



New Zealand
Biosecurity Institute

the magazine of the NZBI Spring 2025

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New Zealand
Biosecurity Institute

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The New Zealand Biosecurity Institute can be found on the web at www.biosecurity.org.nz



■ FROM THE EDITOR

Lots to celebrate

There's lots to be proud of in this issue.

It celebrates innovation, wisdom, success and longevity in aquatic weed control on a sustained project which almost never got off-the-ground, or should that be never got-under-the-water?

It celebrates career-long service (so-far) to the Canterbury Westland branch, and it introduces the recipients of the 2025 NZBI Scholarships, whose projects will benefit the Institute and the biosecurity sector.

A significant new threat has made it to Aotearoa, and resources will swing into action to prevent its establishment. The yellow legged hornet will keep biosecurity staff and the community on the alert this Summer.

Protect Magazine wants to hear about everyone's successes and challenges, whether it be battling Invasives through backyard trapping or weedbusting, hard work at the border, planning and carrying-out control programmes or researching ways to do things better through good science and clever innovation.

Read on and share the success.

CHRIS MACANN
EDITOR

■ FROM THE PRESIDENT

Futureproofing biosecurity capability

Kia ora tatou

The biosecurity sector is facing funding challenges like all others. We all want a piece of the pie and it is our job to show how important our work is to the country and to share and celebrate what we do with everyone we come into contact with.

Our crown research institutes are facing a degree of uncertainty at the moment as are regional councils. **Without these organisations' support, our Institute would perhaps not exist in its present form.**

As an Institute, **we are perhaps best-placed to take the broadest possible view of the sector**, and to share our collective knowledge when it comes to sector-wide improvement or adjustment.

In 2023, the regional councils conducted a review titled "Future-proofing the Regional Biosecurity Sector." The review identified gaps and misalignments in roles and responsibilities across councils, and examined discrepancies between employer's expectations and employee's skills. It also examined the current state of biosecurity education and noted the communication challenges within the sector.

Now is perhaps a good time to take a look at the role of the Institute in our sector as it faces these many emerging challenges.

Following interest expressed by several participants at NETS 2025, a dedicated group, now known as the Biosecurity Education Working Group met in Hamilton in September to discuss the report, and explore future directions for strengthening biosecurity education and professional development.

The working group's aim is to effectively futureproof the capacity and capability of our biosecurity industry, which is consistent with the aims of the NZBI.

The group proposed that NZBI would be the ideal conduit for provision of needs in the future as the 'Professional Body' for the industry.

There are a lot of matters to consider and the NZBI Executive is keen to hear everyone's thoughts.



Ngā mihi

DIANE FRASER
PRESIDENT, NZBI



LONG SERVICE TO CANTERBURY BIOSECURITY REWARDED:

Fellowship for Laurence Smith



Laurence Smith with his Fellowship Award, with Immediate Past President Rowan Sprague and Canterbury Branch Chair Brad Chandler.

Years of support for Biosecurity and the Canterbury branch of NZBI has earned Laurence Smith an NZBI Fellowship.

Here is the nomination penned by his Canterbury peers:

The Canterbury-West Coast branch believes that Laurence's service to the branch for almost two decades should be recognised with a Fellowship. He has made a substantial contribution to the running of the branch, branch activities, and the organisation of multiple NETS conferences.

Laurence has been a member of the NZBI and its predecessor organisations for 45 years. He was elected Secretary of the Canterbury-West Coast branch in 2007 and served in this role for many years. He has been Treasurer of the Canterbury West Coast Branch since 2017, and has helped organise NETS conferences in Canterbury and many Canterbury-West Coast mini-NETS (METS). He gave a plenary address at NETS2022, and has presented at every METS on Canterbury's biosecurity programme, from policy and regulation changes to its vision for biosecurity. He champions the NZBI and encourages new biosecurity officers to join.

Laurence is approaching 45 years in the industry, and is a stalwart of the sector. He began working in the biosecurity industry on 4th August 1980 as a Ranger on the North Canterbury Nassella Tussock Board. In 1983 he became an Inspector, implementing the County Subsidy Scheme (CSS), where farmers were paid a government subsidy if their control efforts were sufficient, and he quickly became Officer in Charge in areas north of the Hurunui River (this work involved signing farmers up to the CSS, ensuring the work was of a good standard, and training new staff).

The Board was absorbed by the Canterbury Regional Council as part of local government reform in 1989. In 1990, Laurence moved into a Noxious Plants Officer role until 1996 when the passing of the Biosecurity Act resulted in a restructure of plant pest management section. He was the Team Leader in the Northern biosecurity team until 2011 when he moved into his current Principal Advisor, Biosecurity role.

Throughout Laurence's career, he has consistently demonstrated an unwavering dedication and passion for biosecurity. He's **a forward thinker, a mentor and extremely knowledgeable champion of biosecurity.**

COLLABORATIONS AND GREAT MAHI CELEBRATED:

Canterbury-West Coast branch gathering

Boffa Miskell hosted Canterbury-West Coast branch's end-of-year Christmas gathering in November.

Laurence Smith, Environment Canterbury's principal biosecurity officer, updated the group on ECan's pest management activities and noted the collaborations and good mahi which were making successes possible.

Jourdan Leithbridge from Boffa Miskell continued the tale of success of benthic barriers in Lake Wanaka among other waterbodies. He said there were opportunities to use this method in many other places including Christchurch's Avon River.

Ronny Groenteman, from the Manaaki Whenua Landcare Research Group of the newly-named Bioeconomy Science Institute, updated the gathering on plant biological control projects around the country. She mentioned the National Biosecurity Collective is currently supporting preparations of applications to the Environmental Protection Agency for release of biocontrol agents for Lagorosphon and Yellow Flag Iris.

She said researchers are working with Te Arawa Lakes Trust in Rotorua to develop a monitoring programme in combination with the harakeke woven mats the Trust is using for controlling aquatic weeds.

Laurence Smith was rewarded for his career-long service to the Canterbury West Coast branch with an NZBI Fellowship.

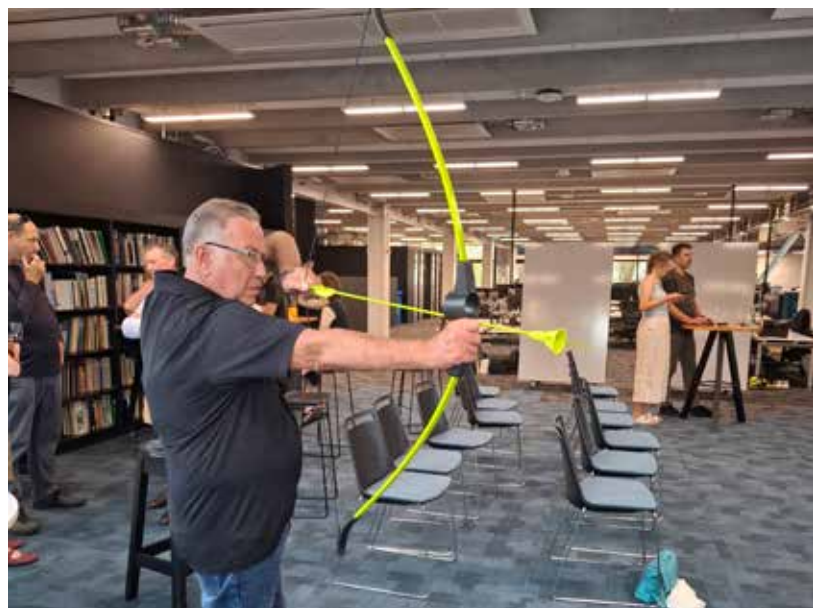
The gathering acknowledged that the branch incorporated a large geographical area separated by sheer distance and mountains, and that it was important to celebrate the work of South Canterbury and West Coast members.



Rowan Sprague and Beth Williamson at The Canterbury West Coast Branch catch-up.



Marcus Girvan invites one-and-all to a plant pest target game.



Target practice at the Canterbury West Coast Summer get-together. Laurence Smith takes aim.



SHAPING FUTURE HONEYBEE PROTECTION:

Tim Lunt receives an NZBI Scholarship



Victoria University Masters student Tim Lunt has been awarded an NZBI Scholarship to study the transmission of honeybee disease American foulbrood.

In this summary of his study Tim says:

"Honey bees are a key part of our primary industries. This project involves direct interaction with New Zealand beekeeping groups and biosecurity agencies (NZ bee health and biosecurity), to gain insight into how the deadliest disease of honey bees (American foulbrood) is being transmitted at a regional scale by beekeepers. I further seek to understand how the bacteria responsible for American foulbrood build up within hives before symptoms arise, the results of which may potentially shape future management strategies around control and eradication.

The New Zealand Biosecurity Institute offers two types of scholarship: the Wendy Mead Professional Development Award and the NZBI Scholarship.

The purpose of the NZBI Scholarship is to provide funds to assist with an individual's research to improve knowledge in the field of biosecurity.

**"Honey bees are
a key part of our
primary industries."**

Tim Lunt

DEVELOPING NEW COLLABORATIONS:

Thomas Carlin receives the Wendy Mead Professional Development Award

Christchurch-based researcher from Scion, Thomas Carlin has been awarded a Wendy Mead Professional Development Award to assist him to travel to Melbourne to attend the Plant Biosecurity Research Initiative (PBRI) Symposium in May 2026.

In his application Thomas wrote:

"This symposium is held biannually and attracts a significant number of biosecurity experts across Oceania.

The PBRI Symposium is a premier regional forum for identifying emerging risks, sharing tools, and coordinating strategies across borders. By attending, I will gain early access to knowledge on new biosecurity threats, surveillance tools, and management approaches being trialled in Australia and internationally. This intelligence can be directly integrated into New Zealand's research and preparedness planning, including ongoing work within B3 (Better Boarder Biosecurity).

The value of this award will therefore be realised by strengthening the skillset, networks, and knowledge of a NZ-based biosecurity early career researcher. My goal is to develop new collaborations with Australian researchers that will generate joint projects and proposals, ensuring New Zealand benefits from shared expertise, funding opportunities, and coordinated responses to future incursions.

The New Zealand Biosecurity Institute offers two types of scholarship: the Wendy Mead Professional Development Award and the NZBI Scholarship.

The purpose of the Wendy Mead Professional Development Award is to provide a member of the NZBI with funds to assist with professional development expenses (e.g. travel or additional training) where that member is undertaking activities to further their knowledge in the field of biosecurity.



Tom Carlin at work.



LOOKING FOR EVIDENCE-BASED CONTROL PROTOCOLS:

Rory Johnson receives an NZBI Scholarship



Horizons Regional Council Pest Plant Biosecurity officer Rory Johnson has been awarded an NZBI Scholarship to help him study control methods for the invasive aquatic plant Senegal tea.

In his application, Rory says:

My proposed research investigates effective control methods for Senegal tea (*Gymnocoronis spilanthoides*). Although currently limited to small populations in the North Island, it is classified as an unwanted organism under the Biosecurity Act 1993 due to its potential to spread widely.

Despite its recognised threat, existing control approaches across New Zealand remain inconsistent, with regional councils reporting variable outcomes from herbicide control efforts. My study addresses this critical gap by conducting a replicated, field-based trial comparing the short-term effectiveness of herbicide treatments (glyphosate, metsulfuron-methyl, and a glyphosate/metsulfuron mix) in the Waikato River delta.

The results will provide regional councils with **evidence-based recommendations to standardise control protocols**, reduce management costs, and improve response efficiency.

The New Zealand Biosecurity Institute offers two types of scholarship: the Wendy Mead Professional Development Award and the NZBI Scholarship.

The purpose of the NZBI Scholarship is to provide funds to assist with an individual's research to improve knowledge in the field of biosecurity.

Rory Johnson immersed in his research on Senegal tea.

ENDURANCE, INNOVATION AND SOME WISDOM JUST IN TIME:

Fighting Lagarosiphon in Lake Wānaka

Boffa Miskell partner Marcus Girvan looks at the long road to success of aquatic weed control in Lake Wanaka and

ponders the future

Lake Wānaka, one of Aotearoa New Zealand's best-known alpine lakes, has been the site of a decades-long battle against Lagarosiphon major. First detected in 1972, reportedly introduced via the release of a goldfish, lagarosiphon quickly colonised the lower third of the lake, with outlier populations found in other bays.

From its accidental introduction, to the sophisticated, multi-agency eradication programme of today, **Lake Wānaka's battle against lagarosiphon reflects the evolution of aquatic weed management in New Zealand.** Thanks to sustained funding, stakeholder coordination, and adaptive management, the vision of a lagarosiphon-free Lake Wānaka is within reach. And, importantly, the lessons learned and strategies used here can be applied throughout Aotearoa's freshwater lakes.

1972–2004: Detection, Spread, and Early Control

For more than 30 years, control efforts were sporadic and largely reactive, involving manual removal and localised herbicide application. By the 1990s, the infestation had escalated to a critical point, prompting more structured interventions.

Aerial herbicide application using diquat was introduced in areas most severely impacted. **While these treatments were initially controversial, drawing public protest, they were later recognised as necessary due to diquat's proven effectiveness and its safety when applied under controlled conditions.**

A 2004 study by NIWA (National Institute of Water and Atmospheric Research) assessed the effectiveness of diquat herbicide and a more targeted control method using suction dredging. Helicopter and boat-based applications targeted over 30 hectares of weed, and while the findings were encouraging, the study highlighted the need for more to be done.

2005–2009: Coordinated Planning and Management



Another day at the office. Marcus Girvan and colleague on Lake Wanaka.

Toitū Te Whenua | Land Information New Zealand (LINZ) and stakeholder partners launched a Ten-Year Lagarosiphon Management Plan (2005–2015). This plan introduced an adaptive management approach, combining herbicide application with suction dredging and hand-weeding. Additionally, a comprehensive programme of public education was undertaken, aimed at sport and recreational boaters, to counter the spread of lagarosiphon via privately-owned boats and fishing gear.

2009 –2015: Strategic Shift and Early Innovation

When Boffa Miskell came on board in 2009, dive contractors were suction-dredging, and aerial herbicide application was still underway in key areas.

In 2013 one of our contractors introduced a submerged spray boom attached to a boat, which enabled herbicide to be applied one meter below the water surface. **This allowed for more targeted herbicide application, filling a niche in the programme that had previously been missing.**

Late that year, a larger area was added to the Eradication Zone. This was a real victory, and the team was justifiably proud of our collective achievement.

At the same time, due to budget constraints focused resources on a popular boating, fishing, and swimming area which accelerated progress in removing lagarosiphon while maintaining previously cleared zones. The goal was to minimise the impact of lagarosiphon on lake users as well as reduce the risk of weed fragmentation and transmission to other waterbodies.

Looking back, **this decision proved pivotal for both the lake and the overall programme.** We proved that if our eradication strategy

continued



worked in this area, which was the 'home' of lagarosiphon in the lake, then it had the potential to work everywhere in the lake.

Trialling biodegradable jute hessian matting in 2015 was another major breakthrough. The mats were laid over weed beds and pinned to the lake floor, shading out the weed. The method proved highly effective, killing lagarosiphon within three months, and quickly replaced suction dredging as the primary control tool for elimination of dense weed beds.

2016–2020: Scaling Up and Refining Techniques

The Ten-Year Lagarosiphon Management Plan for Lake Wānaka (2016–2025) formalised the dual strategy of progressive containment and targeted eradication, aiming to push the containment line further and eventually clear the lake.

Divers refined their mat-laying techniques, and mat dimensions were more than doubled. However, challenges remained: buoyant weed beds and wave action sometimes prevented sediment from infilling the mat weave, letting enough light through to keep the weed alive, resulting in costly re-lays.

Some tough lessons were learned as we developed the hessian to be fit-for-purpose, working closely with the manufacturer to manage quality control and tighten the weave, ensuring the product was both effective and as cost-effective as possible.

In 2020, LINZ secured an increase in baseline funding which enabled large-scale hessian deployment in line with the Strategy. With the refined hessian mats and the increased resources to mobilise at scale, we knew we were well positioned to make a huge impact on containment and eradication.



Lake Wanaka. This is why we do it.

2021–2023: Clearing the Western Bays

With critical funding secured, we concentrated our efforts on lagarosiphon strongholds, building on our previous work, and by July 2024 these areas were entirely cleared and have remained so. Today, **with surface-reaching weed beds eliminated, native plants have returned, and habitat quality has significantly improved.**

2024: A Challenge and a New Focus

In December 2024, we discovered lagarosiphon well-established in a stream which posed a serious risk of reintroducing weed into cleared zones.

A full delimitation survey, closely followed by herbicide treatment, removed an estimated 99.9% of the weed present. Ongoing support from the local landowner is helping to ensure lagarosiphon is fully eradicated from the stream.

Resources are now shifting toward another bay, including the main Wānaka waterfront. The plan is to clear other bays and arms working towards the lake outlet.

2025: Major Deployment, Updated Management Plans and Future Vision

Now that Wānaka's Western Bays are essentially under control, with only single plants and fragments being found, the focus has shifted to the new front line of control that will take place. Divers have already made significant progress along this new front, hand-removing lagarosiphon and laying hessian, covering approximately 4.5 km.

However, as previous experience in the Western Bays has shown, progress can often feel like two steps forward and one step back. As the work progresses toward Wānaka township, the likelihood of drifting fragments will remain an ongoing challenge.

LINZ has released updated aquatic weed management plans for Lake Wānaka, Lake Dunstan, and Lake Wakatipu. Developed by Earth Sciences New Zealand (formerly NIWA), the plans reflect the unique conditions of each lake and incorporate the latest research and best practices. For Lake Wānaka, the updated plan focuses on making inroads on remaining infestations.

Ongoing monitoring and surveillance remain crucial, along with traditional control methods, including hessian matting, hand-weeding, and the application of aquatic herbicide in targeted areas. Public awareness initiatives continue to play an important role. **Emerging innovations, such as wool-based benthic barriers manufactured in Christchurch, may offer more durable and locally sourced alternatives** to hessian; addressing supply chain vulnerabilities and improving performance in high-energy environments.

Fragmentation means the risk remains

After twenty years of strategic planning, scientific innovation, community engagement and developing a skilled contractor workforce, Lake Wānaka's lagarosiphon control programme exemplifies collaborative biosecurity in action.

Despite this remarkable progress, several risks continue to threaten the programme's success.

We're always conscious of fragmentation-based spread because **even a fingernail-sized piece of lagarosiphon can establish a new colony**, and there's the potential introduction of more aggressive weeds, such as hornwort (*Ceratophyllum demersum* - only present in the North Island) or *Egeria densa*, which if found, would divert resources from the lagarosiphon battle. But these aren't the biggest threat.



John Clayton, Marcus Girvan and Stuart McNaughton in Glendu Bluffs Bay, Lake Wānaka in 2012.

The greatest threat to our work in Lake Wānaka is any interruption to funding. Limiting the scale and continuity of operations would risk undoing two decades of progress and could allow lagarosiphon to regain a foothold.

The good work gone before

I often think back to my earliest years working on Lake Wānaka. I was fortunate to learn from the late Dr John Clayton, a principal scientist at NIWA and a driving force behind the development of the science of aquatic weed management in New Zealand. John worked in and carried out research on New Zealand freshwaters for over 44 years and would regale me with stories of yesteryear and often came back to the time **when LINZ had received wayward management advice that they should halt their efforts on lagarosiphon control in Lake Wānaka as the issue was 'too far gone'**. John had strongly advocated for that work to continue with urgency, and ultimately it did, but not before two years were lost and kilometres of cleared shoreline reinvaded.

John knew that with a species like lagarosiphon, you can't let up, or it will bite back hard. This programme, Lake Wānaka, and aquatic weed management throughout New Zealand owes a lot to John; without his deep conviction for the importance of this work, we wouldn't be in the position we are. I'm sure if he were still here, he'd be proud to see how far we've come in protecting the lake he cared so deeply about.

This article is abridged. Some of the precise geographic information included in the original story has been removed for simplicity.

A tribute to the late John Clayton appears in the Spring 2021 issue of Protect Magazine.

On 1 July 2025, NIWA merged with GNS Science to become Earth Sciences New Zealand.

The full story is available at the News and Insights section (14 November 2025) of the Boffa Miskell website.



Warning over yellow-legged hornet



In October Biosecurity New Zealand urged Aucklanders to be on the lookout for yellow-legged hornets (*Vespa velutina*) following the discovery of a queen hornet in the early stages of building a nest in the suburb of Glenfield.

The nest was removed swiftly by biosecurity officers on 17 October, addressing the immediate threat of a colony establishing, says Mike Inglis, North commissioner, Biosecurity New Zealand.

However, with summer approaching, any undetected nests could be a biosecurity risk.

"This is the first time we've found a queen yellow-legged hornet in New Zealand," Mr Inglis says.

"We responded quickly to this threat, but we need the public's help to eliminate any further risk."

Two male yellow-legged hornets were spotted earlier this year in the Auckland suburbs of Grafton and Albany.

"New Zealand is fortunate to be free of hornet populations, and we want it to stay that way," Mr Inglis says.

The yellow-legged hornet is a biosecurity concern due to its potential impact on honeybee and wild bee populations.

"It is a highly adaptable predator with a broad diet, primarily feeding on bees, wasps, and flies, but also ripe fruit and flower nectar, posing a risk to growers. It may compete with native insects and birds for food, and it has a painful sting."

Supporting young people in their learning:

NEW PRESIDENT, DIANE FRASER



Diane shared a little bit about herself with Protect Magazine

"I was born in Scotland and lived in Glasgow, where I complete my schooling, before going to Aberdeen University to study a BSc in Agriculture (Hons Animal Science) followed by a PhD in dairy cow nutrition at the Rowett Research Institute and Aberdeen University. I was then dazzled by the bright lights of New Zealand and completed two years of a post-doctoral fellowship at Lincoln Uni studying protein nutrition of lambs at pasture.

Then, got married to a kiwi, taught animal management at Bay of Plenty Polytech for three years, ran a wildlife park on Molokai, Hawaii, and started working for Unitec in the Animal Sciences Department. Since then, I have taught a range of topics from animal husbandry, captive animal husbandry, animal nutrition and breeding, environmental risk and its mitigation and biosecurity in our certificate, diploma, BASCI and MASCI programmes. I am research-active in the field of biosecurity and pest control, social science, biocontrol and habitat suitability of invasive species, including under climate change scenarios.

What gets me up in the morning is supporting young people in their learning, especially those who embark on research projects under my supervision. Many of these students are lucky to get support from industry, particularly Auckland Council **and I send a shout out to all industry members that have supported my students** and employing them after graduation."

A fuller profile of Diane appeared in the Spring 2019 edition of Protect Magazine.

Dear Mum and Dad

Here is a photo taken near Inverness. People have said it is photoshopped but I know what I saw ...

