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Apiarist's Advocate

News, Views & Promotions - for Beekeepers - by Beekeepers

Put Out Your Traps

Hornet surveillance takes on increased importance as temperatures rise

Hornet Response – A View Beyond Auckland Needed, and Beekeepers Implored to Act Now

As a yellow-legged hornet (*Vespa veluntina*) biosecurity incursion response winds into month three, the Ministry for Primary Industries (MPI) is simultaneously being praised by the beekeeping community for an expansion of their response funding and front-line efforts in Auckland and encouraged to provide longer-term contingency planning with a view to the invading insect being found elsewhere.

The clock is fast ticking on eradication hopes and critics say the beekeeping community and general public need to be better rallied to assist in the fight.

While male hornets were first detected in the suburb of Grafton in Auckland's city centre in late-June 2025 and soon after in Albany, the official response ramped up following the October 17 find of a queen yellow-legged hornet in the early stages of nest-building on the North Shore.

Since then more than 7500 public notifications have been received by the Ministry for Primary Industries (MPI) and their offshoot agency Biosecurity New Zealand to investigate, while intensive trapping, inspections and information pamphlet drops have taken place in Auckland.

As of December 30, 39 queen hornets, 26 of which had begun nest building, had been located and destroyed – all within "Zone A" which has been subject to intensive trapping out to 1km around detection sites. Beyond that "Zone B" extends trapping 5km further

MPI's yellow-legged hornet incursion response in Auckland moved to a third zone in December, extending out to 11kms from where hornets have been found.

and, as of late December, a "Zone C" out to 11km from the centre point of Glenfield and Birkdale has been implemented. All up 780 traps have been placed, the majority in Zones A and B while owners of 575 apiaries within Zone C are being asked to closely observe their beehives.

On December 19 a Christmas bonus arrived when Biosecurity Minister Andrew Hoggard announced the government would commit $12million to cover the response up until June 2026.

Some cost-sharing is taking place with industry groups from the horticultural sector that have pre-set biosecurity Government

SUMMER

The primary nest is often abandoned and the hornet colony moves to a new location where it builds a much larger nest, called a secondary nest. The secondry nest is frequently located high in the tree canopy (if present).

The hornet worker population increases exponentially as egg-laying and brood raising happens more quickly, taking not much longer than 30 days from egg to worker. In late summer, the hornet colony begins to raise reproductives, males and spring/new queens (gynes). More and larger broods require more food and the protein needs of the colony further increase. Adult hornets are particularly energetic (being fed back by the larvae), bold, and likely to be aggressive.

This is the period of most intense and diverse foraging. At its peak, the hornet colony can have more than 1000 adults.

Large amounts of nectar become available from flowering plants, and honey bees increase their forgaing to take advantage of this. Honey bee colonies attain their maximum size, often exceeding 50,000 honey bees in a single colony.

Drones are common and have matured. Queen matings are very successful at this time of the year due to the presence of mature drones and favorable flying conditions. However, swarming inpulses in colonies do reduce when floral nectar flows increase, as the colony turns its focus to storing honey in preparations for winter.

Beekeepers place honey boxes (supers) on hives. This is the season where beekeepers focus on getting honey. Honey may be harvested at any time, but especially late summer.

Hive inspections become less frequent as bees are left to gather nectar and increase their honey stores.

Swaring of bees becomes less of a risk

Beekeepers may move hives to take advantage of seasonal honey crops.

'Hawking' behaviour of hornets at beehive entrances becomes common. Beekeepers may need to observe beehive entrances for 10-20 minutes to be able to observe this behaviour. It will not be as obvious to beekeepers as the robbing that is done by bees or wasps. Hornets target honey bees on the wing, rather than going in the hive itself.

This is the time of year of greatest risk to beehives. Hornet predation of beehives is at its peak but beekeepers are spending less time with their hives.

Both protein and carbohydrate traps could work for trapping hornets, but by-catch will be an issue and traps must be checked routinely.

Very high risk to beehives as hornet workers emerge and target bees. Increasing 'bee hawking' by hornets. Beekeepers may not notice this due to reduced hive inspections in summer.

MPI has provided a seasonal risk assessment for yellow-legged hornets and how their activities relate to honey bees and beekeeping practices. Full version, with all four seasons, available here.

Industry Agreements and, while the beekeeping sector doesn't have such an agreement, several groups have been engaged as part of the response without committing funds.

One of those groups is New Zealand Beekeeping Inc (NZBI), who have been privy to MPI's draft contingency plan and whose advisor Ian Fletcher has supplied the response leadership with an eight-page advice document from a commercial beekeeping perspective. In it MPI is asked to 'shed the lone hero persona' and that they 'must expect and receive full-throated community and industry support'. It outlines early detection of any hornet spread to new urban, rural or conservation estate areas as essential.

"It is an attempt to get MPI to think more longer-term and nation-wide about the response," Fletcher says of the advice document.

"We are yet to see a response which is commensurate with the challenge. They need to think longer-term. You have to have a plan that extends to 2027, which is a huge resource commitment and therefore MPI has to build a wider partnership to manage that."

To be best prepared for potential hornet spread to a rural area, or areas, a 'national beekeeper surveillance network' needs to be established with beekeepers providing trapping, observation, reporting and potentially some response capability if needed, according to Fletcher and NZBI.

Apiculture New Zealand (ApiNZ), along with NZBI and the American foulbrood management agency New Zealand Bee Health and Biosecurity (NZBB), has formed the national-level

A homemade hornet trade made by Richard Klaus with a sugar/yeast/vinegar bait. The Bay of Plenty beekeeper is imploring all hive owners to set traps at all sites, anywhere in New Zealand.

beekeeping representation to MPI during the response, but NZBI has refused a non-disclosure agreement with the government on the issue, limiting their involvement but providing greater ability to publicly speak out on the matter.

"Contingency planning is the next step," says ApiNZ chief executive Karin Kos.

"We are still working through what the worst-case scenario is and how we prepare.

"There is a lot of interest from beekeepers and at this stage liaisons have been with hobbyists because the incursion is centred in an urban area. But the next step is, what needs to be considered across the rest of New Zealand?" Kos says.

"Clearly there is a role for beekeepers to play and we need to consider what changes over the season … it is all in the planning at this stage."

TAKING THE HORNET BY THE HORNS

Not prepared to wait, some beekeepers are calling on their fellow apiarists to take action now, even if it is not yet formally organised.

"I think every beekeeper on every site should make a home-made trap and set it," says Bay of Plenty commercial beekeeper Richard Klaus.

"They should also be observant of apiary sites and, before they drive in to work it, stop 20 metres before it and look to see if any behaviour has changed. Be observant. If one of these things has travelled, we need to eradicate it now. It could have gone on a pallet from Auckland to Invercargill on Mainfreight."

Klaus says he is putting his money where his mouth is too, with traps at all his apiaries, plus some other locations, and is in the process of making contact with transport operators and orchards in the Bay of Plenty asking them to trap for hornets, having been working closely with Zespri as a pollination advisor through spring.

Both ApiNZ and NZBB have circulated advice on how to make and set traps, plus observe hives for 'hawking' – the process of hornets preying on honey bees on the wing near hives.

The risk to beekeepers' livelihoods posed by the hornet should be sufficient motivation for apiarists all over New Zealand to act by setting traps now, in the crucial months before hornet queens mate again heading into winter, Klaus says.

"The clock is ticking and we have about 70 more days to find them. If one has travelled, with a capital 'IF', then if we all set a trap, we can find it before there are 400 next year."

BOOSTING THE PUBLIC PROFILE

A beekeeper response is one thing, but gaining the assistance of more of New Zealand's population of five-million-plus is essential says another commercial beekeeper in the Bay of Plenty – a region where any impact to bee health could seriously impact the local, and by proxy national, economy due to the heavy reliance on kiwifruit orchards and their insect pollination.

"People in the bee fraternity know where to go and look, but I have asked others if they know where to go and they say 'no'," Grenville Ormsby says of MPI's yellow-legged hornet **website**.

"It should be promoted better to the general public. Promotion to the bee community is not enough. Somebody needs to stand up and say how serious this is. I know beekeepers in France who say they got devastated by this hornet within two years.

"I don't doubt what they are doing in Auckland is a good job, but I worry they are not giving enough information to the general public. Don't keep it in house with the beekeepers."

Ormsby says he has approached MPI with these concerns and is encouraging various politicians to take a public lead on boosting the profile of the matter.

Ormsby, Klaus and NZBI's advice all centre on the same concern, that the response needs to simultaneously continue its focus on Auckland while increasing surveillance and preparedness across the rest of the country because the risk of not doing so is simply too high.

ON THE GROUND IN AUCKLAND

Members of Auckland Beekeepers Club have played a role in the response so far, by helping educate the general public in Auckland and some members assisting the response team in setting traps and carrying out inspections.

"The hives will be a magnet to the hornets so they are asking all beekeepers in Auckland to spend at least 20 minutes a week observing the hives for hawking," club president Ken Brown says.

"They still haven't been found outside of the Glenfield area, but assuming they have moved then we will be able to find it (in the expanded zone)."

Hornets are being painted with coloured dots and tracked back to their nests, while radio-transmitted tracking technology is expected to be implemented in January and beyond. While beekeeping clubs and groups outside of the Auckland club are not being formally organised to respond, Brown's advice is to be ready.

"I believe in the system. I have travelled around the world and New Zealand is the least corrupt place and a place where biosecurity is so important. I think other groups should trust in the system and work within the system, but make suggestions where they think they are needed."

Some are making those suggestions already, and Fletcher says he expects to meet with response leadership in the first half of January to promote his advice around a more organised plan for urban, rural and conservation estate preparedness for the hornet, and better utilisation of beekeepers.

Klaus is putting himself out there to numerous industries and media platforms to stress the need for greater trapping surveillance, countrywide, now.

"I hope it is nothing and I hope everyone laughs at me but, if one has travelled, we could have 400 of these things somewhere new," Klaus says, adding "I have lived through varroa and I don't want to live through something like that again, with all its ongoing issues".

Key Resources

- How to make a homemade hornet trap
- Hornet risks to beehives by season matrix
- Yellow-legged hornet – FAQ for beekeepers [PDF, 1 MB]
- The yellow-legged hornet (Vespa velutina) – Information for beekeepers
- Looking for yellow-legged hornet nests: Beekeepers' guide to surveillance – Fact sheet
- Protecting hives from yellow-legged hornet: Beekeepers' action guide to trapping – Fact sheet

Thank-you India – Honey Tariffs to World's Most Populous Nation Soon Slashed

In a world first, New Zealand's mānuka honey entering India will soon see significant tariff reductions under a free trade agreement (FTA) between the two nations. While potential for the mānuka honey industry abounds, some are warning that, this time, honey sellers should take the clean slate, "work together" and not "stuff it up".

With a population nearing 1.5billion and a developing economy, trade minister Todd McClay says the deal "unleashes huge potential for our world class exporters". However, India is one of the world's largest producers in honey, believed to be in the top five of all nations. Therefore mānuka honey, with its high price point and additional antimicrobial properties effectively placing it in a different market to India's domestic production, will become the first honey the world over to be included in a FTA with the subcontinental Asian nation.

Once the deal is ratified, which is expected to be in the first half of 2026, the current tariff rate of 66% will be reduced by 10% each year for the next five years on honey valued USD30/kg or greater. From 2030 a final tariff rate of 16.5% will remain. In addition to that top-end honey, a quota of 200 tonnes of honey valued between USD20 and USD30/kg will be provided entry on the new rates.

To date India has been but an afterthought for the New Zealand honey industry. In the year to June 2025, mānuka honey exports to India were valued at just NZD260,000 as only 11.5 tonnes made the journey.

New Zealand has become the first country to gain preferential honey trade with India under a FTA, with mānuka honey tariffs set to drop from 66% or 16.5% over a five year period.

"Clearly it has been an opportunity for years, as it has been for other primary product producers in New Zealand, but it has not been conducive to going in there because of those tariffs," Apiculture New Zealand (ApiNZ) chief executive Karin Kos says.

"It is not an easy country to crack by any stretch of the imagination. It has taken a lot of visits to get this deal, but it is a really good start and I expect our sector will make the most of it."

NZ-ONLY

Among those from the honey industry consulted during the negotiating phase were ApiNZ board member and The Mānuka Collective chief executive Sean Goodwin, UMF Honey Association chief executive Tony Wright, industry consultant Ian Fletcher and members of The Mānuka Charitable Trust's governance.

Goodwin says the USD30 value roughly equates to UMF10+ honey, and he expects the 200 tonne USD20-30 quota to fit bulk mānuka exports as a food ingredient.

"It is a great agreement, being that New Zealand is the first country to achieve preferential access for honey to India in any FTA," Goodwin says.

"There was talk during the negotiations of an over-all quota and the risk was that quota would be all taken up with low grade honey, which would be of little value. So, I think this represents a great opportunity."

Wright sees it that way too. He expects their members to start building markets into India soon, and believes the wording of the FTA will help protect against competing Australian honey.

"I think where it has landed is positive for the industry. It gets better over time, so it gives clarity. You can start a marketing programme and know it is only going to get better," the UMF Honey Association chief executive says.

"The wording in there is quite clear about it only applying to mānuka honey certified by the Ministry for Primary Industries. So, that means we have a trade agreement saying the honey needs to be certified to the regulatory definition to get tariff treatment. It means the Australians can't get a look in. They have already

completed their FTA with India, so it means we have preferential access for the genuine article to that market."

POTENTIAL PROTECTIONS

However, there is always the risk of Australia renegotiating terms says Kristen Kohere-Soutar, chair of The Mānuka Charitable Trust, who are seeking to protect the term 'manuka honey' in key markets. Therefore, while a geographic indicator (GI) – such as which Scotch whisky and Champagne wine, among others, trade under in many markets around the globe – has not been included in the FTA for any New Zealand products, there is hope it could be pursued for mānuka.

A review of GIs between the two nations will take place within six months of the agreement coming into effect.

"The Indians are very partial to the GI system, so when our people spoke regarding the geographic indicators there was a meeting of minds and understanding of the appropriate legal protection systems that should be used," Kohere-Soutar says of the Trust's role in negotiations.

"That hasn't transpired in the FTA terms, but it was central to them coming back and putting mānuka honey on the table to discuss terms.

"We should also be looking to build a geographic indicator for India, because India will accept it from a unified place."

THE POTENTIAL

"I firmly believe India will be a top five honey market for New Zealand within five years. Although, it will take some time for this agreement to come in," says Goodwin, who travelled to India twice last year including on a Ministry of Foreign Affairs and Trade envoy.

Not only is India home to the world's largest population of any country, their ancient and traditional 'ayurvedic' holistic health practices place honey in high regard.

"Ayurvedic health principals are very similar to rongoā or traditional Māori healing," Goodwin says.

"They will put a drop of honey in a child's eye if they have an eye-infection. They understand honey, and have used it for many centuries."

He believes mānuka honey's value may also be increased in India due to the country's antimicrobial resistance problem following years of antibiotic overuse.

"The idea of using a product in honey that they know and then a particular honey like mānuka that can help antibiotics be more efficacious when they need them, they want that sort of thing."

For many years mānuka honey has benefitted from the 'daigou' trade of Chinese nationals sourcing product overseas and returning with it to their homeland. India may offer a similar benefit Goodwin believes.

"The economy in India is exploding. Highly mobile, young and forecast to be the globe's third largest consumer market in a couple of years' time. Their diaspora is spread internationally. Big populations in the US, UK, Middle East, so if we think about marketing to India as a population this is huge, not just to the country of India itself," Goodwin says.

There are significant challenges in the Indian market too though, and so one of New Zealand's largest honey exporters, Egmont Honey chief executive James Annabell, expects growth in the market to be a slow-burn, but still with great potential.

"It piques my interest and India is a market we have watched with interest, but haven't taken a leap because of tariffs and it can be a complicated channel to market, with multiple layers wanting to take their cut," Annabell says.

"The tariff is still quite high right now and with the lumpy path to market we have to question how much volume we will do there in the really near future."

THE RISKS

There are of course two sides to any trade agreement and, while New Zealand's strict border wall against honey imports will not be at all weakened for India's sake, they will receive tariff-free access to New Zealand across the board. On top of that, increased access to New Zealand will be provided to Indian tertiary students and temporary workers.

Perhaps of most concern for New Zealand's honey industry is the inclusion of 'apiculture and honey' in the 'economic cooperation and technical assistance' section of the agreement. With world-leading honey production practices, and home to the world's most valuable honey in mānuka, there are plenty of valuable trade secrets within the New Zealand honey industry.

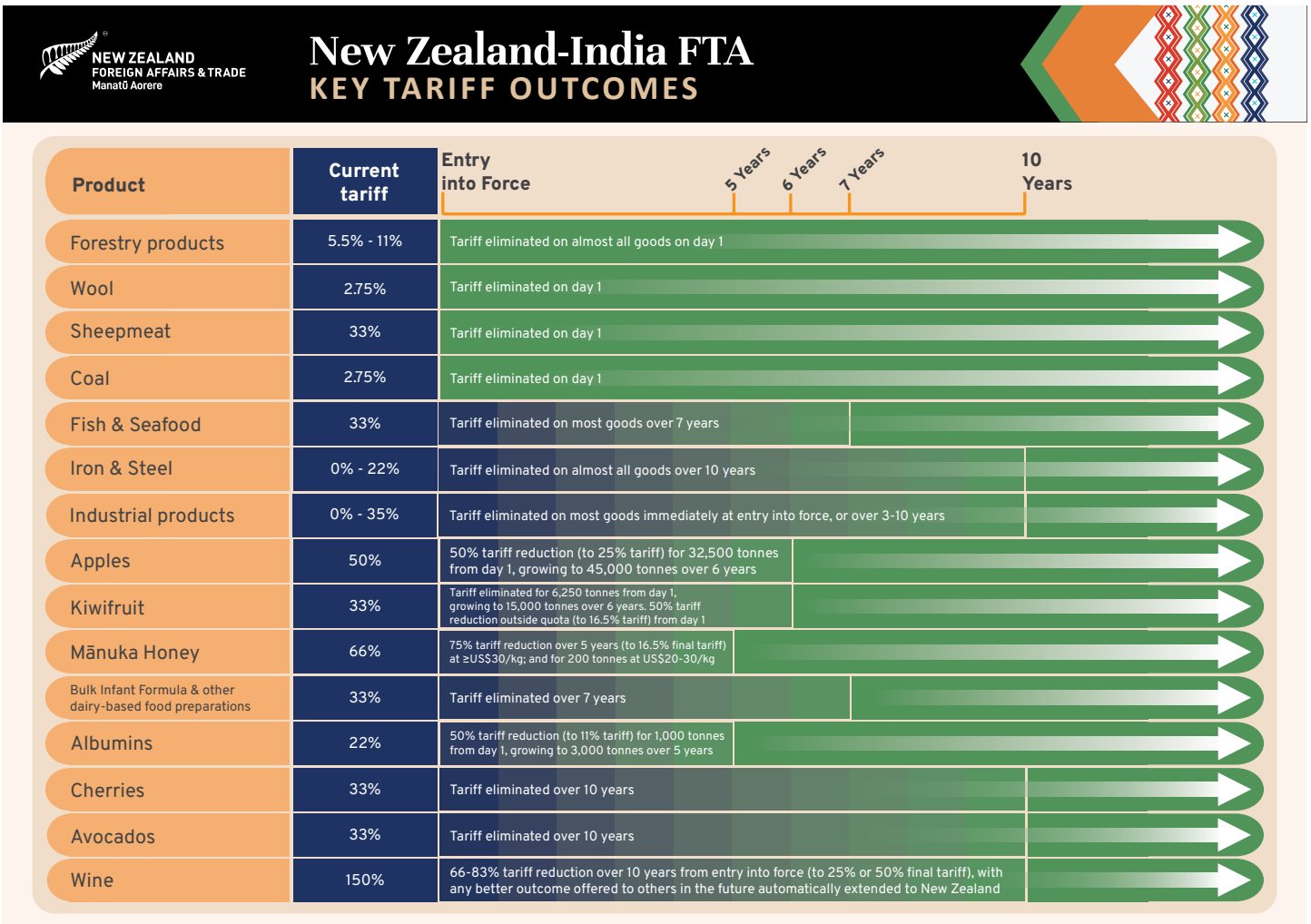
"Seeing what New Zealand has been able to do with mānuka honey and getting a premium globally is of interest to them, but we need to make sure we protect our intellectual property and our rights as manufactures and beekeepers in New Zealand," Goodwin says.

"I think there is more to be gained though. India is a technologically savvy and science-based country and so if we can be flexible and collaborate around solving productivity or bee health type issues then this could be a great partnership."

CAPITALISING ON A CLEAN SLATE

The mānuka honey industry was built, in large part, off the back of exports to the now second most populous country in the world, China, and Wright believes India offers similar potential and an "opportunity to develop a market from almost nothing".

"We have the opportunity to build at the sort of pace and scale that we saw in China. It is actually bigger than China and is in a similar position to which China was 15 to 20 years ago. Why couldn't it be just as big?" he says.



When pushed to answer that question himself, the UMF Honey Association chief executive stressed what would be required to realise the vision.

"We need to try very hard to get some unified messages from the start that talk about 'mānuka honey from New Zealand' and try not to confuse the consumer with multiple rating systems, confusing stories, or climbing over the top of one another to put your brand before the major brand which we are trying to sell – New Zealand mānuka honey."

Wright says they will be seeking to assist members in this coordinated approach, but it is ultimately up to the brand owners as to their marketing strategy and use of the UMF brand.

"We can help, but at the end of the day, members run their own businesses and we have to respect that, but we would definitely like to see a more coordinated approach to market development in a situation like this where we have the opportunity to set the story, get the narrative right and make the consumer proposition clear and consistent. There are lots of good reasons to try and do it right from the start."

Kohere-Soutar is staunch in her support for a more unified approach in India than other markets, including China, where she says too much of the profit has gone offshore. If the India market is approached in the right way, profits should stretch as far as beekeepers and landowners, she says.

"If we resort to type and go into this market in the same way, based on history, all we will be doing is leaving value on an Indian balance sheet and not our own. That is the big question for the larger exporters and some of our brands who are treating mānuka honey as a volume play and not a value play," The Mānuka Charitable Trust chair says.

"So, we might have a short feed at the trough for the couple of companies that have the balance sheet to get out there and get sales going, but if we are not joined up with supply, with half the hives we used to have, how are we going to supply that?" Kohere-Soutar says.

"This requires us all to come together, work together."

Done right, the potential is there though and Goodwin says The Mānuka Collective will put their money where their mouth is and look to build a good thing in India, starting in 2026, with an eye to much lower tariffs in future years.

"I do believe it is going to be a very good market and we have to have the kind of vision which others had years ago for China, because it helps to diversify and slowly build back the kind of size of an industry we want," Goodwin says, adding "we don't want another gold rush, but we want a return which is market led, not production driven and I think India has a huge role to play in it."

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Murky Results Delivered by Beekeepers on Matter of Widening NZBB's Role

Levies for American foulbrood are set to remain the same into the 2026/27 season, following consultation with beekeepers. But should the agency, New Zealand Bee Health and Biosecurity (NZBB), be advancing plans to extend their remit beyond AFB into wider bee health and biosecurity as their name suggests? Results on that question were murky and the path forward now similar, right as the country contends with a crucial beekeeping-related biosecurity incursion.

Despite 7445 beekeepers being contacted by email and another 833 by post, only 147 responded, with even less, 115, of them going so far as completing all three questions pertaining to the country's biosecurity preparedness and NZBB's role in that. A strong desire to maintain the current AFB annual levy rates of $1.95+gst per colony along with a beekeeper base rate of $40 resulted, whereas the results were split almost down the middle on an NZBB role expansion – 40% agreeing and 42% effectively saying "stick to AFB".

"We would have liked to hear from more beekeepers," NZBB chief executive Niha Long says.

"At the end of the day we will do what the industry wants us to do. We have been saying for a long time that something needs to be done and everything we have said has proved to be true and correct in the current hornet incursion."

To pursue a wider biosecurity mandate, more fitting with the name the former AFB Management Agency took on when it was reconstituted as a Trust last year, approval would need to be given by the Minister for Biosecurity, Andrew Hoggard, and have the industry's backing. The matter and how it might be progressed now sits with the minister, Long says.

"We have been clear to the minister that we got a really low response rate, but telling generally what we found," Long explains, adding they are "considering other funding options".

The biosecurity consultation was included with the annual levy-rate and budget check-in with beekeepers in September and October. While the 1.9% response rate is paltry, it exceeded the level of response in any of the past five years. Only 20 beekeepers with 251 or more registered beehives replied.

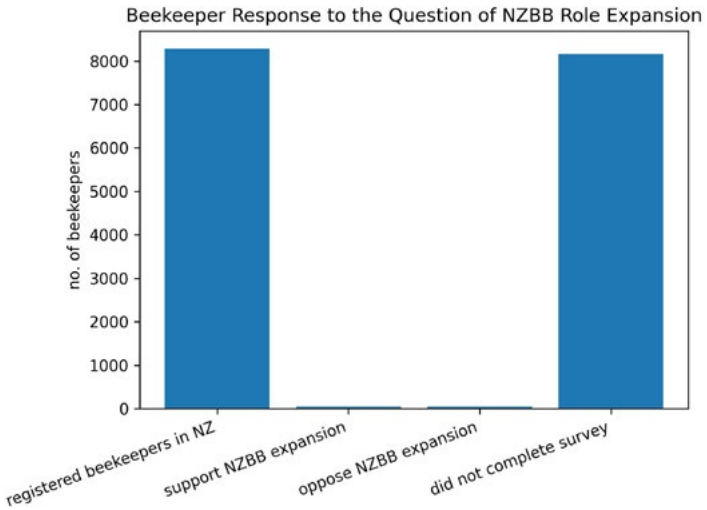
What was clear in the results was that almost all beekeepers, no matter their hive-holding, rated New Zealand's level of biosecurity preparedness for beekeeping-related matters as 'low', or 'very low' and generally insufficient. Despite this, NZBB was not seen as providing the vehicle for better preparedness by many, with government and AsureQuality listed as better bets by some.

The government was also identified as a potential source of increased biosecurity funding, along with 'industries which benefit from pollination'. Outside of the AFB levy, beekeepers are not compelled to commit any funds to biosecurity preparedness.

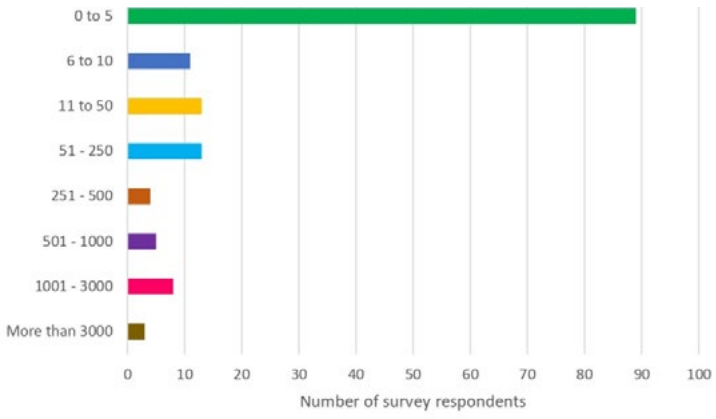
"Realistically an industry does need to come up with some money to help prepare for all of the risks coming at them," Long says.

As it stands, with registered hive numbers reducing year-on-year, NZBB is operating with a shrinking budget as levy rates remain stagnant.

"We have to work with what we have got and that means trimming the fat anywhere we can find it," Long says.



The response rate to NZBB's consultation on potentially expanding their role was just 1.4%.



Number of respondents, by number of colonies owned

Only 147 beekeepers responded to NZ Bee Health and Biosecurity's latest round of consultation on levy rates and budget, of which the vast majority owned less than six hives.

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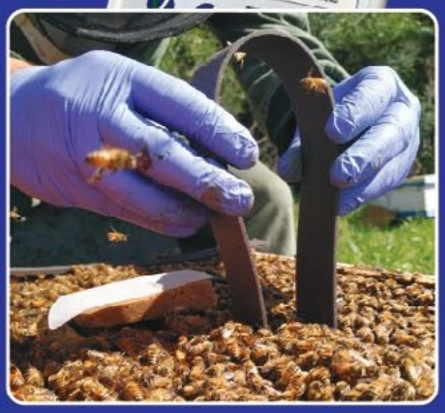

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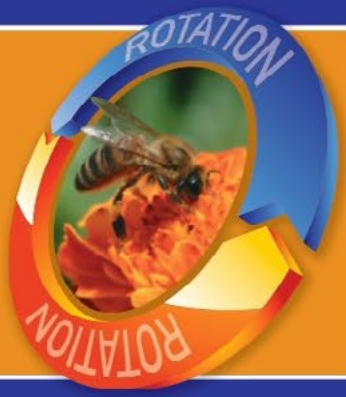

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Ten Beekeepers Help Shape New Industry Body

Progress towards the reshaping of a national-level beekeeping industry body is continuing its slow but now, seemingly, steady progress as the calendar flips to 2026.

A group of ten beekeepers have been tasked with assessing a "draft foundation document", having met once in December and planning to do so again in January.

For several months Apiculture New Zealand (ApiNZ) CEO Karin Kos and New Zealand Beekeeping Inc (NZBI) advisor Ian Fletcher have been hashing out what they see as the framework for an industry body which will better appeal to beekeepers than their existing models, and meet the needs of the industry.

The membership structure – who is included, and how – has been a sticking point in discussions. Agreement was reached between the two groups to present a 'one member, one vote' concept led by commercial beekeepers to a select group of beekeepers on December 18 via a video call with Kos and Fletcher facilitating. The purpose, function and governance of a potential new group were all addressed.

"We covered a lot of things in an initial meeting. I thought it was great, positive and we received some good feedback," Kos says.

"People should be reassured that we have something and are testing it with a good group of beekeepers."

The group included a mix of North and South Island business owners. From the North were Liam Gavin, Jason Marshall, Rory O'Brien, Kowan Eyers, Cameron Martin, Jamie McCrae and Jason Prior. The South Island reps were Matt Goldsworthy, Carolyn McMahon and Peter Ward.

Both Kos and Fletcher say it was made clear through earlier consultation with beekeepers that a commercial beekeeper led group is desired, and the draft concept respects that.

"As a starting point the one member, one vote system delivers beekeepers what they have said they want, in a non-complicated and a non-artificial way. It is easy to understand," Fletcher says.

Another meeting with the group of 10 beekeepers is expected to take place the week of January 12 to further discuss the draft structure. Beyond that, ApiNZ plans to share more details with their members at a January 28 Special General Meeting, being held to present adjustments to their constitution required under the Incorporated Societies Act. Following that, more details are expected to be shared and consultation with the wider beekeeping industry take place.

Comvita & the Question of Public Equity

BY BRUCE ROSCOE

Following rejection of the takeover bid launched by Florenz Ltd for Comvita Ltd, the manuka honey flagbearer has announced its intention to raise NZD25 million in new capital, which means that Comvita shares will continue to be quoted on the New Zealand Exchange. But should they be? In this review of the record of Comvita's performance over 20 years, Bruce Roscoe explains why the financing needs of the company are more suited to private than public equity.

The risk of ownership of Comvita shares is now vividly seen as comparable to swimming in a deep ocean. Beyond a short distance from shore, ocean swimming is unsafe. The risk is red-flagged on the beach, except that the sometimes wide distance between the flags requires as wide a view of the mānuka honey industry, the markets into which Comvita sells, and of Comvita itself.

(The industry conditions that exacerbated Comvita's near collapse are investigated in the double feature — *A Honey Industry in the Dark*, and *The Honey in the Sheds, and the Sword of Damocles* that led our October 2024 edition. In the second of those reports, we wrote, "The industry…is more walking the edge of a precipice than facing a crossroads". Comvita now sits on the edge of that precipice.)

Comvita's early years as a high-flying company mask a long-term trend of deterioration in a key measure that reveals how efficiently a company deploys its assets to generate sales. That measure is "asset turnover". It is expressed as either a ratio of sales to assets or as the number of days taken for the value of assets to equal the value of annual sales.

Say your honey shed and extraction plant are valued at NZD500,000 the land on which they are sited, NZD1m; the 100 drums of honey in the shed, NZD600,000; and vehicles and bits and bobs, NZD500,000. Total asset value, then, is NZD2.6m. You rang up sales of NZD4,264,000. Divide sales by assets to arrive at the ratio of 1.64. (Best to use an average of the value of assets as recorded for your last two reporting years. That produces a value that more represents the year.)

Your business is doing very well. Your asset turnover ratio is 1.64 times. Within a year, you have sold goods to a value that exceeds the value of your assets by 1.64x. Your production prowess is the envy of the town. Demand for your products is runaway. You are doing so well that you could even list shares in your business on a stock exchange. Which is what Comvita did in 2002 when it achieved the same asset turnover ratio of 1.64x.

Table 1 reveals the trend of a worsening asset turnover ratio over the 22 years since Comvita's share flotation. The ratio is also expressed in days. Just divide 365 by the ratio. At 1.64x, Comvita's asset value was "turning over" in just 223 days. Inventory — mainly the raw material of honey and packed honey — in usual years has accounted for the queen bee's share of total inventory. A marked declined in the ratio has foreshadowed profit declines or blowouts. In some years the ratio has sunk to 0.61x (601 days) or even 0.54x

Table 1: Comvita Trend in Asset Turnover 2002-2025

Years to		Ratio(x)	Days
Dec	2002	1.64	223
Dec	2003	1.31	279
Dec	2004	1.18	310
Dec	2005	1.13	324
Dec	2006	0.94	389
Mar	2008*	0.70	520
Mar	2009	0.67	543
Mar	2010	0.80	455
Mar	2011	0.75	488
Mar	2012	0.84	433
Mar	2013	0.82	444
Mar	2014	0.81	452
Mar	2015	0.88	416
Jun	2016*	1.04	350
Jun	2017	0.61	601
Jun	2018	0.62	588
Jun	2019	0.54	674
Jun	2020	0.65	558
Jun	2021	0.67	545
Jun	2022	0.67	541
Jun	2023	0.68	539
Jun	2024	0.61	600
Jun	2025	0.81	452

Notes:
* 15-month financial years
Asset values are calculated as the average of the stated and prior year.
Some numbers may not add due to rounding.
Source: Comvita financial statements

(674 days). The trend appears embedded as structural.

(The data are distorted in only four financial years — the two 15-month years that arose as a result of changes to a March and then June financial year, which inflated sales value, and the gargantuan asset write-downs at the close of the June 2024 and 2025 balance dates. The transition in the December 2007 year to NZIFRS [international financial reporting standards] does not materially alter the ratio trend.)

At the time of its flotation, Comvita had embarked upon a policy of building up inventory in response to the heavy rainfall of 2001 that was estimated to have halved 2001/02 season honey production volume. Ever higher inventory volumes later became needed for blending and temperature-controlled storage for the production of as many as six grades of mānuka honey. The need to freshen old honey with new through blending also contributed to inventory buildup. Scientific mānuka honey definitions launched by the Ministry for Primary Industries in 2018 further increased the need for blending and additional inventory.

The more entrenched in mānuka honey production Comvita became, the more tenuous its resolve to achieve "organic" growth. As Comvita reported in its June 2016 year: "Cashflow from operating activities resulted in net outflow of $32m…The increase in inventory is directly correlated with the increase in net debt". And Comvita's thirst for continual funding in the form of both new share issues and loans had become almost unquenchable. As Table 2 shows, funds from those sources reached NZD378m between Dec. 2002-Jun. 2025.

Honey Value "Doesn't Decrease"

"And inventory in terms of the honey industry actually increases in value. It doesn't decrease, that's a maturation thing, a bit like wine. I think there's a general lack of appreciation of that." — Neil Craig, Comvita chair from 2005-2019, and founder of the business that grew to become Craigs Investment Partners and bears his name, as quoted in a New Zealand Herald report of 7 May, 2019.

In the report, "No need to raise capital: Comvita chairman Neil Craig", Mr Craig also reportedly said, "Raising capital is an option for us, but it's not necessary…We have significant bank headroom…we know it's a perceived issue. But it's not an issue for the board and it's not an issue for the company and it's certainly not an issue for the bank."

In May the following year, Comvita raised NZD47.6m from institutional and individual investors and shareholders in its largest ever capital raising.

Table 2: Comvita Funds from Share Sales & Loans 2002-2025 (NZ dollars millions)

Years to		Funds from share sales	Funds from loans
Dec	2002	1.743	0.131
Dec	2003	0.027	8.604
Dec	2004	7.203	--
Dec	2005	0.000	4.168
Dec	2006	11.611	12.690
Mar	2008*	15.473	13.952
Mar	2009	0.007	2.290
Mar	2010	0.071	--
Mar	2011	2.012	4.500
Mar	2012	0.300	--
Mar	2013	1.290	16.765
Mar	2014	9.454	7.400
Mar	2015	25.065	16.794
Jun	2016*	1.867	43.200
Jun	2017	22.977	--
Jun	2018	1.024	30.200
Jun	2019	0.607	2.550
Jun	2020	47.641	--
Jun	2021	--	--
Jun	2022	--	22.450
Jun	2023	--	21.640
Jun	2024	--	22.923
Jun	2025	--	--
Subtotals		148.372	230.257
Total			378.629

Notes:
Values larger than NZD10m highlighted in orange.
* 15-month financial years
NZD148.7m of the NZD230.3m in borrowed funds had been repaid by 30 June 2025.
Source: Comvita cash flow statements

CHINA AND THE WEATHER

Publicly quoted companies are expected to release statements of "guidance" about the earnings they expect to achieve in their current or next reporting period. They are also required to inform the market when they become aware of events that they judge likely to materially impact their share price. This is similar to a "no surprises" policy.

Prudent companies usually issue conservative earnings estimates that leave room for upward revisions later in the year. The ideal is to surprise on the upside and not disappoint on the downside. Comvita has tended to surprise on the downside. Actual results fell well short of the first forecast it issued (August 2002) as they did for the latest forecast (November 2023). Between those dates, Comvita has not done much better. As chair Neil Craig wrote in the June 2019 year annual report: "We acknowledge the current share price is the result of successively missing financial forecasts".

WHAT ARE YOU DOING? some investors may have wanted to scream. On 7 May 2019 — about eight weeks before full-year results were to be announced — Comvita said it would record a net profit loss "in the order of NZD6m". The actual loss was NZD27.7m.

In early 2016 management spoke of a goal to double annual sales to NZD400m over five years. The only observable basis for this target was that Comvita had nearly doubled sales to NZD152.7m from NZD84.9m in the previous five years. The NZD400m target fell short by NZD208.3m.

Decisions by Mum and Dad investors in the case of a company such as Comvita are likely to be based more on the attraction of the theme of mānuka honey than company fundamentals. (Such investors, loosely identifiable by their holdings of fewer than 5,000 shares, numbered 1,871 and accounted for 74.4% of Comvita total shareholders at 30 June 2025.)

Comvita, as the only listed play of consequence in the mānuka honey industry, is often chosen as a proxy investment for that industry. Too, it is easy to get high on the hype, when news media publish headlines such as "Comvita's Share Price Soars as More Honey Equals More Money" — several media outlets used this headline in January 2016.

Which makes the communication of reasonable guidance on earnings a duty, for both a listed company and the analysts that cover it. But when the company itself struggles to produce reasonable earnings projections, analysts cannot be expected to do much better. On the one hand, in Comvita's case, an analyst needs to anticipate what China will do, and on the other hand, forecast what the weather will do. To date the guidance has been about as good as the smell of paraffin wax.

FANS WITH KEYBOARDS

Eddie Jones, the irrepressible former rugby coach of the Wallabies, once only half-jokingly described New Zealand rugby journalists as "fans with keyboards". It would be unfair to tag analysts who cover Comvita in that way. For several years only one analyst has covered Comvita in detail. There are now two. Their firms — Craigs Investment Partners and Forsyth Barr — attend to Comvita's investment banking business for mainly the issue and marketing of new equity. Research is needed to support shareholders and maintain market share in the trading of the shares. A "Chinese wall" within the investment bank assures the independence of the analyst.

The danger is that analysts at other firms which wish to compete for Comvita's business may feel compelled to self-mute and maintain a false positive view. Because of the illiquidity of the shares, it is doubtful that any other investment bank or stock brokerage would allow an analyst to spend time on a stock such as Comvita without the assurance that investment banking business would follow.

Comvita has increased the volume of research about itself by commissioning Edison Investment Research to provide coverage. The reports are detailed and useful, but it is clear the piper is paid. An Edison research note published in May 2016 not only believed that Comvita's NZD400m sales target was achievable but based earnings estimates partly on the assumption that Comvita would exceed the target by 10.0%. A text subheading in the note states: "Increased raw honey inventory levels are a positive".

Notably absent in some research reports on Comvita is honey industry analysis. A positive view is presented about the prospects of the company as though it were operating in a vacuum.

PRIVATE EQUITY

If not the pockets of Mums and Dads, private equity becomes the first alternative. Private equity funds take stakes in both unlisted and listed companies, where hidden value is seen and a pathway to profitable resale mapped out. If the target company is quoted on a stock exchange, the objective is to gain enough control to be able to delist from that exchange, restructure the business out of public view, and resell it whole or in parts.

(Florenz, which mounted an unsuccessful takeover bid for Comvita last year, represented private equity but did so as an owner and operator of a large-scale mānuka honey packing and

export business that may have offered synergistic benefit to Comvita.)

Comvita is accustomed to the courtship of private equity. The most recent love call — the so-called "non-binding indicative offer" reportedly made by CVC Capital Partners PLC — represented a "significant premium to the current share price" Comvita said in the 22 February 2024 announcement. On that day, Comvita's share price closed at NZD2.25. The withdrawal of the offer about three months later was not necessarily a vote of no confidence in Comvita. It could have more reflected a negative view of the industry as a whole.

Honey companies — or any food companies — do not appear on annual lists of Comvita's top shareholders. An exception was Capilano Honey Ltd (now a brand of Hive & Wellness Australia Pty Ltd), which became Comvita's third- and second-largest shareholder in 2008-2009 after selling Medihoney Pty Ltd for AD5.5m in Comvita shares and AD500,000 in cash. By April 2010, Capilano had sold its Comvita holding.

Still, Comvita shares appear inherently unsuited to individual investors. Private equity funds have greater ability to understand and mitigate risk. Although the marketing of Comvita to such funds has yet to yield results, perhaps the efforts should be redoubled, so that Mum and Dad can deploy their savings elsewhere and get a good night's sleep.

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

Comvita co-founder Alan Bougen and former chair Neil Craig met with Comvita shareholders in the weeks leading up to the 14 November vote on the defeated Florenz takeover proposal. Their purpose was to persuade shareholders to vote against the proposal on the basis that they believed the NZ80c-per-share offer substantially undervalued Comvita's assets, which Comvita over two reporting periods had revalued downward by NZD118.1m.

CORRECTION

In *Comvita and the China Brick Road*, December 2025, we incorrectly wrote that Comvita raised capital to fund acquisition of Comvita Food (China) Ltd in 2018 at implied share prices of NZD5.80 and NZD3.40. The second of these numbers is incorrect, and the price was NZD3.04. We regret the error.

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Dr Mark Goodwin, esteemed scientific beekeeper and author of some of the most important works in New Zealand beekeeping.

Introducing Dr Mark Goodwin, 'the Scientific Beekeeper', and Keeping Records

Editor's introduction: It pleases me to introduce a new, regular column being written by Dr Mark Goodwin, where one of our most esteemed honey bee scientists can impart some of what he has learnt from his research, and from beekeepers in New Zealand and around the world.

Dr 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. He 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, books on American foulbrood (AFB) and varroa, two on pollination, three on beekeeping (*Control of Varroa: A Guide for New Zealand Beekeepers; Elimination of American Foulbrood Disease Without the Use of Drugs; and Best Practice Beekeeping*), two on history and one book on birds. He has also produced a YouTube series on AFB and another on beekeeping.

As well as that significant body of written and audiovisual work, for his wider efforts he was awarded the inaugural Peter Molan award for excellence in apicultural science in 2016, HortResearch's outstanding achievement award, Scientist of the Year award from the Foundation for Arable Research in 2009, a Kudos Science Trust entrepreneur award, Apimondia silver medal, and a NZ Royal Society Science and Technology medal.

All up, Dr Goodwin holds a wealth of knowledge over a wide range of topics relating to beekeeping, from disease control to pollination success, honey production to invasive species. We look forward to helping him share what he knows, and an appropriate place to start is, how beekeepers can keep record of their in-hive findings.

Keeping Records

BY MARK GOODWIN

All beekeepers are used to keeping records, even if it is only to please the Inland Revenue Department. Records can also be of great benefit to a beekeeping business.

All approved beekeepers must keep records of when AFB inspections are carried out, how they are conducted, who did the inspections, when the AFB Management Agency (now New Zealand Bee Health and Biosecurity) was notified of any AFB hives, and when they were destroyed.

Commercial beekeepers should keep other records for their own use. This is more important if the beekeepers have staff working for them. When keeping records it is important to consider how easily they can be accessed and how useful they will be.

The most common record that beekeepers keep is a work diary which records the work done in chronological order. Another important record is an apiary diary so that beekeepers can see what was done to the hives last time the apiary was visited and what needs to be done on the next visit.

A commercial beekeeper I was working with demonstrated what can happen if you don't keep good records. He wanted to show me a site that he was going to put hives on. Driving across the paddock he saw that somebody had beaten him to the site as there were already hives there. When we got closer, he could see that they were his own hives. They had been moved to the site two years prior and he had forgotten that he had done it. This was before varroa, so the hives were still alive. The two-box hives were solid with honey and only had small patches of brood.

Some beekeepers number all their hives, which is very useful when they need to do something to a hive when they next visit or instruct someone else to do something to a particular hive. This can be easily done by fixing sheep ear tags to the flight boards. If you only number boxes you will occasionally end up with two

boxes with different numbers on the same hive. If you want to take the high-tech approach, I have seen beekeepers using barcodes to identify both hives and boxes.

It can be difficult to inspect hives fully when honey boxes are removed as it is heavy, hot work. To shake all the bees off frames to do a careful AFB check can also result in bad robbing problems. The boxes could be given the hive number with a vivid marker as they are removed, and a full AFB check could be done before the boxes are extracted. The boxes from any AFB hive could then be removed as it comes up for extraction.

One of the best ways of keeping records is on the hive itself. I have seen a commercial beekeeper doing this with the position of two bricks on the roof. The method is complicated and can get mixed up if anyone else opens a hive.

This can be better achieved by painting a white strip on the roof of each hive. Then everything that is done to the hive can be recorded with the date, the initials of who did it and what was done. It takes a few seconds to record using a black felt pen. A beekeeper can then see a beehives' history before they open it. For example, in the photo alongside, hive 317 was checked for AFB September 7, Requeened on October 12, found to be queenright 16 November, checked for AFB again in March and supplied hive 568 with brood.

If you use a vivid marker the first entries will fade by the time that the bottom of the strip has been reached, and recording can start at the top again. If you want to keep longer histories of hives you can use a paint pen instead of a vivid.

Writing on the hive lid, a tried-and-true form of in-apiary record keeping.

John Berry on Timing it Right

It's much easier said than done, but for beekeepers timing when the important tasks in the apiary are undertaken is crucial. John Berry imparts what he has learned about timing it right over his six decades of time in the hives.

BY JOHN BERRY

Do everything right, but at the wrong time and both you and your bees will suffer for it.

You can never be perfect and you can never get everything right, I should know I have made enough mistakes over the years, but I have tried to learn from them.

Before varroa life was certainly easier, but there was still plenty of mistakes you could make with timing and the more hives you had the easier it was to make them. One thousand hives per person was fairly standard back in the day.

One day late feeding hives in the spring and they can be eating the brood or starved. I hate to think how many hives I have seen starved bees in over the years and how many more have been held back severely by lack of feed. For some reason it hasn't been such a problem lately, but I remember a period of four years when we had to feed up to the end of November and I have fed bees the day before Christmas. Two of us would feed up to 200 hives a day on eight litres of sugar syrup.

The only positive from that sort of spring is that often a really bad spring is followed by a good season, certainly some of the best springs I have seen have been followed by truly awful summers.

As a beekeeper in New Zealand, John Berry has never had much time for summer holidays – but is that just because the long-bearded-bee-man is moonlighting at a second job…?

Getting your supers on in a timely manner is also vital. Get it wrong and they will swarm or, even worse for your time, they will be raising cells and you have to go through every frame on every hive. Supering up too early can be just about as bad, as it takes a lot of extra time to do any necessary feeding.

It's unbelievable how quickly hives can jam up with fresh honey on some of the early flows like rewarewa. Get it wrong and you not only have swarming problems but you have also severely constricted the brood nest which will mean less honey later on. Letting hives get choked out with honey too early in the season can have the same effect.

Little Barrier Island, a protected nature reserve in the Hauraki Gulf, is John Berry's happy place for a holiday. But summer sojourns were rare when working fulltime as a beekeeper.

I remember many years ago a beekeeper bringing honey in for extraction at the end of the season and bragging about how full they were. I didn't have the heart to tell him that our hives in the same area had been just as full two months before and we had got another three full boxes a hive while he had been having an extended Christmas holiday.

HOLIDAY SEASON USUALLY WAITS

I only once had a two-week Christmas holiday. I could take the time off because we had an early and crippling drought with no honey and no prospects. I spent those two weeks on Little and Great Barrier Island's where it rained every single day we were away. Terrible weather but an amazing holiday and the start of a love affair with an island.

Little Barrier is one of the most special places on earth. Christmas holidays were certainly not the norm and I don't remember my father ever having one, although apparently he did when he was younger. The only summer holiday I can remember my father having was when he slipped off a truck deck and got hung under the arm on a rope hook. That got him a few days R&R in hospital.

Dad's idea of a holiday usually involved the middle of winter and as much work-related stuff as possible. Helping his brother Russell at Wiotapu, or beekeepers conferences, fitted the bill nicely.

MAKE THE MOST OF THE GOOD YEARS

You don't get good seasons all that often and when you do you need to take full advantage of them. Then maybe you can afford to take a decent Christmas holiday next time you have a terrible season. Getting the timing right when taking off different types of honey is also important as generally monofloral honeys are worth more than mixtures.

Even kiwi have a holiday on the beach! From avid beekeeper and conservationist John Berry's personal photos is this evidence of a beach sojourn by a kiwi bird.

Back in the day when we used all of our mānuka honey to feed back to the bees in the spring it really didn't matter if they had 15kg of mingi mingi already in the honey supers, but now it does and the same goes for mānuka and kānuka. It used to all go in the same pot. Not anymore.

GET A FEEL FOR THE VARIANCE

Getting your timing right is easier for someone like my son in Norway where spring, summer and autumn are proper seasons and most flows start within a few days of a fixed date every year. We do not have that luxury and even early flows like willow can vary by close to a month. Crops that need pollination can also have large fluctuations in flowering dates, which can make getting hives ready on time really difficult.

You can't change the weather or the time of flowering, but what you can do is constantly monitor and the only way to do that is to look into hives. When heading out on a day's work we would often check two or three apiaries on the way home just to see what was happening. Over the years you build up a knowledge of just how things work, but you still need to keep an eye on things.

Local knowledge is important and I think my beekeeping got better as I ran fewer hives and did all the work myself, not because the people I worked with weren't any good but because I always got to see the results of what I did and I had more time to get it right.

Every apiary has its own idiosyncrasies; every area is different. I like to re-queen in autumn when conditions around here are much more settled. If I have to raise queens in the spring there is no point in starting before there are drones in the hives and, if you want reasonable matings, you better be finished before the equinoxial gales start up.

When it comes to varroa you probably can't be too early treating for it, but you certainly can be too late and if you can't control your varroa on time then you can't keep bees.

Prioritise, try and do what is necessary on time, but on the other hand try not to be a bee botherer. Learning when not to do anything also involves timing.

Bees are living organisms, change is constant, and you can't get your timing from a spreadsheet in an office.

John Berry is a retired commercial beekeeper from the Hawke's Bay, having obtained his first hive in 1966, before working for family business Arataki Honey and then as owner of Berry Bees. He now keeps "20-something" hives.

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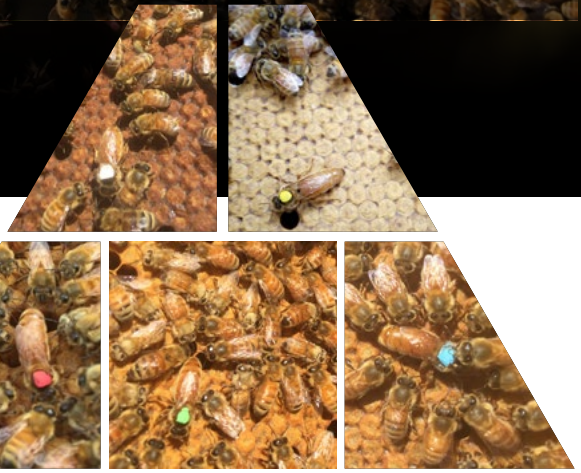

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Signs of the Time: Clocks, Bees and their Forgotten Scientist

Can bees tell the time? In their own unique way – yes. And, understanding how and why could play an important role in increasing hive productivity and improving conservation efforts.

BY DAVE BLACK

Ingebord Beling, who died in January 1988, is the bee scientist we all forget about. Born in Germany in 1904, and with an academic career that lasted a mere seven years, that isn't surprising. Beling completed her PhD studies at the University of Munich advised by Karl von Frisch, who became a family friend. It's not clear why her career was so short. In the pre-war 1930s, marriage and children, and the prevailing Nazi misogyny, are likely to have contributed.

After the award of her PhD she moved to a job with a Berlin-based Institute for Agriculture and Forestry, away from bees, to biocontrol measures for pests and the connection to her future husband. In seven years she had published three papers related to chronobiology (which studies the rhythms and timing of biological events), the last one in 1935, and seven related to pest control. All of course written in German, the other reason she's been forgotten.

Beling retained a life-long friendship with von Frisch (who died in 1982) and in a fascinating bit of archive film from 1952[1] she can be seen as his, uncredited, 'assistant' working in the gardens of his house at Brunnwinkl, near Salzberg, Austria.

CHRONOS AND THE CLOCKWORK COSMOS

Beling's thesis *Über das Zeitgedächtnis der Bienen (On the Time Memory of Bees)* was published almost 100 years ago in 1929, making her one of the earliest pioneers of chronobiology.[2] At that time, circadian rhythms and living clocks were unknown.

Ingebord Beling, circa 1929, 'the bee scientists we all forget about'.

We will never know what exactly inspired her interest in bees and time. That plants demonstrated daily cycles was known, but usually assumed to be due to alternating day and night. Carl Linnaeus proposed a 'floral clock', a *Horologium Florae*, in 1748 and published the design in his 1751 book *Philosophia Botanica*. He realised that an intimate knowledge of when certain plants flowered during the day was reliable enough to tell you the time. Unfortunately for the many people subsequently trying to actually plant such clocks, location matters! It turns out to be really complex, your '4 o'clock flower' will be a '5 o'clock flower' to someone somewhere else.

Carl Linnaeus (1707-1778), developed the idea of his floral clock in 1748. It works on the principle that flowers open and close at set times of day.

Bees were not known to have any sense of time, but for a long time people had also observed that honeybees would visit certain flowers (or marmalade!) at specific times of the day. Beling would have been aware of other scientists of the time discussing the idea, particularly Hugo-Berthold von Buttel-Reepen (1860-1933), a zoologist and leading figure in German Beekeeping[3], as well as Auguste-Henri Forel (1848 -1931), a Swiss intellectual with complicated interests and a controversial legacy (eugenics

anyone?)[4]. Beling simply wanted to understand how well bees could remember 'feeding time', what the biological relevance of being able to do that was, and what factors might influence the memory of time for bees?

REPLACING CONJECTURE

Her controlled experiments showed bees were clearly able to remember feeding times they were trained to, and they could be retrained to new times. They easily recalled times of the day when food is available and turned up to a feeder 'on time'. In indoor experiments with artificial light and constant environmental conditions she found bees can remember the time of feeding at any day-time or night-time. It didn't matter if brood was present or not.

Together with Oskar Wahl (another von Frisch disciple) in follow-up experiments they learned that even with food constantly available, the trained bees only visited at the right time, while untrained bees turned up at all times, or not at all. It took a couple of hours to train them, and they remembered for at least six days. It could be shown hunger wasn't a cue, that bees were not using the sun as their 'clock', and that 24hr cycles were all they could manage.

By transporting trained bees around the globe and across continents 25 years later, Max Renner and others were able to prove the 'clock' had to be an internal part of bees that, left to its own devices cycled over 20-26 hrs, but which could be synchronised to new day-night periods. To use the jargon, the 'clock' was *endogenous*, *circadian*, and could be *entrained*. More recent work has gone on to illustrate how fundamental a 'clock' is to a bee's own biology, regulating and focusing internal molecular processes to make efficient use of its limited resources.

Having a sense of time is clearly useful for bees. Just in terms of foraging, several features of flower plants operate to a temporal rhythm; flower opening, scent release, petal movement, nectar production, and pollen availability, so the ability of bees to learn and co-ordinate their behaviour accordingly is certainly ecologically relevant. Using the sun for navigating and communicating food sources requires a sense of time to compensate for the sun's apparent motion. What we don't yet fully understand about a bee's sense of time is, how the measuring instrument works[5].

AN ANCIENT OUROBOROS

Even the simplest plant and animal cells have clocks, almost everything about life is cyclical. At its most fundamental, a clock is just an oscillator. In everyday life, a pendulum, a balance wheel, or even a quartz crystal all oscillate, the regular 'tick' counting the continuum of time. In biology, chemical reactions can oscillate back and forth, repeatedly moving away from an equilibrium point before returning to it[6]. After a period of time the products of the reaction serve to limit the reaction itself. As far as we know there are two basic types of 'clock-forming' reactions, Transcription-Translation Feedback Loops (TTFL) and Post-Transcription Oscillators (PTOs), the former applying to honeybees.

Four genes have been discovered in the honeybee cell nucleus which are used to make the proteins involved in the honeybee clock. Two make (transcribe) proteins that, together, form a complex that activates the last two. These last two genes (DNA) transcribe messenger RNA molecules which make proteins outside the nucleus in a process called translation. The finished proteins are relocated back to the nucleus where they block the activity of the previously formed protein complex[7].

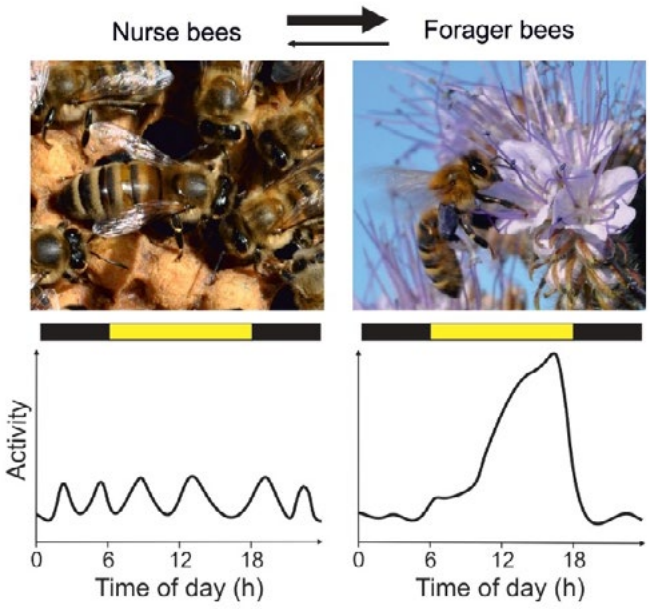
These genes and proteins are responsible for one endless looping cycle, promoting the manufacture of a product that in time inhibits its own manufacture, a 'tick' that has a constant duration. How this cycle becomes synchronised with the outside world is less clear in bees than it is in some other animals. In Drosophila, for example, daylight degrades one of the protein products, changing the dynamic of the cycle in a regular way.

By attaching protein antibodies that stain or fluoresce to one of these 'clock' proteins, and to one of the chemical messengers known to be used by animal nerve cells, rough 'maps' of the bee brain's clock have been constructed.

THE SOCIAL CLOCK

Honeybees, as we know, are all special. Only some of them work outside. In the last few years honeybee chronobiologists have noticed that social bees' clocks are different to solitary bees' clocks, and that our social bees emerge without a fully developed clock and no circadian rhythm[8]. The honey bee is the first animal for which social synchronisation was shown to override synchronisation by light.

Social cues from other members of the colony appear to help nurse bees to mature and develop a circadian rhythm and the 'clock' remains strongly influenced by social cues, because foraging bees can revert to nursing without rhythms and young bees can start foraging prematurely with daily activity rhythms[9]. Young bees isolated from the colony take longer to develop circadian rhythms than bees that have had social contact. Gradual maturation or synchronisation of a clock looks like it might be a feature of social animals, including social mammals like us.



Socially regulated plasticity in the circadian activity of honey bees. Nurse bees care for the brood without daily rhythms, whereas foragers are typically more active during the day and sleep at night. Division of labour is plastic and socially regulated.

A NEW ZEITGEIST

In the wider world it is the plants, and the climate they inhabit, that are training honeybees, although in some circumstances the bees could be training the flowers. A successful visit by an insect pollinator can advance the time of flower closure and reshape the subsequent timing of flower availability, but no-one has taken a thorough look yet at how bee-clocks and plant-clocks might interact, something potentially quite significant for pollination ecology. How time organises plant rewards or bee activity is almost certainly affecting pollinator competition, and the co-existence and diversity of plant and pollinating species.

Beekeepers might want to pay attention. Those pollinating kiwifruit will have seen the influence anther dehiscence timing has on bee flower visits[10] and there is more to learn. If you follow the complexity of avocado flowering, it's possible evening opening female flowers are being visited by insects other than bees[11], and the controversy surrounding bees from mānuka hives on conservation land displacing native pollinators might well be misplaced[12]. Olfactory conditioning (training) honeybees to crop odours for pollination has some limited success, but as we have seen, timing is everything.

Timing, is everything.

Dave Black is a commercial-beekeeper-turned-hobbyist, now retired. He is a regular science writer providing commentary on "what the books don't tell you", via his Substack Beyond Bee Books, to which you can subscribe here.

See the online story for full list of references.

Yule be Working Through Summer

Bask in warm December air, bees are working everywhere. Mountains, valleys, farm and fields, every buzz increasing yields of viscous, trickling, sticky stuff – us beekeepers just can't get enough.

Beekeeping's not always fun; cue sweating, unrelenting sun. Holiday makers relax, while we relay stacks and stacks of boxes on our coastal runs, honey filling every one.

Chasing nectar, chasing gold, blankets of white, but it's not cold. The manuka flowered hard and fast, by Christmas time it's almost past. In our case though it's not the last…

Honey producing floral crop, blackberry pumps, we get a lot. Lotus major likes the heat, the ground is yellow, air is sweet. Towai flows, rata may bloom, a sporadic fruition of bee perfume.

Catsear suffocates the hills, and thistle honey is hoped for still. Rubbing shoulders with tarweed and clover, potential flow is still not over.

Last but not least, a koromiko feast. Nectar, delicate and clear, leaves to be used for diarrhoea. An ace up your sleeve when you're chasing the flow, the magic of plants is a good thing to know.

On the home front, with the change of year, it's time to rejoice with those we hold dear. Put down the hive tool and kick off the boots, unzip your veils and shrug off the suits. Lean into love, and family, and play. Make time for yourself, even just for a day.

For tomorrow, tomorrow we work.

The extracting shed's set, paint no longer wet, that pesky nib wall has been fixed. The pricker bank's new, the seals are too, and the plumbing's all been affixed.

Jars have been ordered and drums have been cleaned, we've cleared out the shed and the gear's all been screened. The trucks have been washed and the concrete's clean too, it seems these keepers need some beeing to do…

While holiday makers idle, we thrash the hive tools.

Blowing bees and checking disease, harvesting honey in thirty degrees. Hard on the back, tough on the knees, wading through hundreds of thousands of bees.

Stacking the truck is a fun job at best, weightlifting comp I can attest. With a new guy on board, I hope he can swim, I know what he's doing, it's better than gym. Let's just hope he can handle the pace, to wind up a compliment to our workplace.

"The manuka flowered hard and fast, by Christmas time it's almost past. In our case though it's not the last…" goes the verse for Aimz in the Bay of Plenty this summer

And a nod to surveillance, we can't be complacent, liberty comes at a price. Varroa counts low as our sticky boards show after gassing them with our device. Oxalic vapour through the hives front door stops phoretic mites in their tracks. No sign of bees damaged, it seems we have managed to keep the scourge off of our backs.

But the time will soon come when summer is done, the wasps will begin to advance. With Vespex in hand, at a sheltered stand, those invaders won't stand a chance.

Though the future seems distant, work is persistent, and extracting is not far away. Pricking and spinning, it's just the beginning, but I'll take the reprieve today.

The bees, they are humming, the sun, it is sunning, the glory of nature is true. The beauty of being amidst of this feeling will encompass the goodness in you.

So today, I'll take time with my family, make merry, and just have a ball.

A happy new year to my readers, safe travels and peace to you all.

Aimz.

Aimz is a second-generation commercial beekeeper in the Bay of Plenty who took up the hive tool fulltime at the end of the 2024 honey season. Formerly a stay-at-home mum to four kids, she has now found her footing in the family business.

Aimz stays ahead of the oxalic acid vaporiser, and with it, hopefully, the varroa mites.

The India FTA – A Win for Honey, but we Should be Wary

Ian Fletcher once helped negotiate trade agreements for the European Union, now he's at home in the Wairarapa and lending his expertise to New Zealand's honey industry. So, what does he make of the shiny new Free Trade Agreement (FTA) with India?

BY IAN FLETCHER

The Government announced the conclusion of negotiations with India for a FTA just before Christmas. NZ First was immediately critical, saying it would oppose the agreement because it gave away access to the New Zealand labour market (through a new visa category and enhanced rights to work for Indian students), and yet gained nothing for New Zealand on dairy exports. All Indian products would immediately get tariff-free entry to the New Zealand market.

WHAT SHOULD WE THINK OF THIS AGREEMENT?

The draft agreement does indeed give India a lot: full, immediate tariff-free access to the New Zealand market for Indian exports and enhanced immigration opportunities does look like a win for Indian firms and people. So, NZ First is probably right to ask whether the result is balanced on the other side.

If you take the New Zealand position as being that it's all about dairy, then NZ First is right: this is a dog, with some marginal

Rashtrapati Bhavan, the residence of India's President, in New Delhi.

crumbs (that help India's larger dairy co-operatives) and a commitment to talk if anyone else gets a foot in India's dairy door. This is palliative: Indian rural politics (which matter very much) mean wider dairy opening is for the birds anytime soon.

If you think we may have other things to sell, then the deal looks a little better. For the beekeeping sector, the separate (and reducing) tariff for mānuka honey is welcome (copying the EU FTA). India is a big honey producer supporting a lot of rural employment. So we must be cautious about the inclusion of honey and apiculture in the technical cooperation part of the FTA: we won't get meaningful market access beyond mānuka, and I don't see why we should help a major competitor without meaningful market access. I hope the New Zealand industry is on its guard here.

For others, especially kiwifruit and other orchard products, there are real wins, over and above current trade. That's good.

IMMIGRATION

So, what about immigration? This does look like a big concession. But numbers are limited (an average of 1667 three-year visas per year in shortage occupations, plus 1000 working holiday visas). These numbers won't seriously change our workforce, and NZ First are making up a story here.

I suspect NZ First have an eye on next year's election. Immigration is the political issue this century in western democracies, because falling populations (collapsing in some cases like Japan, Korea, Italy and Germany) mean immigration is going to be essential to maintain our economies and social services. Yet older populations (NZ First's natural homeland) don't want migrants who look different.

New Zealand still has a marginal excess of births over deaths, but that will reverse in coming years. Immigration and departures for Australia are the big demographic swing factors in our story. Like everyone else, we will need migrants to maintain a workforce and tax base, and within a couple of decades we won't be able to be as choosy as we can now. So, there is a case for building up and refining good migration pathways now, so there are settled and successful migrant populations here to provide a stable social pull factor as well as an educational and employment story.

The real winner here will be New Zealand, if we can attract the right migrants. If we don't, we won't be much worse off, given the numbers involved.

THE NEW WORLD TRADE ORDER

This FTA is also a sign of things to come on trade and trade agreements generally. Thirty years ago, when I first negotiated a FTA (for the EU, with Saudi Arabia) the focus in all FTA negotiations was on trade in goods, balancing the acknowledged case for liberalisation with the politics of decline and adjustment.

Since then, the World Trade Organisation system has ceased to work as a motor for trade and market access liberalisation, and FTAs are the only game in town, apart from the US's current use of informal and unilateral tariffs, often accompanied by threats and (sometimes extorted; sometimes sincere) promises of investment. It's a less predictable world, driven by domestic politics everywhere, and it rewards size and aggression. None of that plays to our strengths. We have to think again about what we want, who our friends are, and how we make our way in a more hostile world.

Against that, I think this FTA is simply as good as we could get. We should also learn some lessons from it.

LESSONS

Firstly, we need to recognise the limits of dairy market access. Any country with a domestic dairy industry will want to protect it. Secondly, we've done exceptionally well on kiwifruit, cherries and other similar products. They depend on biosecurity at home and strong airfreight links to get to market. We need to focus on both, biosecurity especially.

Finally, NZ First's press release attacking the agreement went out of its way to put the blame (as they see it) firmly on National, and to praise the Indian side. This is good: in the world we live in, building strong personal contacts and sustaining those relationships over time is one asset we can develop. It's good to see that being recognised. Generally, working with the grain of others' systems is essential, even if we don't like their values. Let's see how we get on balancing domestic politics and foreign relations in an election year.

Ian Fletcher is a former head of New Zealand's security agency, the GCSB, chief executive of the UK Patents Office, free trade negotiator with the European Commission and biosecurity expert for the Queensland government. These days he is a commercial flower grower in the Wairarapa and consultant to the apiculture industry with NZ Beekeeping Inc.

Letter to the Editor

Dear fellow beekeepers,
I'm Mirza, a hobby beekeeper and faculty researcher at Syracuse University (New York) studying something I've never seen researched before: what actually drives us as beekeepers, and how we think about success beyond just honey yields.

I've created a survey that asks questions other research has never bothered with — like how our connection to nature and the bees themselves shape what we do, and what thriving really means in this work.

If you've got 10-15 minutes, I'd really value your voice in this (you can always stop and continue the survey anytime).

If you have a couple of minutes extra, please share this survey with the beekeepers in your community, too. The survey covers beekeepers from backyard hobbyists to commercial operations, across multiple states and countries. I'm hoping to publish findings that actually reflect our reality, not just what academics think matters.

Thanks for considering it — and thanks for being part of this community. Click here to begin the survey

Mirza

P.S. As a thank you, respondents will be entered to win $100 toward beekeeping supplies.

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