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Beekeepers report a bounce-back honey season

A Bounce-Back Honey Season



Following on from a dreadful 2022-23 honey season where the national crop was at least 40 percent lower than any of the previous five years, and which some veteran beekeepers called the worst they had seen, apiarists over much of the country are in the midst of harvesting what shapes as a better than usual crop. There is still plenty of hives to check and the hard work of harvesting and extracting many of the honey boxes, but most are confident the end of season volumes will be favourable, if not the price.

"Above average" are the words turned to by many beekeepers canvased for their assessment of the honey season. Coming off the back of a paltry honey season, comparisons to 12 months ago are of little value. So, comparisons to longer-term averages are the go-to, and few think their crops will dip below the average.

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New Zealand's island make-up means results always vary between regions, but for the most part complimentary amounts of rain and sunshine appear to have provided both the flowers and nectar needed, combined with flying hours for the bees to work in.

Across the lower North Island beekeepers are generally reporting positive honey volumes, and that stretches south-west to Golden Bay at the top of the South Island and even down the West Coast, where the sporadic flowering rata trees have seen some bloom. Conversely, further east in the South Island, especially in the high country, a dry summer looks to have made hives there the least productive in New Zealand.

NORTH ISLAND

In a season where not as many hives have been placed on mānuka sites, due to diminished pricing, a favourable clover/ pasture flow has been welcomed, while those who have braved the high-end honey backlog and headed for the hills and mānuka have also been impressed with returns.

"It's been good. There's so much honey it's not funny," says Rob Murray of Tai Tokerau Honey, which is based in Northland but migrates hives around the North Island.

"The mānuka season up here in Northland was touch and go, but after that the honey has been pouring in. I was down in Dannevirke not long ago and the hives there had honey pouring in. One of the best seasons I have seen down there. A lot of it probably has to do with there being less hives around."

A "good average" crop was still achieved in Northland he says. Kintail Honey has tens of thousands of hives spread across much of the North Island and owner James Ward is bullish, without getting ahead of himself.

"It is shaping up well, but you never count your chickens before they hatch," Ward says.

For the most part the weather has been good, but it didn't play ball for bush crops in Taranaki or the Manawatu for Kintail. Over in the Hawke's Bay, pasture honey returns have been strong though.

Like Ward, Russell Berry and his family's Arataki Honey business has seen many honey seasons with many hives, and so he is coy about returns.

"Some areas are good, some not so good. There is quite a variation. There is very little rewarewa crop, but we are having a good clover season," Berry says.

> It's hard to find any beekeepers who can report a rewarewa flowering, limiting bush honey takes in many areas. That includes Bay of Plenty where Jody Mitchell's Kaimai Range Honey is based. "We did six tonne last year and we will probably do 20 to 25 tonne this year, but mostly pasture. We were doing a lot more than that in the past," she says. In the Waikato moisture in the ground is meaning the pasture boney season is

is meaning the pasture honey season is hanging on, but not overly strong.

It's been a long and strong mānuka flowering in Taranaki says Egmont Honey chief executive James Annabell who has been finding full boxes and capped frames during hive inspections right across the region in January. "It is ticking away fine, but you would expect it should be coming in a bit more," Mitchell says.

Out on the East Cape the Golden Grove Apiaries mānuka hives have filled up as the sun has shone in the new year says owner Jason Stanley.

"It's definitely much better than last season and shaping up as average to good. Early season, in December the weather was good, but then there was a lot of rain through Christmas and New Year. Since though, January has been good, with only one storm and it didn't stop the flow," Stanley says.

Jim McMillan at True Honey Co, known for helicoptering hives in to remote locations to chase high-end mānuka honey, has been pleased with results down the North Island, after Northland didn't fire for them.

"Production was favourable in our mid-season blocks, through the Tauraruas and over to Raetihi they have done pretty well," McMillan reports.

"It would be one of our better seasons, certainly in the last few years. It's looking good with some nice honey and fully-capped frames. It will be interesting to see how it tests out. We have just started extracting, but I am pretty happy really."

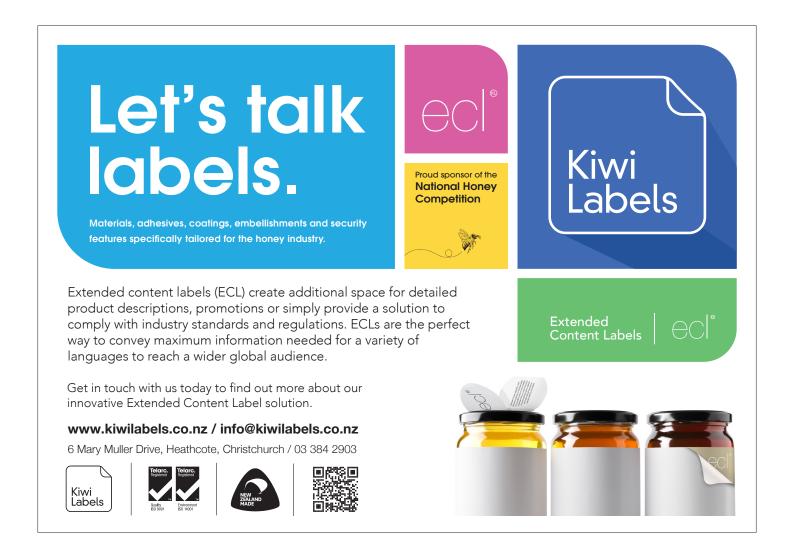
Up at Kinloch Honey, on the Central Plateau, owner Lee Tahere says with so many full mānuka honey drums still in the shed from past seasons, he is not as put off by the "patchy" mānuka flowering in their main blocks this summer, but encouraged by the other varietal flows.



"The weather was a bit up and down, but we got there in the end. A bit of sun in January had the honey pouring in and we had to race around and whack extra boxes on," Tahere says.

"It was pretty much all kamahi this year, the rewarewa didn't do anything. Then the clover came in and we put a full-depth box of foundation on in January and they have all filled it up. Some have done a couple of boxes."

The mānuka flowering was better in the Wairarapa for Hunter Reilly, which owner Stu Ferguson was relieved to see, after early signs were not promising.



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"It didn't look like it was going to get there, but it was a protracted flowering, coming out bit, by bit, by bit and it has gone on, and on, and on. Not a heavy flow, but a long flow. It meant we have had some troubles with getting our hives out of one block and on to the next for a second flow," Ferguson says.

Perhaps the best mānuka flowering of all has been saved to the end though, with the later budding Taranaki region hitting its straps in January and into February.

"I don't think I have ever seen flowering as good and it is holding on," Egmont Honey chief executive James Annabell reports.

"Eastern Taranaki is white. I've never seen anything like it. We have had good weather, with touches of rain, which I think is keeping it flowering."

SOUTH ISLAND

It's not far from Taranaki over the Tasman Sea to Golden Bay at the top of the South Island, and Nelson beekeeper Murray Elwood of Mountain Valley Honey says beekeepers in the northwest of the island are reporting a "boomer of a season", while in his own hives further east and into the Marlborough Sounds it's just "average". Finding more luck in the Sounds is

Rainbow Honey general manager Lubomir Dudek, whose hives span Marlborough, Nelson and the West Coast. He says they have

Rainbow Honey beekeepers at the top of the South Island are finding crops of about two full depth boxes per hive, meaning busy apiaries like this when it came to blowing out the supers in January.

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averaged two full-depth boxes per hive across the operation.

"It's been a good mānuka crop in the Sounds and Buller area and a bit in Greymouth, and there is a decent amount of northern rata on the West Coast," Dudek says.

Rata trees tend to flower only sporadically from season to season, with sometimes as many as four years between significant showings. Southern rata has not flowered well this summer says inter-generational West Coast beekeeper Gary Glasson, but they may get some honey off it. While it is early to make any definitive statement on the Coast, he is another tipping an "above average" honey return.

"The kamahi got good weather and it flowered really thick, as good as you will ever see it flower. The mānuka seemed to keep flowering, and flowering well, so for mānuka we are probably having our best summer since that big 2020 season," Glasson says, reporting from his truck during a late January night moving hives to chase more honey flows.

Across the main divide in North Canterbury Natural New Zealand Honey managing director James Malcolm also says they are heading for an "above average" crop. With mānuka honey prices so poor they are chasing volume rather than highactivity honey, and inland sites have not been as productive as those closer to the coast. He puts that down to a November frost hitting the higher altitude mānuka buds. As the calendar turns to February the dry is hitting in Canterbury and the flow has all but ceased Malcolm says. That is a state beekeepers further south know well this season.

"There is a drought in the Mackenzie Basin. We usually average about 80 tonne up there and it is looking like we will get 20 this year," says Walker Jacobs of Pleasant Point Apiaries in South Canterbury. "They haven't had any rain all summer, so as soon as the willow stopped there wasn't much after that. Just a wee bit of blue borage, but the clover burnt off. It can be blue with borage up there, but it was just the roadsides this summer. Quite a few empty boxes and quite disappointing."

Closer to the coast in South Canterbury it was contrasting weather, but similar honey results, with some rain and a lot of overcast days.

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Team leader Matt McClintock shows off one of the full honey frames in the beehives of Natural New Zealand Honey in the hills of Canterbury, where managing director James Malcolm says they are experiencing an "above average" season – a refrain of many beekeepers around the country. "They never got a good flow to build up the hives, but it did start to come right towards the end of summer. Some of the boxes look alright, but each hive has probably missed out on a box of honey just by not getting the sunshine early enough," Jacobs says.

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The dry has extended into Central Otago too, with Taylor Pass Honey Company's Steve Wootton not expecting much honey and saying he knows beekeepers who shut down their honey harvest in January after only meagre returns.

In Southland they are getting the rain Otago would like, meaning their pasture flows are ongoing as clover holds its flower.

"Patchy and late" is how Miele Apiaries owner Chris Fraser is describing their Southland honey season, just days after putting out some more honey supers in late January.

"The season is all over the place. It was six degrees yesterday. Madness," Fraser reports.

"The ground temperature has only just got up to 18 degrees (Celsius) in the last few weeks for the clover. So the flow is later, but it is happening. Typically when we get the rain we have it means a prolonged flow, but not a strong flow. We just need a bit of heat and it will go."

If they get that heat in February, the Southland pasture honey harvest will join strong takes off the farm lands of the North Island too. While rewarewa may not have flowered, stronger showings of other bush flowers such as pohutukawa and kamahi, will provide bush honey volume, along with some encouraging mānuka honey takes – where beekeepers have made the effort to place their hives.

With that in mind, Rob Murray in Northland sums up the thoughts of many beekeepers struggling to find a willing honey buyer at an acceptable price.

"Getting the honey is one thing, selling it is the hard bit these days." $\ensuremath{\mathfrak{K}}$

Rainbow Honey beekeepers blow bees out of honey supers. Mānuka, kamahi and rata have all provided flows across their apiaries.



HONEY MARKET CHAT | FEBRUARY '24

Quarterly Honey Market Chat - February '24

The Quarterly Honey Market Chat is a space for honey buyers to connect and inform honey producers – the beekeepers. Here's what the teams at Egmont Honey and Airborne Honey have to say about the markets as the honey harvest hits full-noise.

Airborne Honey

John Smart, Bev Foulds, Ian McRae.

A TIME FOR CHANGE ON THE HONEY BUYING FRONT

John: For me, it's been 14 happy years talking with beekeepers and buying

Airborne's annual honey requirements. Over these years I have built some great relationships with beekeepers during a period where the industry has gone through some of the most significant changes in its history.

It's time to pass on my honey buying responsibilities to Bev and Ian while I focus on growing international sales. Ian has worked for Airborne for nearly 30 years, initially as a beekeeper before Airborne sold its hives and Bev has been with Airborne for 10 years in a food safety/ compliance role.

Thank you for your support and best wishes.

And from Bev and Ian...

We are at the start of another season actively talking to beekeepers to understand what to expect from the 2024 honey crop. Early indications suggest the crop will be better than last year.

We are buying all honey varieties, looking to fill our consistent export, domestic and bulk requirements. Give us a call if you have honey you are wanting to sell honey or have any questions.

2023 Export sales are expected down in volume and value compared to the three previous years. This trend is likely to continue while international household budgets remain under pressure and the consumption of monofloral declines in favour of multifloral mānuka.

Pasture and clover honey prices are likely to be the same or slightly stronger than 2023 on average, however this depends a lot on export sales demand and the 2024 honey crop.

On the domestic front Airborne continues to grow strongly, increasing market share in a very competitive market. It has been great to see household consumption of honey continue to increase in New Zealand, due to more affordable manuka prices and honey being sold in easy-to-use upside-down squeeze packs.

We look forward to talking with you all over the next few months.

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Egmont Honey James Annabell *Chief Executive*

I've spent the last few weeks speaking with beekeepers in different parts of the country, as well as surveying the situation in our own hives, and it promises to be a productive honey season. I took a look over Taranaki by the air recently and the mānuka flowering is very strong. What stood out to me was areas that would usually have hives, were without. It's evidence on the ground of what a lot of beekeepers have been tipping – that they are not willing to make the costly journey to some mānuka blocks this season. You can't blame them.

At Egmont Honey we are in a position of sitting on high levels of mānuka honey inventory and so there will be little change in our pricing for mānuka honey to that of last season. Beekeepers shouldn't take from this that we are not buying mānuka though – we have bought a lot in the last year to help keep business going. Pulling a silver lining from the situation, the access to mānuka honey allows us to push into more international markets. Our partners want to see a guarantee of supply and so holding a large inventory of honey is very important, as is access to ongoing supply.

So with that in mind, we are currently very willing buyers of bush and pasture honey. Production of pasture honey in particular appears to have been strong and so pricing is similar to last season. Pricing above that point makes us uncompetitive internationally. As it is we are competing on the shelves in Woolworths Australia with honey bought from Aussie beekeepers for AUD\$4.50.

The country's export honey totals declined last year, but we are growing some new areas. Recently we sent out a shipment to Korea where our honey is now on the shelves of Hyundai Department Stores, a major retailer. Even more promising is a deal struck with a Chinese eCommerce distributor. Green shoots are out there!

There you have it – we need more bush and pasture honey, mānuka we all know the situation, but we are still buying some, especially off beekeepers who are offering it alongside a portfolio of other honey varieties. With hive numbers in NZ declining, it's important for us to strike up productive relationships with beekeepers. So, whatever honey is in your shed, get in contact and get on our radar, we want to know what you've got! *****

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Egmont Honey is proud to be sharing New Zealand honey with the world, and with demand increasing in 2024 we're in the market to purchase multifloral honey (both Mānuka and Bush). If you are looking to secure a competitive price for your honey and partner with a growing business, please get in touch.

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Can you imagine producing more than 10,000 mated queen bees a week, or 365,000 total across a season? That huge work load was the reality for Gus Rouse and his Kona Queen Hawaii business by the end of his 40 years at the company, most as the owner. The now-retired American beekeeper recently holidayed in the South Island, but the visit wasn't completely without beekeeping as he visited a Nelson queen breeding business and then reflected on his journey from the wonder at first seeing inside a beehive, to owning and managing not only America's, but one of the world's, largest queen bee businesses.

The numbers are staggering – each year Kona Queen alone produces enough mated queens to requeen over 60 percent of New Zealand's just under 600,000 registered colonies.

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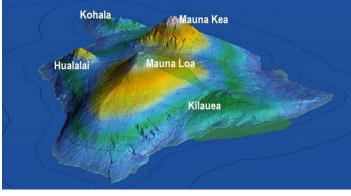
Kona Queen is located on Big Island of the American state of Hawaii and has what Rouse calls "perfect conditions for raising queens".



Now retired from owning Kona Queen Hawaii and the rigours of producing hundreds of thousands of mated queen bees a year, Gus Rouse and wife Sandy Pelzel take in the South Island scenery on a recent holiday.

"The island is kind of shaped like a boomerang or a heart and we are tucked in that protected area on the leeward side of some huge volcanic mountains, protecting us from the Trade Winds. It's warm temperatures, no wind and 360 days of sunshine," Rouse says, speaking from Nelson airport shortly before hitting the skies on the way home to Hawaii, following a mountain bike tour of the South Island with his wife Sandy Pelzel.

While Rouse, points out that not all of the 365,000 queens produced were sold, with four percent extra queens included in any order shipped to account for any losses in transit, as well as many used for requeening their own hives. Regardless, the output is exceptional.



Hawaii's Big Island's five volcanoes provide a great windbreak for queen bee mating success.

Big Island, also known as Hawai'i, is the largest of Hawaii's eight main, or 137 total, islands. Volcanic mountains provide the windbreak to the western side, two of which stretch to almost 14,000 feet or around 4,200m, both approximately 500m taller than Aoraki/Mount Cook.

While the geography and tropical climate plays a big part in being able to be home to one of the world's largest queen bee breeding programmes, a lot of human toil is needed too. When Rouse sold up Kona Queen to US mainland beekeeper Kelly O'Day in 2017 and headed for retirement the business had 35 employees and about 28,000 nucleus hives, plus 5000 support hives, for raising their. 365,000 mated queens from. That was a far cry from the 26,000 queens produced the first season when Rouse took an ownership share in the early 1980s.



"Kona Queen Hawaii grew much bigger than I ever thought," he says of the business which breeds both Italian and Carniolan strains of honey bee.

The story of that growth is not only one of beekeeping nouse, but lobbying government agencies for change, good mentorship, some luck, sleepless nights and a lot of hard graft, the American apiarist explains.

COMING TO HAWAII

Before making Big Island his and his new brides' home, Rouse had spent most of his 20s running a successful beekeeping business of about 800 hives on the US mainland in the 1970s, alongside his brother.

"We ran the hives for pollination and honey, in almonds and prunes in California and then alfalfa (lucerne) seed production in Nevada. Later in the season we would move them up into southern Oregon, then back to California. We had a small circuit compared to most American beekeepers. They were going Montana, down to California, back up to Washington. You come to a point where you can't tell if you are a beekeeper or a truck driver. You have to keep bees during the day and drive a truck at night."

His honeymoon to Hawaii in 1978 piqued his interest in beekeeping on the islands and he relocated the approximately 2000 miles, or 3200km, south west across the Pacific Ocean to begin work at Kona Queen, which at that stage had been operating for just three years. It was founded by two big players in beekeeping on the US mainland, Roy Weaver and James Powers.

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Access all New Zealand honey types at the click of a button. Both those men would prove to be great contacts and mentors for Rouse in his time as first an employee, then one third owner alongside them, before taking outright ownership in 1993-94.

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"One was the country's biggest queen breeder and the other the biggest honey producer," Rouse describes Weaver and Powers.

"They decided to start this little company in Hawaii because they thought the conditions were ideal for queen breeding. They just had it managed though and didn't participate a lot themselves. They donated beehives or money or whatever it was to get it going."

Rouse initially intended to work on one of the smaller islands in more general beekeeping practises, but decided to get started at Kona Queen when they had an opening, despite some scepticism.

"We had raised queens in California, and I thought that was the hardest, busiest time of year for us. So, I was not excited, but in the end it worked out great," Rouse reflects.

Great indeed. After just a year in the manager quit and, despite being unsure at first, one of the owners convinced Rouse to step into the role.

"I told him that's what I came for, but didn't know if I was qualified. He said he could help, 'call us when you need'. He gave great advice. It wasn't making any money, but they then gave me a pathway to one third ownership, if I could show a profit."

A profit they showed and by 1985 Rouse had paid off his one-third share.

Early on his mentors encouraged him to serve on one of America's two main industry bodies, the American Beekeeping Federation. He would spend 12 years on the board and six on the executive committee.

"You meet a lot of people and sooner or later they are going to want to buy some queens and they will think of you. That all worked out and I learned a lot about government and international trade. I enjoyed my time on the board, but it was all voluntary. No one offered to pay your air fare or hotel room or anything. It was 'congratulations you're on the committee, here's when the next meeting is'."

Serving the industry in that manner was very much a worthwhile investment of his time and resource though, as it would lead to change in international bee trade that would launch his business into a new stratosphere.

OH CANADA

When Rouse bought out his partners in 1993 and 1994 to take full ownership, his timing was good.

"In 1993, after five years of working on it, I was able to get the Canadian border open and access to that market. In '87 they had closed to all US queens and bees. There were huge companies put out of business overnight on both sides of the border. It was really a rough go. It took me until 1993 to convince authorities that we weren't going to be shipping bees from our partners in Texas to circumvent their rules, that they would come from Hawaii. From then we didn't really produce honey, we just focused on queens and it extended our markets.



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"We starting having queens ready and sending them out from early February, building up to our biggest shipping week of March 25. Then when the Canadian market opened, our next biggest week was May 5. So, it doubled our production and meant we could go through and harvest five more rounds in all our nucleus hives. It provided a much more viable business."

In New Zealand a "round" in a queen mating unit between each potential successful mating is usually 25-30 days. However, in Hawaii the more conducive weather for bee flight makes in 16 days. There are also enough drone bees in the colonies to make for adequate mating partners for the queens almost all year round. The combination of ideal conditions and market forces saw Kona Queen boom in the 1990s and into the new millennium.

"We went from having three months in the black and then hanging on for the rest of the year, to by the time we left we actually had 10 months of positive cash flow. For only two months around Christmas, where we were getting set up for the coming season, did sales slow down."

As well as the Canada market opening up, Rouse says US beekeepers began to extend their queen demands more into autumn once varroa began to bite and they realised autumn splits gave them the required amount of time to get hives up to strength before being used for pollination services or honey gathering. The growing almond industry and the requirement for honey bee hives for pollination has helped beekeeping prosper on the US mainland too, and with it the demand for queens increased. "We ended up raising more queens than anyone I've ever heard of. We weren't doing it for glory, we were doing it because the demand was there," Rouse says.

IN THE HIVES

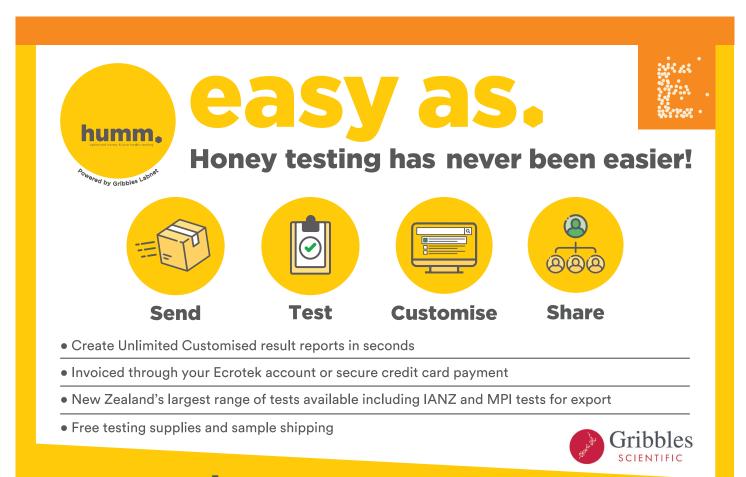
With 28,000 nucs running during peak production, requiring 12,000-15,000 cells to be produced a week, from January all the way to November, it was, and is, a long and industrious season at Kona Queen. They always tried to carry out their first graft of queen cells on the first working day of January, "That's probably the equivalent of June 1 for you guys", Rouse says to explain the extreme length of their season.

Those cells would go into two-way nucs with frames 6.5 by 9inch in dimension.

"We designed a stand you could put any box in and make two nucs out of it. We had a two-way hive then. In Kona it is so rocky. You will never get stuck in the mud, but you might in the rock and grass. So, we had all our hives on stands which you could bounce around in the rocks to get level."

While they didn't target November or December matings, he says they got very good at supplementary feeding to ensure hive strengths year-round. Protein patties and "candy boards" of sugar cooked to a rock candy were used, as well as sugar syrup at different times of the year.

"Often times it would be really dry and hard on the bees in Kona, we would be feeding them heavily weekly with pollen pattys and



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While in New Zealand, Gus Rouse, right, fit in a visit to Nelson-based queen breeding business Kiwi Quenn NZ and owner Matt Goldsworthy.

sugar syrup, but then we had some areas up in the volcanoes at about 6500 feet at a totally different climate. So, we had some backup sites. If we didn't feel some of the areas had enough drones we could bring hives down from the mountains and they would be full of drones. Huge hives."

They also ran 5000 full-sized hives for bees and drones to support the mating units.

When he first arrived at Kona Queen they had a reputation for breeding aggressive bees due to cross-breeding with feral German black bees. It took nearly a decade to breed a gentler stock Rouse says, which included learning and implementing artificial insemination.

While Hawaii has closed borders to bee imports, they have had varroa since at least 2007 and small hive beetle since 2010, the later is not yet found in New Zealand.

"Small hive beetle is equally as bad as varroa, at least until we learnt how to contain it. You have to be a better beekeeper and have strong colonies to defend themselves. Frame spacing is important. If you have frames pushed up against the walls of the hives then beetles will jump right on. But, as long as the bees have access to everywhere in the hive, and they are strong, then the beetles never have a place to hide and lay eggs. They move fast though," Rouse warns.

When the beetle, which feeds on pollen, honey and even bee larvae, first arrived it posed a big challenge until their management practises adapted, the veteran queen-breeder says.

"It was a tough couple of years there to maintain queen production. The beetles would be taking out hundreds of nucs a day. A couple of years without sleep and we made it through."

OUT THE OTHER SIDE

All those challenges are behind Rouse now though and he hasn't had a single hive to his name since selling up in 2017. He still lives in Kona on the Big Island only a couple of minutes drive from his former business though. Along with wife Sandy, the pair now have time to enjoy holidays at any time of the year – including mountain bike sojourns to New Zealand in January – and reflect on over 40 years of beekeeping.

His trip to New Zealand included a visit with former Ministry for Primary Industries employee Lou Gallagher in Nelson, the pair having crossed paths on a beekeeping course in Hawaii previously. While there they called in on Kiwi Queens NZ, a Nelson-based queen breeding business owned by Matt Goldsworthy and Sarah Brooks. There he got some education on New Zealand beekeeping, where mating percentages around 50-60% for a season are common. Rouse says they worked on about 80-85% mating success in Hawaii.

And, as for the mānuka honey, he couldn't bring himself to buy any.

"When I first came into New Zealand I saw 8oz (225g) for \$65-70 and I thought, this is unbelievable. Now I'm leaving without any. I have produced a lot of honey and I am not going to pay that. Then I found out later on the tour that someone bought some for \$15 down near Queenstown."

He has learned of some of the pain Kiwi beekeepers are experiencing with honey prices at present, and has some advice.

"I was told long ago, don't leverage yourself too much. Don't overspend. Because the market is going to go up and down, especially if you're in the honey market. If, and when, it does go down, and you are not indebted to the bank, you can buy a lot of hives for cheap. Then, when the market goes up again, you will have a lot of hives to produce honey with."

That's all behind him though and while he remained active in the hives until he was 66, he was glad when a willing buyer came along. Getting to that point was the result of many years dedication to the craft of beekeeping, sound business management and industry involvement, which any beekeeper can learn from.

"From '81 to '95. Those were the grind years. After that I thought we could actually support the family and send the kids to college, and all that," Rouse surmises.

"I had a great foreman for years and years and great people in the office. We had good people around us and it was a team effort for sure," he says, adding "my last 15 years were the best, the first 30 were a lot of hard work and I am just thankful I enjoyed it". *****



Gus Rouse discusses some of the finer details of queen bee cell raising with Matt Goldsworthy of Kiwi Queen NZ.

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Wasp Hunter Needs Beekeepers' Help



Ever thought that wasps were good for nothing? Have you wondered why they were put on the planet? If you are a beekeeper you might have a particularly high distain for the winged predators as they compete with and prey on your stock. However, there is one man in New Zealand who has made a living from them, but his job is getting harder and he is turning to beekeepers for help...

"If beekeepers are seeing German wasps robbing honey or killing bees, or just floating around the trees, I'd be really keen to hear from them," John Eason says.

"I don't need to know where the nest is, I can usually find it myself."

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The Golden Bay-based wasp collector and owner of Waspol NZ Ltd has spent 27 years searching for and capturing *Vespula germanica*, aka German wasps, as well as collecting pollen from trees and sending them to labs around the world to be used for immunotherapy. That is, desensitisation treatments for those allergic of wasps stings, or with pollen allergies. In recent years Asian paper wasps have also been sought after for the same purposes by Eason.

"I'm the only person in New Zealand who loves wasps. I get a fair amount of stick," Eason says.

"They know me too. If I'm sitting around at a BBQ they come and see me. I have a theory that, if I have been collecting that day, they can smell me, from the venom that might have accumulated on my beesuit." Once he finds a nest of a suitable size Eason has a vacuum device to suck the insects out, which he then freezes whole until he has enough to send off to labs, primarily in the USA or UK.

"All we want is the whole insect. We do not extract the venom. That is a highly technical process which has to be done in full laboratory conditions," Eason explains.

When he started his business in the late 1990s – after an old school friend contacted him from America to see if he could supply some wasps – large germanica wasp nests were far more common. Now, due to the use of Vespex wasp bait, and stormy weather in some key North Island nesting sites, the nests of substance are hard to come by and thus Eason is hoping the general public, including beekeepers, can help him identify German wasp nests which he can practically access.

His is a 'Has wasp vacuum, will travel' advertisement, meaning if a German wasp nest is big enough he is willing to travel anywhere in New Zealand to get it. They do have to be within 500m of vehicle access though.

Happy hunting grounds in the past have been his Golden Bay location at the top of the South Island, as well as Northland and



German wasp, Vespula germanica head sideon – a complete yellow band behind the eye.

German wasp, Vespula germanica - black dots on the abdomen, which are usually (but not always) separate from the black rings.





Common wasp, Vespula vulgaris head side on - a black mark behind the eye.

Common wasp, Vespula uulgaris - black dots on the abdomen, which are less defined and more likely joined to the black rings.

South Head in North Auckland. Warmer climates mean wasp nests can survive winter and so they are then generally large. South Head is a particularly conducive area, with the sand making easy digging, plenty of dune lakes to provide insects water and the hunting of fallow deer common, meaning gut bags and carcasses are left behind to provide wasps ample protein.

Auckland's inclement weather last year has wiped many queen wasps out though, and so now Eason is having to look further afield. He believes the Kapiti Coast and Wairarapa could hold some big nests.

He cannot collect from any areas where Vespex has been used recently, for risk of contaminating the samples. Just as importantly, he does not need common wasps, and so has some tips to differentiate the germanica and vulgaris (common) species.

"The best way to determine German or common is to look on the tops of the trees as they are flying around. The Germans work over the tops of trees hunting. Common wasps will be inside the trees. The definitive way to tell the difference if you have the wasp in front of you is the general band on the side of the face. The Germanica are much brighter yellow and not as hairy, but the general band on the side of the face is an unbroken yellow. The vulgaris, or common, wasp tend to be hairier, slightly smaller and the general band has a black smudge in the middle of it.

Then there are the markings on the back of the wasps.

"The dots on their back, on either side of the arrow, are always fully separate on Germanica. On the common wasp they can be separate to some degree, but there will always be at least one

band that has joined up dots and the dots will not be as defined, they will be a bit clumpy," Eason explains.

He asks beekeepers to try and get a photo of them if possible and with that, and a chat on the phone, he can usually determine if he can help and the required travel is worthwhile.

Germanica nests can get as large as a truck, but the biggest he has seen, many years ago now, was as big as the front section of his truck. From it he harvested 32lbs of live wasps, "that's 64 sandwich-size snap-lock bags".

As for stings, well he has had his fair few, and like beekeepers he manages them a lot easier after so long in the job. He is quick to know when strife is nearby and can usually correct the situation after just one sting he says. It's usually because a zip on his suit has not been fully closed. That suit is imported from the USA and has several layers of material, as the common beesuits here did not provide enough protection.

While German wasps are his primary target, Eason also wants people to alert him to any areas high in paper wasp populations.

"They love tree protectors, they love silage pit tyres. Those are the sort of areas where we are after them. The one, or two, or three nests on someone's eves is not worth the effort to collect them," he says.

It's a unique way to make a living in New Zealand and now he hopes to help beekeepers who might be having hives hindered by particularly troublesome German wasp populations make theirs.

"I am trying to throw the door wide open to find new sites." John Eason, owner of Waspol NZ, can be contacted via phone 020 4007 9983 or email waspolnz@gmail.com 🕷

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RAINBOW HONEY NEW ZEALANE

Familiar Foes – But Which is Worse?



When we test bees in the lab for a range of pathogens, we can obtain precise quantities on a range of bacteria, fungi-like cells and viruses – and often the colony appears healthy. Some new work published is a return to 10 years ago and triggers us with two words: ceranae and passim. As in *Nosema ceranae* and *Lotmaria passim* – two of the pathogens we found during a syndrome that first broke out in the Coromandel and the Wairarapa back in 2014.

BY JOHN MACKAY

Thus, it seems appropriate that it was Dr Oksana Borowik who sent this recent paper through to me – a commercial beekeeper and scientist who drove much of the research into what was leading to the deaths of hundreds (and thousands nationally) of spring nucs and colonies. Our laboratory was the first to confirm that bees from these colonies had very high levels of both Nosema ceranae (only recently discovered in NZ at that time) and Nosema apis (which has always been present in New Zealand's honey bees,

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as far as we know). At the same time, a newly classed organism known as a trypanosome had been reported in the USA. It didn't escape Oksana's attention, but we had already designed a DNA test for this new Lotmaria passim and soon confirmed it was present in these spring dwindling hives (**Stuff, 2015**).

It always needs to be said, this was a new detection – not a new introduction into New Zealand. From our bee testing around the country, L. passim turned out to be widespread and at varying levels among bee samples. Without seeing the health of the colonies, it has been difficult to accurately assess the effects of L. passim as a hive measure. A story unto itself (previously believed to be another organism), L. passim has been associated with major overwintering losses in Belgium (*Rauoet et al., 2013*, note: this work's title shows *Crithida mellificae*, but it was later shown to be all *L. passim*).

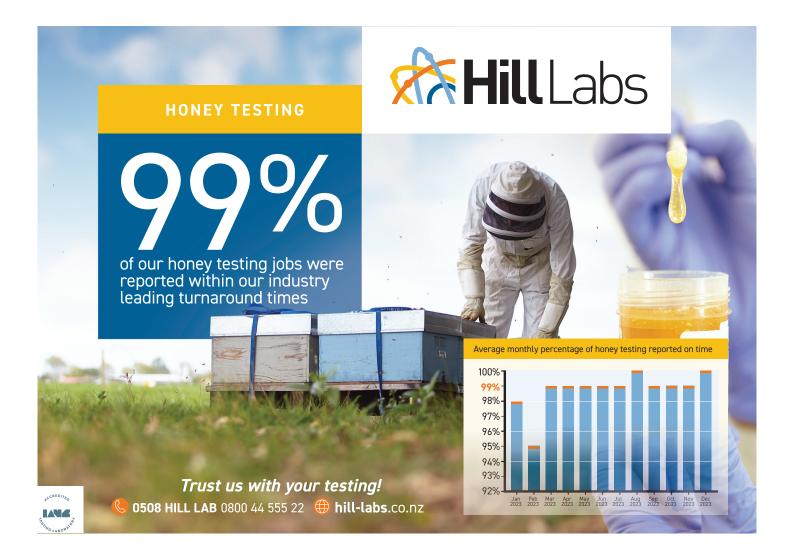
The newest work turns this to a tale of two parasites – literally, it's in the title of the open access paper A tale of two parasites: Responses of honey bees infected with Nosema ceranae and Lotmaria passim. The authors infected newly-emerged bees with either or both N. ceranae and L. passim and used two measures of bee health – the time taken for half the bees to die as well as their interest in higher sugar concentrations (acting as a marker for hunger or energy stress). It could be expected (as the authors did) that the double whammy of both L. passim and N. ceranae would shorten the lifespan, compared to one or other organism alone. And that the interest in sugar would also increase due to the energy stress from the pathogen(s).

Nope. Nosema ceranae alone turned out to be the most pathogenic – shortening the lives of the bees in this experiment, by four days compared to the mixed infection of *N. ceranae* and *L. passsim*. The mixed infection in turn led to bee deaths 8 days sooner than *L. passim* alone ... which shortened lifespans by another 8 to 11 days. In short, *N. ceranae* was shortening lifespans of bees by nearly 3 weeks! The pathogens did lead to increased sugar feeding, but there was no statistical difference among the pathogens/mixture of pathogens.

It can be difficult to compare this decrease with other studies where *N. ceranae* has been fed to bees. A previous study showed a double hit of its own kind when it compared *N. ceranae* to *N. apis* and mixtures of the two (*Milbrath et al., 2014*). Here the bees were fed 30,000 spores (median decrease of seven days) whereas this current work fed three times higher amounts. However the current work confirms the mortality effects by *L. passim* and once more shows the danger of (often invisible) nosemas in bees.

(**Editor's note:** John excellently described how beekeepers could identify the signs of nosema in their hives in this September 2022 column.)

John Mackay is a molecular biologist and the technical director of Gisborne-based lab dnature diagnostics and logistics, as well as a hobby beekeeper.



Brood Interruptions Book Review



BOOK REVIEWED:

AUTHORS:

PUBLISHER: AVAILABLE VIA: REVIEWED BY: Bee Colonies: Towards sustainable varroa control using biotechnical methods. Aleksandar Uzunov, Martin Gabel, Ralph Büchler. Apoidea Press. www.amazon.com.au \$38.24 + delivery. Patrick Dawkins

Summer Brood Interruption for Vital Honey

There isn't a Kiwi beekeeper out there who isn't aware of the continual threat which varroa poses to their honey bee colonies, and very few who are not looking to expand their knowledge and improve their management strategy. While we hope for scientific advancements to assist our varroa control, as the pesky mite gradually grows resistance to miticides, in the meantime there are potentially management practices, such as brood interruptions, which could help.

With this in mind, this book on brood interruptions would be a welcome addition to many beekeepers' libraries. While it is authored by three Germany-based bee scientists and converted to English, it is written in a manner making it highly pertinent to Kiwi beekeepers. The book is also self-aware enough to state that some of the techniques detailed are difficult to scale up to commercial operations. Despite this, the theories presented and practical details required to achieve effective brood breaks are good education, and the book is a handy reference point should such methods ever be used, in large scale or small.

It introduces three methods for 'summer brood interruption': 'brood removal' (i.e. completely removing all brood frames from a hive), 'queen caging' (i.e. enforcing a brood break) and 'trapping comb' (i.e. restricting the queen to a series of combs to trap mites in as the remainder of the hive is broodless). Queen caging is the most common method of these which I have heard used, or discussed, here in New Zealand. In my own operation I am considering trialling this technique to enforce a winter brood break. So this method, at least, is not limited to summer as the book's title suggests.

Each of the three methods is succinctly, but well, explained. It's an A5 sized, paper-back, book which runs to just 80 pages. However, the three methods of brood interruption are detailed over 34 pages, meaning the reader can quickly learn each technique within minutes of reading. Having all the timings and dates of queen laying, varroa's reproductive cycle and the required actions of the beekeeper laid out is a reassuring reference point. The remaining pages provide supporting chapters such as 'Factors affecting applicability' and 'Additional aspects and tips' which help the reader decide what methods are best for their operation and how they can be harnessed to improve hive management more generally.



Written by three Germany-based scientists, Summer Brood Interruptions for Vital Honey Bee Colonies has been converted to English.

It is definitely written by beekeepers for beekeepers too, and by that I mean there are multiple ways of displaying the required information – because we all know each beekeeper has their way of doing things and this goes for learning things too. Each method of brood interruption is explained in text, but then with photos and diagrams detailing timings and actions required. On top of that, each title page has a QR code so the reader can quickly scan with their smart-phone to load a Youtube video of the method in action. It's a modern book!

And it's modern in more ways than one. I read Summer Brood Interruptions for Vital Honey Bee Colonies in probably only a couple of hours combined reading time, and that is perhaps its best quality. In a world where we are attracted by 'bite-sized' pieces of information, its succinct chapters fit perfectly, with short videos and simple but effective diagrams to boot.

So, who should buy this book? Any beekeeper reassessing their varroa management strategy, any beekeeper who likes to keep a library of reference material from expert and respected authors, or any beekeeper who is simply looking to expand their beekeeping knowledge base more generally. The methods detailed would certainly appeal to many hobbyists who are intensively managing hives, or a hive, as they could more practically be introduced on a small scale.

I don't know if summer brood breaks are going to be the answer to controlling varroa long-term in New Zealand, but they very well could have a role to play and this book will help you decide whether they do in your operation or not. *****



Diagrams are well used in the book to help explain the various methods of brood interruption and the allimportant timing of beekeeper action.

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Southern Satisfaction – Southland Bee Society Going from Strength to Strength



Being based in one of the southernmost cities in the world can make for challenging beekeeping conditions, but the Southland Bee Society in Invercargill takes the challenge of sometimes cold and inclement weather in their stride. Maggie James ventures south to speak with club president Lindsay Affleck and secretary/treasurer Marj Baker about what makes their group of apiarists tick.

BY MAGGIE JAMES

Over the past two years the hard-working committee at the Southland Bee Society (SBS) has set about reversing what was a declining membership. Now, thanks to some good PR and beekeeping standards, membership sits at 62 – an increase of 24 over the last 18 months. Established just 13 years ago, the club's membership is mainly hobbyist beekeepers and spread throughout Southland.

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JAM9

While the region might get more rainfall than many others around New Zealand, working in beekeepers' favour is the extended daylight in summer as one heads south on the Mainland. The club takes advantage of this with monthly evening meetings at their Findlay Road apiary in Invercargill where hives are inspected, followed by outdoor BYO cuppa. The club also uses the Commercial Vehicle Centre at Bill Richardson Drive, which provides an area for storage of equipment and club workshops, plus a meeting room which is well utilised in the long winters.

QUALITY ADVICE

All workshops, seminars, BBQs, and apiary evenings are well attended, giving beginners a chance to meet local experienced beekeepers.

"Whilst there aren't a huge number of beekeepers in Southland, we do reach out to local quality advisers," Affleck says.

"We are lucky to have as a club member, Frances Trewby. Frances has reared queens for 40 years. We were treated to a great session on all things about queens – their life cycle, how to

Southland Bee Society members take advantage of extended daylight hours in summer to inspect club beehives in the evening once a month, followed by a cuppar. look after hatching, introduction of a mated queen to a hive, how to sight the queen, and how to inspect the hive without rolling the queen and damaging her."

Trewby served on the Executive of the National Beekeepers' Association of New Zealand 1990-93, including one year as President.

Another club member speaker is Dianne Allan, a local hobbyist beekeeper, and in the commercial sector a well-known queen cell rearer and artificial insemination specialist.

"Dianne gave a very interesting and informative specialist PowerPoint presentation on instrumental insemination," Affleck says.

"In the past year the club was also visited by Grant Hayes, longtime local commercial beekeeper with a wealth of experience and hives throughout Southland. Hayes talked on how he got started, what made him decide to become a commercial operator, and his biggest work problems he faces daily, and was happy to field a variety of beekeeping questions."

On other occasions hands on talks and demos from other club members have covered alternative products from the hive on making honey liqueur, manufacture of beeswax furniture polish, candles, toffee honey, plus lip balm. Other workshops include practical skills such as frame wiring and use of jigs, box construction, and building your own solar wax melter.

HIVE MANAGEMENT

23

Prior to last season, SBS boasted only two hives. With improved



SBS club nights sometimes include demonstrations of practical beekeeping skills, such as embedding wax onto frames as seen here.

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beekeeping practises, there are now three strong hives with three-quarter depth double brood boxes, and three-quarter depth honey supers.

This season, due to building up the apiary and to increase available drawn-out comb, ten frames are in each of the brood boxes and supers. Next season there will be nine frames in the supers, and the year after eight frames, once the comb is drawn. With the current regime of ten frames in brood boxes, extra vigilance and time is required not to damage the queen.

In winter, the preference is to leave on a super of honey rather than feed sugar syrup. This helps the colonies cope with the Invercargill winter which brings strong, cold, westerly winds channelled through Foveaux Straight and hail storms, temperatures below 10°C, and only eight hours of daylight. All these factors affect floral sources and bee flying times.

Varroa treatments consist of spring and autumn miticide strips – alternating Apivar and Bayvarol. The club actively promotes sugar shakes to check mite levels.

Generally requeening is with introduction of a virgin queen sourced from Hayes or Trewby.

"Southland in general this season has had very unsettled wet and windy weather, and this is a bit of a problem getting virgin queens not mated, and quite a few have had to be hit on the head," Baker notes.

The Club also has a couple of members with 40 hives, and these beekeepers are often on hand during hive openings to chat with beginners.

Bee suits worn must be clean, but SBS supplies gloves and hive tools for Club hive inspections.

"On club nights we haven't had as many open hives this season due to weather patterns, and this has been disappointing. I believe there is nothing like opening a hive and letting members go through it themselves. It's a great learning tool," Baker says.

During the season, outside of the monthly club night hive inspection a committee member inspects the hives every ten days. American Foulbrood (AFB) appears to be on the rise in Southland and recently the Management Agency alerted the club to AFB within two kilometres.

"The upside of this notification is that it hammers home to members that every time they inspect their hives, they must be vigilant for AFB. It's given them a bit of a shakeup. If there's any



SBS founder and life member Murray Christensen, right, shows off the clubs display hive during a visit to a local plant nursery.

sunken brood, or cappings with holes present, we undertake a matchstick rope test," Baker explains.

Clover and pasture honey is produced from the apiary and members extract the club honey using various knives and prickers to ascertain the best preparation and extraction method for their home apiaries.

IN THE COMMUNITY

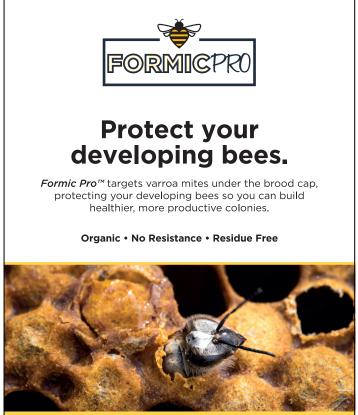
SBS has a strong presence at several local events, which helps drive new membership. Once a year the club has a one day stand at the Riverton Harvest Festival, and again at the Southland A&P Show. In September for one day during Bee Aware Month a stand is manned at Nichol's Garden Centre, Invercargill branch. Glass display cabinets holding one or two frames of bees are excellent at attracting the public.

Using the populated display cabinets committee members visit preschools, kindergartens, senior citizens, and horticultural groups delivering talks.

"At our last AGM, we had two new members stand up and comment on how amazing and welcoming our club is, so we were pretty stoked with that," Affleck says.

From what is likely one of the world's most southern honey bee clubs the enthusiastic committee of the Southland Bee Society are happy and hoping for continued expansion of their membership base and club hive numbers.

To discuss any aspect of this story with the Southland Bee Society email southlandbeesocietynz@gmail.com 🚿



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A Five-Eyes Partnership



Did you know that honey bees' eyes are essential to their ability to fly? Science writer Dave Black takes a deep look into the eyes of the bee and explains their varied and important purposes, which are so naturally ingenious that NASA has harnessed their features to aid exploration of far-away planets.

BY DAVE BLACK

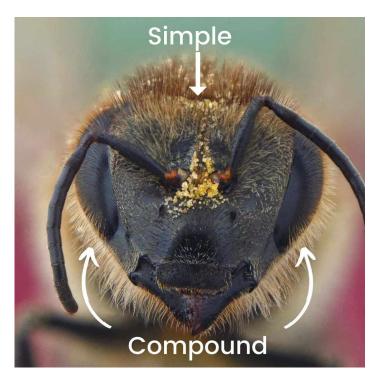
Honey bee have two, relatively large, compound eyes. They also have three other 'eyes' called ocelli (one would be an 'ocellus'), and these are a little more enigmatic. All the bee families follow much the same pattern and have two compound eyes and three ocelli, and it's a blue-print followed by all flying insects, even if the number of ocelli and their structure or shape vary a bit. A few insects that don't fly (like ants) can also have them, but flying = ocelli is a pretty good rule-of-thumb and tells us something about what they are for.

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Putting aside silly jokes about bumble bees, just by looking at an insect you'd never imagine it was constructed for flying, they just don't look air-worthy. Other things that fly and seem to defy physics include a lot of modern aircraft. By prioritising 'stealth' and manoeuvrability we have managed to deliberately build some extraordinarily unstable aeroplanes, apparently only kept up there by the lightning-fast reactions of enormous engines, smart sensors and cunning computers. That's not a tactic insects can use; it's largely ocelli that make that possible.



The honey bee can fly with its three ocelli blinded, studies have shown, but they fly 'differently' as the three eyes on the top of their head help them react very quickly to changes in light.



Honey bees have five eyes, working together to form some essential functions. The compound eyes on the side of the head, and three ocelli (aka 'simple' eyes) on the top of the head.

In honey bees their three ocelli are arranged like a dainty crown on a slight bump on top of their head in a small equilateral triangle above the compound eyes¹. In drones they get shifted forward a bit because of the much larger eyes. The middle ocellus is positioned in front of the other two at the tip of the triangle in a more forward-looking position. The left and right ocelli collect a view mostly from light to the side, and above, the middle one detects light from the front, and from the top and both sides. There is some overlap, controlled to a greater or lesser extent by sitting on a mildly curved surface and being shaded by surrounding body hairs, or bigger eyes, but the orientation of the head determines their view point. They are completely immobile.

In principle the structure of ocelli is not too different from the two compound eyes, there is a fixed lens (much of which has a faintly granular surface), pigment cells analogous to an iris, a light conducting tubes called rhabdoms, around which light sensitive retinula cells make up a 'retina' layer. In honey bees there is a dimple in the outer surface of each corneal lens which divides the lens into two regions, which corresponds with the retina that also has two regions, a lower one with long retinula cells and the other upper region with short retinula cells. The layers of straight rhabdoms make the ocelli very sensitive to the orientation of light waves (their 'polarisation'), and the pigments screen and select particular wavelengths (the pigment in the short cells screen out red for instance).



Because these 'eyes' are fixed and the light they receive is determined by the position of the head (and body), you can imagine that turning a horizontal body to the left or right, tilting up or down, or rotating it, will change the field of view for each or the three ocelli. Aviators talk about this as 'yaw', 'pitch', and 'roll'. Usually the light coming from above will be bright and polarised, the light coming from below will be scattered, darker, and unpolarised, and there will be a 'boundary' that we call a 'horizon'. The different regions in an ocellus are constructed to be particularly sensitive to light from distinct sources. They are not built to form sharp, focused images and have very limited spatial resolution². It's worthwhile trying to imagine how honey bee ocelli will react in a netted enclosure, or when it snows.

A honey bee has all sort of sensory mechanisms that provide feedback about its position, not just ocelli. Honey bees with ocelli that have been 'blinded' can still fly, they still have two big eyes for one thing, but they fly 'differently'. Part of the reason for a multiplicity of sensors is specialisation, another reason is 'redundancy', that is, they have a backup in case. On a more fundamental level, all insects function by comparing all the data they get from relevant sensors as a form of reality check and on-going system calibration. Being sensitive to the same signal in various wavelengths and orientations eliminates some of the ambiguity in information that occurs in the natural world.

Insects don't 'measure' an absolute status with their sensors, they are built to detect a change of state³. The absolute light level from one ocellus is not important, but an increase in one *matched* with a decrease in another is, and the bee acts to correct it to the default condition. This use of 'comparators' in nervous systems is very fast and can be executed very simply, you don't need a large complex brain to remember or calculate sensor data. Signals from the ocelli reach their destination within 6ms, twice as fast as those from the compound eye that follow more circuitous, multi-staged processing route. If you want to be as manoeuvrable as a 'bee, that speed is essential. These features of ocelli have been used to construct autonomous drones, most notably (in 2003) a prototype 'Mars flyer' for NASA inspired by dragonfly ocelli⁴. The 'biomorphic ocellus' was small and used very little power or computing, and didn't rely on gravity or magnetic fields (not much of either on Mars!). The honey bee's simple ocelli are mainly (but not only) rapid, very sensitive horizon detectors, and the triangular layout of a bee's three ocelli detects the apparent horizon tilt produced when it's flying. They add to the sensory range of the compound eyes, and reduce the 'processing overhead' enabling the brain to concentrate on something else.

Just like combat aircraft, honey bees rapidly and continually correct their flight trajectory, adapting to agitation in the air, collisions, and the strange aerodynamics of tiny, fragile, flexible wings.

Dave Black is a commercial-beekeeper-turned-hobbyist, now working in the kiwifruit industry. 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. *****

References

- Willi Ribi, Eric Warrant, Jochen Zeil (2011), The organization of honeybee ocelli: Regional specializations and rhabdom arrangements. Arthropod Structure & Development 40 (2011) 509e520, doi:10.1016/j.asd.2011.06.004
- Yu-ShanHung and Michael R.Ibbotson (2014), Ocellar structure and neural innervation in the honeybee. Frontiers in Neuroanatomy, Vol.8, Article 6 doi: 10.3389/fnana.2014.00006
- Graham K. Taylor and Holger G. Krapp (2008), Sensory Systems and Flight Stability: What do Insects Measure and Why? Advances in Insect Physiology, Vol.34 ISBN 978-0-12-373714-4, DOI: 10.1016/S0065-2806(07)34005-8
- 4. Chahl et al. Bioinspired Engineering of Exploration Systems: A Horizon Sensor/Attitude Reference System Based on the Dragonfly Ocelli for Mars Exploration Applications, Journal of Robotic Systems 20(1), 35–42 (2003) DOI: 10.002/rob.10068. (The current 'Dragonfly', proposed for exploring the Saturn moon Titan, uses gyrocompassing and accelerometers for flight stability.)



A Beekeeper Reviews The Beekeeper



FILM:	
DIRECTOR:	
REVIEWED	BY:

The Beekeeper David Ayer Patrick Dawkins

When my friends and family starting flooding my inbox with links to *the trailer* of the upcoming movie titled *The Beekeeper*, I can't deny I was intrigued. I'll admit, I was sold on the title alone, but when Jason Statham popped onto the screen gently tending to bees and then anything but gently tending to what I could only assume to be bad guys with a barrage of fast fists and an armoury of guns, explosions, and pithy puns to cut even deeper, I was counting down the days until it hit cinemas.

In the few weeks that passed before I could grab my popcorn I was left to ponder as I worked my hives ... With honey harvest coming up, could Hollywood unearth some modern back-saving technique I could implement? Will they offer up some tips for improved varroa management? What cell raising method does Jason Statham use? Was I being sent the movie trailer because I was identified as the *beekeeper* in social circles, or because I was renowned as the elite tough guy, with assumed ability to unleash fury on the forces of evil, should it be required? So many questions... So, after a hot day in the field hauling honey, with no time to remove the beesuit, I organised the babysitter, called in home to grab the bride and headed for town and the inviting airconditioning of the local cinema for the most romantic of nights out.

From a purely apicultural perspective this flick starts strong for Statham, who you may know as one of the world's leading action movie stars, or, if you are a diving aficionado, his 11th place finish on the 3m springboard at the 1990 Commonwealth Games in Auckland ... He's traded in the speedos these days and staunchly rocks a fitted and shoulder-padded, grey beesuit, decorated with honeycomb patterned stitching and replete with a triple ensemble of leather belt-strapping and buckles to fasten, not to mention near knee-high leather boots. Do I look like that in my beesuit? I ponder inwardly before turning to my date to outwardly ask. Her one look at me sitting like a fish out of water in the cinema chair in my baggy, once white, propolis stained attire and holey-veil is all the answer I need. Gotta get me some of Statham's getup, I resolve and Google lets me know the privilege of owning a *beekeeper-chic* jacket will cost me but USD\$135 ... better hope for a good honey season ...

From there we learn that competitive diver-cum-movie-star Jason Statham is in fact playing Adam Clay, a staunch but loner beekeeper who in the first scenes is tasked with removing a hornet nest from the shed of a semi-rural New England property. Then, bang! As a fitting sign of things to come he smashes a light bulb and electrocutes the pesky predators, bag and all. I guess carbaryl is banned in America.

That violent end for the unfortunate hornets foreshadows many, many more demises – all human – at the hands of Adam Clay over the next 105 minutes. For, Adam Clay is not just any beekeeper he is a *Beekeeper* with a capital B – a specially trained force of a select few agents who answer to no one, but have been established to keep all other law enforcement agencies in line. It basically means he can kick anyone – nay, make that any-dozen – opponents' asses at any time and we shouldn't question it. Those bad guys in the know certainly don't: "If a Beekeeper says you are going to die, you are going to die". I think I like this universe.

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"This is like the opposite of any beekeeper I know," my date turns to me to scoff mid a particularly bad-ass rampage from Adam Clay as bodies fly through tables and windows. *Why does she have to hurt me so*?

I shan't dive much further into the deep narrative progression for risk of spoiling what becomes an epic story of modern day good (your humble apiarist...) versus evil (phishing scam artists who prey on society's vulnerable). However, the characters of evil seeking to understand why a B/beekeeper is on such a rampage is a highlight when they provide succinct explanations like "Sometimes when the hive is out of balance you have to replace the queen". I think we have all felt like torturing a particularly active drone-laying queen by punching its face with an office stapler every now and then, haven't we Adam Clay.

On that note, crucial to the narrative ark – and some apparently top-rate detective work to understand this B/beekeeper's motive – is the belief that honey bee colonies can produce "queen slayers – a bee that will rise up and kill the queen if she produces defective offspring". Taking this literally, I guess that makes Jason Statham a virgin? Yeh, you're right, *queen slayer* has a better ring to it.

It's fair to say my beekeeping is unlikely to be much improved following this work of cinema, but the next time a hulking South African mercenary hit man with frosted tips, a neck tattoo and a prosthetic leg is hunting me during a cocktail party at a beachside mansion, I've got a few tricks up my sleeve to take him down in hand-to-hand combat. So, there's *that*.



Spot the difference. Mid honey season there was no time to get changed before a date to the flicks for The B/beekeeper reviewer Patrick Dawkins.

Right throughout, it was left unexplained why the retiree of the Beekeeper program of special forces had also taken up the keeping of bees post his policing the police career. Was Level 3 apiculture education tacked on in the afternoons after a vigorous morning training on the gun range and in the martial arts dojo? Did he buy some hives off Facebook marketplace? Has he completed a DECA course?

Yes, I left that beautifully comfortable air-conditioned cinema on a hot summer's night carrying a head swirling with even more unanswerable questions than I entered. However, with the prospect of more back-breaking work awaiting when the sun arose, and unfavourable honey prices looming at the end of the season, no question repeated louder in my mind than the words of the greatest bard of all, as dramatized by our neck-tatted, peg-legged ultimate bad guy in a clumsy South African accent...

"To bee, or not to bee? Isn't that the f*@king question?". 🕷

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January: A Slow Lead in to Harvest



Some R&R and a scenic drive has owner Patrick Dawkins well rested before launching into the honey harvest and a bunch of orders for queen bees in this month's Inside Pyramid Apiaries...

BY PATRICK DAWKINS

January is a hectic month for many beekeepers around New Zealand, but, for whatever reason, we seem to have stayed on top of things at Pyramid Apiaries as we wind into the honey harvest. I think the sense of control might be short-lived though, because we have just pushed a lot of the honey harvest activity into February.

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In Marlborough it is dry, December and January only netted us 38mm of rain total. It means there were a good number of sunny days for bees to operate in, but it also means the pasture flows ended quickly in mid-to-late-January, and potentially they were not as strong as they could have been leading up to that point.

There's a bit of honey there though and normally by now we would have shot around and taken the mānuka/kanuka honey off everything and left them to fill up a box of whiter honey later



Pallet loads of full-depth honey boxes head out the door of Pyramid Apiaries shed to a contract extractor, having been depotted in batches of about 300.

in the season. However, with buyers signalling they are not picky about differentiating honeys to that degree, we are working towards one big harvest on the hives.

In three days Laura and I got around all the 3-way mating units and support hives on their sites and blew off their honey boxes. With most having only one honey super to fill, and three queens providing the workforce, the boxes were well packed out. From the apiary we cart the boxes back to our shed – once a two-stand woolshed – to depot into batches of about 300 for a contract extractor to pickup. It is pasture honey, taken from sites close to home, many in vineyards.

Being a bit of a control freak, in an ideal world we would have our own extraction facility. With only 400 production hives and about that many mating units, we are best putting our capital elsewhere though I feel. Even more importantly, not having to spend days in the honey shed frees us up to focus on our real speciality, a breeding programme and raising queen cells and mated queens.

So, a contract extractor it is and as I type, Rainbow Honey in Nelson should be spinning out our first batch, and a return of our stickeys should be just days away. That sets up what will be a hectic February bringing in a whole season's-worth of honey from our production hives.

We use all full-depth boxes – It just makes sense when you are using contract extractors whose prices will not vary between three-quarter boxes and full depth – so there has been some heavy carting already. The heaviest of our honey boxes so far was 38kg.

I was well-rested to put my back into carting them though, as I took a few days off in mid-January to take our daughter to Hanmer Springs for some R&R and meet some family. This provided me an opportunity to tick something off the bucket list which, for a variety of reasons, I had previously never managed to make line up: driving the Molesworth rd, from Hanmer Springs to Blenheim.

You would have seen ads for J Bush and Sons Honey business in Marlborough up for sale recently. They have had hives on New Zealand's largest farm, Molesworth Station for decades and produce some delicious blue borage honey. It was a delight to drive through mid-summer and see Bush's hives – which have now sold to Kiwi Queen NZ in Nelson – and the borage in flower, along with the rest of the 185km of stunning vistas. It was a great road



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Blue borage honey can be bountiful on New Zealand's largest farm, Molesworth Station in the Marlborough high country where the Acheron river flows. In January it was flowering profusely.

trip for our daughter to take with her cousins too – she's ticked the journey off her bucket list far sooner than I!

As for the queens, we turn all of our mating units over in January/February so that anyone buying over-wintered queens next spring is getting a good, young queen. That means caging mated queens on weekends in January and February and getting orders sent out on Mondays. Lastly, we must be vigilant to varroa this time of year. As bee populations drop, especially in a dry year when pollen and nectar intake come to an early halt, but varroa populations increase, this is the key time of year to understand varroa infestation levels. We will be undertaking mite washing in the coming weeks, and I dare say that our autumn treatments won't be far from going in. I advise you to stay vigilant to varroa this time of year too... *****

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An Independent Foreign Policy?



BY IAN FLETCHER

I've been struck by the response to the deployment of six (yes, just six) NZDF people to the Middle East, to 'help' in the response to attacks on shipping passing into the Red Sea en route to and from the Suez Canal. I've been surprised at the level of media interest. And I've been disappointed by the ill-informed and selfregarding nature of much of the comment. So, what should we think?

The immediate context is the Hamas-Israel war, and the regional tensions bubbling away in the Middle East for decades. The wider context is New Zealand's claims to have an independent foreign policy, and what that actually means.



Protecting Shipping Lanes Amid Israel-Hamas War

The Houthi rebel army of Yemen has made it their mission to disrupt international shipping routes through the Red Sea and so New Zealand has made a display of support to its allies by sending six military personal to help offer protection.



This Israeli-owned cargo ship was set alight following a Houthi attack in November.

Before looking at both, and asking what we ought to be thinking and doing, I should declare my own interest: in 1983, the New Zealand Government sent me to learn Arabic. I wasn't very good at it, but I made some life-long friends, studying in London and Syria, and living and working in Bahrain and Saudi Arabia. My teachers were Palestinian, and they imparted their family stories along with some very good language lessons, in some cases literally weeping as they did.

The Hamas attack on Israel on October 7 last year was intended to provoke an Israeli reaction to disrupt an emerging peace deal with Saudi Arabia. Israel has certainly retaliated, and the peace deal is on hold.

But look at what hasn't happened: apart from words, Hamas has found it has no Arab friends actually prepared to act other than the Houthis in Yemen. Egypt has sealed its border to keep Palestinians out. Israel, Lebanon and Hizballah (the huge Iranianbacked Shiite militia in Lebanon) have exchanged fire, but that border has been managed so war has not followed.

Iran might have been provoked into war. They support Hamas, up to a point. And they certainly hate Israel. But Iran has, in my view, done the minimum to maintain its anti-Israel credentials and no more. The recent attack on a US post in Eastern Syria where three soldiers died seems to have been the result of a tragic defensive error.

Hamas' attack has united Israel (where politics was very divided, and will be again). And Hamas' mishandling of the attack itself (sexual violence and atrocities suggest a real lack of discipline) as well as the fact that they couldn't locate all the hostages during the aftermath has sullied their narrative, including in Arab countries.

Israel is using extreme violence, and has lost a lot of international support as a result. But it turns out they can afford to. It may be that Hamas' tactical victory has set the scene for their strategic isolation and defeat. A sort of Pearl Harbor moment.

Which leads to the attacks on ships, and New Zealand's minimal involvement. The attacks are by a Yemeni group called Houthis, who are a Shiite group, Iran-funded, well equipped, and experienced as a result of a nine-year civil war where they have seen off the Saudis, the UAE and their Yemeni compatriots (Yemen has never been united; this is a local as well as regional war). They say they're looking to support Hamas. Iran is likely egging them on.

They have much of the world economy by the throat. A large portion of East-West trade goes by their front door to and from the Suez Canal. A few well-aimed missiles have caused huge disruption.

Does that affect New Zealand? Yes. Costs will rise for our exports and imports, a bit. Journey times are longer. We depend absolutely on freedom of navigation for merchant ships in distant waters. And we depend absolutely on the US and (closer to home) the Australian navies to protect that freedom. As I've said before, even a partial risk to navigation leads to higher marine insurance costs, and big risks lead to the withdrawal of cover. No ships, no trade. No trade, no life as we know it. Freedom of navigation is a vital national interest for New Zealand, arguably above all others. Our remaining ally, Australia, is in the same boat. We can usually ride their coattails.

So, where does this leave our independent foreign policy? I distinguish between what we think and what we do. We can think for ourselves about world affairs. That's opinion, not policy. Our opinions matter little in the rest of the world. What can we actually do, with the minimal resources we've chosen to invest in defence, and our limited economic weight? A senior MFAT official – agreeing with this analysis some years ago – told me pithily that New Zealand's real foreign policy was "to do as little as we could, as late as possible". Sending six NZDF people to the Middle East this last week fits that exactly. The government has chosen to talk it up; the truth is that it's just a gesture. Nothing more.

There is claimed (by the Opposition parties) to be a danger that we will be 'embroiled' in a wider Middle East conflict. I think this is fanciful. There is every sign that the US, Saudi Arabia, Egypt and – crucially – Iran are determined to avoid a wider conflict. Were a wider war to break out, fighting would not reach our shores, and we haven't the resources to send ships or planes even if we wanted to. It's shipping disruption we'd need to fear, and that would also affect most of Asia. That would be a really big global crisis, which would get fixed fast. Our six-person gesture seems pretty risk-free to me.

Finally, what about the rights and wrongs of the conflict? I learned back in 1983 that there are no easy good guy/bad guy categories in the Middle East, and that simplistic judgments are usually the result of ignorance or prejudice. I think there are things we can do on the humanitarian side, and we should. But we should acknowledge that only treats the symptoms. It's for those that live there to eventually tackle the causes. Not us.

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. *****

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An Open Letter to Beekeepers

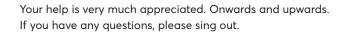


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We need samples no later than the end of February – please note this on your calendars as we are on some tight timelines and we are hoping we can present the research data and findings by Apiculture New Zealand's conference, if it is still on, in June 2024.

This research is pivotal and will at least give us an indication if we need further research or can commercialise the test methods for all beekeepers' gain.



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- Region/Location
- Land type (e.g. Urban, bush, farm or orchard)
- Harvest date

Best wishes always, Ngā Mihi,

Sri Gouindaraju, The Experiment Company. Ph 021 024 22407, sri@experiment.nz

Editor's note: The work of the Experiment Company has been profiled several times in Apiarist's Advocate, most recently in a Q&A piece with Sri Govindaraju in December. *****



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