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APIARIST'S ADVOCATE



News, Views & Promotions - for Beekeepers - by Beekeepers



Catch Me if You Can

We explore the NZ Honey Origin Project and why the support of Kiwi beekeepers will be essential for the potentially world-leading research

Nectar Analysis Project a World First, but Needs Beekeeper Support



Is there a more accurate, more detailed way to define New Zealand's – and potentially the World's – honey varieties? Esteemed honeybee scientist Dr Mark Goodwin certainly thinks there is and so, alongside Sarah Cross and supported by industry body New Zealand Beekeeping Inc (NZBI), is undertaking a project which will involve catching thousands of bees to analyse the nectar they are collecting.

Over two decades after first conceiving of the idea, a passion project of Mark Goodwin is finally coming to fruition in the NZ Honey Origin Project.

"I'm always excited for projects with the potential to change a little piece of the world we live in and this is one of those," Goodwin says of the project, which will seek to more accurately define New Zealand honeys and potentially their flavour profiles.

The NZ Honey Origin Project will be heavy on science in its research – examining the chemical profile of nectar collected from the crop, or foregut, of honeybees – but the team behind it hope the outcomes will include an improvement in marketing tools, as well as an improved technique for defining honey through lab testing.

Goodwin, a semi-retired research fellow of Plant & Food Research who has been preeminent in the study of many aspects of the New Zealand beekeeping industry including varroa and American foulbrood, is joined in the research by former Plant & Food Research associate Sarah Cross, and Jane Lorimer representing industry body NZBI.

NZBI will help bring together funding and organise the project, which is expected to last three to five years.

"We decided, as an executive, that this project was worth pursuing for the industry," Lorimer says.

"Of late, our industry has been struggling with low honey prices. We think it is time we started to invest money and look into the properties of different honey varieties."

DECADES IN THE MAKING

The concept of examining nectar collected by bees to help form honey varietal definitions was first floated by Goodwin in the 1990s. However, when varroa mite was discovered in New Zealand, in 2000, research and education on the destructive honeybee parasite took priority. Now, more than two decades on, the NZ Honey Origin Project will soon get underway.

There will be a large element of citizen science, with beekeepers and the general public called on to collect honeybees foraging on target flower species from all over New Zealand. Those bees will then be sent to a laboratory for testing. Nectar from the bee's crop will be assessed.

"We will analyse a few things, such as various chemical markers, but also the sugar concentration of the nectar," Goodwin explains.

"We don't have to study the honey, just nectar. We know that honey has about 80 percent sugar. So, if the nectar of a plant is found to be 40 percent sugar concentration, then you know you will have to double the sugar concentration to make it honey, and that is what the bees are doing of course. Therefore, you will have to double the chemical marker concentration as well. Using that ratio – such as doubling in this instance, where I use nice round numbers – we hope to be able to predict what level of markers are present in a uniform, monofloral honey of that variety."

If the research goes as Goodwin outlines, it will mean chemical testing of honey could be used to generate more detailed and accurate floral makeup analysis than current techniques, such as pollen counting.

"We hope to be able to define the ratios of various floral varieties within a honey, in a percentage term. That will then enable people to sell a known variety or blend," Lorimer says.



After initially conceiving the concept behind the NZ Honey Origin Project more than 20 years ago, now semi-retired scientist Dr Mark Goodwin, left, is excited to bring the "world-first" research to life alongside Sarah Cross, right.

HONEY INTO WINE

The honey industry is limited by a lack of accurate variety and flavour descriptors Goodwin says, noting that "light" and "dark", "pasture" and "bush" are all that are commonly used. He hopes the NZ Honey Origin Project will foster a maturing of the honey industry akin to what New Zealand wine has gone through.

"Our parents bought wine by the box. Now it's in bottles that tell the full story of the vintage, the vineyard and the complete origin story. It all adds tremendous value," Goodwin says, while also noting that the coffee industry has undergone a similar journey.

The marketing benefits may not just be in the project's findings though, with Goodwin seeing great potential in the story of the research itself.

"This project will get a huge amount of media coverage. There is nothing better, as far as media is concerned, than images of a child in a field happily catching insects. It is all media coverage for honey and if you wanted to pay for it, it would cost you a fortune. So, as we go through the research process we can bring the public along and get them talking about New Zealand honeys and the unique floral sources. We can educate them before we even get the results."

HOPES FOR AN IMPROVED TESTING TECHNIQUE

At present much of New Zealand and the World's honey testing and definitions are based on pollen counts, which Goodwin calls a "blunt instrument". The NZ Honey Origin Project has the

potential to revolutionise that, which is why he is excited that it could "change a little piece of the world".

"It may, in the end, replace the pollen counting technique," Lorimer says.

"In some of our plant species, we get over or under representation of pollen grains. So this will, hopefully, define honeys based more on a nectar profile, rather than pollen grains."

New Zealand already has an export manuka honey standard based on chemical profiling, as was set by the Ministry for Primary Industries (MPI) in 2018 and is currently undergoing a review. However, both Lorimer and Goodwin are quick to point out that the NZ Honey Origin Project is not setting out with the aim of redefining that standard.

"All we will do is provide MPI with information as we get it. That will either reinforce the current manuka honey standard, or it eventually may give them information which means they may wish to reassess it," Lorimer says.



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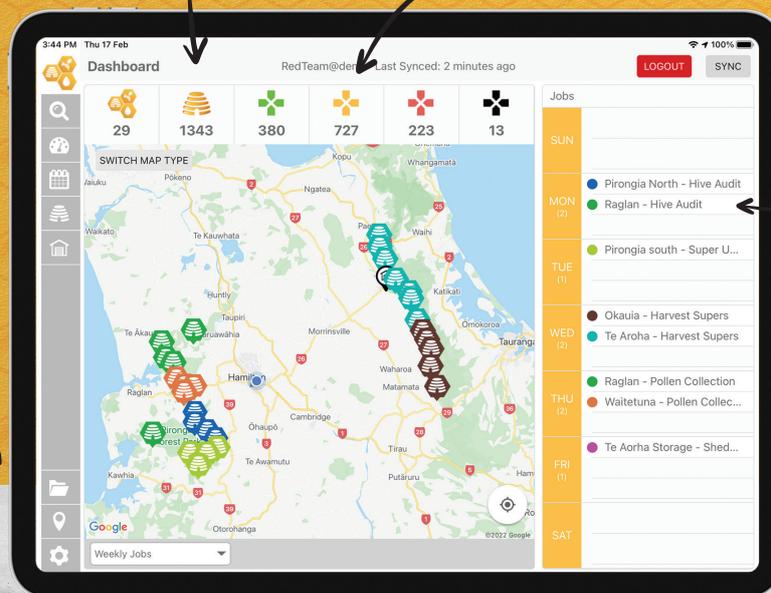
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YEARS OF WORK

The project is several decades in the making and is also sputtering into life now, with a small amount of bees collected from flowers in 2020, but only now getting analysed after being frozen for several years following Covid delays. Those bees were taken from clover, kamahi and pohutukawa flowers.



Beekeepers are being asked to assist the NZ Honey Origin Project by catching honeybees that forage on target flower species, including manuka, so that the nectar contents of the bees' honey stomach can be analysed.

Photo: Peter Bray.

This honey season it is hoped thousands of bees can be gathered. The team is currently setting the parameters for this, but expect to target about 10 floral varieties, including manuka and kanuka.

After the initial collection in year one, year two and three will allow for further refining of the analysis as seasonal differences are taken into account, new flowers potentially added to the list, and nectar profiles determined.

FINANCIAL SUPPORT NEEDED

Crucial to the success of the project is getting the support of beekeepers, not just as a means for collecting foraging bees, but also financial support. A requirement to access many co-funding options is displayed industry support, and so NZBI and the project team are seeking expressions of interest from people who wish to collect bees and/or contribute funding, large or small.

Also crucial to the project has been Goodwin's desire to undertake this type of research. While the amount of work he can take on is limited these days due to a fibromyalgia diagnosis which saps energy, he is excited to finally bring the NZ Honey Origin Project to life.

"This is a world first. No one has ever done this before."

Anyone interested in supporting the project, by collecting bees off flowers and/or contributing funding, is asked to register their interest via email to NZHoneyOrigin@gmail.com 

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Floods Leave Lasting Damage



Beekeepers in many regions, in both North and South Island, are dealing with the effects of historic levels of flooding in August. Many are unable to assess the damage as access to apiaries is blocked by road closures and impairments on private tracks. However, the worst might yet to come, with beekeepers facing inability to manage unreachable hives at a crucial time of the season. For some, beekeeping has even been pushed aside as emergency response takes priority, including one Marlborough business on the brink. We check in with beekeepers from around the country to get their reports.

This time last year Rob and Sabine Harpers' "Logistical Nightmare" at Sherrington Honey in the Marlborough Sounds was detailed. After making it through that season with their business taking a big hit, but intact, a similar setback could spell the end of their beekeeping enterprise.

"I haven't thought about it. We are still in emergency response mode," Rob Harper says of beekeeping, a week after a deluge of rain hit Marlborough and Nelson.

It started on August 16 and plunged both districts at the top of the South Island into an emergency. The Harpers, along with all residents of the Kenepuru Road in the Marlborough Sounds, remain cut off by road, and relying on boat access. For two and a half days the power was out at their Ohinetaha Bay home.

"I've lived out here 40 years and never seen anything like it," Harper says.

He has yet to constructively think about how his business will respond to the setback, with their home and base cut off from all most all their 1400 hives, and staff, due to a multitude of landslips and the resulting closure of Kenepuru Road. To the south the road links them to their nearest towns, such as Blenheim and Picton, and then to the north-east it takes them deeper into the Sounds and their hives.

"There are slips on this road the size of houses, and wash outs just as big. There are houses that have been red stickered, houses yellow stickered. It's not good."

Owning one of the few boats in their area, Harper was called on to assist evacuations.

He's also had to jump on an excavator to hurriedly clear a slip threatening

Rob Harper was still in human emergency recovery mode a week after August's rain event and hadn't turned his attention to what will need to be a drastic business recovery mission for Sherrington Honey's 1400 beehives in the Marlborough Sounds.



It is going to be a hard road to recovery for Sherrington Honey with numerous slips, such as this, blocking Kenepuru Road and access to their hives further out in the Marlborough Sounds for the second year running.

buildings at Te Mahia Bay Resort. Since then a neighbour has suffered a heart attack and Harper, a volunteer firefighter with first aid training, was called in to help. He believes the Marlborough District Council should be making an effort to provide land access of some type.

"We couldn't get to a defibrillator because the road is blocked. We are just lucky he didn't arrest. There should be, at the very least, an effort to put an emergency track in. We are trying to do everything by boat and it's bloody ridiculous."

While emergency response to humans has taken priority, beehives will need feeding and varroa counts have been high due to potential miticide resistance in autumn. However, getting spring treatments in anytime soon seems unlikely.

"The big thing is access. Even once they fix the main roads, the farmers in the outer Marlborough Sounds have had so much damage that they don't know if they will be able to do anything with them, they don't know if it will be economic. They have whole hill sides that have moved. The scale of it is crazy," Harper says.



Sherrington Honey's 1400 hives is down from 1700 a year ago, following their flooding and access setbacks last winter.

"Last July we had a storm come through and lost \$150,000 worth of livestock. Insurance didn't cover it because the loss was due to lack of access and you can't insure roads. It will probably happen again and it will probably be the end of our business," Harper laments.

In July the nearest main centre, Blenheim, registered significant flooding and their wettest month on record with 200.6mm of rain. Therefore, August's deluge – which amounted to hundreds of millimetres of rain in some western areas of Marlborough – fell into already saturated soils. In the Rai Valley, which sits on the border of Marlborough and Nelson and at the south end of the Marlborough Sounds, over 1000mm of rain was registered in a matter of days.

IN NELSON

Beekeepers spoken to in the neighbouring Nelson region – while not themselves in emergency response mode like the Harpers – were also still in the dark when it came to the status of many apiaries.

"We haven't been to our hives yet which is a real worry," says Cathy Ayres, owner of River Terrace Apiaries.

"We can't get over the Whangamoas because the road is closed. Because the sites are on forestry land, there is likely to be slips on the private tracks which will need to be cleared as well."

Half an apiary remains precariously placed in the Marlborough Sounds following a land slip.

While they expect some hives to be flooded away, until they can get to the apiaries they "just have to hope and be prepared for the worst when we do eventually get on site".

Fellow Nelson beekeeper Murray Elwood of Mountain Valley Honey is in much the same situation. His mind also goes to those who own land.

"I have talked to a number of landowners and I really feel for the farmers. The land is pretty messed up. I am not sure if we have lost any hives through flood and I am not sure when we will be able to find out. Some we might get into soon, but others I'm not sure. We will have to wait and see," Elwood says.

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NORTH ISLAND

The weather pattern that hit Marlborough and Nelson hard also inflicted flooding damage to many other parts of the west of the country and into Northland. There, beekeepers suffered some hive losses and there were some close calls too as they rushed to move apiaries threatened by water.

"We are lucky, we have managed to save our hives, but I know of other beekeepers who have lost them to flooding or landslips," says Lenny Stone, head beekeeper at Kaitaia-based Mana Kai Honey.

"We have managed to pull them out, but there were a few horrendous missions getting to them because of slips and rivers being so high. It's been pretty nuts actually."

With avocado pollination around the corner, as well as the first manuka flows of the season, it's a rush to gain access to sites through sodden soils and damaged tracks in the far north.

"It is a matter of walking feed in, or, if you have access to a quad bike, taking that," says Whangarei Bee Club president Nick Watkins.

"Some sites are a struggle to get to even with a quad bike though. You have to do what you have to do. You have to feed the girls."

Further south, Egmont Honey lost "80 to 100" hives to flooding in South Taranaki according to head beekeeper Mark Thomas. That is not a significant setback to their large hive-holdings he says and they are glad many of their hives are wintered on dairy farms with

Mana Kai Honey were able to rescue hives from rising flood waters in Northland in the nick of time on August 19.



lower flood risk. However, access to such sites will be limited by wet paddocks.

That is a situation being addressed by many, with beekeepers far and wide resigned to motorbike or foot access to apiaries for the time being.

At Sherrington Honey in the Marlborough Sounds, there are more pressing concerns though.

"We are in survival mode," Harper says.

"Words don't describe it really. Just when you think things are not too bad, the next-door neighbour shows up with someone who needs to get flown out on the helicopter because he's having a heart attack," he says, adding "we are just really stressed, but what can you do?". 🐝

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Recovering Costs of an AFB Infection Through the Disputes Tribunal



Imagine being forced to burn all of your beehives due to American foulbrood (AFB) infection. Then imagine having to do it again. That was the case for Hamilton beekeeper Phil Evans, but second time around there was clear negligence from another local beekeeper and so Evans sought compensation. This is his story of going from complete hive destruction and back to beekeeping ... twice ... and where he believes we are going wrong in our AFB management.

BY PHIL EVANS

It is well known that there isn't a lot you can do to recover costs when your hives are wiped out from AFB. It is just an accepted fact that it is part of the cost of having bees. Even the experts say it is almost impossible to locate the actual source of the infection. But what if you could?

During the process of getting my kitchen registered to extract and bottle my honey under a National Program 1 (NP1), I had to factor in every possible scenario. I had to document each step, from clearing benches, moving my fridge into the laundry, thoroughly cleaning every surface, scrubbing down all equipment, washing floors, setting up the extractor, uncapping stations, filtering table, and bottling areas. There were processes for getting honey boxes into the kitchen, plastic drop sheets to put down, buckets at the ready. After the extractions were complete, every piece of equipment had to be cleaned and put away. Every part of the process had to be completed without my bees being able to access any honey, at any stage.

COMPLETE LOSS

Removing bees' access to honey was at the top of my mind throughout the whole process, as three years earlier I had lost all my hives to AFB. At that time I was confident where the infection had come from, but whenever I mentioned it, I was told there was

no proof that the swarm I had collected from a friend's hive was the source. When I discovered the first infection in my hives, I also found out that the swarm's original hive had died out and was left completely empty.

I suggested to my friends that I take their hive back to my apiary (fully wrapped just in case), as I had arranged for an AFB detector dog to run over my remaining hives. It was a way of determining if the gear could be used for a future colony.

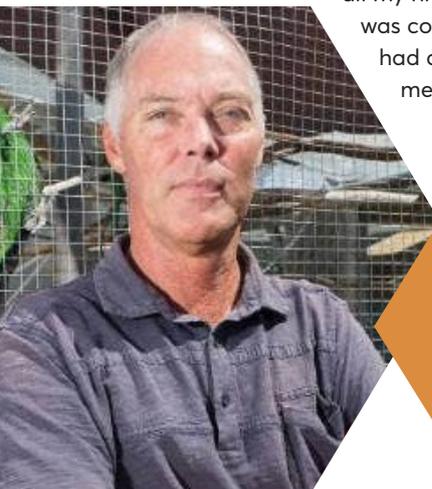
The detector dog indicated clearly on that hive, strongly hinting that it had AFB. I had split the swarm hive a few times, so in my mind, I was certain of the source of infection. The dog indicated on all my hives except one, but within weeks I had found clinical symptoms in that hive as well.

Once all my hives had been burned, I restarted and operated a 'hive quarantine' system, where each hive had its own gear, clearly marked, including a hive tool under each lid. I wanted to ensure that what I was doing would not contribute to spreading AFB among my hives.

A COMMUNITY RESPONSE ... OR LACK OF

Losing all my hives prompted a request to my local bee club to be more proactive with AFB, and this started a two-year AFB eradication programme which aimed to eliminate AFB from Hamilton. Sadly, uptake was not of a high enough standard, even with significant marketing and support from Dr Mark Goodwin.

It seems many of our beekeepers want the bees, they want the honey and the money from selling it, but they object to the costs involved. The first year of AFB spore testing by the club was free to members, but uptake was still low. The second year a small charge was introduced, and uptake dropped. It seemed that because only a few hives were infected each year, many probably thought why pay for something that isn't in my hives... The real message still hasn't got through, that prevention and elimination is far better than burning hives.



Phil Evans. The Hamilton beekeeper successfully filed a grievance with the disputes tribunal against another beekeeper and was paid out \$5000 for the loss of his seven beehives due to AFB infection.

EXTRACTION RULES, AND A RULE BREAKER

That experience played a big part in establishing instructions for when honey extraction customers brought their honey boxes onto the property. It was made very clear in writing, and verbally, that once they arrived, 'my bees must not be able to access their honey'. Getting their boxes inside was to be a quick process, and the same at the end of the day. Loading the wets back into their vehicles was the last action before they left.

At the start of the first season of extraction, I was learning what my setup could handle. I was very comfortable handling up to 10 boxes at a time. One of my first contacts said he had 20 boxes, and could bring their electric extractor as well as an uncapping station. It would be a tight squeeze, but the only way to know if it would work was to try it. We would only be able to bring in 10 boxes to start, with the remaining 10 left on the back of the truck, tightly wrapped up. Very clear instructions were given, and the customer agreed he would wrap all the boxes in cling film.

When he arrived, everything looked fine. The customer was a semi commercial operator, so I accepted that he knew what he was doing, and understood all the risks of AFB. He knew I had hives on the property, and assured me he understood what he was required to do. I (wrongly) assumed that he had undertaken the usual AFB inspections when taking the boxes off the hives.

So when we went outside to unload the remaining 10 boxes, I was gutted to see my bees robbing all through the boxes. The cling film was not securely wrapped and the bees had found their way



The home apiary of Phil Evans in Hamilton. Above, wintered down this year after being re-established for the second time. Below, his hives in December 2020 and on a flow, prior to AFB infection for the second time.

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in through numerous gaps. This was my first experience of robbing, and it was ferocious. The bees were seriously angry, and started aiming for us.

Bee suits were put on, and the boxes taken to the other side of the back yard, the bees wiped off each frame, and the box taken inside through the back door. It took quite a while but we got them all cleared and the extraction continued, all the while I was hoping that his hives were clear of AFB. He assured me he hadn't found AFB for years. At the time I had to trust that...

BACK IN MY HIVES

About three months later I found AFB in one of my seven hives, and my immediate thought was that fateful day. I reported the find, and made preparations to burn it. A couple of weeks later I found AFB in more hives. These were reported, along with phone calls to the AFB Management Agency, where I outlined my concerns about that robbing episode back in February.

One of the things I ask each of my customers was to take a 500g jar sample of their honey, which are lined up on the windowsill to demonstrate the various colours of different honey. I had taken a sample of this customer's honey, and asked the Agency if that could be tested for AFB. They said 'yes', and I shipped a 50g sample to them. In the meantime, all of my hives had become infected and were destroyed... again!

This was the second time in three years I had lost everything. All six hives back in 2018, and now all seven hives in 2021. On



Phil Evans' NP1 registered Dinsdale Honey extraction facility, located in the kitchen of his Hamilton rental unit. AFB Infected honey was brought onto the property by an extraction customer, the Disputes Tribunal determined.

both occasions I knew the source, the first backed up by the detector dog.

The test came back positive, with a very high AFB spore count. What was of real concern was the 50g sample came from a 500g jar of honey taken randomly from 278kg extracted on that day. The Agency immediately arranged for an AP2 inspection where AFB was confirmed. It was later reported the beekeeper lost 80% of his hives.

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In my mind this was clear evidence that his honey was seriously contaminated with AFB, and was the source of infection in my hives. The chances of all seven hives getting AFB, when each hive had stringent quarantine applied to them, were almost zero. The source was from his honey, and I felt it only right he compensate me for what I had lost. I filed a claim with the Disputes Tribunal for \$5000, and won.

The main task of the hearing was to first determine if there was a 'duty of care' on both parties to protect each other's hives from AFB infection. It was determined there was.

The next stage was to determine if that duty of care had been breached. This was discussed from both sides, and it was found the customer did in fact breach his duty of care. The requirement that 'my bees must not access your honey', was stated both verbally and in writing prior to the extraction day. The customer agreed to that, and stated in writing that he would securely wrap his boxes, knowing there were beehives on my property.

He also stated, during the hearing, that it was common practice for commercial operators to only inspect 1-2 frames of brood during AFB inspections. Having been through the AFB course twice, I knew the clear requirement is that *all* frames of brood are inspected. If commercial operators are only inspecting 1-2 brood frames per hive, New Zealand has a serious problem. It is no wonder the disease is so prevalent.

It was determined that the customer had breached his duty of care to protect my hives from infection, and on that basis, the final outcome was that he was required to pay the full amount I had claimed.

The awarded amount of \$5000 covered all hive gear from seven hives, and included some compensation for loss of honey sales for the 2021/22 season. Thanks to the extraction business income the previous year, I was able to buy new hives and equipment during the spring of 2021 to re-establish my apiary. I have 12 colonies, as of June 2022, but my honey harvest for this season was only one third of last year's due to new hives, nucs and splits to build numbers.

A FIRST?

I believe this is the first time in New Zealand that a beekeeper has successfully recovered costs for all losses caused by AFB infection, and I hope this story will be the start of more vigilance by beekeepers, both hobbyists and commercial operators. Check for AFB properly. That means all brood frames at least once per year, and whenever adding or removing boxes. That is the industry standard. Failure to comply with that could result in wiping out someone else's hives. Do you want to be responsible for that?

SUPPORT FOR THE AGENCY

The Pest Management Agency need better funding to oversee the eradication of this scourge on our industry and I really hope that is understood when they next canvass to increase levies. I will certainly be supporting any increase in fees, if the result is I never have to burn another hive.

AFB is everyone's problem and it needs to be taken more seriously. Every beekeeper should be checking their hives for AFB more often, and doing it properly – all frames, not just one or two. All beekeepers should be doing the AFB recognition courses, getting their own DECA's and doing refresher courses every two years.

I was fortunate in being able to identify the source of AFB infection in my hives in this case, and was able to recover the costs. Having strict processes in both managing my hives, and my extraction facility, was key. This case was perhaps as clear cut as it may ever be, but it does highlight that all beekeepers need to be accountable for their beekeeping practices. Are you confident that your AFB processes will keep you out of court?

Phil Evans is a Waikato beekeeper with nine hives on two sites, and operates Dinsdale Honey, extracting honey from his rented property in Hamilton. 🐝

Timeline of Events

This article is a simplified version of events. The complete timeline is:

February 2021:	Honey extracted from infected supers.
Late May:	First AFB hive in my apiary found
June:	Honey sample sent for testing early June, with results returned late June.
Late June – late August:	All other hives found to have AFB between end of June and late August.
Late August:	Disputes Tribunal claim filed.
October:	First hearing.
February 2022:	Second hearing.
March 2022:	Final decision advised.
May 2022:	Lawyers became involved relating to the payment of the award and was finally settled with full payment made mid-May.



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— HONEY —



Can Apiculture Meet the Need?



Inspired by a presentation from Meat the Need founder Wayne Langford, Raglan beekeepers Hannah and Rory O'Brien hope to support beekeepers in helping New Zealanders in need – but they will need the assistance of the wider apiculture industry. The couple behind Hunt and Gather Bee Co. hope honey producers, packers, packaging and label suppliers, and even freight companies can unite to help deliver a regular supply of honey for charitable good.

"I've been watching Wayne on social media and thinking, oh man, this guy's got some energy. He's getting stuff done," says Hannah O'Brien of Langford, a Golden Bay dairy farmer who as 'YOLOfarmer' has a following of over 125,000 people across various social media platforms.

Langford's Meat the Need charity has been operating since 2020 and acts as a conduit between farmers and New Zealanders with food scarcity. It has helped bring almost 800,000 mincemeat meals to the dinner tables of Kiwis in need. They now also supply milk to foodbanks across the country, made available by farmers who supply Fonterra and Miraka.

After attending a conference where Langford spoke about the work of the charity, the O'Briens have been motivated to help add honey to Meat the Need's offerings.

"We know that there are people with excess honey, that perhaps doesn't fit with what the market wants. This could be an opportunity to turn that into a positive for someone else," O'Brien says.

"Also, we are a really unique primary industry in the way that everyone is kind of in competition with each other, and kind of not. Unlike pastoral farmers, many of who supply Silver Fern Farms or Fonterra and work together, as honey producers there's not much that we can all do together that's non-competitive. So, something like this could be a good reason to get people around a table and work towards something that makes everyone feel good. It isn't a threat to anyone, but is positive."

The O'Briens have spoken to Langford, who is general manager of the charity. They say he has been very receptive to the idea, if the honey industry can provide a regular supply of potted honey, to food safety standards. From there, Meat the Need can take care of the logistics of supplying food banks.

Some honey producers or packers already supply food banks, but O'Brien says it is her understanding that this is sometimes sporadic – often when an export order falls over. What they hope to achieve through Meat the Need is improved logistics, where a regular supply could be guaranteed so food banks can incorporate honey into their supply plans.

"I think there's probably two things we can offer. First, a more centralised distribution of honey so that food banks know what's coming and when. That way they can plan a bit better for consistent supply. Also, we can offer people without a brand, who might want to donate a couple of buckets, or a barrel, or however much honey. It might be honey they aren't shifting, potentially costing them more on storage than what they'll make from it. It would be a way that they can contribute, help others, and get some of that good feeling, because it's mostly people who have a brand and can pack and label it who are donating now," O'Brien says.

She is well aware that it could be honey that is deemed flawed in some manner, or not fit for market, that beekeepers might be more willing to offer up free of charge. Therefore, specifications for honey which is donated will need to be determined, as well as a blending and packing plan, she says.

It is predicted that 14 percent of New Zealanders face food insecurity – defined as a lack of access to an adequate quality and quantity of nutritious food.

A rough goal of making available 0.1% (equal to around 20 tonne) of the approximately 20,500 tonne national honey crop has



Hunt and Gather Bee Co owners and beekeepers Hannah and Rory O'Brien are hopeful that the apiculture industry can pull together to supply honey to New Zealand's foodbanks by partnering with Meat the Need charity.

How it might work



Bulk honey donated by producers



Honey collected and consolidated in time to pack



Lab testing to ensure honey meets Tulin and AFB standards to protect both packers and consumers



Quarterly or half yearly packing runs, by different packers



Distribution to food banks via Meat the Need distribution networks

been floated by the O'Briens following discussions with Meat the Need. The charity is confident their distribution channels can get the honey to those who need it, if the apiculture industry can make it available.

With not just honey supply, but testing, packaging, labelling and freight to consider, it will take a committed effort from a range of stakeholders to bring the supply together. Therefore, at this stage the O'Briens are simply calling on anyone in the industry who thinks they might be able to contribute product or services to reach out so that a database and contact list can be established.

"What they need from us is to pull together the honey and get it sorted into jars, then they (Meat the Need) can take over from there," O'Brien says, adding, "It could be a bit of a big job, but if no one starts, then nothing gets achieved, does it? So, we'll give it a go."

Anyone interested in learning more about the project, how to donate honey or other products and services should contact Hannah and Rory O'Brien by emailing hannah@huntandgatherbeeco.com

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Sustainability – Where Are We Now?



“Sustainability” – there’s a lot of noise about the global movement these days, but how do beekeeping businesses stack up when it comes to achieving it? **Last month** resident science writer Dave Black explained where the sustainability movement has come from, now he looks at how the apiculture industry is trying to get up to speed and introduces some key concepts that beekeepers are going to have to get to know.

BY DAVE BLACK

Very little of the work on sustainable agriculture could be easily adapted to describe what sustainable apiculture might look like. No assessment tools, no certification, no agreement, and no advice about what we should look for or how we should assess very diverse beekeeping operations to improve their performance with respect to sustainable development goals. Even though beekeeping can contribute to or detract from sustainable principles it is rarely considered at all. To use the jargon, there is no ‘framework’ for thinking about this.

In an effort to begin to address the problem, in 2018 a group of French researchers, mostly from the French National Institute

for Agriculture, Food, and Environment (INRAE), presented a paper¹ at the European Symposium of the International Farming Systems Association (IFSA). The group used a system of interviews and workshops with a wide range of participants involved in, or linked with, the beekeeping sector to consider what should be used to define a sustainable ‘beekeeping farm’ as “economically viable, environmentally sound, and socially acceptable”. One of the members of the group was Dr Yves Le Conte, who you may remember presenting (on a different topic) at the 2017 ApiNZ National Conference².

The outcome of the work can be summarised in Table 1. If we want to assess the sustainability of a beekeeping operation the

DIMENSIONS	THEMES	MAIN CONTENTS
Beekeeping sector and society issues	<ul style="list-style-type: none"> Quality Food and services production Contribution to the understanding and recognition of beekeeping sector and issues Collective stakes of beekeeping sector 	<ul style="list-style-type: none"> Quality and traceability of products, ethics and apicultural practices Pollination and food production Contribution to the awareness of the beekeeping sector realities and issues among the general public and among other agricultural sectors Involvement in collective structures, contribution to collective stakes of the sector as genetic diversity or prevention of introduction of invasive pests
Economic viability	<ul style="list-style-type: none"> Income Economic stability Economic autonomy 	<ul style="list-style-type: none"> Match between the real income and the beekeeper’s expectation, between the income and the time spent Ability to face price variations, diversity of products and outlets Self-financing ability, capacity to invest
Environmental impacts	<ul style="list-style-type: none"> Local biodiversity Impacts on the natural resource Landscape integration 	<ul style="list-style-type: none"> Contribution to and potential impacts on local biodiversity Greenhouse gases emission, waste management, use and choice of inputs Landscape integration of buildings
Local development	<ul style="list-style-type: none"> Exchanges with land managers and local stakeholders Socio-economic and cultural development Transferability 	<ul style="list-style-type: none"> Relationship and exchanges with land managers, neighbourhood, other beekeepers Production of local bee products, participation in local economy, in social and cultural development Transferability of the farm, transferability of the beekeeper’s skills and knowledge
Ability to ensure the production	<ul style="list-style-type: none"> Production means Autonomy Adaptability 	<ul style="list-style-type: none"> Match between beekeepers’ goal and constraints and production means: livestock management, quality and quantity of available resource, material resources Technical autonomy, independent decision-making, information and training possibilities, exchanges between beekeepers Adaptability to annual and long-term changes
Quality of life	<ul style="list-style-type: none"> Job satisfaction Wellbeing Health and safety 	<ul style="list-style-type: none"> Meeting of beekeeper’s expectations, happiness at work Workload and time off Safety and health risks, risk control

Table 1. From Sustainability of beekeeping farms: development of an assessment framework through participatory research. Koucher et al 2018.

agenda starts with the 'Main Contents' part of the table. When comparing this with Comvita's key focus areas from their ESG³ (pg16) and the 'Harmony Plan' shown on page 20, we can see where Comvita's participation in community education, the Wasp Wipeout Programme, regenerative planting, and employee-shareholders contribute to the overall 'sustainability' project. Also part of that project? ... Life Cycle Analysis ...

A TERM TO LEARN: LIFE CYCLE ANALYSIS

Of the six 'dimensions' of sustainability identified by the INRAE group, one is directly concerned with environmental impacts, more specifically greenhouse gases, waste management, and resource

consumption – Life Cycle Analysis. LCA is used to quantify the impact of these and is where the infamous 'carbon foot-print' comes from. It is essentially a book-keeping ledger where all the inputs and outputs for an operation (even non-carbon ones) are listed and usually converted to equivalent kilogrammes of carbon dioxide or CO₂e/kg⁴ for each kg of honey produced.

Simple in principle, these are quite complicated tools full of assumptions. Some, such as UC Davis' Honey Carbon Footprint Calculator, are customised to apiculture, while others, like openLCA software, are used broadly across many industries. There are even international standards to abide by (See [ISO 14040](#), [14044](#), & [14064-1](#) for more enthralling detail!).

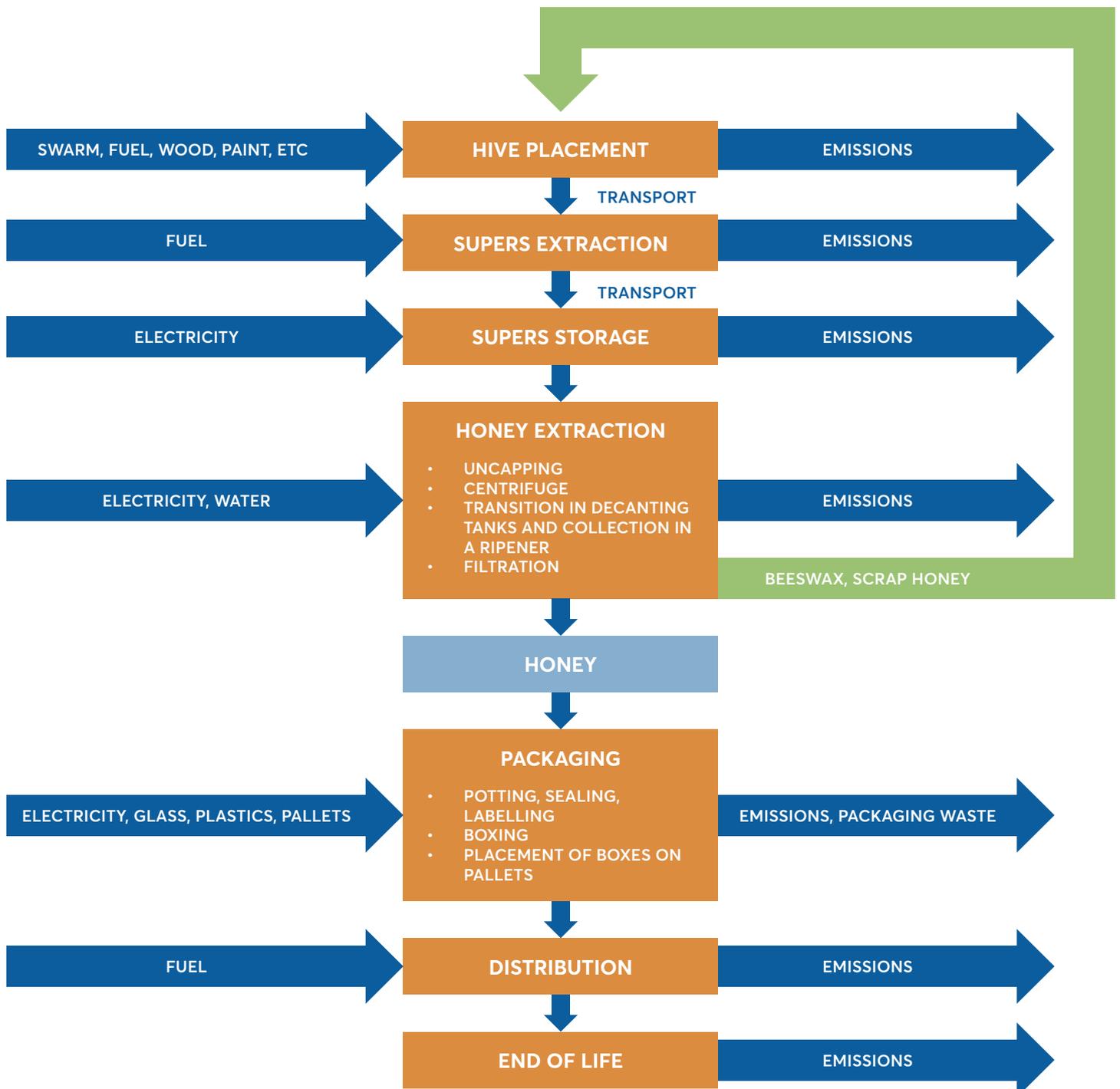


Fig 1. Schematic for a theoretical Life Cycle Analysis for the production of honey in a glass jar, from Ioannis Arzoumanidis, Andrea Raggi, and Luigia Petti.

PUTTING LCAS INTO PRACTICE IN NZ BEEKEEPING

In New Zealand, and more accessible for small operations, the Sustainable Business Network makes an Excel-based calculator developed by the Bay of Plenty company Catalyst for free⁵. To give you an idea about how such a calculation is made, have a look at Fig 1. The main 'inputs' to the 'system' are energy, water, glass, wood, plastics, paper and card, and some chemical products; the main 'outputs', heat, greenhouse gases, and polluted water, plastic and packaging waste. I've no doubt you could sketch out your own version. There are databases available of carbon emission 'costs' for many, many items.

What also complicates LCAs for apiculture is that there are sometimes multiple 'products', like honey and pollination, that don't always occur together. Wax is not always recycled. Some people use plastic equipment, some wooden, and so on. Endless variation.

Using this single measure to 'rate' environmental performance is open to criticism, but there are advantages too. Whatever we think, this has managed to become the most acceptable and ubiquitous index used. Auditable, and subject to independent validation⁶, carbon dioxide equivalents (CO₂e) have become the reserve currency of environmental impact assessment.

LCAS: WHAT'S A POT OF HONEY COST?

To give you some idea of the range of answers in our context, life cycle analyses of one complete commercial supply chain (honey production, transport to a processor, and processing) shows that total life cycle greenhouse gas (GHG) emissions range from 0.67

to 0.92 kg CO₂ equivalent/kg of processed honey⁷. Other carbon footprints that have been calculated for honey ranged from 1.40 to 2.20 kg CO₂ equivalent/kg of honey for migratory beekeeping and from 0.38 to 0.48 kg CO₂ equivalent/kg of honey for non-migratory beekeeping⁸.

To give these numbers a sense of scale, using one litre of diesel has a CO₂e/kg of about 2.66. As you may imagine, the calculation is quite specific to the particulars of each operation, but it shouldn't come as any surprise that energy, as transport (diesel), is a big component of the environmental cost of commercial honey production.

Comvita's LCA for a pot of manuka honey is being conducted by EPD International⁹, an organisation specialising in environmental product declarations all around the world. It would be interesting to learn what their calculation comes up with, but what the actual number is not really the point. The point is to set a benchmark. The eventual result of course is not just to quantify GHG emissions, but to not have any.

DOES HONEY HAVE A 'CARBON NEUTRAL' FUTURE?

Honey vendors around the world are already marketing honey as 'carbon neutral'. Being 'carbon neutral', by recapturing carbon ('fixing' carbon) from the atmosphere to off-set emission (by planting trees for example), is regarded only as a worthy intermediate step on the long march to eliminate carbon emission, and even allows emission to increase ('cos you just offset the increase!). The real goal, known as 'carbon zero' or 'zero carbon', is reached by first reducing carbon emission, off-setting what you

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can't reduce in the meantime, and keeping the real prize in your plan.

You can't do any of that if you don't know where they come from and how much there is, but remember ... environmental performance is only one dimension of a sustainable beekeeping operation, and there is no point in being an unsustainable carbon neutral beekeeping operation. 🐝

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Are You Seeing Signs of Nosema in Your Hives?

As beekeepers we know how to pick the signs of American foulbrood (AFB) and deal with it, but are you as clued up on the traits of the two nosemas? Spring Dwindling Disease can be devastating, so it pays to know what you're looking for and how to go about confirming and remedying their presence. Molecular biologist John Mackay of dnature lab in Gisborne brings you up to speed.

As strips start to go into boxes (our own included), our thoughts also turn at this time of year to an issue that first arose back in the spring of 2014. Coromandel beekeepers Oksana Borowik and John Bassett had noticed that hives were suddenly losing bees. Fast!

John Bassett had communicated these losses to Gisborne beekeeper Barry Foster and before long, we had samples of the remaining bees from these hives. At the same time, we had samples coming in from Wairarapa beekeepers who were trying to understand why their hives – strong at the first spring inspection – were suddenly collapsing.

CORomandel and WairarAPA generated a name for the syndrome we were seeing: Cororapa. You can

see what we did there. These hives had similar clinical pictures:

- Formerly strong hives suddenly losing bees over 2-3 weeks
- Plenty of honey and pollen stores
- Typically still queen-right, with a small cluster of bees
- Despite low numbers of bees, these hives didn't suffer robbing
- No dead bees outside the hive or on the baseboard

SO ... WHAT WAS IT?

In our lab, we take a 10-bee sample and extract the DNA and RNA from these bees. This material can then be tested for nosemas and American foulbrood (DNA) and bee viruses such as Deformed Wing Virus (RNA). Using quantitative DNA testing methods allows us to see the pathogen levels present in the sample – the same technology that we would all come to learn about six years later when COVID hit.

We tested the samples for all the pathogens we could at the time. Most showed low or no levels – but two stood out: *Nosema ceranae* (only discovered in New Zealand four years earlier) and *Nosema apis* (the “invisible honey tax” as Mark Goodwin calls it). The samples from these hives in Coromandel and Wairarapa were showing much higher levels of both these nosema species – with *Nosema ceranae* showing levels approximately 10 to 100 times higher than *Nosema apis*.

Nosemas are fungal-like organisms – microsporidians to be exact. There are two main nosema species in honeybees and while it has seemed in many countries that *Nosema ceranae* was ‘replacing’ *Nosema apis*, both are commonly found.

WHAT WILL NOSEMA DO TO YOUR HIVES?

Nosema ceranae has been associated with major colony losses in the USA and Europe and, for a time, was considered a major cause of the Colony Collapse Disorder in the USA. *Nosema ceranae* has a number of effects on honeybees – encouraging foraging behaviour through altering hormone levels while disrupting the homing ability of those same foragers. Bees are recruited at an earlier age to replace the lost foragers and the colony enters a downward spiral.

The combination of both nosema species is a double hit – a report in 2014 involving David Tarpy (who will be speaking at next year's Apiculture New Zealand conference) showed that bees without a nosema infection lived an average of 27 days in the lab; infection with one or other strain was a decrease to 20-21 days, while an infection with both species led to a further 25% drop in lifespan to 15 days (Milbrath *et al.*, 2014). This decrease in the longevity of the bees, combined with the other effects of nosemas, helps explain the observed signs in New Zealand colonies.

While colonies collapsed and died, Plant and Food Research scientists – together with Oksana – showed that using the same hive ware the following season led to a similar result. A heat treatment process was tested and showed that the bees readily took to the treated combs with increased brood and fewer spores in the bees.

At the same time, and with the encouragement of Oksana, we developed a new test for the detection of a very new pathogen: *Lotmaria passim*. Well actually the name was



Beekeepers should look out for the signs of nosema in their hives and, if in doubt, take a sample of 10 to 20 bees and freeze them for potential lab analysis at dnature, advises John Mackay.

new – the pathogen had been around for some time, but believed to be something else! The discovery of *L. passim* in New Zealand caused some concern, but has been shown to be widespread and not necessarily associated with the rapid colony dwindling. This was backed by



dnature Diagnostics and Research's lab offers beekeepers a range of diagnostics tests for pathogens of honey bees, including AFB, nosema ceranae and nosema apis.

Masters research from Tammy Waters in our lab, under the supervision of Prof Phil Lester at Victoria University of Wellington.

HOW DO YOU KNOW IF NOSEMA IS PRESENT?

To confirm the Cororapa picture a DNA test is required. It is the only way to confirm the presence of both nosema species and the levels of both will also be indicated. This is important, as bees will often have low levels of different pathogens that cause little issue. A test – which includes both species plus *L. passim* – is \$80 for the 10 bee sample. Should the presence of Cororapa be confirmed, then the infected gear can be marked for treatment (or comb replacement), while some companies have tested their products as treatments against nosemas, in the form of additives to sugar syrup and patties.

If you're not sure about getting a test, take the 10-20 bee sample into a small container and euthanise by freezing

the bees overnight. With bees in the freezer you have testing options . . . with empty boxes and frames, you have only uncertainty. The issue has been widespread in the North Island – including my own hives back in 2016. There's a story there about prying the racks off the home oven in order to heat frames to the 50 degrees, but don't tell my wife!

TALK ABOUT IT

The way in which the affected beekeepers dealt with the discovery of this syndrome demonstrated lessons that should serve us well. The beekeepers in Coromandel talked about it with their colleagues and discovered that 14 of them were affected by the same issue. More conversations got ourselves and Plant and Food scientists involved as well as the Ministry for Primary Industries.

Getting a fatal disease in your hives does not make you a poor beekeeper – it's what you do and who you tell after the fact, that determines that. ■

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The Tiger Sleeps



It's "long-distance riding, bugs, eccentric people and ... pure contentment" as we once again tag along with "Jesse" James Corson on his epic road-trip across North America. Part four sees the Canterbury beekeeper tackling the Alaska Highway and once again encountering stunning scenery and tall tales, but this time on a new steed.

BY JAMES CORSON

*'We are The Highwaymen,
Riding the roads
And twisting the grip
Hoping like hell
When it's wet
We won't slip.'*

The Tiger died on me in Montreal. She had stalled on a hill at a red light and the starter refused to crank the triple pots back into life. A new starter was to be found in the depths of the English Midlands, three weeks away, and I was resigned to the fact that the journey was over.

I was philosophical about it, telling myself that some things are not meant to be. Even so, I was gutted. But then, my mate in Saskatchewan had said, 'James, take my Africa Twin, she needs an outing.' ... So I did!

I powered the bike up the lazy curve to the low pass at Summit Lake. The expanse of the Northern Rockies stretched out in an endless wriggle of mountains and mist. We were headed north to the Arctic up the arterial Alaska Highway, hacked out of the boreal forest at the end of the Second World War, after the Japanese had landed in the Aleutian Islands and the Americans got worried.

That evening I wrote in my diary that crossing Summit Pass and dropping down into the Muncho Lake watershed would go down in the annals of my life as 'being up there'. The reality was that it was just the prelude to a month-long odyssey of long-distance riding, bugs, eccentric people and pure contentment.



Kicking the bike stand down for a coffee break on the Alaska Highway where "pure contentment" can be found is Canterbury beekeeper James Corson.



James Corson's latest mount, and Africa Twin adventure bike, takes a well-earned rest with a view of the St Elias range in Kluane National Park, Alaska.

No matter that when I woke in the morning to the sound of gentle rain on the tent, it wasn't rain but bugs looking for breakfast. Or when my boots were full of water after a day of torrential rain on a gravel road, I was smiling like a sandboy at the thought of a hot shower and a dry bed in the attic of a former brothel in Dawson City.

It was in Dawson that I met Troy and Lyel one Sunday afternoon. They were stood on the wooden board walk outside another dilapidated hotel sharing a joint. I had slowed the bike to avoid a rain-filled pothole and we had made eye contact. I killed the motor and laughed with them...

"Aye for sure Paddy, it's been a long and muddy road. A cold one might restore the zing."

My new found mates were goldminers. We whiled away the afternoon with lies and beers, during which Lyel disappeared, to return with a piece of ivory that he plonked down on the table in front of me.



Left: Through Alaska and British Columbia, James Corson has covered big miles on an Africa Twin adventure motorbike, as he takes a break from beekeeping.

Right: Just like New Zealand, "bugs" can draw blood in wildest parts of North America, but they are all part of the adventure for James Corson on his trip of a lifetime.

"Mammoth", he said. "I found it while dozing off the overburden of a cut we were doing a while back. Take it home, it's 23,000 years old."

His mate Troy ordered more beer and pulled a small wooden box from his jacket. "I can do better than that." He smiled as he pulled a gold nugget from his treasure and dropped it into my hand.

"That's over a million years old... better take that too. We found it in the clean-up after we found the Mammoth."

Later that evening I made my way back to my attic brothel (former!) pit, clutching the mammoth tusk embedded with gold, and as I stretched out in the soft sheets I chuckled at a text I had received from my nephew a few weeks before.

'The exploration of the unknown is beautifully simple. Balance a purposeful direction with an acknowledgement of the uncertainties that lie over the horizon. It doesn't matter which way you go... you will be surprised.'

Late summer sun

The journey run

As geese head south

Sweet prairie soil

Horizon stretch

Your gentle soul

Your Northern woods

And endless stretch of gold

Rest easy as the north wind blows

The sun drops

The wolf howls

And the Bear sleeps. 🐝

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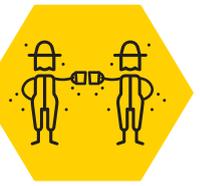
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Dedicated to Club and Craft



John Trevena is a man dedicated to improving beekeeping knowledge, both his own and his fellow members of the Marlborough Beekeepers Association (MBA). He's spent nine years at the club, nine years with his own hives – including a three-and-a-half-year stint working for a commercial beekeeper – and recently communicating with his fellow beekeepers got profoundly easier...

Not one to rush in, Trevena spent 12 years reading up on beekeeping and as a beekeeping club member in Christchurch before getting his own hive.

"I thought, it's now or never," Trevena says of the time he moved north to Blenheim, joined the MBA, and took up the hobby.

Taking the time to learn something and learn it well was not new for him though, having been born profoundly deaf, yet taught to speak by his parents.

"There are two types of deaf people. You either belong to the hearing world, or you belong to the deaf world. I have always belonged to the hearing world, because I went to a normal school. My parents didn't want to send me to an institution. They were both teachers and Mum had the time to teach me how to talk," Trevena says.



John Trevena. The Marlborough Beekeeping Association's hive guardian in their club apiary in Blenheim.

He has never learned sign language, but for most of his life has relied on lip reading while using a hearing aid – a skill that doesn't combine well with beekeeping.

"With people hidden behind a veil it makes it very difficult to lip read," he points out.

However, last year a whole new world of hearing was opened up to Trevena when he received a cochlear implant. It means he can



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now hear many sounds, including peoples' voices clearer, and it compliments lip reading to communicate in person. While he is still getting used to the implant and resulting hearing, with it adjusted every three months by a specialist, it does make communication around the club's hives in Blenheim much easier.

Trevena, in his 50s, was first introduced to beekeeping when his father retired from teaching and took up the hobby in the 1980s.

"Regrettably I wasn't involved at all, other than extraction of the honey. I should have followed him more to learn more about beekeeping. I was young and busy with other things though."

He spent much of his working life at local Councils as an assistant environmental planner, but in 2018 – having had his own hives for five years – landed a job with then Blenheim-based beekeeping business Putake.

"I was doing basic hives work and maintenance and then one day one of the queen rearers quit and I was asked to fill in, that lasted a few years so I must have been doing alright."

"You learn more quickly because you are regularly working in the hives. If a hobby beekeeper was to join a commercial for a short time they would learn a lot. Unfortunately some commercials don't always have time and patience to do that."

He's committed to sharing his time and what he has learned with others at the MBA though, as a committee member and the club's "hive guardian" of their apiary located at the Nelson-

Marlborough Institute of Technology premises in Blenheim. Trevena is fast to point out the club is based around a strong team on the committee and about 20 members who show up at their monthly gatherings.

The club is led by president Dion Mundy, while commercial beekeeper and committee member Phil Vercoe helps educate. Murray Bush, Will Trollope and Dale DeLuca – also commercial beekeepers – have previously helped too.

"They are happy to pass on their knowledge to hobby beekeepers which is great. There is no them and us. They generously help and give their time."

Trevena says he enjoyed his years as a full-time beekeeper, with much of it focused on queen breeding for sale, but believes he has "done his dash" as a commercial apiarist. Now his seven hives and the club's small apiary is plenty.

"I give away most of my honey, so I really do need to cut back on hives. Having a few more gives you a safety net though. For me I get satisfied just watching the bees. It's not so much about the honey."

As far as mentoring other beekeepers goes, he encourages those new to apiculture to seek others' opinions as well, before finding their own way.

"I enjoy helping people," the hive guardian says, adding "it's quite satisfying when they get the hang of it." 🐝

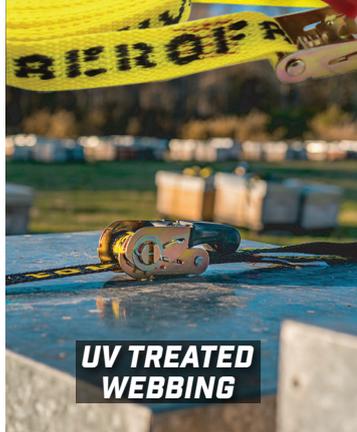
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The Honey Bee's Early Years in New Zealand



Last month regular contributor Maggie James recapped her recent research into the early history of New Zealand beekeeping, exploring how it is believed the first honey bee colonies made their way to New Zealand. Now, in part two she looks into the dispersal of honey bees around New Zealand in the initial years of organised European settlement, with a few interesting tidbits uncovered.

BY MAGGIE JAMES

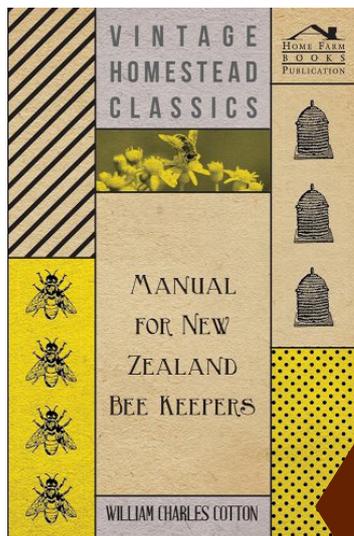
Following the work of early colonists to introduce honey bees to New Zealand, by the mid-1840s it was generally thought by those north of the Waikato River that bees were distributed widely throughout and New Zealand was now the land of milk *and* honey. Beehive boxes were being made to order in Wellington, as per William Cotton's measurements. In 1848 Cotton wrote *A Manual For New Zealand Beekeepers*, describing basic beekeeping and hive production.

There was a brisk business in honey bee exports from Australia to New Zealand, 20-30 hives per order. Due to the climate, bees appeared to thrive here. *Chamber's Papers for the People*, 1852 notes in 1847 an upper North Island beehive produced a mighty 1211lb (549.31kg) of honey, that some beekeepers were being overwhelmed by the amount of swarming, and that the land may well one day be overstocked with bee hives ... a prophetic statement indeed!

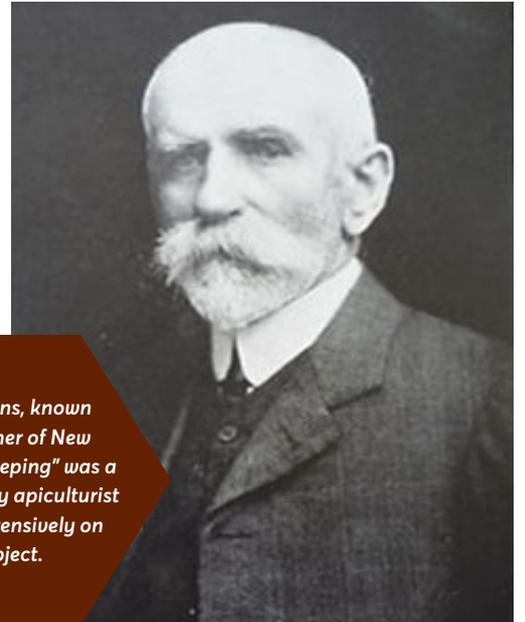
In the 1840s honey and mead were imported from the UK and Australia. Meanwhile in the North Island and Nelson area, much domestic honey was being exhibited at agricultural and pastoral shows. By 1860 domestic shipments of honey were common and export honey trade was at its inception.

However, in Canterbury and further south the European honey bee appeared to be almost non-existent. In January 1852 the Lyttelton Times reported the arrival of two hives by ship from Nelson required to pollinate clover crops on The Plains; believed to be the first importation

William Cotton's A Manual for New Zealand Beekeepers, published in 1848, was one of the country's earliest works dedicated to beekeeping.



Isaac Hopkins, known as "The Father of New Zealand Beekeeping" was a prominent early apiculturist and wrote extensively on the subject.



of bees into the Lyttelton settlement. Later that month, another edition noted hived bees at Port Levy, Banks Peninsula. Thereafter, hives were shipped further afield around the South Island.

FATHER'S OBSERVATIONS

Isaac Hopkins (1837-1925) has been called the "Father of Beekeeping" in New Zealand. He arrived in 1858 and went on to become a successful beekeeper, government apiarist and inspector of apiaries. He wrote several bee manuals and bequeathed £3000 to the Cawthron Institute in Nelson for bee research. Hopkins observed that by the 1860s bee nests in the bush were plentiful, and considerable quantities of honey were being sold by Māori – the country's first commercial beekeepers.

TUTIN HONEY LESSONS

Perhaps the first deaths from ingesting tutin honey are recorded in a letter to the editor of the *Daily Southern Cross* newspapers on December 21, 1860. The letter, signed "Pro Bono Publico" (for the public good), notifies of a "native village" in the Coromandel in which numerous people have suffered illness and five died, with

poisonous honey the suspected cause. "Everything in the shape of honey, bees, or boxes, was destroyed, so nothing remained for chemical examination," the author stated.

TO THE FUTURE

Increased commercial production of honey in New Zealand began in the late 1870s following the introduction of the Langstroth hive, which we still commonly use today.

In 1880 two Langstroth hives of Italian stock arrived successfully from California after many failed attempts. As noted in the Wellington *Evening Post*, 26 August 1880, the ship's captain cared for them in his cabin on the 25-day voyage, San Francisco-Wellington, giving them fresh water each day over the combs. The hives were transferred to a Union Steam Ship Company vessel for delivery to the Christchurch Acclimatisation Society and a Mr Harrison of Coromandel.

By the mid-1880s numerous Italian – or Ligurian as they were commonly known in the 1800s – (*Apis mellifera ligustica*) beehives were being imported from Australia, Italy and the USA. Often these imports were unsuccessful, but intense efforts were made to improve New Zealand bee stocks. In December 1880 the Canterbury Beekeepers' Association reported the high fatality rate of shipping hives from the USA.

In 1881 Isaac Hopkins, having successfully arranged for beehive imports, wrote under the title, "How to Prepare Bees for Shipping" for the *American Bee Journal*.

There was much difficulty in maintaining the yellow stock, but

it was generally recognised these bees weren't as aggressive as the black British bee, also commonly known as the western or European dark bee (*Apis mellifera mellifera*), while being better honey producers and crop pollinators.

To this day, much of New Zealand's existing bee stock is Italian. Post varroa, many of the stropo black "bush" bees have disappeared, much to the delight of many. Carniolan (*Apis mellifera carnica*) drone semen was imported in 2004 and the strain is here to stay too.

So, from sea voyages spanning months and the race to become the "first" apiarist in New Zealand, to modern day importations of drone semen, there's a little bit of what I've managed to uncover in this rabbit-hole of research!

Thoughts, feelings or contributions to make on this story? Email editor@apiadvocate.co.nz 🐝

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Public Sector Pay



How should we think about pay for nurses and other health care workers, or teachers, or police?

The Government has been engaged with these groups for the past five years, and yet, in health, a sense of crisis remains. How should we think about these services, and how much should we be prepared to pay them?

BY IAN FLETCHER

Pay has three dimensions: economic, social and psychological. They all matter. At an economic level, people need to be paid enough to meet expectations about what sort of life a nurse or teacher or policeman can afford. Socially, pay is part of the way society expresses value – especially relative value. And psychologically, decent pay is part of the self-respect I certainly hope people doing this work feel about themselves and the careers they have chosen.

There's also a labour market effect: a lot of health care workers at all levels in New Zealand have come from overseas, presumably in the hope of a better deal. Many New Zealand health care workers move to Australia or the UK, in the hope of better pay and conditions (quite likely in Australia; the UK experience might be better seen as part of one's OE). Teaching abroad is possible, but it may be harder to get qualifications recognised. Other public sector professionals, like police officers and military personnel, can and do transfer too. There is also a market for senior executives (I've worked for five different governments as a senior public servant), but that lies outside the scope of this analysis.

I've included police and teachers in this because it shows some contrasts. Police pay is believed to be good. It seems starting pay for police in New Zealand is about \$70,000. Registered Nurses start at around \$61,000. This is lower, despite longer, more expensive degree-level training. Other, less-qualified health workers get quite a lot less. Primary teachers start on \$48-52,000, again after a three- or four-year degree programme. It takes several years to get up to police or registered nurse starting pay. In New Zealand, average pay is around \$56,000 per year.

On this analysis, well-qualified nurses earn above average (other health workers significantly less), while primary teachers start below the average. Yet, the focus of public debate is on healthcare, where there seem to be chronic shortages of staff. Is it pay?

Only partly. Globally, nurses are in short supply. The World Health Organisation estimates the world is short 5.9 million nurses. The current global nursing workforce is 28 million, so it's quite a big shortfall. In many places, more nurses are leaving than being

trained (except the US, where the lack of minimum staffing levels mean there aren't enough jobs for graduates). New Zealand is already very dependent on foreign trained health care workers. In fact, recent data suggests that only Chile has a greater proportion of foreign-trained nurses among recent recruits.

And then there's Australia. We underestimate how well-connected the trans-Tasman labour market is, so New Zealand workers in many fields respond willingly and quickly to shifts in demand in Australia. Health care delivery is a state government responsibility in Australia, and state governments take it seriously. The result is well-resourced public health care systems, a flourishing private health provision sector (there are tax incentives to have health insurance) and generally higher pay through the workforce. For many New Zealand trained or resident nurses and other health professionals, that's all attractive.

I think it's both pay and working conditions that drive choice here. It's clear that the New Zealand public health system, like many around the world, is under strain from constant high demand (think Covid then winter flu all on top of an aging population). Healthcare workers will rightly want adequate pay, but also enough support to get time off for themselves, adequate professional resources, and good and supportive management.

So, what does that mean? For Police, and teachers, there seem to be very different experiences (police paid well; teachers paid poorly), but neither system has an air of staffing crisis. Healthcare seems different: persistent crises, staff shortages, some very low pay for some, the constant appeal of Australia all contribute to a system that seems under more and more pressure and coping badly. More pay might be part of the answer but just getting more qualified staff and keeping them seems like a bigger issue. Immigration may not work well (every developed country is trying that, and we are not as attractive as we were). So, some old-fashioned workforce planning might be needed, including subsidising degrees, accompanied by a serious effort to get more resources into the health system overall. I think we've proved we can't do it on the cheap. Now we must prove we can do it well, and we must be prepared to fund accordingly.

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



Nurses have been taking industrial action in recent years as they seek better work conditions, yet huge staff shortages remain and no solutions to their grievances have been found.



Beekeepers Should Make the Effort to Help Themselves



BY PATRICK DAWKINS

You have to feel for Rob and Sabine Harper at Sherrington Honey in the Marlborough Sounds, whose plight is outlined in *Floods Leave Lasting Damage* on page 5. They just clawed their way through a logistical nightmare of a season after a “once in a century”-level flood wiped out road access to most of their hives in July last year, only to be hit by a worse fate following another winter deluge which will put their business on the brink.

The Harpers are beekeepers who have good excuse for their attention to be on larger concerns, but there have been plenty of industry initiatives floated in this and our August issue which beekeepers would do well to support. I checked in with PhD researcher Jane Pierce to see what uptake was like of her questionnaire regarding beekeeper work habits, which was detailed last month in *Researcher Needs Beekeepers to Help Her Help Their Health*. Beekeeper response has been very disappointing.

If we want others – such as a physiotherapist trying to improve beekeeper occupational health as Jane is – to make the effort to contribute to our industry, then we have to make some sacrifice (and sometimes it is as little as 30 seconds of time!) to get the pay-off. That pay-off might not always be immediately apparent, or perhaps not to you directly, but it all helps contribute to an improved industry.

With that in mind, here's some projects looking for support. Can you help?...

NZ HONEY ORIGIN PROJECT

Could this project be a game changer when it comes to marketing our honey? Mark Goodwin thinks so and that's a pretty good start! They are simply looking for beekeepers to register interest at this stage, so down the line you can consider whether to aid bee collection and/or contribute funding.

Cost to beekeeper: At this stage, \$0 and between 30 seconds and one minute of time as you send an email to NZHoneyOrigin@gmail.com to register your interest.

Potential payoff: New Zealand monofloral honeys soar in value and we all retire early...

MEET THE NEED

This is one that will be easier to back for some than others, but Hannah O'Brien who is floating the concept of the honey industry providing more honey to Kiwis in need is another just looking for people to register their interest. Whether you think you can donate a tonne of honey or just a kg, putting your name on the list to be kept in the loop is not so difficult... Read all about it in *Can Apiculture Meet the Need* on page 14.

Cost to beekeeper: At this stage, \$0 and between 30 seconds and one minute of time as you send an email to hannah@huntandgatherbeeco.com to register your interest.

Potential payoff: New Zealanders who suffer food insecurity get a pot of delicious honey to help relieve the pressure of putting food on the table ... and you earn good karma.

JANE PIERCE'S RESEARCH ON MUSCULOSKELETAL DISORDERS

Jane wants to help us better understand the **impacts of beekeeping on our health**. She's not a beekeeper, has little connection to the industry, yet is willing to dedicate years of her life to provide research so we, and beekeepers of the future, can lead healthier lives. Our apathy to this sort of work risks putting people like Jane off contributing to our industry. Email bkstudynz@gmail.com to take part.

Cost to beekeeper: \$0 and 15 minutes of your time completing a simple questionnaire on your everyday activities.

Potential payoff: Some beekeeper someday retires with their back intact.

TINA BLUMENTHAL'S APICULTURAL DATA SURVEY

Tina's research project is detailed in her letter to the editor this month. She wants to better understand how beekeepers capture management data, to try and recommend improvements the industry could make. The survey is very simple to answer and took me less than 10 minutes. It can be found at: <https://forms.gle/WNmrEgAGRfUhND6X8>

Cost to beekeeper: \$0 and 10 minutes of your time completing a simple questionnaire on your everyday activities.

Potential payoff: Tina's research leads to improved management practices which means we can all work more hives each ... or less as your preference may be!



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Letter to the Editor

Apiculture Data Survey – You Can Help

My name is Tina Blumenthal, and I'm a Senior IT Lecturer at Eastern Institute of Technology (EIT) in Tairāwhiti. My area of specialty is data, data analytics and database management systems and I've recently become a hobbyist beekeeper.

I am undertaking a Masters in IT with a focus on data management in the Apiculture sector. My research has shown this is a fragmented industry, with gaps in how is data is recorded, stored, shared and used, that might otherwise benefit beekeepers.

The aim of my thesis is to identify opportunities that we as a sector can explore to increase the productivity of our beekeeping operations through improved data management practices.

As a starting point, it is important to survey everyone and capture as many opinions as possible. As such, I have developed an Apiculture Data Survey that will allow us to collect good base information from which we can gain insights about what is important to each of us, as beekeepers.

I would be very pleased if you could take 15 minutes to complete this survey. Some early results will be made available to the whole sector through Apiculture NZ.

Click on this link to take the Survey:

<https://forms.gle/WNmrEgAGRfUhND6X8>

Regards, Tina Blumenthal.



Kaimai Range Honey owner Jody Mitchell is all smiles after the Bay of Plenty beekeeping business earned a bronze award for their Kaimai Special Bush Honey at the Apimondia Beekeeping Awards, held in Istanbul, Turkey, in August. The honey is made up of rewarewa and tawari nectars.

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