

TERM 1 NEWSLETTER 2025

President's Report

Kia ora koutou,

I hope everyone is doing well. There are plenty of things going on at the moment and the executive committee team has been working hard to arrange events and develop resources relevant to what our membership is requesting.

Sarah, our new BEANZ facilitator has done a really good job providing support to those just entering our profession and those who are trained overseas. It's a big task to connect everyone and get them on the same page! Feel free to reach out to her even if you are an experienced classroom teacher. I know it's good to have some fresh ideas or new resources every now and then to keep you current.

Our AGM will be on the 5th of April and we're always on the lookout for more people for the Executive, so even if you miss our AGM and would like to be involved, please don't hesitate to send an email to our administrator at biologynz@gmail.com

Finally, be on the lookout for more professional learning opportunities, new resources and new NZQA Quality Assured Assessment Materials (QAAM). These will be sent out through our mailing list, so double check your spam if you haven't been receiving updates from us.

Upcoming opportunities to look out for later this year:

- New Plymouth NZQA/BEANZ Making Assessor Judgement Workshop
- Regional BEANZ Workshops
- Two NZQA QAAM Task for 91604 (Glucoregulation & Thermoregulation)
- Practice exams for: Level 3 Biology externals, CB 1.3 Genetics, Biology Scholarship



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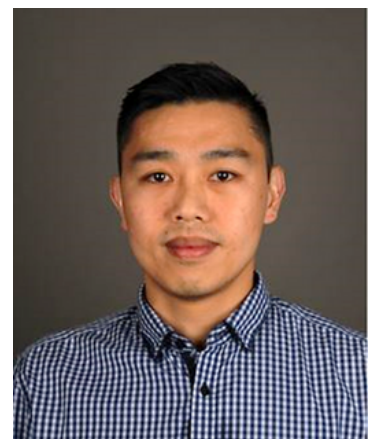
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Zooming in on Biology

Introduction from your BEANZ Facilitator 2025

Kia ora everyone, I am Sarah Oliveira - the newly appointed BEANZ facilitator. I have the pleasure of assisting biology educators across New Zealand who are new, overseas trained, or rural and isolated. My experience includes teaching biology for fifteen years - in both rural and city schools, a Masters in e-learning, and I am working towards a PhD in biology education. All of which gives me a multifaceted approach to this role.



Initially when I started in the role, I brought in a weekly Zoom session. After two weeks, it grew into three different Zooms to cater to different cohorts and schedules, creating a space for rural educators and new teachers to connect with each other as well as myself. These Zooms are an optional space for tips and tricks that help teaching practice in a Biology classroom. As well as this, they are a place for teachers to ask for help and create their own network of teachers so that they do not feel so alone in their practice. At the end of the day satisfying teachers' biological need for connection.

The Zoom sessions are 7.30am on a Thursday and Friday and 3.30pm on Thursdays for those who can't do mornings. All sessions are half an hour and generally follow the structure of Karakia, Tip of the week, Tool of the week, and Whakatauki with a little bit of chat at the beginning as people are coming in. I don't record my sessions due to the desire to allow teachers to chat more freely without the fear of being recorded. I do, however, provide a follow-up email summary of resources discussed and conversation points of interest. The feedback so far is positive and that it's meeting a need for these biology teachers. I hope to eventually invite in guest speakers.

Alternatively, for teachers who are perhaps more new at teaching biology or perhaps new at teaching a year level, I meet them individually either via Zoom or in-person. I have now found myself visiting a number of schools throughout the week enjoying the beautiful countryside of New Zealand in the process. And for those who prefer to ask more private questions, I am a point of contact to support them.

More personally, I truly enjoy working in this role and I have found a new interest in seeing biology educators feel connected and supported in what they do. I love teaching biology and ultimately love seeing students loving the subject so it's great to be able to gather like-minded people and discuss nerdy topics around biology education

SLICK Cows QAAM task.

On March 15 BEANZ put out news about a new SLICK Cows QAAM task which is now up on the website. See the News tab on the BEANZ homepage: www.beanz.org.nz

Here is some background information

Ruminants are uniquely thermogenic - producing heat from their normal metabolic activities and from the metabolic activity of their gut bacteria. Heat production is further increased in lactating and pregnant cows compared to 'dry' cows, making heat stress is a major issue in New Zealand dairy herds. Characterised by the visible phenotype of a fine coat, SLICK cows are bred for improved thermoregulation while pregnant and lactating. However, the mutation to the PRLR gene that results in the SLICK allele has more going on physiologically than simply producing pretty animals. BEANZ is proud to release our latest NZQA QAAM task for the 3.7 Biotechnology standard (AS91607 Demonstrate understanding of human manipulations of genetic transfer and its biological implications). The SLICK cows task uses the work of New Zealand scientists who selectively bred SLICK cows, and the work of scientists globally who used CRISPR-cas9 to genetically modify cattle for the South American beef market.



Image source

[Meet New Zealand's Coolest Dairy Cows | LIC International](#)

Biology Resources on the Web.

Jennie Merchant (Cashmere High School) has shared a curated list of biology website resources. It is impressive. You can see it [here](#).

Science Teaching Leadership Programme in 2026 – Something for you to consider?

Empower science education leadership with the Science Teaching Leadership Programme in 2026

Delivered by Royal Society Te Apārangi and funded by the Ministry of Business, Innovation and Employment, the [Science Teaching Leadership Programme](#) aims to empower educators to transform science education in New Zealand.

Programme Highlights:

- Real-world science experience: Participating teachers engage in a two-term placement with a science-focused organisation, deepening their understanding of scientific practices. Teacher release is funded by Royal Society.
- Curriculum and Leadership Development: Through expert-led workshops and courses, teachers enhance their grasp of the Nature of Science strand in the New Zealand Curriculum and refine their leadership skills.
- School-Wide Impact: After the placement, teachers collaborate with their schools over 18 months to elevate science teaching and student learning.

Eligibility Criteria:

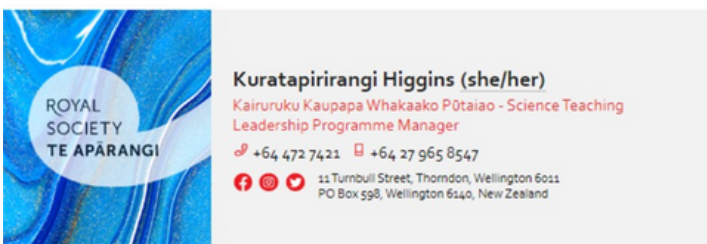
- Registered primary, intermediate, or secondary science teachers (Years 9 and 10) with at least three years of teaching experience.
- Permanent employment in a New Zealand school (full-time or part-time).
- New Zealand citizenship or holder of a New Zealand Residency permit.

Application for 2026 are now open!

- Applications for 2026 are now open and close on 8 May 2025.
- For guidance on the application process and to access the application form, please visit the [Apply for the Science Teaching Leadership Programme](#) page.

For inquiries, contact stlp@royalsociety.org.nz

Ngā manaakitanga,



Science Teaching Leadership Programme (STLP) - Vicky Wallace

BEANZ Bay of Plenty Regional Rep and Mount Maunganui College Science kaiako Vicki is currently undertaking phase one of the Royal Society Te Apārangi Science Teaching Leadership Programme (STLP). Many kaiako around Aotearoa New Zealand have taken part in this program since it began in 2015.

STLP provides opportunities for primary schools, secondary science departments and their nominated teachers to enhance the teaching of science within school communities. with the aim to transform science education in schools by:

- Enhancing science programmes to better engage students and develop their science knowledge and skills
- Contributing to the professional learning and development of teachers
- Building links between schools and practising scientists

The Program is a full school or science department initiative that requires a commitment from the school to prioritise science as a key focus area for professional learning. Schools nominate a teacher to develop their curriculum leadership skills in science, connect with others learning about the Nature of Science and develop links with science organisations in their communities.

There are two phases to the programme. Participant teachers take paid leave from their school during phase one (6 months) and return to school for phase two where they complete a science review and action a science development plan (12-18 months).

Vicki will be hosted by Professor Chris Battershill at the Coastal Marine Field Station, University of Waikato, Tauranga where she will participate in field and lab-based research conducted by MSc and PhD students and faculty staff. Resilience and restoration of coastal and marine ecosystems will be the key theme of her placement.

On completion of phase one Vicki hopes to gain a deeper insight into scientific research being carried out within the Tauranga Moana rohe and expand her field and laboratory skills. She also hopes to further develop her understanding of NoS, to facilitate better teaching and learning of this crucial part of the curriculum as well as her leadership capabilities.

If you are interested in the programme, find out more [here](#).



Vicki on field work

Kaitiakitanga o te moana

In Aotearoa, we have a strong connection to the sea and the diversity of marine habitats along our coastline. Marine biosecurity is key to protecting these environments.

Gerd Banke teaches science at Nayland College. In 2022 as part of the Royal Society Te Apārangi Science Teaching Leadership Programme, Gerd worked with Cawthron Institute scientists involved with the Marine Biosecurity Toolbox. During her time at Cawthron she learned about environmental DNA and its role in marine pest detection. The Science Learning Hub has since then partnered with Gerd to produce a suite of resources that support learning about marine biosecurity. They incorporate topics such as classification, adaptation, DNA, pest detection and pest management – with an emphasis on the nature of science and mātauranga Māori. They also have strong links with literacy in English and the arts – as outlined in the article [Kaitikaitanga o te moana – a context for learning](#).

The Science Learning Hub has organised the resources into [planning pathways](#). Each topic has ready-to-use Word documents ideal for one-off activities or as part of a [larger unit](#) and can be adapted to suit classroom needs. The topics are supported by wrap-around Hub articles and media.

The resources are not limited to marine environments – many have direct connections to terrestrial environments.

Planning pathways

www.sciencelearn.org.nz/image_maps/138-kaitiakitanga-o-te-moana-planning-pathways





BEANZ Feature Article



Southern elephant seals (*Mirounga leonina*) are an iconic species of the Southern Ocean. But with rapid environmental changes in their ocean home, the seals' population range has been shifting. Once spread across vast areas of the southern hemisphere, these apex predators are facing challenges from both climate shifts and human activities.

Our new research examines ancient and modern DNA, archaeological records and ecological data. It reveals how these large marine mammals have adapted – and sometimes failed to adapt – to such pressures since the height of the last Ice Age thousands of years ago.

A dynamic evolutionary history

Today, the largest southern elephant seal populations are found on subantarctic islands, including South Georgia, [Macquarie Island](#) and the Falkland Islands. These colonies act as global strongholds for the species.

Yet in the past, until just a few hundred years ago, many smaller populations existed on the Victoria Land Coast in [Antarctica](#) and closer to temperate zones, on mainland Australia and New Zealand.

Our study focused on the Australasian lineage of southern elephant seals, drawing on samples from these ancient colonies. By analysing their genetic makeup, we pieced together a timeline of their biological heritage, including population expansions and contractions.



Subantarctic islands such as the Kerguelen islands remain strongholds for southern elephant seals. [Antoine Lamielle, CC BY-SA](#)

This has crucial implications for understanding the resilience of elephant seals in the face of climate change.

From genetic clues in subfossil and archaeological remains, some thousands of years old, we found evidence of repeated population cycles. Expanding sea ice during cold glacial periods forced the seals northward, only for them to recolonise the Southern Ocean as sea ice retreated during warm interglacials.

This history was particularly dynamic after the height of the last Ice Age 21,000 years ago. The planet started warming then, which led to dramatic ecological shifts.

Elephant seals likely expanded from ice-free refuges in temperate regions such as Tasmania and New Zealand into newly available subantarctic and Antarctic coastlines. However, this range expansion wasn't permanent. As the current warm interglacial (the Holocene) progressed, new challenges arose: [Indigenous hunting](#) and, later, extensive European industrial sealing.

For Indigenous communities in New Zealand and Australia, elephant seals were a part of their diet. We know this from seal remains in middens (rubbish dumps) and material culture, including necklaces made from elephant seal teeth which have been found in early Māori archaeological sites.

Archaeological remains from coastal sites in New Zealand and Tasmania indicate significant hunting and reliance on seals by Indigenous populations. Along with human-driven environmental changes, this led to local extinctions.



A mummified southern elephant seal found on the Victoria Land Coast in Antarctica.
Brenda Hall, [CC BY-SA](#)

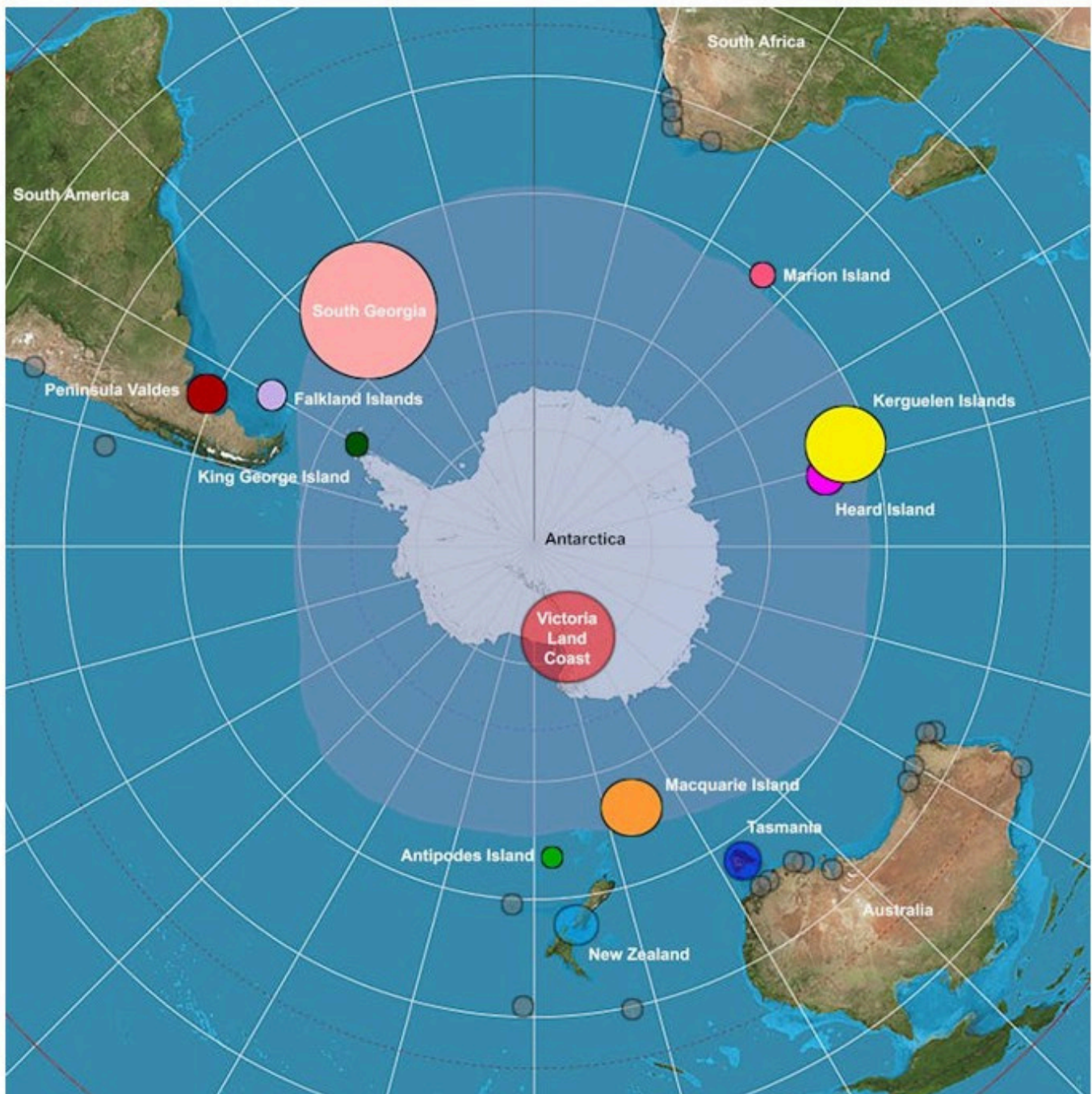
Impacts of humans and climate change

Genetically, the seals from these ancient Australasian and Antarctic colonies were distinct but related. They formed a unique lineage in the Pacific that included Macquarie Island. This genetic diversity likely resulted from periods of isolation in separate refuges at the height of the last Ice Age. However, with modern climate shifts and human exploitation, much of this genetic diversity has been lost. The colonies that once thrived on the Victoria Land Coast in Antarctica are [now extinct](#).

Meanwhile, Macquarie Island is home to a significant breeding colony facing its own challenges. Changes in Antarctic sea ice are increasing the distance between breeding grounds on the island and feeding grounds at sea. This has affected the colony's stability in recent decades.

One of the most striking outcomes of our research is how quickly these large, long-lived animals can respond to environmental pressures. Seals adapted to a shifting climate by expanding their range in response to new habitats and retracting when conditions became unsuitable.

This ability to move and adapt, however, was limited when confronted by the dual pressures of rapid climate change and human exploitation, which reduced their numbers and genetic diversity drastically over a short period.



This schematic shows living (solid circles) and extinct (opaque circles) southern elephant seal populations and the extent of sea ice around Antarctica (opaque blue-grey) at the height of the last Ice Age. [Berg et al \(2025\)](#), CC BY-SA

Can the Southern Ocean ecosystem adapt?

As human-driven climate change continues, the Southern Ocean is expected to continue warming. This will cause further habitat loss for species that depend on sea ice and are affected by shifts in the availability of prey. The elephant seals' history offers a window into how marine mammals may respond to these changes. But it also serves as a warning: human impacts, coupled with environmental pressures, can lead to swift, sometimes irreversible declines.

Our research underscores the importance of conserving the genetic diversity and habitats of southern elephant seals. These seals are not just a testament to adaptability in a changing world; they are reminders of the vulnerability of even the most resilient species.

Protecting their remaining strongholds and minimising human impacts on their food sources and breeding grounds will be crucial if we hope to avoid further contractions in their population.

The story of the southern elephant seal is one of survival, adaptation and loss. As we face our own climate challenges, we must consider the lessons embedded in their genetic and ecological history.

It's a reminder that while nature often adapts to change and can weather some ecosystem threats, human-driven impacts can push even the most adaptable species beyond the point of recovery.

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Environmental Science Flexi Conference - Christchurch

Field Based Stem in conjunction with Climate Action Campus are excited to advise that we have an upcoming Environmental Science Flexi Conference in Christchurch that you won't want to miss!

We are proud to be hosting a 'flexi' conference at the CAC, organised by the amazing team at Field Based STEM Education. The flexi conference format means that there will be sessions in the morning, afternoon, after school and after dark. This will enable any teacher who would like to attend to be able to do so, without having to be out of the classroom, if that is not feasible.

Participants can attend a single workshop or all four days.

There is currently a 2 for 1 early bird deal on offer!

Click the link below to see an overview of all the different workshops available.

[Overview of Workshops](#)

Please share this information with any kaiako or learning support workers that you think might be interested. Field Based STEM Education would love to have lots of teachers benefit from the knowledge and expertise of the scientists they partner with.

To register your interest in this amazing opportunity, click on the link below:

[To Register Click Here](#)

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Senior Vice-President	Erica Jar
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Assessment Coordinator	Kenneth Loh
Curriculum Development	Penny Daddy Heidi Brown Jessica Jarman
Executive	Gerd Banke Jennie Merchant
Tertiary Representative	Nic Rawlence
National Administrator	Allan Smith

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