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Apiarist's Advocate

News, Views & Promotions – for Beekeepers – by Beekeepers

Resolution for a Revolution

ApiNZ Members to Vote on Group's Fate Again

On June 5 Apiculture New Zealand (ApiNZ) members will be asked to make a crucial decision regarding the industry organisation's future for the third time in less than 15 months. The choice? Dissolve the group with roots stretching back more than a century, or adopt an entirely new constitution which hands control to commercial-beekeepers, reducing the influence of hobby beekeepers and honey marketers?

ApiNZ's AGM will be held online, with four resolutions to consider regarding transition to a new constitution, fees structure and governance model which would take the interim name 'Honey and Bees NZ'. Or, if members reject that proposal at the first resolution, then the members will be asked to approve a 'wind up of its operations'.

ApiNZ chief executive Karin Kos has served the group in the role for all 11 years it has operated, since emerging as the organisation which succeeded the National Beekeepers' Association, formed in 1914 to advance beekeepers' interests. Along with Ian Fletcher, an advisor to fellow beekeeping interest group New Zealand Beekeeping Inc (NZBI), Kos has worked to shape a constitution for a united beekeeping group. Their work comes off the back of numerous public meetings with beekeepers in varying regions in the second half of 2025, and bouncing ideas off a smaller 'Industry Advisory Group' in 2026.

The board and staff of ApiNZ at the July 2025 AGM, Sudima Hotel Christchurch. From left, board members Stu Ferguson, Sean Goodwin, Lisa Nicholson, Tony Wright and Nathan Guy, with staff Karin Kos and Phil Edmonds at right.

The goal is 'unity', the key word coming out of ApiNZ's last AGM and workshop to discuss a path forward for beekeeper representation, in July 2025 in Christchurch and streamed online. That meeting saw members vote to accept a short-term future funded largely by the Honey Industry Trust to buy time for reformation. Prior to that, in March 2025 in the face of financial difficulties, ApiNZ's board first proposed dissolution at an SGM, with members postponing that decision to the Christchurch AGM, and now the 2026 event.

NZBI'S UNSURE PATH TO AMALGAMATION

Even if the new constitution is adopted, the path to NZBI carrying out their end of the amalgamation process is uncertain. NZBI president Jane Lorimer says they will have to wait and see what emerges from the June 5 AGM before committing to a course of action. That will likely involve meeting of their leadership team and then membership to confirm their contentment with a new group she says, despite Fletcher's heavy involvement in writing the new constitution.

"We have an agreement to be part of the board to work towards the uniting of the industry, but how long that will take, I don't know … we need to talk to our members and let them decide what we will do," Lorimer says.

TAXATION WITHOUT REPRESENTATION

Unity among commercial beekeepers could be moved closer with the coming together of the two industry groups under Honey and Bees NZ, but it looks likely to freeze out non-commercial hive owners and also the honey marketers which have helped shape ApiNZ in membership and governance since 2016. There is provision for their inclusion under the new constitution, but it would be in the form of an 'associate' membership class which comes without ability to vote or hold board positions.

One of the resolutions to be tabled at the AGM – should the transition to a new constitution be passed in the first vote – will be a new annual fees structure. While they would be reduced 'pro-rata' for a shorter first year of operation, the proposal is for commercial beekeepers to pay $600 to become a member, plus an additional $1 per hive for any hives over 500 owned. Among the

affiliate classes are 'non-commercial beekeeper' whose fees would be $80 per annum, clubs $200, 'companies involved in extraction, packing, exporting honey without beekeeping operations' $1000, and 'industry suppliers, research organisation etc.' $500.

It is stipulated that the proposed new board comprise a minimum of five and maximum of seven elected directors, all of whom must have 'substantial experience in commercial beekeeping' and that these elected directors can co-opt up to two non-voting directors 'with relevant experience'.

The constitution for Honey and Bees NZ states the purpose of the Society to be … 'to protect and advance the interests of beekeeping in New Zealand, with a particular focus on the resilience, sustainability and profitability of commercial beekeeping operations, while also providing for constructive engagement with non-commercial beekeepers, industry suppliers, and with pollination export and other partners'. Beyond that the constitution provides a broad base of functions and powers to form an advocacy group for beekeepers, without defining specifics of a work programme. A background note to the AGM supplied by ApiNZ lists key themes from consultation with beekeepers being the need for a focus on 'biosecurity, bee health, financial sustainability and bringing in a new generation of leaders to steer the future'.

The work plan will be shaped by the level of membership support received, with the constitution allowing for employment of staff or contractors.

The July 2025 discussion day in Christchurch hosted by ApiNZ which kickstarted a period of consultation with beekeepers, resulting in the potential new constitution to be presented to members for adoption at the 2026 AGM, June 5.

MEMBERSHIP & VOTING

In recent years ApiNZ's membership and thus funding level has dropped, forcing the changes in direction ahead of members. At the 2025 AGM it was decided – due to the organisation's state of limbo – that existing memberships would be rolled over for another year, without obligation to meet subscription fees. The result is approximately 230 members, a mix of commercial, non-

commercial and market sector, will hold the fate of the group in their hands on June 5.

As per ApiNZ's existing constitution, voting is weighted to favour commercial beekeepers (defined as members owning >25 beehives) to a weight of 56%, market sector holds 33% and non-commercial beekeepers 11%. Support from more than 50% of the weighted vote will be required to pass any of the resolutions.

THE TWO PATHS

If reformation is the path taken, an interim board will take control of the process with two commercial beekeeper representatives nominated by each of ApiNZ and NZBI, and then each group to also nominate an advisor to assist formation of Honey and Bees NZ. When an initial AGM of the new group takes place, a board of directors would be elected.

If the other, shorter, road – that of dissolution of ApiNZ – is preferred by their members, then it would bring to a close a continual form of national-level beekeeper representation which has existed in New Zealand since the National Beekeepers' Association formed in 1914. ApiNZ was the result of the amalgamation of the then 102-year-old group and Federated Farmers Bee Industry Group in 2016. A subsequent meeting would need to be held to confirm the landing place for ApiNZ assets, such as any remaining money at bank, the New Zealand Beekeeper Journal, library, and considerable information resource held.

Event on Backburner

ApiNZ chief executive Karin Kos says that at this stage no event is planned for this winter, with their priority being given to forming the new organisation. Previously a launch event and initial AGM for the group had been floated, but until the decision by ApiNZ members to take this path is chosen, no plans will be made.

If any event does eventuate, it will be a significantly scaled back gathering to that of the national conferences which ApiNZ once held.

At this stage only one major beekeeping conference is known to be planned, that of Mānuka Orchard's annual Open Day in Paengaroa, Bay of Plenty, July 24. Beekeepers wanting more details of that event are invited to email justine@manukaorchard.com.

Experienced Minds Sceptical, but Realistic, About ApiNZ's Direction

While seen as the likely outcome of Apiculture New Zealand's (ApiNZ) June 5 AGM, transition to, the temporarily named, Honey and Bees NZ is seen by some of the longest serving members of the group as an outcome that will exclude too many otherwise interested parties.

The membership is too narrow, and too poorly defined, but at least Honey and Bees NZ offers the potential to unify commercial beekeepers, say several practiced beekeepers with considerable governance experience in the industry.

"It is a good thing beekeepers are getting together and hoping to work off the same platform, to reduce the 'us' and 'them' type thinking," ApiNZ life member Ricki Leahy says.

"I like the representative body having more emphasis about beekeeping. I have long advocated for the ApiNZ constitution being a good one, but that it just needed a few changes to better include the likes of pollination so that beekeepers felt they were more the main anchor of the representative body. I think that is where we are going to now."

The AGM and passing of resolutions to adopt a new constitution and move towards an entire new board, if followed by a similar process by fellow industry group New Zealand Beekeeping Inc, would support establishment of an, effective, amalgamation. The new group would limit full membership, and thus voting rights, to 'New Zealand beekeepers directly involved in commercial honey production, pollination services, and/or queen rearing'. An associate, non-member class would exist for 'non commercial beekeepers, processors, packers, exporters, service providers, research and education bodies, clubs'.

Ricki Leahy, ApiNZ life member and past president of the National Beekeepers' Association.

That setup is going to leave the likes of former National Beekeepers' Association (NBA) president Nick Wallingford, owner of one beehive in the Bay of Plenty, "disenfranchised".

"To allow someone to pay money to become part of an organisation, and yet they have absolutely no control, no input to the direction of the organisation. Yeah, it makes it pretty challenging," Wallingford says.

He served as president of ApiNZ's forerunner, the NBA, from 1994-96, and before him fellow non-commercial beekeeper Frances Trewby was president in 1993. In 2000 Wellington part-time beekeeper Richard Hatfield took the top seat, making it three 'hobbyists' to hold the top role.

"I don't know how you can ignore that group," ApiNZ life member Allen McCaw and NBA president 1986-89 says of the hobbyist apiarists.

"They are not the lobby group or the takeover group some imagine them to be. How would they be? Imagine trying to organise 6000 individuals with a couple of beehives."

The Ministry for Primary Industries' latest apiculture data puts the count at 5725 beekeepers registering five or less hives, while 765 have more than 50. That leaves 1185 between 5 and 50 for a total of 7675 beekeepers in New Zealand.

"It's been called commercial-beekeeper-centric, and it certainly is that, and that is the biggest draw-back to the whole thing," McCaw says of the potential Honey and Bees NZ.

"To me it excludes too many important people in the industry and you can't talk about having an industry representative organisation unless you include everyone who is involved in the industry."

For about 90 years, since Airborne Honey founder William 'Billy' Bray coined the phrase in the 1930s, the NBA operated by the mantra, "better beekeeping, better marketing" Wallingford says. ApiNZ, since its formation in 2016, has included full memberships, board roles and voting rights for the honey marketing sector and hobbyist beekeepers, alongside commercial beekeepers. All three

will cast votes on the June 5 resolutions to drastically change that.

"For the beekeeping industry to now say 'better beekeeping and only those who are actually producing it to sell honey to other people' seems a short-sighted view to me of an industry and particularly the bee industry," Wallingford says.

Should the transition go ahead as expected, McCaw says the new board's first point of business should be to objectively define a 'commercial' beekeeper, something the proposed constitution is silent on.

"This will be governed by a constitution and by how you have to behave as an incorporated society, so a clear definition of what is and isn't a commercial beekeeper is needed because that is the point which you include or exclude full membership and voting rights," McCaw points out.

"It not only defines who can vote, it defines who is going to be on the executive and making the decisions. If you don't have that down in clear terms there is going to be room for so much confusion that it is not going to be funny."

Leahy, the president of the NBA for its final three years, 2013-15, before reshaping into ApiNZ where he took a board role, is hopeful that a potential new Honey and Bees NZ leadership and members would take a pragmatic approach to shaping the group.

"No constitution is ever set in concrete. They can go through a process of coming to agreement, which you have to do, to get a workable governance body in place," the retired Murchison beekeeper says.

A long-time supporter of a commodity levy to fund industry-good work, Leahy is realistic about the realities of ApiNZ's financial situation and many beekeepers' reluctance to back an industry body, but still hopeful that the financial security provided by a levy could be in the not-too-distant future.

"I understand where we are at and that we need to start again with a clean sheet of paper. The main thing we are achieving right now is for beekeepers to work together. It might be small, it might be dreadfully underfunded, but if it looks like it is going to be positive, hopefully some of those who are doing well can drop in funding here and there to get us through to a point of getting a levy," Leahy says.

"That is only going to happen if we are cohesive though."

Allen McCaw ApiNZ life member, past president of the NBA, and sceptical about the proposed new direction of beekeeper representation.

Nick Wallingford, past president of the NBA and a hobbyist beekeeper says the much-reduced role of non-commercial beekeepers in a proposed new group is concerning.

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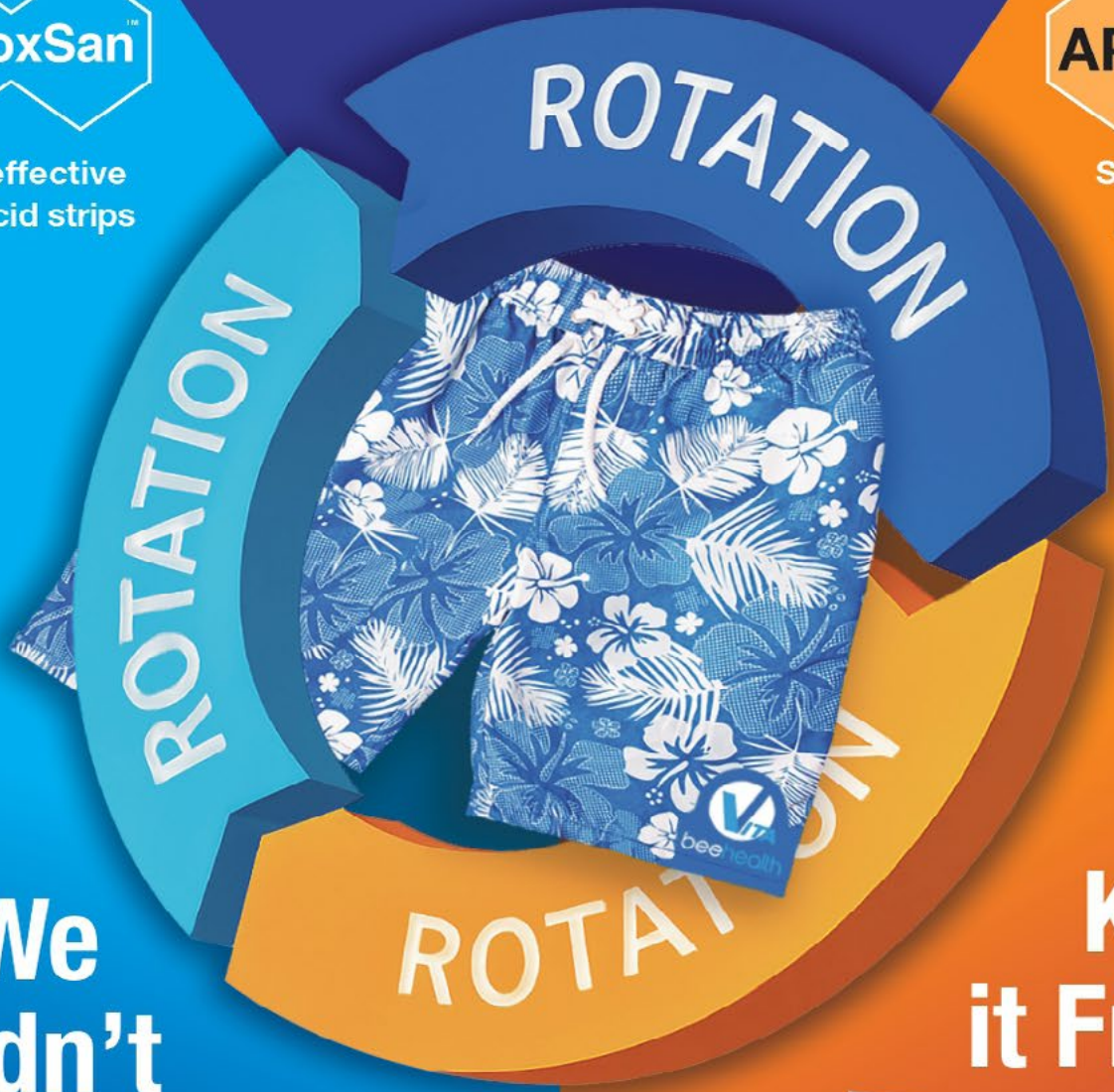

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Comvita & the Leap of Faith

BY BRUCE ROSCOE

Comvita raised NZD40.5m through the sale of 59.3m new shares in a rights issue and placement that concluded 7 May. The share sale, which increased shares in issue 84.0% to 129.8m, was Comvita's largest ever. Banks will be paid all sale proceeds as a condition for agreeing new loans.

The capital raise represents the fourth major share sale undertaken by the company since 2015 – three were made in rights issues, the other a private placement to China Resources of Hong Kong. These sales supplied an approximate total NZD136.2m, or NZD11.3m per year, to Comvita, whose future continues to be leased from banks but on more stringent and watchful terms than applied to earlier lending.

The new funds cleared Comvita's slate of the aftermath of a string of cul-de-sac investments — from California stardust to Uruguayan propolis — financed by bank loans and equity, or a combination of both.

Equity (an ownership stake represented in this case by shares) is viewed as the most expensive of all financing types, because of the risk that shareholders, who become part owners of the business, must take. Yet in Comvita's case, share sales may represent an inexpensive financing method. When no after-tax profits are made, none need be shared, and no monthly repayments are needed.

Conversely, the debilitating costs are bank interest charges and fees linked mainly to Comvita's position as a publicly quoted company. In its latest financial year (ended June 2025), Comvita paid a monthly average NZD665,250 in interest and other financing expenses, NZD93,833 in legal and other professional fees, and NZD93,417 in accounting and auditing fees.

Comvita must repay loans to two commercial banks and pay fees to two investment banks and two (at least) law firms. Banks will receive the NZD40.5m less the fee owed investment banks, which will amount to an estimated 3.5-4% of the amount raised.

Banks have limited Comvita's new borrowings to NZD44m, compared with about NZD80m following the May-June 2020 capital raise. (Also in the 2020 example, which at NZD50m

represented Comvita's largest ever share sale by value, the entire amount, less NZD1.8m in fees, was used to repay banks.)

RESERVOIR OF GOODWILL

The final result of the share sale, announced 12 May, showed the top three shareholders as F&N Ventures, a wholly owned subsidiary of food, beverage, and printing enterprise Fraser and Neave (F&N) of Singapore, with 19.99%; PHC Investments, wholly owned by Private Health Care (NZ), 11.73%; and Kauri NZ Investments, 10.14%.

Shareholders who did not participate were diluted 45.7%. By the same token, the currency value of Comvita shares is much reduced. To illustrate by simplified example – this time Comvita raised NZD10 by selling 15 shares, whereas in the 2020 raise it could pocket the same amount by selling 4 shares.

Still, the fact that Comvita could raise such a large amount of funds following successive earnings disappointments and management upheaval, all amid geopolitical instability, evidences how deep is the reservoir of goodwill toward the company among some shareholders.

THE MILKY WAY

Milk may have brought everyone together. Comvita chief executive Karl Gradon, during an about 14-year tenure with Fonterra, held posts in Singapore (2012-2014). In the three years before signing with Comvita in 2025, he led milk processor and exporter Miraka, whose markets include Singapore. Andrea Wilkins, who records a 2011-2015 tenure with Fonterra followed by 10 years with Spring Sheep Milk Co., joined Comvita as chief marketing officer in March. (Source: LinkedIn profiles.)

Kauri NZ Investments wholly owns Oravida, whose China website gives top billing to mineral water followed by organic milk, ice cream, and mānuka honey.

F&N's dairy farm operations and dairy product division recorded sales of SD1,276m to account for 55.0% of total sales in the year to September 2025.

Can Southeast Asia become a latter-day land of milk and honey? Comvita believes that the region, with a population of some 686 million, offers "considerable opportunity". The tropical climate would suit the milk more than the mānuka honey, which fares best in northern climes where winters are long and cold.

The placement to F&N may open a door to prosperity. F&N said in a 15 April announcement that it saw the "partnership" with Comvita as one "with long-term merit, one that can strengthen the quality of F&N's portfolio while creating value for both companies over time". F&N, which traces its history to 1883, can take a longer-term view than banks may allow Comvita.

F&N is announced as a "cornerstone" shareholder, but such cornerstones are uncemented. Equity capital that has participated in the mānuka honey industry has shown itself to be transitory.

Among other examples, Comvita recorded Capilano Honey (Australia) as a major shareholder on only two dates (25 May 2008 and 22 May 2009).

SOFT-NOSED BULLET

The industry has dodged a soft-nosed bullet, which cause wounds more wide than deep. A Comvita collapse would have triggered a falling domino effect as payments to suppliers and employees (NZD160m in the June 2025 year) evaporated.

Such a collapse may also have shuttered the UMF Honey Association (UMFHA), which in turn would disable the Manuka Charitable Trust (MCT). Comvita supplies the queen bee's share of licence revenues (for both mānuka honey and products that contain mānuka honey) to UMFHA, which co-funds MCT.

Comvita shareholders have taken a leap of faith. They are owed a debt that may be larger than any that Comvita can repay. Hopes of dividend income may be wistful. To compete with a Kiwibank six-month term deposit of NZD1,000, for example, a Comvita dividend must yield 3.5%, which would require a payout of NZD2.95m (NZD0.65 share cost x 0.035 x 129.8m shares). Comvita has paid a higher dividend in only six of the 23 years to June 2025.

Shareholders can only hope that, even as a speculative asset play, their investment in Comvita will not end in the throwing of good money after bad.

Note: This report updates dilution and other data which appeared in our May 3 report Comvita Wins Reprieve from New Shareholders and which were current at the time of publication.

Bruce Roscoe is a Japan-resident researcher and former foreign correspondent and securities analyst.

Comvita has raised NZD40.5m through the sale of 59.3m new shares, resulting in Singaporean food, beverage and printing giant F&N Ventures taking a 19.99% ownership stake of the Paengaroa-based company.

From First Detection to Winter Silence – a Perspective from Inside the Hornet War

For over six months, the fight against yellow-legged hornets on Auckland's North Shore has been one of the most significant biosecurity responses New Zealand beekeepers have ever faced. Now, with no hornets or nests found since early April, many are asking the same question – have we beaten them, or is winter simply hiding them? For Ken Brown, president of the Auckland Beekeepers Club and one of the early responders, the answer is cautious optimism mixed with realism.

BY ELOISE MARTYN
PHOTOS BY KEN BROWN

When Biosecurity New Zealand needed someone who understood both bees and the threat bearing down on them, they turned to Ken Brown. The president of the Auckland Beekeepers Club was among the first contacted when yellow-legged hornet nests (*Vespa velutina*) were detected on Auckland's North Shore in November 2025. His expertise opened the door – and what followed kept him there.

"With knowledge about bees and wasps I helped with training in the very beginning," Brown explains, looking back on a summer like no other.

Since then, he has worked within the organism management side of the response, in what he laughingly refers to as "the kill squad", with his team destroying 55 nests. His involvement, he says, came down to experience, availability and being based within the affected region.

A primary nest in a punga log, ready for collection, having been treated 24 hours previously.

From the front line, Brown believes there are encouraging signs.

It's been months – early April – since the last nest was found and destroyed. A few hornets were sighted in the days immediately after, but since then there has been nothing. Importantly, he points out, this was at a "development stage" where teams would normally expect to see hornets actively flying around.

"The teams we have got have developed over time into world class, hunters, tackers and hornet finders. They have looked harder and harder."

HERE'S HOPING

Echoing the words of Biosecurity New Zealand leadership, Brown says he is "cautiously optimistic" about the response and whether New Zealand has managed to get them all, or if winter has simply slowed hornet activity.

"I think we most likely have; but only spring will tell," the keeper of around 40 beehives says.

For him, one of the most positive signs is that response teams appear to have reached nests before gynes – fertile females capable of starting new colonies – emerged. Still, he stresses that nobody is treating the situation as over.

"We can't stop looking around the area or New Zealand. We need to be vigilant because, if there are some, we could be in trouble."

Biosecurity New Zealand's latest update supports that caution. Despite the lack of nest finds recently, surveillance and monitoring remain ongoing. To date, 77 queen hornets and 132 nests have been destroyed, while members of the public have made more than 17,600 reports of suspected sightings (as at mid-May).

Brown says one of the biggest achievements has been how quickly knowledge developed.

"We have gone from no experience on hornets and no idea how they would adapt to New Zealand or what the situation really

looked like to knowledge and skills. With the skills we have, even if a few emerge, it won't be such a worry."

PUBLIC AWARENESS

The public response has also played a major role. Brown says one of the hardest parts of the operation has been navigating misinformation and negativity online. He recalls seeing social media comments claiming "it's too late", "they don't know what they are doing", or "I have had them in my garden for years". Brown says those involved in the response have been "trying to keep the narrative reliable".

Equally important, he says, was ensuring people felt comfortable reporting sightings, particularly those genuinely asking "is this a hornet?" and facing mockery online.

"Reporting by members of the public was crucial. It was important to keep the positivity, to encourage people to keep reporting."

On the ground, he says most interactions were positive, with many people simply unsure how to tell the difference between common paper wasps and a yellow-legged hornet.

The suggestion of introducing a bounty system for hornets was something Brown strongly disagreed with, and he was pleased nothing came of it.

"There were suggestions about a bounty and if you had been part of the engagement, you could see that a bounty would have been negative. I put a hornet suit on, full PPE, before going near them. You wouldn't want kids around hornets for a bounty."

A camouflaged primary yellow-legged hornet nest.

Ken Brown retrieves a secondary hornet nest from a tree.

The risk is real. Unlike honey bees, hornets can sting multiple times because they do not lose their stinger after attacking, and their sting is extremely painful.

EDUCATION EFFORTS

For members of the Auckland Beekeepers Club and other beekeepers in the area, the hornet response unfolded during what Brown describes as a "mixed" 2025-26 season.

A hornet stinging a leather glove. Note the length of stinger and amount of venom.

Brown's 40 hives are spread across different city locations, some inside the affected response zones, requiring extra monitoring and trapping.

"A lot of people outside those zones were also ideally monitoring traps for hawking behaviour," Brown says, and that club members played roles far beyond simply monitoring hives.

"Getting awareness out there and fielding a lot of questions from other clubs and beekeepers who were seeing if there was any extra information. Giving context around how the life cycle relates to where they were at in response."

Club members also visited schools, spoke with the public and worked with local media to spread education and awareness about the risks if the hornets became established in New Zealand.

Behind the scenes, Brown highlights what he calls "the unsung, unpaid work done by bee clubs and non-commercial beekeepers" which much of the work has relied on.

"One of my early tasks was recruiting people who knew their way around bees. So, I recruited three students from this year and four from last year, plus bee club members." Brown explains.

"They were mostly on nest tracing teams, often leading them. One student, Debra Sample, was on the organism management team. Matt Telfer, a tutor, came up from Taranaki to join in on the nest tracing."

He also credits the wider collaboration behind the response.

"It's not just 100 people from MPI (Ministry for Primary industries). MPI is with experts getting advice from all around New Zealand. They had people who knew about Vespex, wasps, bush

craft, trapping – anything they have needed they have brought people in who know about it."

MONEY WELL SPENT

The Government has committed $12 million to the response through to 30 June 2026, with ongoing monthly costs of around $1 million. By January 2026, several million had already been spent, with staffing the largest cost.

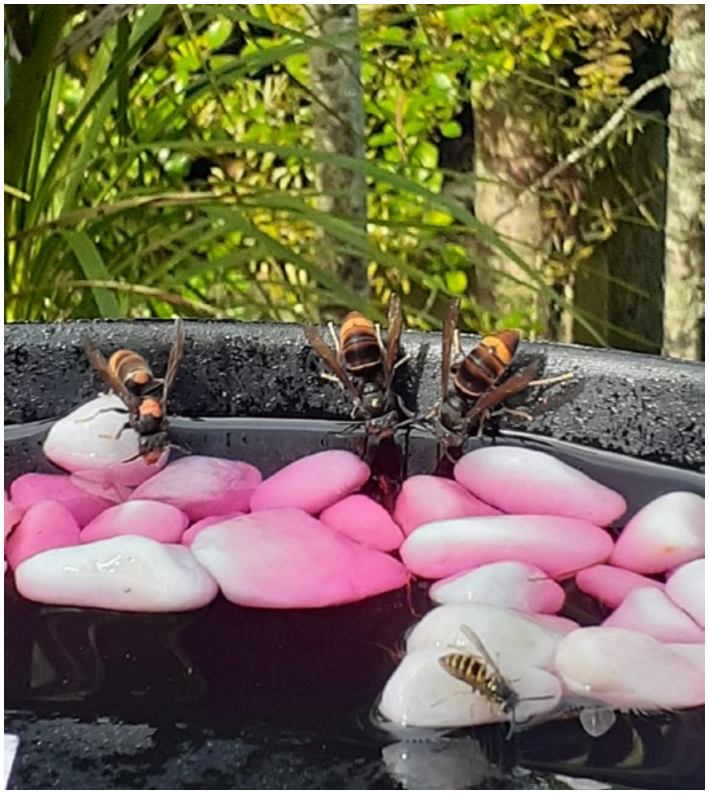
For Brown, the scale of the response is justified because the stakes have always been enormous, to both the economy and public safety.

"Think about what wasps have already done in New Zealand – and then consider what these hornets could do to kiwifruit, pasture and farming. It would affect everyone. One nest I helped destroy was right where children were playing. If these hornets became established here, it could change a lot of things in New Zealand."

For now, the landscape is cold and quiet, with monitoring continuing in the background. Those involved in the response are watching and waiting for spring to reveal whether anything has survived the winter unnoticed.

"This is probably one of the most important things we will do in our lives. If we are lucky and successful, in a few years people will have forgotten just how important it was to stop them now," Brown concludes.

In the absence of new sightings or nests, there is cautious hope that the silence signals success rather than concealment. In this case, no news is good news.



Three hornets and a wasp, with one of the hornets marked for tracking purposes.

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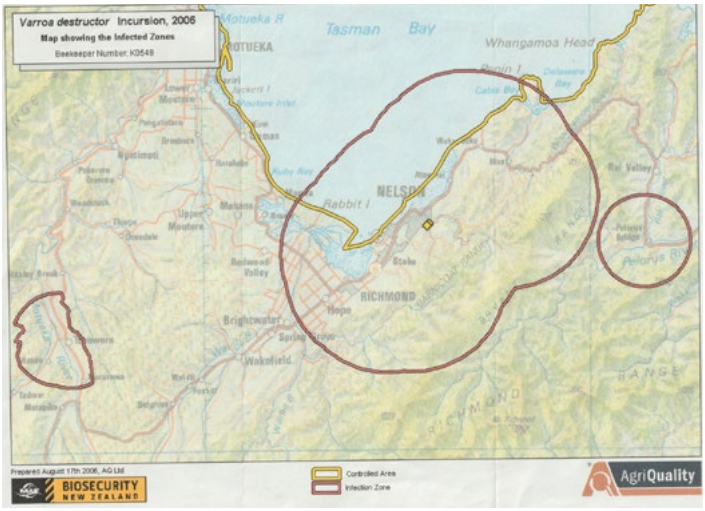
We Few, We Lucky Few: 20 Years on from Nelson's Varroa Incursion

Nelson beekeeper Nigel Costley was in the thick of it when *Varroa destructor* was first identified in the South Island, June 2006. He describes an exhilarating six months on the front line – a time of steep learning, excitement, disappointment and controversy. But most of all, a camaraderie sometimes scarce in the beekeeping community.

BY NIGEL COSTLEY

It would be a world first: a varroa outbreak totally eliminated. And, for a few brief heady months, we were believers.

Yes, in retrospect, it was naïve and self-serving, but at the time the South Island was thought to be varroa-free. The apiary surveillance had done what it was designed to do: pick up early signs of varroa. In this case in the Nelson suburb of Stoke, on 15 June 2006. We had three months to act until the riot of spring would sweep all before it.



After initial incursions in Nelson city, varroa was soon after found in Tapawera and Pelorus in 2006. For several months it was hoped that the spread could be limited there, but it was not to be.

An experienced hobbyist beekeeper, I was doing the apiary surveillance in Stoke that unwittingly picked up the first sample. I only knew about it a few days later when the lab results came through. To ensure there was no spread beyond the exclusion zone – a roughly 30 km area surrounding Nelson City – a delimiting survey was required for the top of the South Island. Hence a large number of AgriQuality (now AsureQuality) staff descended on Nelson and set up a temporary HQ. Working in teams of three – one AgriQuality guy and two local beekeepers – inspections would cover a huge area, reaching from Farewell Spit, through Murchison, to the Marlborough Sounds.

Keen to broaden my experience, I joined one of these teams, as luck would have it with Norbert Klose. He saw an ad in the paper looking for beekeepers and said: "wow, that looks like me!"

Using two Apistan per brood box, with a sticky board in for 24 hours, we spent the next four weeks up to our elbows surveying bees in every condition and apiary site imaginable. We were trained to be very pedantic about retrieving the Apistan strips. Whatever number went in, the same number came out.

Not used to handling bees in mid-winter, I was amazed at how many queen-right hives retained their drones. We often buddied up with other teams when handling big apiaries, and as a consequence got to work with Nelson's most experienced and capable beekeepers. The sense of working to a common purpose in such company was intoxicating.

Timeline

Nelson's 2006 Varroa Incursion

2000
Varroa arrives in Auckland.

2006

15 JUNE
Routine surveillance discovers Varroa in Stoke, Nelson.

22 JUNE
Varroa found in Tapawera. Then Pelorus. Sites over 30km from Nelson.

JULY/AUGUST
Inspections of all registered apiaries in the Top of the South Island show no further varroa outside exclusion zone.

2 AUGUST
Government announces a $3.2m "management" plan.

8 AUGUST
Beekeepers announce plans to go it alone with "aggressive control" plan.

24 AUGUST
Government adds an extra $1.2 million to back the beekeepers' plan.

SEPTEMBER
800 hives from the Nelson control zone bought ($140 per) and shipped north.

SEPTEMBER
Feral baiting stations laid with a view to using fipronil as a poison.

27 SEPTEMBER
Biosecurity New Zealand announces that fipronil's manufacturer would not allow its use to kill honey bees.

DECEMBER
Infected hives found near Nelson outside the exclusion zone.

2007

23 JANUARY
Eradication is officially abandoned, with the focus now on slowing spread.

BEE MURDERERS – LICENCED TO KILL

I soon discovered that Klose was a much more adventurous beekeeper than me when he abseiled down a steep bank to reach a feral hive. He received a 'talking to' from Health and Safety. After the delimiting survey was complete, Klose and I were employed, via an 0800 number to our cell phone, to answer calls from the public about swarms and feral hives. On account of all the publicity the public were well up on the eradication drive.

We became licensed bee murderers – a horrible job initially but we hardened to it. For nests/swarms in enclosed spaces the technique used was not environmentally pure: reduce space with Gorilla Filler and poison the entrance with carbaryl (subsequently banned).

As spring began the calls came thick and fast in ever more unusual and obscure places. If it was an exposed swarm we tried to catch it in a large plastic bag, suffocate it, then send it to the lab. We weighed them too – the largest we ever got was 4.8kg.

An arborist in a former life, Klose took to catching swarms in high places with a gusto that gave me conniptions. His finest hour came when we tackled a nest below a high window sill at Warwick House (castle… see the pic). I thought 'forget it' but Klose was game. He shot up his trusty 12 metre extension ladder, hive tool at the ready. He couldn't quite reach it. Then he asked the owner, Nick Ferrier, if he had a spare broom handle. He did. Klose then attached his hive tool to its end with masking tape. Thus armed, he charged back up the ladder, Errol Flynn fashion. He now could just reach the nest with his makeshift spear. My abiding memory is,

Nelson beekeeper Nigel Costley took the bee sample which included the first varroa mites detected in the South Island in 2006, and then had a front-row seat for the response which followed.

I'm down below desperately clutching the almost vertical ladder, inundated with comb and enraged bees. So much for the Health and Safety 'talking to'.

As time went on we began losing faith in eradication largely because of human factors. Klose gave me his take recently saying, "the average Kiwi doesn't like to be told what to do".

"People get suspicious and make up stories. It would be even worse today with social media."

We were also involved in setting up the bait station trialling aromatic honey additives to the sugar syrup to enhance their attractiveness. I was amazed at how variable sites were within the exclusion zone, an area still thick with feral bees. In two sites the bees barely touched the bait, while the third was sucked dry in a matter of hours. The effectiveness of bait stations obviously depends on available forage.

Local beekeeper Norbert Klose worked on the front lines of Nelson's varroa response in 2006, taking an adventurous approach to collecting bee swarms for elimination. The experience was "life changing" for Klose, stimulating a strong connection to beekeeping which continues to this day.

Warwick House, Nelson, one of many sites requiring some adventurous swarm catching techniques during the varroa incursion response in the district, 2006.

Even after the eradication was abandoned we continued to be employed for monitoring and sample collection until the end of the season.

AGRIQUALITY-GUYS

Marco Gonzalez arrived early in the campaign working as an AP1 for AgriQuality. A native of Paraguay, Gonzalez's training as a veterinarian included beekeeping. He is currently Operations Manager Southern Region NZ Bee Health and Biosecurity, having worked for the AFB-focused agency since 2018.

Gonzalez was always sceptical towards hopes of eradication, largely because of the huge number of feral hives, unregistered apiaries, and unsupportive beekeepers.

"Those beekeepers bringing in hives for kiwifruit pollination were supposed to treat, but many of them didn't," he says looking back 20 years.

The Pelorus find – 30km by flight, much more by road and a week after my discovery in Stoke – was quite a surprise. That beekeeper didn't have an apiary in Stoke, but had shared honey extraction with someone who did. They found heavy infestation within the zone in north/east Nelson.

There were hive movement restrictions outside the zone which were also often ignored. There were unconfirmed rumours that varroa turned up in Rangiora 400km away. (Without hive movement varroa is thought to spread naturally only 5km a year.)

Tony Roper, also working as an AP1, was one of the first on the scene and remembers inspecting heavily infested hives from day one.

"These hives had at least 20,000 mites, but looked healthy, no sign of viruses," he says.

Apart from that, he thought the early signs of eradication looked pretty good. Roper's diplomatic skills were brought to bear when liaising with renegade beekeepers as nine out of 79 registered beekeepers refused to comply with the scheme.

"Some of them threatened to shoot me, but on the whole they were compliant."

Based on reports of a swarm at a garage near Port Nelson, Roper suspects that varroa had been in Nelson undetected for six months.

"That's the thing about varroa, it's always ahead of where you think it is," says Roper, who to this day still works three days a week for AsureQuality.

THE DAVIDSON EFFECT

That there was an eradication attempt at all is due to one beekeeper: Mapua queen breeder Matt Davidson. He remembers the initial meeting with biosecurity officials where they said varroa was here to stay and we'd just have to lump it. Davidson stood up at the meeting and said he wasn't happy with that, and challenged the assembled beekeepers to join him in fighting this decision.

"After the biosecurity guys had gone from the meeting the initial group was formed to give it a crack," says Davidson.

The news of his stance quickly spread and a subsequent meeting drew around 50 beekeepers, picking up support not just from the affected hive owners, but Federated Farmers and local orchardists.

"I was fielding phone calls from all over the country," Davidson says, adding that media started to attend their meetings.

The group became incorporated, the South Island Varroa Control Group, SIVCG, to handle the donations and pledges of support that poured in. Davidson was appointed chairman and spokesperson.

Based on the premise that varroa was confined to Nelson City, the SIVCG began to formulate a plan to compensate hive owners in the effected elimination area and set up poison bait stations to destroy the remaining feral hives. Meanwhile, an AgriQuality-led survey of all the registered hives in the top of the South Island carried out over July and early August found no further cases over the initial findings.

It was at this point, after a meeting between SIVCG leadership and Minister of Agriculture and Biosecurity Jim Anderton, the Clark Government decided to support the eradication attempt. But it came with caveats.

"The Government did not want to use their executive powers to force beekeepers into handing over their hives and insisted the scheme was supported by 90% of the effected beekeepers," Davidson says.

Then, working in collaboration with the Ministry for Agriculture and Forestry (MAF), SIVCG managed the purchase and organised collection, and shipment north of all hives in the effected zone. Using mostly volunteer labour, over 800 hives were shifted. Support came from many corners. Russell and Annette Berry came from Rotorua to Nelson for long stints with Annette's trusty sewing machine used to make netting to cover the hives in transit.

In September, when the eradication plan still looked feasible, it came as a nasty shock to learn that the poison's manufacturer refused to allow the use of fipronil off label.

Matt Davidson. The Mapua beekeeper was instrumental in rallying beekeepers in an attempt to eliminate varroa from the region in 2006.

"Jim Anderton phoned me and said 'what do we do?' I couldn't believe that they hadn't sought permission already," Davidson says.

With bait stations set up all over the area already, evidence emerged from laboratory tests on dead hives that fipronil was being used. SIVCG sought legal advice which strongly advised against this practice. One of the MAF officials took Davidson aside and asked him if he knew of anyone using it. His reply? "No, but I wouldn't be surprised if they did".

However, fipronil ceased being a burning issue as unofficial reports started coming in of varroa being found outside the zone. The sceptics were right. Davidson thinks there were multiple factors working against them, including a large number of unregistered hives, and uncooperative hobbyists. But there were small victories.

"Even beekeepers who thought we were wasting our time came on board when they saw how it was uniting the beekeepers," he says.

LIFE CHANGING EXPERIENCES

So, while the war against the invading varroa in the South Island may have ultimately been lost, we got six months advance education in the biology, politics, social dynamics, and endless vagaries of beekeeping that no PhD course could possibly conceive.

I always knew I wasn't cut out to be a commercial beekeeper, but figured I now knew enough to be informative, and went on to ten years of running beekeeper training courses at Wakefield and Pelorus.

It had even more impact for Klose – "It changed my life". His inspection work expanded into permanent AFB and exotic monitoring, also with a three-year pathogen programme. From having a couple of hives in the backyard, he set up a commercial apiary dedicated to finding organic means of varroa control. He imported Liebig formic acid dispensers from Germany and is practising diverse and experimental forms of organic control to this day. He runs a honey and bee produce stall at Nelson's famed Saturday market and is currently tutoring Nelson's AFB recognition course.

So, ill-fated though it was, the eradication attempt was for us a 'once in a life time experience', giving us the impetus to advance our beekeeping in ways we never could have imagined.

"It's amazing how many of those beekeepers we worked with then are still good friends," Klose says.

"You realise it takes a whole beekeeping community to make this thing work."

Norbert Klose removes a swarm during the varroa incursion response in Nelson 2006.

A 4.8kg swarm, circa 2006, the biggest that "licensed bee murderers" Nigel Costley and Norbert Klose recovered during their attempts to eliminate varroa.

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Ready to Jump? – What Could the Gene Tech Bill Mean for New Zealand Beekeepers?

BY JOSIE SAGE

For many New Zealanders, the Gene Technology Bill may sound like a distant scientific or political debate. But for beekeepers, pollinators, and those working closely with the land, the proposed changes raise important long-term questions about the future of our ecosystems, farming systems, and export reputation.

If someone tells you to jump off a bridge, should you? Should New Zealand jump off of our 'clean and green' non-GMO (genetically modified organisms) agricultural practices into the deep waters of gene technology? With 30 countries that have banned GE cultivation, it also begs the question, who is telling New Zealand to jump?

Josie Sage – for beekeepers, pollinators, and those working closely with the land, the Gene Tech Bill raises important long-term questions about the future of our ecosystems, farming systems, and export reputation.

The crux of the debate is not simply whether gene technology itself is "good" or "bad." Instead, it is whether New Zealand should fundamentally change the agricultural and environmental model that has helped make our primary industries globally respected.

As beekeepers, we know healthy hives do not exist in isolation. Bee health is deeply connected to soil health, biodiversity, flowering plants, water quality, spray regimes, and the resilience of surrounding ecosystems. That is why many within the environmental and apiculture sectors are watching the proposed Gene Technology Bill closely. But I have found that knowledge is severely lacking among everyday New Zealanders on this matter, and it has me wondering, 'why aren't more people talking about this?'

NEW ZEALAND'S BIOSECURITY SYSTEM EXISTS FOR A REASON

Anyone who has travelled to New Zealand understands just how seriously we treat biosecurity. Before even leaving the airport, travellers are repeatedly reminded to; declare food, clean your boots, and check your gear for any soil, seeds, plant materials, and the list really does go on and on.

As an isolated island nation, Aotearoa developed separately from much of the world for millions of years. This isolation created extraordinary biodiversity found nowhere else on Earth, and it is part of what makes it such a special and beautiful country. But it means many native species are highly vulnerable to introduced organisms, pests, and diseases.

New Zealand has already experienced the devastating consequences of introduced species: opossums damaging native forests and spreading bovine tuberculosis; stoats and rats decimating native bird populations; myrtle rust threatening native plants; varroa mites transforming beekeeping nationwide; wilding pines spreading across vulnerable landscapes; to name but a few at the tip of a mighty iceberg of ecological impact.

These situations highlight a hard lesson in biosecurity: once a species becomes established, even early intervention does not

guarantee full containment or eradication. While invasive insects and genetically engineered organisms are different in origin, they share a common policy challenge – once they are released or become established in open environments, their spread and ecological interactions are extremely difficult to fully predict or impossible to reverse.

These experiences shaped one of the strictest biosecurity systems in the world because New Zealand understands the repercussions of invasive introduced species. GE scientists know there is no current technology whereby GMOs can be effectively controlled or retrieved – they migrate, genetically contaminating whatever they come into contact with. Why would we risk our ecosystem and our food given that history has shown that once these biological "jumps" are made, climbing back to where we were before is rarely possible.

This is why many critics of the Gene Technology Bill believe the discussion cannot simply focus on short-term productivity or technological opportunity alone. It must also consider long-term ecological risk in a country whose economy, biodiversity, and global reputation depend heavily on environmental integrity.

New Zealand already produces globally respected food and honey products under some of the strongest GMO restrictions in the developed world. This international success has been through: selective breeding, advanced horticultural science, strong traceability systems, world-leading biosecurity protections, and premium "clean and green" branding. Why jump when what we have already works? Importantly, these industries succeeded without widespread commercial release of genetically engineered crops into the environment.

New Zealand plant and animal breeding science is highly regarded globally, producing resilient, high-performing varieties through conventional methods that are well trusted by export markets. For many New Zealanders, this raises an important question:

"If our current agricultural and biosecurity systems already support world-class exports and premium international trust, why would we weaken the systems that helped build that reputation in the first place?"

This concern was reflected in submissions to Parliament with 97% of submissions in opposition to the Bill, including from the Parliamentary Commissioner for the Environment, who warned that genetically engineered organisms released into the environment could become future biosecurity challenges if containment fails.

WHY POLLINATORS MATTER IN THE GENE TECHNOLOGY DEBATE

The Bill could open the door to broader environmental release of genetically engineered organisms. Supporters of gene technology argue that newer techniques may offer benefits such as improved

disease resistance and greater climate resilience. However, some overseas studies and farming systems suggest that these gains can sometimes be accompanied by increased reliance on inputs such as fertilisers, herbicides, or insecticides, depending on how the technology is used and managed. And many crops cannot grow without those inputs, even failing completely.

In New Zealand, where regenerative farming practices are increasingly being adopted, it raises the question of whether introducing certain crops or soil organisms would support or undermine the direction our agricultural systems are already heading. As beekeepers, we should undoubtably be asking what the long-term impacts may be for pollinators and ecosystems.

One of the strongest concerns internationally is not necessarily the genetically modified plants themselves, but the agricultural systems that often accompany them.

Globally, many GMO crop systems have been linked to increased use of broad-spectrum herbicides such as glyphosate. While scientific debate continues regarding glyphosate's direct health impacts, there is growing evidence that intensive herbicide-based farming systems can contribute to pollinator stress through; reduced flowering plant diversity, simplified landscapes (monoculture crops), nutritional stress, disruption of insect microbiomes, and cumulative chemical exposure. We already see firsthand how vulnerable pollinators are when ecosystems lose diversity and resilience.

WHAT ABOUT THE HONEY INDUSTRY?

New Zealand's honey industry depends heavily on international trust.

Consumers purchasing premium native honey types are not simply buying a sweet spread or health food, they are buying a story: environmental purity; remote landscapes; unique honey flavours; natural production systems; traceability; ecological integrity.

For beekeepers, the concern is not necessarily that all gene technologies are inherently dangerous. The concern is that New Zealand could slowly follow other countries into increasingly industrialised systems without stopping to ask whether those pathways align with our own environmental values and export strengths.

A PRECAUTIONARY CONVERSATION

This debate should not be reduced to "pro-science" versus "anti-science".

Many New Zealand honey brands use various non-GMO accreditations as part of their marketing, but this approach will be put at risk should genetic engineering laws be loosened.

New Zealand scientists, growers, and beekeepers are all deeply invested in innovation and sustainability. The question is what kind of innovation best protects the long-term resilience of our ecosystems, pollinators, and rural industries.

For beekeepers, the precautionary principle matters because once ecological changes spread across landscapes, reversal may be impossible. Beekeepers understand better than most that ecosystems do not operate in isolation. Bees forage across entire landscapes without regard for property lines or regulatory boundaries. Once genetically engineered plants enter open environments, pollen movement and ecological interaction become almost impossible to fully contain.

That is why those in apiculture should see this Bill less as a cautious scientific step and more like standing on the edge of a bridge. Once New Zealand jumps, there may be no practical way to return to the biological purity, traceability, and environmental reputation that currently underpin our honey industry.

WHO'S TO GAIN?

New Zealand does not need to follow global trends simply because larger countries or multinational interests may be moving in that direction. Our ecosystems, export reputation, food and biodiversity are uniquely fragile – and once the jump is made, there is no going back. The waters below are not clear. They are uncertain, constantly shifting, and filled with risks we may not fully understand until long after the jump has been made.

For many beekeepers, growers, and environmentally conscious New Zealanders, that is not a gamble worth taking. And again, who is asking New Zealand to jump? It's not the people. It's not the ordinary New Zealanders calling for this genetic manipulation in our food systems.

The growing concern around the influence of those positioned to benefit financially from the expansion of gene technologies is also something to note. It raises serious questions when individuals or corporations are heavily involved in shaping policy to which they stand to profit from. That presents a conflict of interest (at the very least) and risks placing corporate priorities ahead of the long-term interests of New Zealand people, farmers, animals, and the environment.

Around the world, major multinational companies involved in genetically engineered seed, agrichemical, and pharmaceutical industries – including Bayer (which acquired Monsanto), Syngenta, Corteva Agriscience, and BASF – have invested heavily in expanding the global use of patented GE seeds and related chemical systems. Critics argue these models can create ongoing dependence on proprietary products, licensing agreements, and agrichemical inputs, shifting more control of food production away from farmers and into the hands of multinational corporations. There has been extensive outcry from Indian cotton farmers.

New Zealand's strength has always been its independence, clean-green reputation, world-leading agricultural science, and the trust global consumers place in our products. We should be extremely cautious about handing over our food systems and natural environment to overseas corporate interests whose primary responsibility is ultimately to shareholders – not to New Zealand's land, biodiversity, or future generations.

Josie Sage is the general manager of Ceracell Beekeeping Supplies, based in Auckland. She holds a Bachelor of Science degree in Biochemistry from Canterbury University, and a Masters in business management from the University of Auckland.

A New Test for AFB in Honey – What is 'AFB Ultra'?

Dnature diagnostic and research's new advertisements almost says it all – "Tired of the 'yeah-nah-yeah' AFB results in your honey? Get a real answer with our new AFB ULTRA test before you blend your honey". We would like to know more about how it works though, so we put some probing questions to dnature technical director John Mackay to determine how this new test works and why it could save beekeepers and honey traders costly mistakes.

Apiarist's Advocate: **Let's keep it simple to start – What is AFB Ultra?**

John Mackay: It's a new DNA diagnostic test to detect the presence of AFB (American foulbrood) spores in honey. It uses a new detection technology and a new DNA target in the bacteria to make it – well – ultra-sensitive. It's designed to test batches of honey before they go into larger (expensive!) blends.

Technical director John Mackay at work in the dnature Diagnostics and Research lab which offers beekeepers a range of diagnostics tests, including the new AFB Ultra.

Why do we need a new AFB test?

Industry has had issues with variable honey results, especially when spores are low. This is to be expected statistically, but we've heard issues when batches of honey test negative for spores and yet the final blend has spores detected in it. Or the variability with low spores when a honey sample is tested among different laboratories.

AFB Ultra has been developed to prevent this issue due to its much higher sensitivity: honey batches that are sampled appropriately and clear the AFB Ultra test are safe to blend and will then clear the required export AFB testing at your normal laboratory.

So, aren't you just testing a larger amount of honey?

No, this test uses a single high copy number DNA target in the bacteria, along with a new DNA detection method to further increase the sensitivity. So, we can still use the same high throughput DNA test methods from the small amounts of honey we developed for the industry over 10 years ago.

More sensitive... but how much more sensitive is it?

Compared to the current qPCR methods (our own AFB duo qPCR test of tests included), AFB Ultra is approximately 20-50 times more sensitive. It means you can ensure your honey results won't return any nasty surprises upon blending and export testing.

That's very sensitive then, so won't that just mean all honeys now test positive?

No. As with previous testing, our R&D shows most honeys still have undetectable levels. However, honeys that have had ambiguous results or honeys that have gone into larger (AFB detected) blends have been clearly identified with our new AFB Ultra.

Will this replace your original AFB DNA test, aka 'the Foster Method' from hives?

No. Our AFB duo qPCR test continues to perform very well for swabs, honeys and other samples – for both ourselves and other laboratories who use this test. For this particular application of testing batches pre-blending and removing surprises when large blends were tested, well, we felt there needed to be a better solution. AFB Ultra is it.

OK, so the Foster Method is still going strong, and I know there is plenty more testing being done in your lab for beekeepers. What are some of the other problems dnature can help solve?
Yes, swabs continue to flow into the lab. The Foster Method is a great way of determining AFB-incidence without even opening beehives, just by our rapid swabbing technique of their entrances. This time of year, it can also be a great tool for swabbing equipment in the shed, especially if beekeepers want assurance when buying that so-called "AFB-free" gear second-hand. Beyond that, if beekeepers suspect varroa resistance to pyrethroid treatments we can test bee/mite samples which is something we've been helping Australia with given their new (second!) varroa incursion. We can determine viral loadings within samples taken from hives, helping to determine if nosema or other nasties are present.

The full gambit of our tests offered are detailed on our website.

There's plenty going on in the dnature lab. How do beekeepers or honey sellers get their batches AFB Ultra tested, or access any of the other tests?
You can simply request the AFB Ultra as a test from dnature. We only need the normal pottle of honey. Just like if you want Foster Method swabs sent out, or info on any of the ways we can help, get in touch by email to orders@dnature.co.nz or phone 0800 362 887. ■

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How to Achieve Varroa Resistance in Your Hives – the Workshops

BY RAE BUTLER

After first floating the idea publicly two months ago, Ashburton queen breeder Rae Butler now has dates set for eight workshops focusing on how to identify, measure and maintain varroa resistance in honey bees. And there is still plenty of time for new participants to register their interest.

After three seasons of practical fieldwork in Canterbury, a clear and workable pathway has been developed to help beekeepers identify, test, and breed from their own varroa-resistant bees. Supported by the New Zealand Honey Industry Trust, this work has focused on defining key resistance traits and how they can be measured, giving beekeepers greater confidence in what they are breeding or buying, and what performance to expect from their stock.

This work places a strong focus on Varroa Sensitive Hygiene (VSH), alongside other complementary traits, and how these can be maintained and strengthened through different mating options. A Canterbury pilot study confirmed that VSH traits already exist within local bee populations. Using a simplified, time-efficient testing method (around 25 minutes per test), this approach is practical for both commercial and small-scale beekeepers. These traits can be progressively enhanced over time, with or without the use of insemination techniques.

This July, a series of one-day workshops will be held across New Zealand, building on the findings from both those local pilot studies and evolving varroa resistance research worldwide. These workshops will cover: what varroa resistance traits are and how they are measured; how to identify and select resistant colonies; applying simple testing methods in your own apiary; making breeding decisions using measurable data; and mating systems suited to your operation.

For commercial beekeepers, whether breeding or purchasing queens, this provides clarity around resistance traits and encourages queen breeders to incorporate varroa resistance into their programmes.

Selecting for varroa resistance can reduce treatment reliance, lower costs, and improve colony health — all while working with the bees you already have.

Register now to secure your place. www.bbnzg.co.nz/register
(Thanks to those who registered their interest; your responses have made it possible to finalise locations.)

Bee Breeding NZ Group Workshops

Register Now

Advance your knowledge on breeding for varroa resistance: Workshops - held in both the North and South Islands in July and August.

REGISTER YOUR INTEREST NOW
www.bbnzg.co.nz/register
For more information phone Rae Butler 027 430 1106 or visit www.bbnzg.co.nz
$50 registration fee applies

SCHEDULED WORKSHOPS			
LOCATION	DATE	VENUE	ADDRESS
SOUTH ISLAND			
Mosgiel, Otago	Mon 6 July	Invernay Agricultural Centre	George Holmes Room, 176 Puddle Alley, Mosgiel
Ashburton, Canterbury	Thu 9 July	Ashburton Library Te Whare Whakatere	Wakanui Room/EOC 2 Baring Square East Ashburton
Nelson, Tasman	Mon 10 August	Greenmeadows Community Centre	Kotuku Room, 491 Main Rd, Stoke, Nelson
NORTH ISLAND			
Havelock North, Hawkes Bay	Sat 18 July	Aratiki Honey Visitor Centre	66 Arataki Rd Havelock North
Gisborne, East Coast	Wed 22 July	Eastern Institute of Technology Rural Studies (EIT)	Gisborne
Hamilton, Waikato	Mon 27 July	The Links Community Centre	Cattanach Hall 4 Te Aroha St Claudelands Hamilton
Orewa, Auckland North	Wed 29 July	Hibiscus Coast	216 Hibiscus Coast Highway, Orewa
Stratford, Taranaki	Mon 3 August	Stadium Bar & Bistro	62 Portia St Stratford

Dancing Bees – and a Hack to Reduce Robbing

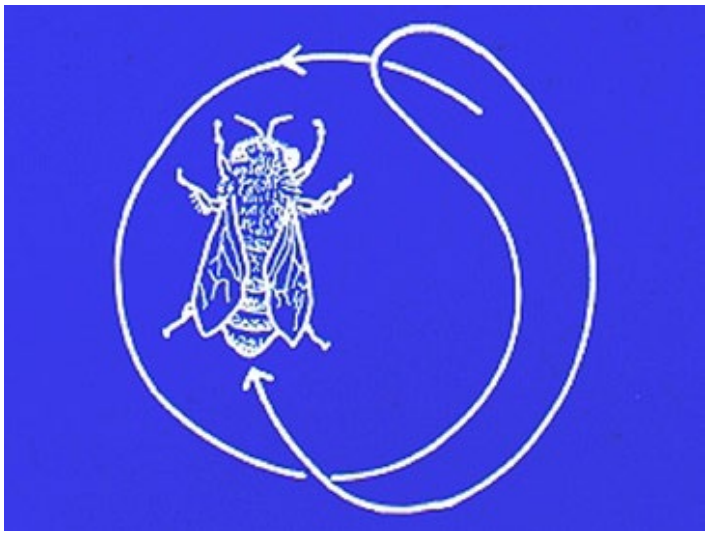
Most beekeepers are well aware of the 'waggle' dance, but did you know honey bees also perform 'round' dances? Mark Goodwin has studied the behaviour and determined each of the dances has its own occasion, and that understanding the resulting foraging behaviour can help prevent robbing.

DR R. MARK GOODWIN

Honeybees can recruit other workers to a food source by providing information on what the food smells like, what it tastes like, the attractiveness of the food source, how far the food source is away from the hive, and in what direction.

It had been reported that bees do excited dances inside their hives for about 100 years, but why they did it was a mystery. That was until the 1940s when the purpose of these dances was discovered by German-Austrian ethologist Karl von Frisch. He was awarded a joint Nobel prize with Conrad Lorenz for his work on imprinting, and BF Skinner for his work on operant conditioning.

I could always imagine myself in his lab, when the discovery was made. Von Frisch had trained marked bees from an observation hive, to collect sugar syrup from a dish outside their hive. He noticed that these marked bees ran in circles (round dances) when they returned to their hive. Other bees would follow these dancing bees, which would frequently stop and give their followers a taste of the sugar syrup. These dances are usually done in complete darkness, although you can see these dances being performed on the flight board of very strong colonies, or on the surface of swarms.



The 'round dance' performed by honey bees to recruit fellow field-bees when a forage source is within 50m of the beehive.

He also noticed that unmarked bees were returning to their hive carrying pollen pellets, and were doing a completely different dance (waggle dances). These dancing bees also stopped to give the following bees a taste of what they were carrying.

His first thought was that the different dances were to communicate whether the dancing bees were collecting nectar (sugar syrup) or pollen. A reasonable assumption. For an unrelated reason, Von Frisch started moving the dish of sugar syrup further away from the hive. When it was moved out to 75m, the bees that were doing round dances changed to doing waggle dances. So, the type of dance was not indicating whether the bees were collecting sugar syrup or pollen, but possibly how far the food source was from the hive.

From watching waggle dances, Von Frisch knew bees go through the straight part of the dance and vibrate their abdomen at the same time. Then came the observation that put him on the road to his Nobel prize…

He was recording the angle of the waggle portion of the dances carried out by his marked bees over time, and he noticed that the angle was changing and doing so at 15 degrees per hour. Back then, every scientist knew that the sun's azimuth changes by 15 degrees per hour. From that, he established that the angle of the waggle portion of the dance relative to gravity, was the same angle the bees had to fly relative to the sun to find the food source.

Exciting stuff, and I will talk about the waggle dance in some further articles. For now, the 'round' dance and the resulting question – how do bees get recruited to a food source after following a round dance when it doesn't contain distance and

direction information? This is one of the questions I set out to answer in my MSc thesis.

I put 10 scented bee traps in a circle within a 25m radius around a hive. The bee traps would allow bees to enter, but not to leave. I then fed marked bees scented sugar syrup behind one of the bee traps. It did not matter which bee trap I fed the marked bees behind, all the recruited bees were collected in the trap directly upwind of the hive. The same happened when I did experiments with a 50m radius from the hive. All the bees collected in the upwind trap, irrespective of where the marked bees were feeding.

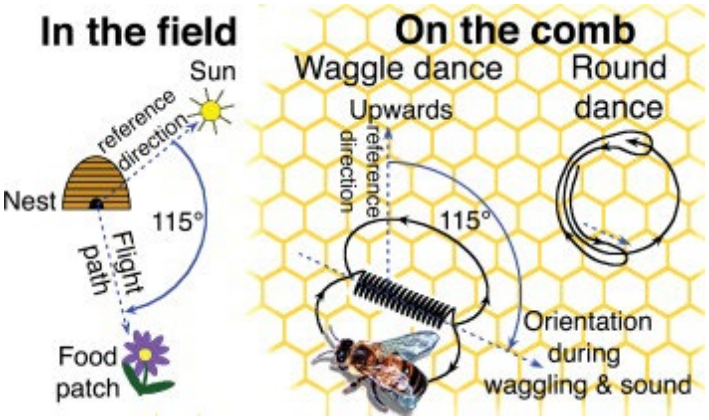
This all changed at 75m, in the area where waggle dances are occurring. Then it didn't matter which way the wind was blowing, all the bees got caught in the trap behind where the bees were being fed, and which was indicated in the waggle dance.

It appears that if bees are bringing back food from distances of 50m or less from the hive, the bees following the dances cannot tell where the food is before they leave their hive. They just leave the hive and hunt for food that smells the same as that carried by the dancing bees.

This is why robbing can be bad within an apiary. If your bee truck is parked in an apiary and bees that got a taste of the honey, their dancing will tell their nest mates that there is a very attractive food source outside their hive, and that it smells of honey. The recruited bees will fly out looking for the smell of honey. Some bees will find the truck, and others may find a neighbouring hive.

If you park you truck downwind of your apiary, some bees will find it, but it would likely be hard for those bees to recruit other bees to your truck.

Mark Goodwin is a honey bee scientist and pollination biologist. He set up and led the honeybee research team at Ruakura in Hamilton for 35 years and has vast experience in beekeeping, having given lectures and worked with beekeepers and growers in 19 different countries, written 25 scientific papers, hundreds of technical articles and some of New Zealand beekeeping's most instructive books.



An example of how the honey bee's 'waggle' dance is performed and what it communicates to its sisters.

Keeping Bees in Ancient Rome: A Glimpse from Virgil the Poet

The profession of beekeeping is very old, and the behaviour of bees together with the unique sweetness of their honey fascinated the ancient world. One admirer was the Roman poet Virgil (70-19BC) who wrote a collection of four short poems on farming called the *Georgics*. CHRIS NORTHCOTT surveys beekeeping from the ancient Roman world as glimpsed in Virgil's poem, uncovering things that are familiar to apiarists today, as well as things we may find surprising.

BY CHRIS NORTHCOTT

Originally Virgil's poems were written in Latin, but English translations are easily available as cheap paperbacks or online.

FAMILIAR OBSERVATIONS

The life of bees fascinated the ancients as much as it does people today. Some of the things Virgil writes he no doubt saw with his own eyes, but he is known to have drawn on the work of others.

Keen observers realised even then that the life of bees was communal, with different bees performing different tasks for the colony. Somehow they knew that the bees didn't mate (mostly correct) and that the bees only had short lives – seven summers tops (not at all precise even if they had the right idea!).

Foraging didn't happen when it rained, or in rising easterly winds. They saw the way worker bees surrounded the queen, and noticed the sticky substance at the hive entrance which the Greeks had earlier called 'pro-polis' (literally, the stuff 'in front of the city').

Robbing and swarming were observed, as was the harsh necessity of drones being evicted from the hive. The mutual value of gardens and bees for one another had been learned. Careful watchers had seen the symptoms of diseased bees, and dead bees being carried from the hive.

Various bugs and animals are noted in Virgil's poem as dangers to the bees, including bee-eating birds who bring their catch to their *'cruelly gaping nestlings'*, the spider ready with her *'dragging hunting nets'*, and the *'savage hornet with superior weapons'* which fights its way in.

FAMILIAR PRACTICES

Many of the practises mentioned will be very familiar. Selecting a good site is necessary. Water should be provided with floats for the bees to alight on. De-winging a queen prevents swarming. Narrow the hive entrance in winter to keep out cold.

Virgil recounts the procedure of spying a swarm and placing an empty hive near it with scented mixtures to attract it inside, and of planting nectar-bearing plants around the hive.

Dating to a time before even Christ graced the earth, Roman poet Virgil's works offer a unique insight into ancient beekeeping practices.

When it is time for harvest (every six months it seems), we who haul honey will empathize with our vocational forebears: *'The rage of bees is boundless, hurt, they breathe into their stings poison, and fasten on your veins to leave their secret javelins, and in that wound lay down their lives.'* Smoke is recommended!

Despite the ordeal, the rewarding experience of squeezing the *'foaming honey'* from the comb is a pleasure that apiarists without frame spinners can relate well to.

ODD IDEAS AND OLD PRACTICES

One of the best things about old or exotic literature is its ability to surprise us, and Virgil's poetry is no exception. Some of the mysteries of the honey bee (unsurprisingly) were unsolved by the ancient world. The queen bee is mistaken for the colony's king, and bees were thought to collect new young from plants while foraging rather than reproduce. Drones are thought to be a different breed of bee within the colony.

Furthermore, some beekeeping practices differed from ours. Hives were constructed from woven willow branches or bark from the cork tree, covered with clay and leaves. Another novel practice is the recommendation to reinvigorate sluggish hives by fumigating them with the fumes of a gum and honey mixture, or by concocting a syrupy brew and leaving that outside the hive.

Perhaps most memorable of all is the account of a practice known as 'Bugonia'. A beekeeper without colonies is reminded of the legend of Aristaeus and how he became the mythical first keeper of bees. Bugonia was a strange ritual which involved beating a cow to death and leaving its pulverized, but un-torn, body in a specially prepared place. It was thought that new bees would self-generate from the fermenting insides of the carcass, thus providing the bee-less beekeeper with a new colony. While it was a popular subject for poets, it is uncertain whether people actually practised this, and more prosaic authors were sceptical of the idea!

POETIC LICENCE

Another surprising feature is the way that Virgil likens the behaviour of bees to human activity. He was fascinated by the way bees lived in vast communities and imagined them living like little human societies.

The industrious honeybees of his poem are made out to be working as blacksmiths, town surveyors, and field labourers, all toiling away for the communal good, until *'At last, when all are tucked in bed, a silence falls for the night, and over their tired limbs a well-earned slumber steals.* When a worker's short life ends, *'Then the living carry the corpses of the lifeless out of the home in funeral procession.'*

The occasion of swarming or robbing is dramatically likened to battle: *'You can presage mob violence arising and hearts agog for war… bustling they assemble; wings are flashed, stings sharpened upon beaks and muscles tensed… out they sally, battle is joined… heroic hearts beating in tiny breasts, still steadfast not to yield till victory has driven these or those to turn in flight.'*

THE PLEASURE OF BEES UNDER THE SUMMER SUN

Poetry can be tricky to read and appeals to a narrow range of readers, but it is designed to be enjoyed. Virgil's poetry on farming, including the keeping of honey bees, promotes the value of hard work. We who keep bees understand hard work, but when harvest time is over and brood checks are finished, cannot help but enjoy the sight of foraging bees on a warm summer's day, just as Virgil did:

'Now when the golden sky has driven winter in rout beneath the earth and freed the sky with summery light, the bees incontinently roam over glades and woodlands harvesting bright blooms, and lightly sip the river's surface. Inspired by this with some mysterious joy they tend their nests and young; inspired by this they forge new wax and fashion sticky honey.'

Chris Northcott is a west-Auckland beekeeper, and once trained to be a high school teacher in classics and history.

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