

# AUSTRALIA'S HONEYBEE NEWS

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Volume 6 Number 5

SEPTEMBER - OCTOBER 2013



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COVER: Larvae swimming in royal jelly growing into a queen bee

PHOTO: Nick Annand - DPI NSW

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# NSW APIARISTS' ASSOCIATION INC. EXECUTIVE COUNCIL



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## BRANCHES

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 Hunter Valley  
 Mid North Coast  
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 Northern Tablelands  
 Riverina  
 Southern Tablelands  
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 Western Plains

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 To be advised  
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## AUSTRALIAN QUEEN BEE BREEDERS ASSOCIATION (AQBBA)

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## CROP POLLINATION ASSOCIATION (CPA)

**Secretary:** Mr Stephen Targett, PO Box 325 Narrandera NSW 2700 Ph: 0428 649 321 Email: wally.56@hotmail.com

## HONEY PACKERS & MARKETERS ASSOCIATION (HPMAA)

**Secretary:** Mr Ross Christiansen Email: ross@superbee.com.au





# PRESIDENT'S REPORT



As we move into spring most of the State is still in dire need of rain. Hopefully we'll see some soon.

## Ministerial meeting

Neil Bingley organised a meeting for the Association with Ministers of the NSW State Government through Andrew Constance (Minister for Finance and Services). So on 24 August Neil, Shona Blair and I met with Minister Constance, Minister Parker (Minister for the Environment, and Minister for Heritage) and David Dawson the senior advisor for Minister Hodgkinson (Minister for Primary Industries and Minister for Small Business) as she was called away at the last minute.

A very pleasing outcome from the meeting was that all three Ministerial portfolios acknowledged the detrimental impact of the lack of a unified beekeeping policy in NSW. We provided them with a copy of the new Victorian policy on Apiculture, which will almost certainly reinvigorate the Victorian beekeeping industry. This is because their government has acknowledged the essential role of the industry in food security due to pollination services. So they are opening up more beekeeping sites on public land, cutting licensing red tape and providing greater security of access for Victorian beekeepers. The NSW Ministers were very interested in this and we had quite a bit of discussion about the obvious need for NSW to adopt a similar approach to Victoria.

We discussed recent cuts to the DPI and were relieved to be told that there are no further reductions in apiary personnel planned. The Ministers were unable to provide further information on the fate of our access to TSRs as the Crown Land Review is still not completed. We also raised our concerns about the way the EPA handled the spraying incident in the Riverina area.

Overall, I was pleased that the NSWAA had the opportunity to raise serious issues that are threatening our industry with these Ministers and their advisors and feel that it was very helpful. We will be following up with them to do our best to ensure action on the key threats to NSW beekeepers.

## EPA meeting

While in Sydney Neil, Shona and I also attended a meeting with the EPA to discuss the handling of the Riverina incident. Although we still have serious concerns about how the incident was handled we are looking at ways of working with the EPA to reduce the risk of future spray incidents resulting in significant bee losses.

## 2014 Conference and Association Planning Workshop

I am pleased to announce that the 2014 Conference will be held in Narrabri at The Crossing Theatre, 117 Tibbereena Street, on Thursday 8 and Friday 9 May.

We are also in the process of organising an Association Planning Workshop for the day before 2014 Conference. Greg Mills (General Manager, GoAhead Business Solutions), who spoke at Conference this year will be running the Workshop. The purpose of the workshop will be to help set up a plan for the Association that will map out our major objectives and areas of focus moving into the future. A plan like this would ensure that we are not just reacting to issues as they come up, without considering the long-term viability and usefulness of the Association.

We will be asking for two delegates from each Branch to participate, and the Executive will also take part.

After the Conference, on Saturday 10 May we'll be organising a drive through the Pilliga scrub to explore this beautiful area with its highly valued beekeeping resources. And we'll have a BBQ lunch afterwards at Salt Caves.

We will be working on the program over the rest of this year, but I know the 2014 Conference will be extremely worthwhile for all of our industry, and I look forward to seeing you there – put the dates in your diary now!

## 2014 Sydney Royal Easter Show

Plans are under way for the 2014 Sydney Royal Easter Show, and we are looking for donations, discounted honey and packing services to provide honey to be sold at the Show. This is our major fundraising event for the year, and it is also an invaluable opportunity to raise our public profile. However, our gains from the Show are only possible due to the hard work of the Show Coordinator (thanks to Bruce White for agreeing to do this again in 2014) and of the many volunteers, as well as the essential donated product. So if you have some honey to donate and/or you can help with packing, please contact one of the Executive. If anyone has good pictures of bees, beekeeping or anything related and is happy to share them, please forward them to our Association Secretary, Kate McGilvray.

## Bad news

As you can see from the detailed article in this edition of the *Honeybee News*, we are still having serious problems with some beekeepers moving bees during the day, when they are un-netted and the beekeeper stops at a service station or somewhere else in a populated area. The potential for a serious incident - like an allergic member of the public being stung due to this is very high. If this happens public and government sentiment could very easily turn strongly against our industry. This would make arguing for more access to public land very difficult.

**Don't move bees during the day, unless they are netted and if you see someone else doing this – say something to them!**

## Amendment to Apiaries Act

The Executive has proposed an amendment of the Apiaries Regulation to include a new clause: When a vehicle is loaded with un-netted, open entrance bee hives, a person must not drive that vehicle into a refuelling station for the purpose of refuelling said vehicle. Penalty: minimum \$1000.

## Submission for Protection of the Environment Operations Regulation Amendment

The Executive prepared a submission for the public consultation process for the *Protection of the Environment Operations (General) Amendment (Native Forest Bio-material) Regulation 2013*. We made it clear that we strongly oppose any clearing of native forest for the generation of electricity, as this would reduce our resource base.

**Casey Cooper**  
President

# NEW MEMBERS

A warm welcome to the following new members:

Norman Maher  
Richard Smith

Kootingal  
Wagga Wagga

## STOCK & CROP REPORT

### CENTRAL WEST

All the bees that went to the almonds are back in their local beekeeping areas on canola or in some cases capeweed.

At the moment there seems to be some areas of the Central West and the West showing reasonable patches of Patersons Curse. With the Central West having around 30-40mls of rain in September it did freshen up the weeds and canola but, with the September winds that we have been getting it is time for more rain to keep the Patersons Curse alive and strong.

As for Eucalypts it still seems to be a year where we had a very mild winter and they have flowered out of season, and the later flowering trees are starting to flower now. Along the western rivers the River Gums were showing reasonable budding, but once again I have been told that they have started to flower early.

Honey prices still sitting around the \$3.20 mark and not looking likely to move in the near future. Talking to one packer, honey stocks were low but this hasn't increased honey prices yet.

With the September rain it has sparked some new growth on some of the trees in the Central West and Western areas, all you can hope for now is more rain in near future to carry this growth through to budding for next season.

As we are heading into the summer months we all should be very careful when working our bees with smokers and the drying grass around the bee yards.

*Mal Porter*

### NORTHERN NEW SOUTH WALES

The north of the State has been very dry and unseasonably warm.

Large areas of canola produced good bees with a box or two of honey. Small areas of white box gave good honey and was kind to bees with late bud still producing.

Good bud on yellow box of which 50% has already flowered with the warm weather the remaining bud flowering have been producing some fair honey.

Coastal areas are in need of good rain with early ironbark with little to no bud.

Wattle and hang down in Pilliga Scrub had a poor budding as did tea tree with only small amounts of sand gum with bud.

The north had just 30-40 mls of rain in past week though been so dry leading up to this event we will need two to three times this rain in next four to six weeks to bring white clover and some short-term budders like silver leaf / coolabah.

*Casey Cooper*

## MOVEMENT OF BEES DURING DAYLIGHT

### Well it has finally happened

It has been brought to the attention of the NSW Apiarists' Association (NSWAA) that a CCTV camera at a roadhouse in the south west of the state allegedly recorded a bee truck refueling during the day without nets covering the bees. As a result a large cloud of bees was left which prompted the roadhouse to close for four hours to enable a pest control company to eradicate the bees. We believe legal action is now pending.

*Is this the image the bee industry wants to convey to the public? – we think not!!*

*Surely trucks could be fuelled up before loading bees.*

### Movement of bees – with or without nets during daylight hours

The NSWAA has been made aware that a number of beekeepers involved in almond pollination were moving their hives without nets during the day. This is a very negative approach as most beekeepers wish to be seen doing a professional job especially when fulfilling pollination contracts.

When moving loads of bees at any time during the year it is crucial that the whole beekeeping industry is aware of the dangers and potential catastrophic fallout by parking at roadhouses/service stations/truck stops and places within town limits, during the day and under lights at night, without nets. The behavior of these few unprofessional beekeepers could have a crushing effect on their more professional colleagues.

The potential negative impact of an incident such as an anaphylactic reaction (due to a bee sting) to an allergic member of the public, in close proximity to a load of uncovered bees, would inflict irreparable damage to our reputation and would most certainly be devastating to the whole industry. This would also no doubt alert government bodies i.e. local councils to take action to keep the general public safe, as well as state government agencies being put under similar pressure. Further, the years of hard work done by the NSWAA and many other bodies arguing the essential nature of the industry and our need for more access to public lands and private properties would be undone almost instantly.

Should the movement of bees during the daylight hours, especially in hot weather, be a continuing practice, be prepared for possible strict law enforcements i.e. the locking in of bees, netting of all hives, empty supers and honey **before** accessing all public roads. Imagine the loss of bees due to heat stress should this be the enforced procedure.

All beekeepers should be aware of this very important issue, as well as the potential impact on the general public and on our industry.

*Should you see bees being transported during the day without nets – be proactive and bring our concerns to the beekeeper responsible. Surely his actions impact on his livelihood as well.*



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# MARCUS OLDHAM COLLEGE REPORT

*by Daniel Costa*

After been asked by Casey Cooper if I was interested in attending Marcus Oldham College to participate in the Rural Leadership Program, one could say I was a little nervous to accept his offer and what the program actually involved.

After thinking about it for the rest of the day and having a quick look at their website later that night I was even more curious as to what this program was all about. So after much thought the following day I decided to contact Casey back and agree to his proposal, still a little nervous about what I had signed up for and by all accounts wondering if I had just made a good or bad decision but always remembering that a challenge can always be fun. From this point the paperwork about the course had come and the first job was to write a pre course submission to an organisation or authority calling for action.

So a couple of weeks passed and on the 23 June the time had come, leaving home early on a cold winter morning to catch my flight from Port Macquarie to Melbourne via Sydney. I arrived in Melbourne early afternoon, keeping Casey informed of my whereabouts. Arriving at a bus stop in Geelong I bumped into more of the course participants, from here we shared a taxi to the college and were the first group to arrive with plenty of time to register, settle in and find out a bit about each other.

The course kicked off later that afternoon with all 26 participants from all walks of life and from different parts of the country. We were introduced to our course presenters: Sam Inglis, Neil Inall, Mike Stephens and Fiona Chambers. After the course presenters had informed us about the week and what was expected of us the first exercise was to pair us with another participant, find out a bit about them and to introduce them at dinner an hour later. This was the first part of the program - a communication and listening exercise.

Next morning the first session was Understanding the Place of Vision with Mike Stephens. In this session we learnt about goals, how to make goals, and about different ways to make your goals happen. How in making goals you are looking at a future result on how you view things now, and that views change in time, an interesting topic.

The next session was Leadership, Learning and Team Building with Fiona Chambers. We learnt about leadership and team building and were given models/tips of effective leadership and various styles of leadership. The presenters explained the different models with fellow participants, about different individual roles in learning styles and team building and how this can influence on team dynamics and decision making, and what categories of the many we fell into. We also learnt about cultural differences, emotional intelligence and leadership strengths and weaknesses. We learnt that communication in teams plays a big role in many and different situations for just about anything to achieve the desired outcome.

Later in the evening at dinner the course presenters had organised a guest speaker to come and give a talk about her leadership roles. This was Rebecca Casson, Executive Director – Committee for Geelong. She has high level of experience in international partnerships, is involved in political management, strategic projects and policy. She previously was Executive Director of the committee for Jamestown on policy for the British House of Lords, she gave us good insight as to what her job involved and the sort of high ranking people she had been involved in with different projects. She was also quite an entertainer with an open mind.

The next day was a Learning and Communication session with Mike Stephens and a guest presenter Ben Reeve, here we learnt about effective communication and styles of communication,

this was by far an interesting session as Ben the course presenter had a few of the fellow participants stumped. As his style as a presenter was different, a few in the class had told him half way through his session that they didn't know how to take him, as he was quite boisterous, to the point and jolly, and been told by a couple that his way of communicating was confronting, he was quite stumped himself. This I and others found quite amusing but was a great session and that alone gave great insight to how a message can be perceived the wrong way just by having a different communication style. We also learnt about verbal and nonverbal communication, generational differences and the new age communication – social media. Mostly a very informative session that highlighted the fact that, without effective communication, outcomes can be very different if information is explained wrongly or not perceived correctly.

Later in the day was a Public Speaking Session with Neil Inall. In this session we had to do a four minute speech about a topic of our own, the speeches were recorded and commented on by adjudicators at the end to inform you of any hick ups in your presentation, or how to better your presentation so your message is interesting, to the point and informative.

Following the presentations was a session on working with the media. This was about how to write a Media Release and was purely up to you what you wrote about and was later evaluated by Neil Inall. We also were shown clips from the media in which stories had been totally incorrect to the facts that were correct, how media will edit material in interviews to suit themselves and in a sense can worsen a situation.

We were also given back our pre course submissions to an organisation or authority with a request for action which had been read and evaluated by Neil Inall.

In the evening was dinner with another guest speaker Bronwyn Roberts who is MLA Young Farming Champion Emerald QLD. Bronwyn did an interesting presentation on her day to day life in her role as part time grazier on her parents 5500 acre property and full time Grazing Land Management Officer. She is also granddaughter of the late Joseph Comiskey.

The dinner also incorporated the Merial Howard Yelland Beef Industry Award 2013. The award was presented to David Blackmore a Wagyu Beef breeder from Alexandra VIC - An enjoyable night by all.

The following day was a session presented at Torquay – The Sands Resort, on understanding self and others by guest presenter Suzanne Loubris.

This session was to make people more productive, teach them to understand themselves, be conscious of their behaviour and touched base on the skills you can use daily to help you behave in ways that are practical and effective. It was informative that it covered subjects such as managing change, self-management, behavioural styles, how to handle the knockbacks and depression.

After lunch followed the session Negotiation – getting a win/win outcome, presented by Sam Inglis.

Here we were divided into groups and given a subject of conflict in which we had to negotiate to resolve the conflict by agreement until both sides were happy that a mutually acceptable solution had been reached. This took many hours to negotiate with the other team to reach an ideal result for both teams on the subject.

Following this was a quick trip to Bells beach where we had a quick look and walk along the beach. And into the night another dinner/session in which we had table discussions over

dinner with the course presenters and fellow participants about 'Developing a Vision for the Future' about where they would like to see issues that face their industry go in the future.

Thursday morning's session was Conducting a Meeting that Works with Neil Inall and Sam Inglis. Upon being given a scenario of a meeting the class had to run a meeting which had obstacles thrown into it such as boisterous people unhappy about the scenario. The meeting had to run smoothly - which didn't considering the scenario we were given and the certain parts people had to play but that was the idea of the meeting. We were then given tips on how to run meetings that work and models on how to do so.

The following session was a group discussion to identify the issues in implementing and managing change and to consider potential solutions to problems faced. This was an interesting session as we all learnt that within communities and groups that people have different ideas and needs that vary from industry to industry and community to community and person to person, other things to consider are peoples resistance to change, pressure to change, and that change is never ending and can open up other issues in the process as well as time and money.

Next session saw us divided into groups again in which the presenters played the media, the groups into a growers group, a company group, a VFF group, and a union group. Here we were given a scenario for each group to resolve the parts played by all and which had to be formal with the way we contacted each other to resolve the situation. This took hours to resolve the scenario as every group got mixed up in the media reports by the presenters and the actual facts of the situation by the different groups. As things got a bit tense towards the end the presenters called it off and told the group where they had gone wrong which were the media reports, which were supposed to be discarded by the groups but were not which saw the groups getting confused. This was based on an actual scenario one of the presenters was involved in years ago which had the same result until it was clarified by the appropriate parties.

Following the day was a formal dinner sponsored by NAB agribusiness in which industry guests and leaders were invited and a guest speaker invited Julian Cribb, Principal, Julian Cribb and Associates - Canberra. Who is also an environmental and science professional. During the dinner Julian did a presentation on - "Does Australia have a place at the table"? His views and ideas on this subject. Which was an interesting view on exactly where agriculture goes next, considering the population is growing, running out of land, running out of supplies, pests and disease of crops, degradation of soil and land, and more. Very enjoyable time had by all which went late into the night.

The final session on the last day was our action plans for 'Forming a View session - issues for my industry' which had to be expressed in an recorded interview with Neil Inall, each participant having to share their view on the issues affecting their industry as a group. A little unnerving as you didn't know what question was coming next, but a great experience.

After this came a quick talk for us to keep supporting our industries, the challenge of leadership, to further our roles as leaders, followed by an award ceremony and lunch. After lunch was our departure and goodbyes.

Overall a very enjoyable week, course presenters were tops and fellow participants were great people.

I would encourage any person that is nominated to attend, to take up the offer as the course was a great experience for all who attended.

I would like to formally thank Casey Cooper, Kate McGilvray and the Association for their efforts and support in organising the course details, logistics and nominating me to attend the course and a special thank-you to my partner Denille for being so understanding for the time I was away.

Daniel Costa

## MANUKA HONEY FRAUD

*Manuka honey is currently undergoing an international food fraud investigation amid allegations that many products sold may be fake.*

A nationwide alert has been issued by the UK Food Standards Agency (FSA) to all trading standard departments, encouraging them to look out for the inferior products which are labelled as Manuka, yet derived from other sources.

Testing which was carried out by the Food and Environment Research Agency (FERA), the scientific arm of the UK's Department for Environment, Food and Rural Affairs, the UK Environment and Food Ministry and various studies suggest that much of the honey labelled as Manuka is in fact ordinary, run of the mill honey,

The majority of the world's honey is sourced from New Zealand where the country produces 1,700 tons of the product each year which is in stark contrast to the estimated 1,800 tons sold annually in the UK, let alone 10,000 tons sold worldwide.

John Rawcliffe from New Zealand's Unique Manuka Factor Honey Association (UMFHA) said that the estimated amount of Manuka sold worldwide does not add up to the actual amount produced.

"There is potentially huge fraud. There are higher and ever-increasing volumes of honey labelled as Manuka that are not Manuka. More Manuka is sold in the UK alone than the total actually produced. The same applies to China, America and so on," he said.

The UMFHA commissioned a significant number of tests over 2012 and 2013 on products distributed throughout the globe. From the 73 samples tested, 41 displayed no non-peroxide activity - which is a unique and genuine attribute of Manuka honey. Additional tests in Hong Kong found that 14 of out 55 Manuka honeys tested were adulterated with syrup.

The UK's Food Standards Agency said that all trading standards authorities have been directed to ensure that anyone selling Manuka honey is made fully aware of the consequences of selling an inferior product.

"[The trading authorities have been] asked to make sure anyone selling Manuka honey is aware that they must fully comply with the law".

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# VALE - David (Dave) Fuller

David or Dave had a long association with Agriculture having been educated at James Ruse Agricultural High School; he completed a Diploma of Agriculture at Wagga Wagga Agricultural College.

David started work with the Department of Agriculture on 22 March 1971 in the position of Livestock Officer Pigs and undertook training in various country location with Piggery Officers in Orange, Kyogle and Grafton

His year of appointment was a year that saw:

- Neville Bonner became the first indigenous Australian to sit as a member in the Parliament of Australia.
- Yvonne Goolagong was named Australian of the Year.
- Cyclone Althea hit Townsville and surrounding islands, killing 3.
- Joh Bjelke-Petersen declared a State of Emergency in Queensland in response to escalating protests to the 1971 Springbok Tour.
- Australia and New Zealand announced a pull out of troops from Vietnam.
- Bob Askin would sign off on Dave's appointment after checking with his old mate Henry Bolte, the Premier of Victoria.

I first met Dave when he was being trained by Bill Kirsop the District Piggery Officer in Orange in the 1970s. Both Bill and I shared an office in Orange at the Western Agricultural Regional Office in Kite Street. He had the tidy side.

In 1983 Dave moved into the position of General Enquiries Officer, a multi skilled job well before multi skilling became common place in many Government Departments, because Dave had an interest in all aspects of Agriculture he quickly made a name for himself helping primary producers across many industries as well as Department staff across many Departments.

(If you wanted to know anything ask Dave and if he didn't know it he would find out about it for you he was a wiz on the computer) A position he held for 30 years, a job he enjoyed and worked in the position for four years over the normal retirement age of 60 and may have never retired except for forced cut backs to Agriculture that required a 300 person reduction in Agriculture by the Government. I said to him at the time "you can now enjoy your retirement"

During Dave's time in answering general enquiries he was encouraged to serve the Australian and NSW Apiary Industry over many years.

Among Dave's contributions were:

- Assisting in the establishing of an apiary swarm hotline
- Editing the NSW DPI publication Bee Briefs
- Provision of technical support to the Apiary staff
- Training the Technical Specialist Honey Bees (myself Bruce White), in computers and the Bee registration system a challenging endeavor (I think this is the only time he may have failed, trying to teach me the computer)
- Answering a minimum of 35 enquiries about bees per month from the public and the beekeeping industry. (Sometimes when it was in swarming season the 35 calls could be in one day he was a busy man but never lost his cool.)
- In addition to that Dave handled general enquiries through a listed free 1800 phone number for all the Agricultural industries and was always able to help instantly or on the same day. One phone call maybe about earth worms, the next about flying foxes, pesticides or pruning etc.

Dave had a love of computers and freely passed on his knowledge. I had little or no interest so he was very helpful in doing my power point presentations for me saying "one day you will have to learn all of this" and I would say "OK" knowing he was there to get me out of trouble again".

On a personal note Dave was not only a work colleague but a close personal friend. I retired in 2005 but we stayed in contact with each other. Dave was a reader of books like my wife so they swapped books regularly, with Dave giving her bags of books. During Dave's last visit to my home he gave my wife some books he had read for her to give to Riding for the Disabled for their book fair.

Dave was always reliable and gave sound advice, he was well thought of, today we have representatives from State Forests, Environment Protection Agency, Land Services and NSW DPI officers from Cumberland State Forests, Parramatta, Richmond, Elizabeth Macarthur Agricultural Institute, Penrith, Flemington Markets, Orange, Bathurst and Goulburn and members of various Primary Industry Associations.

In conclusion, Dave, during his career in NSW DPI built up a reputation as Encyclopedia of Agricultural knowledge with no one in the organisation to challenge his knowledge and I think it would take a long time for anyone in the DPI to beat it.

So long mate it has been a pleasure to know you the world will be a sadder place without you.

**Bruce White**



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# DOUG'S COLUMN

Doug Somerville

Technical Specialist, Honeybees - NSW Department of Primary Industries - Goulburn

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## KASHMIR BEE VIRUS

A series of events unfolded over the last few months to suggest that something out of the ordinary was happening in bee hives. Trevor Monson (almond bee broker fame) mentioned at the Central Victorian Apiarists' conference on the 16<sup>th</sup> July that while his crews were auditing and checking the quality of bees on the almond orchards, they noticed a lot of hives with PMS type symptoms. PMS is an acronym for Parasitic Mite Syndrome, a name given to a group of symptoms that are strongly associated with a very heavy infestation of varroa mites. But we don't have varroa mites (yet). The essential signs are demonstrated as brood disease type symptoms but no EFB or AFB is evident when the samples are submitted for lab examination.

There were a lot of colonies that went into the winter in poor to very poor condition. This was reflected in many hives not making the almond pollination standard of 8 frames of bees in early August. Under such circumstances, nosema will be a major problem. However this may go unnoticed by many beekeepers due to the lack of symptoms besides the colony just not building up or even declining in adult bee numbers.

The other aspect I noticed was the number and nature of lab reports received by the government veterinary laboratory from beekeepers. From 14/7/2013 until 18/9/2013, 40 reports had been issued regarding samples submitted for diagnosis. Beekeepers often submit more than one sample and the most was 9 slides in one batch over this period.

A quick summary:

- 59 positive smears for AFB
- 11 positive smears for EFB
- 13 negative honey samples
- 1 positive honey sample for AFB
- 21 negative smears

The interesting figure for me is the 21 negative smears. The lab is essentially looking for the presence of bacterial particles. These are quite pronounced to the trained lab technician. What the test doesn't do is allow the lab technicians to identify viral particles. This suggests that the hives from which the samples were submitted may have a viral disease. The samples came from a large cross section of the state including the Sydney basin, Hunter Valley, Mid-North Coast, North Coast and the Central Tablelands.

The next significant event was when I received a phone call from Dave Mumford from the Riverina on the 5<sup>th</sup> September. While conducting spring inspections for another beekeeper, a few hives had been found with strange disease symptoms that did not match EFB or AFB. Three lots of samples were collected and Dave dropped them at Goulburn on his way to Sydney on the Saturday the 7<sup>th</sup>. First thing Monday morning I rang John Roberts (CSIRO) and discussed the samples and the unusual symptoms. I jumped in my car and headed to Canberra with the samples and deposited them with John. Denis Anderson was present and we all discussed the symptoms and generally closely inspected the samples. Thursday of the same week they (John and Denis) were able to conduct tests on the samples and the results indicated reasonably high levels of Kashmir bee virus.

Combine the information from the CSIRO results, Trevor Monson's observations, the number and distribution of the

negative lab results, and there is enough evidence for me to suggest that for some reason, not entirely understood, we are experiencing a greater number of colonies suffering from symptoms associated with Kashmir bee virus. So what do we know about bee viruses?

Bee viruses are capable of killing honey bees, although under most circumstances the presence of a bee virus does not cause death of the adult bee or larvae. Viruses replicate intracellularly, under a particular set of circumstances a given virus could kill bees. All life forms can be invaded by viruses, although normally each virus type has a very narrow host specific relationship, i.e. a virus that is found in chickens is extremely unlikely to be found in honey bees or cattle. In a few rare cases viruses will cause periodic infection in other animals. The 'Hendra' virus carried by bats for instance can occasionally cause a fatal infection in horses and even humans. No such cross species movement of virus is known to occur in bee associated virus.

Virus can best be described as particles covered in a protective layer of protein. They enter the living cells of their host and simply replicate. Bee viruses are likely to have a very broad distribution but fortunately most of the time remain benign (do not cause any disease symptoms).

Specific bee viruses are capable of infecting bee larvae and or adult bees. Symptoms of a virus infection are not specific to a particular virus. Viruses infecting bees are very difficult to diagnose. Viral particles are extremely small and electron microscopic techniques are able to identify viral particles. Use of one diagnostic technique compared to another may cause some discrepancies in the identification of bee virus. Virus particles are constantly mutating, for example in humans we are exposed to a new strain of the flu or common cold virus every year.

In the majority of cases the flu is not fatal to humans, although if the immune system is weak due to other medical conditions the flu can be fatal. In honey bees when symptoms of a bee virus are observed, in most cases this is associated with another infectious agent. Viral infections have been strongly correlated with the presence of nosema and varroa mites.

In the process of infecting or feeding on the bee larvae or adult bee either of these parasites would appear to create an opportunity for viral particles to also enter the body of the bee (larvae or adult). In these circumstances the virus particles are able to multiply and spread more readily than if the primary organisms (varroa or nosema) was not present. Under these circumstances bee virus infections can be lethal.

It is highly likely that other sets of circumstances exist whereby a larvae or adult bee is more susceptible to a lethal viral infection. These factors to name a few possibilities could be related to the environment or diet. It is unfortunate that viruses have been difficult to study and thus they have not been researched in depth in relation to their impact on the management of honey bees.

The number of viruses capable of infecting honey bees is still to be determined although one report suggested 18. Even so most bee viruses are likely to remain as a minor issue in relation to honey bee health and fitness. The following are known virus types within Australia:

### ***Kashmir bee virus***

Several strains of Kashmir bee virus have been identified within Australia. This is a similar scenario to that described for the different strains of the flu virus which infect humans. There is some debate as to the naming of new bee viruses by the world scientists as they may well be strains of the Kashmir bee virus. Although thought to be relatively common it has rarely been associated with bee deaths.

Disease symptoms may resemble those of an infection of American foulbrood or European foulbrood. Infected adult bees are likely to have a reduced lifespan leading to a rapid loss of bees within a colony.

### ***Sacbrood***

This is a relatively well known virus that infects larvae.

Signs of the disease include:

- partially uncapped cells scattered amongst healthy brood
- larvae die just before pupation begins
- the dead larvae is initially contained in a watery bag
- the larvae lies along the base of the cell in a banana or gon-dola shape
- the larvae takes on a light brown appearance

The dead larva turns dark brown and is easily removed from the cell.

Treatments usually include re-queening infected colonies, improving the nutrition of the colonies by providing sugar syrup and pollen.

### ***Black queen cell virus***

This virus has been occasionally recorded to be associated with the death of queen cells in commercial queen rearing operations. The virus was thought to be stimulated by lower than ideal temperatures in artificial cell incubators. The literature suggests that this virus is closely associated with nosema disease infections.

Symptoms of the virus include dead queen larvae or pre-pupae after they have been sealed in their cells. These dead larvae become dark brown to black in colour and take on the appearance of a worker larvae killed by sacbrood virus.

### ***Paralysis virus***

This disease is common in adult bees with the following symptoms. Affected bees tremble, tend to crawl about the entrance of the hive and are often found climbing onto the stems of grass in the near vicinity of the hive. They can cluster together on the ground or on grass stems close to the entrance of the hive. Their abdomens can appear enlarged with wings dislocated; they also become hairless, dark to shiny black in colour. Dysentery can also be a sign of this disease.

Most of these symptoms are often associated with other ailments including nosema disease or pesticide poisoning and may possibly be associated with these conditions.

Treatments include those for the other virus infections including providing sugar syrup and good breeding conditions, re-queening with a resistant strain of bee.

### **Treatments**

There are no known medical treatments for any of the bee viruses. Management of colonies to prevent losses associated with bee viruses should include:

- regular brood comb replacement
- regular queen bee replacement, some strains of bees seem to be more susceptible to some viruses
- do not breed from stock demonstrating any signs associated with a virus infection
- minimise nutritional stresses to a colony by providing sugar syrup and pollen supplement during periods of deficiency
- manage bee colonies to minimise the levels of nosema disease throughout the year

### **In summary**

Although bee viruses do not historically stand out as a primary pathogen of honey bees in Australia, they have more recently been associated with large numbers of bee deaths in many countries.

Viruses associated with honey bees very rarely cause disease like symptoms. The difficulty in diagnosing bee viruses has meant that there is also very little knowledge on the subject of bee viruses.

Beekeepers need to manage bee colonies to achieve colony fitness throughout the year to minimise the potential impact of bee viruses. Minimising other pests and diseases of the honey bee would seem to be an excellent strategy in controlling any problems associated directly with bee viruses.

Regular queen replacement with strains of bees not exhibiting disease, plus maintaining a good plane of nutrition will minimise any unwanted surprises that may arise due to the presence of bee viruses.

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# WHAT IS PLAN BEE?

The annual movement of tens of thousands of beehives around the country has become the subject of a major research project to help Australia's horticulture industries plan for the possible arrival of the devastating Varroa mite.

The Australian almond industry is investigating the impact of a potential Varroa incursion on hive movements, and the effect that any movement restrictions would have on the ability of our horticulture industries to continue paid pollination.

The project is being managed by Plant Health Australia and funded by the Pollination Program, a partnership between the Rural Industries Research and Development Corporation (RIRDC), Horticulture Australia Limited (HAL) and the Australian Government Department of Agriculture, Fisheries and Forestry (DAFF).

Chairman of the Pollination R&D Advisory Committee, Gerald Martin, says two thirds of our food industries are dependent on honeybee pollination, so a Varroa incursion could have a significant impact.

"Australia is lucky to have a massive population of wild European honeybees, but Varroa is likely to wipe out many of these and end the free pollination services they provide. That will make paid pollination even more critical for sustaining many of our crops and industries."

From mid-July 2014, beekeepers that provide pollination services transport thousands of hives across Australia, with some travelling as far as 1800 kilometres. Timing is critical to ensure that hives are in place before flowering begins so that the pollination services are available at the optimum time.

"The almond industry, in particular, is one of the most experienced when it comes to recognising the value of paying for pollination services. As the almond industry is 100 per cent dependent on bee pollination to produce almonds, every year beekeepers will organise for more than three billion bees to be moved to the orchards," Mr Martin said.

"Many other industries are dependent on pollination as well, including the apple, pear, avocado, vegetable, cherry, prune, melon, summer-fruit and onion industries, so in the pollination season hives are constantly on the move."

If Varroa does enter Australia, quarantine requirements by state and territory governments may result in hive movement restrictions in order to try and stop the pest spreading.

The research project runs from now through to mid-2015 and will proactively investigate the effect of an incursion on paid pollination, and importantly what strategies can be implemented to ensure industries dependent on pollination are not severely impacted. It will review what movement restrictions might eventuate and provide contingency planning for alternative pollination services that might be used to help manage a reduction in hive availability.

This project is another good example of government and industry working together to fund risk management R&D strategies and protect Australia's pollination dependent horticultural industries.

# PABLO VAZQUEZ RETIRES - DUE TO POOR HEALTH

I first met Pablo when the Department of Agriculture decided to make the inspection of honeybees available to regulatory staff in partnership with advisory officers.

A number of regulatory staff including Pablo met at Yamba where Peter Stace the Apiary Officer at Wollongbar had organized with a local beekeeper, with an AFB problem, for his colonies to be used for training. I was amazed at how savage his bees were, but I guess they were a good introduction to what inspectors may encounter, with many of them never having opened a colony of bees before.

At the end of the course that Peter and I ran, they all agreed to continue with training in beekeeping. All regulatory officers are multi skilled and service the regulatory needs of Horticulture, Agronomy and Livestock Industries. The key was the regulatory officers all volunteered and had an interest in beekeeping, a policy change means this is no longer the case.

Pablo was stationed in Sydney and we spent a lot of time together inspecting colonies till Pablo became very competent, he was self-motivated and above all very reliable with outstanding communication skills which is so important when dealing with beekeepers from many different ethnic backgrounds in the Sydney region. His army training was also an asset.

Pablo was involved in the counselling of beekeepers and persons who complained about bees being a nuisance, asking the right questions and using common sense in an effort to resolve the problem to the satisfaction of the both parties by far the best outcome for all concerned. He was also responsible for the integrity of the inspection service in the certification of Queen Bees and packages for overseas markets and the interstate movement of queens and colonies

When Chalkbrood was first discovered in Queensland, NSW DPI selected three of the regulatory Officers Pablo, Graeme Brown and Rick Jennings to go to Queensland to provide assistance. He was also of assistance to the NSW Amateur Beekeeping Association judging colonies for the branches in the Colonel Pulling Award.

Coming from Uruguay Pablo was very helpful to me when I was invited to train the Uruguayan beekeepers in working Eucalyptus Plantations, his Spanish was helpful.

Pablo served many industries but had a passion to help beekeepers. He was awarded a staff Achievement Award in 2003 in recognition of being an outstanding officer.

Sadly Pablo contracted MS in 2006 and his condition has deteriorated to an extent that he was medical discharged from NSW DPI on the 21 August 2013.

As a mark of how well Pablo is thought of by the Market agents and Horticulture industry, plans are underway for a farewell.

As well as working with Pablo he has also become a friend, his wife Julie has trained in disabilities and is able to provide assistance.

**Bruce White**



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# IMPORTED BUMBLEBEES THREATEN UK BEES

*Bumblebees imported from Europe carry pathogens that pose a threat to native honeybees and bumblebees in the UK, according to scientists.*

Between 40,000 and 50,000 bumblebee colonies are imported into England each year to assist with crop pollination.

For a study in the *Journal of Applied Ecology*, scientists bought 48 colonies - hives containing up to 100 bees each - from three producers in Europe.

They found 77% had parasites that could infect native bees.

Lead researcher Prof William Hughes, of the University of Sussex, said commercial production and importation of bumblebees had been "going on for decades".

"We couldn't grow tomatoes in this country without these bumblebees," he said.

And with the decline in pollinating insects in recent years, food producers are increasingly reliant upon imported bees.

"Over a million colonies are imported globally - it's a huge trade," said Prof Hughes. "And a surprisingly large number of these are produced in factories, mainly in Eastern Europe."

"We sought to answer the big question of whether colonies that are being produced now have parasites and, if so, whether those parasites are actually infectious or harmful."

## Undercover science

With his colleagues from the universities of Leeds and Stirling, the researcher set out to buy colonies "in exactly the same way a farmer would".

## Precious pollinators

- Bees have different colour detection systems from humans, and **can see the world in ultraviolet**. This helps them to detect the flowers they pollinate and take nectar from
- Pollination is essential for agriculture, as well as the reproduction of non-food flowers and plants. According to the UN Food and Agriculture Organisation, pollinators, including bees, birds and bats, are involved in more than a third of the world's crop production
- **Honeybees** evolved to make honey as a food source for the colony. Selective breeding of European honeybees by humans has produced colonies that make excess honey for us to harvest
- **How beehives are used to prevent elephant crop raids**
- **See how honeybees protect their hives from attacking hornets**

The team then screened the bees for parasite DNA.

"We found quite a number of parasites within the bees," Prof Hughes said.

The imported bumblebee colonies carried a range of parasites including the three main bumblebee parasites (*Crithidia bombi*, *Nosema bombi* and *Apicystis bombi*), three honeybee parasites (*Nosema apis*, *Ascosphaera apis* and *Paenibacillus larvae*), and two parasites that infect both bumblebees and honeybees (*Nosema ceranae* and deformed wing virus).

The team also found parasites in the pollen food supplied with the bees.

The scientists say that current regulations governing bumblebee imports are ineffective.

In England, for example, the non-departmental public body responsible for the protection of the environment, Natural England, issues licences for the release of non-native bumblebee subspecies.

But this study found parasites in both native and non-native subspecies that were commercially reared in Europe, and no licences are required to release native subspecies into the environment.

Natural England said under current regulations it was "not possible to impose disease control conditions or environmental safeguards on the release of imported bumblebees which originally descended from British bumblebees".

"It is therefore of particular concern that this research has revealed that imported bees - descended from British stock - have been found to be carrying disease," its statement added.

Prof William Hughes University of Sussex stated "that many bee species are already showing significant population declines"

"Our licensing regime stipulates that where non-native bumblebees are used, they must be disease free, only used within polytunnels or greenhouses, using hives from which queens cannot escape, and that all hives and surviving bees must be destroyed at the end of their use."

But the researchers say that regulatory authorities need to strengthen measures to prevent importation of parasite-carrying bumblebee colonies, including checking bees on arrival in the UK and extending regulations to cover imported colonies of the native subspecies.

Prof Hughes said: "If we don't act, then the risk is that potentially tens of thousands of parasite-carrying bumblebee colonies may be imported into the UK each year, and hundreds of thousands worldwide."

"Many bee species are already showing significant population declines," he said.

"The introduction of more or new parasite infections will at a minimum exacerbate this, and could quite possibly directly drive declines."

The British Beekeepers Association said in a statement: "Defra (the UK Department for the Environment, Food and Rural Affairs) must take urgent steps to tighten regulations together with practical steps to ensure that imported bumblebee colonies are not heavily laden with pathogens."

It continued: "[Regulations must ensure] that these bees are not released into the environment at the end of the season putting our native pollinators at enhanced risk."

A Defra representative responded to the study, saying: "Imported colonies of non-native bees are required to be screened for parasites and disease."

"We will continue to work with Natural England to ensure that growers who break the rules are punished."



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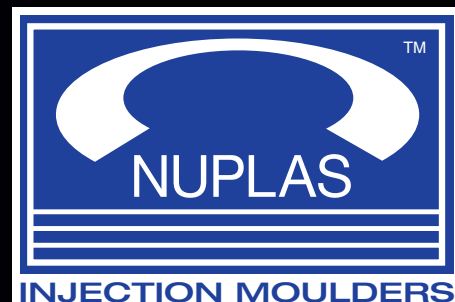
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# NICK'S NEWS

*from DPI NSW*

Nick Annand

Livestock Officer (Bees), NSW Department of Primary Industries, Bathurst

Ph: 02 6330 1210 Email: [nicholas.annand@dpi.nsw.gov.au](mailto:nicholas.annand@dpi.nsw.gov.au)



## DOES THE POLLINATION INDUSTRY NEED AUDITING?



*Almond Pollination*

Beekeepers in NSW and across Australia are taking on more paid pollination work as part of their business plan.

This has largely come about due to the expansion of the almond industry and its requirement for large numbers of beehives for pollination each year.

Next year the demand for hives for almond pollination is thought to be around 200,000 to 220,000 hives. This is getting close to half the hives in the country. This has provided beekeepers with a cash flow early in the spring. Almonds are not the only crops heavily dependant on honey bees for pollination.

Other crops such as apples, avocado, cherries, mango, macadamia, blueberry, kiwi, cucurbits and a wide range of seed production are all heavily reliant on bees for pollination to name just a few. Horticultural producers are also obtaining a better understanding of the need for good pollination for a successful crop and are realising that once varroa enters Australia the reliance on feral bees for pollination will be futile.

The suitability of hives for pollination varies considerably depending on a range of factors as does the stocking rate of hives between crops. Hive quality for pollination is heavily dependant on hive preparation in the months prior to the job. Especially were coming out of winter as is the case for almond pollination. So if there are large variations between beekeepers hives doing the same job how is an equitable payment system determined relative to the bees provided to perform the pollination service?

For the situation with the almonds the main broker Trevor Monson who is responsible for an expected 125,000 hives that will be moved into NW Victoria next year has put together a team that goes around assessing the hives and then pays accordingly.

The assessment team have a standard of 8 frames of bees that they expect the hives to meet for payment of the agreed pollination service fee. They assess 10% of the hives put down. If hives do not meet that requirement fees are deducted. For example if the hives all have 6 frames of bees, the beekeeper would only be paid for 3 hives for every four hives put down ie.  $6 \times 4 = 24$  frames of bees. This is equivalent to 3 hives of eight frames of bees.

The auditing of hives in this manner is achievable in this situation with such a large gathering of hives in a relatively small area and payment matches according to what is provided. Despite this Trevor still made note the cost of auditing hives is expensive hence the relatively basic auditing process. They do not look at brood area or if queen right.

If beekeepers are unhappy a review process system is available. Firstly the beekeeper is requested to visit with the audit team or Trevor. If still unhappy the beekeeper can nominate an agreed third party to assess the hives with Trevor's team. If in review the assessment remains unchanged the beekeeper is required to pay for the re-assessment. If the review finds differently to the original decision Trevor will pay for the assessment and adjust payment accordingly.

There is also the requirement for more bees to be sourced when hives are below standard to make up the short fall by the beekeeper. Trevor tries to get the auditing done within one week of placement of hives in the orchard to enable adjustments if needed.

Pricing for pollination services in other pollination reliant industries is often hugely variable and ad hoc. Often beekeepers undercut each other to obtain pollination jobs or do the job at "mates rates" or just simply undervalue the service they provide. None of these scenarios help the beekeeping industry and the quicker a recommended standard minimum rate is applied for particular crops across the beekeeping industry, the better for the industry.

Unfortunately I suspect, people being people, this would often be undone by short term greed/need for cash. The pollination service provided can also be very inconsistent and unreliable. We have all heard of cases of where beekeepers have placed hives with little to no bees in them on farms for paid pollination jobs. This type of thing is unacceptable and does damage to the whole pollination service industry.

These variations in payments and the pollination services provided have unfortunately not been good for either side, the growers or the beekeepers, leading to questions of quality and reputation of pollination services.

Farmers are always going to try and save a penny where they can and are reluctant to pay good money for a service that they do not fully recognise the value of and are unfamiliar with what is required to prepared and maintain a beehive for pollination.



However this understanding by producers is changing. Only just back in June Dr Mark Goodwin a bee researcher from New Zealand was brought out to Australia by Future Orchards to speak to apple growers up and down the east coast on pollination. He discussed what growers should expect from hives provided for pollination and that not all bee hives are the same. He outlined the benefits of a good pollination service and what is done in New Zealand and how hives are audited. The growers could see a need for hive assessment to ensure they were getting the product they were paying for.

So this then raises the issue on how pollination reliant producers requiring pollination services can be sure that what they are paying for is doing the job. As mentioned this is what Trevor's team does at the almonds.

Should and could this type of audit service be extended to other pollination jobs to provide a quality assurance to the pollination dependant industries? This would then ensure those paying for the service that what they are getting is of a particular standard suitable to do the required job.

This has been used in New Zealand for many years now and Bryon Taylor discussed this at the 2013 Crop Pollination Association 2013 conference at Merimbula.

The issue was also raised by beekeeper/pollinator David Mumford as something that the Crop Pollination Association should consider. Such a auditing service would provide a quality assurance to those using beekeepers participating in such a scheme and as such I suspect would no doubt pay accordingly.

The complexities of running such an audit service would obviously require some nutting out. Such issues as who would do the auditing, at what cost, how are disputes resolved, what scenarios would require auditing, is it always needed, what happens when hives are unsatisfactory to requirements etc would all need to be resolved. However we do have a model to work from across the ditch. I suspect if varroa was to reach our shores this process would evolve rapidly.

There have been some very useful Rural Industries Research and Development Corporation (RIRDC) publications in the last few years that provide guidance and awareness of issues relating to the commercial pollination of crops.

These include the Pollination Aware series looking at individual crops, the "Pollination of Crops in Australia and New Zealand" written by Dr Mark Goodwin, Publication No. 12-059 and "Honeybee pesticide poisoning. A risk management tool for Australian farmers and beekeepers" written by Daryl Connelly, Publication No. 12-043.

All these publications can be purchased from RIRDC as a hard copy or downloaded from the web for free at <http://www.rirdc.gov.au/research-programs/rural-people-issues/pollination>.

In Mark's Publication an example of a comprehensive Pollination Contract for use between the grower and the beekeeper is provided. Such a contract should be used for all commercial pollination jobs.

**I have written this article to as food for thought.**

**Would it help improve the professionalism of the expanding pollination industry?**

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# RESEARCH GRANT TO PROTECT BEES

***New grants are the Bees Knees for one-third of what we eat.***

A leading international bee expert who has teamed with local beekeepers and experts has been awarded nearly \$600,000 to help combat a global decline in bee health that threatens world food production.

The University of Western Australia's Professor Boris Baer and his team will undertake research that will help to protect not only bees but the production of food for humans.

Australian Research Council Future Fellow Professor Baer said bees - managed and feral - pollinate about one-third of everything we eat. And bees around the world are under threat.

"The US has lost more than 10 million hives over the last six years and is having problems securing crop pollination," Professor Baer, of UWA's Centre for Integrative Bee Research (CIBER), said.

"Here in Australia, beekeepers report increasing problems in coping with diseases such as American foul brood, hive beetle and the parasitic fungi Nosema. The arrival of the main villain, the Varroa mite, is expected in the coming decade and will have a catastrophic effect on our honeybees.

"We need about 750,000 hives to pollinate our crops but we currently have only about 500,000 managed colonies. A lot of the pollination is done by feral bees at the moment, but they are expected to be wiped out by Varroa."

An important step in the race against time to save the bees is to understand more about their immune system.

"Bees harbour more than 80 different parasites but they have an efficient immune system to cope with these diseases - or they wouldn't have survived for tens of millions of years," Professor Baer said.

"Our pilot work has shown that bees possess substances that are very efficient at killing parasitic fungi and we need to identify the molecules responsible and understand their function. This will allow us to search specifically for more parasite-tolerant bees and breed them.

"It also offers the opportunity to produce new treatments against diseases if such molecules could be produced commercially."

Professor Baer said the ARC Linkage scheme provided \$430,000 and Better Bees \$120,000 towards his research.

The research team at CIBER - with partners including the Australian bee industry and international collaborators - aims to intensify research into honeybee reproduction, immunity and ecology. The goal is to better understand honeybees to spare Australia from the dramatic losses encountered everywhere else in the world.

*Courtesy: Get Farming*

# USA HONEY UPDATE

October 2013

Every year, the US honey crop sets the tone for the world raw honey market. As the lion's share of the 2013 US honey is still coming in, early projections of a better crop than last year are fading away. Although some hot weather at the end of August into September helped add to the honey production pot, the total crop appears to be less than last year's crop. The demand for this honey is very high, early price projections of 7% to 8% higher than last year for US raw honey are now looking to be more like 10% to 12% higher.

Subsequent honey crops in the world market will follow the price trend set by US honey. The industry is still in a situation of exhausting each world market honey crop as it enters the market. This leaves no carry over honey to fall back on as demand strengthens. Any remnants of honey in the world market are held for higher pricing, usually until the next crop year. As long as demand remains strong, prices will remain firm.

The issues that plague the honey market seem to be worldwide: Extreme weather conditions, Colony Collapse Disorder resulting in fewer bee colonies, and reduced forage area for bees to gather nectar for honey. This has resulted in reduced honey crops, and heavy demand for this honey has increased prices.

The 2013 Argentina honey crop is sold with the exception of some remnants that are being held for very high prices. The 2014 Argentina honey crop should enter the market in February 2014. This honey will be in high demand by US and European packers. It is too early for price projections for this honey.

Brazil is producing more and more organic honey which is reducing the volume of the regular crop honey. Organic honey sells at a higher price than the regular honey. Prices for regular Brazilian honey will probably be slightly lower than Argentina honey, but the demand for this honey will be high which could increase prices as we move toward 2014.

The 2013 Vietnam Light Amber honey crop proved to be better than last year's crop in both supply and quality. Europe has entered the Vietnamese honey market increasing the demand for this honey. Prices for this honey remained fairly level early on, but with Europe competing for this honey, prices have increased and less Vietnam honey will enter the US market.

The 2013 India honey crop is in, and the crop ended up being about average. Demand for this honey is high. Most of the white honey is already sold. The extra light amber and light amber honey is selling quickly, and the prices for this honey have risen.

Most of the Chinese honey crop was being sold to Europe for the past several years with little legal Chinese honey entering the US market. Europe is now experiencing the pains of purchasing Chinese honey that the US felt. Adulteration, substandard quality, and circumvention are rampant. Europe is now shying away from Chinese honey and again focusing on South America for much of their imported honey.

The demand for honey in the US continues to grow with some consumption projections exceeding 450 million lbs. The US imported over 300 million lbs. of raw honey last year. With the average production of US honey dropping from 200 million lbs in 2002 down to about 160 million lbs. today, and demand increasing, continued price pressure for both US and imported honey will continue.

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# Honeybee R&D News



## Chairman's Foreword

Michael Hornitzky, Chairman, RIRDC Honeybee Advisory Committee

The process to fill the newly created industry member position on the Honeybee Advisory Committee (HAC) has been completed. James Kershaw is the successful applicant and I welcome him to the Committee. James is a commercial beekeeper from Gundaroo in NSW and the president of the Southern Tablelands Branch of the NSW Apiarists' Association. Thank you to everyone who expressed an interest in the position.

On the 24th June I participated in the RIRDC-funded workshop examining the future bee breeding needs of the industry, organised by Ben Oldroyd and held at the University of Sydney. The workshop was attended by 20 people representing all sectors of industry, as well as Michelle Taylor who provided a New Zealand perspective; and Rob Banks, Director, Animal Genetics and Breeding Unit at the University of New England. Rob described the spectacular rise in the gross value of lamb production over the past 20 years (on average a \$35 million improvement in industry income every year). Similar genetic based principles which achieved these huge increases in productivity in lambs could also be applied in bee breeding. This very successful workshop finished the day with an action plan; to form a steering committee to develop a business plan and seek the appointment of a Genetic Improvement Officer, and to support the efforts to re-open Eastern Creek Quarantine Station as an interim measure until the new Quarantine station is opened in Melbourne.

The first round call for research proposals opened on the 14th August and closes on the 13th September. To guide researchers, research priorities have been developed for both the Honeybee and Pollination programs and are listed below. Details on how to apply for funding are provided on the RIRDC Website ([www.rirdc.gov.au/for-researchers](http://www.rirdc.gov.au/for-researchers))

### Honeybee program

- Review the method used to calculate the honeybee industry's gross value of production (GVP) and undertake an industry survey to collect data to: calculate the GVP; determine the financial position of beekeepers; and determine the impact of RIRDC's RD&E on productivity and profitability. (The Australian Government matches expenditure from the Honeybee Program up to 0.5% of the GVP of the honeybee industry)

- Develop and implement novel methods of honeybee genetic improvement
- What are the characteristics of, and opportunities to develop Australian *Leptospermum* honey?
- Research implications of the APVMA review of neonicotinoids
- Develop an external trap for the Small Hive Beetle

### Pollination Program

- What financial benefits could be gained from improving pollination productivity by managed bees in specific horticultural crops? For example:
  - o How can the same pollination benefits (yield & quality) be obtained from less bees, or more pollination benefits from the same bees?
  - o What en-pollination or mechanical pollination management options are available?
  - o How should bees be managed under hail nets, plastic tunnels or glasshouses?
- Evaluate which types of public lands have management objectives compatible with access by managed European honeybees and those that do not have such objectives.
- What standards for pollination units are appropriate for specific crops and what could be the elements of a crop/s pollination auditing system?

### Current R&D Committee

Dr Michael Hornitzky (Chair)	(02) 4651 2729
Prof. Ben Oldroyd	(02) 9351 7501
Prof. Boris Baer	(08) 6488 4495
Ben Hooper	0407 820 474
James Kershaw	(02) 6236 9137
<i>Senior Research Manager</i>	
Dr Dave Alden	(02) 6271 4128
<i>Program Coordinator</i>	
Margie Heath	(02) 6271 4145

## Chairman's Foreword continued

An outcome of the Honeybee Program funded American Foulbrood Future Management Workshop held in Canberra in March was a commitment to develop a National Honeybee and Pollination Industry Biosecurity Management Strategy. To facilitate this, RIRDC funded the preparation of a proposal outlining the need for this strategy which was submitted by PHA on behalf of AHBIC to the Department of Agriculture, Fisheries and Forestry (DAFF). DAFF has supported the proposal and provided \$65,000 for the development of the strategy.

As foreshadowed in the previous Newsletter, a workshop was held on the 7th August to discuss how industry could benefit from the Value Adding to Honey project findings. A range of industry representatives participated in the workshop including AHBIC, honey producers, packers and marketers. The area of greatest promise for increasing the return to beekeepers is the use of

honey as a prebiotic (a food ingredient that beneficially affects the host by selectively stimulating the growth and/or activity of one or a limited number of bacteria in the colon, and thus improving host health). Once industry has assessed the findings, recommendations will be made to RIRDC if further work or facilitation is required.

It was disappointing that no applications were received from industry members to attend the Marcus Oldham Leadership course this year. This course provides participants with the opportunity to develop their skills and knowledge to enable them to undertake a leadership role in industry. The HAC can sponsor one person each year to attend this course. Any prospective applicants can apply for a RIRDC Honeybee Program Scholarship to cover the \$2,500 course fee. Expressions of interest will be sought in the first half of next year.

## New RIRDC Honeybee-related Publications

### BeeBox Application User Manual

**Publication No:** 13-061

**Author:** Stephan Winter

**Published:** 12 Jul 2013

**Free downloads only**

The objective of this research was to systemise knowledge about floral resource availability from a number of underlying datasets, and present this information to beekeepers through a web mapping portal. Beekeepers, supported by such information equally well at home or in the field, will profit from making better informed planning decisions, moving less, and with less risk.

The project succeeded to demonstrate a correlation between freely available satellite data and flowering patterns of eucalypt, the resource of main interest for the beekeeping industry. It also set up a flowering calendar as a dynamic webmapping application, for the use by beekeepers.



### Establishing the disease status of the Asian honeybee in the Cairns region

**Publication No:** 13-082

**Author:** John Roberts and Denis Anderson

**Published:** 27 August 2013

**\$25 (28 pages) or free download**

This research is a key step in re-establishing trade of Australian bees with the United States and for maintaining other export markets under threat. The Australian honeybee industry and apiarists will benefit from this research through the identification of exotic pathogens that may affect the health of *A. mellifera*. There are also potential benefits to commercial beekeepers, particularly those based in Eastern Australia that are currently unable to export live bees to the United States.

The findings of this research showed that no new honeybee pathogens have been introduced to Australia with the establishment of *A. cerana* in the Cairns region. There is also no indication that novel pathogen strains have spread from *A. cerana* to *A. mellifera*, but at least one pathogen has spread from the local *A. mellifera* and is infecting *A. cerana*.

### Use of a Sniffer Dog in the Detection of American Foulbrood in Beehives

**Publication No:** 13-080

**Author:** Sharon de Wet

**Published:** 27 August 2013

**\$25 (28 pages) or free download**

This report describes the training and validation of a sniffer dog for detection of American foulbrood (AFB) in bee hives. AFB is the major endemic brood disease in Australia. A detection method that is reliable and less labour-intensive than methodically scrutinising individual brood frames manually is desirable. The objective of this project was to develop a novel, quick and reliable way of detecting AFB that is user friendly and affordable. The sniffer dog (Baz) was trained successfully and was able to detect as little as one infected cell in a hive.



# SICK BEES

## PART 17A

### NOSEMA - THE SMOLDERING EPIDEMIC

by Randy Oliver - ScientificBeekeeping.com



The latest National Honey Bee Diseases Survey found that as many as seven out of ten U.S. colonies were infected by *Nosema ceranae* in late winter and spring (Rennich 2011). It appears that the “new nosema,” rather than being the “kiss of death” or “much ado about nothing,” has created a “smoldering epidemic.”

As a California beekeeper, I’d never been much concerned about nosema, unless I was shipping queens and wanted to make sure that they went out “clean.” But in 2006 I experienced unusual colony collapses in my operation. So when I found that my bees were infected with *Nosema ceranae*, and that the Higes team was convinced that it was causing the collapse of colonies in Spain, nosema really got my attention! In order to avoid being redundant and repeating myself, I suggest that you get up to speed by rereading my article “The ‘Nosema Twins’- Part 1” (at ScientificBeekeeping.com).

What has struck me since is how closely the symptoms of nosema infection match reports of the new rash of colony health problems being reported by beekeepers. Yet, although *N. ceranae* was often present in collapsing colonies, no one save Dr. Higes seemed to be able to make the case that it was the cause. I myself also tended to dismiss *N. ceranae*, since I found it to be common in my operation in apparently thriving hives, and I couldn’t discern any connection between colony health and spore counts.

But then along came Dr. Jerry Bromenshenk’s study (2010) that suggested a link between colony mortality and coinfection by nosema with a virus. Previously, other researchers had also linked nosema and viruses, in both bees and other insects. Then at about the same time, Beeologics approached me to run some large-scale field trials, in which I inoculated *N. ceranae*-infected colonies with a particularly virulent virus cocktail - which pretty quickly crashed the whole yard!

But I still couldn’t firmly nail down nosema as a significant problem in the rest of my operation. But this year I started to become a bit uneasy when I noticed spring spore counts notching up for the fourth year in a row.

What kept nagging me was that the well-described consequences of nosema infection - poor buildup, reduced honey production, and occasional colony dwindling or collapse - exactly matched what I observed in a number of my poorly-performing colonies. Furthermore, this winter I had more dinks than I am accustomed to.

So I researched the older literature on nosema. What hit me was that author after author stressed that nosema disease was “invisible” - that is, the beekeeper would generally not recognize any symptoms. I wondered, could I be failing to notice the obvious?

**Practical application: nosema infection is generally “invisible” to the beekeeper. The only signs are poor buildup, reduced honey production, and occasional colony dwindling or collapse.**

The clincher came when I shifted my method of nosema monitoring from spore counts to determining prevalence - the percentage of infected bees in a sample (Fig. 1). It appears that *N. ceranae* was indeed a factor in the majority of the weakest hives in my operation in December. However, let me be clear that it wasn’t the only cause, as nosema was not evident in all the weak hives.



Figure 1 - This is how I currently take samples for a Quick Squash analysis. I simply flip a dozen bees from under the cover into a labeled ziplock bag, and then add a squirt of rubbing alcohol to preserve them until I process them in the dining room back home.

#### The “Invisible” Infection

So let’s look a little deeper at the “invisibility” of nosema infection. Nosema is a parasite, and if present at high levels, can indeed cause disease. But keep in mind that its *raison d’être* (sorry about the French), is not to make bees sick - on the contrary, that’s the last thing it wants to do!

Wikipedia does a good job at explaining the host/parasite relationship:

A typical parasitic relationship is one in which the parasite and host interact **without lethal harm to the host**... In most such relationships, the parasite arrogates enough nutrients or other resources to thrive without preventing the host from reproducing [*arrogate: to appropriate for oneself without right*—your vocabulary word for the day].

**Take home message: nosema is normally only a thief, not a killer.**



In the case of nosema, it is counter-adaptive for the parasite to cause colony death, since robber bees do not appear to a prime mechanism for the transmission of the spores. Rather, it is to the adaptive benefit of nosema (and also the “acute” bee viruses, which I will discuss in my next article) to exist as relatively “benign” infections, most readily transmitted by a living host. What nosema “wants” to do is to turn the infected bee into a long-lived spore producing machine. That way, there is more chance for an infected bee to transmit spores to its nestmates or to other colonies via drift, or through contamination of flowers or water sources.

Both nosema and viruses are obligate parasites with greatly reduced genomes. They are completely dependent upon a living host for survival and reproduction—unlike, say AFB or chalkbrood, which complete their reproductive cycle in a dead or dying host (and can, unlike nosema or viruses, be cultured in a Petri dish). It is to the disadvantage of either nosema or the acute viruses to actually kill either an individual bee or the colony, since death of the host stops further production and transmission of spores or virions—unlike AFB or chalkbrood, which benefit from the death of their host, since that is the next step in transmitting spores to the next victim via cleaning or robbing.

Nosema is adapted to merely skim a few resources off the host, without actually putting the host out of business - kind of like credit card companies. There is an ongoing evolutionary battle between the card issuers (the parasite) and you (the host). The card company wants to siphon off as big as much of your income as it can get away with, without eliciting an “immune” response in which you destroy the card in self defense. So long as the issuer keeps fees low, it’s just not worth the bother to resist it.

But it is to the card company’s benefit to covertly ratchet up its “take” so long as the cardholders don’t notice it. When cardholders start to feel the hurt of the fees, they start fighting back. The evolutionary game is for the company to find the “sweet spot” at which it can extract the most profit, without eliciting a serious self-preservatory “immune” response from you. The card company wants to “infect” as many customers as possible; not to create casualties.

Similarly, the best strategy for nosema or acute viruses is to co evolve with the bees’ immune system, so that the bee generally keeps the parasite in check, yet still allows it to reproduce just enough so that it manages to successfully infect the next generation of bees (and perhaps some other colonies). Truly virulent strains of the parasite, or particularly susceptible strains of bees, are discarded in the evolutionary process—all extant species are those who have “worked things out” (note that one downside of regular prophylactic treatment with fumagillin is that it counteracts this natural process).

What we, as beekeepers, are concerned with is when things go awry, and environmental conditions change to favor of the parasite. It is easy for us to anthropomorphize parasites, but in reality nosema and viruses are extremely simple and mindless entities without any capacity for thinking, planning, or intent. Killing their host is not in their best interest. Unfortunately, though, they can’t help that they possess an innate capacity to reproduce explosively, given the chance. And that they’ll do!

Bee parasites are normally held in check by the immune barriers thrown up by both individual bees and at the colony level. But there is a point of diminishing returns for

the bees, so they reach a shaky “truce” with the parasites - they only devote enough energy as is required to hold them in check and to keep them at levels that don’t appreciably handicap overall colony fitness.

What’s interesting is that such parasites are not normally evenly distributed among the hosts—rather, the parasite usually has an “aggregated” distribution across host individuals, which means that most hosts harbor few or no parasites, while a few hosts carry the vast majority of the parasite. Such is the case with bees, both at the individual level and the colony level. For example, in a healthy colony, perhaps only one out of ten, or one out of a hundred bees will be infected with nosema, but that bee may be chock full of spores! Similarly, the odd colony will fail to hold nosema in check, and every single bee may become infected (Fig 2). These infected bees and colonies act as “reservoirs” for the parasite within the larger bee population—they keep the infection “smoldering” (which is why it is to our advantage to breed for bees that are naturally resistant to the major parasites).

But things can go badly under conditions of stress such as poor nutrition, chill, toxins, or coinfection (my “Four Horsemen of Bee Apocalypse”); the tenuous “balance” can suddenly tip in favor of the mindless parasite. ***The moment that the host fails to maintain its normal defenses, then there is nothing to hold nosema or virus reproduction in check, and the infection can suddenly explode*** (see Sick Bees 2—A Model of Colony Collapse).



*Figure 2 - Parasites are generally not evenly distributed throughout an apiary. Some susceptible colonies will have much higher levels than others. Those colonies act as “reservoirs” for infection, which can then spread to other hives in times of stress--such as will occur the moment these almond trees drop their blossoms!*

It’s also likely that *Nosema ceranae* is similar to the flu in that it is constantly mutating and recombining (mixing up its genes). Sagastume (2011) found that even within an individual bee, new strains of *Nosema ceranae* are constantly being created - any of which could be more or less virulent or pathogenic. And just like with the flu, we can expect to see either mini - or large-scale epidemics due to new strains of nosema or viruses from time to time.

In nature, the way that virulent forms of a parasite get weeded out is by the excessive death rate of the host. But in managed apiaries there are so many host colonies that a virulent strain can spread like wildfire. Nosema and virus epidemics that spread beyond a single colony are largely a beekeeper-created phenomenon.

The point that I'm trying to get across is that it is not the "intent" of nosema nor the acute viruses to cause disease—bees only get sick either when environmental factors or a novel parasite strain upset the balance. Under those conditions, the percentage of infected individuals in a hive can creep past the tip point, whereupon the colony may start quickly spiraling downward (I've twice observed this phenomenon first hand after inoculating healthy apiaries with an "infective dose" of a pathogen).

However, just because a parasite infection does not normally cause colony mortality, that does not mean that it doesn't cause morbidity—the lowering of colony fitness (Brown & Fries 2008). Returning to the credit card analogy, the small fee charged to the merchant each time you swipe your card is invisible to the cardholder, but amounts to an overall drain to the U.S. economy to the tune of \$60 billion each year! I wonder to what degree the year-round presence of *Nosema ceranae* drains the U.S. beekeeping economy?

**Practical application: although *Nosema ceranae* may not be directly responsible for colony mortality, it may very well constitute a significant drain upon colony buildup and productivity.**

### Something Changed This Decade

Dr. Dennis vanEngelsdorp (2010) has documented that for the past few years about a third of colonies in the U.S. perish each winter, as compared to the historical level of 5–10%. It is also worth mentioning that Gilles Ratia, the president of Apimondia, reports that worldwide, colony mortality appeared to start increasing about the year 2000.

Bart Smith, technician at the USDA Bee Disease Diagnostic Lab, has kept track of the percentage of samples received each year that test positive for nosema. In the August 2011 issue of this Journal, Bart noted that "The number of nosema-positives samples has been steadily rising during the last decade." Curious, I worked up his data into a graph (Fig. 3), adding Bart's estimate for 2011. The result was striking, to say the least!

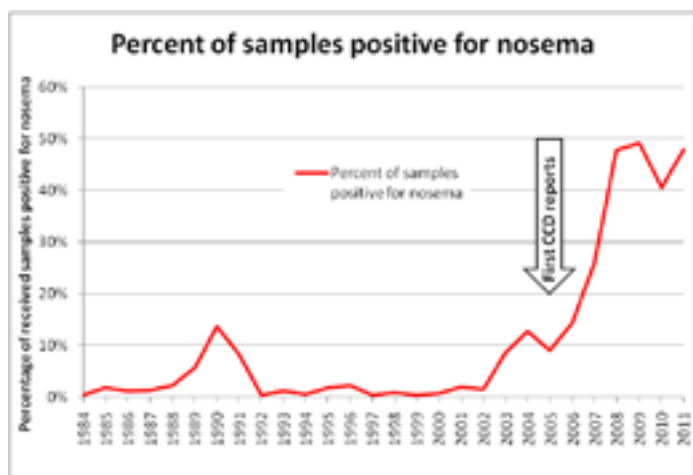


Figure 3 - Plot of nosema prevalence in samples received by the USDA Bee Disease Diagnostic Lab. Keep in mind that this data is not from random sampling, but rather from samples sent by beekeepers to the lab, which biases the sampling toward apiaries that are having problems. However, the current high prevalence of infection is supported by recent nationwide sampling. My appreciation to Bart Smith for his help with the data.

It's hard to ignore the impression that a distinct trend in nosema prevalence occurred in U.S. bees in the past decade, as evidenced by Bart's data above. It's also hard

not to notice the remarkable concurrence of over-winter colony losses rising at about the same time that nosema prevalence took off! I added an arrow to the graph indicating the first reports of unusual winter losses (Bob Harrison, Dr. Jerry Bromenshenk, pers comm), which slightly preceded Dave Hackenberg's famous CCD event.

Of additional note is that the first major shortage of bees for almond pollination also occurred in 2005; Rucker's (2011) graph of almond pollination prices in real dollars follows nearly exactly the same curve as the graph above. This despite the fact that bearing almond acreage rose at a steady rate from 1994 through 2006, and only picked up slightly after that. The rental price for almond pollination correlates strongly with the overall strength of commercial colonies in February.

The obvious question is whether the occurrence of increased colony mortality (and weakness) can be contributed to the invasion of *Nosema ceranae*, or was it mere coincidence?

**Practical question: has the skyrocketing "invisible" infection by *Nosema ceranae* since the year 2000 contributed to our increased colony mortality rate?**

What also catches my attention is that the exponential increase in nosema-positive samples almost exactly mirrors the data from Higes' diagnostic lab in Spain (Martín-Hernández 2007! The spike in Spain can clearly be attributed to the invasion by *N. ceranae* (Botías 2011), and likely holds true in adjacent countries.

**Question: have we simply overlooked the impact of *Nosema ceranae* because we were distracted by problems with varroa?**

Despite the suggestive graph above, I find this a difficult question to answer. It appears that *Nosema ceranae* arrived in the U.S. at about the same time as tracheal mite (1984), and varroa (which hit us in 1987). Within a few years, colony losses stepped up from the historical 5-10% level to 17-20% per year in the 1990's (Johnson 2010), and then jumped again in the early 2000's to 30% or above. So it is very difficult to separate the influence of nosema from that of the mites!

Beekeepers in several countries which were recently invaded by *Nosema ceranae* are also experiencing unusual colony health issues, but we can likely attribute most of them directly to varroa and viruses. Another contrary observation is that *N. ceranae* also invaded Australia, but it doesn't appear to be causing noticeable problems there, yet—in the absence of varroa. Perhaps *N. ceranae* is not much of a problem unless varroa and associated viruses are involved.

### Historical Prevalence of Nosema

I must say that I am puzzled by the surprisingly low incidence of nosema during the '80's and '90's in the Diagnostic Lab data above. Beekeepers have been aware of nosema issues since I began beekeeping in the 1960's, so nosema is certainly nothing new. In order to try to find an answer, I dug into the literature to see what the earlier historical levels of nosema infection were.

Dr. White (1919) asked beekeepers for samples from weak colonies, and received 150; half contained nosema spores. Fast forward a hundred years—surprise, I find about the same prevalence in the weak colonies in my own operation!



So let's move ahead to the 1940's and '50's, a period when Dr. Farrar from Minnesota loudly decried nosema as the cause of problems of winter losses, queen supersedure, and in the buildup of package bees. In 1955 and 1958, Jaycox (1960) found 14% and 85%, respectively, of sampled California colonies to be infected with nosema.

Moeller (1978) tracked the level of natural infection in some 200 untreated colonies in Madison, Wisconsin for the years 1954-1962. Typically, fewer than 8% of colonies were infected in December, but that level rose to around 20% (and up to 80%) in March and April. In the infected colonies, typically 30-40% of individual bees were infected.

In South Australia, Doull (1961) determined that *N. apis* was present in all hives at all times. He concluded that "no hive is likely to be completely free from either spores or infected bees for any appreciable length of time."

In the spring of the next year, Doull (1962) sampled 626 colonies from 61 apiaries in California. Roughly 10% of the colonies, and a third of the apiaries were infected. He noted that, "There was no external evidence of the disease."

Furgala (1973) surveyed Minnesota apiaries in spring for the years 1969-1972. Apiary composite samples were taken of flying bees from every second or third colony. The cooperators were encouraged "to use fumagillin therapy when warranted." Spores were observed in 80% of samples from untreated hives, with spore counts exceeding 1M in most of the samples (they were typically in the 50M range, which is scary high!). Surprisingly, he even found spores in 30-40% of the treated hives!

Mussen (1974, and a coauthor of the previous study) followed up by looking for nosema in 708 samples from 376 apiaries taken in March through June across the entire U.S. Nosema was present in 54% of the samples, with a trend for higher prevalence at higher latitudes, and the lowest prevalence in the Mountain and West South Central states. The highest spore counts and prevalence was in April and May.

So I don't get it! Compare the historical figures to the Bee Disease Lab graph above (especially allowing for the fact that the samples were voluntarily sent in by beekeepers concerned about colony health issues). What the heck happened between the '60's and '70's, when nosema infection was common, to drive the level of nosema prevalence down to the extremely low figures recorded by the USDA lab during the '80's and '90's?

I posed that question to Dr. Mussen. He recounted that upon his 1976 arrival in California, he strongly pushed the use of fumagillin. As a result, sales of Fumidil-B doubled each year for several years thereafter, as buyers demanded fumagillin-treated packages. That action alone, due to the numbers of then-treated package bees shipped all over the country, could possibly have had a substantial effect upon nosema levels. So a plausible hypothesis is that beekeepers simply cleaned up nosema with fumagillin during the 80's and 90's; or perhaps our bees simply evolved to be more resistant to *N. apis*, as they did with tracheal mite and chalkbrood.

**Last minute update:** just as I was wrapping up this article, it occurred to me that the Diagnostic Lab might have changed its nosema sampling methodology during the time period in question. So I asked Bart. His answer:

*My records indicate we started doing hemacytometer counts on a regular basis in August of 2007. Prior to that time, results were listed as being positive or negative for nosema disease. This is what I know about sample size for nosema checks: During 1984 to 2002, the sample size consisted of 4 bees. During 2003, the sample size was changed to 10 bees. The sample size was again increased to 30 bees during 2008 and has continued at that number.*

So, I wondered, could the apparent meteoric rise in nosema prevalence be merely an artifact of the sampling method?

Let's reevaluate the data. Up 'til 2002, only about 2% of the samples tested positive, with a sample size was only 4 bees. I cranked those numbers into the probability calculator, and found that the level of prevalence that the lab recorded indicated that, on average, less than 1 bee out of a hundred in the samples was infected. So, it appears that the early low figures stand!

Since the Lab sampled 10 bees from 2002 through 2007, I'm comfortable with that data too. That leaves the extremely high prevalence from 2008 on, which would be more likely with the larger sample size, since larger samples are more likely to catch an infected bee, which would then skew a spore count. Luckily, we have Rennich's (2011) data to support the high prevalence for recent years--in fact, her numbers are higher than Bart's!

Whew! No need to delete the chart (by the way, in order to try to prevent my readers from suffering from painful information overload, it's not unusual for me to delete up to half of a written article before sending it to press. I try to just cherry pick the goodies that I hope will be of general interest to you).

So why did nosema levels start climbing rapidly around the year 2000? Perhaps we became complacent about nosema treatment, perhaps we introduced more virulent strains of the parasite in Chinese pollen (Fig. 4), perhaps the increased movement of hives to almond pollination spread the infection, or maybe *Nosema ceranae* simply hit its stride. It is worth noting, though, that the new nosema does not appear to respond quite as well to fumagillin treatment as does the old nosema, so that may have something to do with it. We may never know the answer.



*Figure 4 - In the early 2000's, the feeding of home-mixed pollen supplement really took off. Many beekeepers added unsterilized pollen imported from China, not knowing that it could contain viable spores and virions. Others used unsterilized Chinese royal jelly for queenrearing. Recent findings by Singh (2010) strongly suggest that we very likely inadvertently inoculated our bees with every sort of pollinator pathogen found in China! (Cue to bang head against wall).*

## Was *Nosema ceranae* a Game Changer?

While I am in agreement with most bee researchers that the number one problem for bees worldwide is varroa, one must remember two things:

1. There were plenty of sick, dwindling, lagging, and collapsing colonies due to nosema and viruses before we ever heard of varroa (as there are in Australia even in the absence of varroa), and
2. Our colonies were generally doing fairly well despite varroa, so long as the beekeeper used effective mite treatments.

Something else apparently changed the game in the early 2000's—could that something be *Nosema ceranae*? It is plausible that Mariano Higes has been right all along, and that *N. ceranae* shifted the tip point of colony health? I want to be clear here that I am ignoring the viruses in this article, but certain viruses (notably the “acute” virus group) also appear to be significant contributors to the increased colony mortality, so a more complete picture would be the varroa/virus/nosema troika. I'll address this in a subsequent article—but first I'll continue to focus upon nosema a bit more.

**Wrap up: it's likely that the increased rate in colony mortality is due to various combinations of varroa/virus/nosema buildup, coupled with the effects of miticide residues, and exacerbated by poor nutrition. In the case of colonies exposed to commercial agriculture, the deleterious effects of pesticides are often a serious contributor. But it's possible that *Nosema ceranae* helped to tip the balance.**

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*These articles were originally published in the American Bee Journal. All of Randy's bee articles may be found at: [www.Scientificbeekeeping.com](http://www.Scientificbeekeeping.com). If you find these articles of use. Randy appreciates donations to fund his efforts.*

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## AUSTRALIAN HONEY BEE INDUSTRY COUNCIL

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Mailing Address: PO Box 4253 Raceview QLD 4305  
Website: [www.honeybee.org.au](http://www.honeybee.org.au)

# AHBIC NEWS

*Excerpts from August/September Updates*

## AGM COMMITTEE APPOINTMENTS

At the AHBIC AGM in July the following Committees were appointed. In many cases the member bodies appoint the members to the Committee.

Please note that the AHBIC Chairman is ex-officio on all AHBIC Committees.

### **Disease**

Craig Klingner (Chair) Ian Zadow and Sam Malfroy

### **Quarantine**

Peter McDonald - Victoria (Chair), New South Wales – Casey Cooper, Tasmania – Lindsay Bourke, Western Australia – Stephen Fewster, South Australia – Barry Pobke and Queensland – Peter Warhurst.

### **Education**

Rosie Stern (Chair), Ben Hooper and Marion Weatherhead

### **Resource**

Ken Gell – Victoria (Chair), New South Wales – Neil Bingley, Western Australia – Rod Pavy, South Australia – Martin Gilbert, Tasmania – Peter Ewington and Queensland – Robert Dewar. **Food**

### **Safety and Prevention of Residues**

Ben McKee (Chair), Dawn Smith, Barry Pobke, Ian Zadow and Trevor Weatherhead (Secretary)

### **National Honey Week**

Leilani Leyland – Western Australia (Chair), Victoria – TBA, Tasmania – Shirley Stephens, Western Australia – Leilani Leyland, South Australia – Martin Gilbert, New South Wales – Karla Hudson and Queensland – Marion Weatherhead

These Committees are a crucial part of the functioning of AHBIC and we thank those who are on these Committees and look forward to their input.

## HONEYBEE ADVISORY COMMITTEE (HAC)

AHBIC has been advised by RIRDC as follows: "The process to fill the newly created industry member position on the Honeybee Advisory Committee (HAC) has been completed. James Kershaw is the successful applicant and I welcome him to the Committee. James is a commercial beekeeper from Gundaroo in NSW and the president of the Southern Tablelands Branch of the NSW Apiarists' Association. Thank you to everyone who expressed an interest in the position."

## CATEGORISATION

Responsibility for any incursion has now shifted over to the Emergency Plant Pest Response Deed (EPPRD). Previously we were covered by the Emergency Animal Disease Response Agreement (EADRA) Under EADRA we had the various exotic diseases categorised. Now that we are under EPPRD, our industry needs to have the various diseases and pests categorised. Currently Plant Health Australia (PHA)

is reviewing the categorisation process which should be finished by early next year. AHBIC is looking to start this process when the review is finished. Currently if there was an incursion, there is an automatic 50:50 split but there could be a review called for. There is some ground work that AHBIC will be undertaking in the next few months prior to asking for a review of the categories early next year.

## AHBIC RECEIVES GOVERNMENT GRANT

The AHBIC Executive is pleased to report that it has received a \$67,000 grant from the Department of Agriculture (formerly Department of Agriculture, Fisheries and Forestry) for use in setting up a Biosecurity Strategy for the beekeeping industry. There is an Industry Working Group (IWG) made up of the AHBIC Disease Committee Chair, Craig Klingner who chairs the IWG, AHBIC Chairman, Ian Zadow, and Sam Malfroy from Plant Health Australia (PHA). They have met and have put in place a contract for Plant Health Australia and Michael Clarke from AgEconPlus to work on gaining support for the Biosecurity Strategy. The IWG are working on preparing a case for the industry Biosecurity Strategy to present to industry.

## NEW GOVERNMENT

With the recent Federal elections and the change of Government, there are new Ministers appointed and Departmental name changes. What was called the Department of Agriculture, Fisheries and Forestry (DAFF) is now called Department of Agriculture. The new Minister is Barnaby Joyce, the new member for New England. His Parliamentary Secretary is the Tasmanian, Senator Richard Colbeck. AHBIC has written to the new Minister congratulating him on his appointment and asking for the opportunity to meet with him at some time soon. No doubt our industry will have reasons to talk with other Ministers as issues arise.

## AHBIC EXECUTIVE MEETING

The Executive met in Adelaide on Monday 23 September. It was followed by the AGM and meeting for B-Qual. Some of the issues discussed were:- The Honey Week Committee had its first phone hook-up. It was thought that it was hard to try to have all States participate on the one day. It was thought that maybe all activities could be in the one month. The Committee is looking at several issues and will meet again soon. The Executive has decided to go ahead with having the queen bee levy set at zero. The 12 levy principles have to be met and all levy payers need to be contacted. The rationale is that the queen bee levy is costing more to collect than it collects. In 2011-12 it lost around \$4,000. The Executive is looking at ways of reducing the levy collection cost for the honey levy. This levy is a vital part of the industry's research effort and we need to maximise the amount of money available for allocation to research. A more comprehensive report on the meeting will be forwarded to member bodies of AHBIC shortly.

## BQUAL

BQUAL is a wholly owned company of AHBIC which is responsible for the quality assurance program developed by AHBIC. With more and more companies, which buy honey from the various packers, asking that their suppliers have a QA program, BQUAL is an excellent way to meet this requirement.

We would encourage you to look at becoming a part of the BQUAL program if you are not already a member. Some packers provide an incentive for beekeepers to be BQUAL assured. For details on the BQUAL program go to the AHBC website <http://honeybee.org.au/> and click on BQUAL.

#### QUARANTINE STATION OPEN AGAIN

The quarantine station at Eastern Creek is again open for the business of importing queen bees. A shipment from Canada is due soon. It has been around seven (7) years since any imports of queen bees took place. It was closed due to someone saying that CCD was a threat. Industry could never find who made that statement and caused the closure. There are a few minor issues to sort out but the way the quarantine station functions will be a fore runner to how the new facility in Melbourne will function when it is built. It is crucial that there is a safe legal way for genetic material to be able to be sourced from overseas. The disappointing part is that the Import Risk Assessment (IRA) for drone semen is still languishing somewhere in Canberra. This is also an important part of genetic material being able to be safely imported. You will recall that it was Recommendation 12 from the More Than Honey report that the IRA for drone semen importation be completed by the end of 2008.

#### NORTH QUEENSLAND COURSE

As part of the Transition to Management Plan for the Asian bees, a course was held at Gordonvale in North QLD to let local beekeepers know how they can live with Asian bees.

The course was held under the auspices of Burnham and Associates who did the organising. As well as living with Asian bees, the opportunity was taken to perform the unit from the Certificate III in Beekeeping on Managing Pests and Diseases. Being a Registered Training Organisation (RTO), Alan and Carmel Burnham will issue a letter of attainment for that particular competency.

It was fortunate that Dr. Ben Oldroyd and Dr. Denis Anderson were able to come and be part of the lecturing team. Thanks to Denis and Ben for making their time available, at no charge, to carry out this task. Roberts Stephens, who is the Queensland Departmental Officer in Townsville and has responsibility for beekeeping as part of his role, was able to come and meet Ben and Denis plus have further interaction with local beekeepers.

Maurie Damon, Geoff and Brett Quinn were the organisers on the local scene and did an excellent job. Maurie even had a nest of Asian bees that were able to be shown to the course participants. As the bees were being destroyed, the opportunity was taken to be able to supply a sample of Asian bees, in alcohol, to those who had come up from Mackay, Ayr and Ingham. This will be a good reference source for these beekeepers in these areas which do not have Asian bees. Having Robert Stephens at the course was fortuitous as he was able to issue permits to take these samples out of the restricted area, which is still in place.

For the managing disease component we were able to look at hives nearby.

It will be interesting to keep monitoring, through the local beekeepers, the progress of the Asian bee and how it affects them locally. At least they now have a basic understanding thanks to this course.

For those at the course, the feedback was very positive and this course provides a template if it is needed to be held somewhere else in the future. Hopefully that is a long way off.

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Trent is a second generation apiarist, from one of Victoria's most successful beekeeping families. Trent grew up surrounded by bees and was also able to work for many years as a beekeeper internationally. These experiences helped him to gain the necessary skills to become one of Victoria's largest commercial apiarists. Because Trent and Jo are still heavily involved in beekeeping, they know the industry well. This has helped them to grow Whirrakee Woodware even further and establish a name which is now even more recognised throughout Australia.

Whirrakee Woodware specialise in assembled material, from hive boxes (all sizes) to lids and bottoms; saving valuable time for beekeepers. All assembled items come already wax dipped and painted in a choice of five different colours\*. Also, if required, the boxes can be branded with your individual brand as a complimentary extra. All assembled products must pass through a stringent quality control process to assure they are of a high standard.

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Modern beekeepers use traditional practices and equipment playing very important roles in beekeeping farming techniques and subsequent results. The current traditional equipment and practices have catastrophic impact to both the honey production and to the vital protection of the healthy environmental sustainability of the honeybee habitat when interloping parasites invade beehives.

- The ideal environment in which SHBs breed requires food (honey), warmth (inside honeybee hive), humidity (honeybee hive water condensation) and the traditional brood box bottom board.
- Construction of the traditional brood box includes a solid bottom board, a normal entrance and generally two ventilation holes in the lid of the hive.
- Traditional brood box design with its plain bottom board suppresses ventilation thereby allowing condensation and humidity to increase to a level, which optimises the SHB breeding conditions.
- Traditional brood box bottom board definitely creates the right environment for SHB breeding.
- Traditional brood box bottom board allows substantial amassed quantities of debris and detritus where the SHB hide and diseases incubate more readily.
- Should any hives be pest-colonised to the degree as shown on YouTube (Search “Small Hive Beetle Infestation”) there is very little ability to salvage these hives.
- The solution lies only with prevention.
- Rather than trying to control the SHB after it has invaded honeybee colonies’ hives which use the traditional brood box bottom board, a better solution is to discourage the SHB from colonising the beehive by radically changing the traditional beehive environment to the extent that SHB breeding simply becomes impossible.
- The brood box bottom boards must remain clean at all times.
- The preventive solution already exists. When the brood box traditional bottom board is replaced by the Australian-made Bluebees Brood Box Bottom Board, airflow within the beehive is increased. The humidity and condensation within the beehive will thus dramatically decrease, making the environment inhospitable for the SHB to breed. As one of the prime requirements for the SHB’s breeding is humidity the SHB can no longer successfully breed in this dry and clean environment. The SHB will relocate to a more suitable breeding environment, leaving the beehive with optimal ventilation and beetle-free.
- Since the appearance of Varroa Destructor changes of the brood box bottom boards have already been tried with the introduction of a stainless steel mesh bottom board. Unfortunately, the stainless steel mesh board created far too much ventilation. Additionally with the observation that the bees have great difficulty walking on the mesh – they damage themselves and become irritable to the point anecdotally, that the colonies have absconded. Detritus and debris still amassed to unacceptable quantities.
- The revolutionary Australian-made Bluebees Brood Box Bottom Board allows optimal airflow thereby dramatically reducing the humidity created by the natural condensation generated by all healthy honeybee colonies.
- The inside brood and super boxes become dry and remain dry because the right amount of air-flow is allowed to go through the entire beehive.
- Additionally, the Australian-made Bluebees Brood Box Bottom Board design allows and encourages the honeybees to eject any interloping pests including the dreaded Varroa Destructor along with any debris / detritus.
- Preventive action is the correct answer to control interloping pests. Healthy and strong honeybee colonies have their beehive environmental sustainability maintained due of the technical characteristics of the Australian-made Bluebees Brood Box Bottom Board. The Bluebees Brood Box Bottom Board empowers the honeybee colonies to adapt and learn to deal with any interloping pests efficiently.
- The need to use chemicals is also greatly reduced, probably eliminated, because the honeybee colonies have now the means to efficiently manage the health and cleanliness of their beehive environment.

After 3.5 years work, the Australian-made Bluebees Brood Box Bottom Board is designed to professional beekeeper bush working conditions and standards.

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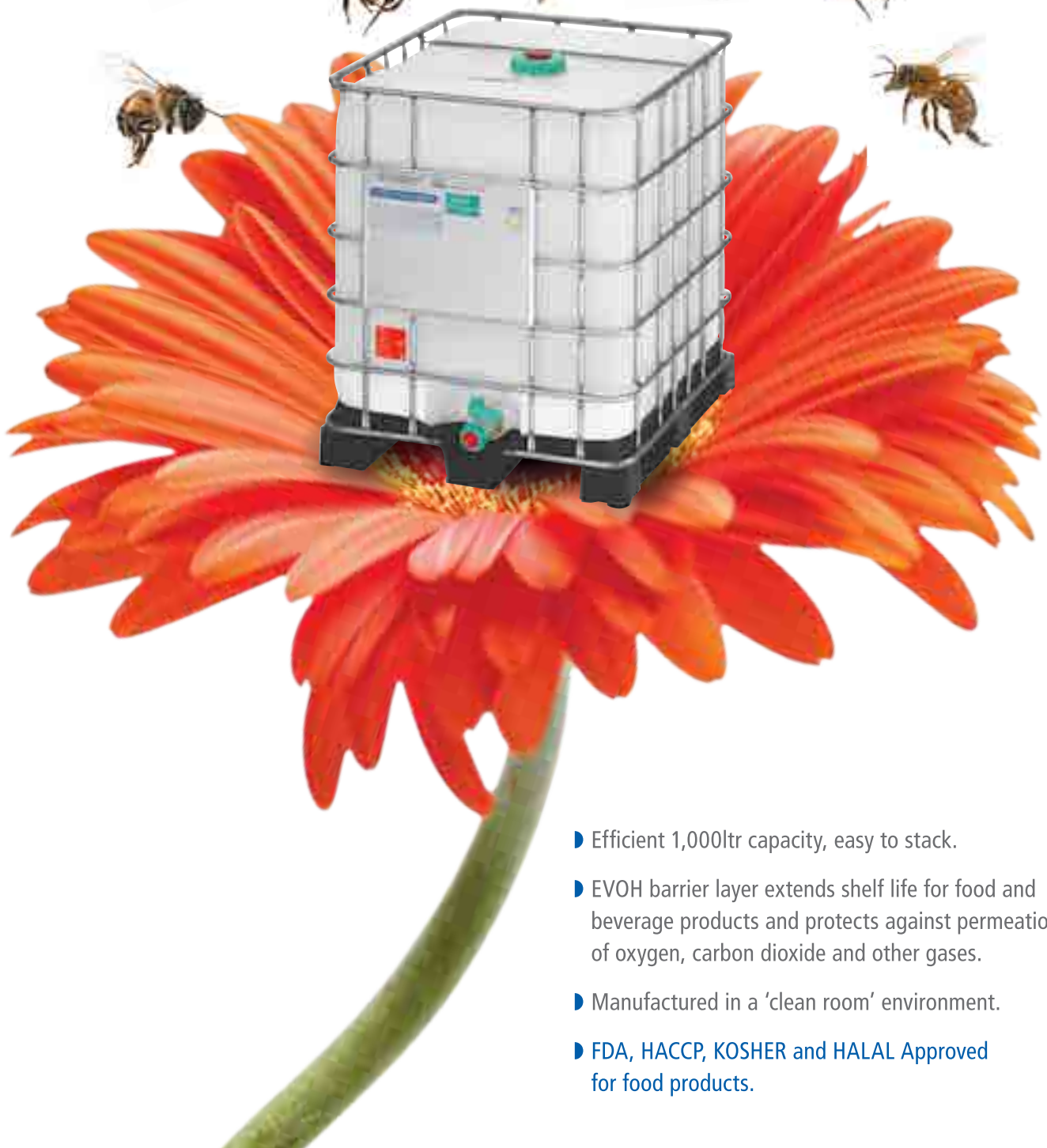
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