

# Cawthron Institute

Year in Review 2022-23



# World-class science for a better future.

Ko te kōunga o te pūtaiao te  
auahatanga ki te ao anamata.

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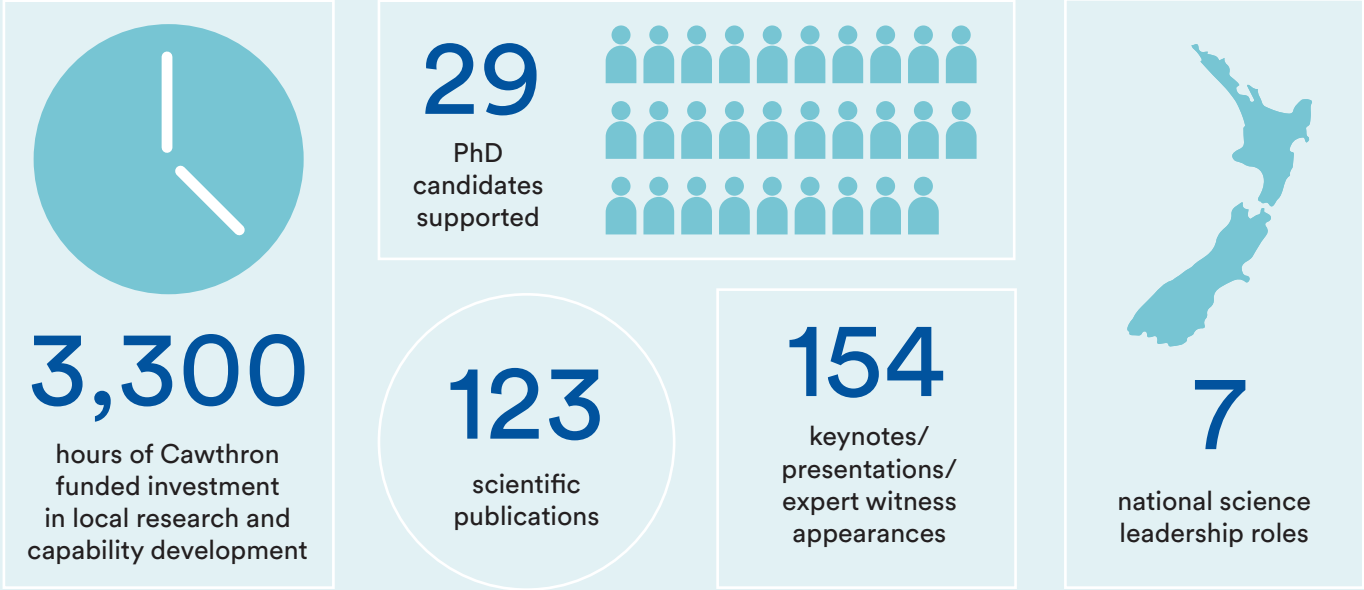
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# Highlights 2022-2023

## Advancing science through:



## Community engagement:



## Relationships/engagements with Māori entities:





# Foreword from CITB Chair

## Embracing diversity of voice to advance science and inspire the next generation of scientists

Cawthron Institute is a charitable trust whose purpose is to advance science for the benefit of Te Taihū and Aotearoa New Zealand, with a focus on natural resources. We discharge this purpose in the approach we take to tackling pressing issues and in how we serve our community.

We honour the legacy of our founder, Thomas Cawthron, by undertaking research that makes a tangible difference to the improved management of our coastal and freshwater ecosystems and growth of our aquaculture sector. We also find sustainable new ways to use resources so that our ecosystems are healthy, our people and communities are thriving and we have a prosperous blue economy.

To ensure that we can continue to deliver world-class science, one focus over the past year has been to guide the Thomas Cawthron Trust Act Amendment 2023. The original Act saw the establishment of the Cawthron Institute Trust Board to govern Cawthron Institute. The main amendment to the Act, which was passed in Parliament in June with unanimous support, means that an additional member nominated by Te Taihū iwi will join the Trust Board.

This iwi member will join statutory Trust Board members – the Member of Parliament for Nelson, the Mayor of Nelson City, the Mayor of Tasman District, and the Anglican Bishop of Nelson – and six appointed Trustees. Iwi representation at this level will help ensure our science delivers solutions that support the aspirations of Māori, and integrates indigenous knowledge with western science to create impact for all.

The Trust Board can now make simple administrative decisions without High Court or Parliamentary approval, thanks to the modernisation of the nearly 100-year-old Act. I'd like to thank fellow Trustees, and especially Rachel Boyack, for guiding the Bill through its readings and Select Committee hearings.

Another aspect of Cawthron's legacy is our philanthropic activity. We share our mahi with our community and inspire the next generation of scientists through education in schools, scholarships and public science lectures. We take great pride in opening our doors and sharing our discoveries and innovation with the community. The dividend of our philanthropic work benefits Te Taihū and Aotearoa New Zealand. We continue to look for better ways to engage the community at all levels and expect to make changes to some activities to deliver more impact.

This past year has seen a change in Trustees. Following the local government elections in October 2022, Mayor Dr Nick Smith joined the Board in his statutory role for Nelson. We farewelled Danette Olsen in February 2023 and welcomed Dr Peter Crabtree in July 2023.

We are proud of how our research improves New Zealand's environment, economy, and communities. Many highlights in the past 12 months have seen us partner with others to undertake research and then to disseminate knowledge. This collaboration enhances our impact and reach and together we are creating a better future.



**John Palmer Chair**  
**Cawthron Institute Trust Board**





# An Update from BoD Chair and Chief Executive

Meeting the challenges of climate change, biodiversity loss and food security is driving our science with unprecedented urgency.

Science and innovation are key to helping humanity thrive, by seizing the opportunities in front of us and tackling some of the most pressing issues of our time.

Cawthron Institute excels in the development of science-based solutions to these challenges, collaborating with partners and applying our diverse scientific expertise in innovative new ways. But, we need to do more, faster, if we are going to turn the tide and protect the shared ecological, economic, social and cultural values we hold dear.



That is why we have leaned sharply into the development of Cawthron's Science Plan with a ten-year horizon. This plan has been developed over the past year, immediately following the global Covid pandemic, and over the course of several significant environmental events that rocked Aotearoa New Zealand, including the 2022 Nelson floods and Cyclone Gabrielle earlier this year.

These events, which are inextricably linked to a warming planet, have provided strong motivation for Cawthron to achieve greater impact, faster. This impetus led to a collective decision for Cawthron to focus efforts into key areas that directly tackle the tripartite challenges of climate change, biodiversity loss and food insecurity. Ultimately, our vision is for our ecosystems to be healthy, our communities are thriving, and we have a prosperous blue economy.

As part of looking ahead to how our science can create the most impact, we have also been reviewing how we can diversify our funding streams so that we are more resilient to the outcomes of competitive funding rounds and the downstream impacts of a challenging economic climate. We are now highly focused on realising commercial opportunities to apply our science and ultimately meet market needs, using financial returns to invest in more research.

There is no doubt it has been a challenging year and Cawthron Institute is no different to many others in terms of feeling the impact of rising costs and inflation. We started the year with the excitement of planning for the new Science and Technology Precinct at Port Nelson, but were confronted with costs that almost doubled in less than two years, which meant this undertaking was no longer feasible.

Whilst we were extremely disappointed over this outcome and the associated write-off costs, in the end we must ensure our future is sustainable.

For now, Cawthron remains at our Halifax Street campus and we are preparing a master plan that will support our people and our research well into the future.

One of our core areas of focus is to realise the ambitions of others through our research. We have a responsibility to work in ways that embody Te Ao Māori. In practice for us, this means building authentic partnerships with Māori to identify shared challenges and co-develop solutions that draw on both science and mātauranga Māori to achieve equitable and just outcomes. We are proud of the partnerships we are developing and the research we are delivering that informs decision making and tools that empower people to create change.

We are excited about what the future holds, and the contribution of Cawthron's research to that future.



**Meg Matthews**  
Chair, Board of Directors



**Volker Kuntzsch**  
Chief Executive



# Our Story

Cawthron Institute is Aotearoa New Zealand’s largest independent science institute, based in Wakatū/Nelson at the top of New Zealand’s South Island.

Our world-class science helps to create a better future by delivering science that supports healthy eco-systems, a prosperous blue economy and thriving communities.

Officially established in April 1921 with a bequest from Nelson businessman and philanthropist Thomas Cawthron, we have a century-long legacy of delivering world-class science that supports the protection of our natural environment, the wellbeing of our people, and the growth of New Zealand’s primary industries

through the sustainable use of natural resources. Thomas Cawthron’s legacy is realised everyday by our highly qualified scientists, technicians, researchers and specialist staff from all over the world who come to work to explore and challenge the boundaries of new science and make ground-breaking discoveries.

Cawthron Institute is owned by a charitable trust, in accordance with the Thomas Cawthron Act 1924. The charitable purpose of Cawthron Institute is the advancement of science to benefit Te Taihū and Aotearoa New Zealand, with a focus on natural resources.

## A Century-long legacy

Thomas Cawthron had a vision that science could contribute to the growth of a young New Zealand.

Following his death in 1915, he bequeathed the equivalent of more than \$100 million in today’s New Zealand dollars - the largest single bequest in New Zealand at the time – to establish and maintain a technical school, institute and museum.

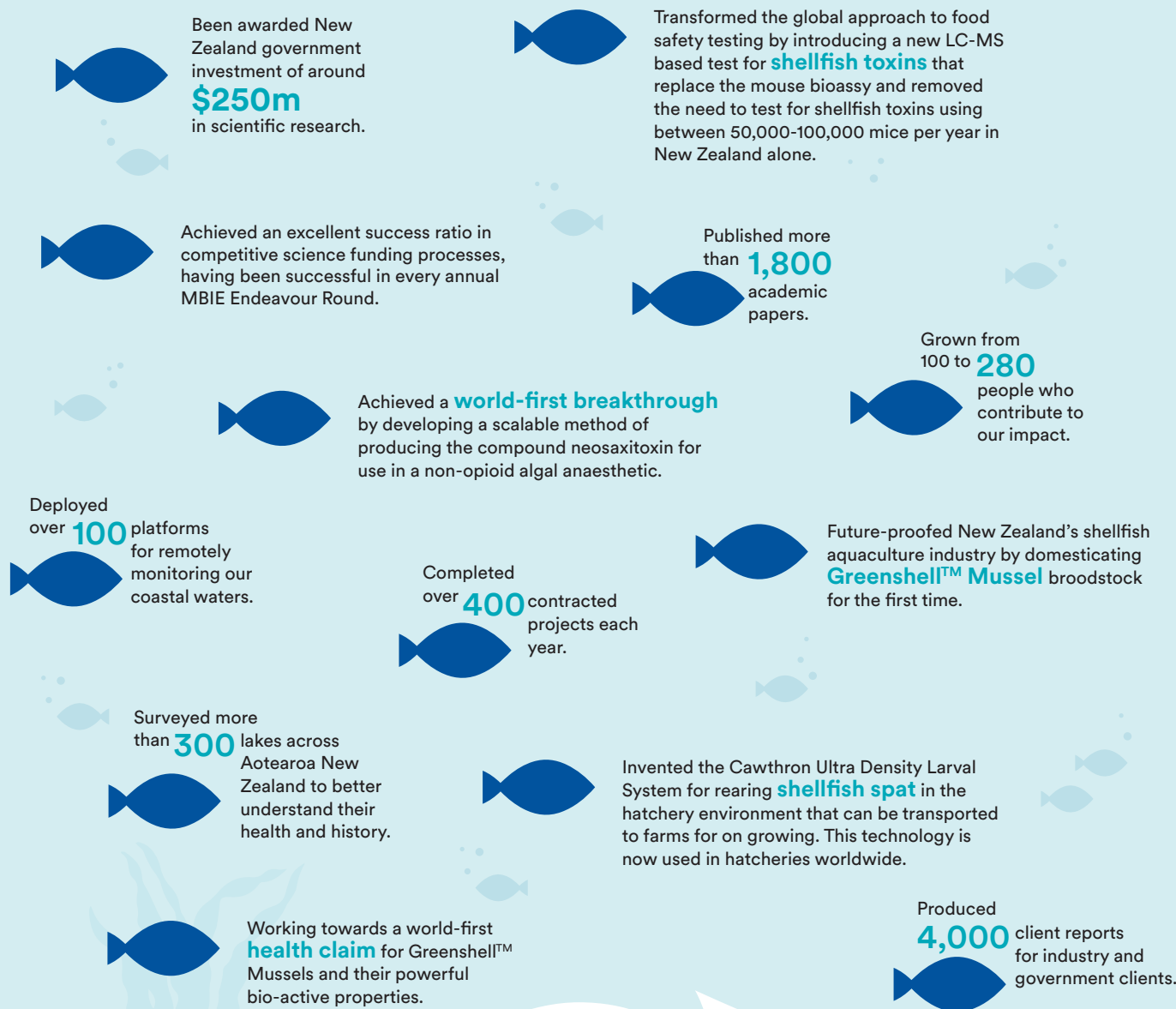
Since then, Cawthron has grown to be one of New Zealand’s preeminent science organisations with nearly 300 staff from more than 30 countries working across multiple sites in Nelson.

Our scientists bring a plethora of world knowledge, and have been able to identify emerging areas of research to assist industry and New Zealand, to become sustainable and successful. At Cawthron, we believe that research, science and innovation is essential to building a sustainable future for generations to come.



Thomas Cawthron

## Over the past 20 years alone Cawthron has:



Cawthron holds significant leadership roles in New Zealand’s science system. We lead MBIE’s Strategic Science Investment Fund (SSIF) platforms in seafood safety and aquaculture, with responsibility for growing New Zealand’s capability and delivering impact.

In addition, we hold national leadership roles with several National Science Challenges as well as delivering research projects within the various Challenges.

## Our facilities

Our world class science is supported by our world-class infrastructure, including the purpose-built Cawthron Aquaculture Park, the National Algae Research Centre, our commercial testing and research laboratories, our internationally significant microalgae Culture Collection and our aquatic animal health bio-containment facility, Te Wero Aro-anamata.



# Our Impact

A key uniting factor for our people is our shared passion to make a difference and develop solutions to a broad range of challenges.

By addressing these global challenges, our ambition is for our mission-driven research to support healthy ecosystems, thriving communities and a prosperous blue economy. Our research is ensuring Aotearoa New Zealand thrives through an intergenerational approach to taiao, moana and whenua, as well as contributing to the United Nations Sustainability Goals.

## Healthy Ecosystems

Human activities have placed huge pressure on our aquatic ecosystems, threatening the ecological, economic, cultural and social value they hold. These impacts are compounded by the effects of climate change, pushing our ecosystems ever closer towards tipping points from which it is difficult to recover.

We deliver research and develop solutions that support the protection and restoration of healthy freshwater and ocean ecosystems. We take a holistic approach to research design and delivery – ki uta ki tai, ki tai ki uta – from the mountains to the sea, from the sea to the mountains, working closely with communities, industry, government and Māori to inform, inspire and empower people to make an impactful change.

## Prosperous Blue Economy

The ocean is one of our biggest assets as we look for solutions to the challenges we are facing as a society. Our science supports the growth of sustainable marine activities that operate within healthy ecosystems. Our work aims to identify challenges and opportunities facing Aotearoa New Zealand’s blue economy, and develop solutions that will help protect and grow our blue economy on the basis of a healthy ocean, with a focus on finfish, shellfish and seaweed aquaculture, algae, aquatic animal health and biosecurity, blue technology, open ocean aquaculture, environmental monitoring and restoration and marine mammal ecology.

## Thriving People and Communities

The challenges of climate change, biodiversity loss and food security pose a huge threat to human wellbeing, with the potential to reverse the global progress made towards the United Nations Sustainable Development Goals by increasing poverty and inequality.

Cawthron is committed to developing solutions that support thriving people and communities through genuine partnership. The values of equity, justice and manaakitanga (Māori principle of respect, care and generosity towards others) guides our approach to delivering nature-based health, safety and wellbeing solutions.


Our research in food safety, seafood safety, bioactive compounds and social-ecological science helps to enhance the health and wellbeing of people and communities. Some of these research programmes are globally significant and involve the development of novel technologies and solutions with transformative potential, like the exploration of bioactive compounds for pharmaceutical applications, the identification of new marine toxins and the development of world-first testing methodologies and environmental monitoring technologies.

# United Nations Sustainable Development Goals

We are committed to delivering our three outcomes that contribute to meeting the following United Nations Sustainable Development Goals:

- 


No Poverty
- 

Zero Hunger
- 


Good Health & Wellbeing
- 

Quality Education
- 

Clean Water & Sanitation
- 

Decent Work & Economic Growth
- 

Climate Action
- 

Life Below Water
- 

Partnership for the Goals

As a research institute focused on oceans and freshwater, we are committed to practising sustainability in all we do. From our research projects which include establishing seagrass meadows, rewilding rivers, battling invasive species and sustainable aquaculture approaches, we are also focused on ensuring our organisational footprint is light and we take great care when working in our precious environments. We also make sure our choices and investment decisions today will make the most difference to future generations.





# Our Science Plan

To achieve our three outcomes and to contribute to the United Nation's Sustainable Development Goals, Cawthron has developed a Science Plan that identifies transformational change programmes which are underpinned by robust science, with the aim of catalysing collective action.

Cawthron is focused on delivering science solutions through the following five impact pathways:



1

## Turning the tide on climate change

We will be good ancestors by creating a sustainable future in a changing climate where people and nature thrive. Under this impact pathway, we are collaboratively pursuing three transformational science programmes focused on:

- Enabling Māori-led climate change research, emphasising mātauranga Māori.
- Understanding climate and social tipping points for aquatic socio-ecological systems.
- Climate resilient low carbon seabeds.



2

## Protecting and enhancing aquatic environments

We will unlock the key drivers of habitat degradation to optimise the implementation of restoration-focused solutions. The transformational science programmes we are pursuing focus on:

- Growing aquatic species for restoration.
- Mountains-to-sea ecosystem enhancement in Te Taihū.
- Innovative and effective pest and disease control to protect and enhance ecosystems.



3

## Securing safe and sustainable food

We will increase food security by improving the safety, nutrition and sustainability of foods from the community level (e.g., marae) through to industrial scale. Cawthron seeks to implement five transformational science programmes:

- Next generation food safety testing methods and tools.
- Reducing the carbon footprint of the agricultural sector through novel methane reducing agents.
- Community-based aquatic food production systems.
- Understanding and managing risks in the food supply chain.
- Supporting the growth of Aotearoa New Zealand's aquaculture industry through diversification, innovation and building resilience.



4

## Realising the potential of algae

We will enhance the blue economy in Aotearoa New Zealand by building knowledge of our unique algal species and their potential applications. Cawthron aims to establish three transformational science programmes.

- Enabling algal production and development of high value algal products.
- Understanding how microalgae are responding to a changing climate.
- Predicting and safeguarding the environmental distribution of seaweeds.



5

## Supporting resilient communities in the Pacific

We will support communities in their efforts to better understand, protect and sustainably enhance their aquatic systems, transform their food systems towards more sustainable pathways, and adapt to the impacts of climate change. As part of this focus, we are aiming to establish two collaborative and codesigned transformational science programmes:

- Transforming Pacific Island food systems to improve health and wellbeing.
- Promoting healthy aquatic ecosystems.





## Our capability

The Science Plan builds on Cawthron's existing unique capability and will help us to deliver our impact pathways through our core expertise in:

- Aquaculture
- Biosecurity
- Food & Bioactives
- Freshwater Ecology
- Healthy Oceans
- Molecular Algal Ecology
- Social Sciences

Our cross-cutting capabilities also closely support the delivery of the Science Plan:

- Our **analytical laboratories** underpin research, create leading method development and deliver commercial testing;
- Our **technological innovation** enables a prosperous blue economy;
- Our **data science** unlocks our full potential;
- Our **science communication** is making our science accessible, supports educational outreach, and is helping to inform decision making and deliver impact.

## Supporting aspirations

We are a highly collaborative and globally connected organisation, working with researchers, industry, government and communities in New Zealand and around the world on novel solutions to some of the biggest challenges facing society today. Our research solutions support the aspirations of others and make a real difference to their operations, environments and communities.

Cawthron is passionate about building stronger relationships with Māori that are consistent with Te Ao Māori values and support iwi/hapū/whānau aspirations. We aspire to work constructively and positively with Māori and learn from their experiences, mātauranga, and whakapapa. We will listen to the objectives and considerations of whānau, hapū, and iwi, and work together to support the development of Mātauranga and science, conceptualise and trial solutions, and collectively put them in place.

Across our organisation, researchers are working with Māori on a range of challenges and opportunities. Some of these projects involve consultation with Māori, some involve research partnership, and in other cases Cawthron is providing scientific support and services. Researchers in Cawthron's Te Kāhui Āio team are working on the implementation of a framework for 'research that is equitable and just for indigenous peoples' called 'He kāinga rangahau'. This framework is intended not only to guide Cawthron's engagement

with Māori, but to contribute to a national and global conversation about how to ensure research that includes and affects Māori, also benefits them.

Cawthron actively advocates for empowering Māori to provide leadership at all levels, including governance, within Aotearoa New Zealand's research, science and innovation (RSI) system as it is critical to ensuring it delivers impact against our shared objectives and achieves its potential. Māori already possess the innovation, inspiration and values required to ignite our RSI sector and take advantage of our country's unique natural capital and cultural identity to generate economic, environmental and cultural benefits for our people.

In addition, Cawthron continues to build on its long-standing relationships with Pacific nations, with a strong focus on science solutions that support those communities as they face the challenges of climate change. Our vision is to support Pacific Island communities to gain a deeper scientific understanding of their aquatic systems, have the tools to rejuvenate and conserve these ecosystems, be empowered to transform their food systems towards more healthy, sustainable and resilient pathways, and adapt to the impacts of climate change.

## Partnering with purpose

Our work is focused on delivering impactful results. Essential to us being successful in our mission is the trust and dedication from others who are eager to support us in generating value from an ecological, economic, social and cultural perspective.

To ensure we continue to make a difference, our international and dynamic team of scientists, technicians and support staff welcome opportunities to work closely with others to support their aspirations and realise ground-breaking discoveries.

Some of our successful collaborations include our partnerships with local organisations, primary

industries, national research institutes and universities, local and central government, and as detailed above, with whānau, hapū, and Māori enterprises.

Being based in Te Taihū we are lucky to have such a motivated and passionate community to work alongside. Our region's high share of scientists and researchers per capita, our location and many of our economic activities support the possibility to be a world-leader in the blue economy. At the centre of efforts to progress this opportunity and foster collaboration is Moananui, a developing collaboration between private firms, public sector entities and knowledge institutions, aimed at increasing value, connecting people and improving ocean health. Cawthron is extremely proud to be an initiator of this ambition.

## International collaborations

In addition to our local and national partnerships, our ground-breaking research is continually sought after internationally as well. Over the past year, Cawthron has signed a number of Memorandum of Understandings with a number of highly regarded international research institutes.

Cawthron has formalised global algae R&D relationships with RISE Research Institutes of Sweden and another with Iceland's Matís – a research institute focused on food science and biotechnology. We have also formed a strategic partnership with Ifremer, France's national integrated marine science research institute. This relationship will see Cawthron and Ifremer work together to increase impact in securing sustainable food sources and protecting and restoring the marine environment.

In addition, Cawthron continues to work with Boston Children's Hospital and Harvard Medical School on algae-based pain relief potential, with Singapore's Agency for Science Technology and Research to explore the protein potential of two native New Zealand seaweeds, and Durham University on novel anti-fouling approaches, to name a few.



# Science Highlights

Cawthron’s world-class ocean and freshwater science is helping to create a better future.

Our research is exploring the vast, untapped potential of our oceans to help us protect the environment, mitigate climate change and create sustainable products that enhance the wellbeing of people, as well as ensure our freshwater environments are thriving.

By finding sustainable new ways to use our natural resources, we are helping to make sure our marine and freshwater ecosystems are healthy, our people and communities are thriving, and we have a blue economy that is prosperous. This is why Cawthron’s expertise is focused on aquaculture and blue technology, food safety and marine bioactives, biosecurity and ocean health, freshwater ecology and social science. Our research in these areas is helping to ensure Aotearoa New Zealand thrives through an intergenerational approach to taiao, moana and whenua.



## Turning the Tide on Climate Change

1

### Restore the meadows

The Cawthron-led ‘Restore the Meadows’ project is building off previous work to provide guidance on when and where to find seagrass seeds and how to collect, process, store and germinate them. Additionally, we are collaborating with seagrass restoration scientists from Central Queensland University (CQ University) and Deakin University in Australia, who have developed robust and standardised methods for seed-based restoration using the same seagrass species.

Over the past year, Dr Anna Berthelsen and Dr Dana Clark, who are co-leading the project, travelled to Australia to visit these researchers and learn about the methods they have developed. This will help ensure standardised approaches to be implemented in New Zealand as well. We have also welcomed financial support from new project partner The Simplicity Fund.

### Blue carbon sampling gets underway at Wakapuaka with The Nature Conservancy

Cawthron is continuing to contribute expertise to The Nature Conservancy (TNC) Aotearoa New Zealand’s Blue Carbon Project. This year, Dr Anna Berthelsen was involved in the exciting first round of fieldwork, with the site at Nelson’s Wakapuaka Flats being first on the list. Up to eight site visits are to be carried out over the next 12 months.

Cawthron will provide technical staff to carry out the fieldwork, with support from DoC, Ngāti Tama and Nelson City Council. The first site visit in August 2023 saw staff establishing nine sampling plots which will be visited every six months to measure carbon sequestration rates.

We expect the results of this work to be available in early 2025. This data will contribute to TNC New Zealand’s global blue carbon programme with the objective of leveraging sustainable financing schemes to restore coastal ecosystems.

Sustainable financing is also a cornerstone of the work identified through Kotahitanga mō te Taiao’s Restoration by Design process. The policy research analysis element of the programme is expected to be completed in mid-2025. The findings will be used by central government to make informed decisions about a potential national blue carbon credit scheme, with potential to change the carbon credits landscape in New Zealand.







## Collaborating with aquaculture industry on climate change adaptation

As with all primary sectors in Aotearoa New Zealand, the aquaculture industry is beginning to feel the effects of climate change. Farmed fish and shellfish, typically located in inshore areas, are particularly vulnerable to warming waters and marine heatwaves during the summer, as well as associated phenomena like harmful algal blooms, ocean acidification and invasive pests and pathogens.

Through the Cawthron-led Shellfish Aquaculture Research Platform (ShARP) and research programmes run at Cawthron Aquaculture Park, great progress is being made towards understanding the nature of the challenges climate change poses for our aquaculture species and building their resilience through a range of measures including breeding, diet, vaccination and hatchery and farming practices.



## Key climate change aquaculture research achievements in the past year include:

- Shellfish thermal biology research is underway to understand the impact of marine heatwaves on mussels and oysters, including their thermal sensitivity, tipping points and recovery mechanisms.
- Research continues into selective breeding for marine heatwave resilience in mussels.
- Research conducted in collaboration with the University of California Santa Barbara and the University of Auckland has revealed that exposing breeding mussels to climate change scenarios (marine heatwave conditions or ocean acidification) can have carry-over benefits for the sensitive embryo life stages of their offspring, and the process provides commercial breeders with important new tools in the struggle to develop 'climate-ready' crops.
- Detailed investigation into the climate change-linked Greenshell mussel summer mortality syndrome has identified a number of key bacteria species and parasites that are likely to contribute to stress and mortality under summer conditions. It appears, however, that the pathogens are opportunistic and co-occur with heat stress, rather than representing a disease as such.
- Working with juvenile mussels (spat), a novel approach has been identified for elevating heat tolerance by bathing the shellfish in water containing extracts from the prickly pear cactus. As this approach becomes refined, it is expected the technique can mitigate stress associated with live transport and deployment into warm water locations.
- Harmful algae blooms (HABs) are likely to increase in intensity and frequency as climate changes. A ShARP-funded PhD programme is demonstrating that a key HAB species, *Alexandrium pacificum*, is harmful to Greenshell mussels, as well as human consumers, and mortality caused by the algae is amplified if it occurs in conjunction with elevated water temperatures. The work highlights the importance of careful HAB monitoring and the study of climate change stressors in combination.

## Key achievements in our Chinook salmon research include:

- Cawthron researchers are aiming to understand the impact of a slow but continuous rise in water temperature and an associated decrease in dissolved oxygen in some areas. In New Zealand fish farms, during the hottest period of the year (January/February), increased water temperatures have been shown to be detrimental to Chinook salmon performance and are associated with mortalities. Cawthron researchers monitored the responses of Chinook salmon to a chronic, long-term increase in temperature and decrease in oxygen over a three-month period. This research provides evidence on how the use of molecular tools, alongside general health and haematological parameters, have the potential to better inform the aquaculture industry of stock health status, helping to enhance resilience, efficiency, and productivity.
- Cawthron researchers have partnered with the Aotearoa Circle to support the development of 'climate change adaptation pathways' for the salmon sector. This process involved a workshop with representatives from across the salmon aquaculture industry who worked together to identify the challenges that climate change represents, what the drivers of change for the sector are, future vision and goals, future possibilities and adaptation options, and pathways towards fulfilling this vision. The report on this workshop will inform the industry's collective planning and development activities and be presented to government regulators to inform policy planning.
- Finally, Cawthron Institute's Endeavour Fund Proposal for a new research programme entitled 'Fast-tracking Finfish Climate Change Adaptation' was accepted. This five-year programme will enable the finfish aquaculture sector to thrive and adapt in an uncertain climate future by creating future adaptive breeding strategies, incorporating climate-change forecasting and identifying strategies to respond to emerging threats. It will involve research partners at AgResearch and Plant & Food Research, as well as iwi and industry stakeholders.





## Protecting and Enhancing Aquatic Environments

2

### Five-year Lakes380 programme completed

Five years after commencing the biggest survey of lake health in Aotearoa New Zealand's history, the Lakes380 Programme leaders at Cawthron Institute and GNS Science were able to officially announce the study results, providing the most comprehensive picture to-date of lake health in Aotearoa New Zealand.

The announcement of these results, which revealed that over 80% of lakes in the North Island and 45% nationally are in poor or very poor health, was covered widely by national media, including two 1 News at Six features.

Cawthron is thrilled with the recent news that a new research programme, entitled 'Our lakes, our future' has been funded through Endeavour, and will build on the success of Lakes380 to develop a globally unique approach to monitoring and revitalising our lakes.

Other research opportunities and partnerships have emerged since the completion of Lakes380 that apply the scientific techniques developed and utilised through the programme. One of these spin-off projects is a Ngāti Kahungunu-led study of the aquatic plants in Lake Wairarapa that will involve eDNA samples and sediment core analysis that is intended to reform the iwi-led restoration efforts.

Another is the launch of an eDNA tuna detection tool that can rapidly identify the presence of the species in sediment or water samples.

### Marine Biosecurity Toolbox develops new pest detection and antifouling tools

Beginning in late 2022, Cawthron's Grant Hopkins ran a month long trial of bubble machines as an antifouling solution at Waikawa Marina in the Marlborough Sounds. The large bubble blower installed beneath the marina creates a periodic disturbance in the water, which prevents damage-causing organisms from attaching to the surfaces of boats and marina structures. Hopkins said the trial results were very good, indicating the technology has great potential as an antifouling technology. The next step is to develop a scalable and feasible solution for use in marinas and ports and the team are interested in the option of building this technology into marina infrastructure. Funded by Marine Biosecurity Toolbox, the experiment is the only trial of its kind worldwide.

### Keeping caulerpa at bay

The spread and associated impacts of the non-indigenous seaweed 'exotic Caulerpa' are of great concern to all stakeholders in Aotearoa New Zealand's marine environment, in particular the northern regions. In 2023 there has been elevated concern about several invasion hotspots in Northland.

Northland Regional Council engaged scientists from the Marine Biosecurity Toolbox research programme to assist them with prioritising locations along the coast of Northland for surveillance and readiness activities. The team applied their prototype maritime pathway network model to predict critical risk locations along the Northland coast.

Cawthron's Dr Ian Davidson has also been a member of MPI's Aotea Operational Trial Team for exotic Caulerpa response. Beginning in September 2023, the trial is an important step in marine invasion management for exotic Caulerpa. The primary tool being trialled is suction dredging, while chlorine under containment will also be examined. The trial team will find out how well the method removes exotic Caulerpa without leaving fragments or sub-surface components behind, as well as how long it takes to treat certain areas of the seafloor and how the method performs across different types of seafloor and whether there's an effect on native species or habitats by doing the work.

The ultimate goal is to understand if these methods will help responders have an impact on the trajectory of this invasive seaweed. This is a positive step toward developing effective tools and methods to reduce the footprint of exotic Caulerpa or stop it from establishing in additional locations.

### Catchment Management Tools and Resources

Cawthron researchers completed an in-depth report for the Our Land and Water (OLAW) National Science Challenge which will help catchment groups achieve better outcomes from their efforts to improve freshwater health.

The report found that for Aotearoa New Zealand's catchment groups to realise their potential, both agencies and the groups themselves should re-focus their efforts, and that there needs to be more support, more targeted policy, better planning and monitoring by groups and stronger relationships with Māori. The report was launched in April 2023 via a stakeholder webinar, with over 170 attendees from across Aotearoa New Zealand's freshwater management and conservation sectors.

Cawthron researcher Katharina Doebling supported the delivery of another important OLAW resource called the Healthy Waterways Register - a new national database for recording and reporting the work being done on land to support waterway health.

Healthy Waterways enables restoration activities to be recorded in a systematic way, with the aim being to link these actions to water quality outcomes. This register is an important piece of a jigsaw puzzle of restoration information that will eventually help to understand which actions work best to improve water quality.







## Securing Safe and Sustainable Foods

3

### Musseling Up clinical studies complete

For the last six years, Cawthron's Dr Matt Miller has led a team of researchers and industry specialists to produce a body of research under the banner 'Musseling Up', financially supported by the High Value Nutrition National Science Challenge.

The challenge was to turn the humble New Zealand Greenshell™ mussel (GSM) into a prized, high-value product by using science to identify the underlying mechanisms of its health benefits including a series of human intervention trials.

The project involved three clinical studies facilitated by project partners Massey University with human participants who were given daily doses of Sanford's Perna Ultra Greenshell™ Mussel Powder during the trial period. These studies assessed both the participants reports of how they felt as well as clinical results from blood tests that examined factors like changes in biomarkers of inflammation and muscle damage, immune cell phenotyping, and RBC and plasma fatty acid measurement.

The first study, *Mussels Optimising Vigorous Exercise & Recovery* (MOVER) included 20 male participants between the age of 18-45 and it aimed to evaluate the effects of GSM in promoting muscle recovery and modulating inflammation following exercise-induced damage in healthy males. This study provided clinical evidence that GSM helps to reduce inflammation and aids muscle recovery post exercise.

The second study, titled *Mussels Improving Nimble Knees* (MINK), aimed to assess the effect of GSM on cartilage biomarker and inflammation response in healthy postmenopausal females. It involved 50

participants aged between 55 and 75 years old, who were healthy but experiencing joint pain and had a BMI between 25 and 35.

The ROAM Study, *Researching OsteoArthritis and GreenShell Mussels*, aimed to discern whether GSM can improve both signs and symptoms of osteoarthritis in those with early/subclinical OA.

There were 126 participants between 60–74 years, and the results of the study provided clinical evidence that GSM can improve both symptoms and functionality for those with early osteoarthritis through a reduction in cartilage damage and inflammation. It is hoped that these novel discoveries will assist the transition of Greenshell™ mussels from the relatively low priced "commodity protein" market to a globally recognised position where the mussels and mussel products are valued for their unique nutritional and functional properties.



### Sustainable and resilient aquaculture production – Ngā Punga o te Moana

The Ngā Punga o te Moana open ocean aquaculture (OOA) research team has made great progress in 2022/23, delivering a successful trial of new oyster farming structure designed for exposed ocean environments.

The team is collaborating on this trial with Moana New Zealand, Stainless Concepts and Whakatōhea Mussels Ltd who deployed the trial structures on their marine farm off the coast of Ōpōtiki around 11km from the coast and 50m deep where the oysters are

suspended at about 9m below the surface to avoid surface wave energy.

Around 8000 spat were deployed and within a month one sleeve weighed nearly 10x its original weight, showing that the oyster spat were thriving in the environment. There was some minor fouling on the sleeves, but not enough to restrict waterflow to the oysters, and the oysters were clean with no mortalities. The trial is yet to be completed but the method shows great promise. The researchers will assess results and seek further industry input during the process of testing refining the technology and methods employed.







## Realising the potential of algae

4

### Microalgae being explored as future food

Cawthron has partnered with biotechnology nutrition company NewFish to commercialise microalgae intellectual property into food nutrition with a focus on specialised proteins.

Building on Cawthron's extensive expertise in seaweed and microalgae, and the innovation and commercialisation capabilities of NewFish, the partnership will focus on shared research and the development of high-quality non-animal proteins from microalgae.

Cawthron Institute's Culture Collection of Microalgae holds over 600 strains of microalgae, many of which may have properties that could make them suitable for use in food production, however this potential is largely unrecognised.

This project involves scanning the collection for strains of interest and investigating their properties. Cawthron's Dr Matt Miller says Cawthron is an ideal partner for NewFish given our proven expertise in developing production systems for algae and extracting high-value bioactive compounds.

"This makes great use of the culture collection, and we hope to attract other similar research partners who are interested in its commercial potential and willing to invest in the research and resources required to unlock it."

### Cultivating New Zealand's red seaweeds

Cawthron continues its work to identify promising bioactive compounds and potential high-value novel products through its research into native New Zealand red seaweeds – namely Karengo and *Asparaposis*.

Researchers have found that Karengo has great potential as a high-value functional food and as a unique protein ingredient. Previous research carried out by Cawthron found that Karengo contains 30-35% protein as a percentage of dry weight – which could be a higher level of protein than any terrestrial plant. It has also been proven to contain a very high level of vitamin B12, which means a small snack of this red seaweed could provide the recommended daily allowance of this vitamin.

However, little is known about the reproductive biology, ecological and environmental constraints on the growth of Karengo. Cawthron's team of seaweed experts are focused on how to sustainably produce this species of seaweed, along with others, using aquaculture systems.

Meanwhile, research continues into understanding and closing the lifecycle of *Asparaposis*, known as 'methane-busting' seaweed, to enable it to be grown at scale. Overseas trials have proven this seaweed reduces greenhouse gas emissions in livestock by over 90 percent when used as a supplementary feed.

Cawthron researchers continue to be heavily involved in contributing to New Zealand's seaweed regulatory framework through a Sustainable Seas National Science Challenge programme called 'Building a Seaweed Sector'.







## Supporting Resilient Communities in the Pacific

5

### Transforming Pacific coastal food systems

With more than 20 years' experience of supporting Pacific communities, Cawthron has been delivering positive impact through knowledge exchange, capability and capacity development and problem solving.

Cawthron researchers are currently working with the Australian Centre for International Agricultural Research on a project called 'Transformation pathways for Pacific coastal food systems', which aims to develop and test processes and tools that transform coastal food systems in the Solomon Islands and Kiribati, resulting in improved diet, nutrition and community health; community food self-sufficiency; enhanced climate and disaster resilience; restoration and stewardship of natural resources, and diversified livelihoods.

Building on these individual pieces of work, Cawthron is in the early stages of developing a multidisciplinary 'Pacific Hub' that supports resilient communities in the Pacific through co-developed solutions tailored to real world problems. Cawthron intends to focus on marine and freshwater ecosystems and understanding their intrinsic links to Pacific communities.

### Supporting Pacific aquaculture expertise

Cawthron researchers welcomed aquaculture technicians from the Pacific Islands for a four-week knowledge exchange project funded through a joint Pacific Island government initiative. The aim of the visit was to enable the Pacific visitors to learn from Cawthron's shellfish hatchery expertise and take that knowledge back home to support their local shellfish industries.

The visit was funded by the Secretariat Pacific Community Fisheries, Aquaculture and Marine Ecosystems (SP FAME), which has 22 member countries throughout the Pacific Islands and is an example of the valuable work SPC FAME do to provide Pacific communities with the knowledge, skills and resources they need to manage their aquatic resources. Supporting the development of Pacific aquaculture not only enables and secures a sustainable food production system, but also creates economic opportunities.





# Our Commercial Laboratories

Cawthron Laboratories have provided trusted laboratory testing services to Aotearoa New Zealand’s food and natural products sector for over 40 years.

We are a nationally significant provider of testing services that supports Aotearoa New Zealand’s food industry by ensuring the safety of their product for domestic supply and export markets.

From seafood, oils and milk powder to a range of other food and natural products, our testing services play a critical role in supporting our country’s food system. Our testing services span dairy and micronutrients,

toxins, food safety and certification, microalgae analysis, natural products and supplements, shelf life and stability trials.

Our laboratory staff work closely with Cawthron’s scientists across a number of our research projects. Our technicians work closely with our dedicated Food and Bioactives team to develop customised analytical solutions to support product development and to validate nutritional content for the food and natural products sector.

## A new testing facility based in Tāmaki Makaurau Auckland

To build on our broad spectrum of food testing services, this year Cawthron made the exciting announcement it will open a new analytical testing facility in Tāmaki Makaurau Auckland.

Located in Māngere, the new facility expands Cawthron Laboratories’ service capacity and supports existing efforts to provide a full spectrum of testing services to customers in any part of the country, with prompt turn-around times for results regardless of location.

This expansion builds on the strong relationships Cawthron already has with customers in the North Island and creates opportunities for new customers by increasing confidence in the accessibility and reliability of our testing services.



# Realising Commercial Opportunities

Cawthron is passionate about ensuring our research has enduring impact and contributes to our vision of creating a better future.

One of the ways we are doing this is to transform some of our ideas, discoveries and inventions into products and services that meet market needs.

Commercialising our research extends far beyond financial returns (which are invested back into our research); it is about allowing industry and communities to access new and innovative solutions to address some of the most pressing challenges we face. Over the past year Cawthron has worked closely with KiwiNet and Callaghan Innovation to realise some of our opportunities. Here are just some examples of how Cawthron is taking our science to market.





## An Ocean Intelligence revolution

One of Cawthron's key ambitions is to effectively deliver ocean intelligence into the blue economy. The need for data-driven intelligence for the oceans is accelerating and creating a large market with few solutions on offer. By comparison, blue technology's land equivalent 'Agritech' is a \$1.6B industry in New Zealand, which shows how much potential there is.

Cawthron is already a research leader in this space, having led the Precision Aquaculture spearhead project through the SfTI National Science Challenge. The next step is to advance investor readiness and develop a pathway for our science and technological innovations through the Ocean Intelligence project.

To help with this, Cawthron in partnership with Oceanum, is advancing a new venture to accelerate the commercial readiness of our blue technologies and data science solutions, which span bespoke hardware solutions such as sensors, through to digital support tools that enable farmers to manage their farms remotely.

This venture will allow skillsets outside of our core science capability to be integrated with the technologies, including ocean and climate forecasting and data visualisation. Although initially focused on aquaculture, the venture represents a pathway for Cawthron science to impact sectors spanning the entire blue economy.

## Anti-fouling bioarmour

Biofouling on manmade structures like ship hulls, aquaculture equipment, or pontoons and jetties causes major problems because it degrades the surfaces and also represents a biosecurity threat because it allows invasive species to establish and spread within the marine environment.

Marine sensors are severely impacted by biofouling, and with blue technology the future to aquaculture farming efficiencies, it is important to find a solution to prevent this from happening. 'Antifouling' coatings are the traditional approach to controlling the accumulation of biofouling, and although effective, these kinds of antifouling coatings can generate unacceptable environmental damage so the need for improved antifouling technologies is urgent and globally important.

To meet the challenge, and thanks to funding from KiwiNet, Cawthron together with Durham University, has developed a unique surface coating which traps air and prevents fouling growth. Cawthron is currently testing the coating on some aquaculture farms.

## eDNA Services

Cawthron scientists are on a mission to ensure new and best practice methods for capturing and analysing environmental DNA (eDNA) become industry standard due to their simplicity and cost effectiveness.

The term environmental DNA refers to traces of DNA collected from environmental samples (such as soil, sediment, water, air) without knowledge of the original organism. The sources of this DNA vary, but can include DNA shed through faeces, mucous, skin, eggs, pollen, etc.

eDNA methods offer universal and cost-effective ways to measure biodiversity and detect the presence of organisms in an environment, including pests. It is a fast-moving and innovative field, and increasingly, government agencies and industry are adopting it to support environmental management and species detection in a broad range of areas such as biodiversity conservation, biosecurity, agriculture and environmental management.

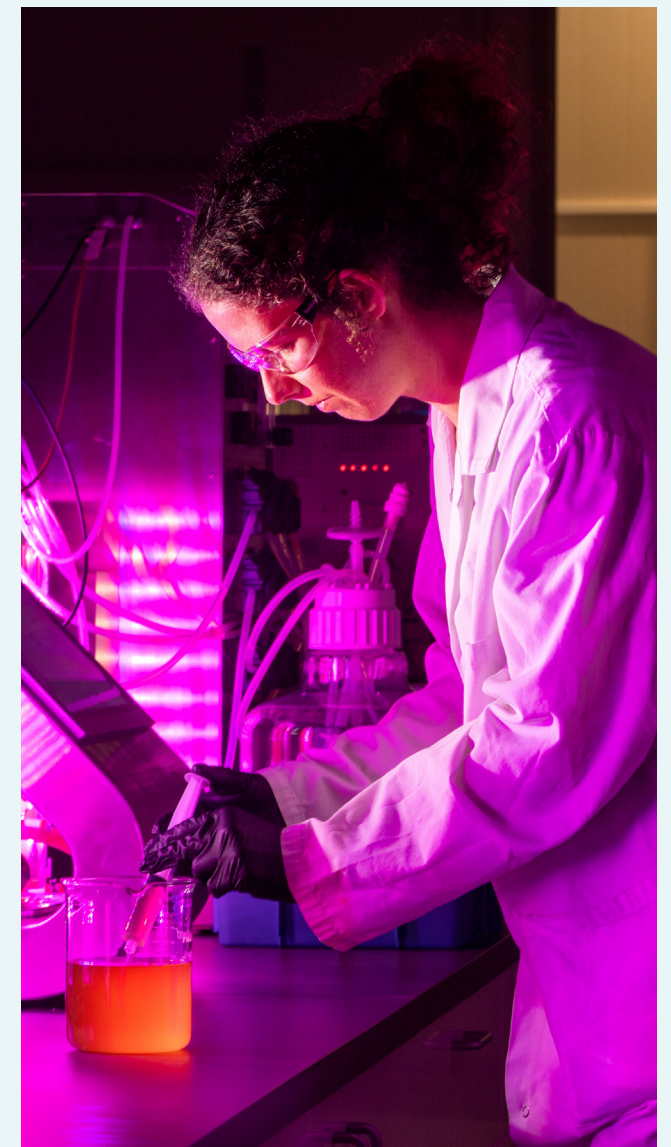
As a leader in the application of eDNA technologies, over the past year Cawthron has expanded its eDNA offerings and provides a flexible and personalised service from start to finish to support molecular surveillance needs. These services are already available, go to [edna.cawthron.org.nz](https://edna.cawthron.org.nz).

## Continuing our mission to develop the world's first algae-based local anaesthetic

Our pursuit to realise an algae-based pain medication that could improve the care of patients undergoing surgery has continued over the past year, thanks to our ongoing collaboration with medical researchers at Boston Children's Hospital (a Harvard Medical School teaching hospital) and Chilean biotech company Proteus.

Cawthron has developed a reliable and commercially scalable method for producing neosaxitoxin, a potent toxin from the paralytic shellfish toxin family, that can be combined with existing local anaesthetics for use as a local anaesthetic during and after surgery in post-operative patients.

The motivation to develop this drug is to provide more effective pain relief for both children and adults following surgery. Opioid analgesics produce side-effects and can be addictive, so there is great interest in developing better non-opioid approaches to pain relief. Work continues to take the drug through to Phase 2 clinical trials.





# Our People

## Manaaki tangata – we take care of our people.

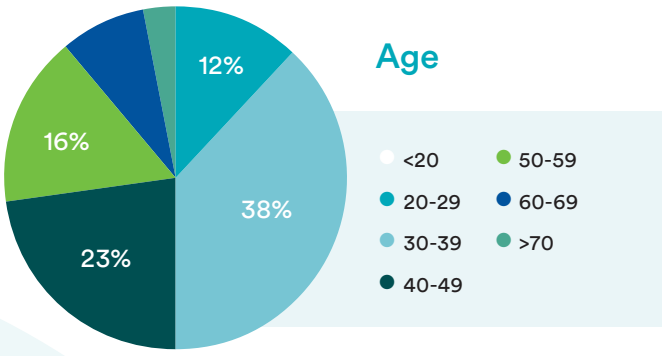
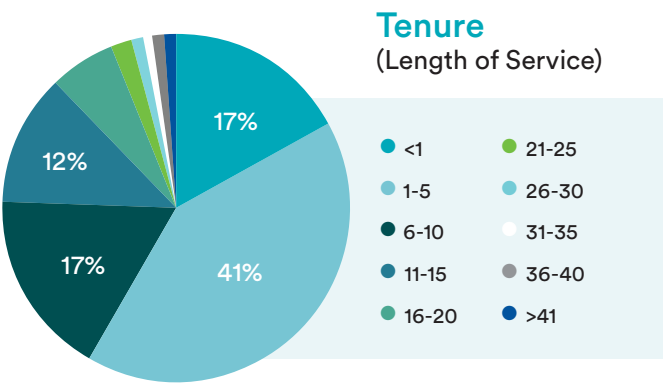
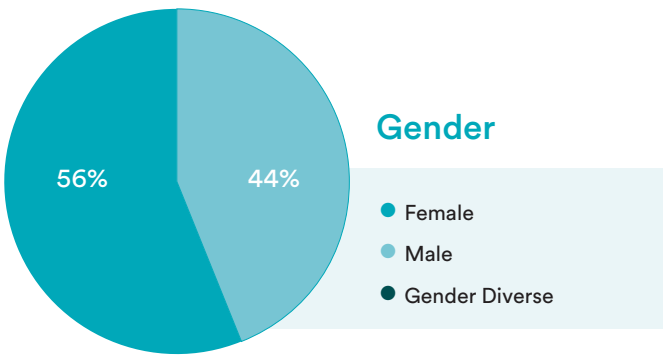
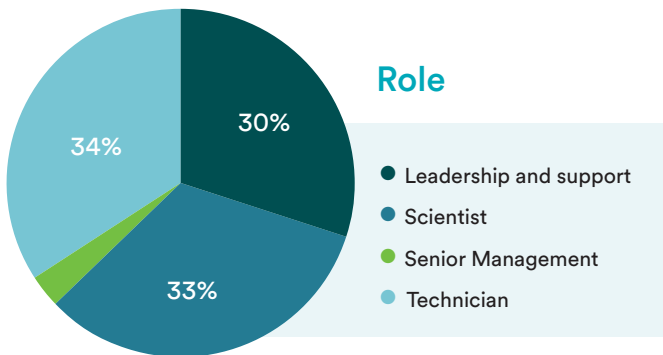
Our people are our greatest asset, and it is our culture at Cawthron that underpins our success.

The reason why many people choose to work at Cawthron and are successful in what they do, and how they do it, is embraced by a commitment to a better future, environmental protection and restoration, sustainability and advances to protect environmental and human health.

Our location in Whakatū/Nelson at the top of New Zealand’s South Island provides an inspirational setting for our marine and freshwater research and enables us to carry out cutting-edge field work research on our back doorstep.

### Our People Profile

Cawthron continues to have a strong gender balance with a workforce profile that is more than 50% female, and spans in age from 16 to 99 with half of the organisation aged under the age of 40. Our staff hail from more than 30 countries and bring a plethora of world knowledge to the day-to-day work. This diversity brings a unique culture to how we engage with and support each other, as well as approach our work.



### Health, Safety and Wellbeing

Tūmanakotia te oranga tāngata, kia haere āhuru mai, kia hoki āhuru atu!

Our priority is to ensure staff wellbeing, so they arrive protected (safe), and they leave protected (safe).

Our ISO 45001 Accreditation was renewed in 2023 for a further three years and we continue to develop our people’s knowledge and skills in this area with significant investment in training including First Aid, 4WD and Health and Safety Representative Stage 1 and above courses. In addition, to ensure we are well prepared for any disaster events, key staff attended CIMS training.

In the past twelve months we have focused on how we can support the wellbeing of our people. Alongside our Employee Assistance Programme, we have trained a group of Mental Health First Aiders and run regular events to promote awareness including Men’s Health Week, Mental Health Awareness Week and Pink Shirt Day. In addition, our Social Committee has organised a range of activities to promote connection including an end of year BBQ, mid-winter feast, and Kubb Tournament.

### Capability development

To enable our people to understand and work with indigenous knowledge and science including mātauranga Māori we conducted an initial baseline survey, Te Ara Ki Tua - The Pathway Forward, to identify current levels of knowledge and understanding of Te

Ao Māori and confidence in Te Reo Māori. Following this, three cohorts of our people have completed a workshop to improve their cultural competency and basic Te Reo. In conjunction with Te Kāhui Āio, a range of resources for self-directed learning have been developed and shared.

A refreshed Leadership Development programme was launched in early 2023 with a focus on self-awareness and creating foundational skills for our more recently appointed People Leaders. In addition, the latest internal mentoring programme resulted in successful matches which will continue to develop our early career researchers (ECR). We have also appointed a Postgraduate and ECR Peer Mentor and Liaison to better onboard and support students and ECR’s. Finally, we continue to reinforce core technical and professional skills through funding relevant training and encouraging self-directed learning.

### Diversity and inclusion

We are exploring how to strengthen our diverse culture with people from a wide range of nationalities and background and ensure we are inclusive to all. In the past twelve months we registered as a Safe Space with Safe Space Alliance and invited Q-Youth Nelson to run a number of sessions to promote LGBTQIA+ awareness, along with establishing a working group to support the development of resources and guidance internally. We promote and support events such as Breast Cancer Pink Ribbon Day and the White Ribbon International Day for Elimination of Violence against Women. In 2023, over 20 of our people attended a Women in Leadership webinar.





# Investing in science as a solution

Solutions to deal with the challenges we face are at our fingertips, but investment is required beyond contestable funding and consultancy revenue to realise this impact.

That is why Cawthron is looking for partners to invest in our science solutions that will address the most pressing challenges of our time, including climate change, biodiversity loss and food security.

We are seeking funding support to develop new science-based solutions that support our three priority outcomes: healthy ecosystems, thriving communities, and a prosperous blue economy.

## Some of our investor-ready research projects include:

- Improving biodiversity monitoring efforts in the Pacific Ocean to make informed decisions about how to manage our oceans and protect their ecosystems.
- Fighting climate change and improve ecosystem health by supporting our efforts to develop a blueprint for seed-based seagrass meadows.
- Providing climate refuge for native fish in our freshwater environments through habitat restoration.
- Supporting our Pacific Island mahi to empower communities to transform their food systems towards more healthy, sustainable and resilient pathways and adapt to the impact of climate change.
- Understanding, predicting and controlling seafood safety threats to protect the wellbeing of people and communities.

If you are interested in talking to us about how your investment could support Cawthron's ambition of creating a better future, please reach out.





# Sharing Science with our Community

Inspiring the next generation of scientists - He pu tangata.

Our founder Thomas Cawthron was a generous, community-minded man who strongly believed science and education were the key to success.

More than 100 years later, we continue to honour his legacy by investing in future generations of scientists and making science widely accessible to our community.

Our programme of annual philanthropic activity includes community initiatives to connect our scientists with the community, specific educational activities, and recognising those in our community who are committed to restoring our environment.



## Nurturing Young Minds

### Summer Scholarships

Cawthron hosted seven undergraduate university students on 10-week placements, providing them the opportunity to contribute to active scientific research projects while being mentored by Cawthron scientists.

The 2022/23 summer scholars were;

- Irisa Hudson – Seagrass restoration (Emerging Scientist Scholarship)
- Demi Fearn – Seagrass restoration (Emerging Scientist Scholarship)
- Laura Neale – Properties of phycobiliproteins in kerengo (Emerging Scientist Scholarship)
- Sylvia Orr – Understanding tuna consumption patterns in Whakakī Lake (Kathleen Curtis, Lady Rigg Scholarship)
- Ashleigh Bunning – Superfoods to enhance greenshell mussel spat resilience (Emerging Scientist Scholarship)
- Akash Pai – Ocean Technology research and development (Sir Theodore Rigg Scholarship)
- Toiroa Whaanga-Davies – Mātauranga Māori research and learning resources (Te Pītau Whakareī Karahipi for a Māori undergraduate student: this scholarship is offered in partnership with Ngā Pae o te Māramatanga, New Zealand's Māori Centre of Research Excellence).

Funded by a mix of donations, partnerships and Cawthron's own charitable funds, these bring us to a total of 27 summer scholarships awarded since the programme was introduced.

### Cawthron Scitec Expo

In a school year still heavily interrupted by Covid, the 2022 Cawthron Scitec Expo attracted 57 entries from five local secondary schools, as well as some home school students. Entries were displayed and assessed at Founders Heritage Park, followed a few weeks later by a prize giving at Pūtāngitangi Greenmeadows Centre in Stoke. Students from Nelson, Nayland and Waimea Colleges received \$500 and a trophy each for the best Science, Research, Technology and Art projects. A range of other smaller awards were also presented.

## Year 13 biology workshops

Held in collaboration with Otago University's Department of Marine Science, NMIT Te Pūkenga and Sanfords, these two-day workshops at Cawthron's Aquaculture Park provided more than 60 students from Nelson College for Girls, Golden Bay High School, Kaikōura High School and Tapawera Area school the chance to run their own experiments with facilities, equipment and scientific guidance that is not available to them in their classrooms.

### Other student education initiatives

The roll-out of Cawthron's popular Lakes380 Education Workshops for primary and intermediate ākonga was completed, and the programme was successfully developed into an online teacher research, made available to schools throughout New Zealand via The Science Learning Hub. Cawthron sponsored the Ministry of Inspiration's annual Inspire Festival which provided a full day of STEAMS education workshops for 451 primary and intermediate students.

## Sharing science with our community

The 80th Annual Thomas Cawthron Memorial Lecture took place in the Nelson Centre of Musical Arts in June 2023, with 217 people coming to hear acclaimed climate change scientists Dr Tim Naish and Dr Richard Levy discuss the impacts of rising sea levels. A further 300-plus people have since watched their presentation online. The last year has also seen the introduction of a regular series of free science talks, hosted by Cawthron and held in collaboration with the Nelson Science Society. Cawthron presenters have included Dr Sam Murray, Dr Laura Kelly, Dr Marc Tadaki, Dr Susie Wood, Dr Dana Clark, Dr James Butler and Dr Matt Miller. More than 250 people have attended these talks. In October 2022 Cawthron staged a highly successful public Open Day which provided people the opportunity to tour its labs, view exhibits of various science programmes and tour the boat shed. This saw about 550 people visit our facilities, and this was followed by a Chamber of Commerce function in December which saw another 120 local business people learning about our mahi.



# Our Governance and Leadership

## Cawthron Governance

We are owned by a charitable trust, established in accordance with the Thomas Cawthron Trust Act 1924. In keeping with the original Act, the Trust includes the Member of Parliament for Nelson electorate, the Mayor of Tasman District, the Mayor of Nelson and the Anglican Bishop. These Trustees appoint six additional trustees, who bring scientific and business expertise to the Trust.

The Trust appoints our governing Board of Directors, who establish our strategic objectives and policy framework and appoint our Chief Executive.

## Cawthron Institute Trustees 2022/23



John Palmer  
Chair



Nelson MP  
Rachel Boyack



Archdeacon  
Harvey Ruru QSM



Bev Doole



Mayor Rachel Reese  
(stepped down in October 2022)



Mayor Nick Smith  
(Joined in October 2022)



Mayor Tim King



Sarah-Jane Weir



Anglican Bishop  
of Nelson, Steve  
Maina-Mwangi



Jan Hania



Danette Olsen  
(Stepped down in  
February 2023)



Dr Peter Crabtree  
(Appointed July 2023)

## Board of Directors 2022/23



Meg Matthews  
Chair



John Cunningham  
(Stepped down October 2022)



Carl Carrington  
(Stepped down July 2023)



Murray King



Nagaja Sanatkumar



Dr Matt Peacey



Lees Seymour



Roz Buick  
(Appointed October 2022)

## Cawthron Core Management Team



Volker Kuntzsch  
Chief Executive



Cath McLeod  
Chief Science Officer



Chris Cornelisen  
Chief Science  
Capability Officer



Anaru Luke  
Tumuaki Te Kāhui Āio



Cameron Ingram  
Finance and Commercial Manager



Paige Riddell-Phillips  
People and Capability Manager



Megan Kitchener  
Communications Manager



Eric Swale  
Commercial Development  
Manager

## Cawthron Science Leadership Team



Johan Svenson  
Science Impact Manager



Roger Young  
Freshwater  
Ecosystems Manager



Grant Hopkins  
Healthy Oceans Manager



Tim Harwood  
Food and Bioactives Manager



Paul Parker  
Cawthron Laboratories Manager



Patrick Cahill  
Biosecurity Manager



Kirsty Smith  
Molecular Algal  
Ecology Manager



James Butler  
Social Science Manager



Seamus Walker  
Aquaculture Group Manager



# Financial Performance

## Financial Performance for the year ended 30 June 2023

2022		2023
\$000's		\$000's
43,208	Income from research contracts, analytical services, consultancy & other scientific projects, lease income and other income	43,256
42,742	Expenses including depreciation	45,587
466	Net operating surplus	(2,331)
(1,208)	Revaluation of land and buildings	3,981
742	Trust Surplus	1,650

## Financial Position as at 30 June 2023

2022		2023
\$000's		\$000's
	The Institute's Trust Capital is represented by;	
10,496	Asset revaluation reserve	14,477
130	Special projects and bequests reserve	172
27,590	Accumulated comprehensive revenue and expenses	25,188
38,216	Total Trust Capital	39,837
	Trust Capital funds the following Net Assets;	
14,351	Working capital	2,586
31,590	Fixed assets	44,835
(7,725)	Long term liabilities	(7,584)
38,216	Total Net Assets	39,837

## Movement in Equity for the year ended 30 June 2023

2022		2023
\$000's		\$000's
38,856	Opening balance	38,856
102	Transfers of reserves	(29)
466	Trust Surplus	(2,331)
(1,208)	Revaluation of land and buildings	3,981
38,216	Closing Balance	39,837

The Cawthron Institute Trust Board is a charitable trust established in accordance with the Thomas Cawthron Charitable Trust Act 1924 to oversee the Cawthron Institute.

Mau tonu  
te au kakara  
i te moana.

So that the sweet scent of the  
ocean remains.



