MAY 2015 | VOLUME 24 No. 4

The NEW ZEALAND BeeKeeper

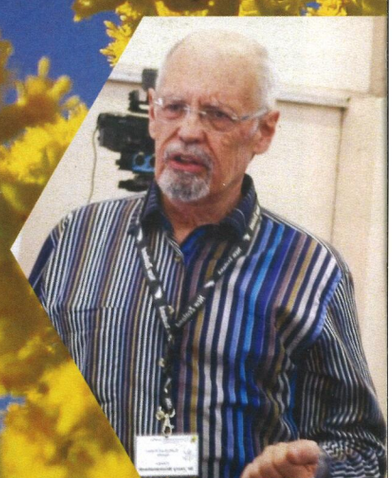
Apiculture industry proposed structure
Interim Working Group and NBA Executive Council

The true costs of doing business
Ricki Leahy

HMF levels in honey
Megan Grainger

Apis cerana
Quentin Chollet

Succession planning
Catriona MacLennan



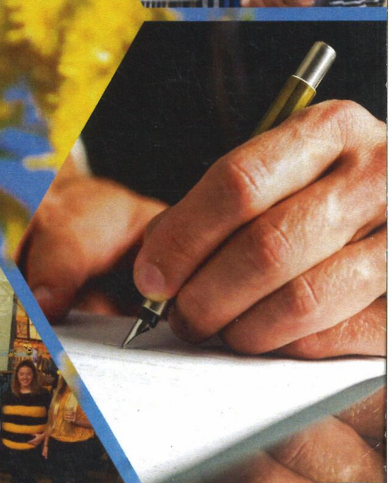


TABLE OF **CONTENTS**

Front cover: NBA Life Member Frank Lindsay provided this photo, taken in Otorohanga. He says, "Goldenrod is a North American plant that produces a late-season dark honey. It is currently in flower. I have seen these in only a few gardens so they are not common, but are very attractive to bees."

The New Zealand BeeKeeper is the official journal of the National Beekeepers' Association of New Zealand (Inc.)
ISSN 0110-6325
Printed by South City Print, PO Box 2494, Dunedin 9013, New Zealand
NBA website: www.nba.org.nz

MANAGEMENT TEAM:
Chief Executive Officer
Daniel Paul
Email: ceo@nba.org.nz

Secretary
Lauren Crimp
Email: secretary@nba.org.nz

Accounts and Subscriptions
Pauline Downie
Email: pauline@nba.org.nz
PO Box 10792, Wellington 6143
Ph: 04 471 6254

EXECUTIVE COUNCIL WARD REPRESENTATIVES:
Ricki Leahy (President/Upper South Island)
Dennis Crowley (Vice President/Bay of Plenty)
Kim Poynter (East Coast)
Stephen Black (Waikato)
Kim Singleton (Northern)
Peter Ferris (Southern North Island)
Roger Bray (Central South Island)
Russell Berry (Lower South Island)

EDITORIAL/PUBLICATION (excluding advertising):
Nancy Fithian
8A Awa Road, Miramar, Wellington 6022
Ph: 04 380 8801 Fax: 04 380 7197
Mobile: 027 238 2915
Email: editor@nba.org.nz

ADVERTISING INQUIRIES:
South City Print Ltd, PO Box 2494, Dunedin 9044.
Phone: 03 455 4486, Fax: 03 455 7286
Email: sales@southcityprint.co.nz

PUBLICATIONS COMMITTEE:
Frank Lindsay
26 Cunliffe Street, Johnsonville, Wellington 6037
Ph: 04 478 3367
Email: lindsays.apiaries@clear.net.nz

JOURNAL SUBSCRIPTIONS:
— 11 Issues —
NZ $155.46 GST inc - incl P&P
Australia $183.22 + NZ $25.00 TT fees and incl P&P
Rest of the World $195.43 + NZ $25.00 TT fees and incl P&P.
Subject to review if postage charges increase
Credit card payment facilities are available on the NBA website: *http://www.nba.org.nz/shop/publications/new-zealand-beekeeper-journal/*

DEADLINES FOR ADVERTISING AND ARTICLES:
Due on the 6th of the month prior to publication

All articles/letters/photos to be with the Editor via fax, email or post to Nancy Fithian (see details above).
Articles published in The New Zealand BeeKeeper are subject to scrutiny by the National Beekeepers' Association management committee. The content of articles does not necessarily reflect the views of the association.

CONTACTS TO THE NEW ZEALAND BEEKEEPING INDUSTRY:
Rex Baynes, AFB PMP Manager
PO Box 44282, Lower Hutt 5040
Email: rbaynes@ihug.co.nz
Ph: 04 566 0773
American Foulbrood Management Plan
www.afb.org.nz

AsureQuality Limited
Phone: 0508 00 11 22
www.asurequality.com

EXOTIC DISEASE AND PEST EMERGENCY HOTLINE
0800 80 99 66
www.biosecurity.govt.nz

Pollinator Incident Reporting Form:
http://www.epa.govt.nz/Publications/Pollinator_incident_reporting_form_2014.docx

PRESIDENT'S REPORT

THE **ACTUAL COSTS** OF DOING **BUSINESS**

Ricki Leahy, NBA President

It's a fact that our industry has grown immensely over the past decade or more. Where some of us used to struggle to get a half-pie decent price for our honey, we are now getting double or even three or four times that amount.

We have become a rich little industry, especially now with the manuka story carrying us all along. However, for us to protect what we have and remain successful into the future, I believe we need to move away from our dependence on voluntary funding of both our association and industry.

At present it's not only voluntary to join our association but also, in effect, so is the level of subscription we may declare. Any research or industry-good undertaking is very limited, uncertain and inconsistent, because funding depends largely on voluntary donations. So in reality, there is very little funding for anything. That's so sad, as it needn't be like that.

Ever since we started the conversation about how our industry could fund itself adequately into the future, I have become aware that with just the mention of a 'levy', many of us become very wary of what this could mean to us personally and of how much it may cost. To be quite honest, nobody knows what that cost may be. I would definitely be putting the cart before the horse to even guesstimate and I'd be totally out of order even to try.

However, I believe there is a universal opinion acknowledging the importance that we need to be operating within a well-funded apiculture industry. We should start by gaining a better understanding of how some of the funding cost would affect us—and especially how much it may end up **not** costing us.

If we are in business, the first thing we have to recognise is that any cost that we may incur to fund our industry should naturally be considered as a cost of doing business within the regulated environs of our apiculture industry.

We pay for our honey to be extracted. We bear the costs of buying drums, paying the power bill, wages, putting diesel in the truck and all those other production costs. Shouldn't the cost of funding the industry also be tagged as a component of the general cost of production?

If so, then paying a membership or annual registration fee—or perhaps a levy relative to the size of your business or of its activities—would surely be considered as one of those production costs. As with all the other costs, these fees or levies should be priced into the value of the product we are producing, and therefore should be considered as passed on to the buyer.

That is, the end consumer will pay for what essentially is the cost of any production: consumers will pay for the levy (or whatever the industry-funding mechanism may be). Not the beekeeper or the honey packer, but the end consumer: that is precisely how commerce operates. The customer who reaches for that pot of honey on the supermarket shelf will inevitably pay the cost of enabling the beekeeping industry to have a bee-healthy and sustainable environment to produce the product.

Actually, the percentage of any levy component of the final retail cost of the product would be very small indeed and probably insignificant to the shopper. To me, that is the cost of funding our industry, successfully passed on, and incidentally, spread over a very large catchment.

I am well aware that many will think I am taking a far too-idealistic approach and that at the end of the day, any cost is simply adding to the list of expenditure items we all try and prune out of our business operations. I acknowledge that reasoning but suggest that with an understanding of how these sorts of costs can be considered in our accounting and passed on to the end consumer, then surely it must make it easier to accept any sort of future proposition to fairly and equitably collect funding for our industry.

But what about hobbyists?

I have heard a lot from those beekeepers with fewer hives also expressing their concerns about the prospect of paying a commodity levy of some sort when essentially they only keep bees as a hobby. These beekeepers may also be thinking that they are stuck between a rock and a hard place. They might support restructuring to attain this positive well-funded, united, and well-represented industry but are not happy if in doing so, they will attract an unwanted levy on their hobby. A 'damned if you do and damned if you don't' scenario. But they probably needn't be threatened by those thoughts.

> "Shouldn't the cost of funding the industry also be tagged as a component of the general cost of production?"

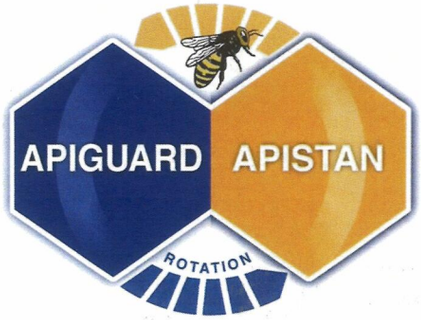
Let me explain. Approximately 4,500 beekeepers have fewer than 50 hives each and collectively own 24,600 hives. This constitutes only 4.5% of the total hive holdings in New Zealand. To collect a meaningful levy from this large number of beekeepers with a relatively small number of hives would certainly be a big ask. Quite simply, it would be totally uneconomical.

For instance, to correspond with all those 4,500 beekeepers, to keep their contact details up to date, to correctly invoice and then make the inevitable corrections, and then to facilitate a voting and communications system so that they, all as levy payers, had their rightful say in how the levy funds could be used, would be absolutely pointless. The administration cost alone would make the prospect non-viable. The amount that could be reasonably collected would probably not even cover the costs of collection, let alone all the extra work to enforce collections from the late or non-payers.

continued...

Vita-Europe's "One-Two" Punch For Varroa Control: Apistan and Apiguard

Apistan used in rotation with the thymol based **Apiguard** almost guarantees you will not develop mite resistance in your hives



When to use Apistan and Apiguard?

Apistan can be used at any time of year, with best results when applied during a build up of brood prior to the honey flow, or after the honey flow.

Apiguard is best used when the weather is warm and consistently over 15C so not early in the spring. Place the trays or spread some gel on the top of the brood box frames with room for the bees to get at the material. The concentrated natural ingredient encourages the bees to try and move the product out of the hive. This distributes the vapours of the thymol based **Apiguard** throughout the hive killing up to 97% of varroa mites.

In ten to fourteen days, check the hive and add another tray or more gel. This will complete the treatment. If you want to be sure to cover two full worker brood cycles, treat again in fourteen days. Use the full recommended dosage each time. Don't skimp—your bees and hives and honey crop are too valuable to try and save a dollar or two on an incorrect treatment.

A good rotation plan is to use **Apistan** in the autumn or early spring and **Apiguard** in the late spring/early summer just prior to the honey flow, or immediately after you take off the honey. This keeps the bees busy removing the gel and will minimise robbing behaviour

Safety?

When used according to the instructions, **Apistan** is unlikely to leave any residues in the honey. (If someone says otherwise they are either fools or deliberately trying to mislead you.) **Apistan** in the measured dosage strips and inserted into the hive as per the instructions is harmless to humans and honeybees.

Apiguard, being a natural product derived from thyme is non-toxic to humans and does not affect honey or wax. It is approved in Europe as a varroa treatment for hives in organic honey production.

Assurance?

Apistan and **Apiguard** are flagship products of **Vita-Europe, the world's largest dedicated honeybee health company**. **Ceracell** is pleased to be the selected Authorised New Zealand Distributor for **Vita-Europe** products and a proud member of **Vita-Europe's** international team of ethical distributors.

AFB Diagnostic Test Kit

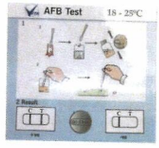
Don't Be a Sergeant Schultz!

For more information and videos demonstrating how to use their products visit **Vita-Europe's** website, www.vita-europe.com.

The Vita Europe American Foulbrood (AFB) Diagnostic Test Kit is an effective, efficient, in-the-field tool to confirm the presence of the disease. Just like a pregnancy test kit, one line in the window tells you the test is working. Two lines means you have AFB. Inform Assure Quality, get a fire permit and burn the hive to stop the disease from spreading.

AFB can be eliminated from NZ if it is identified and those infected hives are burnt. But you don't want to burn false positives.

Keep an AFB test kit handy every time you visit your apiaries. Save time and hassles.



ATTENTION! All Beekeeping Clubs, Serious Hobbyists, and Semi-Commercial Beekeepers.
At the Conference Auction at the Wairakei Resort this June, Ceracell are donating an HS1B Uncapping Machine. This unit will make your honey processing 100% more efficient. Too much time is used up uncapping with a hot electric knife. This is your opportunity to get an ideal machine to do the job. And all proceeds of the auction go to charity. Don't miss out!

Common sense tells me the 800 beekeepers owning the other 94.5% of hives (approximately 522,000 hives) would be the sensible target.

Obviously it is not my decision to make but in my opinion, hobbyist beekeepers should rest assured they will most likely not be called upon to pay any industry-funding type of levy, except of course, the AFB PMP levy that all registered beekeepers pay now as a legal requirement.

It all boils down for each of us to understand the need—and to recognise the value—of establishing a sustainable, well-funded industry.

Now let's get out there and finish working those hives off for the season. Remember that the last manipulation of the autumn affects the first job of the spring. Try and work that one out! Happy beekeeping.

ROY PATERSON TROPHY

The Roy Paterson Award was instigated to remember Roy and his work with the beekeeping Industry. The award is for innovative ideas or inventions to help New Zealand beekeepers, and is presented annually at Conference.

If you have an idea or invention that you would like to enter into the 2015 competition, please go to http://www.nba.org.nz/events/roy-paterson-trophy for more information and an entry form.

PEST AND DISEASE CONTROL

WASP COSTS REPORT PUBLISHED

Department of Conservation

A new study has been released that assesses the economic impact of German wasps and common wasps across industries, society and the natural environment in New Zealand.

The report, An evaluation of the costs of pest wasps (*Vespula* species) in New Zealand, was written by Peter MacIntyre and John Hellstrom of Sapere Research Group, and co-funded by the Department of Conservation and the Ministry for Primary Industries.

This report estimates that introduced wasps cost New Zealand's economy more than $130 million dollars a year, with the biggest economic impacts on farming, beekeeping, horticulture and forestry workers.

This assessment was based on a literature review. Information was collected from previous studies and from affected sectors in New Zealand to estimate the total costs of wasps; i.e., the costs that could be avoided and the opportunities that could be gained if wasps were not present in New Zealand.

New Zealand has some of the highest densities of German and common wasps in the world. Wasps have huge social and biological impacts; they are one of the most damaging invertebrate pests in New Zealand, harming our native birds and insects.

This study found that wasps also have a major financial impact on primary industries and the health sector. This includes:

- more than $60 million a year in costs to pastoral farming from wasps disrupting bee pollination activities, reducing the amount of clover in pastures and increasing fertiliser costs
- almost $9 million a year cost to beekeepers from wasps attacking honey bees, robbing their honey and destroying hives
- wasp-related traffic accidents estimated to cost $1.4 million a year
- over $1 million each year spent on health costs from wasp stings
- on top of the direct costs, almost $60 million a year is lost in unrealised honey production from beech forest honeydew which is currently being monopolised by wasps. Honeydew is also a valuable energy source for kaka, tui and bellbirds.

The report can be downloaded as a web PDF from the Department of Conservation's website: http://www.doc.govt.nz/evaluation-costs-pest-wasps

[Editor's note: see also the article published in the April 2015 journal (page 41) about the wasp control pilot programme carried out this season. Eric Edwards of the Department of Conservation will be presenting the findings at the New Zealand Apiculture Conference, Wairakei Resort Taupo, June 2015.]

Source

Department of Conservation. (2015). An evaluation of the costs of pest wasps in New Zealand. Retrieved April 10, 2015, from http://www.doc.govt.nz/evaluation-costs-pest-wasps

INDUSTRY UNIFICATION PROJECT

APICULTURE INDUSTRY **PROPOSED STRUCTURE**

Kim Singleton, Interim Working Group chairman

At the inaugural Apiculture Industry Conference in Wanganui in 2014, attendees supported the principle of industry unity. Over the past six months an Interim Working Group (IWG) has been exploring possible structures that would enable the industry to move forward in a unified and progressive manner.

At the Apiculture Conference in Taupo in June 2015, participants will be asked to respond to the proposed model as a way forward for the industry. The details and implementation of this structure will be the responsibility of an appointed interim governance board should the model be adopted.

Sector Groups

To recognise the various contributions Sector Groups make towards industry success, it is necessary that they have some autonomy within the Governance structure. Here are some suggested operational functions that could become future sector group operational principles:

(Please note that the details portrayed below are merely an illustration for ease of understanding how sector groups may operate. It must be understood that the final detail would be developed for industry approval by a proposed Interim Governance Board.)

1. A sector group will have the right to nominate one or more Board Representatives, as per the constitution of the Apicultural Industry Governance Body (AIGB).

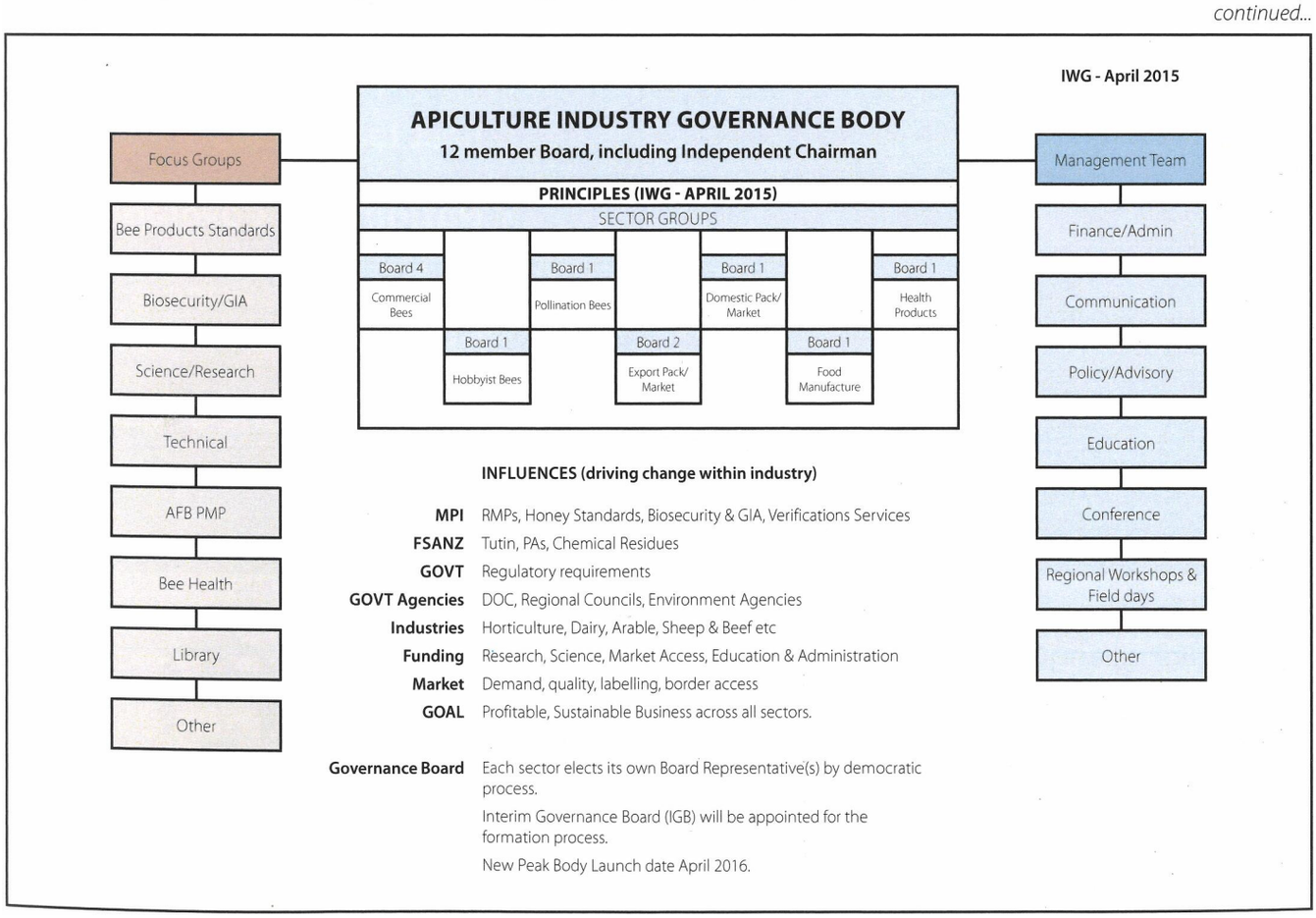
2. Board Representatives will be elected by democratic process and could stand for a suggested period of three years; with a possible maximum one years' extension should the sector group determine that this is appropriate.

3. Board Representatives will be remunerated for their contribution, as per the constitution of the AIGB.

4. Sector groups may, if they so choose, meet twice a year, one being an AGM, to focus on their particular issues and where appropriate bring these issues in the form of a Remit(s) to National Conference for consideration and a vote by industry.

5. The Sector Groups may elect to have their own executive team which is sector focused. It is suggested that the Sector Groups Executive Team could work with or alongside the Management team of the AIGB.

continued...



6. The Management team of the AIGB could plan and co-manage with the Sector Group, meetings, AGMs, field days and workshops.

7. Funding for the Sector Groups, if required, could be by way of capitation from the AIGB. The capitation value would need to be determined as per the constitution of the AIGB.

8. Sector Groups could nominate qualified individuals to represent them on the Industry Focus Groups.

9. Sector Groups could work with the Management Team of the AIGB on key issues such as Communication, Policy, Advocacy, Education and Health & Safety etc.

Focus Groups

These are specific industry tasks that are currently undertaken on an as-needed basis. Some have formal structures, such as the AFB PMP, while others are driven by project requirements, industry, MPI and Government. The AIGB will look to strengthen these Focus Groups where necessary to add value to the outcomes and deliver clear communication to all of industry.

Funding

To deliver a clear and tangible value proposition to all of industry, it will be necessary to have a solid funding base. It is necessary that all sectors of the industry contribute to this funding programme, as they are the beneficiaries of all industry good activities.

A sensible membership or annual registration fee is favoured along with a levy-type income stream relative to the size of your business and the activities. This may be determined on hive numbers or bulk honey production at the beekeeper level, through to domestic and export sales at the packer and exporter level.

The AIGB Board will consider all options as they formulate the best funding method for our industry.

OPEN LETTER TO ALL **NBA** MEMBERS: **INDUSTRY UNIFICATION**

NBA Executive Council

Dear Members

As you will have seen from reading this Journal, the Industry Unification Project Interim Working Group (IWG), which includes four members of the NBA's Executive Council, has now developed a model or structure for a proposed industry representative body. This is referenced for now as the Apiculture Industry Governance Body (AIGB).

This work grew out of discussions at the 2014 Apiculture Industry Conference about the need for unification, and the consensus shown by conference attendees that work should be progressed with unification as a goal.

Catalyst® Ltd, the independent consultants, proposed that an interim Industry Governance Board (IGB) be appointed with an independent chair and representation from all the sectors that make up the industry. The role of the IGB would be to develop the appropriate structures and constitution and funding model with a view to 1 April 2016 as a launch date for what the Industry Working Group has named in the interim as the Apiculture Industry Governance Body (AIGB).

The IWG plans to present its proposed model (see page 7 of this Journal) at the upcoming Apiculture Industry Conference in Taupo in late June. A special session has been dedicated to this discussion on the morning of Wednesday, 24 June and we urge you to attend.

The Executive Council of the NBA has spent considerable time debating this model and its implications, both for the future of our industry and for our own organisation.

We have considered the following options for the NBA. They are:

- Use the NBA platform and assets as the basis of the AIGB. [Obviously our preferred option.]
- Wind up the NBA and have members and assets move to the AIGB. [However, we believe the NBA has considerable value to offer in terms of some of its existing infrastructure, hence our recommendation to proceed as the option above.]
- Use the NBA platform and assets as the basis of a sector group.
- Continue to operate the NBA as is. [This may not be in the best long-term interests of the industry because it will not necessarily lead to unification.]
- Strengthen NBA with amalgamation of BIG (rebrand if necessary), review executive selection process to provide best people for job, review administration services. [Unlikely to be supported by others in the industry.]

It is recognised that members may have other options.

Our formal conclusion and our recommendation to NBA members is as follows:

The EC recommends to NBA members that they accept the formation of the AIGB with the NBA 'platform' used as the basis of the proposed organisation.

You can read about our proposed 'platform' in the panel below.

We will put the intention of the above recommendation as a Notice of Motion to our

upcoming AGM and be guided by the votes of the AGM attendees.

We appreciate that members may have a variety of questions about this issue and we ask you to visit the NBA website for further information.

Alternatively, email your questions to secretary@nba.org.nz with the subject line INDUSTRY UNIFICATION. We will do our best to publish all the questions on the NBA website, together with the answers as we see them.

In the meantime, we look forward to seeing you at the 2015 conference. If you are unable to attend, please take your opportunity to put in a proxy vote through your Branch.

Kind regards
Ricki Leahy, President, on behalf of the NBA Executive Council

INDUSTRY UNIFICATION PROJECT

NBA **PLATFORM** INFORMATION

NBA Executive Council

The Executive Council (EC) of the National Beekeepers Association is unanimous in its willingness to see a cohesive and unified industry body which best meets the needs of those involved and the health of our bees.

The points of agreement by the NBA EC that form the basis of the NBA platform are:

1. The current infrastructure of the NBA is utilised as the platform for the future organisation.
2. The new entity will be rebranded.
3. An interim Industry Governance Board (IGB) will be charged with developing the restructure/metamorphosis of the NBA in order to form the basis of an organisation that can effectively represent the apiculture industry in New Zealand.
4. The Interim Governance Board will comprise a 12-person board with an independent chair, as per the diagram and will provide support to each sector in voting for the Sector's Representatives.
5. The interim Industry Governance Board will be allowed to work independently in developing these proposals.
6. As part of its role, the IGB's duties would include, but not be restricted to, considering the organisation's constitution and rules, membership categories, subscription rates and/or other funding streams.
7. When formally constituted, it will become the body that represents beekeepers and others.
8. To facilitate the continuation of current and ongoing projects during the interim period, the NBA Branch structure and existing sub-committees remain until the organisation is formally constituted and 'open for business'.

In any event, the presented information about the proposed industry model will form the basis of the industry discussions at conference. It is hoped that the platform as outlined above will receive support to provide the pathway to achieve the goal of a unified industry to be launched on 1 April 2016.

Further information is available in a list of questions and answers on the NBA website: **www.nba.org.nz**

RESEARCH

HMF: A MONITOR OF HONEY AGING AND HEAT TREATMENT

Megan Grainger, Ph.D. candidate, The University of Waikato; Technologist, Analytica Laboratories Ltd

HMF (hydroxymethylfurfural) is a part of the manuka honey 3-in-1 test, and is commonly measured alongside DHA (dihydroxyacetone) and MG (methylglyoxal). However, while DHA and MG are uniquely related to the antibacterial properties of manuka honey, HMF is used as an indicator of the age and heat treatment of honey.

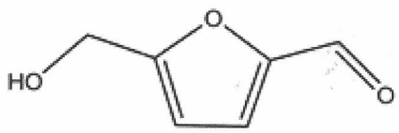


Figure 1: Hydroxymethylfurfural.

HMF is found in all honey

HMF is present in all floral types of honey (not just manuka honey) as well as a range of other foods. Freshly harvested honey contains little or no HMF, but over time the concentration increases due to the breakdown of sugars in the honey.

HMF forms in honey in two ways: *caramelisation* (acid decomposition of sugars) and *Maillard reaction* (condensation of carbohydrates with free amine groups). The honey environment is ideal for caramelisation in particular, due to the high sugar content and the acidic (low) pH. Fructose is the main sugar that degrades to HMF in honey: glucose also degrades to HMF but to a lesser extent.

HMF is considered to be a potential toxin, and international standards recommend a maximum of 40 mg/kg of HMF in honey.

High levels of HMF in honey can indicate that honey has not been stored well, has been heated excessively, or has been adulterated with sugars. International quality standards, including CODEX Alimentarius (Codex Alimentarius Commission, 2001), recommend that honey should not contain more than 40 mg/kg of HMF. There is no stated level in the Australian and New Zealand Food Standards, but the limit of 40 mg/kg is used so that honey will be accepted by other countries.

HMF is considered to be a potential toxin, with a recommended daily intake no higher than 132 mg/person/day. Since the amount of HMF in a typical diet is higher than other toxins in food, it is widely monitored (Capuano & Fogliano, 2011).

Many foods have higher levels of HMF than honey—balsamic vinegar being one example—or foods containing HMF that are consumed in greater quantities, like bread and coffee. One study estimated a daily HMF intake of 30 to 60 mg/person/day in its participants (0.5 to 1 mg/kg body weight, Janzowski, et al.). In reality, if a person ate 50 g of honey a day it would represent less than 1.5% of the recommended daily intake.

What are the main factors that influence HMF levels in honey?

Time and temperature are the main two factors that influence the increase in HMF—and the higher the storage temperature, the faster HMF will be formed.

While manuka honey may be heated and/or stored for periods of time in an attempt to increase the MG concentration in the honey more quickly, this will also cause an increase in HMF. A freshly harvested honey may have less than 1 mg/kg HMF.

As an example to show the effects of storage temperature and time on the levels of HMF in manuka honey, we incubated a honey sample at three temperatures (21°C, 27°C and 34°C) over six months. Figure 2 shows how quickly the HMF can rise at high

> "HMF will continue to increase during retail storage of honey."

storage temperatures. After only six months at 27°C, the honey almost exceeded the recommended 40 mg/kg maximum level. At 34°C the HMF levels rose to over 60 mg/kg. HMF can also increase quite quickly even when honey is melted for short periods at 50°C to aid retail packing of honey. HMF will continue to increase during retail storage

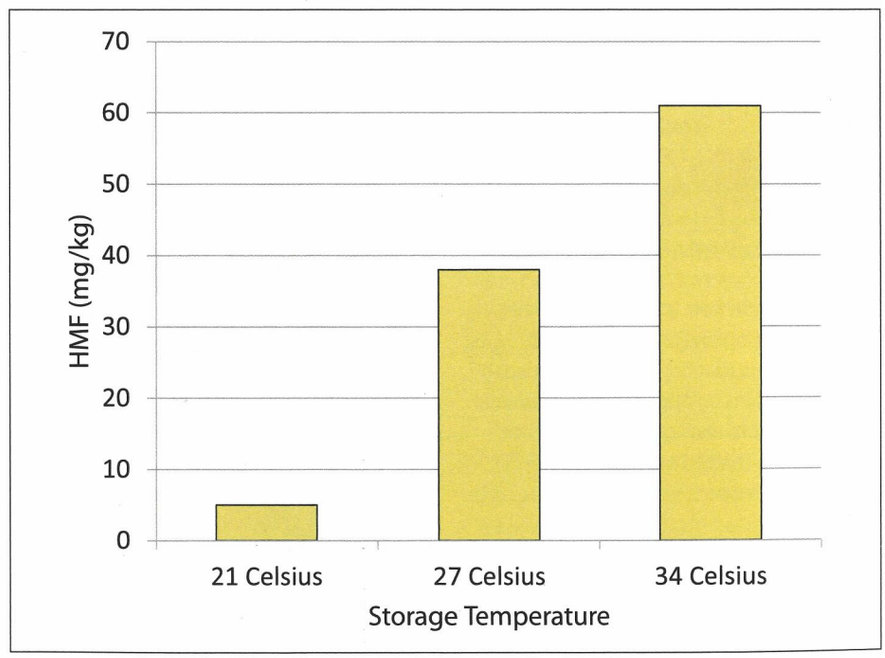


Figure 2: HMF levels (mg/kg) at 21°C, 27°C and 34°C after 6 months.

of honey and this should be taken into consideration when deciding what level of HMF is acceptable for your honey prior to retail packaging.

Honey with a high HMF concentration has a limited market, but honey with high HMF may be blended with honey that has low HMF to overcome this. Honey with high HMF is a lot darker in colour than is normal for the floral type (see Figure 3).

How is HMF measured?

HMF levels in honey are able to be measured quickly and accurately using HPLC (high performance liquid chromatography). Analytica Laboratories has combined HMF in the '3-in-1' test along with DHA and MG, meaning that all three can be measured at the same time for a single price.

References

Capuano, E., & Fogliano, V. (2011). Acrylamide and 5-hydroxymethylfurfural (HMF): A review on metabolism, toxicity, occurrence in food and mitigation strategies. *LWT-Food Science and Technology*, 44(4), 793–810.

Codex Alimentarius Commission (2001). *Revised Codex Standard for Honey, Codex* STAN 12-1981, Revision 1 (1987); Revision 2 (2001).]

Janzowski, C., Glaab, V., Samimi, E., Schlatter, J., & Eisenbrand, G. (2000). 5-Hydroxymethylfurfural: assessment of mutagenicity, DNA-damaging potential and reactivity towards cellular glutathione. *Food and Chemical Toxicology*, 38(9), 801–809.

Figure 3: Three manuka honeys. The left and centre honeys show 'typical' colour and are low HMF, and the honey on the right has very high (4,500 mg/kg) HMF. Photo: Megan Grainger.

CORRECTION TO **MARCH JOURNAL** ARTICLE

In the March 2015 journal, the article entitled 'DHA, MG, and manuka honey activity' incorrectly stated that MG was independently discovered by the Technical University of Dresden and The University of Waikato. However, MG was discovered by the Technical University of Dresden in late 2004 (lab books) and publicly announced late 2006. Confirmation of MG in manuka honey was published in peer reviewed journals in 2008 by both the Technical University of Dresden and The University of Waikato.

OPINION

ONE ORGANISATION

Frank Lindsay, NBA Life Member

Some of us learn from others' mistakes and those making innovations. The National Beekeepers Association as an organisation gives beekeepers an opportunity to learn a fair amount from each other at conference. Some learn in the bar; others learn by attending seminars.

Whatever your way, it's a valuable resource every beekeeper should participate in. From my elders, I learnt shortcuts and little innovations not usually written down in books. Most beekeepers get smart at 60 when the body finds it difficult to chuck a heavy full-depth box back on to a six-high hive. Why would you, when it should be extracted early or when you can get a device to do it for you?

Only a small number participate in the political side of the industry. Sometimes we're protecting what we have; other times we're trying to get things through that improve our lot, but it's not all politics all the time. An industry is only strong if we all work to a common goal.

We are experiencing high prices for our honey because of previous research and a world shortage of honey. There are plenty of sugar alternatives that can suddenly replace honey. Has the price gone as high as it's going to go? It's a fickle commodity that has high and low cycles, which change on a whim or a poor or good season. Perhaps with one organisation made up of many parts we can all work to sustain a healthy future.

PEST AND DISEASE CONTROL

ASIAN HONEY BEE (*APIS CERANA*)

Quentin Chollet, Apiculture Officer, AsureQuality Limited. E-mail: Quentin.chollet@asurequality.com

The Asian honey bee (AHB) and Eastern honey bee (European honey bee) are the common names given to all bees belonging to the species *Apis cerana* (itself a part of the genus *Apis*).

Asian honey bees also refer to other species such as *A. dorsata* and *A. florea* found in the Asian subcontinent. This article will refer to *A. cerana* only when it uses the name Asian honey bee.

Asian honey bees can be found throughout Asia and far eastern Europe in a range of climatic conditions: from cold Siberia to tropical Java, passing through mountainous regions like in Bhutan, Bangladesh or Nepal (shown on Figure 1, where *A. cerana's* habitat is represented by the light blue coloured area). *Apis cerana* has evolved in eight different subspecies adapted to different locations with hot, tropical conditions to cold, harsh climates (Koetz, 2013).

Please note: countries where *Apis cerana* has become established more recently—Papua New Guinea, the Solomon Islands, Vanuatu and Australia (northern Queensland)—do not appear on the map (Figure 1).

Biology

Asian honey bees are slightly smaller (10 mm) than European honey bees (15 mm). This size difference is noticeable to anybody familiar with bees, such as beekeepers in New Zealand. Although general colour can vary a lot (as with *Apis mellifera*), *Apis cerana* always show a striped abdomen with distinct, pronounced black-and-yellow stripes. Additionally, the base of the wings is black and shiny, the body is less hairy and *A. cerana* drones are always quite black.

The life cycles of the AHB and the European honey bee are very similar, as all bees go through the same four stages of development: egg, larva, pupa, and adult. The organisation of a colony is also identical: one queen, several thousand worker bees, and drones seasonally.

However, there are a few remarkable differences:

- the life cycle of the Asian honey bee is shorter by one day
- the cappings on top of drone cells have a characteristic pinhole in the middle
- *Apis cerana* colonies are much smaller than their European honey bee counterparts: the *A. cerana* population averages between 2,000–5,000, and up to 10,000 for the largest colonies, whereas European honey bee colonies can reach up to 100,000 bees per hive!

Behaviour

As Asian honey bee colonies are relatively small, they can nest in locations such as letterboxes. It is common to find them in human-made cavities, one to two metres off the ground. Their ability to nest in such spaces could result in *A. cerana* becoming a public nuisance in urban areas.

A. cerana colonies tend to swarm and abscond readily because of the pressure of predation in the tropics, where the species comes from. They fly forming a very tight cluster, from the size of a tennis ball to the size of a basketball. Swarms can be found up to 10 km away from their location of origin.

Fujio Hisachi, a Japanese beekeeper who reintroduced *Apis cerana japonica* in the Gotō Islands, explains that he was able to identify 20 expressions from *Apis cerana japonica*, when European honey bee only have 10 'words' in their vocabulary. He also observed Asian honey bees coming to him for help in case of a hornet attack! (Hisashi, 2014.)

Asian honey bees are reported to be mild and tolerant with a low stinging tendency. Nevertheless, they show extraordinary skills when it comes to defending their hives against intruders. Under a hornet attack, Asian bees are able to confine the insect and kill it by overheating (they surround the hornet and vibrate to raise the temperature to an unacceptable level for the hornet). Absconding and swarming is also used as an efficient way to avoid conflicts with predators.

Diseases and predators

Asian honey bees are known to be hardy and disease-resistant bees. There is very little record of massive disease-related losses, apart from outbreaks of Thai Sacbrood (Thailand, 1976; India, 1991–1992) that destroyed more than 90% of the existing stock in both cases. AHB are also vulnerable to wax moth (Koetz, 2013).

Asian honey bees have evolved with the parasite *Nosema ceranae* and now live in an established host–parasite relationship. *Nosema ceranae* is a very potent *microsporidian* that causes *nosemosis*, a disease responsible for bee and colony deaths in European bee colonies.

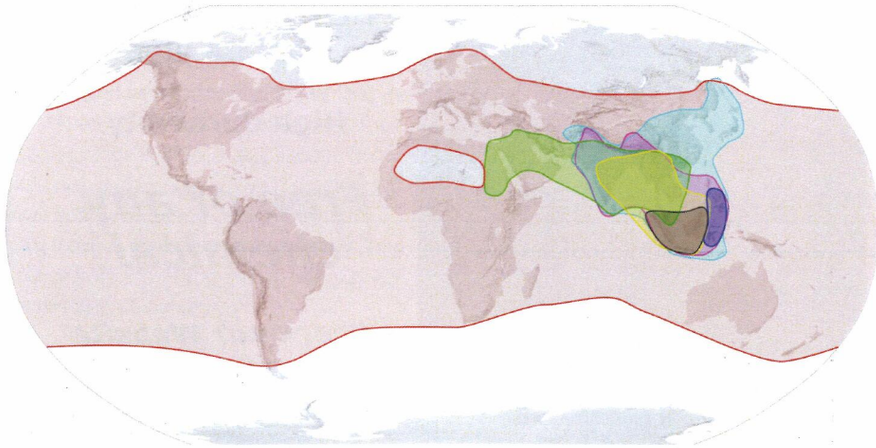


*Figure 1: World distribution map of honey bee species (*Apis *genus). (Source: © Sémhur/Wikimedia Commons, via Wikimedia Commons.)*

continued...

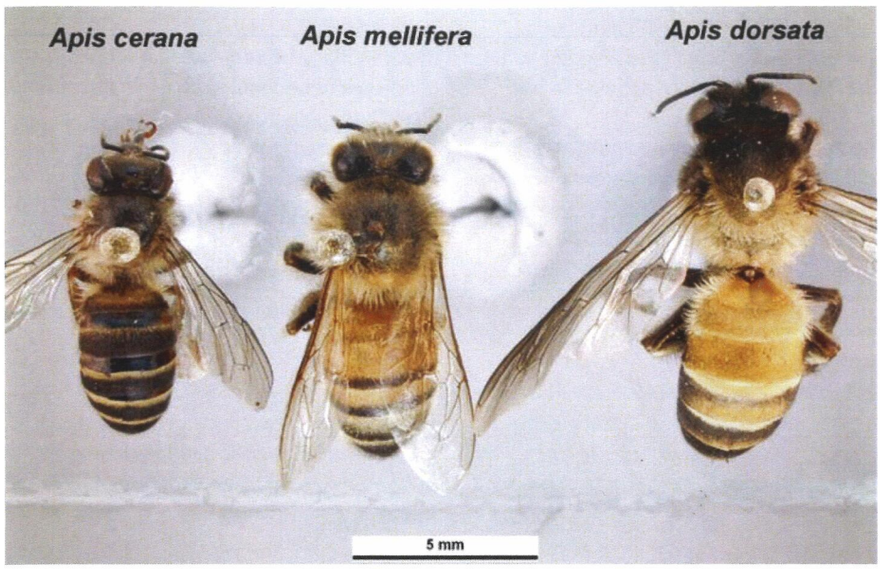


Figure 2: Comparative sizes of Apis cerana, Apis mellifera *and* Apis dorsata, *respectively. (Source: padil.gov.au)*

The main predators of AHB are Asian hornets and wasps, which usually focus their hunt on foragers, only sometimes risking themselves by attacking a colony. But the list of animals potentially preying on *A. cerana* is long: ants, frogs, lizards, rats, macaque monkeys, tree shrews, most Asian bears, martens, birds and even tigers! (Koetz, 2013.)

Asian honey bees are also the natural host of the mite *Varroa destructor*. A good host–parasite relationship is allowed by the great hygienic behaviour of bees. They break the mite's life cycle by removing infested drone pupae from the brood. Varroa mites rarely have a negative effect on Asian honey bee colonies (Ellis & Zettel Nalen, 2010).

Beekeeping with *Apis cerana*

Asian honey bees have often been replaced by European honey bees for productivity reasons. Still, *Apis cerana* are today kept in many countries around the world, especially in Asia where they are very common. They are usually kept in hives similar to those that New Zealand beekeepers would use. They are considered as tolerant and gentle bees. Their foraging range is lower than European honey bees, with a maximum of two kilometres, with most activity occurring within 300 metres from the hive. Reported crops of honey show a range from a few kilograms to 10 kg, 20 kg/annum being the maximum.

Challenges for beekeepers working with *Apis cerana* are:

- to prevent swarming: Asian honey bees have a tendency to swarm and this can affect the honey crop. In order to prevent swarming, Asian beekeepers cage or restrain the queen (or clip her wings) until new comb is built, remove new queen cells, or split colonies to guarantee a good amount of brood comb and space
- to ensure food quantity is sufficient close to the hive, as foraging distance is limited.

Apis cerana is also considered a very good crop pollinator, especially for mountain crops that bloom in early spring: almonds, apples, pears and plums. A study by Tan et al. (2012) showed that Asian honey bees fly at cooler temperatures than European honey bees (see Figure 3). In the event of extinction of *Apis cerana, Apis mellifera* probably would not totally replace its pollination work; in particular with indigenous plant varieties that are adapted to *Apis cerana*, as well as early-flowering fruits and vegetables.

Spread and control

Apis cerana javana originates naturally from tropical countries such as Indonesia, Malaysia and Borneo. This strain has been introduced by humans in Papua New Guinea, the Solomon Islands, northeastern Australia and lately, Vanuatu. These countries are the only ones to consider Asian honey bees as a pest. Although this bee is easily spread by boat traffic between islands, New Zealand is still free from Asian honey bees.

Apis cerana reached Darwin, Australia in 1998. They were eradicated, but another incursion was discovered in Cairns in May 2007. As with the previous incursion, the colonies were destroyed, but unfortunately the incursion was not discovered early enough and there was time for the original colonies to swarm, perhaps multiple times, making eradication much more difficult. The biosecurity response was set up and by March 2011, 360 colonies had been destroyed. Soon after, the government determined that eradication was not feasible and ceased response operations. The Asian honey bee is now established in the far north of Queensland.

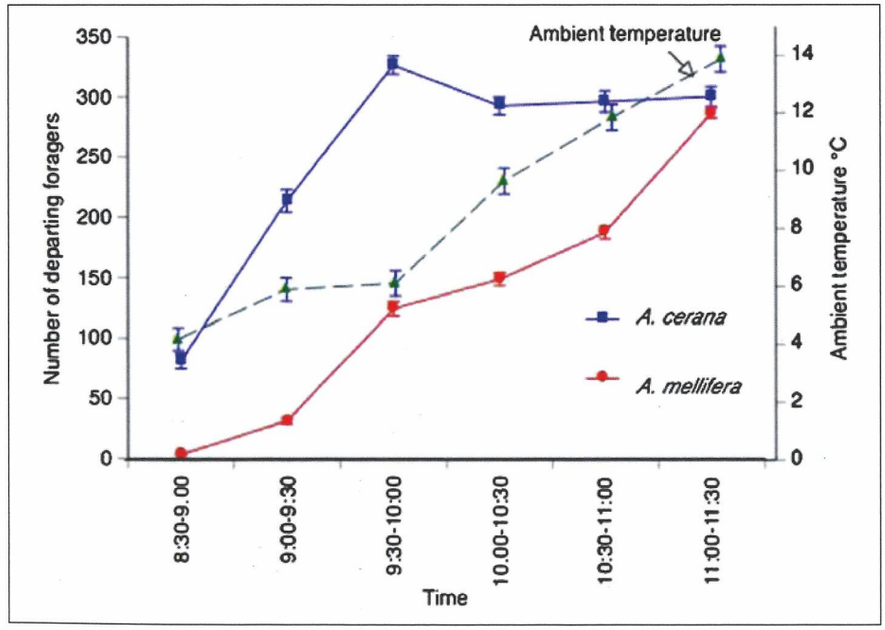


Figure 3: Mean number of A. cerana *and* A. mellifera *foragers observed every 30 minutes from 08:30 to 11:30 (n=10 colonies each) relative to temperature. Error bars are standard error of the mean. (Source: Tan et al., 2012.)*

Apis cerana is regarded as a potential risk in countries where it is not native. The primary risk is competition with *Apis mellifera*. Usually, because European honey bees are more numerous, they will out-compete Asian honey bees (as has happened in Taiwan, China, and Japan).

However, one example shows the opposite: eight years after *Apis cerana* was introduced in Guadalcanal (the main island of the Solomon Islands), only five of the two thousand European honey bees managed hives were still alive! This could be explained by the lack of food (it is a small territory), tropical climatic conditions and a lack of beekeeping techniques to optimise the strength of colonies kept in hives.

In countries like Cambodia and Pakistan, both species are kept commercially in close vicinity. In Vietnam, Asian honey bees are used in the coastal coconut production area and European honey bees in higher altitude.

The second risk is disease transmission. There have been exchanges of diseases and pests in both directions between *Apis cerana* and *Apis mellifera*. Luckily, *Apis cerana* did not bring the varroa mite into Australia (one of the only countries in the world to be varroa-free). Asian honey bees could also compete with the local fauna for pollen and nectar.

Another risk is the increased possibility of stinging events in urban areas, as *Apis cerana* can find suitable nesting locations more easily. Detection of Asian honey bees in Australia currently relies primarily on passive work.

In Australia, a few chemicals are used/being trialled to control Asian honey bees. In the Solomon Islands, fipronil is effectively used to destroy remote colonies (Koetz, 2013).

Potential impact on the New Zealand beekeeping industry

Should *Apis cerana* arrive into New Zealand, its impact would be hard to estimate. It could have a major impact on the export of live bees. An incursion of *Apis cerana* could also introduce other exotic pests or diseases. *A. cerana* would affect queen rearing areas because *A. cerana* drones mate with *A. mellifera* queens resulting in unviable offspring.

Australia's monitoring of the effect of Asian honey bees on the environment has not yet shown definitive results. The Queensland government recommends that scientific research be undertaken on general ecology and behaviour, pollination, impact on the Australian environment, competition with European honey bees, and control techniques. European honey bees, and control techniques. If the Java genotype of *Apis cerana* arrives in New Zealand, as has happened in Australia, there is a chance that *Varroa jacobsoni* will arrive as well.

If beekeepers suspect that their hives have *A. cerana*, or other exotic pests or diseases, they should report these findings **immediately** through the **0800 809 966 MPI Hot Line**. An AsureQuality Limited apiculture officer will follow up on every report, if requested to do so by MPI.

Acknowledgement

This article was funded by the Ministry for Primary Industries through the Honeybee Exotic Pest and Disease Surveillance Programme (see Taylor, 2011).

References and other sources

Ahmad, F., Joshi, S. R., & Gurung, M. B. (ICIMOD, 2001). Participatory action research on *Apis cerena* [sic] selection and multiplication in Nepal. In Mountain Agriculture in the Hindu Kush-Himalayan Region, Proceedings of an International Symposium held May 21–24, 2001 in Kathmandu, Nepal. Available online at: http://www.icimod.org/?q=1508

Annand, N. (2013). The Solomon experience with Asian honey bees. Available online at: http://www.theabk.com.au/article/solomon-experience-asian-honey-bees

Ellis, J. D., & Zettel Nalen, C. M. (2010). Varroa mite. Available online at: http://entnemdept.ufl.edu/creatures/misc/bees/varroa_mite.htm

Hisashi, F. (2014). Profitable beekeeping with *Apis cerana*. Available online at: http://www.beesfordevelopment.org/phocadownload/BfDJ94%20Profitable%20beekeeping%20with%20Apis%20cerana.pdf

Koetz, A. (2013). The Asian honey bee (*Apis cerana*) and its strains - with special focus on *Apis cerana* Java genotype. Available online at: http://asianhoneybee.net.au/wordpress/wp-content/uploads/2013/03/AHB-behaviour-lit-review-FINAL2013.pdf

Tan, K., Yang, S., Wang, Z-W., Radloff, S., & Oldroyd, B. (2012). Differences in foraging and broodnest temperature in the honey bees *Apis cerana* and *A. mellifera*. Available online at: https://hal.inria.fr/file/index/docid/1003658/filename/hal-01003658.pdf

Somerville, D. (2011). Asian bees. Available online at: http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0003/382161/Asian-bees.pdf

Spivak, M., & Downey, D. (1998, February). Field assay for hygienic behaviour in honey bees. *Journal of Economic Entomology, 91*(1), 64–70. Available online at: http://beelab.umn.edu/prod/groups/cfans/@pub/@cfans/@bees/documents/article/cfans_article_436806.pdf

Taylor, B. (2011, September). Honey Bee Exotic Disease Surveillance Report. *Surveillance, 38*(3), 29–30. Available online at http://www.sciquest.org.nz/elibrary/edition/5539

Figure 1: http://commons.wikimedia.org/wiki/File:Apis_distribution_map.svg

Figure 2: Asiatic honeybee. Dorsal views of Apis species. Retrieved April 20, 2015 from http://www.padil.gov.au/pests-and-diseases/pest/main/135533).

EDUCATION

ENVIROSCHOOLS **'BEE CORRIDOR PROJECT'**

By Steve Brown, Enviroschools/Sustainable Living Program Facilitator, Central Otago Rural Education Activities Programme (REAP), E-mail: envirosust@coreap.org.nz

Throughout the week of Thyme Festival I made 'seed bombs' with the children from the respective schools which hosted the Enviroschools tent. Here I am spooning out the mixture of Wild Forage wildflower bee-friendly seed mix, compost and potter's clay, mixed with water and rolled into golf ball-sized 'bombs'. The children in this photo are from Clyde School. The children pictured left to right around the circle are Phoebe, Emma, Vanessa, Neave, Brianna. Photos provided by Clyde School teacher Stephanie Kitto.

In my position as the Community Sustainability Facilitator, which involved facilitating the Enviroschools programme in Central Otago, I became increasingly aware of the sorry plight of our bee populations.

Over recent years, the action arm of the Sustainable Living programme Mad4co (Making a difference for Central Otago) organised these activities:

- viewings of the films *Queen of the Sun* and *More than Honey*
- a forum for people interested in bees
- a presentation to the local garden club
- a visit to an organic apiarist during our local Thyme Festival in November 2014.

It was at the Thyme Festival where I first started raising awareness of bees with the Enviroschools children in the Enviroschools Tent with a display about bees, short videos and a range of beekeeping equipment.

In my search for information around bees, I found out about the North Otago Rural Women's Bee Corridor project. This inspired me to look into doing something similar here in Central Otago with the Enviroschools. To do this, I needed funding to purchase 'Wild Forage' bee-friendly wildflower seed rescue remedy. *[Editor's note: this seed pack is available for purchase in various sizes. Go to http://www.wildforage.co.nz/wildflower-mix for details.]*

Once this funding was secured, I then launched the 'Bee Corridor' project at Central Otago's Thyme Festival, November 2014. Again I mounted a display about bees and made seed bombs containing wildflower seeds. Children from different schools hosted the tent throughout the week and I engaged the children in making the seed bombs with the children who hosted the tent. We talked about Guerrilla Bombing, which captured the children's imaginations, so hopefully we'll see wildflowers popping up around our communities and schools. We used an article from a *School Journal* where Robert Guyton from Riverton was making them with a school in Christchurch.

The next step was to supply schools with a 50-gram pack and a sample single pack of Wild Forage wildflower seed rescue remedy to carry on the bee corridor sowing and/or making more seed bombs. Schools were encouraged to identify areas in their school grounds and community that could be prepared and sown. An extensive online resource 'Padlet' page is available for teachers to use and contact details of our local beekeepers and garden club mentors: go to http://padlet.com/envirosust/ikg5hmwivxvl

I have heard from one school already this year of the wildflowers growing in their school grounds. I look forward to hearing more (and indeed, seeing the evidence) about the children's efforts for the benefit of our bees.

I would like to acknowledge the local beekeepers, garden club members, Enviroschools Regional Co-ordinators, North Otago Rural Women and Maureen Conquer from Wild Forage Ltd for their assistance in various ways for the project.

RESEARCH

TOOLS TO HELP BEEKEEPERS: **SUPPORT SOUGHT**

Jerry Bromenshenk, Bee Alert, Missoula, Montana

Some of you will know Dr Jerry Bromenshenk from his work on 'sniffer bees', which he presented at the NBA Conference at Christchurch in 2005. His organisation is seeking letters and/or in-kind support from beekeepers (including from NZ), for a proposal to USDA "to bring their acoustic technology to market for detection of colony exposures to neonicotinoid pesticides". Jerry takes up the story…

My apologies if anyone takes issue with the following, but we've a short time frame. Most of you know we've been working for some time on acoustic scanners to detect bee pests, like mites, and bee diseases. You may not know that initially, we developed this technology for the [United States] Army to use bees to guard against releases of poisonous gases. We've now come full circle.

Last summer, under a USDA SBIR Phase I project, we were able to detect both acute and chronic exposure to the neonic insecticide clothianidin, and to discriminate between the two levels of exposure, using onlly the sounds produced by bees in their colonies. These results are very promising. FYI, the older pesticides tend to make bees noisy; the neonicotinoids make them quiet.

This week, we are submitting an Application for the next Phase of Testing, a 2-year project. USDA looks for letters of support, specifically: A letter of support for the project and/or some in-kind commitment.

Here's a brief description of the project.

Remote and Hand held Pesticide Event Detection using Bees

During 2014, Bee Alert developed a hand-held and hive-mounted in-hive recorder that allows real-time monitoring of pesticide events in bees. These devices are also capable of detecting a wide range of health issues that afflict bees, such as foul brood and Nosema, and can also tell you if a hive is queenless. The prototype device, pictured at left, with pesticide detection capability, was developed using USDA SBIR funding.

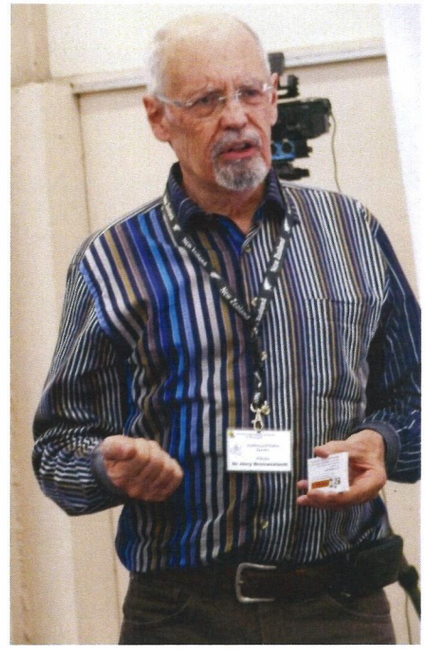
We are now seeking further USDA SBIR funding to make this device commercially available. To do this, we need your help. Simply put we need a letter from you (we can provide a draft version, if you wish) that states that this will be a product you can use and would be willing to purchase when available commercially. You will not be making an actual commitment to buy this product, so no money is being committed by you. Of course, if you wish to offer to do some testing on your own bees as part of the follow on work, that would be great.

During 2015, Bee Alert plans to make the algorithms that detect pesticide events much more robust. We will also port the current grey-box handheld prototype to Android and iPhone smartphones so you can use your smartphone to do hive diagnostics. All of this will make the device affordable, reliable and easy to use.

> "We are now seeking further USDA SBIR funding to make this device commercially available."

Pesticide incidents have always been a major concern for beekeepers, especially for those beekeepers with colonies spread throughout the country for pollination. In many cases, the beekeeper does not know about a pesticide incident until they visit a bee yard and find dead bees underfoot. By that time any chance of sampling for said event is often lost, as most pesticides degrade quickly.

There is a pressing need for a rapid notification system of such harmful events to provide beekeepers the opportunity to respond quickly. The time required for detection, reporting, investigating and responding using traditional approaches results in excessive loss of bees, high labor and costs for chemical analyses that may not yield usable data. The early detection and notification this device will provide will allow a beekeeper [to] intervene and move the colonies away from exposure source before the colonies are severely impacted.



Dr Jerry Bromenshenk at the Thames field day, Feb 2013. Jerry demonstrated the hand-held device that his firm, Bee Alert, is developing to identify problems within a hive. Photo: Mary-Ann Lindsay.

For more information and some pictures of the scanner and initial pesticide detection results, you can email me at beeresearch@aol.com or call me directly on 406-544-9007 (Jerry Bromenshenk). We hope you can help—the industry needs this tool.

J.J. Bromenshenk
Bee Alert
Missoula, MT

Postscript from Jerry

Thanks and a clarification:

First, thanks to all who have or are sending letters of support for our SBIR Phase II proposal to USDA to bring our acoustic technology to market for detection of colony exposures to neonicotinoid pesticides. Second, we are currently testing our original

units for bee pest and disease detection in the USA, New Zealand, and Australia. This technology is NOT just for N. America, but for beekeepers around the world. We're working with Arnia remote hive monitoring to bring this to Europe, and we hope to introduce it soon to S. America.

With PHASE II results, we should be able to add neonicotinoid exposure to our pest and disease software, and we want to be able to provide all of this on Smart Phone/Tablet formats with APPS, so that it is both more affordable and more readily available.

So, third, if you are interested in seeing this technology advance and eventually made available to you, [wherever] you live, please let us know. Thanks again to all. Jerry
Again, send letters and/or questions to me at *[see above for contact details]*

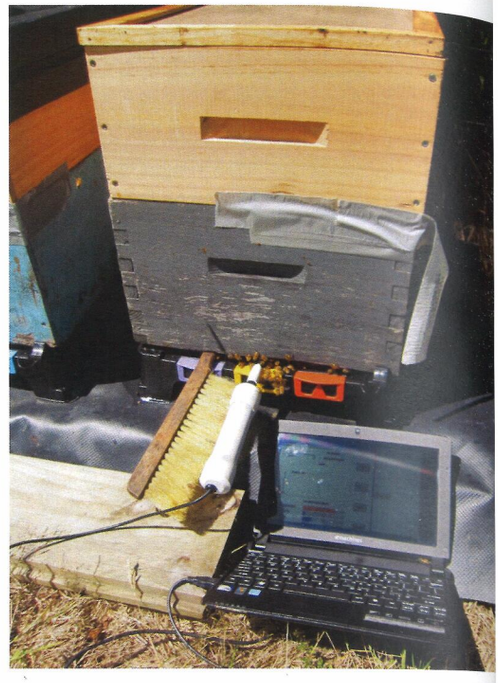
Sources

Bromenshenk, J. J. (2015, February 24). Tools to help beekeepers and Re: Tools to help beekeepers – Not Just for USA. Messages posted to BEE-L@COMMUNITY.LSOFT.COM, archived at http://community.lsoft.com/scripts/wa-LSOFTDONATIONS.exe?A1=ind1502&L=BEE-L#39 and http://community.lsoft.com/scripts/wa-LSOFTDONATIONS.exe?A2=ind1502&L=BEE-L&F=&S=&P=74529.

Related reading

Farrer, N. (2005, August). Notes from Conference and AGM. *The New Zealand Beekeeper, 13*(7), 7–8.

Shimek, C. (2005, August). Harnessing the honeybee. *The New Zealand Beekeeper, 13*(7), 13–16. Reprinted from Research View, a publication of the University of Montana, Spring 2004.



This photo depicts the Bee Alert Technology software used with a probe and computer, which shows a read-out of varroa levels, whether the hive is queenless or not, and other indicators of problems in the hive. Frank Lindsay took this photo while trialing the Bee Alert software on his computer.

BUSINESS

PLAN FOR **SUCCESSION**

Catriona MacLennan

[Editor's note: The following article first appeared in a recent edition of The Orchardist, *but the issues raised are pertinent to commercial beekeepers as well.]*

Nobody wants to think about dying or becoming seriously ill, but failing to plan ahead for life changes and bad times can leave both growers and their families in a tight spot.

Succession planning is vital for all fruit and vegetable growers, and the earlier the process starts the better. Principal Stephen Stafford-Bush of chartered accountants McConnell Stafford-Bush says succession planning is a process rather than a one-off event.

It can take up to 15 to 20 years to put in place all the necessary elements for a smooth handover to the next generation, so leaving succession planning until parents are in their eighties is a recipe for problems.

Mr Stafford-Bush says vegetable and fruit growers are often not good at planning for succession.

"They're probably from my experience the ones that don't do it as well as some of the other farming sectors."

He says this may be because many businesses in the industry are small.

"Succession planning is really all about trying to transfer the business to the next generation. It's all about going through the process of finding out what the current owners want—involving the whole family and then working out the process of how you're going to do the transfer across. What often happens is parents say something verbally to the son and then leave it to the will, and that's disastrous. Suddenly you get into an unholy bun fight. It's just a real disaster leaving it to a will to determine a succession plan."

Mr Stafford-Bush says the courts are littered with cases about succession plans which have not been properly implemented.

One famous example is the case of *Scott v Scott*, which involved a family dispute over how two farms and their assets were to be shared between family members. This led to lengthy and expensive court proceedings in the High Court, as well as attempts to appeal decisions to the Court of Appeal and the Supreme Court. The court cases ran for more than six years and led to a breakdown in family relationships, with family members splitting into two opposing camps.

A second illustration of what can go wrong is *Fisher & Ors v Kirby & Ors*, where family members brought a case in the High Court about the distribution of a dairy farm that had been in the family for four generations. The High Court proceedings were followed by an appeal to the Court of Appeal by relations who were unhappy with the High Court decision.

Donald Murray had intended his son Nathan to continue farming the land and gave him the option under his will to acquire half the farm on generous terms.

Donald's wife, Irma Murray, left almost all her estate to three of her four nieces and nephews. Her three children then brought court proceedings under the Family Protection Act claiming that she had breached her moral duty to them.

In the High Court, Justice Clifford awarded $600,000 to one child, $700,000 to another and A$350,000 to the third. The nieces and nephews appealed against this decision to the Court of Appeal. The Court of Appeal largely dismissed the appeal, saying that there had been no good reason for Irma Murray to virtually exclude her children from her will.

Another example of a family dispute over rural succession is *Ashworth v Lambie*. Trevor Lambie left the residue of his estate in almost equal shares to his two daughters and one son. However, the will favoured the son by providing that approximately $353,389 owing by the son and his family trust to the estate was to be forgiven.

Mr Lambie and his wife had settled their assets as tenants in common in equal shares in 1992. This was on the advice of their accountant, who had told them that there was merit in ensuring that farming assets were jointly owned by a husband and wife to facilitate the transfer of those assets between generations and to preserve them from potential duties or rest home fees.

The combined net value of the assets at the time of Mr Lambie's death was $1.9 million. His estate was accordingly valued at $988,279,

continued...

NEW ZEALAND APICULTURE CONFERENCE TAUPO

NZ APICULTURE CONFERENCE WAIKATO 2015

The New Zealand Apiculture Conference 2015 will be held at Wairakei Resort Taupo from Sunday 21 June to Thursday 25 June, with the theme 'Practical Beekeeping'.

Sunday is the practical beekeeping day with seminars aimed at everyone interested in bees, from hobbyists to commercial operators. We have four international speakers: Dr Fanny Mondet talking about Varroa Sensitive Hygiene behaviour, Maryann Frazier on grafting queen cells, Dr Ben Oldroyd talking about pheromone traps to catch a queen and Dr Madeleine Beekman presenting on bees in the food chain, as well as six New Zealand speakers talking about topics as diverse as bee navigation, general hive management, finding your queen, rules around selling your honey, and wasps and bumble bees.

Workshops will be held on Sunday and Monday including AFB detector dog, queen-raising course, mead making, 4WD training, the basics of honey testing, loading trucks, a First Aid course, a Trees for Bees workshop.

Tuesday features different presentations from the four international speakers, as well as a panel discussion on bee health and presentations by the Ministry for Primary Industries (MPI) on tutin standards and manuka honey.

Wednesday morning features a discussion of the most pertinent issues facing the New Zealand apiculture industry today, such as industry unification, Government Industry Agreements (GIA) for Biosecurity Readiness and Response, and the Health and Safety in Employment Act.

Two competitions are also run during conference:

1. *The NBA/100% Pure New Zealand Honey National Honey Competition and*
2. *The Ecrotek Beekeeping Supplies photo competition.*

For further details and to register for the conference, please visit the Conference website **www.apicultureconference.co.nz**

START EARLY WITH SUCCESSION

- Succession planning is a process, not an event.
- It can take 15–20 years so start early.
- A Deed of Family Arrangement can help clarify.
- Speak to your family about what you plan.
- Update your will.
- A company is a better structure than a partnership.

largely comprising debts owed by his son, Peter; a term deposit of $150,000; and a sum of $19,000 which represented Mr Lambie's interest in a farming partnership with his son.

The two daughters brought proceedings in the High Court seeking further provision from their father's estate under the Family Protection Act. They believed that the property division was unfair because their brother had been able to acquire all of the family farm from their father. They estimated the farm to be worth about $10 million. Their view was that, but for the transfer of the farm to Peter, the value of the estate would have been approximately $5 million.

"It's a bit like a jigsaw. There's a huge amount of options and no one answer fits every circumstance."

However, the High Court dismissed the daughters' claim. Justice Gendall held that Mr and Mrs Lambie had clearly had legal and accounting advice. They had obtained valuations and had carefully constructed their financial affairs.

Mr Stafford-Bush says *Scott v Scott* is a good example of a succession plan gone wrong. To avoid this, he says vegetable and fruit growers should seek advice from an experienced accountant about what structures they need to put in place.

The parents should talk to their children about when they plan to retire, who will take over the business, and how fairness between the children can be achieved.

He says a Deed of Family Arrangement can be a key part of the process. The whole family can discuss plans for the future and a deed can then be drawn up recording the agreement. All family members sign the deed to tie everything together.

Succession plans will often also involve trusts.

"You might end up with two trusts: one for the farming children and one for the non-farming children. A trust or trusts can be part of the structure."

Mr Stafford-Bush says it is likely that a company will be another part of the mix.

"A company is a good entity to use longer term. Often growers have partnerships instead of companies, but they should move to a company. It's part of the progression of the plan to transfer assets of value over time. A company is a better structure for that than a partnership. Partnerships are too restrictive."

Mr Stafford-Bush says it is also important to ensure that wills are updated to take account of asset transfers, new structures and changes in the family.

"My view is I don't have all of the ideas. Some of my farming clients come up with the best ideas for how to make a succession plan work. It's a bit like a jigsaw. There's a huge amount of options and no one answer fits every circumstance."

The court judgments mentioned above and others can be downloaded free of charge from Judicial Decisions Online—**www.justice.govt.nz/jdo**

Scott v Scott 15 September 2008, High Court, Tauranga
Scott v Scott 5 August 2009, High Court, Tauranga
Scott v Scott [2009] NZSC 111
Fisher & Ors v Kirby & Ors [2012] NZCA 310
Ashworth v Lambie [2012] NZSC 1110

Source

MacLennan, C. (2015, February). Plan for succession. *The Orchardist, 88*(1), 60–61. Reprinted by kind permission of the author and publisher.

WHAT HAVE **YOUR EXPERIENCES** BEEN WITH SUCCESSION PLANNING?

We would be interested to hear from anyone who would like to share their stories.

BRANCH REPORTS

FROM THE **COLONIES**

Auckland Branch

Looking back on summer in our region, we can say that it was slow to start, and then long, hot and dry. The dry weather continues except for a couple of periods of good rain. This has resulted in a good pohutukawa flow, followed by an amazing kanuka flow and then not much else as the dry took hold. Pasture flow has been disappointing as a result.

Now we are busy preparing for winter, and protecting our hives from the predations of wasps. AFB is still out there and most of us have had to burn hives or know someone else who has had to. We need to continue to be vigilant, and take action when it strikes.

There is no shame in finding that you have disease, only shame in not doing anything about it.

- Helen Sinnock

Waikato Branch

The willow aphid has caught up with some of us and has played havoc with extraction plants, but I guess it's just another thing to be aware of and plan for!

Most of the Waikato honey crop is in and from all accounts is pretty reasonable, especially considering the worrying very cold start we had before Christmas. The prices are looking good as well, so not a bad season on the whole.

So far there's been very little varroa around and very few wasps, which is fantastic! Last year they were all over the place and caused a lot of damage. Strips are in, feeding the splits is on the agenda now, then the only thing to do is to tuck them up, get ready for conference and a holiday!

P.S.: Planning for the Conference is well on track; register online through the website www.apiculture.co.nz. Don't forget!

- Barbara Cahalane

Hawke's Bay Branch

Cyclone Pam was a bit of a non-event in Hawke's Bay: it did drop some useful rain, although it is still very dry in many parts. We are having a real Indian summer and generally the bees have had quite a good autumn. Willow aphids have appeared again and while they are providing some autumn stores, there have also been reports of brood mortality and general ill thrift from bees working this source exclusively. Nothing really concrete yet but I would be interested to hear if other regions are having this problem.

There are also a number of dead and dying willow trees this year.

Not everybody loves bees, and I recently spent half an hour talking to a woman who has had a commercial apiary placed within 20 metres of her house. She was adamant that somebody should do something about it and convinced that the NBA should be able to do something. Two days before I went past an apiary situated two metres from a main road, honey was being removed from the site while cyclists rode past.

The NBA is powerless to stop this sort of behaviour but if beekeepers don't improve their act, either the councils or government will step into the picture. If it is not possible to get a site that is safe and ethical, then don't do it.

- John Berry, Branch President

[Editor's note: Councils are already getting involved, one example being the Ororohanga District Council, which has proposed amendments to its Keeping of Stock, Poultry and Bees Bylaw by "introducing clauses that prohibit beehives beside a road reserve", and "also clarifies that beehives should not be allowed to be placed on a private property in very close proximity to roads." Public consultation closed on 10 April. See http://www.waitomonews.co.nz/issues/2015.02/2015.02.26.WN.pdf for more details (p.10).]

Southern North Island Branch

We have held our AGM. Allan Richards is Chairperson, for the final year.

We were fortunate to have Dr Linda Newstrom-Lloyd attend our meeting and brief us on some of the findings from the willow research. There are several very interesting varieties that will help our bees at crucial times in spring.

Our field day on 19 April was very well attended. Subjects such as requeening in autumn, varroa treatments (with emphasis on organics and nosema) all added to the information given to attendees. Thanks to Jason and Amanda Prior, hands-on experience was given with commercial Beekeepers offering ideas to the small beekeepers (hobbyists). It was a lovely fine day, which also helped.

- Neil Farrer, NBA Life Member

Honey bee and bumblebee on a poppy flower. Photo: Frank Lindsay.

Nelson Branch

The forecast informs me that for the next few days some snowfall is likely on higher ridges, so guess we are not too far off winter. Most hives appear to be in good condition, and have gathered some honey to replace what we have taken.

In some hives there has been a reduction in egg laying and brood numbers: whether that is caused by a change in temperature or light I am unsure, but is definitely a sign of the approaching cooler months. There seems to be a lack of pollen sources at the moment. Luckily there is at least some gorse around.

Varroa appears to be under control with a few more weeks of activity from strips that were placed in hives last month.

It therefore seems everything is in order bee wise: best I start looking at what stores in the form of firewood I have.

- Jason Smith

ABOUT THE APIARY

WINTERING HIVES

Frank Lindsay, NBA Life Member

Most of the summer flowering species have now finished for the season but a few trees are flowering out of season. I saw a pohutukawa starting to flower in mid-April: about 50% of the flowers had opened.

Winter stores

If the weather is kind, our bees can fetch the last of the pollens to store around the brood nest, ready to be used when the queen starts laying again in July. As I do not use queen excluders, the bees will, in some cases, have stored pollen in some of the honey super frames, especially near an extra entrance (a crack or rotten corner of a super). I do not extract any frames with pollen as this can upset the pollen count of a honey. I put these frames directly into nucs or put them aside, ready to put into nucs in the early spring. One cell of pollen equals one bee, so why not help the bees during the critical spring build-up period when all their efforts go into raising brood? NB: you can only do this if there is no AFB in the area. Feeding honey can quickly spread disease. If any disease shows up, with luck it will be in a nuc and not a hive in midseason that is five supers high.

"We need to plant more trees and shrubs that give our hives a diverse pollen supply late in the season."

Hives should be packed out with stores (a minimum of six frames in a single and a full-depth super on a double) and full of bees. Sugar feed to get to this position if they are not up to this mark.

Pollen also is essential. Rosemary Webby studied the types of pollens that bees collected during the year. She found that a lot of hives in our rural landscape relied mainly on plantain for autumn brood rearing. We need to plant more trees and shrubs that give our hives a diverse pollen supply late in the season. Hopefully this 'Trees for Bees' project will get the funding next year.

For those interested, Dr Linda Newstrom-Lloyd, the Landcare Research scientist who is running the Trees for Bees project, will be making two presentations covering her year's research, one on the Sunday and a more advanced session on the Monday (specialty meetings day) at conference.

Some of our newer commercial beekeepers are learning that an area can handle only a certain number of hives in the spring. More can be put into an apiary but will need supplementary feeding; otherwise they will not build to a maximum. As one person put it, overstocking means there's no swarming, as bees will not produce drones unless they have adequate nutrition. Judging an area's potential takes lots of experience. Linda will be covering this in one of her talks.

Controlling wasps

So the honey is off and the bees have been set for winter. But even with reduced entrances, some hives have already succumbed to wasp predation, which in some areas have reached high populations—battalion strength.

A wasp collecting nectar from a camellia flower. Camellias provide a valuable source of pollen and nectar late in the season. Only the pink ones were producing nectar and lots of pollen. Normally bees would be visiting these flowers but high wasp numbers are keeping them from flying. Photo: Frank Lindsay.

Once a wasp gets the hive's smell, they can come and go without being challenged. Robbing screens help as a last resort but getting rid of the nest is better. It may take a few hours to find and dispatch a nest with a bottle of fuel (petrol or diesel) but it can pay dividends. The only problem is that nests are sometimes only 10 paces apart along banks. With practice, you can see them coming and going. Around some of my farm/open bush sites, it's possible to dispatch six to eight nests in an afternoon. Compared to the replacement cost of a hive ($200-300), this time is value for money. My highest losses in a plague year have been to save only the equivalent of four nucs out of 32 hives in two apiaries after two hives were exposed by boys pushing them over. I closed all hive entrances and powdered them with carbaryl dust for an hour before wasp numbers reduced by half. (The wasps were 25mm deep trying to get in at each entrance). I then had to wash everything to remove any toxins left. Some beekeepers don't take any chances and remove hives from bush areas after the honey is removed, as this is more cost effective and reduces worry.

Once wintered down, our only worries now are storms and stock knocking over hives. South Island beekeepers tend to place lots of rocks on the roof but those migrating hives usually use EMLock® straps. Stainless steel strapping is far better than normal galvanised steel as it stays put rather than unwinding like a spring. It also lasts longer but you have to be in beekeeping for a while for this to pay off.

Bulls can be dissuaded with an electric fence that is set high enough to let sheep graze close to hives but not cattle. Once bulls learn that the tape is hot, the power can be turned off, as cattle tend to keep well clear. On some farms my fences are connected to the farmer's hot wire and are only turned on when stock are in the paddock.

I still tend to be a bit of a hobbyist when it comes to winter. Bees flying during winter in a semi-shaded area will often fall short of the entrances and are chilled. I place a board or wedge a piece of coreflute from the ground to the entrance so that bees landing short can crawl up into the entrance. Bees do better in full sun during the winter, but unfortunately some of my apiary sites are shaded in the afternoons.

Storing honey boxes

Drawn honeycomb is your most valuable asset. In a poor season bees will fill drawn comb whereas they will ignore foundation. Look after it and protect it from rats and mice, and store where there is light and air

continued...

circulating through the stacks so wax moth cannot take over.

I place my honey supers on plastic pallets in an open shed and use queen excluders at the top and bottom of the stacks. Greater wax moth larvae (grubs) clump together, covering an area in silk. They are able to produce their own heat so once they get established, they will continue to destroy comb right through the cold of winter.

I have found that 20 millilitres per super of formic acid is a good treatment for wax moths but can only be applied to equipment stored outside or in the field. Care is essential when using any chemical, as most are injurious to human health.

Monitoring and treating for varroa

So that's the beekeeping year; at least, that's how it used to be. Now we get out on the good warm winter days and check how well our mite treatments have worked. Some are reporting signs of mite resistance to Bayvarol® and Apistan® further south in the North Island. Some beekeepers are not alternating treatments. (Both of these strips, although slightly different, are essentially from the same chemical family so are not alternatives.)

Those with mesh bottom boards can monitor mite fall without opening hives. Those with normal bottom boards will need to put in an insert, or will have to open hives and do a soap or alcohol wash of 300 bees to determine mite numbers. If you find one hive with a high mite count, you will need re-treat all hives in that apiary. The mites might have found a feral hive or a hive that has missed being treated and has broken down, and it doesn't take long for the whole apiary to be re-invaded by mites. My experience in the third year of mites is that one dying feral hive can take out an apiary of 16 hives in a two-month period without another treatment.

Beekeepers in the far south could now be experiencing this. The last of the feral hives will shortly be dying and bees will rob even in poor conditions some years. This is called a winter honey flow: although there's more honey on the hives in spring than they went into winter with, the hives are dead from varroa. Beekeeping is now a year-round occupation, so inspect a few hives during the winter if bees are flying well.

Keep hives dry and ventilated

New beekeepers should check after frosts for condensation under the hive mat. Open mesh bottom board hives don't seem to need top ventilation but most conventional hives require some upper ventilation, especially after brood rearing commences. Bees consuming honey produce carbon dioxide and moisture as part of respiration. Fanning can disperse carbon dioxide but water vapour congeals on cold surfaces and forms water droplets. If these fall down on to the bee cluster, more food is consumed just to keep warm.

Likewise, if too much upper ventilation is given, the draught will cause the bees to consume more honey. Experiment by using matchsticks under each corner and increase the gap slightly over a few weeks until there's no condensation in the middle of the crown board. You can also try putting foam insulation between the hive mat and the roof to reduce condensation. Here in our windy, wet city, I keep my entrances reduced all year to 300 mm. I also use a 25 x 8 mm opening in my crown board, which I turn upside down as a split board in the spring to put a nuc on top.

Too much moisture can also cause the outside frames to go mouldy. It's a fine line balancing the bees' need of one change of air every hour. Beekeepers in the UK remove the bee escape from their crown board and this, combined with small, screened holes in the side of the roof, provides upper ventilation. In parts of North America where they get snow, beekeepers drill an entrance hole in the upper super to exhaust gases, enabling bees to fly in the early spring when the bottom entrances are covered with snow or ice.

Instead of setting nucs out as singles to winter on their own, combine them and place on top of a strong hive. Seal to stop water getting in between them. Bees will gradually move into the centre so both become a single cluster. The heat from the hive below also keeps the nucs warm, so that less honey is consumed.

Analyse your mistakes

We all make mistakes: even after 45 years I'm still learning. We should write them down so perhaps we don't repeat the same ones next year at least, or in five years' time. Beekeeping conditions vary from year to year and successful beekeepers read the conditions and apply their experience so they have 180% production hives each year. Some may question this figure but with losses due to queen failure, varroa reinvasion, the odd starvation causing between 15 to 30% losses and hives dying from nosema during poor spring conditions, it's now necessary to split all hives in the spring just to keep ahead.

Get your orders in for spring queens and bee gear, either for spring expansion or as replacements six months ahead of time. Don't wait for the honey flow to decide more equipment is required. Our manufacturers can turn out only a few thousand plastic and wooden frames per day. Poor planning on your part doesn't constitute an emergency on their part.

Things to do this month

Winter down, check mite kill, dispose of honey (prices have increased again this season). Grade and sort combs into brood, extracting and damaged. In fact, all frames these days should be as white as possible. Control wax moth for those who need to. A few beekeepers are shrink-wrapping pallets and freezing them for a week in the local coolstore.

Check for wasps. Control the growth around hives. Start planning for the coming season. Drone production should start 50 days before they are required. Order plastic frames well ahead of time to give them time to air. The thicker the wax, the quicker they are drawn. This will also give our suppliers something to do during the winter.

Register for conferences: here in New Zealand, and/or any of the five in Australia and several in the USA, plus Apimondia in Korea this September. It's worth the investment and perhaps it's tax deductible or it could be a valuable marketing opportunity.

ERRATUM

An observant beekeeper spotted a mistake in the photo at left on page 45 of the April journal. The photo is of lacebark (*Hoheria angustifolia*), not lancewood. I seem to have a fixation on lancewood (*Pseudopanax ferox*). It's such a great plant, and it establishes early after a slip. In the juvenile stage, the leaves last five years.

Lacebark is still flowering. Bees work it on warm days; however the trees die quickly (within a year) if it gets a virus, probably spread by a stem-boring insect.

OUT AND ABOUT

NATIONAL **HONEY WEEK** CELEBRATED

Maureen Conquer, Wild Forage Ltd; Apimondia Oceania Commission President

Participants (including one 'bee dog') in the "Flash Mob Bee Swarm", downtown Auckland, 20 March 2015. Photos: Dianne Chiang.

The second National Honey Week took place throughout New Zealand from 16–23 March 2015.

The event was created to celebrate pure New Zealand honey and the unique properties and flavours of our wonderful monoflorals. This has given the industry an exciting window to positively promote honey.

Media, both traditional streams and food bloggers, were furnished with information packs, tastings and samples which resulted in social, printed media, TV and radio picking up the story for some UnBEElievably positive marketing.

The week ended with a "Flash Mob Bee Swarm" buzzing early-morning Auckland commuters, distributing honey and Trees for Bees information along with honey samples to sweeten their morning.

We look forward to growing National Honey Week with even more industry players joining this initiative next year.

GET **SNAPPING!**

Autumn is upon us, so it's time to start taking some photos to enter in the seventh annual Ecrotek Beekeeping Supplies/NZ Apiculture Photography Competition.

ENTRIES WILL BE ACCEPTED IN THE FOLLOWING CATEGORIES:

Class A. Close-up print. Subject must relate to beekeeping.

Class B. Scenic print. Apiary subject such as flowers, hives etc.

Class C. Portrait print. Person, beekeeping procedure, honey, hive by-product processing in appropriate setting, commercial frontage or beekeeping base.

Class D. Essay prints. A set of from 4 to 7 pictures depicting a beekeeping story.

Class E. 'Oh Darn!'—for all those 'oops' moments that occur in beekeeping.

The photo contest is open to all registered members of the NBA and BIG.

As an added inducement, winning photographs will be published in *The New Zealand BeeKeeper*, perhaps even on the front cover if taken in portrait format.

For more information, go to http://www.nba.org.nz/events/apiculture-industry-photography-competition

Conference photography competition to be judged at the conference, ***Wairakei Resort Taupo, 21–26 June 2015.***

SHUTTERBUGS

'Striding out'. This photo, taken by Fiona O'Brien, won first place in the Portrait category of the NBA/ Ecroyd photography competition 2014, held as part of the New Zealand Apiculture Conference in Wanganui.

WE WANT **YOUR PHOTOS!**

The Publications Committee welcomes photos for the journal. Pop a camera in the truck and snap away when you find something interesting. Please provide a caption and the name of the photographer so we can credit them.

If you're thinking big (such as a potential front cover photo, which we always need), these need to be as large as possible (3MB or larger if possible), in portrait format (vertical rather than horizontal), and ideally 300 dpi (dots per square inch). Regular digital photos are only 72 dpi, so are not suitable for the front cover.

Email them to editor@nba.org.nz

Alessandro Tarentini took this photo in 2013. Alessandro was working as an Apiarian Technician at Beeline Ltd, Hastings at that time.

KEVIN ECROYD OBITUARY

Due to unforeseen circumstances and time constraints regarding publication of the April journal, the obituary for Kevin Ecroyd was not published as originally stated in the March journal. It was to be printed in the May journal but the family declined this offer, so the obituary will now appear in the October journal.

NATIONAL BEEKEEPERS' ASSN OF NZ (INC.) **EXECUTIVE COUNCIL**

EAST COAST WARD
Kim Poynter
374 B Hamurana Rd
RD 7
Rotorua 3097
Ph: 021 926 937
Email: birchwoodfarm@xtra.co.nz

NORTHERN WARD
Kim Singleton
PO Box 281002
Maraetai
Auckland 2148
Ph: 09 536 6516
Email: beewise2005@gmail.com

SOUTHERN NORTH ISLAND WARD
Peter Ferris
50A French Street
Masterton 5810
Ph: 06 378 7632
Email: happy.ferris@xtra.co.nz

CENTRAL SOUTH ISLAND WARD
Roger Bray
Braesby Farm, RD 1,
Ashburton 7771
Ph/Fax: 03 308 4964
Email: birdsnbees@xtra.co.nz

WAIKATO WARD
Stephen Black
Bees-R-Us
685 Uruti Road, RD48
Urenui 4378, Taranaki
Ph: 06 752 6860
Email: bees@beesrus.co.nz

BAY OF PLENTY WARD
Dennis Crowley (Vice President)
PO Box 16156, Bethlehem
Tauranga 3147
Ph: 07 579 2554
Email: crowleys@slingshot.co.nz

UPPER SOUTH ISLAND WARD
Ricki Leahy (President)
151 Mangles Valley Road
Murchison
Ph/Fax: 03 523 9354
Email: beechdew@farmside.co.nz

LOWER SOUTH ISLAND WARD
Russell Berry
2488 State Highway 5, RD 3,
Rotorua
Ph: 07 366 6111
Mobile: 021 741 690
Email: russell@arataki-honey-rotorua.co.nz

NBA BRANCHES: First named is President/Chairperson. The second named is Secretary.

NORTHLAND
Interested parties wishing to start this branch up again, please contact Kim Singleton 09 536 6516 or beewise2005@gmail.com

AUCKLAND
Graham Cammell
20 Thorps Quarry Road
Clevedon, RD 2 Papakura 2582
Ph: 09 275 6457
Email: graham@cammellshoney.co.nz

Bob Russell
101 Kern Rd, RD 3, Drury 2579
Home Ph: 09 294-8656
Work Mobile: 027 284 8951
Email: bob.russell@xtra.co.nz

WAIKATO
Cameron Martin
Haumea Road, RD 1, Galatea 3079
Ph: 07 366 4804
Fax: 07 366 4804
Email: busy-bee@xtra.co.nz

Jane Lorimer
Hillcrest Apiaries 'Kahurangi-o-Papa'
RD 3, Hamilton 3283
Ph: 07 856 9625
Fax: 07 856 9241
Mobile: 027 294 6559
Email: hunnybee_wave@ihug.co.nz

BAY OF PLENTY
Dennis Crowley
PO Box 16156, Bethlehem, Tauranga 3147
Ph: 07 579 2554
Email: crowleys@slingshot.co.nz

Barbara Pimm
448 Woodlands Road, RD 2, Opotiki 3198
Ph: 07 315 7650
Email:hikuhoney@xtra.co.nz

POVERTY BAY
Paul Badger
19A Pine St, Gisborne 4010
Ph: 06 868 4785
Email p-mbadger@xtra.co.nz

Tim McAneney
11 Oak St, Gisborne 4010
Ph 06 868 9446
Email: tim@mcaneney.gen.nz

HAWKE'S BAY
John Berry
46 Arataki Rd, Havelock North 4130
Ph: 06 877 6205
Email: jrberry@ihug.co.nz

Deanna Corbett
Home Ph: 06 876 8852
Email: djcorbett@xtra.co.nz

SOUTHERN NORTH ISLAND
Allan Richards
14 Bastia Avenue, Wanganui
Ph: 06 343 5039
Email: allan.serena@xtra.co.nz

Frank Lindsay
26 Cunliffe Street, Johnsonville
Wellington 6037
Ph: 04 478 3367
Email: lindsays.apiaries@clear.net.nz

NELSON
Murray Elwood
10 Whiting Drive, Wakefield, Nelson
Ph: 03 541 8929
Email: muzzbuzz@ts.co.nz

Nicky Elwood
10 Whiting Drive , Wakefield, Nelson
Ph: 03 541 8929
Email: muzzbuzz@ts.co.nz

CANTERBURY
Brian Lancaster
1133 Coaltrack Road, RD 1, Christchurch 7671
Ph: 03 318 7989
Email: be.lancaster@xtra.co.nz

Linda Bray
Braesby Farm, RD 1, Ashburton 7771
Ph/Fax: 03 308 4964
Email: birdsnbees@xtra.co.nz

OTAGO
Peter Sales
"Te Ora"
RD 1, Port Chalmers, Dunedin 9081
Ph: 03 472 7220
Email: foxglove@paradise.net.nz

Tudor Caradoc-Davies
779 Portobello Road, Dunedin 9014
Mobile: 027 208 5133
Email: brightwaterbees@gmail.com

SOUTHLAND
Branch President to be advised

John Stevenson
Southern Lakes Honey
PO Box 163, Te Anau 9640
Ph: 03 249 7954
Email: sl.honey@gmail.com

NBA LIBRARIANS
Roger and Linda Bray
Braesby Farm, RD 1, Ashburton 7771
Ph/Fax: 03 308 4964
Email: birdsnbees@xtra.co.nz

APIMONDIA OCEANIA COMMISSION
Maureen Conquer, President
Ph: 09 292 8282
Mobile: 021 956 349
Email: maureen@wildforage.co.nz

IF YOUR DETAILS **HAVE CHANGED...**

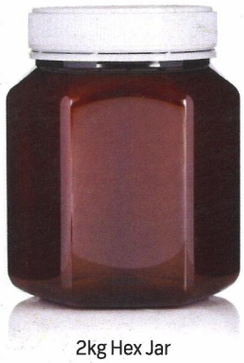
...please email editor@nba.org.nz and secretary@nba.org.nz so that we can update your details in the journal and on the NBA website www.nba.org.nz.

360ml Round Pot

500gm Round Jar

340gm Round Jar
(coming soon)

250gm Round Jar



2kg Hex Jar

1kg Hex Jar

500gm Hex Jar

250gm Hex Jar

2kg Square Jar

1kg Square Jar

500gm Square Jar

250gm Square Jar

NEW ZEALAND'S MOST EXTENSIVE RANGE OF HONEY PACKAGING

Pharmapac's range of export quality packaging for honey has now expanded to contain square, hex & round jars. Sizes range from 250gm - 2kg.

Pharmapac is a New Zealand owned company, with more than 30 years in the business of designing, manufacturing and producing plastic packaging solutions for not only local, but an ever growing list of international clients.

All of our products are manufactured in our ISO9001-2008 accredited facility in Auckland, New Zealand.

No supply contracts are required.

Pharmapac follows well defined parameters of quality, conforming to various national and international standards. As these standards change, we work with our suppliers to continue to meet these requirements.

For more information or product samples please contact us at:

Pharmapac Limited
88 Wairau Road
Glenfield
Auckland 0627

+ 64 9 444 9631
sales@pharmapac.co.nz

100% NEW ZEALAND OWNED & OPERATED

TELARC REGISTERED ™
Quality
ISO 9001

* Our stock jar colours are amber & clear. Stock closure colours are white, blue, gold, green & black. For your own custom coloured closures, a minimum order of 5000 units will apply.

PHARMAPAC

PPAC

NEW ZEALAND MADE

www.pharmapac.co.nz