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The New Zealand BeeKeeper

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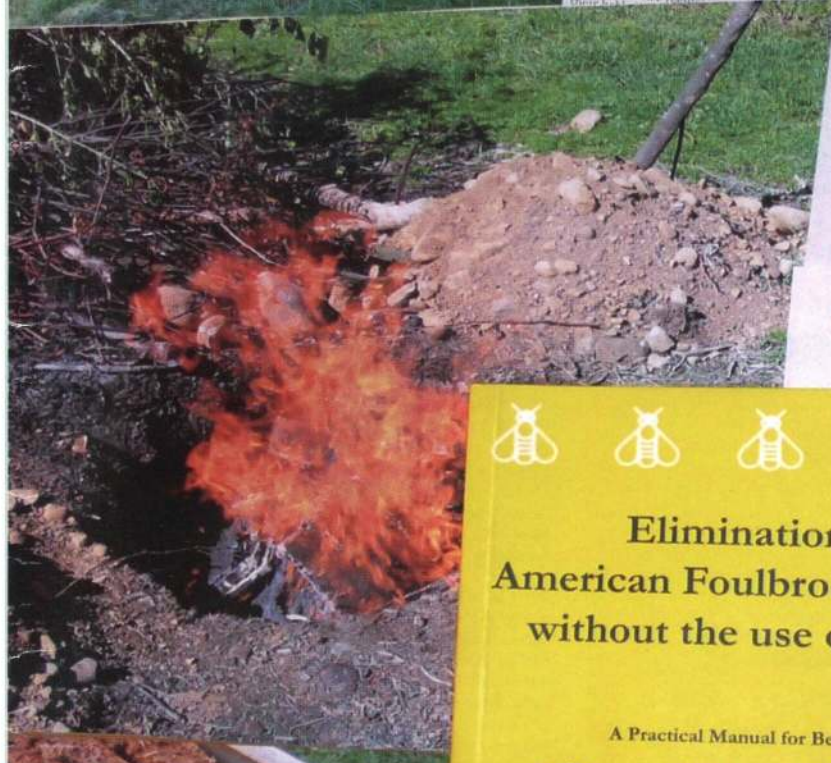

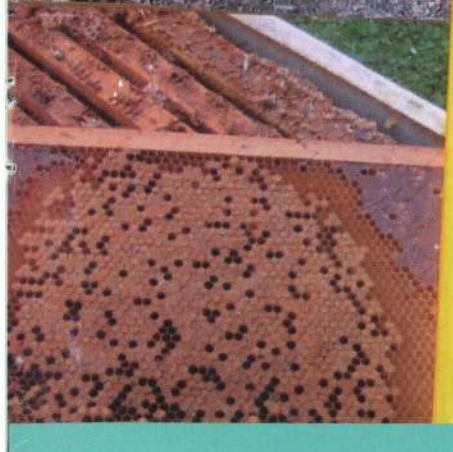

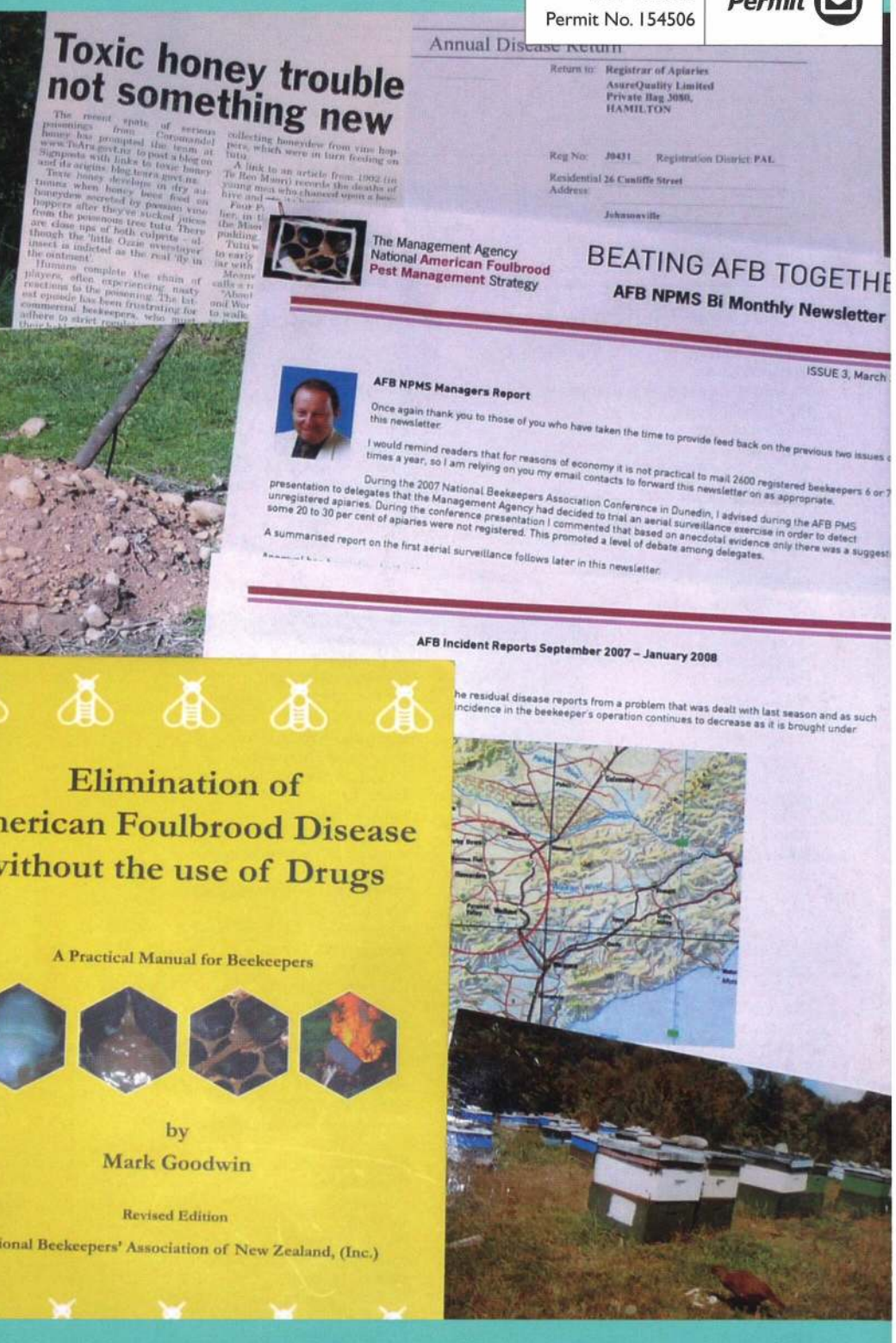

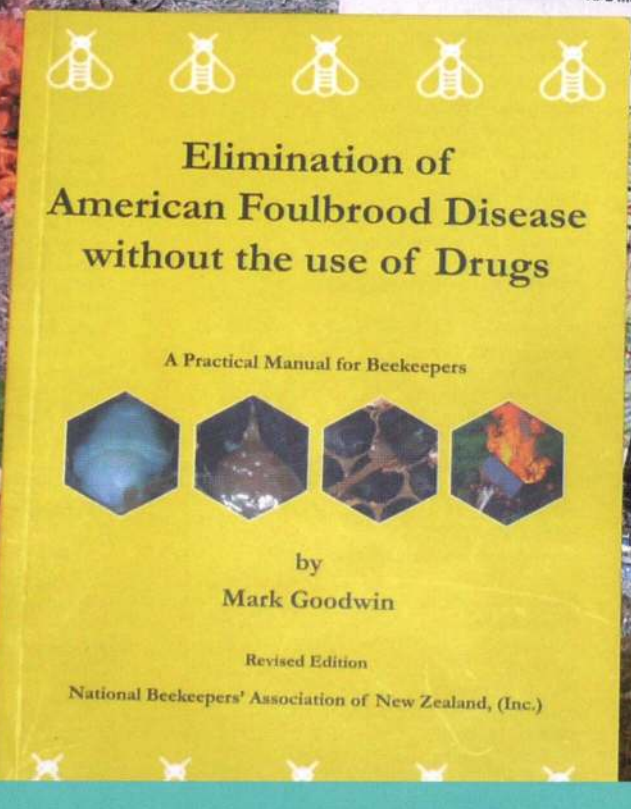

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Deadline for articles and advertising

May issue: 10 April
June issue: 2 May
(refer to page 28)

NB: No magazine in January

All articles/letters/photos to be with the Editor via fax, email or post:

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President's Report

Amendments to the Biosecurity and Hazardous Substances and New Organisms (HSNO) Acts

As you are all aware, the Government presented the draft amendments to the Biosecurity and HSNO Acts to deal with the "problem" created by the Court of Appeal decision in December 2007.

These draft amendments were, in the opinion of the Association, unsatisfactory. As written, the legislation virtually would have handed over absolute control of biosecurity issues to MAF without any limits, guidelines or accountability. Only a short period of time was given for organisations and individuals to make submissions. Despite this, over 50 submissions were received.

During the select committee hearings convened by the Primary Production Committee, the beekeeping submitters were allocated the lion's share of the oral submissions presented to the committee, which I felt was significant. Despite our small size in the overall primary production industry, the select committee considered that our concerns be given prominence over the bigger players during the oral submission process, which says a great deal. Since we started the ball rolling, it would be considered appropriate anyway.

The NBA (represented by me, CEO Jim Edwards and our lawyer David Boldt) started the process off, followed by submissions by the Waikato and Auckland branches. Other groups such as the Pork Industry Board, Fonterra, Federated Farmers, the equine, deer and horticulture industries, the Sustainability Council and Forest & Bird also made submissions. Each of these groups gave the same story from their industry's perspective. The general consensus was that the process for dealing with the issue was hasty to the point of being a dereliction of due democratic process.

Another major concern was the lack of controls for MAF in determining the risks of incidental organisms in imported goods. A number of submitters challenged the incredible comments in the explanatory notes to the draft amendments, which suggested that if an organism was introduced as a passenger organism, it would have a different effect than if it was introduced deliberately.

The French beehive and the Swedish and Korean pork incidents were also highlighted to indicate to the select committee that MAF is acting incompetently in areas of post-border security, and there was a lack of confidence in their ability to do their job of protecting the integrity of New Zealand's environment.

The only submitters that favoured the amendments were the group that imports fruit and vegetables into this country. They are, of course, not primary producers and aren't affected directly by new pathogenic organisms that can devastate the livelihoods of people involved in producing food products in this country.

The last submitter was the Sustainability Council, which presented a blistering attack on the integrity of MAF in general. They stated that MAF were well aware of the problem in 2004 and didn't think it was an urgent issue then, but suddenly decided it was of such importance that extreme measures needed to be undertaken. The Sustainability Council also mentioned that the Department of Conservation was excluded from the process because they also have issues with MAF about biosecurity.

Since the Court of Appeal decision MAF has obtained a Crown Law Office opinion indicating that as a result of the decision all import health standards (IHS), current and pending, are now invalid. As a consequence, MAF has created a lot of problems for importers and had created a climate of fear and uncertainty to bolster their position, despite it being pointed out that the Court of Appeal decision did not

have an effect on other current import health standards, and only applied to known incidental organisms being dealt with by ERMA during the determination of a new IHS.

The NBA has continued to aggressively lobby politicians behind the scenes to try and get some more changes included in the Biosecurity and Hazardous Substances and New Organisms Legislation Amendment Bill. The Primary Production Committee reported back to Parliament on Thursday 20 March with recommended changes to the legislation, and after the second reading debate a vote was taken, with a result of 109 to 10. Labour, National, New Zealand First, United Future, the Progressive Party and two independents voted in favour of the amended Bill and the Greens and the Maori Party voted against it.

Our lobbying has helped gain some concessions for us although we did not get all that we wanted. MAF is now required to set up an independent review panel to deal with the issues of incidental organisms when an IHS is being developed, although the unsavoury feature of this decision is that MAF sets the terms of reference with no statutory guidelines.

The other gain is that at least the select committee has addressed our concerns about the quashed IHS for Australian honey imports, and has given us a 90-day window of opportunity to revisit the issue from the time of the enactment of the legislation. Thankfully MAF has got its act together and is quickly setting up the review panel so as to give us the full 90 days to get our case together. This will provide us with another opportunity to ensure that the EFB, *P. alvei* and *Nosema ceranae* issues are responsibly and honestly dealt with.

This lobbying campaign has cost the NBA a considerable amount of money and extra unbudgeted hours for our Secretariat. We have received a significant donation from a major honey company, and I have had pledges from individuals who wish to help us defray our costs. We would be extremely grateful for additional donations to help the NBA.

While the disease risk from imported bee products will always be an issue, I believe the biggest problem that may face honey marketing will be the problem of honey laundering. Australia has recently had to deal with a number of cases of large tonnages of imported honey being re-labelled as a 'product of Australia'. The most recent case resulted in a fine of over $500,000 to the offenders. Will our country become a conduit for this practice, and will the Government ensure that the honey that may be imported from Australia is actually derived only from Australian beehives?

This is the first time I have been involved with a select committee hearing, and it is an interesting process. The chairman invites each of the speakers in a predetermined order and lets them do their thing. Questions are asked by various members of the committee until all the submitters have had their say. Sitting in the background were a group of officials from the relevant ministries. They had briefed the committee prior to the public submissions and would also have the right of reply afterwards to defend their position. The committee was chaired by David Carter, who ran the hearing splendidly and ensured that everyone kept within their time allocations, but he still allowed for questions to be asked. I felt that some of the Labour Party members present on the committee were not really that interested in the proceedings. This was in contrast to the National Party members, who were well informed and focused and asked some good questions. The chairman was especially sharp and I would have to congratulate him on his fine chairmanship.

On the NZ Beekeepers list server there was a rather hysterical posting lambasting the NBA for doing nothing substantive about trying to alter the course of the amendment process. That person is not a member of the NBA, but is quite happy to criticise the organisation for not doing enough for him. My contact details are in the magazine and I am quite happy to discuss the matter with him in private.

Tutin poisonings

One issue that is always in the back of my mind is when the next tutin poisoning will occur. While in Alexandra actually managing to get a few days away over the Easter break, my cellphone message box suddenly filled up: messages from TV One, Jim Edwards, Radio Live and another beekeeper. What's happened now?!

I rang Jim first. A tutin poisoning episode had occurred in the Coromandel area—luckily no fatalities. By the time I got home it was on TV One as the first item and also on the TV3 website. Thankfully the media acted responsibly and didn't overdramatise the situation.

It appears that the beekeeper who sold the honey had only been in the business for five months and was possibly unaware of the tutu issue. That person may well not have been aware of the requirement to sign a harvest declaration, as this would have alerted him to the fact that he should have been aware of the tutu status in his bees' foraging area.

It appears that some beekeepers who are small scale producers think that a harvest declaration is not required if you are not intending to export your product. This is not correct: if you intend to sell honey, even at a local market or back door, you need to fill out a harvest declaration and keep it in your records for the appropriate time. In reality, if you sell honey you are a food producer and must abide by the appropriate regulations, which are there to protect both consumer and producer.

NZFSA needs to be a bit more proactive in getting their message out to some of the small-scale beekeepers. Many of these beekeepers are not members of any organisation, and this should be a wake-up call for these people to join the NBA or a hobby club where they can be kept up to date with current issues.

- Frans Laas

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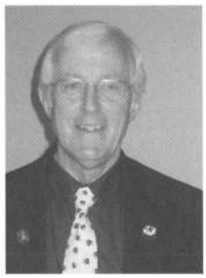
Australian honey imports



At the time of writing, the amendment to the Biosecurity Act has been through the select committee process and had its second reading in Parliament. The third reading of the Biosecurity and Hazardous Substances and New Organisms Legislation Amendment Bill could be as early as 1 April, after which the Bill will become law.

The Primary Production Committee (select committee) amended the Bill to include a 90-day suspension on the issue of biosecurity clearances for honey imports. This begins as soon as the Bill becomes law. The Committee did not overturn the import health standard (IHS) quashed following the Court of Appeal decision last December. It did, however, listen to industry concerns that the risk of *Paenibacillus alvei* needed to be given a proper independent assessment. The Select Committee has recommended that an independent review panel be established by MAF so that this IHS and others in the future can be subject to independent scrutiny.

The immediate challenge now is to use all of the 90 days we have available. I, along with David Boldt and Daniel Paul, have already met with the Director-General of MAF to ensure that the review process can start as soon as the Bill is enacted. Any delay must be avoided because when the 90 days is up, we face the risk of imports being allowed into the country.

A lot of work has gone into this fight and although the industry has won a small battle, we have not yet won the war.

The need to take a professional approach has come at a large cost to the NBA. We have continued to engage our legal adviser, David Boldt, who fought our successful case in the courts. We also engaged Daniel Paul of Four Winds Communications, who are professional communications specialists and lobbyists based in Wellington. These two men have proved invaluable in the campaign, which has concentrated on a constructive approach with MPs and other primary industries and environmental groups. We have avoided sensationalism through the media. There have been many meetings both before and since the select committee hearing. The job is not yet finished.

The NBA is grateful for the financial support that it has received so far in this campaign. Recently one company made a significant donation. Such support is invaluable.

While the industry remains seriously concerned about the disease risks and the inevitability that it will have to pick up the pieces when a new disease arrives, we are also concerned about other risks associated with imports. Not the least of these involves the reports of Chinese honey being imported into Australia along with residues of antibiotics and then being re-exported as Australian honey. These reports are more than hearsay, as a recent prosecution was reported in the Australian media.

- Jim Edwards
Chief Executive Officer

NBA Auckland Branch representative Trevor Cullen, Auckland Branch President Ian Browning, NBA President Frans Laas, Daniel Paul (Four Winds Communications) David Boldt (NBA Barrister), and NBA Chief Executive Officer Jim Edwards. These photos were taken prior to the NBA making representations before the select committee (Primary Production Committee) on the Biosecurity and Hazardous Substances and New Organisms Legislation Amendment Bill, 6 March 2008.

Jim Edwards, Frans Laas and Waikato Branch representative and NBA Life Member Russell Berry.

Photos: Pam Edwards.

From the Secretary's desk

It's April already and before we know it we will be all heading for the annual NBA Conference from 14–17 July in Masterton.

Planning for the AGM

By now all Branches will have received a request for Notices of Motions/Rule changes and Ward Representatives. To assist in the smooth running of the AGM, I ask you to please ensure that they are presented with all relevant background information and are received by the Secretariat by the due date of Monday, 26 May.

Subscriptions

A big thank you to those who have paid their 2008 subscription. Please note: if you have not renewed your membership, the April 2008 issue of *The New Zealand BeeKeeper* will be the last one that you will receive, except for the April and October issues which go to all registered beekeepers. You will also no longer have access to the NBA Library or the Members-only section of the website.

Please do not hesitate to contact us if you are having difficulty paying your subscription so that we can make alternative arrangements.

If you are not a current member of the NBA, I urge you to consider joining. The more members, we have the more we can achieve on behalf of better beekeeping in New Zealand.

- Pam Edwards

[Editor's note: don't forget to complete the Conference forms and the NBA membership form and return them as soon as possible at the addresses provided. You can find these forms in the insert in this issue.]

ADR

REMINDER TO ALL BEEKEEPERS

When you receive your Annual Disease Return (ADR) form, remember that the completed form is due to AsureQuality on 1 June 2008. This means the form must be in the hands of AsureQuality by this date.

AFB NPMS email newsletter available to all levy payers

In response to a call for more information on the American Foulbrood National Pest Management Strategy (AFB NPMS), the Management Agency publishes a newsletter several times each year dealing with issues relating to AFB.

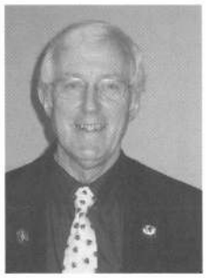
For reasons of economy this newsletter can only be accessed by way of email as the cost of mailing is prohibitive. If you are not on email, I recommend that you contact your local NBA area representative or hobby group and request a copy.

Those who are on email and would like to be on the distribution list are asked to contact me at rbaynes@ihug.co.nz.

- Rex Baynes
AFB NPMS Manager

[Editor's note: the latest edition of this newsletter was published in March 2008.]

Tutin toxicity—the news that the industry didn't want to hear



After a long hot dry summer, the spectre of tutin poisoning became a reality in the Coromandel. The reports over Easter saw a serious crisis for the industry. We cannot underestimate the potential damage from what has, hopefully, turned out to be a small quantity of affected comb honey. The impact on consumer confidence in our honey products, and especially comb honey, will become apparent in the next few months. We have tried hard to maintain confidence, but there will be a cost.

Of course, the last thing we wanted to hear was that people have been affected by this batch of toxic honey. This must have been a terrible and frightening experience for them. The fact that tourists were also involved means that there may well be coverage overseas that could impact on our reputation as a safe country that produces safe food.

There are several lessons. We need to ensure that beekeepers in risk areas properly understand how to manage their beekeeping to prevent poisonings. The entry of new beekeepers into the industry poses a serious weakness if we cannot ensure that they fully understand the management required.

This highlights one of the real benefits of membership of an industry organisation so that participation in Branch activities and sharing of information and expertise can help all. Experienced beekeepers have learned and are prepared to share their knowledge. This applies to all areas of beekeeping.

Some beekeepers have complained about the intrusion of the New Zealand Food Safety Authority (NZFSA) into the beekeeping industry. In today's risk-averse society, there are stringent controls being placed across all industries and community activities in the name of public safety. We should be thankful in this case that we have developed a good working relationship with the NZFSA, because it helped us work through this problem in a constructive way. It has also helped because we have been able to quickly minimise the uncertainty around the Coromandel poisoning and hone in on the local problem that it was.

We are especially grateful to the beekeepers who gave advice, and especially to John Bassett who was prepared to front up on the television news.

By a coincidence, we are currently researching a new test for tutin in a Sustainable Farming Fund (SFF) supported project involving HortResearch and AgResearch at Ruakura. We have also been arranging to make a presentation on tutin poisoning at a Bay of Plenty field day to be held in June. In the meantime, information is available from the NBA website. It can be found in the Main Menu under Pests and Diseases in an item called "Toxic Honey". The link there takes you to the updated NZFSA site to a background on toxic honey written by Murray Reid.

- Jim Edwards
Chief Executive Officer

On the spot fines for Annual Disease Return defaulters a possibility

Once again I am required to report to levy payers the disturbing trend of beekeepers failing to complete and lodge their Annual Disease Return (ADR) on time. This situation has gone on far too long, and must now be addressed in order to maintain the integrity and credibility of the AFB NPMS.

Serious consideration is now being given to amending the Order in Council as part of the 10-year review, to give the Management Agency delegated authority from the Minister to impose a fine for defaulters. Biosecurity New Zealand has already been consulted on the matter.

- Rex Baynes
AFB NPMS Manager

AFB NPMS Report

It's coming up to ADR and levy time again. As you are all aware it is a statutory requirement to file your ADR and pay your levy. As usual the Management Agency (MA) has to deal with a significant number of beekeepers who hand in their declarations late. This necessitates a follow-up letter and sometimes several more for tardy individuals. This extra work soaks up a lot of resources that can be better used for work to eradicate AFB. As levy payers we all have to share in the consequences of this wastage of time and money. With the reduction in the number of levy payers over the years due to the arrival of varroa into the country, the income from levies has also declined. Consequently the costs per levy payer have increased. While the MA attempts to run a neutral budget, we can only go so far with keeping costs down without affecting our ability to keep the strategy functioning properly. **Get your ADR declaration in on time and help the strategy run more efficiently.**

Unfortunately the MA is still dealing with far too many cases where the direct intervention of an AP1 is required. The AFB NPMS is about self-management of AFB. Those beekeepers who come to our attention are failing in the basic and simple techniques for AFB management, and as a consequence are cross-infecting other beekeepers who are doing the right thing. Some of these individuals seem to have a head-in-the-sand mentality and refuse to accept that the problem is real. They often require repeat intervention by the MA, with considerable costs to themselves.

On a slightly more humorous note, I managed to sneak a day off to go deerstalking with a friend in North Otago. When we arrived at the start of the track into our block I noticed an apiary site close to the bush edge. Nothing unusual about this. However, I noticed that the H series registration code on the hives indicated a beekeeper from the lower North Island. That certainly raised a bit of interest. The hives were clearly owned by a professional beekeeper. Further enquiries indicated that the registration code no longer exists and the only H series beekeepers in the South Island are three hobby beekeepers in the north of the island. The plot thickened. Anyway, AsureQuality was asked to check out the problem, and since an AP1 happened to be in the area at the time this person made a quick diversion to check out the site. The owner had correctly registered the site. However, he had recently purchased the hives from a retiring beekeeper, who had used his last initial instead of the correct N series prefix. Both beekeepers were somewhat embarrassed by the affair and both received a written warning to ensure that the offending numbers were removed smartly. Having incorrect registration numbers is actually a Section 154(q) offence under the Biosecurity Act. It does pay to ensure that your correct registration code is displayed, as it can save everyone a lot of work.

- Frans Laas
Chairman
Management Agency
American Foulbrood Pest Management Strategy

Background on Toxic Honey

March 26 2008

BACKGROUND ON TOXIC HONEY

Animal Products Group, Information pamphlet
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March 26 2008

What is Toxic honey?

Toxic honey is produced as a result of bees feeding on tutu (*Coriaria arborea*) bushes. Tutu is a widely distributed native species found throughout New Zealand, particularly along stream banks and in regenerating native bush. The poison comes from the native tutu bush but Toxic honey is not produced by bees visiting the flowers of tutu to gather nectar or pollen, but rather when bees gather honeydew produced by the sap sucking vine hopper insect (*Scolypopa sp*) feeding on tutu plants.

The honeydew (a sweet exudate) produced from the tutu plant contains tutin, a member of the picrotoxin group. The toxin has no effect on bees and honeydew honey is chemically very similar to floral honey and cannot be distinguished by taste, sight or smell from other non-toxic honeys. The toxin cannot be degraded by any heating or processing of honey. The toxins are believed to be very stable, and poisoning cases have resulted from people eating honey that was several years old.

Both comb honey and extracted honey can be poisonous. Comb honey poses a greater risk because it is eaten directly off the comb, increasing the chance of consuming honey with a high concentration of tutin. Extracted honey is often bulked or blended with other honey thereby reducing the concentration of toxin.

While tutin, and its derivative, hyenanchin are extremely toxic to humans, only a few areas in New Zealand regularly produce toxic honey. These areas include the Coromandel Peninsula and Eastern Bay of Plenty (EBOP) and the Marlborough Sounds. To produce toxic honey, all of the following conditions are required:

- concentrations of numerous tutu bushes
- high numbers of vine hoppers
- hot dry weather to allow the honeydew to build up on the tutu (rain can wash it off)
- an absence of more attractive food sources for bees, usually caused by drought
- presence of honey bees (*Apis mellifera*) being managed for honey production.

A number of people have been killed, incapacitated and hospitalised over the years from eating toxic honey. The last recorded case from commercial honey was in 1974 involving 13 patients. There have been 9 cases since 1974 with the last known poisoning occurring in 1991 in the EBOP area. Two poisonings have been caused by comb honey produced by hobby beekeepers in the Marlborough Sounds in 1982 and 1983 and the highest levels of tutin ever measured in honey were produced in this area.

Managing the Risk

The main risk periods are from late December (EBOP) and mid January to the end of April in the Coromandel and Marlborough Sounds areas.

Beekeepers are required to manage the risk of their honey containing tutin by either:

- removing hives and supers containing honey for human consumption before the risk period, or
- by closely monitoring the tutu, vine hopper and foraging conditions in the areas (3 km radius) around the apiary while honey is being produced.

Poisoning symptoms

Symptoms include vomiting, delirium, giddiness, increased excitability, stupor, coma and violent convulsions. These honey toxins can be lethal, or make a person very sick, and permanent damage to the nervous system or spine can result. It is generally accepted that as little as 1 teaspoon (approximately 10 ml) of toxic honey can have a severe effect on the human nervous system.

Reducing the Risk of Toxic Honey Production

It is in the interests of beekeepers to manage the removal of honey from hives in the risk areas in such a way as to prevent any poisonings of humans with attendant publicity and possible claims for liability.

In all areas where tutu and the vine hopper are abundant, beekeepers should minimise the possibility of toxic honeydew honey being stored in the hive. Bees will forage up to 3-5km from their hives, especially in dry years, and toxic honeydew may be present in an area even if it is not obvious in the immediate vicinity of the apiary.

Tutu plants should be monitored for the presence of vine hoppers. The honeydew can be seen clearly on the leaves and stems of the plants as very small wet sticky droplets. Where vine hopper numbers are high a black sooty mould may be found growing on the honeydew. Check for bees, as well as wasps, gathering honeydew.

All surplus honey should be taken off hives immediately the nectar flow finishes, or sooner if there is any possibility of toxic honeydew being collected. Alternatively, hives can be removed from the toxic honey area. If any honey produced

in the risk periods is to be stored and used for bee feed later in the season, frames of suspect honey must be carefully marked so they are not inadvertently extracted. Frames of feed honey should be fed to the bees well before the next honey season so the bees don't remove any surplus honey and shift it up into the honey supers.

Beekeepers should consider taking most of the honey out of the brood nest as well before the risk period, leaving only 3–4 frames of honey, so that the honey gathered during the risk period is all located in the brood chamber for bee feed. This honey from the brood nest can be stored for feeding back later or used to make nucleus colonies, either to increase hive numbers or to re-queen other hives. Never lift frames of honey from the brood chamber into the honey supers during the risk period.

Do not eat honey taken from feral (wild) hives in the risk areas. It is the beekeeper's responsibility not to offer toxic honey for sale.

Please be mindful of the potential to produce toxic honey this season.

For further information contact your local AsureQuality Apicultural Advisory Officer, 0508 00 11 22.

[Note from the NBA Publications Committee:

Perhaps we beekeepers have become a little complacent as we haven't had the right conditions for a number of years where bees have gathered tutu honey dew. This incident should be a reminder to all beekeepers that it could happen to them.

In a good year, dry mild conditions, passion vine hopper numbers increase around the coastal areas of most of the North Island and the top of the South Island. All beekeepers, not just those in the restricted zones of the Coromandel Peninsula, Eastern Bay of Plenty and the Marlborough Sounds should monitor passion vine numbers as although the honey dew is not normally attractive to bees, your bees could potentially harvest this toxic honey dew under drought conditions. If you see hopper numbers increasing on tutu, harvest the honey early to prevent any possible contamination.

If you produce honey for sale (and sale includes barter), you are deemed to be "commercial" (no matter how many hives you have), and come under the Food Hygiene Regulations and therefore must have food registered premises. Check with your local council as to what you require. The regulations are on the NZFSA website: www.nzfsa.govt.nz/animalproducts/subject/bee-products/index.htm

NZFSA sent this background fact sheet as part of a package of information mailed to all beekeepers which included a cover letter about toxic honey for beekeepers and apiarists, and an extract from the Animal Products (Specifications for Products Intended for Human Consumption) Notice 2004, Clause 108. If you did not receive this information, please contact Jim Sim, Senior Programme Manager (Animal Products), New Zealand Food Safety Authority, phone 04 894 2609, email Jim.Sim@nzfsa.govt.nz, or write to him at the New Zealand Food Safety Authority, PO Box 2835, Wellington.]

Giant Asian Hornets: a beekeeping pest from hell!

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Introduction

Last year it was my pleasure to travel to South Korea and experience first hand quite a different type of beekeeping pest, one that would not be very familiar to New Zealand beekeepers. This pest was the Giant Asian Hornet (*Vespa mandarinia*), which is quite common in Korea, China and Japan. It is a flying killing machine that could easily wipe out thousands of hives of the European honey bee (*Apis mellifera*) in New Zealand.

We as beekeepers are all too familiar with the problems caused to bees by the quite similar *Vespula* species in New Zealand, the German and Common wasps. However, these wasps are mild in comparison to the damage the Giant Hornets can do to hives. The Giant Hornet is much larger than the wasps we presently have in New Zealand. Large worker hornets can grow over 50 mm long with a 75 mm wing span. They have more venom in their sting and are considerably stronger than wasps or honey bees. A small number of Giant Hornets, say 10 or more, can attack an *Apis mellifera* hive en masse and completely destroy the colony in a couple of hours. One US scientist reported seeing a single Giant Hornet kill a colony of 6000 bees in very short order (Milius). This would be about a three-frame nuc. Other reports suggest that a single Giant Hornet can kill as many as 40 honey bees per minute.

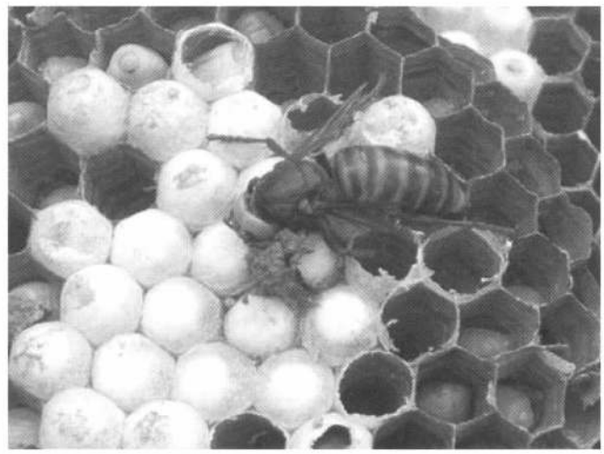
The Giant Hornet is the only hornet species known to have evolved a mass-attack type of predation on other social bees and wasps. Once a single hornet has found a beehive, it marks the hive with a special pheromone to attract other hornets (Ono et al. 1995).

As well as killing honey bees, the Giant Hornet has a reputation for killing humans. Each year in Asia, several people are killed from stings from the venomous hornet. As the hornet nests in the ground similar to the German wasp, it is quite common for people out walking to accidentally disturb a nest. The hornets then fly out to defend their nest and may sting the person to death. As the hornets are so large, each sting contains a huge amount of venom, more akin to a snake bite than a wasp sting.

Life cycle of the Giant Hornet

In South Korea, there are seven species of *Vespa*, all of which would be very bad in the New Zealand environment. The worst of these is *Vespa mandarinia*, the Giant Hornet, which is the largest and most destructive of the species, and as such is the subject of this article.

It is interesting how similar the life cycle of the hornet species (*Vespa sp.*) is to the wasp species (*Vespula sp.*) presently in New Zealand. The queen hornet overwinters in a dormant state, usually hibernating in the soil. In spring, once the weather warms up, the queen will emerge from the soil to feed on insects and sweet substances. She will also start building an underground nest out of paper made from wood fibres that she gathers.



Initially the queen carries out all the duties such as foraging, building the nest and rearing brood. Once the brood develops into adult worker hornets, they then relieve the queen of a number of tasks so she can concentrate on egg laying. Later generations of worker hornets are bigger than earlier generations because they are better fed.

As the season progresses, the large worker hornets increase in numbers and try to maximise the size of their colony. They collect and convert wood fibre to the paper-like material used to construct the nest. During this time the nest size increases dramatically. With large amounts of brood to feed, the worker hornets go on foraging raids to gather food such as insects and also bees and especially brood from hives.

The hornets have very strong jaws and can easily kill honey bees by cutting their heads off. A group of worker hornets will first attack the entrance of a hive and kill all the adult bees by decapitating them. Once the majority of the adult bees are dead or dying, the hornets can then enter the hive without much resistance. The hornets will then systemically remove all the bee larvae and pupae, which they prefer to adult bees because they are more nutritious. They will fly back to their nest with all the brood until the hive is depleted. The hive will never recover from this attack. Unfortunately few hornets are killed by the defending bees during these vicious onslaughts.

Luckily in South Korea, the winters are a lot colder than in New Zealand and the hornet nests cannot survive the winter. In autumn, virgin queens and male hornets are raised in large numbers. After mating, these new queens will find a suitable place to hibernate for the harsh winter, usually in the soil. The rest of the hornets will die out in late autumn. The survival of the species will be solely dependent on the ability of these young newly mated queens to overwinter and successfully start a new nest the following spring.

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Problems caused by the Giant Hornet

The biggest problem to beekeeping is that groups of hornets will attack en masse and completely destroy hives. The European honey bee, unlike the Asian honey bee, has not evolved defences to prevent the Giant Hornet completely destroying their hives. European honey bees will not survive in areas where there are Giant Hornets unless they get some assistance from humans.

Besides destroying complete hives, hornets kill a number of individual bees in the field. This predatory behaviour can include virgin queens and drones as well as worker bees. However, this is not as bad as the hive is still likely to survive even if a number of field bees are lost.

As mentioned earlier, besides attacking bees the Giant Hornets will attack a whole host of creatures, including humans. The hornets need a protein food for feeding their brood and obtain this from any source they can, such as insects, dead carcases etc, but they do prefer social insect communities such as wasp nests and beehives. It is lucky for humans that the Giant Hornet only nests in the ground or in crevices in trees or rocks. This limits areas it will inhabit so it is unlikely to be found in a heavily populated city. It is more common in rural areas with forests, many of which have bush walks where attacks on humans are common.

Defences of the Asian honey bee

Nature favours the survival of the fittest and the local honey bee has learnt to defend itself in order to survive hornet attacks. The Asian honey bee (*Apis cerana*) has evolved several different methods to prevent the hornets doing major damage to the hive (Lee).

Asian honey bees do not guard the outside of the hive entrances like European honey bees where they become easy targets for hornets. Also if they are on the outside of the hive fanning near the entrance, Asian honey bees tend to have their heads forward and tails pointing into the hive. This ensures the Asian bee will have a better chance of seeing any hornets before they can attack.

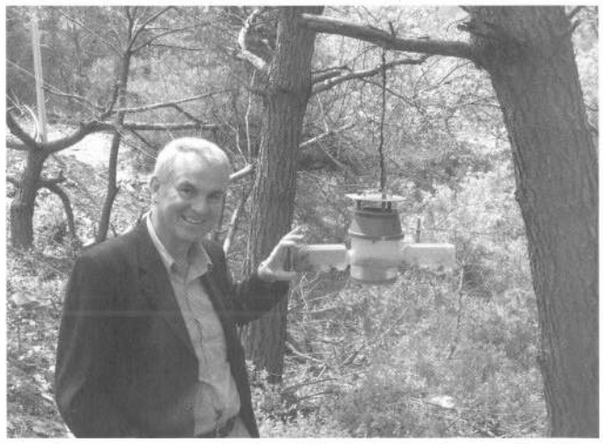
Asian honey bees tend to establish defence lines inside the hive where the hornet is more vulnerable to attack. Guard bees can recognise the presence of the marker pheromone placed on the hive by a hornet and so recruit more guard bees. The guard bees also shake their bodies in a shimmering motion when a hornet approaches, just like *A. dorsata* (the giant honey bee) does. This behaviour often repels the hornets but if it fails, the Asian honey bees then attack the hornets en masse by clustering over the hornets and balling them (National Geographic). Up to 500 bees may form a ball around one hornet and cluster for over 40 minutes until the hornet is dead. The hornets may be able to kill many bees but the thermal energy created by the cluster eventually kills the hornet. This thermal suffocation is a unique behaviour that has been perfected by *A. cerana*. The European honey bee can also ball attacking wasps, robbing bees and foreign queen bees, but never recruits enough attacking bees at once to successfully take on the Giant Hornets.

Asian honey bees are capable of defending their colony against solitary hornets, but may find it more difficult defending themselves against multiple attacking hornets from very large nests. If hornet numbers are too high some colonies will not even leave the hive to forage. A comparative study in India of the Asian honey bee and the European honey bee showed that the Asian bee was much more efficient at attacking and balling hornets (Abrol).

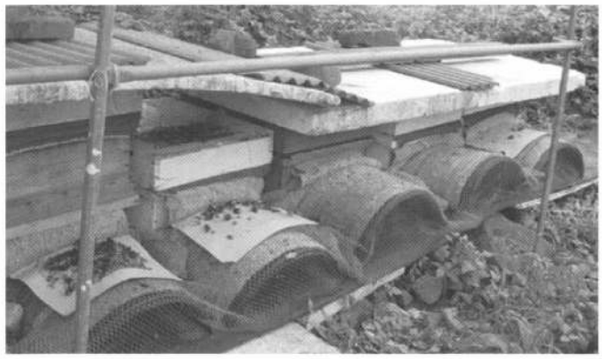
Unfortunately the European honey bee has not had a long enough association with hornets to have perfected its defence mechanisms against the deadly adversary. European bees will only survive in hornet areas with the help of a beekeeper, who has a few tricks up his sleeve to fight these pests.

Methods beekeepers use to fight back

Asian beekeepers have devised four basic methods to flight hornets and protect their bees from attack. The first method, which is widely used and appears to be quite successful, is to trap hornets alive. In South Korea I saw some quite ingenious traps that use a sweet bait to attract hornets into them via a top tunnel. Once inside, the hornets cannot seem to find the top escape route and are trapped inside. This is an excellent method to use in the spring when new queen hornets are foraging prior to starting up a new nest. Any queen trapped will effectively mean there will be one less hornets' nest for the beekeeper to worry about.



Another common method used by Asian beekeepers is sticky boards to trap individual hornets near the hive entrances. The beekeeper makes a tunnel arrangement which the hornet needs to enter to access the hive and becomes trapped on the sticky board.



In some of the Asian countries where labour is very cheap, people are employed as guards to watch over hives all day. If a hornet is seen by a hive, the person tries to kill the hornet with a fly swot. However, this can be very dangerous if the hornet is not killed as it is likely to retaliate and string the "swatter". Because of the large amount of venom injected, this stinging can often prove fatal to the unfortunate victim. In spite of the obvious dangers, this method is useful in spring if hornet queens are killed before they can set up a new nest.

The last method used by Asian beekeepers is to locate hornet nests and destroy them with an insecticide. This is similar to what New Zealand beekeepers do to control high wasp numbers in certain areas, such as beech forests. This method is the most effective as a large number of hornets are destroyed. The only problem is that sometimes the nests are in very inaccessible places and impossible to find.

Biosecurity threats to New Zealand

Should we be concerned about the biosecurity threats of hornets entering New Zealand? We most certainly should, because any of the hornet species would be a major pest in our environment. The Giant Asian Hornet would be by far the worst, but any of the hornet species have a potential to severely affect our delicate native ecosystems.

It must be realised that most hornet species have evolved in very harsh environments, surviving very cold winters and predation from a number of enemies. New Zealand would be a paradise for hornets! The climate in New Zealand is relatively mild and it is likely hornet nests would overwinter, so super-colonies of hornets could develop to terrorise the whole country. With no natural predators, except perhaps man, hornets would have a free run on the New Zealand environment and would affect the insect life. This could upset the ecological balance and a number of other creatures such as native birds may also be affected as their food supply would be reduced.

Are hornets likely to arrive into New Zealand? Yes, it is very likely a queen hornet could arrive on an imported Asian car. Queen hornets seek sheltered areas in winter such as a boot of a car or the side of a shipping container. With the Giant Asian Hornet, it is known that the queens of this species prefer to overwinter in soil. Therefore any equipment that is imported into New Zealand must have all soil removed. Imported forestry equipment would be very risky because it is likely to have residue soil on it; plus it may have come from an area where hornets are common.

France has recently had an incursion of the Asian Hornet (*Vespa velutina*), which are not quite as bad as the Giant Asian Hornet but are bad enough! It is thought this species arrived in France from Asia in a consignment of Chinese pottery in late 2004 (Allen). They have spread across France like lightning and are massacring honey bees in large numbers. Entomologists fear it will just be a matter of time before they cross into Britain. This news is quite disturbing, when one considers the amount of imported goods, especially from China, that come into New Zealand each year.

Therefore, the most important message for beekeepers is to be on the lookout for any signs of hornet attacks on their hives. If anything looks suspicious, please contact Biosecurity New Zealand (0800 809 966) or your local Apicultural Officer at AsureQuality.

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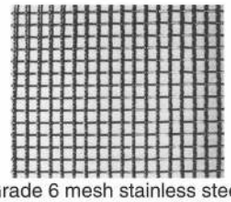

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The Honey Bee Exotic Disease Surveillance Programme—Autumn 2008

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Every year a number of apiaries throughout New Zealand are selected to provide samples for the Honey Bee Exotic Disease Surveillance Programme. Hives are surveyed during the autumn by experienced apicultural professionals from within the industry who have a keen interest in the wellbeing of the New Zealand beekeeping industry.

The annual surveillance programme has two primary goals:

1. to detect an exotic pest or disease early enough for an eradication attempt to be considered
2. to enable New Zealand to make country freedom statements with respect to these exotic pests and diseases, which help facilitate the negotiation of more favourable overseas market access conditions.

The specifications for the programme this year have remained largely unchanged from previous years, although with the disestablishment of the Varroa Agency Incorporated, the South Island component of the inspection programme will now be completed as a 'stand alone' process rather than being attached to the varroa surveillance programme. A total of 650 apiaries in two risk categories will be sampled for a range of pests and diseases of importance to the beekeeping industry. Every hive in each of the apiaries is required to be inspected and tested in order to maintain the sensitivity of the surveillance programme.

Additionally, the programme this year is funding the review and reprinting of the exotic disease surveillance and the 'Cape Bee' pamphlets. These will be incorporated into one pamphlet and will be expanded to include summary information on newly discovered threats to beekeeping, such as Colony Collapse Disorder (CCD). Once updated and reprinted, a copy will be sent to every registered beekeeper around the time of the Annual Disease Return mailout. Like the pamphlet it replaces, the new pamphlet will also be sent out to new beekeepers as part of the registration pack.

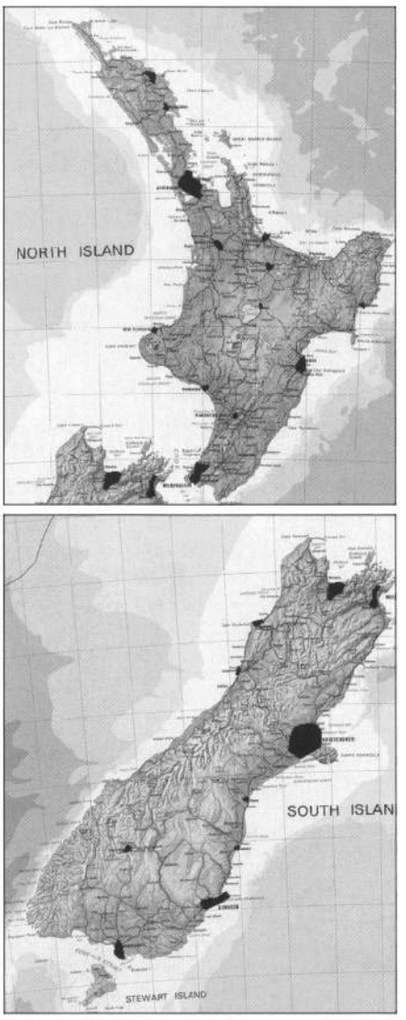
The exotic pests and diseases that we are concerned about are the same as in previous years, although inspectors are trained to report anything that looks unusual. The official list is:

- Africanised Honey Bee *(Apis mellifera scutellata)*
- Cape Honey Bee *(Apis mellifera capensis)*
- other Apis species *(cerana, dorsata etc)*
- Asian mite *(Tropilaelaps clareae, Tropilaelaps koenigerum)*
- other Varroa species *(Varroa jacobsoni, Varroa underwoodi, Euvarroa sinhai)*
- Tracheal mite *(Acarapis woodi)*
- European foulbrood *(Mellisococcus plutonius)*
- Small Hive Beetle *(Aethina tumida)*
- the Parasitic Fly *(Braula coeca)*

Inspection programme outline

The inspection and sampling programme is split into two components:

1. the inspection and sampling of a number of apiaries in high-risk areas, as shown in the following maps
2. the testing of bee samples provided from apiaries for which clearance is required to supply bees for export.



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High-risk areas

350 apiaries from within high-risk areas will be inspected and sampled for the exotic pests and diseases mentioned above. 178 of these apiaries come from 13 high-risk areas identified in the North Island, with the other 172 coming from 10 high-risk areas identified in the South Island. High-risk areas are areas that have been identified as most likely points of introduction of an exotic bee disease and include:

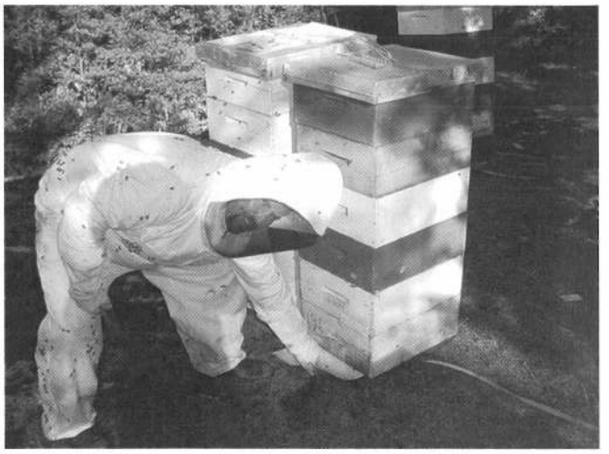
- seaports
- airports
- large population centres
- tourist areas.

The beekeepers carrying out the inspections, in addition to being highly experienced, are recognised as Authorised Persons (Level 2) under section 103 of the Biosecurity Act. This means that they have the legal authority to enter property for the purposes of inspection and sampling hives under the direction of an Authorised Person (Level 1), who are AsureQuality Apicultural Officers. However, the inspector will endeavour to contact the owner prior to any hives being inspected to arrange a suitable inspection time.

In order to achieve the required detection sensitivity, every hive in each of the selected apiaries is to be tested. They will each receive a 24-hour miticide and sticky board test to detect infestations of external mites and will have an adult bee sample taken to be tested for Tracheal Mites (*Acarapis woodi*).

In addition to the routine sampling, hives will receive a visual inspection for signs of European foulbrood, Small Hive Beetle, Africanised Honey Bee, Cape Bee, other Apis species and Braula. In some cases, suspect samples will be taken, while in others (particularly if there is a threat to human safety), the hive will be reassembled and marked for further investigation and/or sampling. The inspectors will also note any unusual symptoms.

If your apiary/apiaries are selected to be inspected you will not be advised of the results of the tests unless they are positive. If a test does come back positive, an exotic disease response will most likely be launched.



Sticky boards being removed after a 24-hour miticide and sticky board test. Photo: Murray Reid.

Bee samples from export supply apiaries

300 apiaries, from the population of apiaries supplying bees for export, will have an adult bee sample taken and tested for both internal and external mites. Each supplier is required to provide samples from up to 25 apiaries that they use to harvest bees for export.

As with the high-risk samples, beekeepers are not informed of negative test results.

What you can do

While it is important for the surveillance programme to inspect and sample hives, it is even more important for all beekeepers to be always on the lookout for an exotic pest or disease. Read the new pamphlet on exotic bee pests and diseases of honey bees that will arrive in the mail soon, and when you are inspecting your hives always look for signs of an exotic disease. If you suspect an exotic pest or disease ring the MAF Exotic Disease Hotline 0800 809 966, or contact your local AsureQuality Apicultural Officer.

Lastly, thanks to all those beekeepers who are taking part in the 2008 programme. Your continued support is very much appreciated.

[Editor's note: refer to page 39 for contact details of apiculture officers and registrars of apiaries.]

Sustainable and bee-friendly beekeeping

Dr David Heaf
Wales, UK

Background

The media has featured honeybee health more than usual lately, largely because of reports from the USA of huge losses of colonies. Random tests on honey imported to the UK show that some beekeepers routinely treat colonies with antibiotics. The worldwide spread of varroa has forced beekeepers to dose hives with acaricides. *[Editor's note: acarides are referred to as miticides in New Zealand.]* And relatively recently in the history of beekeeping, bee disease bureaucracies were set up at public expense.

This small selection of bee health phenomena justifies the question: is modern framed-hive beekeeping, spanning little more than a century out of some three millennia of beekeeping, laying the foundations for its own demise?

In case it is, I describe here a bee-friendly way of keeping bees that is arguably healthier as well as being more sustainable in the broadest sense of the term. I hope to encourage readers to experiment with it—as I am doing alongside my hives with frames—and to join a network to exchange experience.

I started beekeeping in 2003 with five 11-frame hives and by 2006 had covered my start-up costs for 20 hives and all equipment. I was just considering starting a top-bar hive experiment when a friend interested in 'bee-appropriate' (*wesensgemäß*) beekeeping sent me a copy of chapters from a book which describes the hive of Abbé Christ (1739–1813). (1)

The main message of those chapters is that *Nestduftwärmebindung*, i.e. keeping in place the scents and heat of the brood nest, is absolutely essential for optimal colony health. Wild and skep colonies have this characteristic through the sides and tops of the combs being fixed to the walls. Inter-comb cul-de-sacs, opening at the bottom, allow the controlled ingress of fresh air, the discharge of CO_2 and the maintenance by the bees of optimal heat and humidity in the nest. The integrity of the almost closed cavities is essential for creating a 'germ-free' atmosphere in the nest. By contrast, hives with so-called moveable frames constantly thwart the bees' efforts to maintain nest integrity, mainly by letting out the nest atmosphere and heat into voids above and beside the frames, and into supers. This stresses bees, increasing honey consumption and risk of disease.

Intrigued by these arguments, I decided to experiment with the beekeeping concept behind them. The same friend then told me that the modern equivalent of the Christ hive is that of Abbé Émile Warré (?–1951) and sent me plans of it, which, however, were by Jean-Marie Frères and Jean-Claude Guillaume from *L'Apiculture Ecologique de A à Z*, not by Warré himself. (2) Their book has a wealth of meticulously illustrated practical detail about Warré beekeeping, and their hive differs mainly in that each hive-body box has a shuttered window. I made some of these hives and populated six of them in spring/summer 2007.

Wanting fully to understand Warré's original beekeeping concept, I read his book *L'Apiculture pour Tous*. (3) As it was well worth translating, if only to have handy for quick reference, Pat Cheney and I translated it and published it as *Beekeeping For All* on the Internet. (4) He called his hive The People's Hive.

Warré's beekeeping concept

In his book, Warré recounts:

> "Each winter, all my childhood friends ate an abundance of delicious bread and honey, just as I did. Twenty years later, I was the only person who had beehives. In some gardens, there was an abandoned Dadant or Layens hive, empty of course. The owners had let themselves be tempted by the advertisement of some on displays at agricultural shows. They believed they would do better with these modern hives. In fact they abandoned the only hive that suited them. [...] At my parents' home there was always plenty of honey for masters and workers, even for the farmyard animals. All our friends in the village also had their share each year". (Ref. 2, pp. 35 & 37)

L'Abbé Emile Warré (3)

But Warré regarded the practice in skep beekeeping of harvesting honey by sulfuring the bees as barbarous and thus did not advocate returning to 'skeppism'. Instead, he sought a system that was just as simple and economical as skeppism so that bees would once again be commonplace in gardens. The ideal hive had to be easy to construct by anyone with elementary woodworking skills. The annual management had to require little time, be easy and need minimal and inexpensive equipment. The bees had to winter on their own honey, yet leave a reasonable surplus for the beekeeper. The method had to give rise to docile bees so that people would not be fearful of starting beekeeping.

Construction

A Warré hive is a tiered top-bar hive comprising a stack of at least two boxes each of internal dimensions 300 x 300 x 210 (deep) mm with eight 8 x 24 mm top-bars at 36 mm centres. The floor, a plain board, is notched to form a 120 mm wide entrance and has an alighting board nailed underneath. The internal dimensions of the box resulted from long researches involving the construction of some 350 hives, but are essentially developed from features, such as cavity

Continued on page 21

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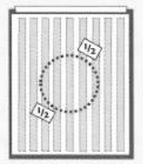

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HARMFUL: May be harmful if swallowed or inhaled.

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DIRECTIONS FOR USE - GENERAL

DOSAGE RATE: Two applications of one wafer per brood chamber at a 3-4 weeks interval. Open the sealed sachet containing 5 wafers. Place one wafer (cut in half) on top of the brood chamber as depicted in the diagram. Use two wafers uncut for a double storey box of chambers. Wafers can be cut with a pair of scissors.

APPLICATION: The first part of the treatment is to put the wafer(s) on the top of the combs of the brood chamber. Close the hive as usual. Open floors have to be closed. Repeat the application of wafer(s) 3-4 weeks later. Remove used wafers after 3-4 weeks. After opening the sealed sachet all wafers should be used immediately.

TIMING: Application can be made in the spring before honey supers have been added for the first honey flow. Alternatively, an application can be made in the late summer to early autumn period immediately after all the surplus honey has been removed. Apply when maximum daily temperatures are between 12°C and 30°C. All hives of an apiary should be treated with Thymovar at the same time, to avoid robbing.

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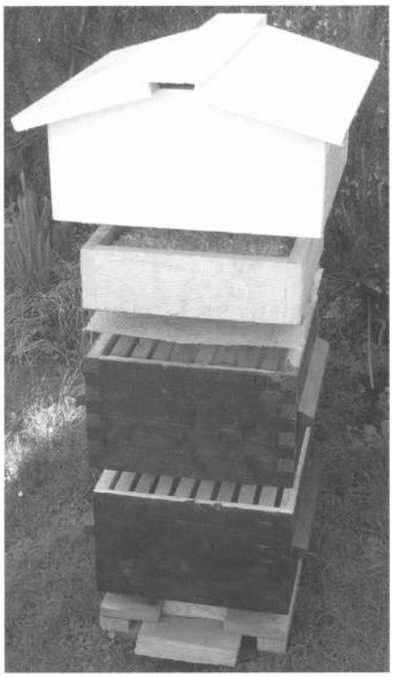
size and shape as well as the number and dimensions of combs, embodied in the hives of Abbé Voirnot and Georges de Layens.



Warré hive (exploded view)

The box walls are at least 20 mm thick; mine are 25 mm. The top-bars rest in 10 x 10 mm rebates, but, to ease construction, can just as securely rest on battens nailed 10 mm below the box rim. The bars have a bead of wax or starter-strip fixed to the centre line of their rough-sawn undersides and a coat of linseed oil on the planed upper surfaces. My first boxes had unnecessarily robust jointing. Warré recommends simple butt jointing fixed with nails. Each box has ample, firm handles.

Hive body/box

On the top box rests a layer of coarse-weave hessian sacking stiffened with flour paste. Above that is a 100 mm deep box, the *coussin* which we have translated as 'quilt', as this term conveys its function better and is not unfamiliar in this context. The underside of the quilt is covered with sacking and the top left open. It is filled with natural insulating material such as wood shavings, sawdust, straw or dried leaves. Apart from its insulating function this helps control humidity through absorbing excess moisture onto the large area of hydrophilic surface. This probably has a humidity buffering function. There is no condensation in winter.

On the quilt is a wooden ridged roof containing a board to keep mice out of the quilt and a ventilated cavity, which not only reduces solar heating of the top of the hive but also, so I am told, prevents the roof lifting off in strong winds. For various reasons, my first batch of roofs were on a conventional, not Warré, hive pattern, i.e. flat, containing a cavity ventilated in four directions and covered with recycled sheet aluminium. There are two arguments against this pattern. One is that sheet metal has a high carbon footprint and therefore violates a criterion of sustainability. The second is that, according to Warré, the drumming of rain on flat metal-clad roofs disturbs the bees.

Warré discovered that the hive body height of 210 mm, under the conditions of natural comb development, is crucial to the ease of separation of the boxes at harvest. The square box and tall, narrow format results in a brood nest whose dimensions correspond closely to a natural swarm when suspended, and, in approximating to a cylinder, is thermally efficient compared with most modern hives. The unit is reminiscent of a hollow tree with the quilt forming a roof that has a thermal conductivity not too unlike rotting wood.

Management

[Editor's note: in New Zealand, all hives must be inspected for AFB in Spring.]

Basic management needs only two visits a year and on only one of these is the hive really opened. A swarm or artificial

Continued on page 23

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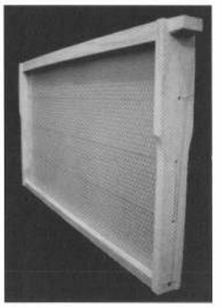

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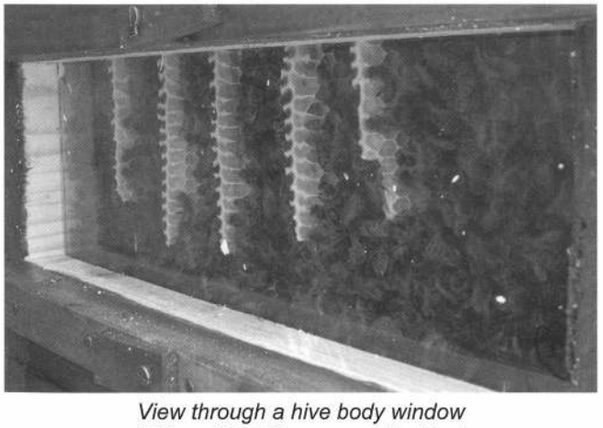
Continued from page 21

swarm of at least 2 kg is introduced at the start of the main nectar flow and, if necessary, fed with diluted honey from the same apiary. Three boxes can be given at the outset to save adding another later.

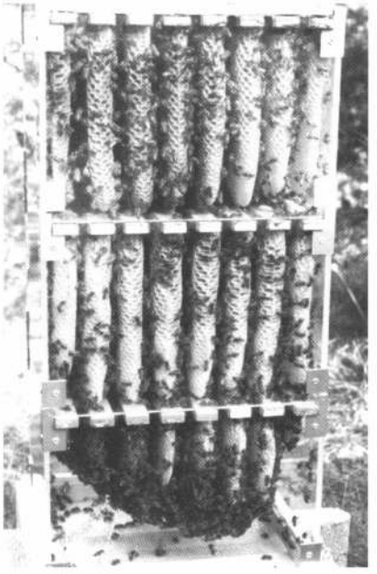
Artificial swarming from an 11-frame brood box shortly before removing the 11-frame box: the brood with an advanced queen cell is above and the queen and field bees are in the Warré hive. In between is an adapter board and queen excluder.

If windows are used, comb growth can be monitored without lifting the hive, otherwise windows are of little observation value, increase the hive's carbon footprint and reduce its cost advantage.



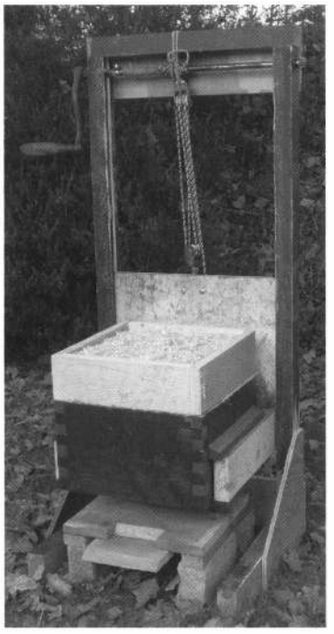
View through a hive body window (Frères & Guillaume modification)

Comb growth starts in the top box, continues as far as a bee space above the top-bars of the box below and resumes under the bars. An artificial swarm I hived in April 2007 extended to three boxes of comb by September 2007, similar to the situation shown in Figure 6, despite it being the worst season in 30 years.



An acrylic Warré hive, casing removed. Photo: Marc Gatineau (5)

In a good season, further boxes may have to be inserted underneath. If an assistant is not available, this can be done with a simple fork-lift. (5) Mine was made mostly of scrap, but there was no escaping the £20 *[Editor's note: NZ $50]* outlay for the pulleys and cord. Note that inserting boxes does not involve opening the hive, i.e. does not let the heat out. I have inserted boxes on busy foraging days without needing smoke. The bees seem wholly unconcerned, although Warré recommends smoking the hive entrance at every intervention.



Gatineau-type fork-lift for Warré hives (5)

The real hive opening occurs only at harvest, in my locality in late August or early September. The top box is gently loosened with the hive tool. The roof, quilt and cloth are removed and the bees smoked down into the box below. Any wax bridges to the top-bars below are sheared by gentle rotation of the box in both directions and the underside of the comb is inspected for brood. If there is no brood the box is taken for harvest by draining or pressing the comb. If the hive has extended to four boxes, the next box can be examined and removed in the same way provided that 12 kg of honey and two boxes are left for winter: the upper box with mostly honey and the lower with mostly comb and a diminishing brood nest. The rim and top-bars of the upper box are scraped clean, a new cloth fitted, the contents of the quilt renewed, the quilt and roof replaced and a mouse guard affixed for wintering. The wintering situation just described applies to the climate of lowland France. In colder climates, a greater weight of stores may be required, perhaps three boxes and, in extreme cases, insulation and wrapping.

In spring, the mouse guard comes off, a clean floor is substituted and a fresh box or more added underneath the two that overwintered. That is all.

Mobility of combs

Unlike in skeps, this hive is designed for removing comb if the beekeeper wishes. This is particularly important in countries where beekeeping legislation does not allow honeybees to build a bee-appropriate nest, i.e. to fix their comb to the sides of the hive, the importance of which is described above. But as with all top-bar hives, much greater care is called for when removing comb, because the comb attachments to the walls have to be cut with a thin, serrated knife and the comb, remaining fixed to the top-bar, kept vertical at all times. Warré commented on the so-called moveability of framed comb and said that he found cutting through the comb bridges in his hive easier than unsticking propolised frames. Another advantage of removing comb is to have some drawn comb spare for the various standard beekeeping manipulations. Accordingly, Warré describes a simple adapter cage for extracting honey from unframed comb in a tangential extractor. However, reusing comb is not done to the extent that it significantly undermines the brood nest renewal process that is built into the Warré hive concept.

Roger Delon introduced a modification of the Warré hive by inserting a 3 mm thick stainless steel wire in the top-bars so as to pass round the three remaining edges of the comb. (6) This wire is essentially 'invisible' to the bees in that, unlike with wooden frames, they still allow a natural nest with comb touching the walls. Although this counters Warré's aims of simplicity and cheapness—and stainless steel has a high embodied energy—it might be an acceptable temporary help to comb mobility while people who make the laws are catching up with the ideas of bee-friendly beekeeping.

Swarm control

Swarming is greatly reduced in the Warré hive because of its potentially infinite brood nest expansion and ample space for bees to hang under the developing comb. Most of the manipulations of beekeeping are possible with a Warré hive but only one additional manipulation is mentioned here, namely Warré's 'pioneering method' of swarm control. At the start of the main nectar flow, whether or not hive entrance 'beards' or other phenomena warn of incipient swarming, an entire colony may be artificially swarmed into two or three fresh boxes. If the brood is left on the old site to make increase, then the interruption of laying in both 'halves' greatly helps varroa control. Otherwise, the brood is destroyed, the honey harvested and the wax rendered. A colony with no brood to hold it back generally develops very rapidly and usually gives a honey surplus.

Varroa control

Frères and Guillaume recommended that, in combination with the pioneering method of swarm control, the colony spends a short time hanging in a decontaminator box fitted with a fluvalinate strip. With varroa developing resistance, in the author's region this is no longer an option. Some Warré beekeepers put thymol, for example ApiLife VAR®, in their hives. This risks undoing the whole point of Warré beekeeping, namely letting the bees maintain their health by suitably structuring their home. Reports that Warré hive mite counts are about one tenth those of framed hives in the same locality still need to be verified scientifically. However, several beekeepers are letting their bees co-evolve with varroa without chemicals. One has had three out of three colonies entering their fourth season without varroa treatment, so I am risking my six colonies that way, at least until the end of summer 2008, to see how things develop.

Warré's aims achieved

The Warré hive is easy and cheap to make. The management time and effort is relatively very little. The equipment required is minimal: a centrifugal extractor is not required, although, if you have one, Warré gives precise instructions for extracting comb. The bees winter on their own honey. Sugar is fed only in emergency. Warré found that the bees, left almost entirely in seclusion, as indeed befits them, became so docile that he could work his hives veil-less with his spaniel sitting at his feet. A commercial Warré beekeeper corroborates the observed docility. (7)

Warré and other beekeepers have proved that honey from such hives is cheaper to produce than that from framed hives. The brood nest is constantly moving down onto new comb, therefore healthier. The bees themselves determine worker cell-size and drone cell numbers. It is natural, organic, bee-friendly, sustainable beekeeping.

Most modern experience with the Warré hive resides in France and Belgium with some in Germany, Switzerland and Austria. However, in January 2008 an English web portal for Warré beekeeping was set up. (8) This points to source material and introduces various modifications that have arisen since Warré's time. It also links to a newly established English Warré beekeeping e-group and a web forum. Warré experiments are now starting in USA (including Alaska!), Canada, Spain and Sweden. Progress of the experiment described in this article can be followed on the author's web page. (9)

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1. Thür, J. *Bienenzucht: Naturgerecht einfach und erfolgsicher*. 2nd ed. Friedrich Stock's Nachf. Karl Stropek (Buchhandlung und Antiquariat), Wien, 1946. The

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essential parts of this are available in German on Bernhard Heuvel's sustainable beekeeping website: http://www.selbstversorgerforum.de/bienen/bienenindex.html and in English at http://www.mygarden.me.uk/thur.pdf.

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Court action necessary to recover debt owing to the AFB NPMS

As mentioned in earlier articles prepared for this journal, one of the more unpleasant duties I have to confront is the problem associated with monies owed to the American Foulbrood National Pest Management Strategy (AFB NPMS). Amounts owed have built up over the years.

Some 12 months ago I recommended to the Management Agency the time had now come to draw a line in the sand and commit to whatever it takes to recover debts owing. The Management Agency agreed and commenced bankruptcy proceedings against a beekeeper to recover a significant debt consisting of outstanding levies, penalties, cost recovery, collection costs and other charges. This action resulted in the beekeeper concerned paying the debt in full to the courts.

Beekeepers must remember that the Management Agency is required to collect all monies owed to the Strategy, and has no legal authority to write off debt for any reason. In addition, the Management Agency is legally entitled to collect all costs associated with recovering the debt.

With the success of this action I am now intent on pursuing other non-payers.

- Rex Baynes
AFB NPMS Manager

NBA Library report

We have recently purchased and added to the Library three books suitable for new beekeepers and one for children (no doubt tempting and suitable for beekeeping adults—we are all young at heart!).

The *Bee Book* and *Bee Agskills* are both Australian books written on similar lines to the New Zealand book by A Matheson. The third book by Dadant Publishing, *First Lessons in Beekeeping*, is an American book and very good for all beekeepers as well as beginners. There is a good section on pests and diseases but the treatments with chemicals may not be appropriate in New Zealand. Care should be taken when considering overseas treatments, as beekeepers should only use treatments that have been approved by the New Zealand approvals system.

The fourth book, *The Story of Honey in Australia*, would be particularly suitable as a basis for presentations to children of all ages, containing good photographs and sketches.

All books are available for rental to NBA members.

- Roger & Linda Bray
Librarians

Commentary: tutin toxin—educating beekeepers

The beekeeping industry has long debated whether we mention toxic honey. Some feel it could adversely affect the sales of New Zealand honey.

Well, we now have a recurrence of a problem that has happened several times in the past: some unsuspecting hobbyist has produced and marketed comb honey that contains traces of tutu honeydew. "Toxic honeydew is produced when the vine hopper *Scolypopa australis* feeds on the toxic plant tutu (*Coriaria arborea*)" (Matheson, page 93). When bees collect honeydew that contains tutin toxin, it contaminates the honey. This honey is not toxic to bees, but as can be seen from the most recent episode, it has serious consequences for those who have eaten it.

The problem of education still exists as not everyone has access to the Internet, and most new beekeepers have never heard of toxic honey. To them, all honey is nature's liquid gold.

What has changed to cause this problem? Under the old regime, MAF used to do targeted audits to make sure beekeepers had removed their hives out of the known tutu areas by a certain date, no matter what the weather or flowering conditions.

The new regime introduced is more flexible but now the responsibility for risk management is on the beekeeper. Beekeepers now monitor passion vine hopper population levels and because there are other crops to chase, they take the honey off and move most of their hives out of the affected areas well before the height of summer.

Commercial beekeepers get together and spread the word on conditions and honey flow. Last year the Bay of Plenty Branch of the NBA highlighted this issue at their field day, and this year the Waikato Branch of the NBA put out a notice advising beekeepers in their group that passion vine hopper numbers were high and that beekeepers should act accordingly.

But what communication does the lone hobbyist beekeeper get—especially a new beekeeper? With no hobby club anywhere nearby, he or she can be left out of the loop. They will have got their information out of beekeeping books from the library. References to toxins in most beekeeping books usually pertain to timber preparation and the two honey plants that are toxic to bees. Most just skip over the tutu reference in Andrew Matheson's book because they have not heard about it. Conditions change: perhaps this has also.

This magazine goes out to all registered beekeepers in New Zealand twice yearly, but it hadn't crossed my mind to include any advice on tutu and passion vine hopper populations as it's not a problem in my area. I take pictures of tutu plants as a reference to conditions, but haven't seen a vine hopper for years.

In the days before 'user pays' we had government-funded apiary advisory officers who spent some of their time in the field. They helped to do inspections for AFB and had time to talk to beekeepers. AG-Link fact sheets were available and were sent free to beekeepers/beekeeping groups, or you could subscribe to get access to other agricultural and horticultural knowledge.

Today we have but four advisory officers and they are virtually deskbound, handling copious quantities of paperwork that allow commercial beekeepers to function and export honey, bees and bee products.

Should government be putting more money into the 'public good' side of beekeeping so information is spread around? Perhaps we should be lobbying for government money to have more people 'on the ground' for actual beekeeper training and auditing. Or should we just include the information pamphlet in with the pack that goes out to all new beekeepers and hope they will have registered? I think we should be doing all three.

In conversation with NZFSA, they said they could do the auditing but they would have to pass the cost on to all beekeepers. If they can't get funding elsewhere, why don't they just undertake the audits and recover the cost from all the beekeepers that are found not complying, instead of lumping the cost on to honest, registered beekeepers?

- Frank Lindsay
Chair, Publications Committee

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From the Publications Committee

We are endeavouring to change the time you receive your copy of *The New Zealand BeeKeeper* to the beginning of each month.

Hence the deadline for articles and advertising will be gradually brought forward over the course of the year. The deadlines for the next four issues are as follows:

ISSUE	DEADLINE FOR ARTICLES AND ADVERTISING
May	10 April
June	2 May
July	5 June
August	3 July

Keep an eye on page 3 each month for deadline details as the year progresses.

- Frank Lindsay
Chair, Publications Committee

From the colonies

Northland Branch

Summer has been kind, with a couple of good downpours at the right time. Most honey has been harvested and overall it's been a good year, but manuka honey is way down on usual volumes. Which brings me to the subject of 'What is manuka honey?' Is to 40 percent, 50 percent, or 90 percent pure? The industry as a whole has to resolve this question; otherwise, the whole industry is going to destroy the credibility of this great product.

As an example, in my case I extracted 1000 kilograms of honey, all from so-called 'manuka sites'. Using a double-spinning system, I got 100 kilograms of what I call manuka honey. The remaining 900 kilograms (four drums) I classed as bush honey, but I know this 'bush honey' has got a large percentage of manuka honey in it. Others may have marketed it as manuka honey. Is this right?

I've been told that up Kaitaia way is called the 'wild west' of the honey world or 'the manuka wars' of Northland. Literally thousands of outsiders' hives are being dumped to plunder Northland's bounty.

Hopefully a mutually acceptable solution to this situation can be found, but who is going to take on this task: the NBA? The Department of Conservation?

Like rust, varroa never sleeps, so be on guard after honey removal. Hives found in good order at this time can a week or two later be devoid of resident bees, with just robber bees busily removing all the remaining honey stores.

The next jobs are requeening and wintering down.

The Northland Branch will have its AGM coming up soon, then there may be a little time off before it all starts again.

- Garry Goodwin, Branch President

Auckland Branch

The Auckland Branch is intending to run a DECA course/test later this year. Please provide expressions of interest to the Auckland NBA Branch Disease Coordinator, Mr Bob Blair PH 09 479 4354, or refer to the inside cover of this magazine for other Branch contacts.

- Bob Russell

Poverty Bay Branch

Autumn is making its presence felt after two months of heat. It's now a lot cooler, with onshore winds and much more rain than usual: La Niña all right.

As I write this I have just heard Jim Anderton on Radio New Zealand National's rural report, still trying to convince us about the independent review of the Australian honey import issue. I have always thought that if you make a submission opposing these things, the government then says that you can't argue or mention anything from an economics base. So if you do contact MAF or the Government, you should mention the economics of bringing in Australian honey. The NBA people who are doing their best to fight this import issue are doing a great job: well done. No other association is doing that much.

On another note, top marks to G L Jeffery for his last few letters on the state of the beekeeping industry. They are good hearty words...power to the people. So that means unity and not being walked over by the civil servants.

Varroa is in Golden Bay now and is probably spreading to other places. My advice for you Mainlanders is to point out that when varroa moves into a new area it spreads very quickly. If you have an apiary say, 60 kilometres away and your hives that are closer to your first infestation don't have any mites, don't make the mistake of thinking that the apiary further away won't have mites: people spread varroa quicker than bees.

When varroa was making its way into my own hives, I did a lot of monitoring. The best method in my opinion is natural mite fall on a homemade sticky board on the baseboard, as this method is very quick. When monitoring, always choose the strongest hives/the most active hives (one and the same), and the hives on the end or front, which are the hives that pick up drift field bees.

I would forget the sugar shake technique as it is time consuming and not reliable to test only 300 bees out of 60,000. And for you organic beekeepers, remember that you can stay organic as there are effective methods. I have used only organic treatment for the last four years.

- Don Simm, Branch President

Waikato Branch

Only a few millimetres of rain have fallen since I last wrote a month ago: this means parched and stressed beekeepers, particularly those with premises reliant on rainwater. They say the wars of the future will be fought over water—I can well believe why!

Average crops have been reported and still a few patches of pennyroyal about, but not much else. I have also heard of patchy takes with queen cells. At least the mite levels still seem fairly low.

Wasps are a problem in some areas, with both the German and Common wasps in equal numbers. Frank Lindsay wrote in the February issue of the journal that German wasps could be a problem. However, Common wasps can be equally so in this area. They are slightly smaller than the German wasp with more noticeable black stripes, and are just as vicious.

Our branch held a hastily convened meeting on 22 February to discuss the proposed changes to legislation. I believe

beekeepers should be pleased with the response of the NBA Executive, and we in the Waikato Branch must commend Russell Berry for the work he put in on his submission to the select sommittee. The branch was very happy to support him. On 14 March we will meet again and will hear from Russell about the submissions made to the select committee. We will also decide if we are holding a field day this year —watch this space.

- Pauline Bassett

Bay of Plenty Branch

The honey crop seems to be good all round the district and now we have had a little rain the pasture is recovering slowly. By no means enough rain, but it all helps. With the moisture has come a definite autumnal feel to the air, although the nights are still warmish.

Like in all districts, the parliamentary antics are causing much discussion here and anxious times are ahead; meanwhile all the work must continue as Nature doesn't stop for Parliament. A great vote of thanks to all of the people involved in making submissions, both written and verbal, on behalf of the industry. Fantastic stuff, and thank you all for your passion and dedication.

The BOP Branch will be having a field day on Saturday 14 June. Check the NBA website for details closer to the date, or information in later editions of this journal.

-Barbara Pimm, Branch Secretary

Hawke's Bay Branch

We had a well-attended meeting in February where we covered grafting and cell raising. A big thank you to all those that helped, especially Mary-Anne. *[See page 35 for a report and photos.]*

Parts of Hawkes Bay could use some rain but it is not too bad for this time of year. Varroa numbers have built rapidly in the autumn. Seeing hives with high mite numbers should remind us all of what will happen when the current treatments we have available no longer work.

A rapid increase in hive numbers in this area is causing concern, with some beekeepers acting like they have no ethics at all. It is disappointing to see this, and makes it very hard to feel caring, sharing and supportive when they come to you for advice. Perhaps we need a separate register for those without ethics so they can all put the hives on top of each other and leave the rest of us alone.

Talking of ethics, I have heard that 80 boxes of manuka honey have been stolen recently from hives on the Taupo Road. Any information on this theft will be gratefully received.

- John Berry, Branch President

Southern North Island Branch

This has been one of the most hectic times that I can remember. The combination of normal beekeeping work plus all the phone calls, meetings, etc to do with the new Biosecurity and Hazardous Substances and New Organisms Legislation

Amendment Bill has meant that there are not enough hours in the day.

In our area, reports are coming in of a very reasonable harvest. Some areas have experienced the dry conditions with nectar just all of a sudden stopping. In the Wanganui area, we are lucky with our temperate climate and good honey yields have been harvested.

As I write this Parliament's Primary Production Committee has been receiving submissions on the proposed Bill that the present Government is trying to ram through. I find it very disturbing that a government can say that even though the Court of Appeal said that MAF was wrong, the New Zealand Government will allow imports of honey anyway. So much for the 'rule of law'.

Conference update: Masterton

There is more material regarding Conference in the insert to this journal. There are many things to see and do in the Wairarapa, especially if you are interested in wines around the Martinborough area. There are also a number of boutique industries in and around Masterton that will attract the ladies. The Conference Committee is compiling a list for attendees to consider. There will be a great bus trip for the ladies, plus another bus trip for those who appreciate a fine beer—more later. (Hint: must have good footwear.)

Do not forget the 'Roy Paterson Challenge' Trophy for those inventions or good ideas that make life easier for you. There is always a new way of approaching even routine things that can open others' eyes, and it could be a winning idea. Bring a sample or story to Conference. Think of the great ideas that John Dobson has shown us, or the waxing of plastic frames with Chris Valentine's roller, or a new drink based on honey, all of which have been winners in the past.

The Branch AGM is on Monday, 14 April, AsureQuality conference room, Palmerston North.

- Neil Farrer, Branch Chairperson

Nelson Branch

At our NBA branch meeting on 3 March, the main topic discussed was the varroa mite—where it had travelled to and how treatments were going.

The mite is now established throughout the Nelson area, as was expected following pollination. The infestations range from just a few mites in some Golden Bay areas with sugar roll testing, to a reinvasion of mites in the Brightwater to Nelson

Flying into Wellington for the Conference?

- Taxi from airport to the Wellington Railway Station: approximately $35
- Co-op Shuttle to the Railway Station: $15 per person
- Metlink Airport Flyer BUSES run every 30 minutes from the airport to the railway station. They take 27 minutes and cost $5.50: go out the doors by the baggage claim to where the shuttles are, turn hard right and the Flyer is there. Buses start running at 6.20 am; last run is 8.20 pm.
- Trains To The Wairarapa Nice New Carriages $14 Each Way

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" 6.53 am " 8.34 am
" 10.30 am " 12.00 noon
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PLEASE NOTE: THERE IS NO DIRECT BUS LINK TO MASTERTON FROM WELLINGTON

- Helipro: 04 472-1550. Helicopter from Queen's Wharf (mid-city) to Masterton: costs approximately $2200 for 4 persons who have had a good manuka crop. (Limited baggage allowed.)

areas, where the mite has been established the longest and where back-to-back treatments are required.

The mite has well and truly crossed the Pelorus Bridge biosecurity line in Marlborough and has been found in a honey house in Blenheim. This is before the treatment of honey from infested areas has been completed (freezing honey from hives in the infested areas in specified containers for 48 hours prior to going to the extraction premises). There has been a recent report of mites in the upper Wairau area (within the designated varroa-free area), so Biosecurity New Zealand has given notice, in conjunction with the Marlborough Beekeepers Association, that the internal control lines will be dropped at the end of this season. At this meeting, the Nelson Branch of the NBA supported the dropping of the Pelorus and Wash Bridge control lines immediately.

Beekeepers repeated the message that it doesn't pay to be complacent or late with treating the varroa mite. Several beekeepers have checked too late or have not re-checked following treatment, and have been left with struggling hives sick with PMS.

The honey harvest has been good following the longest and hottest summer in years. Because it was so dry, pollen collection was poor. The end of February has been cooler and we have finally received some rain in early March. Many queens are shutting down early but luckily drones are still viable, as a lot of beekeepers are popping protected cells into their hives so that these new autumn queens will come into spring strong. Most keepers of hives are experimenting with smaller units (one brood nest) as was advised by North Island beekeepers at our varroa workshops.

The autumn dew is not yet apparent (lots of wasps around stealing it perhaps?) but there are good yellow dandelion-family flowers available. We hope that our hives will fatten up on this for their winter stores if we continue to get warm and settled weather.

- Merle Moffitt

Canterbury Branch

Another season is almost concluded, with only the wintering rounds to go. The continual summer has rolled on in Canterbury; once again the value of irrigation to crop production has been invaluable in that it allowed beekeepers to produce something.

Consensus in the region seems to be that crop production in the region is either at or just below the long-term average. Considering how dry it became in December, I personally was surprised at what the bees managed to do. It just goes to show there are a lot more factors in play than just soil moisture and clover availability to produce a honey crop.

After such a tense season (will it or won't it produce?) it is more than a little disappointing that the prospects for sale are less or at best similar to last season. Honey products seem to be one of the few primary produced products that aren't on a parabolic rise—why is that? With ever-increasing costs (not only compliance but general inflation: does anyone out there believe the Government statistics saying that inflation is 3%?), it won't be long before beekeepers will simply not be able to absorb any more costs. With varroa on the horizon this should be paramount in South Island beekeepers' minds. It is one thing to work for nothing yourself, but it is going to be a hard sell to get anyone else to work for you at our current salary package.

- Brian Lancaster

Otago Branch

For many beekeepers around the 45th parallel this season would be one of the best for quite some time. A long and settled summer, albeit too dry for some, has meant generally good to better than average honey crops. The "on the brink of a drought" conditions often favour beekeeping down here as long as we keep getting at least some summer rains, and the ground wasn't too dry going into the season. This year many districts had only just enough rain to secure a good crop. The exception would be the hotter and drier Central and inland North Otago country. Some of these areas did very poor crops, with at least one North Otago beekeeper having no crop at all and feeding bees most of the summer. Recent rains in Central have helped hives make at least winter stores on a Vipers Bugloss flow. Forest areas did well in the hot and dry and the local bush crops of kamahi, rata, and manuka, etc. have been good.

As an indication of how exceptional the summer has been, I spoke to a Catlins resident the other day who said he had an excellent outdoor tomato crop: a first for him living there. The Catlins is famous for its scenery, not its hot summers. Whether this is a sign of things to come or just a pattern for a year or two remains to be seen, but it is a case of making hay when the sun shines in this part of the world. With a good summer and crop, excellent bee health and no varroa yet, this hopefully isn't the last of the golden weather for southern beekeepers just yet.

Having had such a benign summer I suppose we had better batten down the hatches and drain the pipes soon, or at least get some dry wood in, because there just has to be some real weather on the way!

- Peter Sales

Do's and don'ts of AFB control

[This excerpt is from the revised edition of Elimination of American Foulbrood Disease without the use of Drugs—a practical manual for beekeepers, *by Dr Mark Goodwin.]*

Do

Inspect your hives for AFB at least twice a year.
Inspect hives before removing bees, honey or equipment.
Inspect all brood frames.
Shake bees off frames before inspecting them.
Train yourself and your staff in techniques to recognise and eliminate AFB.
Report AFB to the Management Agency within 7 days.
Burn infected colonies.
Feed pollen substitutes rather than pollen.
Feed sugar syrup rather than frames of honey.
Use hive and apiary quarantines.
Only use approved sterilisation methods.
Use a thermometer and timer when paraffin wax dipping (10 min at 160°C).
Treat hives to clear up parasitic mite syndrome (PMS) before checking for AFB.
Become an approved beekeeper.
Get suspect AFB samples tested.

Don't

Don't feed drugs for control of AFB.
Don't scorch boxes to sterilise them.
Don't try to control AFB by removing diseased frames.
Don't extract honey from infected colonies.
Don't feed bee-collected pollen to colonies.
Don't feed extracted honey to bees.
Don't let hives be robbed out.
Don't shook swarm.
Don't let stock knock over beehives.
Don't use steam chests to sterilise infected equipment.
Don't distribute the equipment from dead hives between other hives.
Don't allow colonies to die of varroa or any other cause.

Hawke's Bay Branch hummmms

The Hawke's Bay Branch of the NBA met on 18 February at 7.30pm at Arataki Honey, with about 35 members and guests attending.

The Branch doesn't have regular set meeting dates. Because we now hold our meetings less often than in the past, it is crucial that the content is of value to the members. The aim is that they learn something practical to make their beekeeping experience not only more enjoyable, but also more successful and profitable.

In the beginning everyone sat back and listened

So rather than a stuffy meeting with lots of minutes, following on from our very successful 'Disease Focus' workshop in November we had another hands-on approach workshop with a focus of 'Queen Production'.

John Berry demonstrated how he requeens in his operation using two-day-old cells. John showed everyone how to graft with a paintbrush, and he also explained how he sets up his starter hives.

John Berry explaining how to set up a hive

Nico Parlea and Mary-Anne Thomason from Kintail Honey demonstrated grafting using a Chinese grafting tool, and discussed setting up cell starters and finishers using an excluder cage for the cell bars.

Cell protectors, 24-hour-old grafted cells and 10-day-old cells were on hand for everyone to look at. Cell cups, larvae, lights and glasses were available and many of the beekeepers had a try at grafting; some were more apt than others. Nico, John and Mary-Anne tried to give advice on the most successful way of picking up a larva.

If nothing else was achieved, everyone appreciated more the dedication and time that goes into producing queen cells and queen bees.

Nico Parlea demonstrating grafting

The meeting concluded with a cup of tea and a biscuit.

- Mary-Anne Thomason

By the end everyone was into it

DON'T SWAP FRAMES BETWEEN HIVES UNTIL YOU HAVE CHECKED THE BROOD NEST FOR AFB

Is honey beneficial for our health?

Lynne Chepulis (Honey Research Unit, Department of Biological Sciences, University of Waikato, Hamilton, New Zealand)
Dr Nicola Starkey (Department of Psychology, University of Waikato)

Ageing and health

Many aspects of health are known to deteriorate in older age. In both humans and animals, ageing is associated with a slow deterioration of cognitive performance, and particularly of learning and memory. Recently, evidence has suggested that deteriorations in learning and memory can occur during middle age rather than just in older age and that cognitive declines in middle age can predict deficits in these areas in later life. In addition to cognitive decline, ageing is also associated with increased prevalence of obesity, cardiovascular disease and diabetes.

We are what we eat

These types of illnesses are all influenced by what we eat. Different foods have different Glycemic Indices (GI refers to the increase in blood glucose that results after consuming food). High GI foods contain carbohydrates that break down quickly, whilst low GI foods contain carbohydrates that release glucose slowly into the blood stream. In terms of health and wellbeing, long-term consumption of high GI foods has been linked to increased Type II diabetes, increased cardiovascular disease, excess circulating insulin and mortality. By contrast, diets based on lower GI foods are associated with lower risk of cardiovascular disease, better regulated insulin secretion, increased satiety and better fat oxidation. Evidence is also accumulating that low GI diets may be better at promoting weight loss than the traditionally recommended low fat and high carbohydrate diets.

Why is GI important?

Prolonged high blood glucose levels have been linked to high levels of oxidative stress, which causes damage to DNA, protein and membrane lipids. Under normal circumstances antioxidants within our body counteract this, but as we age, endogenous antioxidant secretion decreases. All cells within our body are susceptible to this type of damage, but brain tissue is particularly at risk as it generates more free radicals, it has higher levels of polyunsaturated fatty acids in neuronal membranes, has lower levels of antioxidants and high oxygen requirements. Research has confirmed that oxidative stress in an important factor in the development of age-related dementia and cognitive decline.

Minimising oxidative damage

So, in order for us to age more healthily we need to decrease the amount of oxidative damage in our bodies, and there are various ways in which we can do this. However, two of the easiest to manipulate involve consumption of a lower GI diet (which is less likely to result in high blood glucose levels), and increasing our consumption of antioxidants to counteract the harmful free radicals. One naturally occurring sweetener—honey—has both of these properties.

Honey

Honey contains simple and complex sugars in addition to vitamins, minerals, acids and enzymes. It has also been shown to have a lower GI than sucrose, which is probably due to the fact that the sugars in honey are a mixture of fructose and glucose, rather than sucrose (there is evidence to suggest that different types of sugar have differing effects on blood glucose). Some honeys are also a good source of antioxidants, which have been shown to increase serum antioxidant levels in humans.

Honey research

The beneficial effects of consuming honey as a supplement/ sugar replacement in humans has not yet been evaluated, but animal studies carried out by Lynne Chepulis at the University of Waikato suggest some promising results.

The first study examined the effects of four different diets on weight gain in young rats over a six-week period. The diets were prepared so that they approximated the composition of a typical New Zealand diet (based upon data from the 1997 National Nutrition Survey), the only difference in the diets being the source of the sugar. One group of rats received a sugar-free diet, another group received a sucrose-based diet, the third group received a diet based on mixed sugars (as in honey) and the fourth group received a honey-based diet (a honey dew honey with high antioxidant content). Results showed that by the end of the six-week period, the honey-fed rats had gained a similar amount of weight to those on the sugar-free diet, and significantly less weight compared to those on the sucrose or mixed sugar diet (approximately 15% less). Therefore, when taken over the short term, honey appeared to be a healthier alternative to sugar.

As a follow up to this study Lynne Chepulis conducted another study to investigate the effects of feeding honey over a longer term. In this study rats were fed diets for 12 months which were either sugar free, or contained sucrose or honey as the sweetener. Various biochemical measures were taken at the end of the study in addition to behavioural assessments which examined activity, memory and anxiety.

Following long-term feeding (12 months), honey-fed rats again showed significantly less weight gain. Importantly, though, this study also revealed that eating honey resulted in nearly 10% less body fat as well as lower overall blood glucose levels, 18% higher HDL cholesterol (good cholesterol) and less oxidative damage compared to the sucrose-based diet. All three groups of rats consumed a similar amount of food, and had similar activity levels so these differences were not due to differences in food intake or activity between the rats on the three different diets. In addition to these improvements in biochemical measures, the honey-fed rats also showed significant improvements in cognitive performance. These animals demonstrated better spatial memory (they were better at remembering which part of a maze they had visited before) and less anxiety than those on the sucrose-based diet (suggestive of lower levels of oxidative damage in the brain). These findings suggest that

honey may well be a much healthier alternative to sweetening our diet than sucrose.

Future research

At this stage, these findings are difficult to translate into what might be effective in people, and how much we may need to consume to have these effects. In the studies undertaken by Lynne Chepulis, the honey-fed rats had all of the sugar in their diet replaced with honey, and this is clearly not feasible in humans. As well, the levels of sugars used in these studies was only half that of a typical New Zealand diet, and it would be interesting to determine what effects would continue to be observed when honey replaced only some of the sugars in the diet (i.e. when it is present in addition to sucrose and/or other sugars such as glucose). Thus, before trials of honey supplements could begin in humans, further animal studies need to be conducted to determine the quantity of sucrose which needs to be replaced with honey to be beneficial.

In addition, further work is needed to determine which types of honey are most beneficial. For example, we do not yet know if it is the low GI of the honey or the antioxidants it contains which produce these effects. We are currently applying for funding to carry out further research and we will keep you up to date with our future findings.

Contact details of authors

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Conference Dinner, Wednesday, 16 July

Transport to and from the venue
Formal dress
Lovely meal
Once-in-a-lifetime opportunity to visit this venue
You have heard of King Kong: this is better than Snoopy's Christmas.

Shopping and points of interest in the Wairarapa

All are within an hour's car trip. Hire a car and trip around.

- Masterton shopping, Golden Shears.
- Wineries are situated from just north of Masterton, to Gladstone and Martinborough.
- Stonehenge Aotearoa halfway between Carterton and Martinborough. $12 Adult and $6 for children—allow 90 minutes.
- Carterton: Paua factory (jewellery), boutique and coffee shops Richmond Garden, just 15 minutes south of Masterton
- Featherston: Fell engine museum, half an hour south of Masterton. Fell engines used a third rail to pull the train carriage up the steep incline over the Rimitaka hill. As many as six engines were hooked into a train. A restored engine is on display, plus photo gallery.
- Pukaha Mount Bruce National Wildlife Centre, 30 kilometres north of Masterton. Kiwi House, captive breeding programme for endangered birds, bush walk, eels, etc. Adults $8.00; children under 17 free.
- Adventure tourism is also available in Martinborough
- Pottery

Beekeeping and the law

[This excerpt is from the revised edition of Elimination of American Foulbrood Disease without the use of Drugs—a practical manual for beekeepers*, by Dr Mark Goodwin.]*

New Zealand beekeepers have a number of legal obligations that must be met regarding American foulbrood disease. In summary, the most important of these obligations are to:

1. Only keep bees in moveable frame hives.
2. Keep access to apiary sites clear from obstruction.
3. Not feed drugs or substances that mask, obscure or conceal the symptoms of AFB.
4. Not keep beehives more than 30 days in a place other than a registered apiary.
5. Register all apiaries with the Management Agency.
6. Mark all apiaries with the beekeeper registration code.
7. Change registration numbers only by the beekeeper who has the code number assigned to them, unless permission to do so is provided by the management agency.
8. Remove all identification codes when transferring the ownership of the hives.
9. Where a case of AFB is found, the owner of the hives must report to the Management Agency within 7 days of becoming aware of the case.
10. Complete an Annual Disease Return by 1 June each year.
11. Destroy equipment and bees associated with a case of AFB within 7 days.
12. Not deal with or transfer ownership of material associated with a case of AFB.
13. Sterilise beekeeping equipment only by approved methods.
14. Ensure hives are inspected for AFB by an approved beekeeper with a DECA provided to the Management Agency by 30 November (unless there is a certificate of inspection exemption).

Under certain conditions there are some exemptions for these obligations.

AsureQuality Limited contact information

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AsureQuality Apiculture Officers can also be reached on 0508 00 11 22.

Harvest time for Mossop's Honey

Beekeepers at Mossop's Honey having a well-earned break after a day's work removing 850 supers of honey.

Above: Mossop's workers loading one of their trucks with supers of honey. Below: Mossop's truck with over 1000 empty supers, heading out to super up hives.

Photos: Phillip Peterson.

Trees and Shrubs of New Zealand

Dracophyllum subulatum

Maori name: Monoao

Common names: Narrow leaf grass tree; Spiderwood

In the genus Dracophyllum many species are similar but grow in select areas only, especially in the 'heath-like' species.

On the Volcanic Plateau grows *subulatum* and *recurvum*, often together.

These low-spreading shrubs are up to 60cm high. Its bark is grey to black. Leaves are at the tips of the branches with colours ranging from green to reddish brown, giving an area of Monoao the appearance of being an area of dead-looking scrub.

The flowers are bell-like in racemes with the colour varying from red to white. The honey is dark amber in colour with a strong herbal or musty flavour. Their flowering time on the Volcanic Plateau is December to February, with other areas having their own specific flowering times.

The larger leaved species of Dracophyllum grow up to 10 metres or more but are more solitary in the bush, so no nectar collected could be identified as coming from them.

Dracophyllum subulatum

All species of Dracophyllum are good for firewood as the wood burns easily.

- Tony Lorimer

About the Apiary

Every day, more and more drones are being thrown out of the hive in my garden. The cooler nights have triggered the bees into winter preparations. The bees are dragging down honey from the outside frames and packing it around the brood nest, while a few field bees are bringing in the last of the nectar and pollen contracting the brood nest, ready for winter. Bees can also be seen bringing in propolis to seal any cracks and gaps in the hive.

Well, that was the activity until the third week of March, when suddenly the bees starting flying again en masse. Interestingly, the bees were also fanning at the entrance and I could smell that distinct aroma of eucalyptus honey. My bees had found a late-flowering eucalyptus tree and were making the most of it.

This may give some extra stores but also trigger brood rearing again, which could cause the bees to eat into some of their winter honey stores. If they do, the hive may require additional feeding now to increase reserves to ensure they survive the winter.

We should have already done our bit to ensure the hive's survival by replacing any queens that produced a spotty brood pattern. However, it's a good idea to do a complete brood inspection three to four weeks after the robbing season is finished, just in case the bees found a source of honey that contains the spores of *Paenibacillus larvae larvae*—AFB.

Bees at this time of the year are on guard and any bumps or knocks can bring out guard bees, so smoke the bees properly before opening the hive. Put four or five good puffs of smoke into the entrance, wait two minutes and repeat. After another two minutes, remove the roof and crown board and put a gentle puff of smoke across the top bars to control the bees.

Control is important: if you allow time for the smoke to take effect, you will have much quieter bees that are a pleasure to work. Remove the supers and put them on the upturned roof. Continue to waft a little smoke over the top bar whenever a crowd of bees appears. Now you can start your inspection from the bottom super up, checking frames that have brood in them. You are looking for capped or perforated capped cells amongst brood that has already emerged. Flick off the cappings with the tip of your hive tool to expose the larvae underneath.

During this inspection, you should move frames with broken lugs or dark heavy frames to the outside of the super so that they can be replaced in the spring. If any of these frames contain brood and are in the centre of the super, move them to the outside over two visits so that you don't break up the brood nest.

Check that all other woodware is in good condition, and that the hives are sloping slightly forwards so the rain runs off the landing boards. Generally hives have already had their entrances restricted to 100 mm by 10 mm, which helps the bees defend the hive against wasps and robber bees by day and mice entering at night.

Honey stores

Of the swarms that issue from hives each year, only 10 percent make it through to the next spring. Late swarms do not have an opportunity to store enough honey to survive. Varroa numbers can weaken other hives so that there are insufficient bee numbers to maintain the hive once brood rearing commences again.

We are perhaps the saviours of our bees. Miticides reduce mite levels to near zero, and we can provide additional food in the form of sugar syrup if they run short of stored honey so that our winter losses are within two to five percent.

The trick is to not to take off too much honey for yourself just after the flow has ceased. However, in some seasons you may leave enough to winter over on but the bees continue brood rearing, stimulated by a dribble of nectar coming in. By winter, they are short of honey. This is when it is necessary to feed sugar syrup.

Hives should go into winter with sufficient stores to get them through to spring. A single-super hive should have a minimum

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of six frames of honey, while a two-storey hive should have 10 or more full frames of honey. Honey is better than sugar syrup converted into honey, as the natural product contains vitamins and minerals essential for the bee's growth. If the bees are short of the recommended requirement, then it is better to feed sugar syrup now until the recommended reserve is achieved. Feed thick sugar syrup (two litres of sugar to one litre of water by volume) via a feeder within the hive. A strong hive should take down one or two litres per night. If it's still warm enough and you have a hive 'full' of bees, they might even cap it.

I winter my hives three supers high as we are in the lower North Island and have very early bush flows; also, the weather can turn against us in spring. Hence I winter with ample stores, but there is a lot of debate as to whether this is really necessary. Forty years ago, beekeepers found that a small hive wintered just as well, would build up to the same level as a strong hive (with reduced swarming) most years and would produce just as much honey. Learn what is best for your area, but ask an experienced beekeeper or experiment with a few hives.

Pollen frames are essential. Brood rearing begins again in the middle of winter and the bees need pollen to rear brood. I tend to store honey frames with pollen in them rather than extract the honey from them, and add these frames to nucleus hives to ensure better winter survival.

Bees also require a change of air every hour during the winter to allow carbon dioxide and moisture given off by the bees to escape. In really cold areas, moisture accumulation in hives can lead to a greater consumption of stores and perhaps an early demise in the early spring. Too much ventilation is generally not a bad thing, as feral bees have hives with comb exposed to the elements.

I provide top ventilation by turning the hive mat, in my case a split board, over so the entrance side is down. My split boards have an entrance of about 25 mm by 10 mm and this tends to give a good airflow through the hive.

I also sometimes leave a nucleus hive on a split board above a strong hive. In this case I raise one corner of the bottom side (away from the predominant wind direction) of the split board slightly, by placing a twig or match underneath to give the main hive below some upper ventilation. The advantage of placing a nuc hive on top of the main hive is that the main hive helps to keep the nuc hive warm (i.e., the heat from the bottom hive radiates upwards into the nuc hive).

Then it's just a matter of making sure the roof doesn't leak, and placing something on top or tying a thin nylon rope around the hive to prevent the roof being blown or knocked off in a storm.

I use nylon ropes around hives that are not fenced in by an electric wire rather than placing rocks on top of the hive. If the hive is knocked over by cattle or blown over during a storm, the supers tend to remain together and this helps with the hive's survival and prevents robbing.

Drifting

One thing I haven't mentioned for some time is drifting. Hives placed in a straight line close together can be confusing for

bees and they have difficulty identifying their own hive, so tend to drift towards the end hives. If you have hives in a line close together with all the entrances facing the same way, you will notice that the hives on the ends produce more honey than those in the centre. This is due to drifting.

To reduce this problem, beekeepers place pairs of hives two metres apart with entrances facing in different directions. Having the bottom supers painted in a different colour also helps. This is why you see queen-mating nucs spaced out, with all different colours and designs on them. This helps the bees to orientate and for the queen returning from a mating flight to find the hive she came from.

Nosema

Nosema apis also can play a part in the hive's survival, especially during wet winters. This protozoan *(microsporidia)* is in all bees and in high numbers shortens the lifespan of adult bees by weeks. It can also reduce the amount of royal jelly a young bee produces, which can affect brood viability. A microscope and haemocytometer are used to define actual numbers, but as a quick field guide you can look at the midgut content of a young-looking bee at the entrance of the hive, after first removing its head and then pulling out the gut by the sting. Healthy bees have a yellow-orange gut, while nosema-infected bees have a clear gut. Australian bee scientist Dr Denis Anderson believes that nosema disease has contributed to Colony Collapse Disorder (CCD) in the USA. We no longer have Fumidil B (fumagillin) registered for use to control nosema as it is an antibiotic, so must now rely on keeping these protozoa at low levels by good husbandry; i.e., changing brood frames once every three years. In fact, Danish beekeepers completely change their frames in the brood super (they use a deep super for brood rearing) each spring as a means of keeping pathogens low in their hives.

So that's it: a young healthy queen, lots of young bees, plenty of honey and pollen and a dry hive in a sheltered but sunny position. Most hives will come through the winter well but some will have a problem. Sometimes a queen dies unexpectedly, so it pays to have a replacement on hand as queens are not readily available early in the spring. This is the reason I carry a few single-super nucleus hives over on top of a strong hive.

Things to do this month

Winter down hives. Check for AFB. Slope bottom boards for water drainage and fit mouse guards. Replace supers and bottom boards that are rotten or damaged. Attend to fences. Store supers in an open, cool, airy environment to prevent wax moth damaging the comb. Check for wasps and control grass around the hives.

- Frank Lindsay

Club Contacts & Beekeeping Specialty Groups

WHANGAREI BEE CLUB
Meets first Saturday each month (except January)
Time: 10.00 am, wet or fine (we are keen)

Contact: Mike Maunder
Phone: 09 437 5847
Arthur Tucker
Phone: 09 438 4283
Kevin & Melissa Wallace
Phone: 09 423 8642 (Wellsford)

AUCKLAND BEEKEEPERS CLUB INC
Meets first Saturday monthly at Unitec, Pt Chevalier, Auckland.

Contact: Carol Downer, President
Phone: 09 376 6376
Email: fairy-angel-peewee@xtra.co.nz

FRANKLIN BEEKEEPERS CLUB
Meets second Sunday of each month at 10.00 am for a cuppa and discussion. 10.30 am open hives.

Contact: Peter Biland
Phone: 09 294 8365

WAIKATO DOMESTIC BEEKEEPERS ASSOCIATION

Meets every third Thursday at Hillcrest High School, Community Room, Masters Ave., Hamilton, 7.30 pm.

Contact: the Secretary
Phone: 07 853 6304
Email: davew@gallagher.co.nz

HAWKE'S BAY BRANCH

Meets at 7.30 pm, Arataki, Havelock North for workshops or meetings as advised to the members
Contact: Mary-Anne Thomason, Branch Secretary
Phone: 06 855 8038
E-mail: kintail_honey@xtra.co.nz

TARANAKI BEEKEEPING CLUB

Contact: Stephen Black
685 Uruti Road RD 48, Urenui
Phone: 06 752 6860
Email: beeclub@beesrus.co.nz

WANGANUI BEEKEEPERS CLUB
Meets on the second Wednesday of the month.

Contact: Neil Farrer
Phone 06 343 6248

MANAWATU BEEKEEPERS CLUB
Meets every fourth Thursday in the month at Newbury Hall, SH3, Palmerston North

Contact: James Gellen
55 Bruce Road
Levin
Phone 06 368 8553
E-mail: james.gellen@paradise.net.nz

WAIRARAPA HOBBYIST BEEKEEPERS CLUB
Meets second Sunday of month (except January) at Norfolk Road, Masterton at 1.30 pm.

Convenors: Diana and Neale Braithwaite
Phone: 06 308 9101
Fax: 06 308 9171
Email: nandd12@xtra.co.nz

WELLINGTON BEEKEEPERS ASSOCIATION
Meets every second Monday of the month (except January) in Johnsonville. All welcome.

Contact: John Burnet
21 Kiwi Cres, Tawa, Wellington 5028
Phone: 04 232 7863
Email: johnburnet@xtra.co.nz

MARLBOROUGH BEEKEEPERS ASSOCIATION

Contacts: Darren Clifford, President
829 Taylor Pass Rd, RD4, Blenheim
Phone: 03 577 6955

Mark Biddington, Secretary
8 Belvue Crescent, Blenheim
Phone: 03 578 9746

NORTH CANTERBURY BEEKEEPERS CLUB
Meets the second Monday of April, June, August and October

Contact: Mrs Hobson
Phone: 03 312 7587
Email: n.hobson@slingshot.co.nz

CHRISTCHURCH HOBBYIST CLUB
Meets on the first Saturday of each month, August to May, except in January for which it is the second Saturday. The site is at 681 Cashmere Road, commencing at 1.30 pm

Contact: Jeff Robinson
64 Cobra Street Christchurch 3.
Phone: 03 322 5392
Email: alpinebee@hotmail.com

SOUTH CANTERBURY REGION

Contact: Peter Lyttle
Phone: 03 693 9189

DUNEDIN BEEKEEPERS CLUB
Meets on the first Saturday in the month September–April, (except January) at 1.30 pm. The venue varies so check phone or email contact below.

Contact Club Secretary: Margaret Storer
Phone: 03 415-7256
Email: flour-mill@xtra.co.nz

ACTIVE MANUKA HONEY ASSOCIATION (INC)

P O Box 19348, Hamilton
Website: www.umf.org.nz

Contact: Moira Haddrell, Chairperson
P O Box 862, Cambridge
Phone: 64 7 827 3286
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or

John Rawcliffe, General Manager
St Heliers, Auckland
Phone: 09 575 3127
Cellphone: 027 441 8508
Email: rawcliffe@actrix.co.nz

NZ COMB PRODUCERS ASSOCIATION

Contact: Peter Lyttle
Phone: 03 693 9189

NZ HONEY BEE POLLINATION ASSOCIATION

Contact: Russell Berry
Phone: 07 366 6111

NZ HONEY PACKERS AND EXPORTERS ASSOCIATION INC
Contact: Allen McCaw
Phone: 03 417 7198
Contact: Mary-Anne Thomason
Phone: 06 855 8038

NZ QUEEN PRODUCERS ASSOCIATION

Contact: Russell Berry
Phone: 07 366 6111

www.nba.org.nz

Is your group or Branch missing from here? Or have your details changed?
Please contact the National Beekeepers' Association—inside front cover.
Please also send any changes or additions to: editor@nba.org.nz

Botanical information on the tutu plant

[Editor's note: in the light of the recent tutin toxin alert, we have reprinted some information on the tutu plant. Sources are provided below.]

Tutu (*Coriaria arborea* and *C. sarmentosa*)

Small trees and shrubs with shining opposite leaves, four-angled branches and long drooping racemes of flowers 15 cm to 30 cm long, small and reddish. The flowering period extends from September to March and offers bees an enormous source of pollen.

On Rangitoto Island from September to November is a dearth period of pollen and the Tutu plants are covered with bees throughout the day collecting a dull greenish yellow pollen. The Tutu is also a source of toxic honey dew under certain conditions.

Source: R.S. Walsh, Nectar and Pollen Sources of New Zealand. *Fully revised and published by the National Beekeepers' Association of New Zealand (Inc.), February 1978.*

Additional information

The tutu shrub usually is found along stream beds and overhanging banks. It can be killed off by frost but puts up new spikes again in the spring. The reasonably soft stems are easily penetrated by sap-sucking insects like the passion vine hopper.

- Frank Lindsay

This photo was taken at Tawa on a kaka beak (Clianthus puniceus). *This insect likes warm sheltered situations. The juvenile form sucks the sap off soft stem plants and excretes honey dew which attracts other insects.* Photo: Frank Lindsay.

Adult passion vine hopper. Photo: Dr Mark Goodwin.

The tutu plant. Photo: Frank Lindsay.