

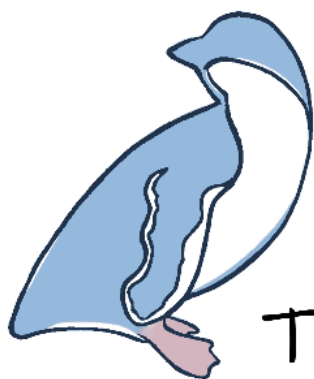


Kororā monitoring and research at Pōhatu/Flea Bay

2025-2026 Annual Report

Prepared by Dr. Rachel Hickcox

14 April 2026



Helps
Pōhatu
Conservation
Trust

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1 Overview

This report summarises the monitoring and research activities conducted at the Pōhatu/Flea Bay kororā/little penguin colony from 1 September 2025 to 31 March 2026. It includes information on the kororā/little penguin monitoring program, research, rehabilitation, predator trapping, and community outreach and education.

2 Permits

94750-FAU Wildlife Authority issued to the **Helps Pōhatu Conservation Trust**, 20 October 2021-29 September 2031 (includes Pōhatu, Motunau Island, and Harris Bay).

96058-FAU Rehabilitation Authority issued to the **Helps Pōhatu Conservation Trust**, 1 November 2021-31 October 2026 (for rehab at the Parthonnaud home).

66810-FAU Rehabilitation Authority issued to the **Pōhatu Penguins/Plunge Ltd.**, 16 August 2018-15 August 2028 (for rehab at Pōhatu).

122500-AIR Drone Permit/Concession issued to the **Helps Pōhatu Conservation Trust**, 1 January 2026-31 December 2028.

103681-FAU Wildlife Authority issued to the **University of Canterbury**, 7 March 2024-6 March 2034.

3 Standard operating procedures

Our 2023 health and safety plan, as well as standard operating procedures for research and monitoring are provided to all trustees, students, researchers and long-term volunteers. Included are all expectations and guidelines that must be followed while on Pōhatu property and within the colony (furnished upon request).

In addition, our Highly Pathogenic Avian Influenza (HPAI) Site Specific Response Plan will be implemented when HPAI arrives in the New Zealand territories. This plan instructs Pōhatu Penguins staff and the Helps Pōhatu Conservation Trust (HPCT) regarding how to manage the little penguin/kororā colony at Pōhatu/Flea Bay during HPAI stages two and three response. This document was sent to all Trustees and Pōhatu Penguins staff and will be reviewed annually to ensure it is up to date.

4 Funding

We thank everyone who adopted a penguin or donated to the Trust, as the ongoing financial support directly funds the projects and season successes outlined in this report. We also acknowledge the ongoing funding provided by Environment Canterbury, the University of Canterbury, the International Antarctic Center, and Pōhatu Penguins/Plunge.

Table 1. Breakdown of activities supported by each funding organisation or grant from 1 April 2025 – 31 March 2026. Some funding numbers are estimates.

Activities/gear	Funding
Helps Pōhatu Conservation Trust, Adopt a Penguin	
Scientist wage	- \$38,058
Trapper wage	- \$11,708
Research assistant one-off payment	- \$2,000
IRD tax/ACC	- \$11,500
Equipment	- \$3,546
Education, events, projects	- \$655
Adopt-a-penguin costs	- \$1,236
Adopt-a-penguin donations	+ \$80,025
Environment Canterbury grant	
Fencing, trapper wages	+ \$36,700
International Antarctic Centre donations	
Boxes of fish	3
Donation (1 Jan – 31 Dec 2025)	+ \$13,662
Moana Mark donation	+ \$5,539
University of Canterbury (in-kind)	
250 transponders	+ \$2,000
Pōhatu Penguins/Plunge	+ \$80,000

Table 2. Financial totals for the Helps Pōhatu Conservation Trust from 1 April 2025 – 31 March 2026. Note these are estimates, particularly for consumables and transport. Total volunteer hours are provided to give an estimate of how much it would cost if volunteers were paid.

	2023	2024	2025
Total consumables	-\$16,351.16	-\$7,936.13	-\$7,294.26
Total wage	-\$55,928.00	-\$56,272.00	-\$50,380.00
Total transport	-\$1,198.80	-\$1,278.72	-\$1,038.96
Total out (consumable + wage + transport)	-\$73,477.96	-\$65,486.85	-\$58,713.22
Total donations	\$104,223.75	\$76,301.00	\$177,885.00
Total grants	\$50,896.32	\$25,000.00	\$36,700.00
Total volunteer hours*\$25	\$13,387.50	\$10,150.00	\$15,791.25
Total in (donations + grants)	\$155,120.07	\$101,301.00	\$214,585.00

5 Pōhatu annual survey

We completed the annual survey of section 7 (**Figure 5.1**) on 16 November. A team of eight (five experienced surveyors and three novices) counted active nests following similar methodology as in previous years. Surveyors used a modified version of the Kobo Toolbox app to record all data on personal smartphones, and their transects were tracked on individual phones using the Geo Tracker app. See Hickcox et al. (2025) for methods.

Table 3 shows section 7 nest counts from all surveys to date. **Figure 5.1** shows a map of active nests and surveyors' tracked paths, comparing 2024 and 2025 data. Note not all surveyors were tracked in 2024. Moreover, some GPS locations had poor accuracy, resulting in some nests appearing in section 3. A small area outside of section 7 was also surveyed, yielding six nests that were removed from the final tally (but shown in **Figure 5.1**).

Despite a decrease of active nests observed during the quadrennial 2024 Pōhatu survey, nesting in section 7 seems relatively stable over the past 5 years. In 2020, however, significantly more nests were counted. In subsequent years (2021-2022), there was a prolonged La Niña that warmed ocean waters around Banks Peninsula, likely contributing to higher nest abandonment and failure rates during those breeding seasons (R. Hickcox, data unpublished).

Table 3. Nest counts over time. A double count was conducted in 2024, so both numbers are provided.

Section	2000	2004	2008	2012	2016	2020	2021	2022	2023	2024	2025
Q3.7	89	128	n/a	n/a	n/a	171	129	117	126	98/124	117

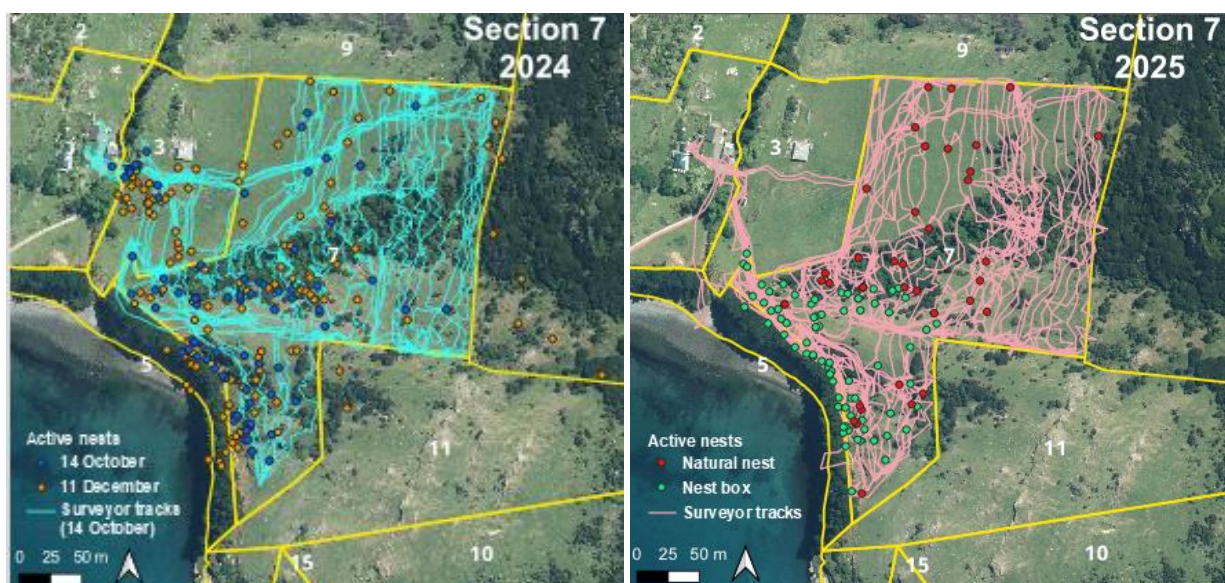


Figure 5.1. Section 7 survey maps. In 2024 (left), a double count was conducted: blue dots show active nests found on 14 October, and orange dots show nests found on 11 December. Blue lines are surveyor tracks for 14 October only; paths were not tracked in December. Note there were some GPS location errors in the data, resulting in some nests mistakenly located in section 3. In 2025 (right), a single count was conducted on 16 November. Nest boxes are shown in green, natural nests in red, and survey tracks in pink lines.

6 Monitoring program

6.1 Breeding season

We monitored over 235 kororā nestboxes weekly from 1 September 2025-31 March 2026 and fortnightly thereafter until the start of the 2026-2027 breeding season. As in previous years, we used the Memento app to record nest activity (breeding, non-breeding, moulting), occupancy (number of adults, eggs, chicks), and general observations including chick age and body condition.

This year, the first eggs were observed on 29 August, compared to 23 August in 2023-2024 and 31 August in 2024-2025. The mean hatch date was about a week earlier in 2025, on 21

September (compared with 30 September in the 2023 and 2024 seasons). Similarly, mean hatch date was a week earlier and mean fledge date was nearly two weeks earlier than in previous years (16 December 2025). Most of the hatching occurred over a three-week period in October.

Figure 6.1 shows a timeline of egg and chick counts.

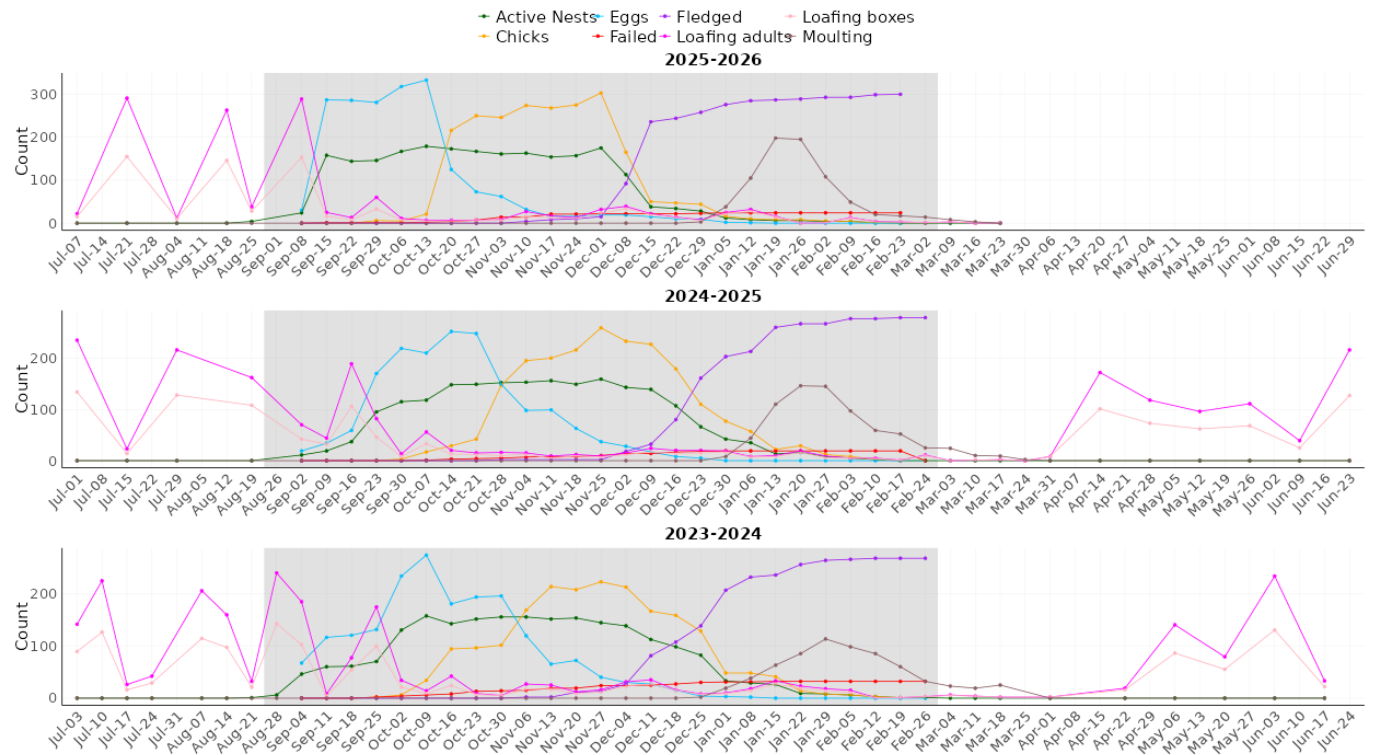


Figure 6.1. Breeding counts for 2025-2026 (top), 2024-2025 (middle), and 2023-2024 (bottom) breeding seasons per monitoring week. The numbers of nests that failed (red) and chicks that fledged (purple) are cumulative, while all other numbers indicate weekly counts. Note the different X-axes.

We resighted 203 breeding adults (162 in 2024-2025), 19 of which were first time 2-year-olds (recruitment rate ~ 9.7% out of the 196 chicks that were marked in 2023; 9.4% recruitment in 2024-2025). See section 6.3 Marking for more details about marking totals. Hatching success (eggs hatched/eggs laid) was slightly lower this year (86.8%) than last year (90.36%); however, there were 32 more eggs laid this year and 14 more nests occupied (**Figure 6.2**). The 2025 number of active nests was more similar to years 2022 and 2023 (**Table 4**). Fledging success (chicks fledged/eggs hatched) was slightly higher this year compared to all previous years, although the number of chicks fledged per eggs laid (breeding success) was slightly lower than

last year (76.9% in 2025-2026 and 79.2% in 2024-2025). Overall, statistics were similar across all monitoring years (except in 2022 due to the marine heatwave).

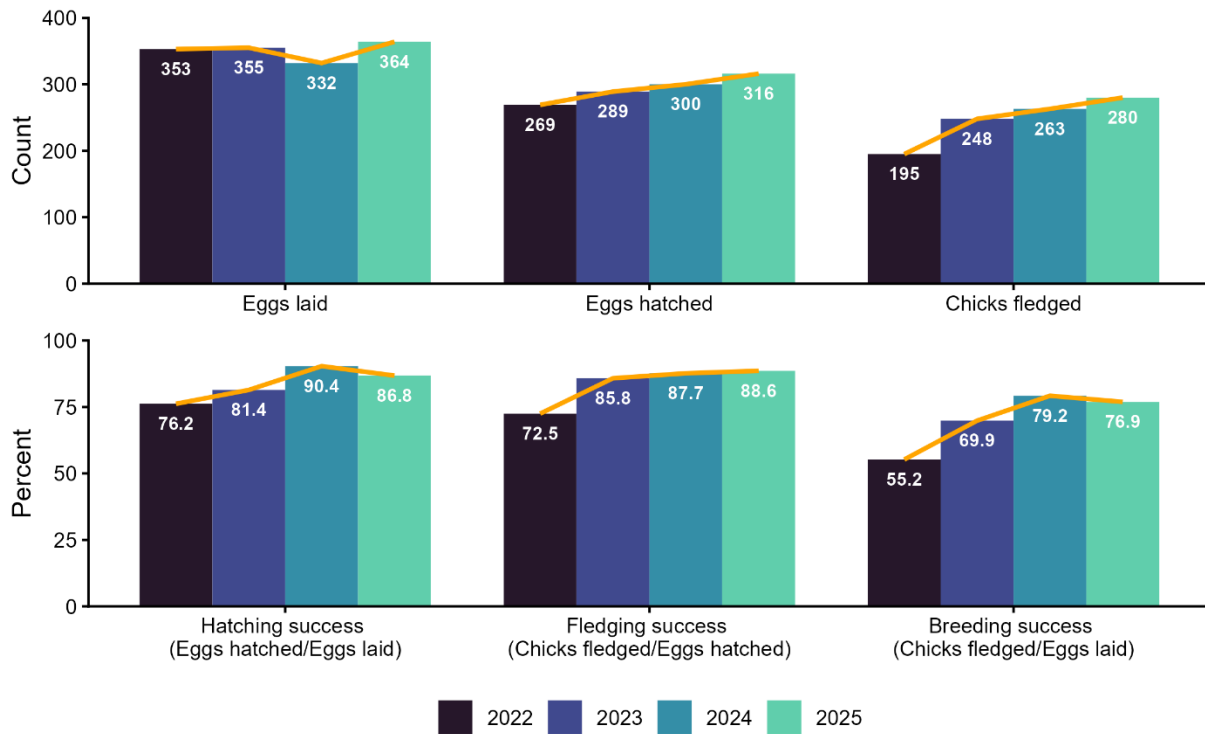


Figure 6.2. Breeding success of kororā at Pōhatu/Flea Bay over time. The top panel shows total eggs laid, eggs hatched, and chicks fledged per breeding season. The bottom panel shows percentages for hatching success (eggs hatched/eggs laid), fledging success (chicks fledged/eggs hatched), and breeding success (chicks fledged/eggs laid). Bars represent annual counts or percentages, and orange trend lines indicate directional change across years within each metric.

Table 4. Breeding statistics for all monitoring seasons since 2022.

	2022-2023	2023-2024	2024-2025	2025-2026
Nests/breeding pairs	178	180	169	183
Nestboxes	171	174	165	175
Nestboxes with multiple clutches	14	12	8	16
Failed nests	56	33	21	26
Nests with uplifted chicks	50	13	11	1
Nests with fledged chicks	72	134	137	156
Eggs laid	353	355	332	364
Single egg nests	3	5	6	2
Nests: no eggs hatched	28	21	10	12
Nests: one egg hatched	31	29	18	26
Nests: two eggs hatched	210	239	272	278
Chicks hatched	269	289	300	316
Chicks fledged	195	248	263	280
Natural	127	230	253	274
Assisted (rehab, SF)	68	18	10	1
Supplement fed (SF)	27	4	0	0
Hatching success (%)*	76.2	81.4	90.4	86.8
Fledging success (%)**	72.5	85.8	87.7	88.6
Natural fledging success (%)***	47.2	79.6	84.3	86.7
Breeding success (%)****	55.2	69.9	79.2	76.9
Hatching Success (hatched chicks per pair)	1.5	1.6	1.8	1.7
Fledging Success (fledged chicks per pair)	1.1	1.4	1.6	1.5
Fledging Success (natural fledged per pair)	0.7	1.3	1.5	1.5
First lay date	10 Aug	23 Aug	20 Aug	29 Aug
Mean lay date	2 Oct	30 Sep	22 Sep	21 Sep
Last lay date	17 Dec	20 Dec	23 Dec	2 Dec
First hatch date	27 Sep	25 Sep	30 Sep	22 Sep
Mean hatch date	8 Nov	2 Nov	4 Nov	25 Oct
Last hatch date	1 Jan	12 Jan	30 Dec	29 Dec
First fledge date	15 Nov	20 Nov	2 Dec	17 Nov
Mean fledge date	1 Jan	30 Dec	28 Dec	16 Dec
Last fledge date	25 Feb	9 Feb	14 Mar	23 Feb
Marked breeding adults	116	52	54	46
Marked chicks	159	196	197	192

* Hatching success = eggs hatched/eggs laid

** Fledging success = chicks fledged/eggs hatched

*** Natural fledging success = chicks fledged naturally/eggs hatched

**** Breeding success = chicks fledged/eggs laid

6.2 Resightings and moult

The first moult was sighted on 22 December 2025 (23 December 2024 in 2024-2025 season and 1 January 2024 in 2023-2024 season), concluding by 23 March 2025. There was a single late breeder who moulted until 13 April 2025. Birds were more synchronous in their moult this year compared to last year, with the last moult starting on 9 March 2026 compared to 17 March 2025. Likewise, peak moulting occurred slightly earlier in mid-January this year compared to mid-late January 2024-2025, late January 2023-2024, and early March 2022-2023. We saw more marked moulters overall this year, especially returning juveniles (**Table 5**). Of all the marked adults and juveniles in the colony observed breeding or loafing during the season, we resighted 206 birds during moult this year compared to 151 birds in 2024. We also observed an additional 12 birds only while moulting in 2024-2025, which increased to 24 birds in 2025-2026. Conversely, we observed 40 birds as loafers only (i.e., nonbreeders not observed during moult either) during 2024 and 15 birds in 2025. There were 36 breeders not seen moulting in 2024, a similar number to 30 breeders not seen in 2025.

Table 5. Number of marked birds resighted during moult in 2024 and 2025 by age class, with resight rates in parentheses. Resight rates were calculated as a proportion of the total marked birds in that age class that were detected during that year's moult. Breeding-age birds (≥ 2 years) are presented separately as a proportion of all marked birds of breeding age.

Age class	2024	2025
First year (juveniles)	7 (3.6%)	18 (9.1%)
2-year-olds	12 (7.5%)	17 (8.7%)
3-year-olds	1 (-)	13 (8.2%)
Breeding age (2+ years)	144 (39.3%)	188 (32.9%)

6.3 Marking

We continued marking chicks and adults in active boxes with passive integrated transponders (PITs) used for identification. During marking, we recorded weights and bill measurements, photographed flippers to classify morphology, and collected feather samples for DNA and isotope analysis. Qualified personnel inserted transponders according to Department of Conservation protocols, overseen by Dr. Rachel Hickcox, a Level 3 trainer, and assisted by Lucy

Howell, also a Level 3 trainer. We welcomed four Cape Sanctuary members again for four days of microchip training in October and December.

Most HPCT trustees are now level 2. We also have two additional L3 trainers, and more Level 1 trained students.

- Lucy Howell, University of Canterbury PhD student (L3)
- Kaitlin Bowe, University of Otago Masters student (L3)
- Georgia Gwatkin, University of Canterbury Masters student (L3 under consideration)
- Averil Parthonnaud (L2)
- Kevin Parthonnaud (L2)
- Joey Cataliotti (L2)
- Geraldine Guillemot-Peacock (L2)
- Benoit Navarron (L2)
- Jess Helps (L1)
- Alison Ballard, Pōhatu Penguins (L1)
- Michelle LaRue, University of Canterbury (L1)
- Sarah Flanagan, University of Canterbury (L1)
- Alexandra Strang, University of Canterbury (L1)
- Isla O'Donoghue, University of Canterbury (L1)
- Skye Davis, University of Canterbury (L1)

Table 6 summarises the total number of adults and chicks marked in the colony, including those marked at Christchurch Penguin Rehabilitation and subsequently released at Pōhatu. This year, we surpassed 1000 marked birds in the colony. All marking records for both Pōhatu and Christchurch Penguin Rehabilitation were submitted in April 2026 to the DOC FALCON database, as part of the NZ National Bird Banding Scheme and annual reporting process.

Table 6. Marking statistics for 2022-2025.

	2022	2023	2024	2025	Total
Marked adults (Pōhatu)	110	48	53	44	255
Marked adults (Pōhatu rehab)	2	2	0	2	6
Marked adults (Christchurch rehab)	3	2	0	0	5
Marked adults (total)	115	52	53	46	266
Marked chicks (Pōhatu)	101	177	183	191	652
Marked chicks (Pōhatu rehab)	45	11	11	1	68

Marked chicks (Christchurch rehab)	16	8	3	0	27
Marked chicks (total)	162	196	197	192	747
Total	277	248	250	238	1013

6.4 Bay counts

We continued recording how many penguins and rafts were observed on the water and on the beach during tours. **Figure 6.3** shows the trend in the number of penguins observed on the water for the past two seasons during the evening tour, with peaks in October and November. Tours did not occur in March due to the low return rate of penguins; the first loafers returning after post-moult foraging trips were observed on 30 March.

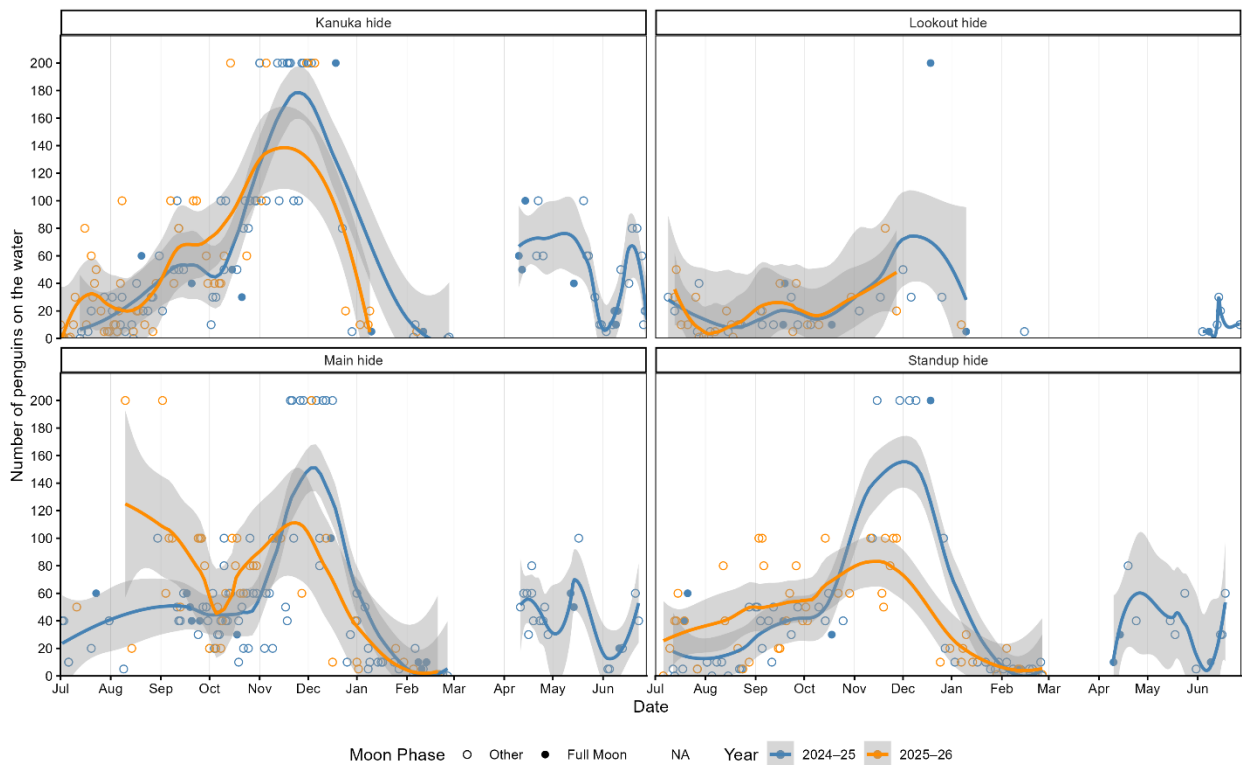


Figure 6.3. The number of kororā observed on the water during evening tours at the primary hides during the 2024-2025 and 2025-2026 seasons (1 July to 30 June). Points indicate individual counts, with closed circles denoting reported full moon nights and open circles denoting other nights. The LOESS smooth line highlights the underlying trend, while the shaded area represents the standard error, or uncertainty, in the trend estimation. The smooth line is not estimated across gaps of more than 28 days without an observation. Shading indicates 95% confidence intervals.

6.5 Nestbox maintenance

Due to recent trespassing problems by the general public, we decided to modify D-section nestboxes to prevent tampering and uncontrolled disturbance to penguins. We also worked on reducing the need for rocks on top of each lid, preventing lids blowing off in high winds, and reducing the potential for flooding due to gaps in the lids. In March, we added wood covers and blocks to 24 boxes, which can only be opened using a magnet (**Figure 6.4**). We added similar block fasteners to central colony boxes often subjected to high winds; however, instead of a nail requiring a magnet, we used larger nails that can be removed by hand. Over time, we will continue to modify and improve all nest boxes throughout the colony.

Additionally, we built 20 new boxes, eight of which were added to the colony. Other boxes were changed out or modified in other ways - holes filled, entrances secured, etc.



Figure 6.4. Nest box modifications: wooden top to cover gaps (left) and magnet fastener (middle). Other boxes in the central part of the colony are now secured with a larger nail (right) that can be removed by hand without a magnet, allowing guides easy access during tours.

7 Rehabilitation

We work with a network of groups and individuals in and around Christchurch to provide the best care possible for sick, injured, or starving penguins, as well as for those found in unsafe locations or nesting in areas affected by natural disasters such as flooding. These include Christchurch Penguin Rehabilitation and the South Island Wildlife Hospital at Willowbank Wildlife Reserve. This year, we had the fewest birds in rehab since intensive monitoring began in 2022.

Three penguin chicks were admitted to rehabilitation this season. One bird was found emaciated in the open at Pōhatu and subsequently euthanised. Another was discovered exposed on the rocks at five weeks of age during a survey at Stony Bay. The third was uplifted from its nest box with severe malnutrition due to having an injured parent; both were released post-rehab. This injured parent was missing a substantial patch of feathers on its back thus lacking adequate waterproofing. An additional adult with a suspected predator-related foot injury was also uplifted, and both individuals were later released at Pōhatu. Two adults were euthanised following foot trauma and emaciation after moulting, while another adult was transferred to the International Antarctic Center due to impaired swimming ability from flipper trauma, rendering it unsuitable for release. In total, five adult kororā were uplifted (**Table 7**).

The Trust also work closely with the Department of Conservation, local iwi, and rehabilitators to coordinate the release of other species, including hoiho/yellow-eyed, tawaki/Fiordland crested, tawaki nana hī/ erect-crested, pokotiwha/Snares, and tawaki piki toka/rockhopper penguins at Pōhatu. This year, we released two tawaki and two erect-crested penguins at Pōhatu after their rehabilitation at the South Island Wildlife Hospital.

Table 7. Rehabilitation statistics for 2022-2023 and 2023-2024.

	2022	2023	2024	2025
First chick uplift	1 Nov	26 Oct	14 Dec	11 Dec
Last chick release	12 Apr	9 Apr	26 Mar	16 Jan
First adult uplift	6 Jan	21 Nov	22 Aug	22 Dec
Last adult release	5 May	3 May	(21 Feb)	12 Jan
Adults	14	15	5	5
Juveniles	0	2	1	0
Chicks	94	25	19	3
Total	108	42	25	8
Released adults	13	8	3	2
Released juveniles	0	1	1	0
Released chicks	82	21	14	2
Total	95	30	16	4
Release rate all	88%	71%	64%	50%
Release rate chicks	89%	84%	74%	40%
Release rate adults	93%	53%	20%	67%
Other penguins	0	0	4 ECP 1 FCP	2 ECP 2 FCP

8 Research projects

8.1 Tracking at sea

We continued GPS tracking at sea during incubation, guard, and post-guard breeding stages this year, as well as during pre-breeding. We deployed nine devices (one did not go to sea) during incubation and four during guard. We were unable to deploy during post-guard due to staffing limitations. We had 12 successful deployments with dive data indicating behaviour patterns similar to past years, upon preliminary analysis (**Figure 8.1**). Dive data is currently being further analysed. All tracking data is available on the online repository Movebank (<https://www.movebank.org/pohatupenguins>).

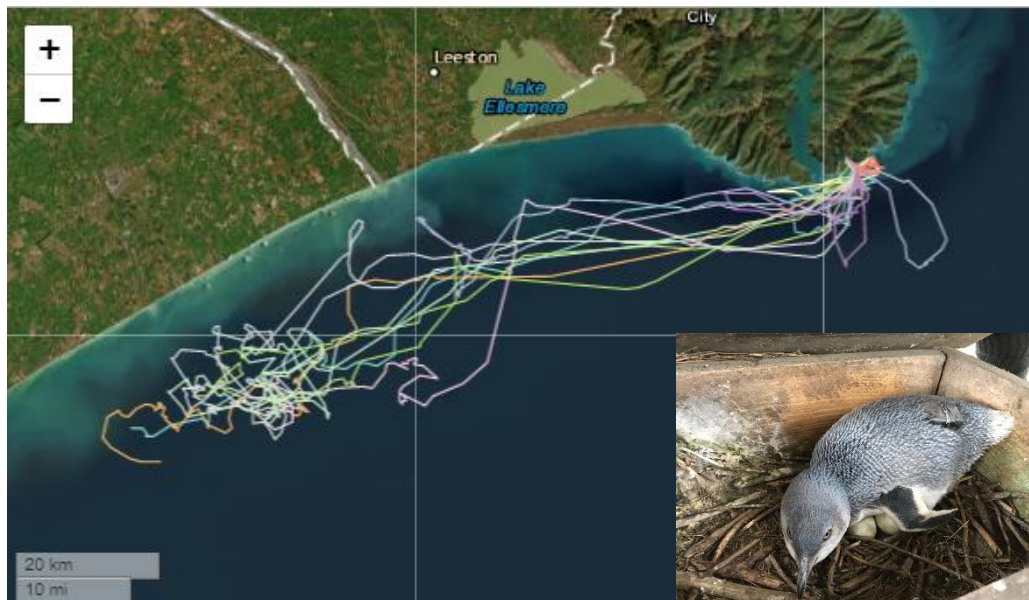


Figure 8.1. Incubation and guard foraging during the 2025-2026 breeding season.

8.2 Student projects

Kaitlin Bowe, MSc Marine Science, University of Otago

Supervisors: Will Rayment, Steve Wing, Rachel Hickcox (associate supervisor)

Thesis: Foraging ecology of kororā from Pōhatu Bay, Banks Peninsula, New Zealand

Completion: October 2025

The goals of Kaitlin's Masters research: (1) to determine the foraging distribution of kororā at Pōhatu; (2) to quantify the important environmental variables affecting their behaviour; (3) to determine their trophic position using stable isotope analysis to predict whether kororā rely on distinct prey at various stages of their breeding season. Kaitlin submitted her thesis October 2025. She is currently revising post-examiner comments and writing up her results for publication. Kaitlin used data from 44 kororā tracked during the 2023 and 2024 breeding seasons and created species distribution models using Maxent to identify key environmental variables influencing their foraging distribution. During prebreeding and incubation, individuals took multi-day foraging trips, often traveling over 100 km south into the Canterbury Bight, although staying within 10 km of shore. In contrast, during chick rearing, they foraged within 20 km south/southeast of the colony. Distance to coast was the most influential environmental predictor during pre-breeding and incubation, while distance to colony was most important during guard and postguard. Stable isotope analysis of guano samples from tracked individuals indicated that kororā may travel into the Canterbury Bight opportunistically in earlier breeding stages to access higher trophic level prey such as fish, before adults are constrained in their foraging distribution during chick rearing.

Paula Brown, MSc School of Earth and Environment, University of Canterbury

Supervisors: Michelle LaRue, Mia Wege, Rachel Hickcox (associate supervisor)

Thesis: Seasonal and within-season variation in breeding phenology and juvenile survival of white-flipped penguins, kororā (*Eudyptula minor albosignata*) at Flea Bay/Pōhatu, Banks Peninsula, New Zealand

Completion: July 2025

The goals of Paula's Masters research: (1) to determine juvenile kororā survival rate, identifying factors that contribute to their survival; and (2) to determine breeding phenologies within a season and between seasons, assessing if a correlation exists between sea surface

temperatures and other climate variables. Paula used monitoring data to look at juvenile kororā survival and to determine timing of key events such as egg laying, chick fledging, and moult over the breeding season. She found that 12.1% of marked chicks in 2022-2023 were resighted in 2023-2024 and/or 2024-2025. Paula also found that marine heatwave events, such as the one that occurred during the 2022-2023 season, likely delayed the annual moult by an average of 21 days compared to two subsequent seasons.

Lucy Howell, PhD Biology, University of Canterbury

Supervisors: Tammy Steeves, Elissa Cameron

Thesis: Optimising non-invasive sampling for assessing kororā (*Eudyptula minor*) health: Enhancing long-term management strategies at the Pōhatu/Flea Bay Colony, Horomaka, Banks Peninsula

Expected completion: July 2027

The goals of Lucy's PhD research: (1) to DNA-sex penguins from feathers; (2) to determine the prey species comprising kororā diet at Pōhatu using faecal DNA metabarcoding; and (3) to quantify stress baselines using non-invasive corticosterone sampling to investigate links between stress and breeding success, and diet. In addition to collecting weekly monitoring and marking information, Lucy also collects feathers, faecal samples, and behavioural observations of stress encounters.

Isla O'Donoghue, BS University of Aberdeen/ MSc School of Biological Sciences, University of Canterbury

Supervisors: Sarah Flanagan, Chris Niebuhr, Rachel Hickcox (advisor)

Thesis: Tick presence at Flea Bay/Pōhatu

Expected completion: September 2026

Isla's research focuses on the ticks that parasitise kororā. She identified the tick species using both microscopy and DNA sequencing. Isla also designed a tick trap using carbon dioxide to collect samples and potentially determine presence/absence and abundance at nest boxes. By comparing the genetic information from Pōhatu ticks with samples from other colonies in New Zealand and Australia, Isla hopes to determine how closely related these populations are in order to support future research on penguin health and parasite ecology.

Naomi Laslett, BS Toi Ohomai Institute of Technology and Unitec

Report: Do habitat characteristics influence the location and activity status of Kororā (*Eudyptula minor*) nests?

Completion: December 2025

Naomi investigated if and how habitat characteristics influence kororā nesting activity across six colonies in New Zealand: Motoura Island, Tiritiri Matangi Island, Motuihe Island, Mount Maunganui, Oamaru, and Pōhatu. Naomi visited Pōhatu to collect data on 21 July 2025, recording nestbox characteristics such as location, shore type, and shade cover. While habitat preferences were localised, Naomi found, in general, active nests across all colonies were more likely to be underground, on stony shores, in low shade areas, further from shore, and around vegetation.

8.3 Blood-based detection of ectoparasites in kororā

PI: Dr. Phoebe Chapman, University of Otago

Partners:

- Professor Crid Fraser, University of Otago
- Professor Michelle LaRue, University of Canterbury
- Professor Sarah Flanagan, University of Canterbury
- Dr. Chris Niebuhr, Landcare Research
- Dr. Phillipa Agnew, Oamaru Blue Penguin Colony
- Henry Elsom, Oamaru Blue Penguin Colony
- Dr. Rachel Hickcox, Helps Pōhatu Conservation Trust

Phoebe's research aims to detect parasite DNA in kororā blood in order to diagnose ectoparasite infections, improve detection accuracy, and reduce handling time and stress compared to traditional methods of assessing parasite loads. If successful, this new approach could be used for health assessments of kororā and other threatened species. In May 2025, Rachel Hickcox and Chris Niebuhr joined Crid Fraser and Phoebe Chapman at the Oamaru Blue Penguin Colony for blood sampling training conducted by Henry Elsom and Phillipa Agnew. After protocol review and lab testing of those blood samples, Henry and Phoebe visited Pōhatu on 6 December 2025 (**Figure 8.2**), and Henry and Rachel collected blood samples from 17 chicks and three adults during postguard. Blood draws from an additional seven chicks were unsuccessful. Our season volunteer, Ellen Rosenberg, weighed each bird, and measured bill

length and depth before the procedure. The average weight of all birds sampled was 1200g. Sampling went well overall, with all chicks fledging shortly thereafter.



Figure 8.2. Phoebe Chapman (left), Henry Elsom (middle), and Rachel Hickcox (right) after blood sampling at Pōhatu in December.

8.4 Drone survey of kororā at Pōhatu/Flea Bay

PI: Dr. Rachel Hickcox

Partners:

- Kevin Parthonnaud, Helps Pōhatu Conservation Trust
- Joshua Foster, Banks Peninsula Conservation Trust
- James Wright, Banks Peninsula Conservation Trust
- Helena Quilter, Banks Peninsula Conservation Trust

Since 2000, quadrennial nest surveys at Pōhatu have faced increasing obstacles, including dense vegetation, tough terrain, and increasing numbers of New Zealand fur seals, making ground-based counting less reliable and safe (Hickcox et al., 2025). Traditional methods are now impractical, despite the need for consistent long-term data to monitor population trends and conservation outcomes. Moreover, knowledge about kororā in the Pōhatu Marine Reserve, especially their rafting behavior before and after foraging, remains limited. Understanding how and when penguins gather on the water is vital for effective marine spatial planning and protection around Banks Peninsula. This project proposes a UAV survey to fill these gaps, using

daily and seasonal high-resolution RGB and thermal imagery of both the terrestrial colony and marine reserve, with the following objectives:

- Characterise the spatial and temporal use of the Pōhatu Marine Reserve by rafting kororā, including raft location, size, and distribution in relation to tidal state, time of day, breeding stage, and other factors.
- Improve and modernise methodology for annual kororā nest surveys to better detect population trends over time, by combining UAV imagery with targeted ground-truthing to identify and map nesting habitat in open and semi-open areas of the colony.

Secondary objectives include: (1) mapping vegetation cover, erosion, and coastal habitat change over the 12-week survey window; (2) contributing imagery for landscape-level habitat modelling to predict population size over time; and (3) developing reliable, repeatable UAV methodology for long-term deployment at Pōhatu and potentially at other kororā colonies.

This project is a collaboration between the Helps Pōhatu Conservation Trust (HPCT) and the Banks Peninsula Conservation Trust (BPCT). UAV operations will be conducted by BPCT certified pilots Joshua Foster and James Wright. We have proposed that research surveys be conducted over a 12-week period in 2026, timed to span the breeding season (September–November), including the incubation, guard, and postguard phases (in addition to proof-of-concept, calibration, and test flights to confirm methodology). A DOC permit has been granted (see Section 2: Permits), Rachel has prepared a project plan, and we are currently in discussion with the BPCT to finalise the project plan, flight schedules, and methodology.

8.5 Data sharing

In October 2025, Cawthron Institute, New Zealand’s largest independent science organisation, asked the Trust to provide information on some of our pertinent data for an upcoming review of the Canterbury Regional Coastal Environment Plan (RCEP). Cawthron was contracted by Environment Canterbury to identify candidate areas critical to maintaining biodiversity within Canterbury’s coastal marine space. During this project, Cawthron will “review, filter and standardise data sets from the coast out to 12 nm, building on a stocktake of the region completed in 2021. Assessment criteria, aligning with relevant national and regional policy will also be developed alongside data collation. Criteria will then be applied to datasets to identify preliminary areas of importance for supporting ... indigenous biodiversity and identify assumptions and knowledge gaps of relevance to indigenous biodiversity. This work will act as a

foundation for further discussion with the wider community, and development of policy and other management options”.

After consideration, the Trust formally signed a data sharing agreement and supplied two datasets, the Horomaka/Banks Peninsula Kororā Survey results (November-January 2020/2021 and 2021/2022) and yearly nest survey data from section 7 of Pōhatu/Flea Bay for 2021, 2022, 2023, and 2025. All data will be deleted after the project is finished.

9 Predator trapping

The “Pōhatu penguin predator control” project, as named on Trap.NZ, comprises a network of over 230 traps across 10 trap lines covering ~521 hectares. Our primary trapper is responsible for checking all existing traps weekly or fortnightly. In total, 345 predators including feral cats, mustelids, possums, hedgehogs, rats, and other introduced mammals have been trapped between 1 April 2025 to 1 April 2026 (). This compares with 352 predators trapped in 2024-2025; see past reports for all previous years’ data.

Table 8. Total captures of introduced mammals per trap line at Pōhatu/Flea Bay from 1 April 2025 to 1 April 2026.

Line	Cat	Hedgehog	Mouse	Rabbit	Rat	Stoat	Weasel	Other	Total
Ridge Run	0	0	0	0	9	0	0	0	9
Cottage Line	0	0	0	1	33	0	0	0	34
Valley Line	0	31	0	1	33	1	4	0	70
Penguin Colony	4	19	7	1	54	2	4	5	96
Tutakahikura Line	0	16	0	1	18	1	2	0	38
F Line	0	4	0	0	7	1	1	0	13
Mabel Hope	1	10	2	0	30	0	0	1	44
Oborne Line	2	1	2	0	6	0	2	0	13
Indian rock Line	0	3	0	0	9	0	0	0	12
DOC	0	6	1	0	8	0	1	0	16
Total	7	90	12	4	207	5	14	6	345

10 Conferences and publications

Rachel will attend the International Penguin Conference on Phillip Island, 31 August to 4 September. She has submitted an abstract to present the species distribution modelling conducted by Kaitlin Bowe for her MSc thesis.

Theses and publications accepted or submitted to journals in 2025-2026:

- Hickcox, R. P., Bowe, K., Gwatkin, G., & Howell, L. (2026). Nest counts of kororā/little penguins on Horomaka/Banks Peninsula, New Zealand. *New Zealand Journal of Zoology*, 53(1), e70004. <https://doi.org/10.1002/njz2.70004>
- Gwatkin, G., Hickcox, R. P., Niebuhr, C. N., Strang, A. J., Flanagan, S. P., LaRue, M. (Accepted). Little penguins breed in older and more isolated nest boxes but lay date influences breeding success.
- Bowe, K. (2025). Foraging ecology of kororā (*Eudyptula minor*) from Pōhatu Bay, Banks Peninsula, New Zealand. [MSc thesis]. University of Otago.
- Brown, P. M. (2025). Juvenile survival and adult phenology (breeding and moult) in kororā / little penguins (*Eudyptula minor albosignata*) at Pōhatu / Flea Bay, New Zealand. [MSc thesis]. University of Canterbury.
- Gwatkin, G. S. M. (2025). Interactions between kororā/little penguins (*Eudyptula minor*) and their terrestrial environment at Pōhatu/Flea Bay, Banks Peninsula. [MSc thesis]. University of Canterbury.

11 Community outreach and education

During 2025, the Trust participated actively in many public outreach and education programs, including visiting schools. We welcomed several schools and other groups to Pōhatu, in addition to hosting the school holiday Conservation Club, where we talked about local wildlife, the importance of marine reserves, regenerative farming, forest restoration, penguin conservation, and more.

In June 2025, members of our team visited Mt Pleasant School in Christchurch. Tamariki learned about penguins, marine reserves, and conservation during Rachel's presentation, then participated in a miniature kororā survey with homemade nests and 'mini-penguins' hidden all around the room; this participatory activity showed tamariki the importance of citizen science.

In July 2025, the Trust was a featured sponsor at the Speaking 4 the Planet event at Tūranga Christchurch library. Averil and Nest Parthonnaud attended, advocating for our oceans at the Trust stall and bringing attention to the devastating effects of bottom trawling, deep sea mining, plastic pollution, and climate change. In August 2025, Joey and Averil went to the Christchurch Botanical Gardens with Envirokids, bringing with them educational games and activities to talk about conservation and wildlife.

In September 2025, Kevin and Iain Cook-Bonney (Technology Education New Zealand, TENZ) travelled to Wellington to engage with educators affiliated with TENZ. During this visit, they introduced the Pōhatu [Minecraft Education](#) and [Frame VR](#) and conducted several workshops.

On 11 October 2025, Averil and Joey represented the Trust at Explorers' Day - Ice and Sky, hosted at the Air Force Museum in Christchurch (**Figure 11.1 top left**). Explorers' Day was part of Days of Ice, an annual celebration of Christchurch's connection to Antarctica as a Gateway City.

The Trust also participated in several events during Seaweeek Kaupapa Moana 2026. We hosted the annual Akaroa community ocean-themed variety show at the Gaiety on 28 February 2026, where everyone enjoyed watching numerous dance and music performances and the famous best ocean-inspired costume competition (**Figure 11.1 top right**). Regenerate Banks Peninsula raised \$500, subsequently donated to the South Island Wildlife Hospital.

Additionally, Rachel and Kevin attended the week-long Seaweeek Immersive Lab, a 360° ocean experience for schools, whānau, and communities (**Figure 11.1 bottom left**). The Lab was hosted by Blue Cradle at Tūranga Christchurch library. Rachel and Kevin joined for the first day and hosted a short film about Pōhatu, produced by Blue Cradle's James Nikitine and narrated by Ave Parthonnaud. They also joined Iain Cook-Bonney (TENZ) as he led interactive sessions for students to virtually explore the [Minecraft Education kororā colony at Pōhatu/Flea Bay](#) (see the 2024-2025 season report for more information).

At our most recent event, Joey and Rachel represented the Trust at Moana Discovery Day, held on 7 March 2026 at Tūranga Christchurch library. They brought several activities and displays to educate Tamariki and the public about our work and the importance of conservation to protect penguins and other native wildlife (**Figure 11.1 bottom right**).

Lastly, the Trust sends out a quarterly newsletter to penguin nestbox adopters and subscribers communicating happenings at the colony, such as stories about individual penguins, monitoring

findings, research highlights, and program updates. These lively and informative newsletters, along with frequent social media posts, are essential to our ongoing community outreach.



Figure 11.1. Top left: Pōhātu exhibit at Explorers' Day, hosted at the Air Force Museum in Christchurch. **Top right:** The HPCT table at the annual Seaweed ocean-themed variety show **Bottom left:** Educators and instructors lead the Seaweed Immersive Lab, standing in front of the purpose-built 360° projection space. **Bottom right:** Moana Discovery Day activities and display.

12 Media

Oceanographic Magazine	Little birds big fight
University of Canterbury	Strong season for little penguins on Banks Peninsula
SHE Changes Climate	What New Zealand's smallest penguin reveals about a warming world
Drift Travel Magazine	The farm that brought little blue penguins back

13 Collaborations and volunteers

We welcomed several new volunteers and students this year. Isla O'Donoghue joined as an MSc student at the University of Canterbury. Paula Raczowska from Akaroa and Skye Davis from the University of Canterbury also volunteered for the season. Ellen Rosenberg from the US volunteered for us during peak chick rearing time in November and December. Additionally, four volunteers from Cape Sanctuary came to Pōhatu in September and December of 2025 (two of which have been in previous seasons, as well) for transponder training.

[Moana Mark](#) is a NZ non-profit connecting individuals and businesses who wish to contribute to environmental conservation and marine research projects that are searching for funding; they support marine science and conservation nationwide. The Trust was selected as the first Moana Mark-Funded Project Partner, which initiated donations to the Trust from a local business in Kaikoura.

We are in the process of developing a collaboration with the [HIT Lab NZ](#) at the University of Canterbury and some of their MSc students will visit the bay in April (see section 14 Upcoming projects for more information). Additionally, we will continue our collaboration with New Zealand Penguin Initiative (NZPI) as part of the NZ kororā monitoring program (see their 2025 [annual review](#)).

The following individuals, organisations, and groups have participated in, supported, or funded the project:

- **Helps Pōhatu Conservation Trust**
 - Dr. Rachel Hickcox (research scientist)*
 - Kevin Parthonnaud (trust manager)*
 - Averil Parthonnaud (trustee and rehab manager)*

Geraldine Guillemot-Peacock (trustee)

Joey Cataliotti (trustee)

Benoit Navarron (trustee)

Thomas Stracke (trustee)

Robin Burleigh (trustee)

Dan Helps (trustee)

Shireen Helps (trustee)

Jess Helps (trustee)

- **University of Canterbury** - *Dr. Michelle LaRue, Dr. Sarah Flanagan, Dr. Mia Wege, PhD/MSc students*
- **Bioeconomy Science Institute** - *Dr. Chris Niebuhr*
- **University of Otago**
- **Banks Peninsula Conservation Trust** - *Joshua Foster, James Wright*
- **International Antarctic Centre**
- **Christchurch Penguin Rehabilitation** - *Kirstina Schuett and Thomas Stracke*
- **South Island Wildlife Hospital at Willowbank Wildlife Reserve** - *Dr. Pauline Howard*
- **Koukourarata Rūnanga**
- **Shireen and Francis Helps, landowners**
- **Pōhatu Penguins/Plunge Ecotours**
- **Volunteers**
- **Current/past funders and additional supporting organisations:**

Environment Canterbury

Christchurch City Council

Department of Conservation

Blue Cradle

Pub Charity Limited

Proteus Research and Consulting

Banks Peninsula Conservation Trust

Pest Free Banks Peninsula

Moana Mark

Forest and Bird -North Canterbury

Lyttleton Port Company

Orbica

Bronx Zoo

Pacific Development Conservation Trust

Technology Education New Zealand (TENZ)

Penguins International

New Zealand Penguin Initiative

14 Upcoming projects

Pōhatu will host several new MSc students conducting their research at the colony next year:

- **Alison Ballard** – Moss Landing Marine Laboratories, CA, USA (supervisor: Gitte McDonald)
 - *Project:* Post-breeding, pre-moult, post-moult tracking
 - Applied for \$15,000 funding through the Brian Mason Trust
- **Max Mulvihill** – Lincoln University (supervisor: Adrian Paterson)
 - *Project:* TBD
- **Sasha Fairbairn** – University of Canterbury (supervisor: Michelle LaRue)
 - *Project:* TBD, starting in 2027

We have also been asked to collaborate with an MSc student at the University of Otago by providing feather samples for corticosterone analysis and stable isotope analysis (currently in discussion).

Other projects include:

- 1) We are working collaboratively with Dr. Donald Degraen, Dr. Susanne Schmidt, and Professor Rob Lindeman from the HIT Lab NZ at the University of Canterbury. Together, our aim is to establish a comprehensive research pathway for the HITD603 course, which is a postgraduate-level paper designed to provide students with advanced practical and theoretical experience in human interface technology. This initiative will create opportunities for MSc students to engage in meaningful research projects that align with both the academic goals of the HIT Lab NZ and the broader research activities at the colony. By partnering with these faculty members, we hope to foster interdisciplinary collaboration, enhance student learning outcomes, and contribute to innovative research within the field of human interface technology. We will welcome approximately 25 students to Pōhatu in late April to discuss projects.
- 2) We anticipate beginning the drone survey in September-November 2026 to collect high-resolution RGB and thermal imaging of both the terrestrial colony and adjacent marine reserve (see section 8.4 Drone survey of kororā at Pōhatu/Flea Bay for more information).

- 3) We will test new lightweight, solar satellite tags provided by Wildlife Computers, a company selling wildlife telemetry devices. These tags weigh only 8g and were originally designed for sea turtles. Wildlife Computers will send three to be deployed in August 2026 for testing, hoping the tags will provide a means to track little penguins outside the breeding season.



Figure 14.1. Selection of photos from monitoring during 2025-2026, including some of the volunteers, students, trustees, and penguins.