomedea epomophora*). During 2025-26, nests were counted in two study (Col and Moubray) and three index areas (Faye, Paris, Honey) to compare to historical counts. Additional aims were to resight marked birds, band all breeding pairs in the Col study area, deploy base station transmitters, recover GLS loggers, and set up remote cameras at nests to monitor breeding success. Other species work included conducting photo point counts for Campbell (*Thalassarche impavida*) and grey-headed albatross (*T. chrysostoma*), deploying remote cameras at grey-headed albatross nests, deploying satellite transmitters and GLS loggers on grey-headed and Campbell albatross, resight marked birds and band up to 100 breeding adults of both species. Accessible nest sites were searched for light-mantled sooty albatross (*Phoebetria palpebrata*) and remote cameras set up at nests. Opportunistic searches while traveling or within southern royal albatross study and index areas were done for Antipodean albatross (*Diomedea antipodensis antipodensis*), and any unbanded birds were marked. As much of the 2020 northern giant petrel (*Macronectes halli*) population survey as possible was repeated, and opportunistic counts of white-chinned petrels (*Procellaria aequinoctialis*) burrows were carried out.

Nest counts for southern royal albatross showed an overall decline of 29.9% since the 1990s and a 23.9% decline since the 2000s. The Paris index area had the highest percent change of -44.8% since the 1990s, and Col study area had the lowest at -18.7%. There appears to be a stabilization in nest numbers over the past three years. Deployment of 20 base station transmitters on breeding adult southern royal albatross in the Col study area was attempted but due to technical issues with the hub this was not possible. Twenty-three previously deployed GLS loggers were retrieved. For demographics, 46 nests had both birds of the pair marked within the Col study area in addition to the 79 pairs completed in previous seasons, resulting in a total of 240 pairs marked over three seasons. Twenty-six cameras were deployed to monitor breeding success. Based on the Campbell and grey-headed albatross photo point counts, the percent change between 2019/20 and 2025/26 (excluding Courrejolles Peninsula) showed an increase in the total number of Campbell albatross (sitting and loafing birds) of 5.6% and a decline of 30.2% in the total number grey-headed albatross, but over longer time periods, both have been exhibiting concerning declines. For breeding success monitoring of grey-headed and Campbell albatross, five cameras were replaced covering 32 nests. Ten PTT-GPS transmitters and ten PTT transmitters deployed on grey-headed albatross showed most of the individuals dispersed widely across the southwest Pacific sector of the Southern Ocean with many undertaking long-distance movements into pelagic waters. For light-mantled sooty albatross, a total of six cameras were deployed covering six nests to continue monitoring of breeding success. Thirteen Antipodean albatross were found on the Moubray Peninsula, of which four were previously banded on Campbell Island in 2023/24 and two in 2024/25. A total of 102 northern giant petrel nests were found across the island compared to 92 nests in 2019/20.

Introduction

Campbell Island/Motu Ihupuku lies in the South Pacific Ocean approximately 700 km south of New Zealand, and is the most southern of the New Zealand sub-Antarctic island groups (Moore & Moffat 1990). It covers over 11,000 ha, and has a long history of sealing, whaling, and farming since its discovery in 1810 (Moore et al. 2012). The island was farmed from 1895 to 1931 (Moore & Moffat 1990), with sheep (*Ovis aries*) removed from the island by 1992 and cattle (*Bos taurus*) in 1984. Norway rats (*Rattus norvegicus*) were eradicated by 2001, and feral cats (*Felis catus*) disappeared in the mid-1980s (Moore et al. 2012).

The Southern royal albatross (*Diomedea epomophora*) is endemic to New Zealand, naturally uncommon, slow to mature (6-12 years), breed biennially, and are long-lived (Moore et al. 2012). Campbell Island is home to over 99% of the southern royal breeding population, with the 2005-2009 census estimating 8,300 to 8,700 breeding pairs (Moore et al. 2012). The introduction of mammals, such as cats and rats, the consequential degradation of the island from farming, such as burning of vegetation, grazing, and depletion of nesting habitat, and direct depredation of birds by humans greatly reduced royal albatross numbers (Moore et al. 2012). Between the 1940s and 1990s, breeding, banding, and population studies were set up at Col and Moubray study areas, with regular and thorough studies from 1987 to 1998 providing a clear baseline of data (Moore et al. 2012). Three additional blocks (Faye, Paris, and Honey) were set up in the late 1990s as index count sites to supplement study area counts (Moore et al. 2012).

Over 35,000 royal albatrosses were banded on Campbell Island mostly by meteorological staff between 1941 and 1998, peaking in the 1960s and 1970s (Moore 2003, Moore et al. 2012). Banding became restricted to the Col and Moubray study areas after 1987, and eventually birds in the study areas had their bands replaced with more reliable bands (made with a thicker grade of stainless steel) or with transponders (*Trovan ID100*, passive integrated transponders (PIT)) due to a large number of leg injuries (Moore et al. 2012). This work was completed between 2004/05 and 2008/09, and a total of 2,882 banded birds were found (Moore et al. 2012). By the end of the 2008/09 season, approximately 674 birds retained an appropriate band (Moore et al. 2012). A total of 405 birds had a PIT inserted, of which 314 (43 females, 271 males) had a confirmed reading on a subsequent visit (Moore et al. 2012).

Data collected in March 2020 (Mischler 2020) and February 2023 (Mischler & Wickes 2023) were indicative of a possible drastic decline in the southern royal albatross population. A two-year project, supported by the Conservation Services Programme (CSP; project POP2023-04) was started in 2023/24 (Mischler et al. 2024) and continued in 2024/25 (Mischler et al. 2025) to build on these data. The trip reported on here (2025/26) continues to expand on the previous two years through continued support from CSP (project POP2025-09). Due to the long duration of this trip and additional funding provisioning (December 2025 to February 2026), several other objectives were added, including counts and monitoring of Campbell (*Thalassarche impavida*) and grey-headed (*T. chrysostoma*) albatross, surveys of light-mantled sooty albatross (*Phoebetria palpebrate*), surveys for Antipodean albatross (*Diomedea antipodensis antipodensis*), surveys of northern giant petrels (*Macronectes halli*), and incidental records white-chinned petrels (*Procellaria aequinoctialis*).

Campbell and grey-headed albatross breed in mixed colonies in the north of the island from Courrejolles Peninsula to Bull Rock and adjacent north-eastern colonies (Fig. 1). The Campbell population historically appeared to fluctuate whereas the grey-headed population showed an overall decline followed by a small increase (Moore 2004, Rexer-Huber et al. 2020, Frost 2019).

Light-mantled sooty albatross data are also lacking most likely because of their inaccessible nesting location on steep coasts and cliffs. The only previous surveys on this species on Campbell Island were conducted in 1995-1997, using a mixture of vantage points for coastal areas and ground searches for accessible areas (Moore 1996, unpubl. data). Breeding success was also monitored.

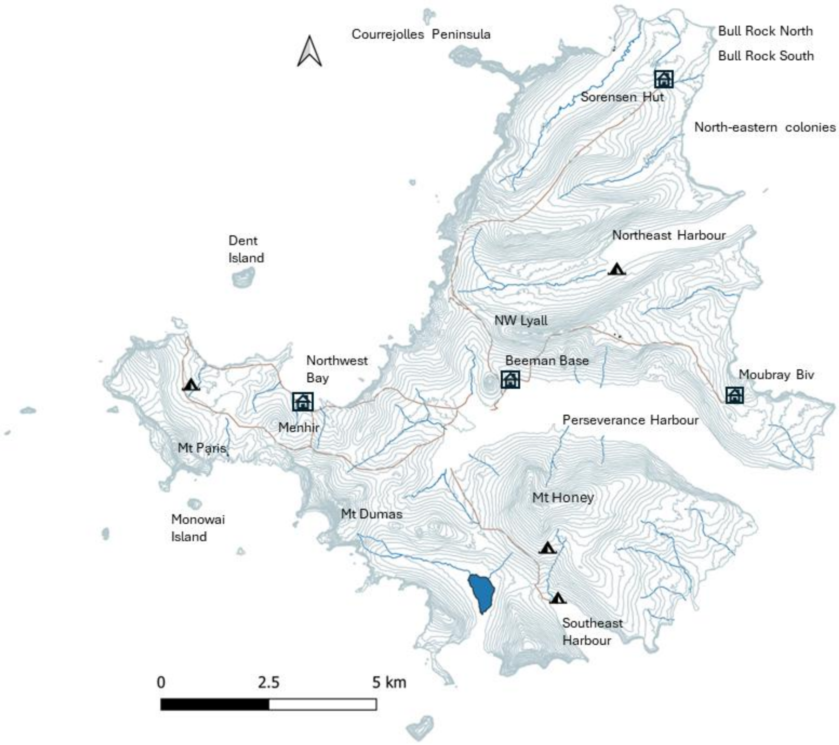

Fig. 1. Map of Campbell Island showing key locations referred to for seabird work conducted in 2025/26. Hut (house symbol) and campsite (tent symbol) locations used by the team are also indicated.

The Antipodean albatross population on Antipodes Island is well studied and known to be dramatically declining, but data on Antipodean albatross on Campbell Island are scarce. Antipodean albatross were first observed breeding on Campbell in 1944 (Bailey & Sorensen 1962). Some breeding pairs were monitored, and over 200 individuals were banded between the 1940s and late 1990s, mostly on Moubray Peninsula (Fig 1; Bailey & Sorensen 1962, NZNBBS 2024). Marchant & Higgins (1990) noted one pair between 1975-77 (exact location not given), and Elliott & Walker (2013) note “a few pairs”. The most comprehensive data is in field notes taken by A. Tennyson during his trip in January 1993 where he summarized that 21 adults were noted in the Moubray hut book between 1986/87 to January 1993, all known to be within the Moubray area. On the 1993 trip itself, nine adults (six of which were on eggs) were noted in the same area. There was a note about an adult bird in January 1978 which was on the saddle between Paris and Menhir, and this was also noted in 1984/85 (G. Taylor, pers. comm.) There are also notes about three records which state “Dumas”, and it was confirmed that there was a pair on the northeast slope of Mt Dumas in the mid-1980s which was monitored for 10-15 years (G. Taylor, pers. comm.). Besides Moubray and the above-mentioned areas, Antipodean albatross were never seen anywhere else on the island (Fig. 1).

Northern giant petrels have been largely unstudied at Campbell Island. Historically, the only whole-island census was conducted in 1996 (Wiltshire & Scofield 2000), and this was repeated by Rexer-Huber et al. (2020) which showed relatively stable numbers. Burrowing petrels also remain largely unstudied on Campbell Island, and this has been limited to grey (*Procellaria cinerea*) and white-chinned petrel surveys in 2014 and 2015 (Rexer-Huber et al. 2016). Sound recorders were deployed across the island in November 2019 to determine and detect any changes in distribution, and this showed that white-chinned petrels were recolonizing the island including in areas that were some distance away from the offshore source locations of Monowai and Dent islands (Fig. 1; Rexer-Huber et al. 2020).

Project Objectives

The main objectives for the 2025/26 expedition were:

1. **Southern royal albatross** (supported through CSP POP2025-09 with additional funding from DOC, Monash University, and the Australian Department of Climate Change, Energy, the Environment and Water; DCCEEW):
    a. Population counts:
        i. Count and map nests in study (Col and Moubray) and index areas (Faye, Paris, Honey) to determine trends.
    b. Demographics:
        i. Collection of resight data on known birds in the traditional study blocks and surrounding areas to inform demographic parameter estimates.
        ii. Continue marking of unbanded adults (aim to mark all breeding pairs) within Col study area and surrounding areas to continue building the mark-resight dataset.
    c. At-sea tracking:
        i. Attach 20 base station transmitters to breeding adults in the Col study area using back-feather mounts to gain short-term, high-resolution insights into distribution and offshore windfarm risks. Deploy in cluster around the base station away from boardwalk.
        ii. Recover previously deployed GLS loggers from breeding adults to gain long-term low-resolution insights into distribution and fisheries risks.
    d. Breeding success:
        i. Service, and where necessary, replace the existing 24 remote cameras in the traditional study site (half associated with the boardwalk, half independent of the boardwalk) and download photos collected over the last year to continue the breeding biology, phenology, success, and visitor impact study.
    e. Diet sample collection:
        i. Collect 6-8 new (recently moulted) back contour feathers from ~15 adult males and ~15 females.

2. **Grey-headed and Campbell albatross** (supported through CSP POP2025-09 with additional funding from DOC, Monash University, and DCCEEW):
    a. Population counts:
        i. Use traditional photo points to update existing population estimates, including the relevant ground count transects at Bull Rock to produce correction factors for both grey-headed and Campbell albatross.
    b. At-sea tracking:
        i. Attach 10 PTT-GPS transmitters and 10 PTT transmitters to breeding grey-headed albatross using back-feather mounts to gain shorter-term high-resolution insights into distribution and fisheries risks.
        ii. Attach three satellite transmitters with pressure sensors to breeding Campbell albatross using back-feather mounts to gain shorter-term high-resolution insights into distribution and offshore windfarm risks.
        iii. Attach 25 GLS loggers on breeding adult grey-headed albatross (using cable ties on leg bands) for long-term, low-resolution insights into distribution and fisheries risks. These birds should be different birds from those fitted with satellite transmitters.
        iv. Attach 25 GLS loggers on breeding adult Campbell albatross (using cable ties on leg bands) for long-term, low-resolution insights into distribution and fisheries risks.
        v. Collect four contour feathers of all equipped individuals to enable genetic sex determination.
    c. Breeding success:
        i. Service, and where necessary, replace the 5 remote cameras to study breeding biology, phenology, and success of grey-headed albatross.
    d. Demographics:
        i. Collection of resight data on known birds in the traditional study blocks to inform demographic parameter estimates.
        ii. Replace worn bands where necessary.

        iii. Band up to 100 adult breeding grey-headed and up to 100 breeding adult Campbell albatross, including those fitted with satellite transmitters and GLS loggers.

3. **Northern giant petrel** (supported through CSP POP2025-09):
    a. Population mapping:
        i. Repeat as much of the 2020 nest count as possible using ground searches, focusing on key areas such as Northwest Bay, Perseverance Harbour, Six-foot Lake, Monument Harbour, Hooker's Peninsula, and Switchback.

4. **Antipodean albatross** (supported through CSP POP2025-09):
    a. Population estimate:
        i. Count and map nests whenever encountered in either southern royal albatross study areas or elsewhere on the island to update the population estimate on Campbell.
    b. Biometrics:
        i. Collection of morphometric and plumage measurements in conjunction with the work on Adams and Antipodes Islands.
    c. Demographics:
        i. Band (stainless steel and darvic bands) any encountered individuals to facilitate individual recognition and add to the demographic dataset.

5. **Light-mantled sooty albatross** (supported through CSP POP2025-09 and additional DOC support):
    a. Population mapping:
        i. Count and map nests, particularly of accessible inland sites to identify suitable study sites and prepare for an update of the population estimates.
    b. Breeding success:
        i. Service, and where necessary, replace the 15 remote cameras to continue to study breeding biology, phenology, and success.

6. **White-chinned petrel** (supported through CSP POP2025-09):
    a. Population mapping:
        i. Opportunistically count and map any newly detected burrows to document recolonisation of this species.

7. **Sooty shearwater** (supported through Manaaki Whenua Landcare Research and DOC):
    a. Population connectivity:
        i. Collect up to 10 sooty shearwater carcasses/wings for an assessment of population connectivity.

Methods

Trip duration and timing

The trip to Campbell was 9 weeks total, with 7.5 weeks on the island, six days travel to the island from Bluff and four days return travel. Departure from Bluff was on 8 December 2025 on the *Evohe*, arrival on Campbell Island was on 14 December 2025, departure from Campbell was on 4 February 2026, and arrival back into Bluff was on 8 February 2026. The team consisted of four people, and a two-person maintenance team was on the island simultaneously. The team conducted work from Beeman Base, Moubray Biv, Sorensen Hut, Northwest Bay Hut, and campsite locations at Southeast Harbour, Mt Honey, Cattle Bay Stream, and Northeast Harbour (Fig. 1).

Southern royal albatross (Objective 1a-e)

For the population objective, methods followed those used in the 2005-2009 population survey outlined by Moore et al. (2012) and replicated for the Col study area in 2020 by Mischler (2020). To maintain consistency, site marker and sector boundary coordinates for the two study areas (Col and Moubray) and three index areas (Faye, Paris, Honey; Fig. 2) were obtained from Moore et al. (2012) and loaded onto four GPS units. Maps and sector boundary descriptions available from the appendix in Moore et al. (2012) were printed and carried in the field for additional clarity. Nest surveying was done by four people walking in parallel sweeps while searching for nests within the study and index areas using boundaries shown on GPS units and maps. The GPS tracking feature was used to maintain relatively straight sweeps and to keep a record of tracks walked (Appendix Fig. A1). Depending on the terrain, weather conditions, and vegetation type (i.e. the ease of locating nests), the distance between observers varied between 10 m and 50 m. Active nests with a bird and an egg were marked on the GPS. Nest contents were checked, sex of the bird was determined (using size and plumage colour; in Col only and for banded birds at Moubray), and both legs were examined for bands (all areas) and tracking devices (GLS; in Col only). Except for nervous birds, a line was sprayed across the centre of the chest of the bird using stock marker to indicate that the nest had been counted. Vegetation beside the nest was also sprayed. At the end of each survey day, accuracy checks were completed where each person walked perpendicular to their survey line and checked each nest within 15 m on either side of their line for a bird sprayed with stock marker. If birds had switched nest attendance during the day, the nest was checked for the spray mark to ensure no nests were missed. If nests had been missed, the accuracy check allowed for adjustments in numbers to be made. All mapping was done on qGIS.

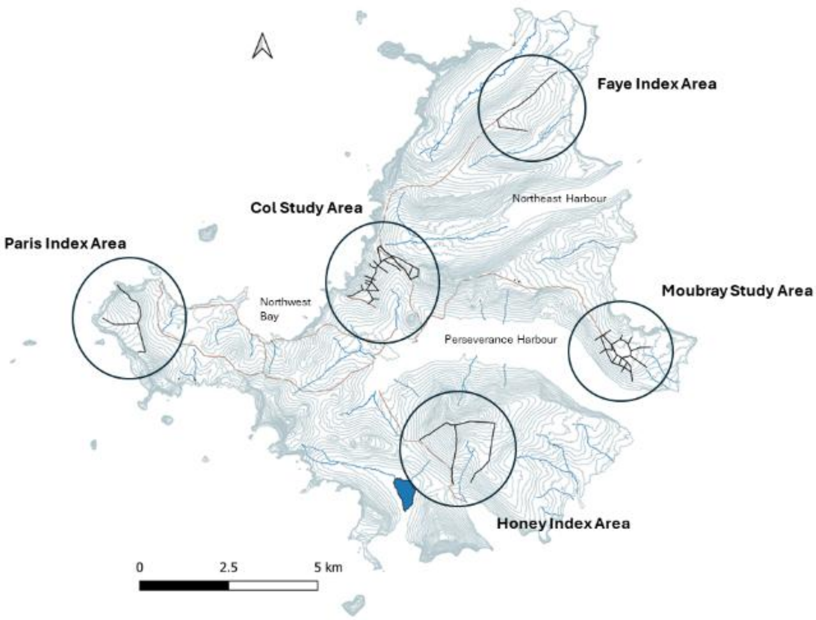

Fig. 2. Map of Campbell Island outlining the two study areas (Col and Moubray) and three index areas (Faye, Paris, Honey) used for southern royal albatross nest counts.

For the first part of the demographics objective (resight previously marked birds), birds were checked for bands while conducting the population surveys in all study and index areas. Bands were checked for gaps and adjusted if necessary. At Col, if no band was present on male birds, the back of the neck and the area towards the mantle were thoroughly scanned with a Trovan ISO Multireader for PIT tags. Birds were not removed from the nest as checks for bands and PIT tags could be done without holding the bird. Loafing birds were resighted if they had alpha-numeric colour bands or captured if they had metal bands or GLSs. For Moubray, only one visit per nest was possible although a return trip in early February allowed for a second check of a small number of nests.

To meet the second part of the objective (marking of unbanded adults with the aim of marking all breeding pairs in Col), nests in the Col study area were visited several times to mark both birds of a pair. Nesting birds were generally not handled for banding, since most birds could be carefully banded while they sat on the nest. This technique requires sufficient training and experience to band the bird quickly and efficiently with the least disturbance to the bird, since the degree of difficulty varies depending on the nest site, type of bowl and behaviour of the bird. Operators worked in pairs, with the second person shielding the bander from the bird's bill with a clipboard if necessary. Since birds were more relaxed and sat more tightly on the real egg, dummy plastic eggs were only used for birds that became fidgety during banding or during initial training of an inexperienced bander. Exceptionally nervous birds were usually avoided on the first or second visit to allow them to get used to being approached by humans. Except in areas close to the tourist boardwalk, birds that had been marked were sprayed with stock marker across the chest to indicate that those individuals had already been checked.

Birds received a primary mark (metal band) and a secondary mark (alpha-numeric colour band). All female birds were banded on the right tarsus with an R-sized band and all males were banded with an RC-clip band. Both sexes were additionally banded with an alpha-numeric darvic colour band (orange for females, blue for males; Fig. 3) on the left tarsus. Primary and secondary marks were added to some birds that had previously been marked with transmitters, transponders or GLS (see at-sea tracking below).

Fig. 3. An alpha-numeric darvic colour band on a female southern royal albatross. These in combination with numbered stainless steel leg bands are used to mark all breeding pairs in the Col study area on Campbell Island (Photo: P. Moore).

The at-sea tracking objective involved deploying 20 base-station transmitters with pressure sensors on breeding adults. A base-station/hub needed to be set up where data would automatically be downloaded from the devices once the birds were nearby. The hub needed to be away from the boardwalk, and nests for deployment needed to be within 500m line of sight. The hub was set up but upon testing the devices there appeared to be technical difficulties due to equipment challenges which already existed prior to departure to Campbell Island.

GLS loggers were previously deployed on birds in the Col study area using plastic wraparound bands, with 2-4 holes drilled and cable tie(s) inserted through and around the GLS tags. When found on breeding birds, the devices were removed by unravelling or cutting the plastic band (depending on whether glue had been used) while the bird was sitting at the nest, or by capturing nonbreeding birds. The tags were downloaded if possible, and returned to New Zealand for processing. None were redeployed. The GLS logger data provide low-resolution estimates of the movements of birds at sea but have the advantage of being able to function for a year or more.

For the breeding success objective, 24 cameras (Swift Enduro Outdoor Cameras Australia with 32 GB SD cards) previously deployed in the Col study area during the 2024/25 season were collected and the SD cards downloaded (Mischler et al. 2025). Ten of these cameras were part of a visitor impact assessment and had been deployed at nests near the boardwalk to determine the effects that visitors have on bird behaviour and nest success. This season, a total of 26 cameras were deployed (three of which were redeployed from the 2024/25 season), and seven of which are along the boardwalk (Fig. 4). One camera was removed after the nest failed and placed at a different nest. Each camera viewed one nest, all of which contained an egg. Distance from the nests varied (up to 10 m) depending on terrain and vegetation but was placed far enough away from the nest to capture the anticipated movement of the chick once it becomes mobile (Fig. 5). The cameras were positioned so as to avoid facing directly into the sunlight, and programmed to take one photograph every two hours between 0600 and 2100 hours. New batteries and SD cards were installed and the door seals and holes (for plugs or microphone) were coated with Gorilla Roof and Gutter silicone sealant to prevent water damage. Cameras were attached with wire to a wooden stake (Fig. 5) with a side stake added for stability. Analyses of the photographs retrieved this season will be carried out and reported on elsewhere.

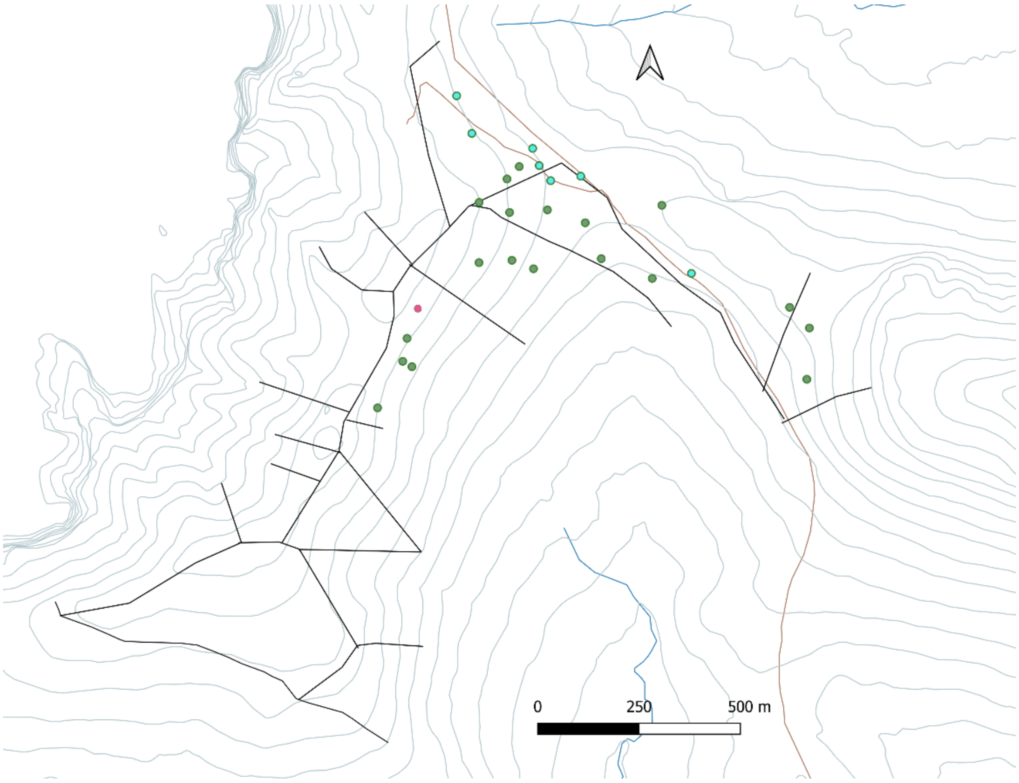

Fig. 4. Map showing nest locations of southern royal albatross in the Col study area where a camera was deployed to monitor breeding success (green). Red indicates where a camera was initially set up but the nest failed and camera was removed, and light blue indicates cameras that are visible from the boardwalk (n = 7).

For the diet sample collection, 6-8 new (recently grown) contour feathers were collected from 16 adult males and 17 females that were breeding in the Col study area. This was done by snipping off the feathers near the base. The feathers were stored in paper envelopes and sent away for stable isotope analyses. Results will be reported on elsewhere by Auckland University.

Fig. 5. Image showing remote camera deployment on a southern royal albatross nest at Col study area on Campbell Island, December 2023. The cameras were used to monitor breeding success (Photo: T. Thompson).

Grey-headed and Campbell albatross (Objective 2a-d)

To meet the first objective, counts from images taken at photo points established in 1987 (Moore & Moffat 1990) were completed (Fig. 6). Rexer-Huber et al. (2020) had revisited these points in 2019 after pooling information from several reports, and this was repeated on the current trip. Photographs were taken with a Canon EOS Rebel XS with a Canon 75-300mm and 18-55mm zoom lens. MP10-12 photos were taken on 19 December (re-attempt at MP12 on 22 December), MP2-9 on 21 December, and MP1 and C1-2 on 24 December 2025. The protocol included an overview photo at each location and several close-up images to allow for species identification (Campbell or grey-headed albatross) and for the most accurate count of birds that appeared to be incubating an egg or brooding a chick (Fig. 7). Nesting areas at each photo point were divided into sections which followed those outlined by Moore & Blezard (1999) and updated by Frost (2019) to allow for count comparisons. Stitching of images was not necessary as boundaries could be drawn and distinguished in adjacent individual photographs to avoid double-counting or gaps in sections. Birds were counted using DotDotGoose (v 1.7.0; Erts 2024), and classified as Campbell albatross, grey-headed albatross, or undefined (if it was not possible to distinguish the species). Within the species classification, they were classified by activity into sitting, loafing, or undefined. To determine if a bird was sitting, it had to be on a nest (of any size) and have the correct posture (sitting tightly, feet and legs not visible, the wing tips and tail sloping down). Differentiating between sitting and loafing was not always possible depending on the photograph quality (if colonies are a long distance away from the photo point) and angle (if rocks, vegetation, or birds are blocking parts of the bird) of the photograph and these birds were therefore classified as undefined.

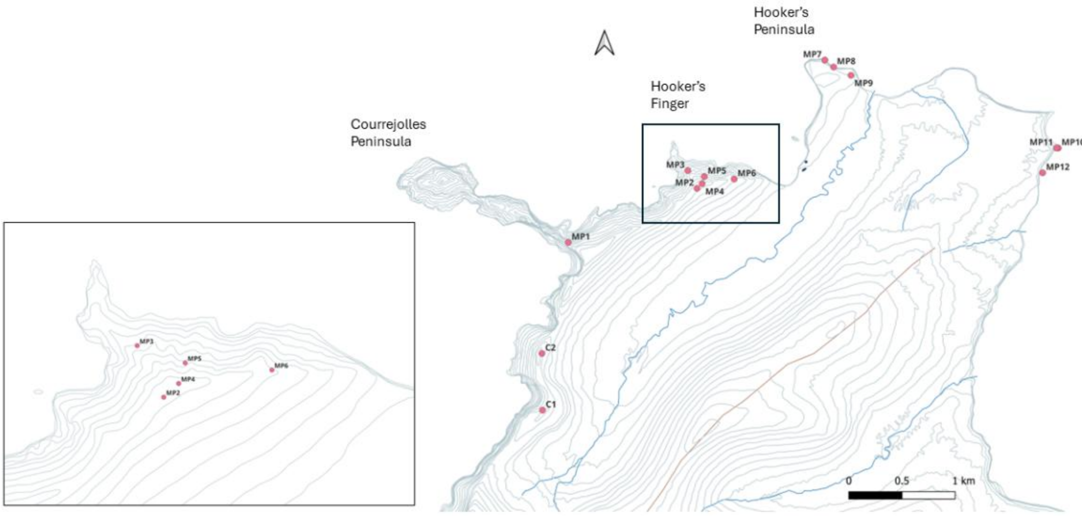

Fig. 6. Map showing photo point locations for Campbell and grey-headed albatross counts on Campbell Island.

To combine undefined species into either Campbell or grey-headed albatross, proportions from the known species classification for specific count sections were used. For example, if 89% of birds sitting in a section were identified to be Campbell albatross, 11% were grey-headed albatross, and 284 birds were unidentified species but known to be sitting, then 253 birds were added on to Campbell sitting and 31 birds to grey-headed. The same process was done for undefined activity. These extrapolations followed those used by Frost (2019) for consistency and count comparisons.

Fig. 7. View of Bull Rock North albatross colony from photo point MP11, Campbell Island. Zoomed in photographs were used to later count Campbell and grey-headed albatross (Photo: P. Moore).

Since peak egg laying for Campbell and grey-headed albatross is assumed to be around 10 October, counting in December results in a lower number of nests as some nests will have failed. To account for these losses, Moore (2004) developed regression equations (-0.1468x + 141.39 for those colonies dominated by Campbell, and -0.3144x + 189.55 for those dominated by grey-headed albatross, where x is equal to the day of year on which photographs were taken). These equations were used to determine the final estimate of apparently nesting Campbell and grey-headed albatross.

In order to assess the proportion of nests still active with an egg or a chick, a ground survey was conducted on 19 December (transects 3-4) and 20 December (transect 1-2) in the Bull Rock South colonies (see Fig. 3 in Rexer-Huber et al. (2020) for an overview of transect locations). Species were divided into Campbell and grey-headed albatross, and activity was categorized as sitting (bird sitting on an egg or chick), empty (bird sitting on a nest but with no egg or chick), and loafing (loose birds walking around in the colony or standing on an empty nest bowl). This ground survey was not used as a 'correction factor' because it only applies to one colony and does not necessarily represent what is happening at other colonies, and because of the uncertainty around what a bird on an empty nest means (i.e. it may or may not have had an egg).

Fig. 8. Grey-headed albatross with a Druid PTT-GPS transmitter which has a baseplate that was attached to feathers of the back using Tesa tape, Bull Rock South, Campbell Island.

For the at-sea tracking objective, ten PTT-GPS transmitters (Druid GPS/PTT YAWL ARGOS) and ten Telonics PTT TAV were deployed on breeding grey-headed albatross, all of which were guarding (sitting on) a chick (Fig. 8). Before catching a breeding bird, a nearby tagging location on a tussocky mound at the colony margin was chosen and the equipment prepared. The chick was removed from under its parent, placed in a thermal hat and put loosely in a kit bag and placed out of sight from skuas. The adult was then captured by grabbing the bill with one hand, securing the feet and tucking the bird into the crook of the other arm. For the PTT-GPS transmitters, a baseplate was attached onto the bird's back with Tesa tape (Fig. 8) using 3-4 "feather clumps" where a few feathers immediately over the spine were lifted away from other feathers so that Tesa tape could be placed underneath the clump and wrapped over the baseplate. Progression was made down the spine, with clumps gathered up and tape put underneath it, overlapping with previous tape straps, for the length of the baseplate. The tag was then clipped into the baseplate and secured with adhesive and two cable ties. Feathers were trimmed in front and to the side of the tag to limit the degree to which the solar panel was shaded. Feathers were plucked from the chest of each bird to determine sex. Eight birds were previously banded and the other twelve had new bands applied. For the ten PTT transmitters, the devices were attached directly to clumps of back feathers by wrapping lengths of Tesa tape around the tag and feather clumps. Bands were applied if necessary and a line was sprayed across the centre of the chest of the bird using stock marker. Once finished, a check for skuas in the vicinity was made, the chick was placed back in the nest, and the bird was carefully placed 2-3 m from the nest and allowed to return to the nest on its own. For the three satellite transmitters with pressure sensors that were deployed on Campbell albatross, the same process used for the grey-headed albatross was followed. All those birds were previously banded.

GLS loggers were attached to the bird’s metal bands using two cable ties. For grey-headed albatross, six birds were previously banded and 19 were newly banded. All birds were sitting on chicks. For Campbell albatross, all 25 birds were previously banded, and all were sitting on chicks.


a)


b)

Fig. 9. Images showing a) remote camera set up at grey-headed albatross nests at Bull Rock South on Campbell Island, and b) nest coverage of grey-headed albatross by one remote camera. Cameras were used to monitor breeding success (Photos: B. Philp).

For the breeding success objective, the five cameras (Swift Enduro Outdoor Cameras Australia with 32 GB SD cards) which were deployed on grey-headed albatross nests at Bull Rock South (Fig. 9a, 10) in 2023/24 were serviced (new batteries, SD cards and re-sealed with silicone sealant – see royal albatross camera methods for a full description). Three out of the five cameras were moved a short distance to improve the angle and view. A total of 32 active nests were covered by the cameras, five of which contained an egg, 26 with a chick, and one was not checked. Distance from the nests varied depending on where the best location for the camera was to capture the largest number of nests. A photograph was taken from behind the camera to later mark the nest locations within the camera view and annotate its contents (Fig. 9b). Cameras were programmed to take one photograph every two hours between 0600 and 2100 hours. Analyses of the photographs retrieved this season will be carried out and reported on elsewhere.

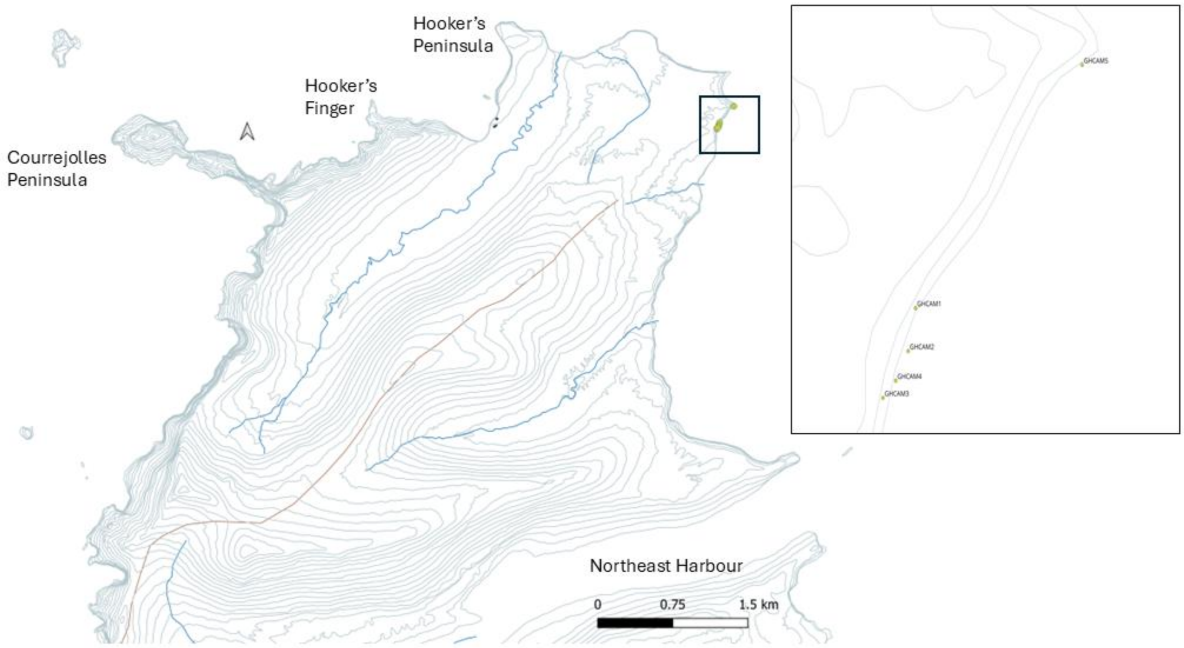

Fig. 10. Map showing locations of remote camera deployments on grey-headed albatross nests at Bull Rock South on Campbell Island. Camera is used to capture breeding success data.

For the demographics objective, all birds (both Campbell and grey-headed) which were seen during the ground survey transects at Bull Rock South, all birds handled for deployments, or any birds in the vicinity of work being carried out were checked for bands. If incubating or nonbreeding birds had a band, the number was read while the bird was sitting or standing. In order to reduce disturbance in the colony, no birds were captured to read bands. To band up to 100 breeding individuals of both species, birds were removed from the nest as described above for deployments, and sprayed with stock marker.

Northern giant petrel (Objective 3a)

The population objective involved repeating as much of the 2020 survey as possible (Rexer-Huber et al. 2020). The GPS locations of previously located nesting areas were provided to the team (K. Rexer-Huber, pers. comm.; Rexer-Huber et al. 2020) to determine if those sites remain active. Areas where giant petrels had been found during the 1996/97 survey carried out by Wiltshire and Scofield (2000) were also targeted. Opportunistic counting and mapping of nests while traveling across the island was done to ensure capturing new breeding locations since northern giant petrels are known to move nesting locations. Our methods followed that of Rexer-Huber et al. (2020), including not recording failed nests due to the difficulty of differentiating them from 'play' nests.

Since counts were not completed until December/January when chicks are nearly at fledging age (due to the timing of the trip), nest counts needed to be corrected for failure during the egg and early chick stage. We followed Rexer-Huber et al. (2020) and used breeding success (average of 63.8%, range 55.7% to 69.8%) from Macquarie Island as that is the closest colony to Campbell Island where breeding success is monitored.

Antipodean albatross (Objective 4a-c)

The three objectives for the Antipodean albatross were all dependent upon locating birds in previously known nesting areas. Historical records for the number and locations of Antipodean albatross are very scarce and difficult to find due to data being collected haphazardly during the Meteorological Station era (1940s-1995) and in subsequent years. Opportunistic searches were conducted while traveling along the Lyall-Moubray ridge and while counting southern royal albatross nests in the Moubray study area. This ridge system is where most Antipodean albatross have been found in recent decades (P. Moore, unpubl. data). GPS locations from 2023/24 and 2024/25 were checked, and any new bird locations were marked with a GPS point. For demographics, each bird was checked from a distance for bands. If they were previously banded, the band was checked to ensure it remained in suitable condition (the bird was not captured for this). If the bird was unbanded, it was banded with a metal (R size) band on the right tarsus and a green alpha-numeric darvic band on the left tarsus. Non-breeding unbanded birds were captured by one or two observers surrounding them. One person would grab the bill with one hand, then reach over the bird to grab the legs with the other hand. If necessary, a second person helped tuck the wings into the crook of the handler's arm and body. The handler walked to a pre-chosen banding site nearby and sat on a tussock or mound so that they sat with the bird cradled and restrained in their lap. A second person applied bands and took photographs to assist with aging. Measurements included culmen length and culmen tip bill depth (Appendix Fig. A2). Several photographs was taken of dorsal and head plumage of each bird to help determine sex and GPI (Gibson Plumage Index; Appendix Fig. A3). For unbanded breeding birds, an attempt was made to band them while they remained sitting on the nest. If the bird became too agitated, it would be removed from the nest in the same manner as for grey-headed and Campbell albatross.

Light-mantled sooty albatross (Objective 5a-b)

To meet the first objective of finding accessible light-mantled sooty albatross nests, areas surveyed during 2023/24 and 2024/25 (Mischler et al. 2024, 2025) were used as a starting point and some additional areas that had been surveyed by Moore (1996) were also visited. Breeding monitoring areas, including Beeman Hill, north-west Lyall ridge and Azimuth (Moore 1996) and east Lyall Ridge (Mischler et al. 2024), were visited to locate nests by searching steep vegetated areas and rocky outcrops. Flying, calling (gamming) and landing birds were also used as indicators of the presence of nests. Scanning with binoculars from viewpoints was also used, although this is less effective in non-coastal areas as birds are hidden by vegetation and topography. Searches were conducted when time and weather permitted.

For breeding success, a total of six cameras (Swift Enduro Outdoor Cameras Australia with 32 GB SD cards) were deployed, including one serviced camera from 2024/25 (Fig. 11). A total of six nests were covered by the cameras, two of which contained an egg and four contained a chick. Distance from the nests varied depending on where the best location for the camera was to capture the largest number of nests. Cameras were programmed and sealed the same way as described for the southern royal albatross. Cameras were attached with wire to a plastic waratah (*n* = 1) or a short single or double wooden stake. Analyses of the photographs retrieved this season will be carried out and reported on elsewhere.

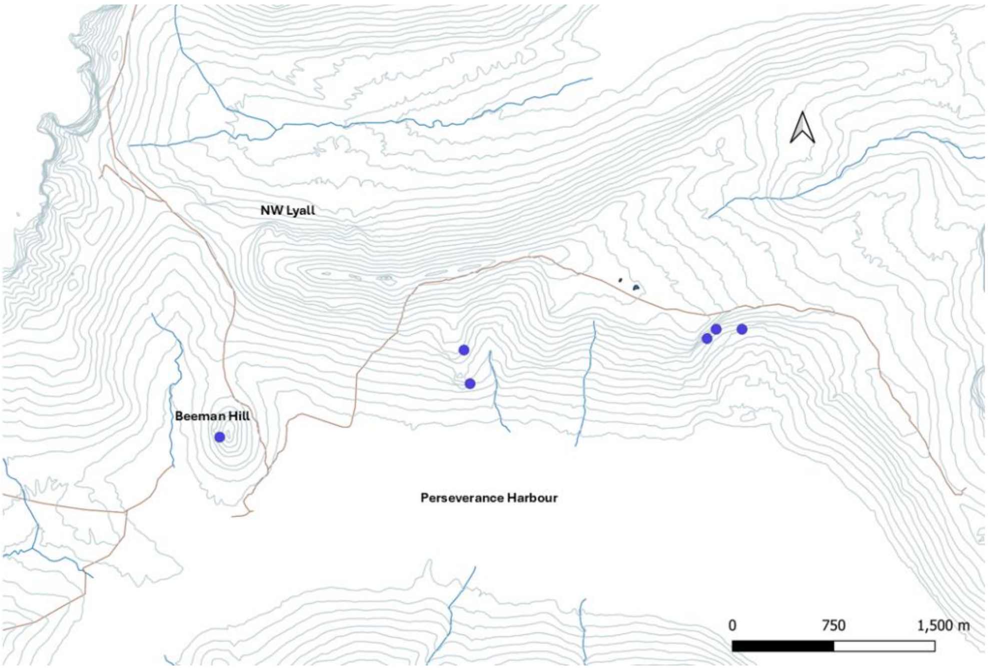

Fig. 11. Map showing light-mantled sooty albatross nest locations (blue) where a remote camera was deployed to monitor breeding success on Campbell Island in 2025/26.

White-chinned petrel (Objective 6a)

This objective involved opportunistically counting and mapping of any burrows found while traveling across the island for other species work. White-chinned petrel burrows generally have a very muddy and large entrance and are therefore distinguishable from other species. The GPS locations of previously located burrows were provided to the team (K. Rexer-Huber, pers. comm.; Rexer-Huber et al. 2020) to determine if those areas have undergone an increase in the number of burrows, and to determine whether any new burrows found on the island were indeed newly discovered.

Sooty shearwater (Objective 7a)

This objective was the lowest priority, and involved opportunistically searching for and collecting sooty shearwater carcasses/wings for an assessment of population connectivity. Areas where nesting skuas were found were searched as there are usually a large amount of carcasses present. Opportunistic searches were done when burrows were located usually when conducting giant petrel surveys.

Results

Southern royal albatross (Objective 1a-e)

Counts of nests for all study and index areas were conducted. All parts of Col were visited at least 2-3 times, or several more times to maximise the number of breeding partners encountered. Moubray was visited twice although the study area was not fully surveyed the second time, and the three index count areas were visited only once. Numbers from surveys conducted between 1987/88 to 2025/26 are shown in Table 1. Nest numbers in Col and Moubray study areas in 2025/26 remain higher than they were in 1987/88, but are the lowest counts since 1991/92 (except for Col in 1991/92 and 2023/24; Figs. 12, 13). Counts at Faye and Paris in 2025/26 were higher than the previous two survey years but lower than the rest of the years, and Honey index area was the second lowest count compared to the rest of the survey years. When examining the percent change between the decades (Table 2), there has been a decline across all years since the 1990s. Col initially remained stable between the 1990s to the 2000s but has declined at 18.7% since. Moubray apparently peaked in numbers in the late 1990s but decreased 25.8%

since the 2000s. Paris has undergone the greatest declines across all surveys compared to the other areas, with the percent change doubling between 1990s-2000s and 2000s-2020s, and an overall decline of 44.8%. Faye has the second worst declines particularly between 2000s to 2020s. Honey had a relatively large decline in 1990s-2000s. Across all survey years, Paris has declined the most at 44.8%, followed by Faye (31.9%), Moubray (28.6%), Honey (25.7%), and Col (18.7%). The average across all areas between 2000s and 2020s was a 23.9% decline, this figure was higher when comparing between 1990s to 2020s at 29.9%. Due to expected annual variation in counts caused by nesting success in the previous season (i.e. failed breeders will breed in consecutive years), counts over several seasons are essential for clarifying trends.

Table 1. Southern royal albatross nest counts completed at respective study (Col and Moubray) and index areas (Faye, Paris, Honey) in various seasons. Nest count data were collated from Moore & Moffat 1990, Moore et al. 1997, P. Moore unpubl. data 1997/98-1998/99, Moore et al. 2012).

	Study or Index area				
Season	Col	Moubray	Faye	Paris	Honey
1987/88	128	344	-	-	-
1991/92	158	376	-	-	-
1992/93	187	400	-	-	-
1993/94	170	435	-	-	-
1994/95	189	489	-	-	-
1995/96	201	508	-	-	-
1996/97	188	508	598	394	433
1997/98	200	551	657	439	400
1998/99	203	564	639	489	428
2004/05	207	506	598	-	-
2005/06	185	462	537	-	-
2006/07	182	494	572	332	336
2007/08	196	492	563	334	402
2008/09	214	569	609	435	377
2019/20	141*	-	-	-	-
2023/24	148	381	413	237	301
2024/25	168	367	407	231	329
2025/26	163	375	470	262	307

* Adjusted nest count to Dec/Jan as actual count done in March.

Table 2. Percent change calculated between survey periods of southern royal albatross nest counts in study and index areas on Campbell Island. Average was calculated using counts from seasons where all study and index areas were surveyed (Table 1).

	% change		
Area	1990s to 2000s	2000s to 2020s	1990s to 2020s
Col	0.2	-18.9	-18.7
Moubray	-3.7	-25.8	-28.6
Faye	-8.8	-25.3	-31.9
Paris	-16.7	-33.7	-44.8
Honey	-11.6	-16.0	-25.7
Average	**-8.9**	**-23.9**	**-29.9**

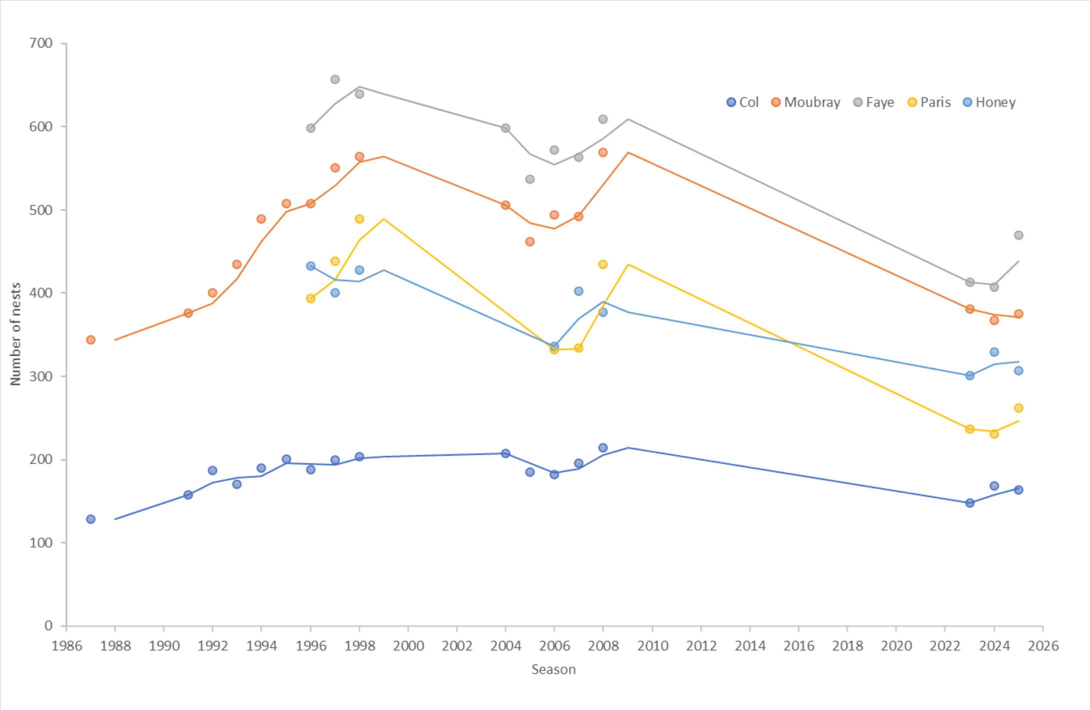

Fig. 12. Graph showing nest count data of southern royal albatross over survey seasons in study or index areas on Campbell Island. Lines are indicative of moving averages with a period of two.

The majority of previously banded males at Col had their bands removed and replaced with PIT tags during the 2000s (Moore et al. 2012). Scanning males for PIT tags can be problematic because the more nervous birds did not tolerate having their neck and back "ironed" with the reader. Some were consequently avoided or given a quick perfunctory scan, hence some transponders were probably missed. Successful scanning required close contact with the inner part of the circular reader and that was less often achieved if the bird was in its natural sitting position as opposed to stretching the neck forward. Five previously marked birds were found at Col (banded pre-2023/24), all of which were breeding. These included four females (previously marked with R-bands) and one male (previously marked with an RA-band; Appendix Table A1). The oldest known-age female at Col was a 30-year-old that had been banded as a chick in September 1996. Two other females were probably at least 37 years old if they were found breeding at around eight years of age. The potentially youngest females were banded as breeders in January 2005. The only previously banded male was banded as a breeder in January 1998. The last time that chicks were banded on Campbell Island was September 1997. Sixty-two nests had birds which were breeding with the same partner and were both banded in 2023/24, and nine nests had the same partners which were both banded in 2024/25. There were also nine previously banded females found at Moubray. The oldest female was a 38-year-old that was banded as a chick in 1987/88, and the two youngest females (29 years old) were banded as a chick in 1996/97. Note that most bands were removed from males at Moubray during the 2000s (Moore et al. 2012).

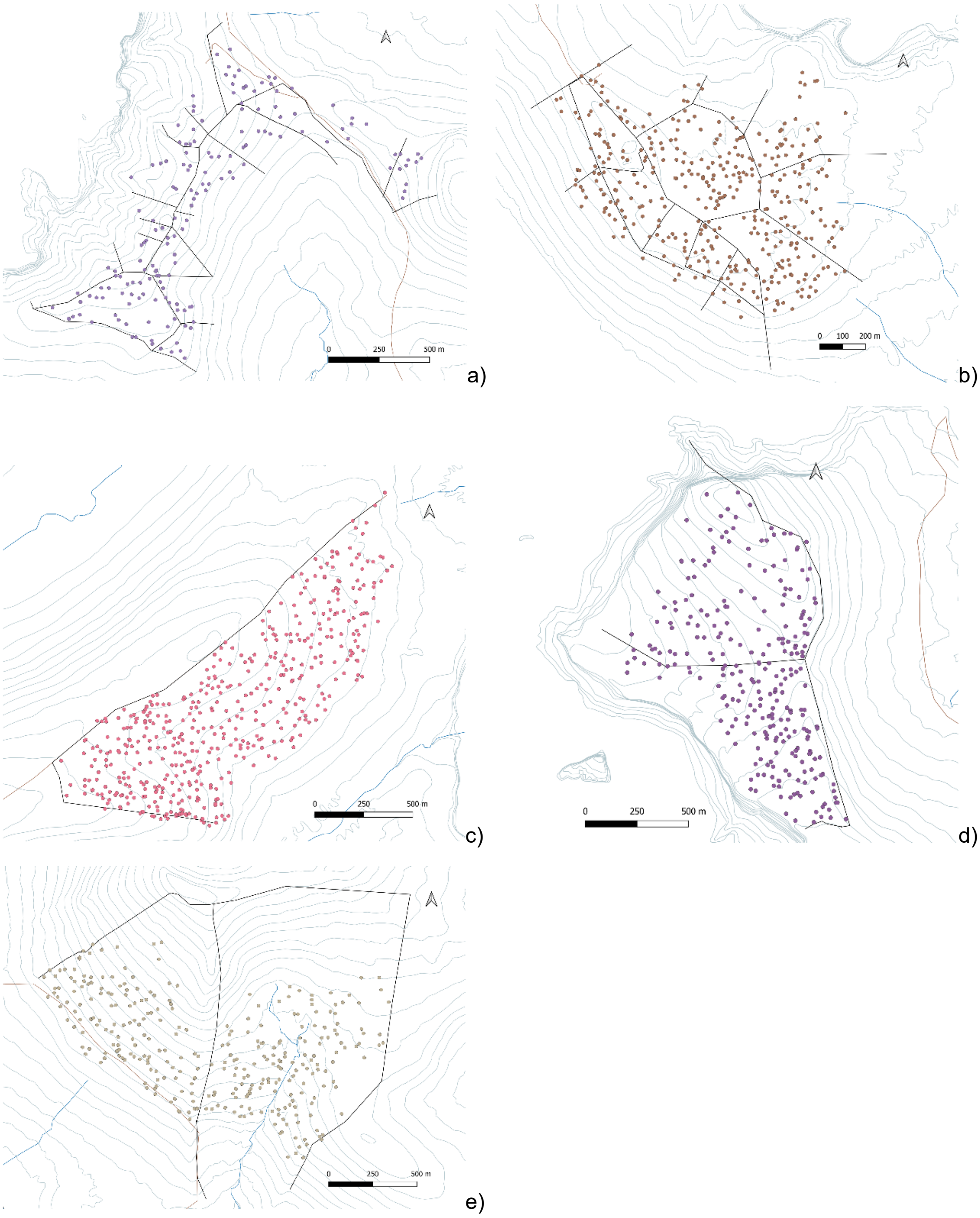

Fig. 13. Nest locations of southern royal albatross in 2025/26 in the study areas of a) Col and b) Moubray, and in the index areas of c) Faye, d) Paris, and e) Honey on Campbell Island.

For the second part of the demographic objective (marking of unbanded adults with the aim of marking all breeding pairs in Col), a total of 113 nests in Col had both partners marked in 2023/24 and an additional 81 nests with both partners marked were added in 2024/25 for a total of 194 breeding pairs over the two seasons. By the end of the 2025/26 season, of the 163 nests at Col, 79 pairs were already previously fully marked pairs (or needed minor changes), 46 nests were completed with one or both birds newly banded, 18 nests only had one bird marked but the partner was confirmed to be unbanded, 16 nests failed before both partners could be identified, and four nests only had one bird identified (Fig. 14; Table 3 and A2). Twenty-three pairs comprised birds that had bred in 2024/25 but had failed and returned in consecutive years. All banding information has been entered into the FALCON, the New Zealand bird banding database.

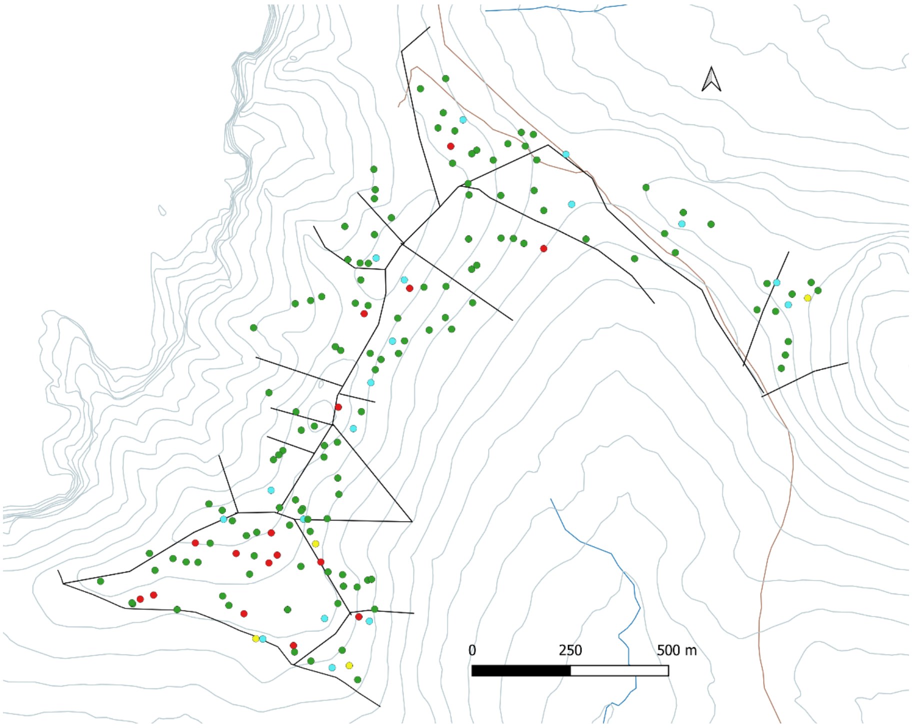

Fig. 14. Map showing nest locations (*n* = 163) of southern royal albatross in the Col study area where both partners are now banded (green; *n* = 125), where only one partner is banded but the other was confirmed as unbanded (light blue; *n* = 18), where nests failed before both partners could be identified (red; *n* = 16), and where only one partner was banded and the other remained unidentified (yellow; *n* = 4) on Campbell Island in 2025/26.

Table 3. Breeding pair summary for southern royal albatross in the Col study area, Campbell Island showing number of birds and pairs banded during the 2023/24, 2024/25, and 2025/26 seasons.

Pair Status	2023/24	2024/25	2025/26	Total	Notes
Completed pair (both birds banded)	113	81	46	240	Includes some pairs where only one bird had been identified in previous season but the partner was now banded (i.e. the pair was completed)
One bird of a pair banded or resighted	30	15	22	67	
Both birds unbanded or unidentified	7	55	5	67	All five nests were failed nests for 2025/26
Failed pairs that bred in consecutive years		30	23	53	Failed pairs from previous year where one or both partners were identified

Grey-headed albatross (Objective 2a-d)

Although Courrejolles Peninsula was photographed for counts this season, the quality of the photographs did not allow for counts to be completed. Many days of fog at an already late stage in the breeding cycle did not allow for much flexibility in the timing of photographs. Counts from this area have therefore been extrapolated. For the remainder of the areas, counts for Campbell albatross from photo points were higher than during the other three surveys, but lower for grey-headed albatross in all years except for the 2023/24 survey (raw counts shown in Appendix Table A3). Table 4 has been adjusted by removing counts done from aerial photographs in 2019/20 to allow for direct comparisons. It is very notable that the number of loafing birds was much higher in 2024/25 than the other survey years for Campbell albatross. For grey-headed albatross, the number of loafing birds was high in 2024/25 but returned to comparable numbers seen in 2019/20 and 2023/24. The number of sitting birds for Campbell albatross is higher this season compared to 2023/24 and 2024/25, and variable across areas and survey years for grey-headed albatross.

Table 4. Number of sitting (adjusted for failures prior to counts) and loafing Campbell and grey-headed albatross individuals from photo point counts done in 2019/20 (24 Nov 2019), 2023/24 (6 and 14 Dec 2023), 2024/25 (13-15 and 19 Dec 2024), and 2025/26 (19, 21, 24 Dec 2025). Courrejolles Peninsula counts were excluded in 2025/26 due to the low quality of photographs but an estimate was calculated (see ^ below). Data from 2019/20 adapted from Frost (2019) and P. Frost raw data to exclude all aerial photograph counts as well as Courrejolles Isthmus excluded an area called JDK, Bull Rock North excluded areas 1c, 16-18, Bull Rock South excluded area 10. 'Sitting' birds were assumed to be breeding birds on an egg or chick, and 'loafing' birds were non-breeding birds.

	Campbell							
	Sitting*				Loafing			
Area	2019/20	2023/24	2024/25	2025/26	2019/20	2023/24	2024/25	2025/26
Courrejolles Peninsula	7835	4629	1358	4440^	1438	4088	5568	4609^
Courrejolles Isthmus	154	261	178	273	45	110	112	137
Hooker's Finger	1209	980	907	1237	154	738	830	759
Hooker's Peninsula	372	189	288	334	109	94	182	270
Bull Rock North	3421	2552	2379	3095	794	856	1917	1623
Bull Rock South	5660	3242	2506	4075	1034	1148	3235	2105
TOTAL	**18651**	**11853**	**7616**	**13454**	**3574**	**7034**	**11844**	**9503**

	Grey-headed							
	Sitting*				Loafing			
Area	2019/20	2023/24	2024/25	2025/26	2019/20	2023/24	2024/25	2025/26
Courrejolles Peninsula	3313	2042	1208	1628^	739	1054	3087	1283^
Courrejolles Isthmus	148	212	183	144	89	67	82	24
Hooker's Finger	912	824	624	707	137	224	237	269
Hooker's Peninsula	325	177	380	255	192	117	127	139
Bull Rock North	549	333	419	276	78	24	108	74
Bull Rock South	311	84	136	115	46	21	68	36
TOTAL	**5558**	**3672**	**2950**	**3125**	**1281**	**1507**	**3709**	**1283**

* Nest counts were adjusted using the regression equations developed by Moore (2004) to adjust for nest failures prior to the photo point counts.

^ Courrejolles Peninsula comprised on average 33.0% and 48.5% of the total Campbell albatross counts of sitting and loafing birds, respectively (2019/20 and 2023/24-2024/25), and 52.1% and 70.3% of the total grey-headed albatross counts of sitting and loafing birds respectively, and therefore these percentages were used as a correction factor to estimate the nest counts for 2025/26.

When examining percent change of sitting birds (Table 5) between the survey years for each area, the average percent change of Campbell albatross between 2019/20 and 2023/24 was a decrease of 17.9%, a decrease of 33.5% between 2019/20 and 2024/25. Using the extrapolated Courrejolles Peninsula numbers, the average percent change between 2019/20 and 2025/26 was a decrease of 1.9%. The average percent change of grey-headed albatross between 2019/20 and 2023/24 was a decrease of 27.1%, a decrease of 22.5% between 2019/20 and 2024/25. Using the extrapolated Courrejolles Peninsula numbers, the average percent change between 2019/20 and 2025/26 was a decrease of 35.0%.

Table 5. Percent change of sitting birds (corrected for nesting failure using regression formulae) between 2019/20 and 2023/24, between 2019/20 and 2024/25, between 2019/20 and 2025/26, and between 2023/24 and 2025/26 surveys calculated from data in Table 4 for each respective area and species. Percent change for years including 2025/26 were calculated using the extrapolated estimate for Courrejolles Peninsula as outlined in Table 4.

	Campbell			
Area	2019/20 to 2023/24 Sitting birds	2019/20 to 2024/25 Sitting birds	2019/20 to 2025/26 Sitting birds	2023/24 to 2025/26 Sitting birds
Courrejolles Peninsula	-40.9	-82.7	-43.3	-4.1
Courrejolles Isthmus	69.5	15.6	77.3	4.6
Hooker’s Finger	-18.9	-25.0	2.3	26.2
Hooker’s Peninsula	-49.2	-22.6	-10.2	76.7
Bull Rock North	-25.4	-30.5	-9.5	21.3
Bull Rock South	-42.7	-55.7	-28.0	25.7
Average of percent change	**-17.9**	**-33.5**	**-1.9**	**25.1**

	Grey-headed			
Area	2019/20 to 2023/24 Sitting birds	2019/20 to 2024/25 Sitting birds	2019/20 to 2025/26 Sitting birds	2023/24 to 2025/26 Sitting birds
Courrejolles Peninsula	-38.4	-63.5	-50.7	-20.3
Courrejolles Isthmus	43.2	23.4	-2.7	-32.1
Hooker’s Finger	-9.6	-31.6	-22.5	-14.2
Hooker’s Peninsula	-45.5	16.9	-21.5	44.1
Bull Rock North	-39.3	-23.7	-49.7	-17.1
Bull Rock South	-73.0	-56.3	-63.0	36.9
Average of percent change	**-27.1**	**-22.5**	**-35.0**	**-0.5**

Comparisons between surveys need to be done with caution as different methods were used during different years (Fig. 15). Note that the number of Campbell albatross nests for 2023/24, 2024/25, and 2025/26 in Fig. 15 was adjusted to hypothetically include counts from the Eastern Colonies (this was also done for the 2006-12 and 2023/24 surveys). The percentage that the Eastern Colonies comprised in those years where a total population count was done was used as a correction factor – i.e. the Eastern Colonies comprised approximately 9.17% of the total population in 1995-97 and 9.43% in 2019/20, for an average of 9.3%. This same concept was used to calculate approximate nest numbers for Courrejolles Peninsula (as outlined in Table 4 and 5).

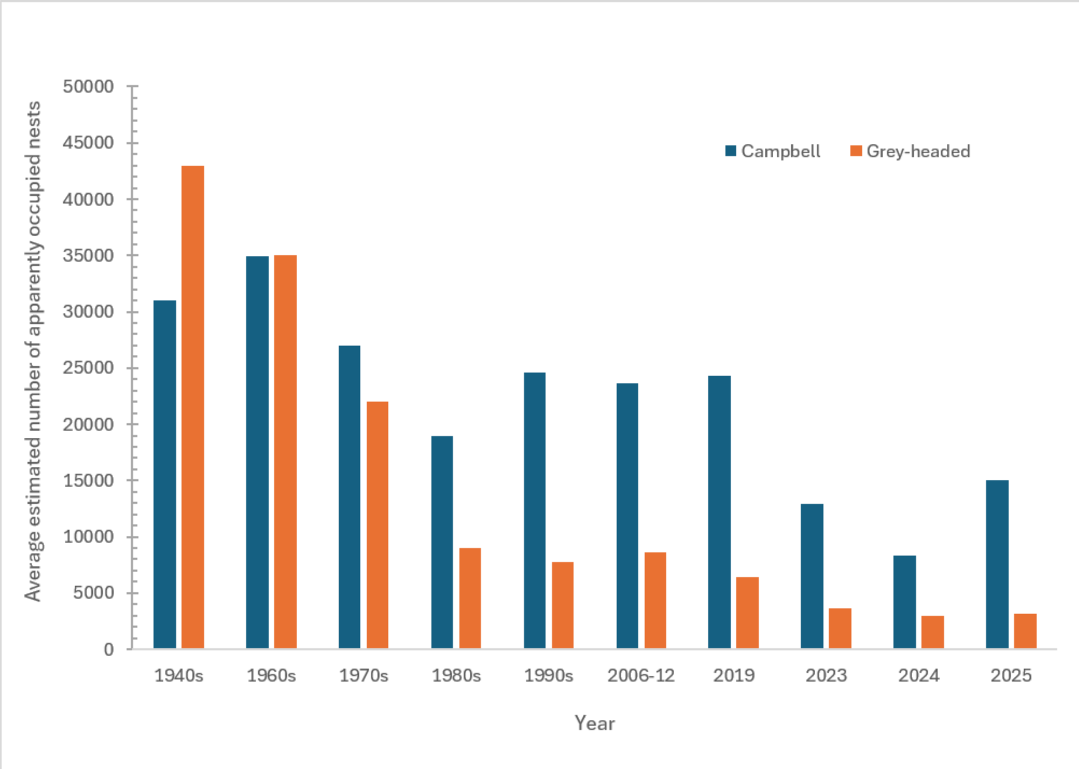

Fig. 15. Overall change in the number of Campbell and grey-headed albatross nests on Campbell Island as summarized by Frost (2019). Regression formulae have been used to adjust the total nest numbers to those expected in early October (as developed by Moore 2004). Campbell albatross numbers have been adjusted for 2006-12, 2023, 2024, and 2025 to hypothetically include Eastern Colonies. See Moore (2004), Sagar (2014), and Frost (2019) for further details. Caution is required when using this graph as different methods were used between years (i.e. aerial photographs in 2019/20). Results from 2025 used extrapolated counts from Courrejolles Peninsula.

Assessing the proportion of nests (still) active with an egg or a chick by ground surveys was conducted at Bull Rock South using transects outlined by Rexer-Huber et al. (2020). For Campbell albatross in 2025/26, total number of birds at Bull Rock South was 5,755 of which 63.4% were designated as sitting which is relatively comparable to the ground survey transects (Table 6) where the total % of sitting birds was 61.6%. For grey-headed albatross, the total number of birds at Bull Rock South in 2025/26 was 139 of which 74.1% were counted as sitting. This is higher compared to the ground survey transect count where 63.6% of the total number of birds were sitting. As outlined in methods, this ground survey was not used as a ‘correction factor’ because it only applies to one colony and does not necessarily represent what is happening at other colonies, and because of the uncertainty around what a bird on an empty nest means (i.e. it may or may not have had an egg).

Table 6. Number of birds counted while carrying out ground truthing transects (transects 1-2 on 20 Dec and transect 3-4 on 19 Dec 2025) as outlined by Rexer-Huber et al. (2020) at Bull Rock South. a) were Campbell albatross counts, and b) were grey-headed albatross counts. 'Sitting' were birds incubating an egg or guarding a chick, 'empty' were birds sitting on a nest but which did not have anything in the nest, 'loafing' were loose birds walking around in the colony or standing on nest bowls.

a)

Transect	Sitting	Empty	Loafing	Total birds on nest	Total birds	% empty of birds on nest	% loafing of all birds	% birds sitting of total birds
1	49	20	16	69	85	29.0	18.8	57.6
2	68	17	24	85	109	20.0	22.0	62.4
3	82	27	28	109	137	24.8	20.4	59.9
4	43	15	7	58	65	25.9	10.8	66.2
Total	**242**	**79**	**75**	**321**	**396**	**24.6**	**18.9**	**61.1**

b)

Transect	Sitting	Empty	Loafing	Total birds on nest	Total birds	% empty of birds on nest	% loafing of all birds	% birds sitting of total birds
1	20	8	9	28	37	28.6	24.3	54.1
2	2	1	1	3	4	33.3	25.0	50.0
3	4	0	0	4	4	0	0	100.0
4	23	6	3	29	32	20.7	9.4	71.9
Total	**49**	**15**	**13**	**64**	**77**	**23.4**	**16.9**	**63.6**

The results from the ten PTT-GPS transmitters (four females, six males) and ten PTT transmitters (six females, four males) which were deployed on breeding grey-headed albatross will provide short-term high-resolution insight into distribution and fisheries risks assessment and are summarized in a separate report (Rowley et al. 2026). As an overview, most of the individuals dispersed widely across the southwest Pacific sector of the Southern Ocean with many undertaking long-distance movements into pelagic waters once breeding concluded (Fig. 16). The three GPS/PTT transmitters (one female, two males) deployed on Campbell albatross were part of an Australian project and results will be presented elsewhere. Since GLS loggers must be retrieved in order to download data, no results are available for the 25 GLSs deployed on grey-headed and the 25 GLSs deployed on Campbell albatross this year. However, for grey-headed albatross, 13 were deployed on females, ten were deployed on males, and two were deployed on a bird of unknown sex. For Campbell albatross, 12 were deployed on females, 11 were deployed on males, and two were deployed on a bird of unknown sex.

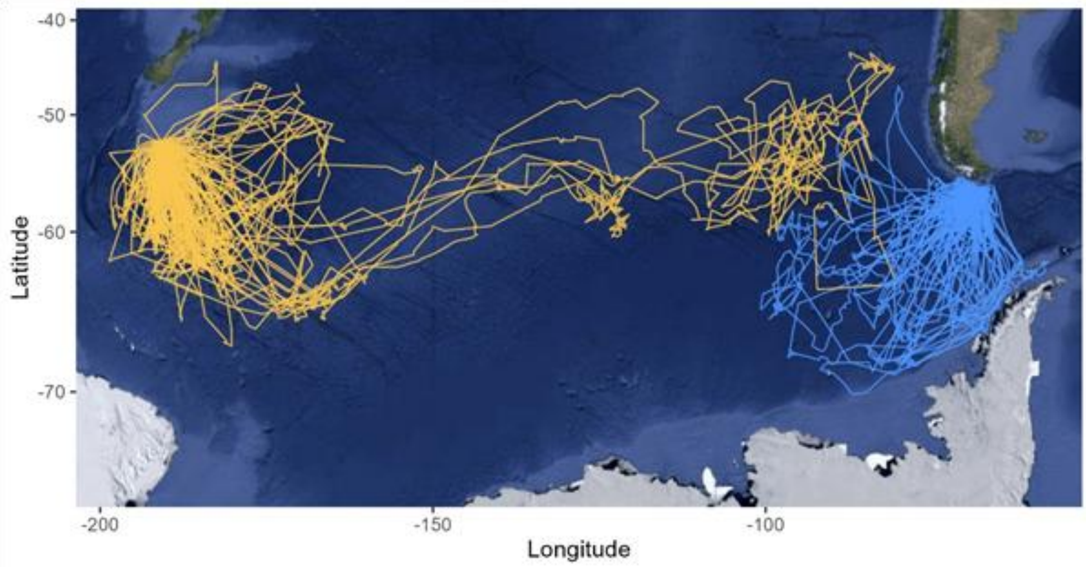

Fig 16. Satellite tracks from devices deployed on 20 grey-headed albatross on Campbell Island (yellow). Note that the blue tracks were from a separate project where transmitters were deployed on grey-headed albatross at Islas Diego Ramirez in Chile (for more information, see Rowley et al. 2026).

For demographics, there were 90 banded birds resighted, 62 of which were Campbell albatross and 28 grey-headed albatross. Of the previously banded Campbell albatross, 48 were brooding a chick, two were incubating an egg, nine were non-breeders, and for three the status was not recorded. Of the previously banded grey-headed albatross, 22 were brooding a chick, one was sitting on a dead chick, one was incubating an egg, two were non-breeders, and two birds did not have the status recorded. Seven breeding Campbell albatross (sitting on chicks) and 40 grey-headed albatross (37 brooding a chick, one sitting on a dead chick, and two non-breeders) were newly banded this year. Detailed band information is shown in Appendix Table A2 and A4, and all banding information has been entered into the FALCON, the New Zealand bird banding database.

Light-mantled sooty albatross (Objective 3a-b)

The search areas and locations of light-mantled sooty albatross nests are summarized in Fig. 17. Nests were searched for at Beeman Hill, northwest Lyall, east Lyall Ridge, and Azimuth, and six accessible nests were located. In addition, a total of 27 active nests were opportunistically located while working around the island, but only one of which was accessible. Note that this count was not comprehensive.

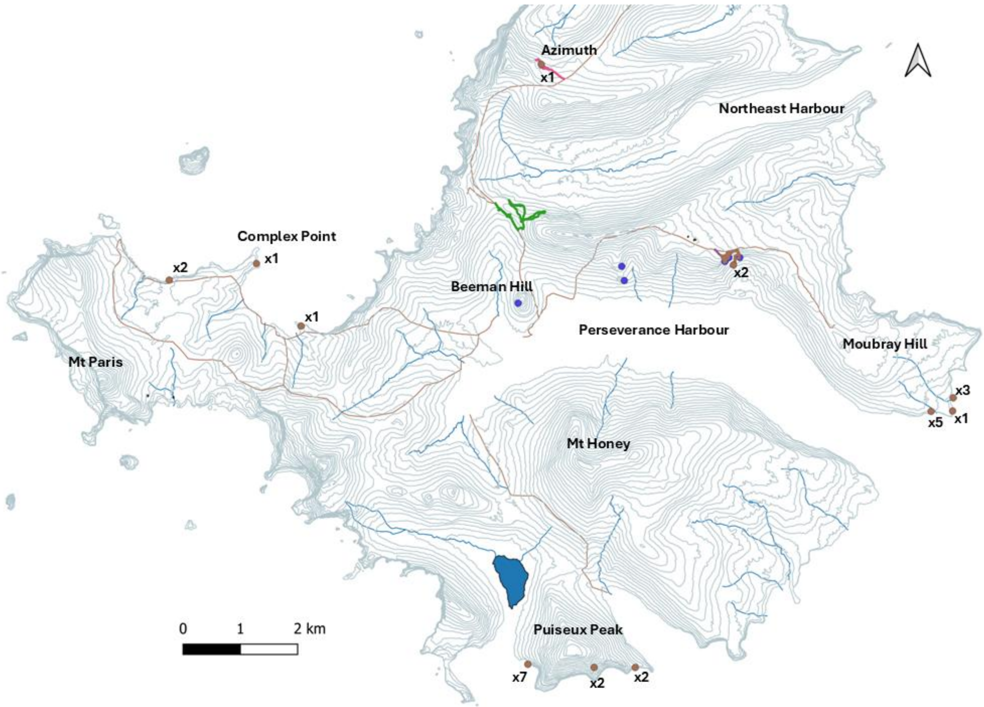

Fig. 17. Map showing tracks and locations of where light-mantled sooty albatross nests were searched for on Campbell Island during 2025/26. Numbers indicate the number of nests at each location (n = 27 total). Blue dots indicate nests where cameras were set up (n = 6).

Antipodean albatross (Objective 4a-c)

A total of 14 Antipodean albatross were found, all of which were on the Lyall-Moubray ridge and Moubray study area. They were found while carrying out southern royal albatross counts in or west of the Moubray study area in early January and when returning to Moubray for a second time in early February (Fig. 18). Five male birds were found in January sitting on empty nest bowls or loitering since the timing was prior to egg laying. All of the birds were previously banded (Table 7 and A2; all banding information has been entered into the FALCON, the New Zealand bird banding database). There was one nearly fledged chick, but banding was not attempted due to very poor weather conditions. In early February, four males were found. One was previously banded and sitting on an egg, and three were non-breeders. Four unbanded females were also found, three of which were sitting on an egg. This count is not comprehensive as apart from a swath either side of the track along the Lyall-Moubray ridge no other areas outside of the royal albatross study and index areas were searched. No other birds were seen when traveling on walking routes around the island.

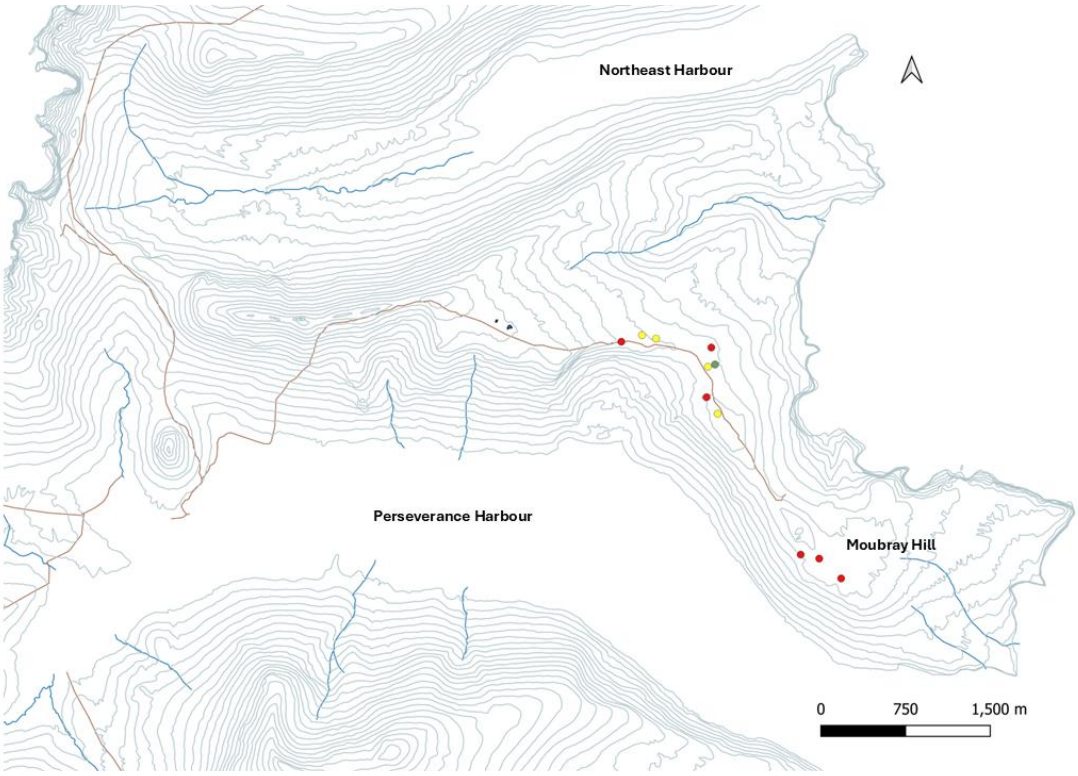

Fig. 18. Map showing locations of Antipodean albatross found on Campbell Island in 2025/26. Red indicates locations where non-breeders were present (n = 6), yellow indicates nests with an egg (n = 4), and green indicates the nearly fledged chick (n = 1).

Table 7. Antipodean albatross data collected on Campbell Island during 2025/26. 'Band' indicates a bird previously banded, 'new band' indicates a newly banded or rebanded bird (on the right tarsus), 'darvic band (green)' indicates the colour band used on the left tarsus. 'Age' refers to the age of the bird when seen. See Appendix Fig. A2 for details on culmen length and culmen tip bill depth measurements.

Date	Band	Original band date	New band	Darvic band (green)	Culmen length (mm)	Culmen tip bill depth (mm)	Age	Sex
5-Jan-26	R-65579	5-Jan-25 (ad)	-	363	-	-	Adult	M
5-Jan-26	-	-	unbanded	-	-	-	Chick	unk
2-Jan-26	R-65458	5-Jan-24 (ad)	-	377	-	-	Adult	M
3-Jan-26	R-65457	4-Jan-24 (ad)	-	376	-	-	Adult	M
4-Jan-26	R-65576	4-Jan-25 (ad)	-	364	-	-	Adult	M
4-Jan-26	R-65455	4-Jan-24 (ad)	-	374	-	-	Adult	M
1-Feb-26	-	-	R-65175	348	151.0	43.0	Adult	M
1-Feb-26	-	-	R-65176	349	-	-	Adult	F
1-Feb-26	-	-	R-65178	350	142.1	36.2	Adult	F
1-Feb-26	-	-	R-65179	351	-	-	Adult	F
1-Feb-26	-	-	unbanded	-	-	-	Adult	M
1-Feb-26	-	-	unbanded	-	-	-	Adult	F
1-Feb-26	R-65453	1-Jan-24 (ad)	-	372	-	-	Adult	M
1-Feb-26	-	-	R-65180	352	156.7	43.9	Adult	M

Northern giant petrel (Objective 5a-b)

A total of 102 chicks were found (Fig. 26). Thorough searches were done across the island, using Rexer-Huber et al. (2020) and Wiltshire & Scofield (2000) as guidance (Fig. 19, 20). Giant petrels were also noted if found in any of the southern royal albatross plots and while traveling. Adults were usually present when there was more than one chick in an area, and occasionally there were adults in areas where there were no chicks present. All areas which were searched by Rexer-Huber et al. (2020) were completed this year, and most of the areas done by Wiltshire & Scofield (2000) were also covered. The main exception was the area around Shag Point was not searched this season.

Wiltshire & Scofield (2000) counted failed nests during their survey in 1996/97; however, failed nests were not counted during the surveys in 2019/20 and 2025/26. Following the method used by Rexer-Huber et al. (2020) to correct for nesting failures which occurred prior to our count, we used the breeding success estimate from Macquarie Island (average 63.8%, with a range of 55.7% to 69.8% over ten years 2004-14). The breeding population for Campbell Island in 2025/26 is therefore estimated to be at least 160 breeding pairs (range 146-183). The corrected estimate in 2019/20 was 144 pairs, and the total estimate (including counted failed nests) for 1996/97 was 234 pairs. However, the number of nests (*n* = 26) counted in 1996/97 in areas that were not surveyed this season represents 11.1% of the overall population (26/234), which results in 88.9% coverage of the whole island in 2025/26. Extrapolation of the corrected 160 nests counted this year across the entire island is therefore 180 nests. Since Shag Point, Erebus Point, and Northeast Harbour were not surveyed during 2019/20, the survey covered 71.8% of the island, resulting in an extrapolated nest count of 201 (Table 8).

Table 8. Counts of northern giant petrel nests conducted during 1996/97, 2019/20, and 2025/26 on Campbell Island. See Wiltshire & Scofield (2000) and Rexer-Huber et al. (2020) for additional details for the 1996/97 and 2019/20 surveys. Total nests for 1996/97 include counted failed nests (*n* = 52 failed nests).

Season	Total nests counted	Corrected nest count	Comparable areas: all survey years
1996/97	234	-	234
2019/20	92	144	201
2025/26	102	160	180

Corrected nest count refers to adjustments made for breeding failures prior to counts in 2019 and 2025. ‘Comparable areas: all survey years’ refers to counts after extrapolation of the 2019 and 2025 counts based on survey areas covered compared to what was completed in 1996. For 2019, 71.8% of the island was covered, and for 2025, 88.9% of the island was covered.

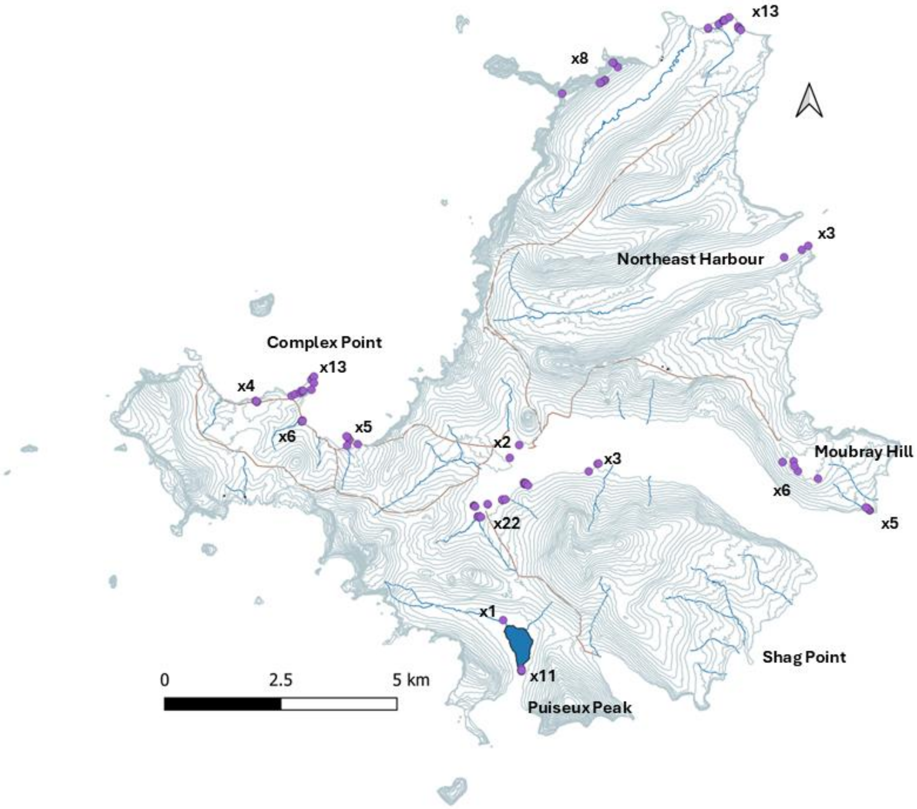

Fig. 19. Map showing locations of northern giant petrel chicks (n = 103) found on Campbell Island in 2025/26. Numbers indicate the number of chicks in clusters.

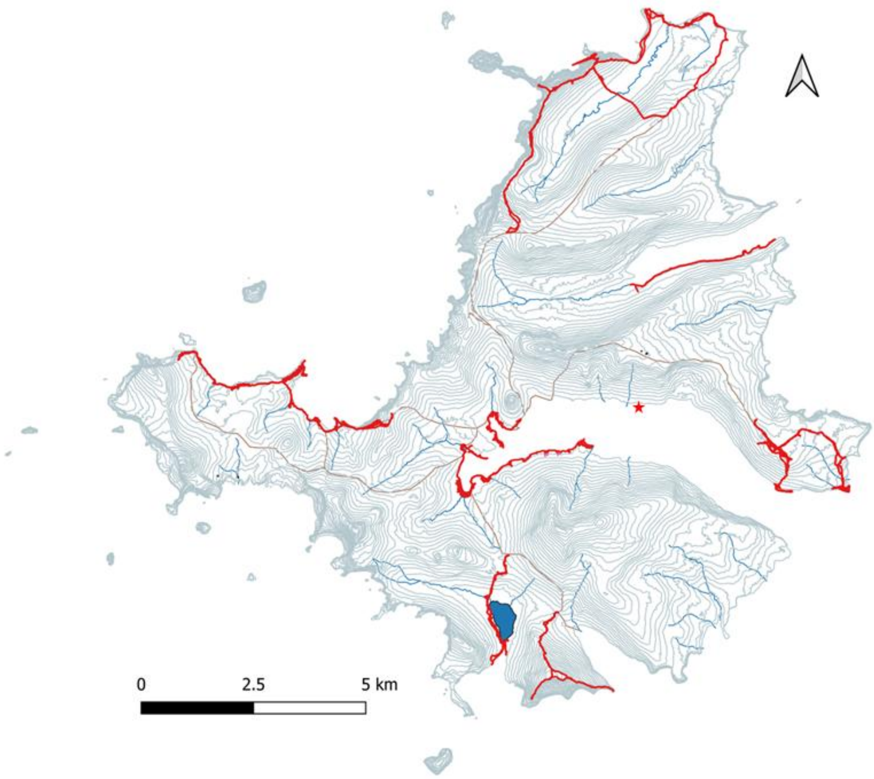

Fig. 20. Map showing searches completed for northern giant petrel chicks on Campbell Island in 2025/26. Note that De La Vire Point was also surveyed (indicated by the red star) but no GPS tracks are available.

White-chinned petrel (Objective 6a)

Several burrows were opportunistically located while traveling across the island or surveying albatross and giant petrels (Fig 21). The burrow network which was noted in gullies above the cliffs on the Paris-Yvon Villarceau coast in 2024/25 and previously (K. Rexer-Huber, pers. comm.; Rexer-Huber et al. 2020) was still active. Two new confirmed sites included one within the Col study area, and one on the west side of Complex Point. Burrow numbers are very conservative estimates as time did not allow thorough searches of larger areas to be done. Other locations (between Yvon Villarceau Peak and Mt Paris, and near Puiseux Peak) were noted to have large wet burrows present but they were not confirmed to be white-chinned petrels. Insights provided here will offer the starting point for any dedicated surveys in the future.

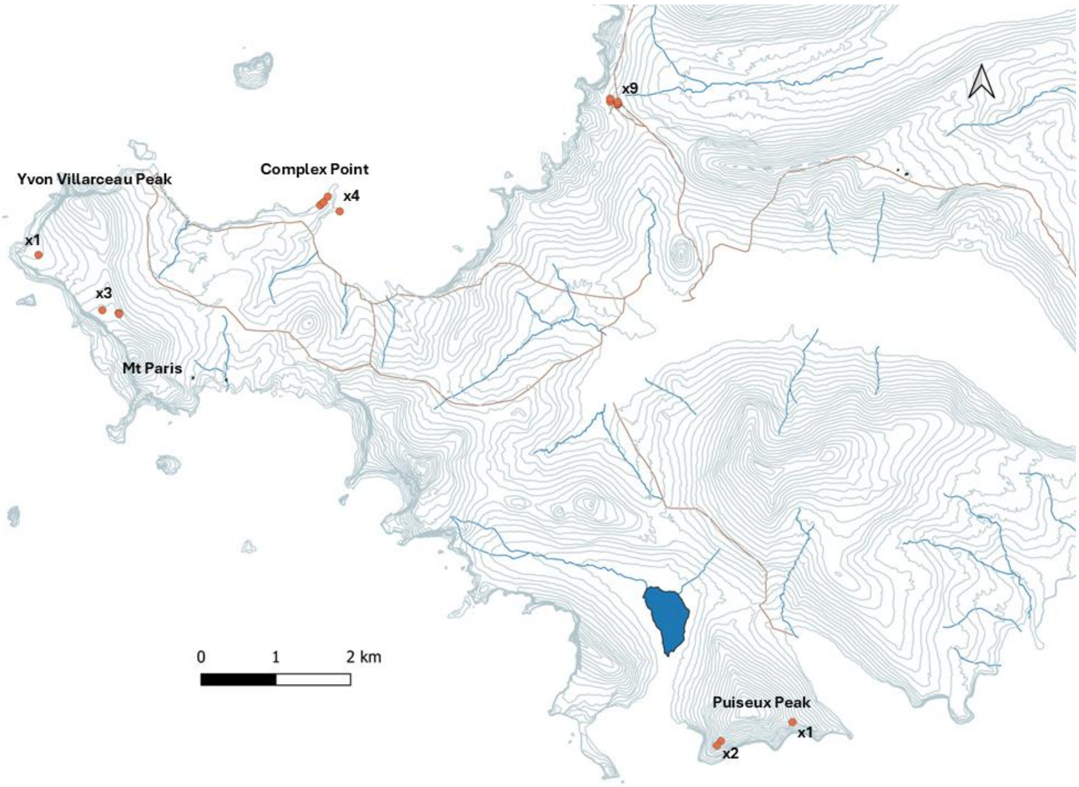

Fig. 21. Map showing locations of white-chinned petrel burrows opportunistically found on Campbell Island in 2025/26. Numbers are indicative of the number of burrows in a cluster but are a very conservative estimate.

Other opportunistic observations and tasks

Plastics and fishing equipment were opportunistically collected as seen while working and traveling across the island. This was done because plastic ingestion presents a problem for albatross species elsewhere around the world (Provencher et al. 2019, Phillips & Waluda 2020). Moore et al. (2012), Mischler (2020), and Mischler et al. (2024) found small quantities of plastic in regurgitates on Campbell Island. The amount of plastic and fishing equipment which was collected is of great concern (Fig. 22).

a)

b)

Fig. 22. Photos showing opportunistic collections of a) plastic pieces and b) fishing equipment while working and traveling on Campbell Island. All items were presumed to be from southern royal albatross since most were found amongst regurgitated material near nests.

Sampling for HPAI (highly pathogenic avian influenza) was also conducted. This was done opportunistically as the targeted species were found. Twelve grey-headed albatross (of which four were non-breeders), seven breeding Campbell albatross, five non-breeding southern royal albatross, six northern giant petrel chicks, and seven skua chicks were sampled.

Discussion

Nest numbers of southern royal albatrosses had been increasing overall during the 20th century, probably recovering from depredations and habitat destruction during the 1895-1931 farming era on Campbell Island (Guthrie-Smith 1936, Moore et al. 2012). The first coarse island-wide survey found 2278 nests in 1957/58 (Westerskov 1963), numbers fluctuating from 3216-5336 through the 1960s-1980s (Moore et al. 1997 and references therein) to 6308-7787 in 1994/95 and 1995/96. Early counts were probably underestimates due to the effort and methodology not being standardized. The last comprehensive population survey of southern royal albatross on Campbell Island was conducted between 2004/05-2008/09 with a composite count of 7855 nests representing 8300-8700 nests once survey accuracy and nest failure was taken into account (Moore et al. 2012). It was suggested from the island-wide counts that there had been a levelling in the population since the 2000s estimate was similar to 1995/96 (Moore et al. 1997, 2012). However, in areas where counts of comparable effort were made, one study area had remained stable (Col), and the second study area (Moubray) and three index areas (Faye, Paris, Honey) had all declined by 4-17% (Moore et al. 2012). A nest count done in March 2020 of the Col study area indicated the possibility of a more severe decline (Mischler 2020). The actual March 2020 count for Col was 104 nests, and this was adjusted to a January estimate of 141 nests based on expected nest failure by March, compared to an average nest number of 197 at Col between 2004/05-2008/09 (Mischler 2020). Another count of Col was attempted in February 2023; however, the short duration of the trip did not allow for a full count (Mischler & Wickes 2023). Overlaying of the track surveyed in 2023 and comparing it to nest locations in Col in 2020 and 2004/05-08/09 showed similar nest numbers to 2020 thereby continuing to support the suspected dramatic decline (Mischler & Wickes 2023). Since southern royal albatross are biennial breeders, it was alarming that both cohorts appeared to be undergoing the same decline (as 2019/20 represented one cohort and 2022/23 another). To fully understand the population trend across Campbell Island, it was highly critical that the other four survey areas be counted. Our results from 2023/24 to 2025/26 confirm the ongoing decline of the species across all of Campbell Island. However, it is now becoming apparent that numbers appear to be stabilising which highlights the complexity associated with this species.

The decrease in southern royal albatross nest numbers since the 1990s and 2004/05-08/09 until now across all of Campbell Island is very concerning. Repeating the nest counts across all five areas continues to be important to capture cohort of breeders in this biennial breeding species while taking into account annual variation. As discussed in Mischler (2020), the decline could be indicative of a decline in breeders, changes in breeding frequency, or low juvenile recruitment. Albatross are highly vulnerable to bycatch in fisheries, at-sea threats, and changes in food supply due to climatic conditions (Cleeland et al. 2021, Patrick et al. 2020). Southern royal albatross feed on the southern and south-eastern shelf breaks of the Campell Plateau and an area south of the Snares Island along an inner shelf break where they may overlap with fishing activities (Waugh et al. 2002, Jiménez et al. 2014). In the most recent update to the risk assessment from commercial fisheries, southern royal albatross have moved up in risk and are now the 12th species at risk from New Zealand fisheries (Edwards et al. 2023). The highest risk fishery group is ‘Small SLL (tuna and Swordfish)’, followed by ‘Squid’ and ‘Large freezer’ which equates to the highest threats stemming from surface longline and trawl fishing within the New Zealand EEZ (Edwards et al. 2023).

Outside of New Zealand, shelf breaks and deep oceanic waters are the preferred feeding grounds for southern royal albatross (Moore & Bettany 2005). Young birds (2-3 years old) and non-breeders use areas near Chile and the Patagonia Shelf, with older birds (4+ years) traveling back to New Zealand via Australia (Moore & Bettany 2005). All ages are vulnerable to bycatch in pelagic longliners and trawlers in the southwest Atlantic, an area of intense fishing effort. Females are more likely to be caught in subtropical regions and males at subpolar regions due to sexual segregation at sea (Jiménez et al. 2014). Tracking captured by GLS data from several years will build on these initial coarse insights and provide useful, updated information in determining overlap with fisheries within and outside of New Zealand and further identify potential threats.

As discussed in Mischler (2020), two related *Diomedea* species, the Antipodean and Gibson’s (*D. antipodensis gibsoni*) albatross, have undergone severe population declines since 2006. High adult mortality, reduced breeding success, and increased recruitment age are attributed to the decline (Elliott & Walker 2019). Antipodean and Gibson’s albatross feed primarily over deep oceanic waters and deep shelf slopes as opposed to southern royal albatross which feed over shallow shelf slopes and breaks and occasionally deep oceanic waters (Walker et al. 1995, Nicholls et al. 2002). For the southern royal albatross, it is also not possible to specifically determine when the decline started due to a large gap in nest counts between 2008/09 and 2019/20, yet the similarity in the pattern of decline between Antipodean and Gibson’s Albatross and southern royal albatross remains. Re-establishing a banded population for mark-recapture studies and using the remote cameras to gather breeding success data as has been done in the current study over the past three seasons will continue to provide insight into mortality, recruitment, and overall breeding success thereby improving the overall understanding of the dynamics of the population.

Both Campbell and grey-headed albatross populations at Campbell Island have decreased over time (Waugh et al. 1999; Moore 2004; Rexer-Huber et al. 2020; Frost 2019). Grey-headed albatross numbers underwent a long-term decrease between the 1940s to 1997 attributed to change in food conditions due to rising sea-surface temperatures or fisheries bycatch in international waters (Waugh et al. 1999; Moore 2004; Rexer-Huber et al. 2020). Campbell albatross have undergone varying trends between 1940s to 1997, but saw a decline between the 1990s and 2006-12 (Sagar 2014). Frost (2019) suggested that Campbell albatross were relatively stable since the 1990s but 20-30% below the numbers in the 1940s and 1960s. For grey-headed albatross, Moore (2004) had suggested that the population decreased by 82-88% over 55 years (1940s to 1997) in some colonies, but Sagar (2014) suggested that the declines stopped and that there was an increase in breeding pairs from 1990s to 2006-12. Frost (2019) suggested a 18-25% decline over the past 25 years. The ongoing percent declines of Campbell and grey-headed albatross highlighted by this study is a real concern, but data collected over the past three seasons highlights the complexity associated with population counts by showing high annual variability.

For grey-headed albatross breeding at South Georgia, there was an annual rate of decline of 5% and an overall decline of 43% between 2003 and 2014 (Poncet et al. 2017). Numbers appeared stable at Diego Ramirez between 2002 and 2011 (Robertson et al. 2014) but increased by 1.3% per year from 1984 to 2021 at Marion Island with the potential increase dating back to the 1970s (Stevens et al. 2024). The decline at the South Georgia populations was attributed to fisheries bycatch threat during the non-breeding season while foraging at oceanic frontal zones (Poncet et al. 2017). It is not possible to compare Campbell albatross to other areas because they only breed on Campbell Island, but for the closely related black-browed albatross (*Thalassarche melanophris*), the overall decline was 19% and 1.9% annually at South Georgia, which also attributed to fisheries bycatch (Poncet et al. 2017). Within New Zealand, both Campbell and grey-headed albatrosses rank as a low risk from fishing bycatch within the New Zealand EEZ, with the former most commonly caught in "small SLL (tuna and swordfish)" and "large freezer" (trawl), while no clear patterns exist for the latter (Edwards et al. 2023). Both species are likely caught in higher numbers in international waters, yet it should be noted that the population estimates provided here are substantially lower than the numbers used in the most recent risk assessment, potentially elevating the risk of both species in future risk assessment iterations.

It is important to highlight that photo point counts are challenging as there are many sources of error and bias. These include but are not limited to different timings of surveys in relation to the breeding cycle of the birds, variation in interpretation of each bird's activity, camera type, etc (Moore & Blezard 1999, Moore 2004, Frost 2019). One of the key points here is the timing of the photographs. Nests are nearly fully occupied in October when laying is complete, and the colonies remain busy in November as failed breeders continue to sit tightly on failed nests (G. Taylor, pers. comm.). Occupancy in colonies begins to decline in December when failed breeders have finished with pair bonding behaviour before departing to sea, or they may be replaced by pre-breeders that sporadically visit the colony (G. Taylor, pers. comm.). With surveys completed in early December, the colonies will have started to appear less populated than would have been the case in October or November. To mitigate this issue, the coefficient calculation was applied to present a more accurate number of breeding birds. It is, however, breeding success used to determine the coefficient calculations may have been vastly different from the breeding success in any given year and may therefore not be truly representative of nest numbers. Nest success data from the time lapse cameras may mitigate this shortcoming in the future. Ideally photo point counts should be completed as close to the mid-October period as possible (Moore 2004, Sagar 2014).

We also provide updated population estimates for northern giant petrels on Campbell Island. Breeding site shifting by northern giant petrels is well known and makes surveys challenging. For example, there were more chicks present in all areas searched this year compared to 2019 except for Six Foot Lake with shifts within each area. The habitat used by giant petrels is also very variable from tussock to open areas to underneath *Dracophyllum*. It is also known that northern giant petrels do not breed every year and therefore surveys completed over several seasons is highly important. Overall, numbers between the three surveys may be indicative of a slight decline; however, more counts are required due to the challenges associated with counting this species. In contrast to the Campbell Island population numbers, there has been a potential expansion in recent years noted in the Auckland Island and Macquarie Island populations (Alderman et al. 2019, Parker et al. 2020).

Recommendations

- Continue the capture-mark-recapture work annually for the southern royal albatross for at least two more years to enable estimates of survival and better understand the drivers of the population decline.
- Repeat the count efforts for southern royal, Campbell, and grey-headed albatross to account for annual variability.
- Deploy tracking devices on southern royal albatrosses breeding in the Paris index area. This area is experiencing the largest decline in nest numbers and it would therefore be helpful to determine if they forage in different areas than the birds at Col.
- Deploy tracking devices on grey-headed and Campbell albatross to better understand what is causing the population declines.
- Re-start the capture-mark-recapture banding study on Campbell and grey-headed albatross to understand the drivers of the population declines.
- For the mollymawk photo points, it is essential to take at least one overview photo of the colonies and then numerous zoomed in photos of individual sections to allow for clearer and more precise counts than when using distant photos.
- Repeat the survey conducted for northern giant petrels for at least two more years following methods used by Rexer-Huber et al. (2020). This would take approximately 5-7 days.
- Fly a drone over the Moubray Index area to find and count all the Antipodean albatross nests. This would also help with southern royal albatross counts.

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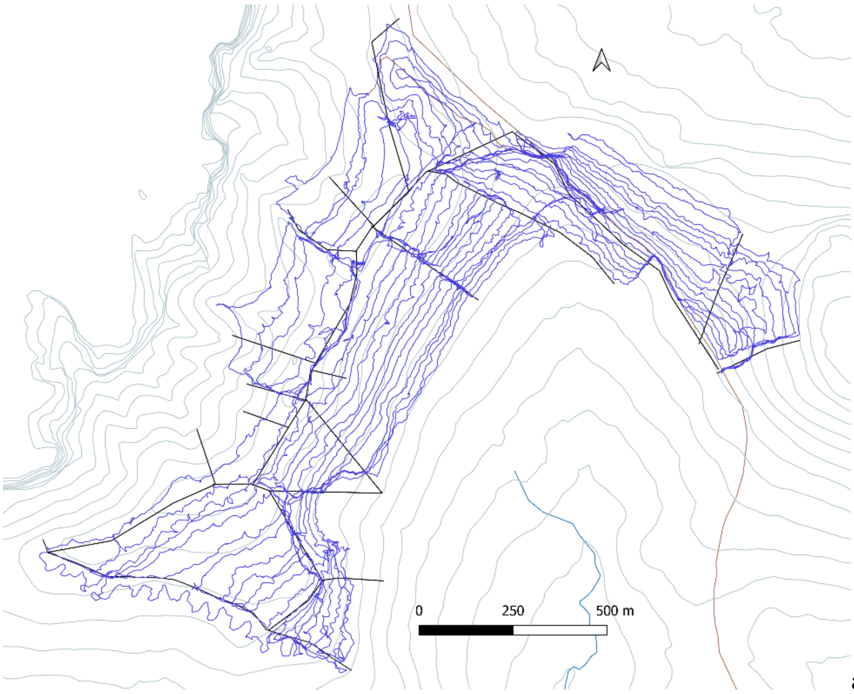
Appendix



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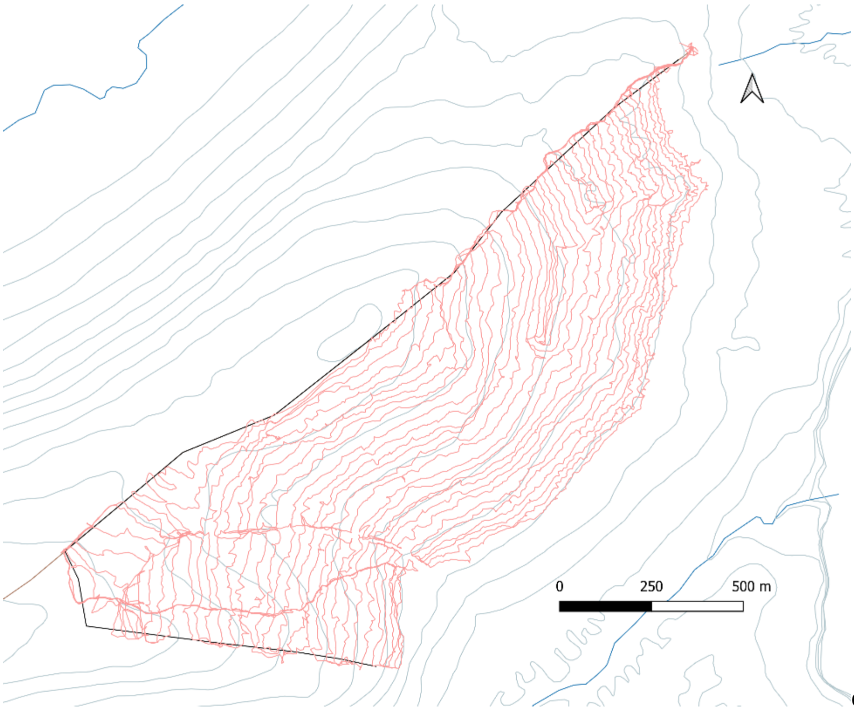

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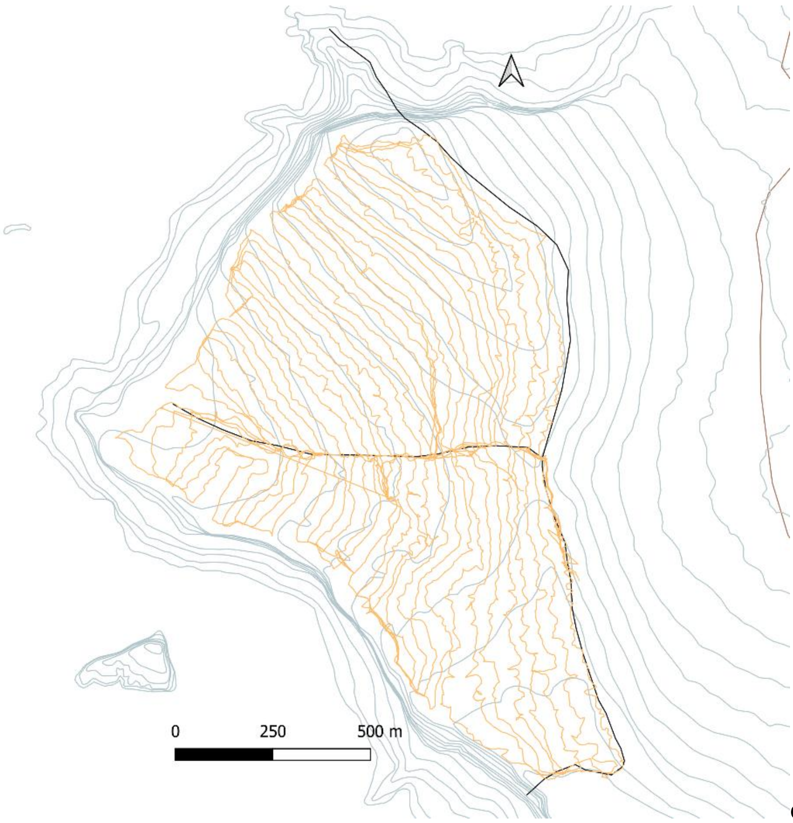

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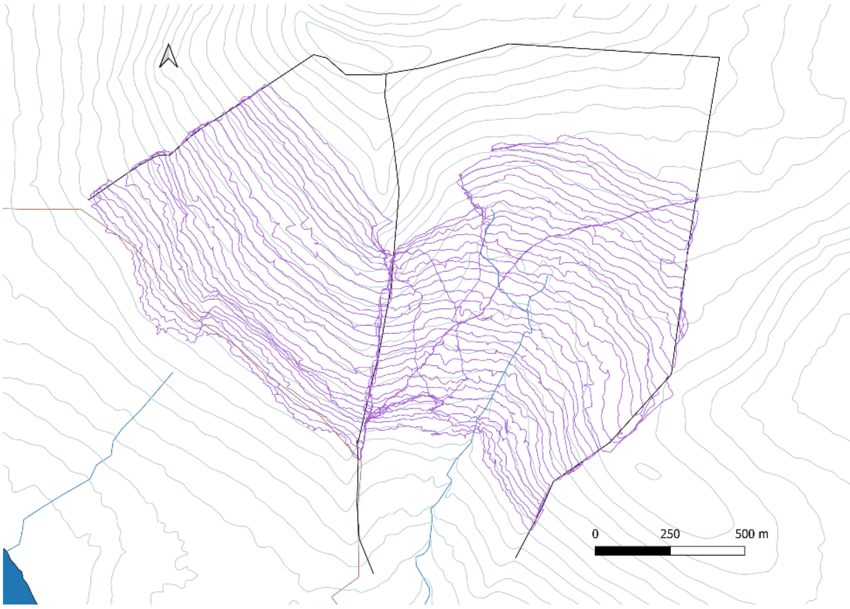

e)

Fig. A1. Enlarged map showing tracks walked by three observers while searching for southern royal albatross nests on Campbell Island in a) Col study area, b) Moubray study area, c) Faye index area, d) Paris index area, and e) Honey index area. Note that there are tracks missing in the Col and Moubray study areas due to GPS malfunction.

Table A1. Banding information, history, and partner data of previously banded (pre-2023/24) southern royal albatross on Campbell Island. Under ‘Breeding & banding history’, BS - bred successfully, BF - bred but failed, BU - bred with unknown outcome, UB – unbanded bird, UNK – unknown partner. Bold is indicative of birds not seen during 2023/24 and 2024/25.

Current Band	Previous mark	Date seen	Site	Sex	Original band date	Age at first mark	Band age	Breeding & banding history
R-65170	R-62274	25/01/2026	Col	Female	13/01/1999	Adult	27	BU 1999, BS 2005, 2007, BU 2009 with RA-2181, BU 2026 with RC-0234
R-62158		07/01/2026	Col	Female	07/01/2005	Adult	21	BF 2005, 2006, BS 2007, BU 2009 with RA-2429, BU 2024, 2026 with RC-0252
R-62468		23/01/2026	Col	Female	07/01/1998	Adult	28	BS 1998 with R-43883, BS 2006, 2008 with RA-2706, BU 2026 with RC-0428
RC-0447	RA-2562	23/01/2026	Col	Male	21/01/1998	Adult	28	BF 1998, BU 1999 with RA-0255, BS 2006 with R-62574, BU 2026 with RC-0420
R-62213		10/01/2026	Col	Female	13/01/1995	Adult	31	BF 1995, BS 1996, 1998, 2005, 2007, BU 2009 with RA-2229, BU 2026 with RC-0100
R-62302		10/12/2024	Col	Female	25/01/2005	Adult	21	BF 2005, BS 2007, BU 2009 with RA-2263, BF 2024, 2025, BU 2026 with RC-0275
R-62133		27/12/2025	Col	Female	4/01/2005	Adult	21	BS in 2005, 2007, BU 2009 with RA-2248, BU 2025, 2026 with RC-0360
R-62921		14/01/2026	Col	Female	30/09/1996	Chick	30	BU 2009 with UB, BU 2024, 2026 with RC-0225
R-62851		10/01/2026	Col	Female	30/09/1996	Chick	30	BF 2008, BU 2009 with R-49052, BU 2024, 2026 with RC-0208
R-62242		28/12/2025	Col	Female	07/01/2005	Adult	21	BS 2005, 2007, BU 2009 with RA-2283, BU 2024 with UNK, BU 2026 with RC-0092
R-62249		23/01/2026	Col	Female	07/01/2005	Adult	21	BS 2005, BF 2007, BS 2008 with RA-2285, BU 2026 with RC-0274

Table A2. Summary of new bands and band sightings of various species on Campbell Island during the 2025/26 season. Letters in second row refer to metal leg band size.

Species	Resight without new primary mark*				Resight plus new primary mark*#		First primary mark*			Total
	M	R	RC	RO	RA	R	M	R	RC	
Antipodean albatross		6						5		11
Campbell albatross	62						7			69
Grey-headed albatross	28						40			68
Southern royal albatross		92	71	15	1	1		48	54	282
Total	90	98	71	15	1	1	47	53	54	430

*for southern royal albatross, generally a secondary mark (alpha numeric coloured darvic band) was added.
#new primary mark was an R or RC band.

Table A3. Raw counts done from Campbell and grey-headed albatross photo points as described above in the Methods section. 'Sitting' – birds assumed to be sitting on an egg/chick, 'loafing' – birds assumed to be sitting on an empty nest or birds not sitting on a nest, ' undefined' – unable to determine if sitting or loafing.

Ground level – Hooker's Peninsula	Campbell Mollymawk			Grey-headed Mollymawk		
Colony	sitting	loafing	undefined	sitting	loafing	undefined
1	207	213		55	38	
2a, d	0	0		30	37	
2c, d	0	1		9	11	
3b-e	26	28		39	20	
3a-e	27	28		60	31	
4a, c	0	0		6	2	
5	-	-		-	-	

Ground level	Campbell Mollymawk			Grey-headed Mollymawk		
Colony	sitting	loafing	undefined	sitting	loafing	undefined
Courrejolles Isthmus	208	136	3	111	24	
JDK	70	36		24	12	

Ground level – Hooker's Finger	Campbell Mollymawk			Grey-headed Mollymawk		
Colony	sitting	loafing	undefined	sitting	loafing	undefined
2	100	86	4	125	64	0
2	127	39	34	216	54	18
3	-	-	-	-	-	-
3	236	126	7	122	56	11
5	379	328	13	35	15	3
6	209	152	23	107	70	4

Ground level – Bull Rock North	Campbell Mollymawk			Grey-headed Mollymawk		
Colony	sitting	loafing	undefined	sitting	loafing	undefined
1a	0	1	0	4	1	0
1b	24	5	4	3	2	0
1c	-	-	-	-	-	-
2	24	22	4	8	4	0
3	86	69	6	0	0	0

4	211	106	10	0	0	0
5	217	190	22	0	0	0
5a	38	17	2	0	0	0
6	136	51	16	9	1	0
7	236	169	17	0	0	0
8	180	116	19	17	1	0
9	66	43	0	0	0	0
10a	59	43	2	0	0	0
10b	54	63	3	0	0	0
11	226	128	10	11	4	0
12	483	258	18	76	20	2
13	465	171	30	47	7	2
13a	25	30	13	1	0	0
14	40	31	1	7	5	0
15	74	30	9	55	19	6
16	9	9	4	2	4	3
17	-	-	-	-	-	-
18	-	-	-	-	-	-

Ground level – Bull Rock South	Campbell Mollymawk			Grey-headed Mollymawk		
Colony	sitting	loafing	undefined	sitting	loafing	undefined
1	9	38	5	1	0	0
1a	10	17	6	0	0	0
2	33	17	17	3	1	2
3-4	343	84	206	22	7	5
5a	147	39	38	17	4	0
5b	241	86	110	0	0	0
6	91	76	52	1	0	0
7	6	1	0	0	0	0
9	86	179	72	0	0	0
10	-	-	-	-	-	-
11	131	143	59	0	0	0
12	118	62	126	0	0	0
13	46	56	57	1	0	0
14	191	130	96	0	0	2
15	49	13	52	0	0	0
16	96	56	84	0	0	0
17	40	13	61	0	0	0
18	50	60	46	0	0	0
19	77	20	47	2	1	0
21a	250	139	203	2	1	0
21b	257	172	47	11	4	2
22	136	48	66	20	8	3
bbt	78	15	10	0	0	0
SS, a-c	41	33	61	0	0	0
d	66	35	72	5	3	4
GH-2	23	7	8	6	0	0

Table A4. Banding information for Campbell and grey-headed albatross resighted at Bull Rock South on Campbell Island during 2025/26. For sex, M = male, F = female.

Band Prefix	Number	Species	Sex	Date banded	Age at banding	Date seen	Breeding stage
O	23220	Campbell		10 Apr 1979	chick	19-Dec-25	unknown
M	29181	Grey-headed	M			19-Dec-25	chick
M	37101	Grey-headed	M			20-Dec-25	chick
M	41670	Campbell	M	29 Mar 1984	chick	19-Dec-25	chick
M	45172	Grey-headed		19 Apr 1985	chick	21-Dec-25	dead chick
M	46016	Campbell	F	30 Mar 1987	chick	19-Dec-25	chick
M	48287	Grey-headed	M	31 Mar 1988	chick	20-Dec-25	chick
M	48387	Grey-headed	M	28 Mar 1990	chick	21-Dec-25	chick
M	48632	Campbell		15 Nov 1991	adult	19-Dec-25	non-breeder
M	48827	Campbell		24 Mar 1992	chick	19-Dec-25	unknown
M	49383	Grey-headed		26 Apr 1992	chick	21-Dec-25	chick
M	49656	Grey-headed	F	15 Apr 1993	chick	21-Dec-25	chick
M	49759	Grey-headed	F	22 Dec 1993	adult	21-Dec-25	chick
M	49981	Campbell		15 Mar 1994	chick	19-Dec-25	chick
M	50058	Campbell		16 Mar 1994	chick	19-Dec-25	chick
M	58184	Campbell	F	16 Mar 1994	chick	19-Dec-25	chick
M	58433	Campbell		17 Mar 1994	chick	22-Dec-25	chick
M	58587	Grey-headed		5 May 1994	chick	21-Dec-25	chick
M	61230	Campbell	M	14 Mar 1995	chick	19-Dec-25	chick
M	61287	Campbell	M	14 Mar 1995	chick	18-Dec-25	chick
M	61296	Campbell		14 Mar 1995	chick	19-Dec-25	chick
M	61670	Grey-headed		20 Apr 1995	chick	21-Dec-25	non-breeder
M	61679	Grey-headed		20 Apr 1995	chick	21-Dec-25	chick
M	61719	Grey-headed	M	20 Apr 1995	chick	21-Dec-25	chick
M	61757	Grey-headed	F	20 Apr 1995	chick	20-Dec-25	chick
M	64260	Campbell	F	12 Feb 1997	chick	19-Dec-25	chick
M	64686	Campbell		6 Feb 1996	chick	19-Dec-25	chick
M	64698	Campbell		6 Feb 1996	chick	19-Dec-25	chick
M	65704	Campbell		20 Feb 1997	chick	19-Dec-25	unknown
M	66172	Campbell		15 Feb 1997	chick	18-Dec-25	chick
M	82582	Campbell	M	25 Oct 2010	adult	18-Dec-25	chick
M	87655	Campbel		14 Dec 2024	adult	19-Dec-25	chick
M	87656	Campbell	M	14 Dec 2024	adult	19-Dec-25	chick
M	89104	Campbell	F	15 Oct 2011	adult	19-Dec-25	chick
M	89117	Campbell	M	15 Oct 2011	adult	19-Dec-25	chick
M	89130	Campbell		15 Oct 2011	adult	19-Dec-25	chick
M	89136	Campbell		15 Oct 2011	adult	19-Dec-25	egg
M	89351	Campbell		15 Oct 2012	adult	19-Dec-25	non-breeder
M	89354	Campbell		15 Oct 2012	adult	19-Dec-25	chick
M	89366	Grey-headed	F	15 Oct 2012	adult	21-Dec-25	chick
M	89367	Grey-headed		15 Oct 2012	adult	21-Dec-25	chick
M	89374	Campbell	F	15 Oct 2012	adult	19-Dec-25	chick

M	89378	Campbell		15 Oct 2012	adult	19-Dec-25	non-breeder
M	89380	Campbell		15 Oct 2012	adult	19-Dec-25	non-breeder
M	89385	Campbell		15 Oct 2012	adult	22-Dec-25	chick
M	89400	Campbell		15 Oct 2012	adult	22-Dec-25	non-breeder
M	89434	Grey-headed	F	20 Dec 2010	adult	20-Dec-25	chick
M	89438	Grey-headed		21 Dec 2010	adult	21-Dec-25	non-breeder
M	89480	Campbell	M	10 Nov 2013	adult	18-Dec-25	chick
M	89489	Campbell	F	10 Nov 2013	adult	19-Dec-25	chick
M	89500	Campbell	F	10 Nov 2013	adult	19-Dec-25	chick
M	89525	Campbell		10 Nov 2013	adult	18-Dec-25	chick
M	89542	Campbell		10 Nov 2013	adult	19-Dec-25	non-breeder
M	89558	Campbell		15 Oct 2012	adult	22-Dec-25	chick
M	89577	Grey-headed		15 Oct 2012	adult	19-Dec-25	chick
M	89593	Grey-headed	F	15 Oct 2012	adult	20-Dec-25	chick
M	89600	Campbell	M	15 Oct 2012	adult	19-Dec-25	chick
M	90128	Campbell		22 Oct 2009	adult	18-Dec-25	egg
M	90132	Campbell		22 Oct 2009	adult	19-Dec-25	chick
M	90134	Campbell	F	22 Oct 2009	adult	19-Dec-25	chick
M	90135	Campbell		22 Oct 2009	adult	19-Dec-25	non-breeder
M	90140	Campbell	F	22 Oct 2009	adult	19-Dec-25	chick
M	90154	Campbell	F	22 Oct 2009	adult	18-Dec-25	chick
M	90181	Grey-headed	F	23 Oct 2009	adult	20-Dec-25	chick
M	90182	Grey-headed		23 Oct 2009	adult	20-Dec-25	chick
M	90188	Campbell		23 Oct 2009	adult	19-Dec-25	non-breeder
M	90196	Campbell		23 Oct 2009	adult	19-Dec-25	chick
M	90304	Campbell	F	29 Oct 2009	adult	18-Dec-25	chick
M	90309	Campbell	F	29 Oct 2009	adult	19-Dec-25	chick
M	90312	Campbell	M	29 Oct 2009	adult	19-Dec-25	chick
M	90325	Grey-headed		22 Oct 2010	adult	20-Dec-25	chick
M	90334	Campbell		26 Oct 2010	adult	19-Dec-25	chick
M	90339	Grey-headed	M	28 Oct 2010	adult	20-Dec-25	chick
M	90359	Campbell	M	11 Nov 2010	adult	19-Dec-25	chick
M	90362	Campbell	M	11 Nov 2010	adult	19-Dec-25	chick
M	90365	Campbell		11 Nov 2010	adult	18-Dec-25	chick
M	90373	Campbell		28 Nov 2010	adult	19-Dec-25	chick
M	90385	Campbell		28 Nov 2010	adult	19-Dec-25	chick
M	90416	Campbell		26 Dec 2010	adult	19-Dec-25	chick
M	90417	Grey-headed		26 Dec 2010	adult	21-Dec-25	egg
M	90441	Grey-headed		30 Oct 2011	adult	20-Dec-25	chick
M	90464	Grey-headed		15 Nov 2011	adult	20-Dec-25	unknown
M	90468	Grey-headed		15 Nov 2011	adult	20-Dec-25	unknown
M	90483	Campbell	M	15 Dec 2011	adult	18-Dec-25	chick
M	90486	Campbell		15 Dec 2011	adult	19-Dec-25	non-breeder
M	90547	Campbell	F	15 Nov 2011	adult	18-Dec-25	chick
M	90558	Campbell		17 Dec 2011	adult	22-Dec-25	chick
M	90563	Grey-headed	M	17 Dec 2011	adult	21-Dec-25	chick
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M	90578	Campbell		15 Oct 2012	adult	18-Dec-25	chick

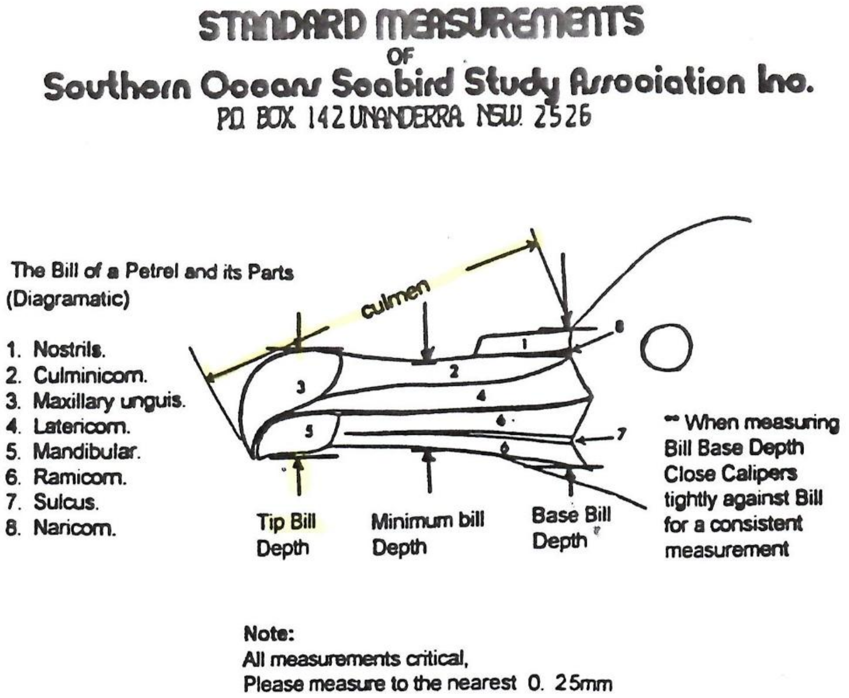

Fig. A2. Image showing standard bill measurements as was used for Antipodean albatross on Campbell Island during 2025/26.

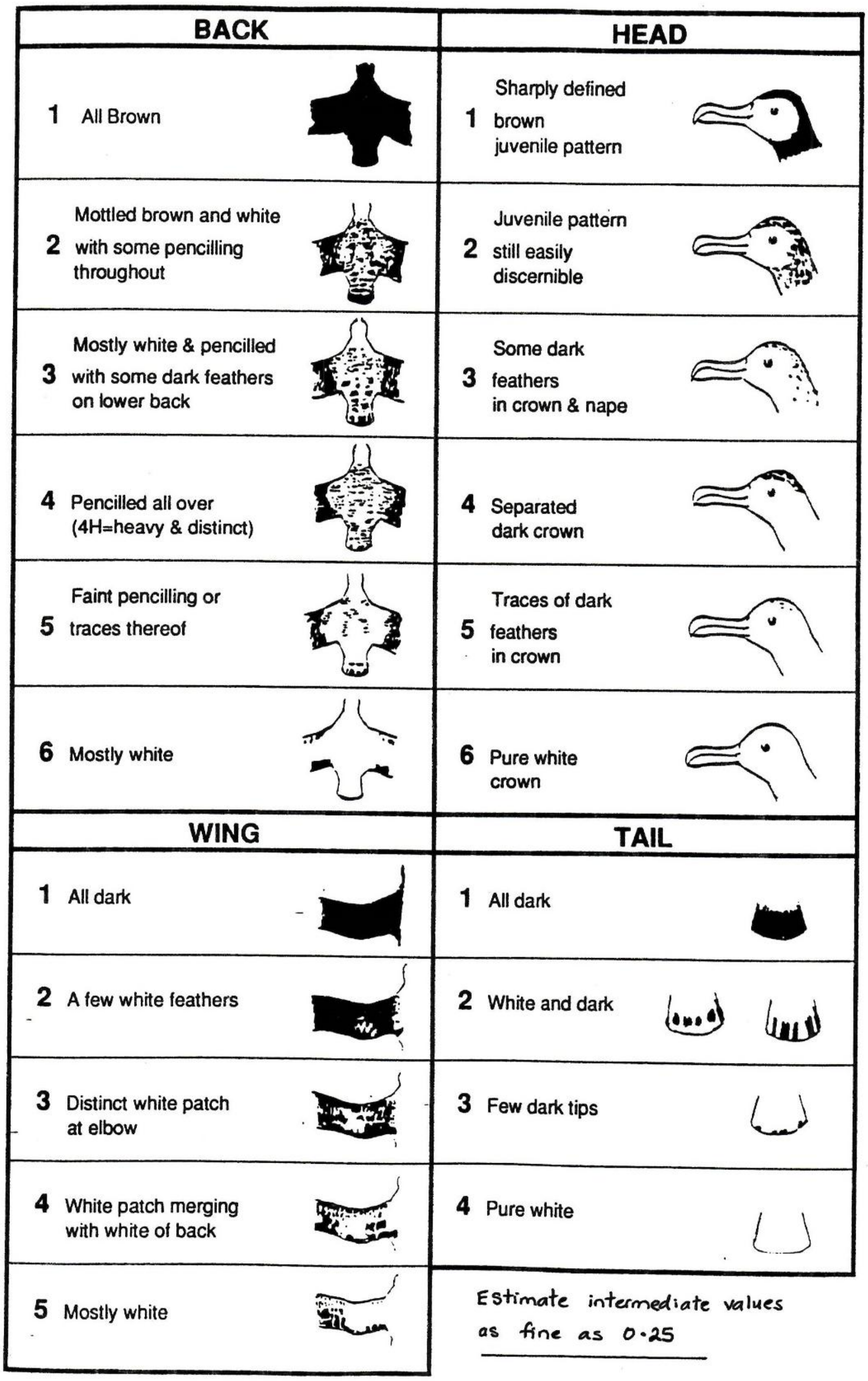

Fig.A.1 Gibson Plumage Index Standard (Gibson Code) for describing *D.exulans* plumage.

Fig. A3. Gibson plumage index standard (Gibson Code) for describing plumage.