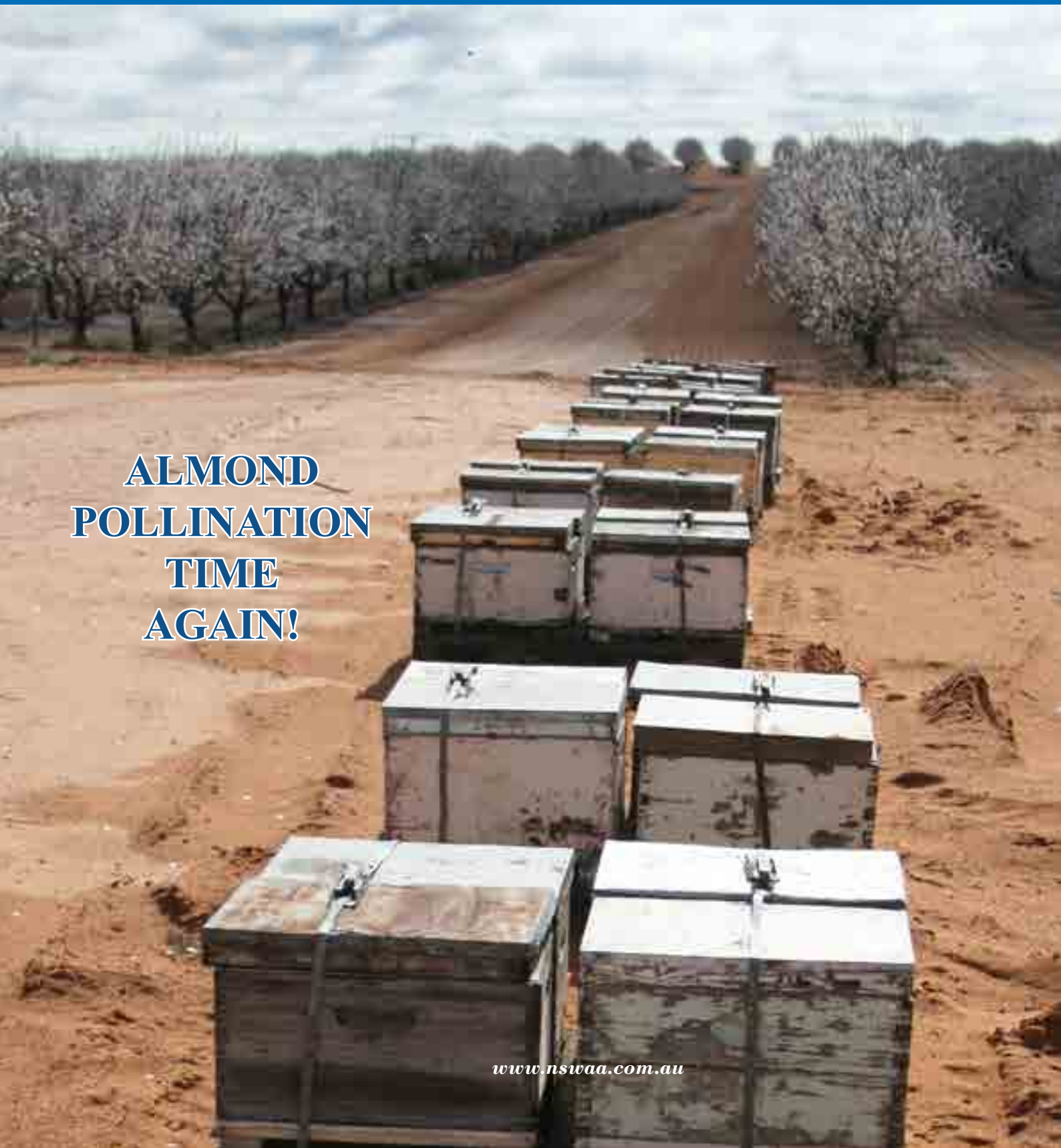
AUSTRALIA'S

HONEYBEE NEWS

"The Voice of the Beekeeper"

Volume 9 Number 4
July-August 2016



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The official Journal of the NSW Apiarists' Association (NSWAA) www.nswaa.com.au

Published Bi-Monthly **Email:** honeybeenews@bigpond.com **ISSN 1835 6621**

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PRESIDENT'S REPORT

Season
It is encouraging to see widespread rain over much of the state, which is a pleasant change to what has occurred in recent years. Prospects for both northern and southern NSW will still be dependent on continuing good falls through spring and summer to enhance ground flora prospects as due to climate variation a large proportion of eucalypts flowered early and out of season.

Membership
It is pleasing to see the many commercial beekeepers supporting our association. Your continued commitment will ensure NSWAA can continue to represent the needs of commercial beekeeping in NSW. If members have anything they wish to discuss with me or any other executive member please don't hesitate to call, we would rather hear first hand of any looming problems rather than be told by third parties with either late or sometimes incorrect information.

Resource
We are still awaiting response to our submission on public land access renewability. I have been advised that a response from Minister Blair could be forthcoming by mid-August. There are many members that have forestry sites fall due on September 30 and NSWAA is hoping that a positive outcome is announced well prior to that date.

The monthly Apiary Site Working Group meetings have been suspended until such time as we receive a response from Minister Blair. The next meeting has been scheduled for 2 September.

At the AHBIC AGM a motion was unanimously passed to instruct AHBIC to pursue the Public Land Access issues federally.

Yet another submission has been completed and sent to the Crown Lands review.

NPWS
The reviewed Beekeeping Policy in National Parks has been endorsed and is now on the Office of Environment and Heritage website.

AHBIC
Having just attended the AHBIC AGM in Townsville and addressed the many issues that arose, it becomes apparent yet again that many in our industry either don't understand or don't bother to understand the necessity to have a functioning National Peak Body.

The functions of your National Peak Body are severely hampered by an acute lack of funds brought about industry members who are content with leaving the voluntary funding of AHBIC to the other guy. While the few other guys continue to fund AHBIC the whole industry gain the benefits.

This scenario cannot continue as those that have supported our National Peak Body become jaded at the many who benefit by AHBIC's work and continue to resist contributing towards its funding. Nationally there are less than 100 Beekeepers and Packers contributing towards AHBIC's funding. This is pathetic.

If you are one of these industry members that have left the funding of AHBIC to others; PLEASE reconsider your position and send a contribution to AHBIC and help your National Body continue to function effectively for favourable industry outcomes.

Asian Bees in Townsville
It concerns me greatly that the recent detection of a colony of Apis Cerana was probably in situ for an extended period of time. If the associated varroa had been Destructor and not Jacobsoni then our industry as we know it would have been changed forever. The latest detection of Cerana, 9kms from the port which has also possibly swarmed is a major development. This incursion must be eradicated as soon as possible.

The latest information on the incursion is on pages 33-34.

DPI
Looks as though our industry will be losing yet another well respected and dedicated Apiary Advisory person with the pending retirement of Nick Annand. I have known Nick for many years and found him approachable and extremely knowledgeable. Good luck Nick with your future endeavours.
Now our industry has only one long term industry player left at DPI.

NSWAA's next challenge is to convince DPI that we need people of Nick Annand's and Doug Somerville's calibre to be available to service the needs and demands of our vital industry.

Conference
Next year's conference will be held at Ballina on May 18 and 19 at the Ballina RSL Club. Speaker lineup is currently being organized. If any members have issues they would like addressed please send details to our secretary Kate McGilvray info@nswaa.com.au

National Congress
At the recent AHBIC AGM it was decided to proceed with a National Congress to be held in 2018. It is envisaged in that year NSWAA will hold a basic AGM held in a central location and possibly funding will go towards supporting the National Congress, this is yet to be considered by your executive.

Meetings
Your executive will next meet at Orange on August 15. Any items branches wish to have discussed need to be sent to Kate McGilvray info@nswaa.com.au ASAP.

Neil Bingley
State President

LOOKING FORWARD LOOKING BACK

Varroa is on our door step. I was not surprised that the powers to be decided to shut down the National Industry owned Queen Bee Breeding Group. Dewar's Queens were one of the original members of this Queen Bee Improvement Programed. Paula and I share the concern shown by the broader industry upon hearing of the demise of the program. The grounds given was it wasn't making a profit. The Good News is that we are determined to keep the research going. One has to question the rationale to wind it up.

Jody Gerdts was using the Genetics in the program to carry out vital Varroa readiness + vital Chalk Brood research. RIDIC is funding part of this work. Bees Down Under is also heavily involved. Dr Denis Anderson is just one of Jody's advisors. Queens out of this program are being assessed by Denis & myself in the United Arab Emirate. 10% OF all Dewar Queen & Bee Build sales go to supporting Dr Anderson's Research Institute. On our recent adventure to the UAE Paula trained two of Denis's Emirate young women in the finer art of instrumental insemination of Queens. Laurie on the other hand had a much harder task of training a young chap to bee Denis's principle Beekeeper. Saeed will be continuing his tuition here in Australia this August.

The name of our new Queen program will be Dewar Gerdts or D.G. Queens. The team will be headed up by Jody Gerdts Principal Scientist, Laurie Dewar master Queen Breeder Paula Dewar principle inseminator supported by Lindsay Burke (AHBIC Chair) & Mal Alroy doing the field testing. This will have queens tested in Tasmania and Queensland. Mal will also be part of this advisory group.

Field results will be published in Journals as well as Jody's web page www.beescientifics.com Bees Down Under www.beesdownunder.com & www.dewarcorp.com.au. Breeder Queens (D.G.Q's) will be made available through Jody direct on Ph: 0427075662 or Dewar Ph 0754635633.

Dewar Apiaries would like to thank all our loyal production Queen Bee customers for their patronage over the last 35+ years. We will no longer be producing production Queens, we will still be supplying Bee Build & Breeder Queens from the DGQ's Program.

Thank you
Laurie Dewar

GET WELL

Best wishes to Noel Bingley who has undergone open heart surgery just one day after his 84th birthday. Noel is recovering in hospital.

SYMPATHY

On behalf of the NSW Apiarists' Association Executive & Members we extend our sincere condolences to Dr Shona Blair, her mother and family on the death of her father on 27 July.

NEW MEMBERS

A warm welcome to the following new members:

Johnathan Mitchell	Mount Vincent
Phil Welch	Wirrimah
Darren Whipple	Molong

HIVES STOLEN IN VICTORIA

124 hives were stolen from a forestry site on the edge of the Old Calder Highway, Hattah Victoria between the 18 July and 2 August. They are a mix of 10 and 8 frame boxes with the brand E180.

The hives are two to a pallet and majority of the 10 framers are on combination bottom/pallets and they are all white. All of the 8 framers have loose bottoms and are a mix of colours with a few different brands on them. Some frames are also branded E180.

Anybody with information please contact:
Victoria Police (Swan Hill) on 03 5036 1674

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Detection of *Varroa jacobsoni* in Port Townsville, Queensland

On the 29th June, a colony of Asian honey bees (*Apis cerana)* was detected in a container stand at Port Townsville, Queensland. The hive contained approximately 5000 bees with their queen. On inspection of the hive two Varroa mites – *Varroa jacobsoni* – were found.

Surveillance and delimiting surveys are being carried out to determine whether *Varroa jacobsoni* is present elsewhere in the area. Initial checks in the vicinity have found no further Asian honey bees or Varroa mites. Moreover, catch boxes and sentinel hives in place as part of the National Bee Pest Surveillance Program have not collected any exotic bees or mite pests over the past two years. Genetic testing will be done to determine if this colony is related to the infestations of Asian honey bees which has established in areas of Far North Queensland, or whether these bees were associated with previous detections at the Townsville Port.

Asian honey bees were first detected in 2007 and were not able to be eradicated from Far North Queensland. Since then, most Asian honey bee detections have been in the city and port areas of Cairns even though the area known to be infested extends to Mossman, Dimbulah and Mena Creek. The Asian honey bee is a highly invasive insect and is considered to be a significant pest and competitor of floral resources for both Native bees and European honey bees. Asian honey bees are approximately two thirds the sizes of European honey bees (12mm), nest in cavities and have a high propensity to swarm on boats, trailers, and other machinery.

The Asian bee is the natural host of the Varroa mites, *Varroa destructor* and *Varroa jacobsoni*. The two mites found in the colony at Port Townsville were identified as *V. jacobsoni*. One particular strain of *V. jacobsoni* is known to parasitise European honey bees. In countries where this strain of mite is established, *V. jacobsoni* destroys European honey bee colonies much in the same way as *Varroa destructor* does. The strain of *V. jacobsoni* found in in the Asian honey bee colony in Townsville is yet to be determined.

Queensland Department of Agriculture and Fisheries (QDAF) is leading the response. A quarantine and surveillance program has been put in place within a 10km radius of Port Townsville. The quarantine conditions stop the movement of managed European honey bee hives, European honey bees, bee products (excluding honey) and used bee keeping equipment. Biosecurity officers from the department will be inspecting all managed hives in the area to check for the presence of any mites. Any feral European honey bee hives found in the area will be destroyed as a critical containment activity.

Asian honeybees and *V. jacobsoni* mites **ARE NOT PRESENT** in NSW and are both **NOTIFIABLE PESTS**. Beekeepers should inspect their hives for the presence of arthropod pests like *Varroa jacobsoni* and report anything unusual to the Exotic Plant Pest Hotline. Increased vigilance is also required to make sure any vehicles or other equipment which has moved into NSW from Queensland is not providing harborage for Asian honey bees. In addition, it is important that people working at seaports and with imported goods remain vigilant.

More information about these pests and how to inspect for them can be found on the NSW DPI webs http://www.dpi.nsw.gov.au/content/agriculture/livestock/honey-bees/pests-diseases

Please contact me should you require any further information on the above publication

Hayley Pragert
Bee Biosecurity Officer
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DOUG'S COLUMN

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SWARM TRAPS

The following article is a little obscure to be placed in a magazine or journal that is written primarily for commercial beekeepers, but in 2007 a *National Best Management Practice for Beekeeping in the Australian Environment* was published, which stated in point 8 of the elements "to maintain swarm traps in and around apiaries particularly during the spring period" (www.honeybee.org.au). This particular activity is not common and it is something that is not practised a great deal in the Australian context.

The background as to why this was put into the National Best Management Practice was due to the focus on honey bees in the Australian environment at that time. A series of one-day workshops was conducted in every state, facilitated by Nick Annand and myself. Part of this process was to identify what were the key elements that beekeepers and land agencies wanted in an overriding set of guidelines for beekeeper best management practice in the Australian environment.

The rest of this article is about bee swarms and their behaviour, and how to set up swarm traps to effectively catch swarms. Before I start the technical stuff, I'll relay a couple of stories.

For many years now when spring comes around I put swarm traps on my garage roof or stacked up against the shed. These are a single 8-frame brood box with some old frames. I remember one year, when I used to live in town (Goulburn), in one week I caught three swarms in the one spot. I very rarely ever had bees in my backyard in town, as I only had a small yard. Another occasion a neighbour, whom I didn't know very well, came to my front door and even though she was only half my size she suitably 'dressed me down' and told me that my bees were invading her house and space and to come and pick them up immediately, in no uncertain terms. I followed her back to her house to see where the swarm was and it was sitting on a rose bush at the front door. I then informed her that my closest bee hives were approximately 200 km south, but I would move the swarm for her and that it wouldn't be a problem, given their location. Understandably, she couldn't get into her house fast enough. It is one of those things that if you own bees, or are identified as a beekeeper, that all things to do with bees in the area you live must be, by default, associated with you.

Ever since those experiences, I continue to put swarm traps out, or have boxes around the house. I can't remember a year when I haven't caught at least one swarm.

Swarming, as all beekeepers should know, is a form of reproduction, so it is a process by which the colony splits in two and creates a new 'animal'. Honey bee colonies are a super organism, so the individual does not survive without the greater population. There is also another form of swarming – that is absconding swarms. Absconding swarms are a bit unusual in the Australian context, but have become a more regular occurrence since the arrival of small hive beetle along the east coast of Australia.

Usually reproductive swarms occur in our spring; in the warmer parts of the state this can be in August/September, in the cooler parts September/October, or even into November. Swarming does not necessarily occur in a specific month, but rather due to a set of conditions which may include increasing day length, increasing temperatures or increasing food supply, which results in an expansion of the area of brood. The resultant congestion of the hive cavity promotes swarming. The different strains of bees show a significant variation in their tendency to swarm. Invariably, it is a function of biology that honey bees will have an inbuilt need to increase colony numbers; that is the most driving force for nature to reproduce itself.

When a colony swarms, the workers will start with constructing queen cells, or swarm cells. Prior to the new or virgin queen hatching, the old queen will cease laying, her abdomen will shrink and she will depart with approximately half the population of the colony – up to 16,000 bees. She may travel a short distance of literally metres, or may travel up to 10 km. The majority of swarms will settle reasonably close to the original hive. This is dependent on the suitability of nesting sites.

Once the prime swarm has left the colony, one of the virgin queens will hatch, possibly tear down its sister cells, go on a mating flight and mate with up to 30 drones, and then settle down to be the queen of the original hive.

In some cases, in fact up to two weeks later, there can be up to four after swarms or secondary swarms that issue from the hive. These can be as small as 4,000 bees and will be headed by virgin queens. The survival factor of these secondary swarms is extremely low, even the survival rates of the prime swarms are not necessarily that great. This is largely dependent on the flowering conditions prevailing at the time, the swarm issues from the original hive and how much nectar and pollen the new colony can gather and the comb it can build. While a suitable cavity is important, I have seen a number of cases over the years where the colony simply starts to build comb on an open branch in a tree and quite successfully survive consecutive winters, no doubt issuing more swarms each spring. So the cavity is not necessarily the critical component of surviving. It is more to do with the food supply and the ability of the colony to quickly and rapidly build comb, store food and start rearing young replacement bees.

One of the furphies out there is that swarms are a high disease risk. There have been a number of studies, including one that I assisted Michael Hornitzky with, where the adult bees in swarms were sampled and cultured for AFB spores. These colonies were then subsequently monitored to see if any AFB symptoms manifested themselves in the colonies that may have had spores in them when they swarmed [Hornitzky, M.A.Z., Oldroyd, B.P., Somerville, D., 1996. *Bacillus larvae* carrier status of swarms and feral colonies of honey bees (*Apis mellifera*) in Australia. Aust. Vet. J. 73, 116-117]. A diseased colony, by its very nature, is not likely to be in the condition which will initiate swarming. The research work both here and overseas suggests that the disease risk with swarms is extremely low for brood diseases.

An interesting observation in recent years is that small hive beetles can occasionally be seen departing with swarms and travelling with them. No doubt this new pest of bees in Australia is something to be considered at all stages of the colony establishing and building up. If the colony is strong enough, small hive beetle will be less of a problem.

Another interesting fact about swarming is if a colony is requeened with a young, newly-mated queen in the early autumn, the colony is much less likely to have a swarm impulse a few months later in the spring. There is a significant difference between those queens and queens that have been placed in a hive the previous spring. By the time the following year comes along, they are 12 months old and more likely to be in a condition in which they may swarm.

I've already stated this, but it is worth repeating that there is a very significant difference in the swarming tendency of different strains (or families) of bees. Beekeepers have actively chosen breeding stock that has less issues or tendency to swarm than others. It is impossible to choose a strain of bee that does not swarm; this is inherently against the nature of bees.

The following quotes are from Tom Seeley's book "Honeybee Democracy". [Honeybee Democracy, Tomas D. Seeley. Princeton University Press 2010]

- Less than 25% of founder colonies, (swarms) will be alive the following spring; this is in contrast to 80% of the established colonies which will survive the winter.
- When a colony is preparing to swarm, the bees will fill their stomachs with a drop or two of honey, 35 mg–55 mg, thereby increasing their body weight by about 50%.
- The wax glands underneath the back part of their abdomen become highly functional and will start producing scales of wax at the time swarming is occurring.
- No fewer than 6 distinct properties of a potential home site are taken into account when a colony is choosing a new site, including cavity volume, entrance height, entrance size and presence of combs from an earlier colony. These components are all assessed to determine the quality of this site to establish the swarm.
- Man-made hives are usually much more spacious than natural nest cavities. As a result, bees in the wild, because they are living in smaller cavities, are much more likely to swarm than bees living in man-made hives. In nature, if given a choice, bees will occupy tree cavities with much smaller volumes than the hives in which beekeepers keep bees.
- The average nest cavity is about 45 litres. This is about one-quarter to one-half the size of the living space provided by beekeepers. Most nest entrances are 10–30 square centimetres. A distribution bar graph of nest cavity volumes for 22 nests in hollow trees revealed that the smallest nest cavity was 12 litres, with the largest 110 litres with one outlier of 440 litres. There is quite a significant cluster in the 30–60 litre category.
- Bees have a strong preference for nesting cavities with entrances located high above the ground.
- For a colony to completely rebuild the beeswax combs, it has been estimated that they need to consume about 6 kg of sugar or 7.5 kg of honey.
- One study showed that 76% of the colonies established that year eventually succumbed to starvation.
- A good location is about 5 m off the ground, highly visible but fully shaded and north facing [south in Tom's book – i.e. Northern Hemisphere].
- Bait hives with scent lures are up to 5 times more likely to attract swarms than ones without scent lures. Swarm pheromones can be purchased from beekeeping suppliers.
- One important factor which distinguishes managed bees in framed hives compared to cavities in trees is when returning foraging bees cannot unload their nectar, they lose their interest in dancing and foraging. Thus, it is possible to add more supers to a managed hive which will maintain this desire for the colony to forage for honey.
- Bees will explore a number of different sites within their range for their potential to establish a new colony. One study suggested on average 24 potential sites are investigated, with a range of 13–34. Initially when colonies are swarming, the swarm will hang close to the original hive. This could be anywhere from a few hours to a few days.
- When the swarm cluster does disintegrate to relocate, this can take up to a minute to occur.
- Half an hour before take-off, piping bees can be heard in the swarm – informing other bees through vocalisation of the imminence of the swarm to relocate.
- Just before the swarm alights, other bees can be seen dashing over and moving through the cluster. If you come across a swarm cluster and can hear piping bees or there is a lot of movement of the bees on the cluster, then the chances are you will not be successful in hiving that swarm. The colony has already made a decision on where it will move to and establish itself.
- Worker bees can navigate up to and beyond 10kms from their hive.
- When a swarm arrives at its intended location, it can take as little as 10 minutes for all the bees to make their way into the new hive cavity.
- One study indicated that 495 bees had visited a single nest box over a number of days prior to the swarm arriving.
- Swarms can travel 5–7kms per hour with a top speed of 12kms per hour.

Volumes of beehives: you can measure the volume of a beehive by simply filling it full of sand and then removing one litre of sand at a time with a measuring jug. Figures that I came up with are as follows:

5 framed nucleus hive with a 50mm lid = 28.5 litres
8 frame full depth hive with a 50mm lid = 45 litres
10 frame full depth hive with a 50mm lid = 53.5 litres

All these cavity sizes are in the range that Tom Seeley found was the most attractive grouping for cavity size for swarms to be attracted to. Thus a single box placed in an elevated position with a conventional entrance and lid should be highly attractive to swarms to enter and establish.

Another factor stated by Tom Seeley was that the presence of added scent will increase the number of swarms that are trapped and certainly old brood combs and/or old boxes have a similar impact. Brood pheromone that still exists in old combs is extremely attractive to swarms.

Trying to establish a colony in a brand new freshly painted hive with new constructed frames can be difficult compared to establishing a colony in a hive that has previously had bees. Bees tend to be more likely to stay put and establish in a box that already contains significant levels of brood pheromone.

One aspect in the positive for collecting swarms is the desire for bees in this mode to build worker cells as distinct from drone cells. So if you have some damaged combs with big

gaps and holes in them and place them into a swarm, the chances are the majority of the comb built by the bees will be worker cells. If you placed the same combs in a hive two or three months later the chances are that they will build drone comb. It is a neat way to actually repair damaged combs.

I found if I have a few swarm boxes set up in the spring and I'm in urgent need to go and collect or remove a swarm from a public location, then I have the boxes already set up for that purpose. It is a simple matter of retrieving one of these boxes off their high vantage point, put it in the vehicle and head off to shake the bees into the swarm catch box.

If you do collect swarms, it is a good idea to keep these colonies separate from your existing hives for 3 or 4 months to monitor any disease or pest issues that may occur with these bees, even though the chance is minimal. Be mindful that you probably have a colony with a queen which is at least 12 months old heading this hive and you certainly have a hive of bees that has a tendency to swarm as demonstrated by the fact that it w*as* a swarm.

It is not important to re-queen these hives immediately but if you are collecting swarms in the spring you should certainly make it a strong management practice to re-queen the hive with a young queen in the summer or autumn before the colony goes into winter.

Small secondary swarms and absconding swarms are likely to be not worth the trouble to collect. They are, by their very size, unlikely to have sufficient resources to build up in population and be able to store sufficient honey prior to a winter period. Small or weak colonies are also highly susceptible to small hive beetle infestation.

When conditions are poor, with low nectar and pollen availability in the field, the incidence of swarming will be greatly reduced. The survival of any swarms that you collect may also be compromised. In such circumstances, if you do collect swarms when conditions are not good, or the nectar flow has cut out or diminished, it may be worthwhile to provide sugar syrup to establish these new swarms to ensure their survival in the autumn and the following winter. This will avoid the naturally high mortality rate of unmanaged new colonies.

These are just some notes for those who wish to contemplate having a go at catching swarms. I will continue to do so, even if it is to reduce the number of vagrant swarms upsetting neighbours.

(Thanks to Vicki Saville for typing my notes and Annette Somerville for proof reading the final article)

MINISTER FOR PRIMARY INDUSTRIES - NIALL BLAIR

Transcript from NSWAA Conference 2016

Thank you Neil and good morning everyone and thanks for the opportunity to be able to address the conference today. I'll also acknowledge Casey Cooper, Vice President of the NSWAA and Ian Zadow the chairman of AHBIC.

Firstly, I genuinely am happy to be here this morning. It was something that we did move a few things around to make sure I could come down today and talk to you because I think there are a number of issues that we want to talk about following on from Ian's presentation. Obviously, access to apiary sites in public lands is certainly one thing I want to talk about this morning. The other thing I want to talk about this morning is biosecurity. But also just want to give you a bit of an idea as to where I think the primary industries sector is going in NSW, where we're particularly going with our public land management and how that relates to apiarists. This is something I'm more than happy to have an open discussion about because it's something that I genuinely believe in as well.

For those of you that don't know, I'm a relatively new be into beekeeping myself. I studied horticulture originally at university and obviously a key component of that was apiculture and just in more recent times I've gotten back into it myself with my twelve year old son. We just have two registered hives at home – I have to say that, Doug Somerville is looking after me.

Something that particularly as minister responsible for primary industries, so that includes agriculture, it includes biosecurity, it includes forestry, includes horticulture, also the minister for lands so I have Crown Lands, I have LLS which manages our travelling stock reserves and also Minister for water. This is something that I think we have the unique opportunity to have the conversation around access to apiary sites around NSW. So I'll go into that in a moment but the first thing obviously I wanted to do was to recognise the significant contribution that the sector makes to NSW. Firstly, to the economy with $36 million annually that we can directly contribute that the beekeeping industry makes to the NSW economy with over 400 commercial registered beekeepers and over 3000 recreational or other type beekeepers. It is certainly something that a lot of people have interest in, particularly in this state.

And as I said being one of them, hopefully I can understand some of the issues that the industry is facing. What I wanted to quickly talk about though is what we're trying to do as a government in moving the whole of the primary industries sector forward in this state. Firstly because we understand the contribution we can make particularly to food security for not only Australia but a lot of our very close international markets particularly through some of the things that have happened at federal level where we've had things like free trade agreements signed. I think NSW is very well placed to be able to service some of those customers that are looking for food and fibre particularly from NSW. So what we've gone about doing is setting a target – we want to increase the contribution made by primary industries sector by 30% by 2020. And that means that we need to look at how we use technology, how we use research and development, but more importantly, how we work with those sectors particularly around national resource management and also how we can drive productivity. Now having lived in Leeton for five years of my life I'm well and truly aware of the expansion of particularly the nut sector in that area, which is obviously limited if we don't have a strong apiary sector in NSW for the pollination in those nuts. We also see the similar expansion particularly in the north coast of NSW around blueberries and again one of those limiting factors along with other parts of my portfolio, especially around water, again relates to the people in this room. As a government and all the money that I'm putting into particularly into research and development for some of our other primary industries particularly into horticulture, means that we can't ignore the interests of the people in this room. And that was one of the reasons why I wanted to come down here today and talk about where we think we're heading and to listen to any of the concerns that you have to see how we can support your sector. So that's just very broadly about where we're going in primary industries.

But following on from what we heard from Ian, obviously we need to talk about the access to lands for apiary sites, particularly on public lands in NSW. Now I remember last year, I only became minister in March and not long after or even during, we were gathering and some meetings were happening in places like Orange, I started to get phone calls from people that were concerned about Forest Corp and the path they had gone down with auctioning off of sites. I was as surprised as I think many other people were when that first came out because that was not a discussion that I had with them at the time. So that was a trial, that once we found out about that we made it quite clear that that trial wasn't to continue any further because we wanted to have a closer look at this. I only saw the end of Ian's presentation, but I was shaking my head at most of the slides and most of the dot points because when I started to ask questions about how we'd manage public land when it comes to apiary sites, it's very consistent to some of the areas and other stakeholders that we've heard of that have had concerns. We have different agencies that are managing and sometimes crossing over the management of different issues- all with different agencies that are doing it, sometimes with different rules, different conditions, and different costs. That's something that as a government we've said that we want to try and bring down and we'd like to take what we call a nil-tender approach for land management in NSW. That means whether it comes to noxious weeds, whether it comes to pest animals, whether it comes to fire management, or whether it comes to apiary sites it shouldn't matter where the lines are on the map or which agency is ultimately responsible, for you to have certainty in your business you need to have some consistency, we need to have some better conversations around bringing that consistency in, we need to try and reduce the amount of red tape associated with it and that means that if you understand what the rules are and if they're not confusing and they are consistent and they

are reasonable, that talk about proper levels of tenure and length of time then you can go about doing what you do best and that's continuing to be working within the industry.

So that was one of the first things that that trial drew up in my office so what we decided to do from there was – first thing I did, because I have LLS, Crown lands, DPI and Forest Corp all reporting to me. Another major land manager in this state is National parks. So the first thing upon hearing about this, I went and spoke to my colleague, the Environment Minister Mark Speakman and said that we wanted to look at this as a whole government issue and pull together a working group to try and have a look at this issue, to give government some recommendations on how we can make some better changes there. I acknowledge the fact that we were then able to get some people in the room and Neil and Greg were representatives for you on that working group and there's no doubt there were some differences of opinion within that working group. We did get presentations from Victoria about how they manage their public land sites that were presented to the working group as well.

That working group has now produced a report with a bunch of recommendations to DPI and DPI are talking within government to the other agencies so that they can then bring that to me and we can try and make some proper decisions around where we end up with apiary sites in NSW. So DPI will get a government consensus, we'll then come and talk to the association about industry perspective and then it comes back to myself and the Minister for Environment to make the final decisions. I don't have an announcement for you today as to what that looks like. It has been something that we have been working through, hopefully we'll do that as quickly as we can but we also want to make sure we come back to industry to make sure you have the input before we land that. That group provides advice back to me to then make the decisions. So government sets policy, government sets the direction as to where we're going and then the agencies within government then adhere to those policies. I'm more than happy to take some questions on that a bit later on. The industry will be consulted before we make any final decisions.

The things that we wanted to clearly look at as part of this report: first thing is pricing. That's obviously a key component and some people shared some concerns that the auction based pricing system was going to put their commercial enterprises into jeopardy and that's something that we're being told from a number of different areas. The next thing is site allocation, so what's the best way to allocate the sites - is it through a ballot system - they're the types of issues we're looking at there. The next thing is permit terms and renewals. Again, I understand the message loud and clear that because of the variable nature from season to season, sometimes you need a long tenure to be able to get the return and get the honey flow you need from a particular site. And you don't want to be that unfortunate person if you have a short tenure that goes in there just in the bad time and doesn't get to reap some of the rewards during the good time when it comes to tenure. And the last one is the continuation of current conditions and existing permit holders. So we want to make sure we look at all of those things in this report and that's something we'll come back to industry to talk about.

The next thing is biosecurity. I'm very, very lucky to have been able to spend some time with the DPI team. It's certainly something that when you look at the role that they play as far as providing the technical expertise to industry, providing the education services and also some input on the biosecurity matters, it's something that as minister I'm very proud of. Although they are a small team, they're certainly playing a huge role. I like the fact that when I get publications, magazines etc. there's two or three pages worth of knowledge coming from people like Nick and Doug about their level of expertise. And the other thing is that wherever you go around the state, in the industry and particularly this applies to some of the recreational or the backyard beekeepers the bible they're running off has been developed by the DPI and the people within DPI – so that's something that makes me really proud. Although we have a small team, we have now got Hayley Pragert who is now based in Orange and has a strong background in biosecurity and a good understanding of some of the issues around varroa mites and things like that. We've got Doug Somerville, the technical specialist, and again a key contributor to some of those publications. Again, Mick Rankmore, regulatory specialist, Nick Annand, development officer and also Elizabeth Frost who is a world renowned AI expert. It's fantastic that we've got some young women now in the team who are making a real contribution and really taking forward where we're heading, particularly in technical expertise. So the appointment of the bee biosecurity officer has been an important step. Something that was done in consultation with the bee biosecurity advisory group and also the people in the national group who had input into the appointment of that. Something that we can't take for granted, particularly in NSW, is our biosecurity. Things like varroa mite and also Asian bees are something we need to be continually vigilant against to ensure we don't become victim to that. I know that there is some concern around the role of the biosecurity officer particularly around compliance and that's something that I'm more than happy for DPI and the industry to talk.

Q: Steve Targett, commercial beekeeper. You mentioned that earlier on in your speech about the tenure of the forestry sites. That's extremely important to us, if we can have long term tenure for forestry sites – I'm not talking five or ten years, that might be the original term but then we can renew it because the investment in our industry... If I'm going to invest in my own business, I want to have security of resource and nectar is a limited resource in NSW and in Australia. So for me to buy a new truck, for me to upgrade my plant, I need to have security of resource and that means that I need to have access to these sites. I learn about those sites over time, I don't learn the whole site in 12 months time. It might take me 5 or 7 years to learn the best times, what's going to flower, when it's going to flower, when am I going to get maximum yield out of that site, when is the yield better than another site. So part of that policy on getting onto public land sites is long term tenure and renewability.

Minister: I couldn't agree more, and as I said the four main areas: pricing, site allocation, permit terms and renewals and then the continuation of current conditions and existing permit holders. That's been absolutely made clear to me in the meetings that I've had with Neil and others. The other thing is there needs to be some reflection of the k's that you've done to know where those sites are. And quite often it's you that's identifying those sites and coming back to the agency and saying 'hey can we have a crack at this one' and we need to be able to look at that because not only is it the time and effort to put those hives out, it's all the time and effort you spend doing the research and searching for those new sites and the record keeping that you keep as well. So I acknowledge that.

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THE FROST REPORT

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2015-2016 AHBIC Education Committee Report

The following report was submitted to the Australian Honey Bee Industry Council (AHBIC) for distribution at the AHBIC Annual General Meeting held in Townsville, QLD 15 July 2016.

2015/2016 Education Committee Members:
Elizabeth Frost (Committee Chair/NSW), Marion Weatherhead (QLD), Martin Gilbert (SA) and Barry Cooper (VIC).

During the period of May 2015 through May 2016 nationally accredited course delivery mapped to the Certificate III in Beekeeping and non-accredited course delivery in beekeeping skills and education initiatives was undertaken by committee members in New South Wales, Queensland, South Australia, and Victoria. The committee member from South Australia confirmed beekeeping education was delivered by the SAAA at the Royal Adelaide Show and the Adelaide Zoo for National Honey Month. To follow are education reports from NSW, QLD and VIC.

NSW Education Report, Elizabeth Frost

Unquantified, non-accredited training and field days were delivered throughout the state with excellent attendance and enthusiasm through NSW Apiarists' Association Branches and Amateur Beekeepers' Association Branches (ABA).

Nationally accredited training mapped to the Certificate III in Beekeeping was delivered by NSW DPI Tocal College (Registered Training Organisation #91166) and its contractors. Face to face delivery is offered in NSW and online delivery is offered nationwide. NSW DPI Tocal College also offers a Beekeeping Traineeship for fulltime employees of NSW beekeepers at a cost of $1,000, highly subsidized as a result of the Certificate III in Beekeeping gaining listing within NSW Smart and Skilled.

The NSW Smart and Skilled listing was championed by Melissa Wortman, Executive Officer of NSW AgriFood NSW ITAB with instrumental help from Bruce White (retired DPI, current DPI contract trainer), Lamorna Osborne (President, NSW ABA) and additional industry representatives. As a result, pending the applicants' prior education, students residing in NSW seeking a Certificate III in Beekeeping (AHC32010) can expect to pay:

- $1,390 for NSW Smart and Skilled supported first qualification (non-traineeship)
- $1,670 for NSW Smart and Skilled supported second or further qualification
- $3,750 full commercial fee for all students not eligible for NSW Smart and Skilled support

Training delivery by the numbers:
Course attendees by NSW region, state, or territory:

- Queen Bee Breeding: Central West, Hunter, Illawarra, New England, North Coast, Riverina, SE QLD
- Beginning in Bees: Central West, Hunter, New England, North Coast, SW Sydney
- Pests & Diseases of Honey Bees Online Course: NSW, NT, QLD, VIC, New Zealand

Attendees & trainees by the numbers:

- Queen Bee Breeding: 100
- Beginning in Bees: 90
- Pests & Diseases of Honey Bees Online Course: 130
- Beekeeper Trainees: 2 (By region: 1 North Coast, 1 New England)
- Certificate III in Beekeeping (part-time): 4 (Hunter region)

Industry Collaboration: I contribute an article to the bi-monthly Honey Bee News NSWAA magazine, collaborate with the NSWAA Hunter Branch and Hunter ABA Branch to develop the Tocal Bee Field Day, and am actively developing units of competency within the Certificate III in Beekeeping based on the education needs of our current Beekeeper Trainees. For additional information please visit NSW DPI/Tocal College's bee-centric website: www.tocal.nsw.edu.au/courses/bees.

QLD Report, Marion Weatherhead
Some of this year's activities in which QBA participated were:

Shows:
Many Queensland Regional Agricultural Shows had beekeeping displays and stalls, providing valuable educational experiences to a large audience, creating interest and many questions. The "Honey Court" at the Ekka (Queensland's Show in Brisbane) is run by QBA with a large band of volunteers from across the State.

Ekka Learning Trail:
This is a Royal National Association (Brisbane Show) educational event for Primary School aged children visiting the Ekka in August where children can work their way around the Showgrounds visiting and learning from a number of display, most of which have a tight relationship with Primary Industries. QBA is part of this trail, supplies
information in the event's booklet (available to all children and School groups attending) and the "Honey Court" is one of the Trail's "Stations" where students can search for and gather further information.

AgForce Events:
In partnership with AgForce Qld, QBA participated in school educational days at:

Beaudesert, **Brisbane Boys College** (Toowong), and **Downlands College** (Toowoomba).
Many Primary Industry groups gave continuous presentations throughout each day with the essential message of "Where our Food and Fibre comes from" with Secondary Students also hearing about career path possibilities.

Rural Discovery Day:
A one day event held at the RNA Grounds (Brisbane) for some 1,200 Primary School aged students to see and understand the essential link between a wide range of Primary Industries and the production of our everyday food and fibre.

Honey Month: (May)
"Local" was the emphasis of this year's Honey Month in Queensland. Every event, large or small, was important. Some of these included:

- Displays and talks at local libraries, museum, garden shows, agricultural shows, community groups, shopping centres & markets
- Radio and Newspaper interviews and articles
- Information & practical days for new & "would-like-to-be" beekeepers
- Local businesses displayed and sold "Cooking with Honey" Recipe Books
- One Beekeeping Group had an evening of mini-presentations by members talking on all things bees, followed by honey tasting & supper with home-made

goodies, all containing honey.
- Many community meetings in May enjoyed honey-baked suppers with recipes for all to take home.

Beekeeping Information Leaflets:
QBA recently arranged for the reprint of the Beekeeping Information leaflet. Gratefully, with four States combining their requirements, a larger number were printed thus lowering the unit cost for all. These are now available within these States for use at many and varied beekeeping events.

VIC Report, Barry Cooper

Delivery of beekeeper training courses in Victoria
A least 30 non-accredited beekeeping courses were delivered by various clubs, groups and individuals, focused mainly on introducing beekeeping to new or prospective beekeepers. Several had a more specific focus such as queen breeding and the Flow Hive.

2015 Revision of Unit of Competency: AHCBEK405A, Select and establish and apiary site
A revision of the Certificate III in Beekeeping Unit of Competency "AHCBEK405A, Select and establish and apiary site" was made, with the assistance of Guy Rischmueller, to "accommodate the backyard situation" as requested by Trevor Weatherhead in September 2015.

Program to "Improve honeybee biosecurity through the training of beekeepers
In collaboration with Prof J-P Scheerlinck, Faculty of Veterinary and Agricultural Sciences at the University of Melbourne, a successful application to the Victorian "Apicultural Advisory Committee" for allocation of funds from the Victorian "Honey Bee Compensation Industry Development Fund" to improve the understanding of bee pests and diseases by Victorian beekeepers was granted.

The funds will be used to reimburse up to 20 beekeepers from beekeeping clubs throughout Victoria the course fee of the NSW Tocal College on-line course, "Pests and diseases of honeybees" upon its successful completion by the end of 2016. (Completed by Barry Cooper in 2015).

A feature of this program was the involvement of the 17 identified beekeepers' clubs in the selection of candidates from their ranks and the requirement that sponsored candidates, upon completion of the course, instruct members of their club about bee pests and diseases.

Development of an introductory beekeeping course

In collaboration with members of the VAA Melbourne beekeeping club, I am assisting with the development of a four day course for beginner beekeepers. This course will be based upon the performance criteria, performance evidence and knowledge evidence of various Certificate III Beekeeping units but will not be accredited by an RTO (although in the future it may be).

Collingwood Children's Farm apiary

During the last year (and the previous six years) I have been a member of the management team of the Collingwood Children's Farm apiary which is located within a "city farm" about 5km from Melbourne's CBD. The apiary's aim is to educate the public about bees and beekeeping, as well as providing beekeeping advice and practice to current and prospective beekeepers. The apiary is open twice a month except for winter when it is only open once a month. Its Facebook page at www.facebook.com/collingwood.bees/ (which I manage) provides an overview of the apiary activities over the last year.

A particular feature of the educational activities at the apiary over the last year was the installation of a Flow Hive in December. Apart from the general interest and excitement that the Flow Hive generated at the apiary, having it there has enabled us to learn how it can be used in a bee hive and thus provided us with some basis for providing advice about it. In April this year we conducted a "Flow Day' of which a major component was an explanation of our experiences with Flow Hives.

Other Educational Involvements
During the year I have delivered a number of presentations at various events- beekeeping club meetings (5), field days (2), radio interview (1), presentations at beekeeping courses (4) and the annual VAA conference (1). I work with staff at the Education Faculty of the University of Melbourne to deliver a program to encourage and instruct prospective science teachers about how they could incorporate a study of bees into the science curriculum. I publish a bi-monthly newsletter for the VAA Melbourne beekeeping club. Educational articles are a major component of the newsletter. As deputy chairperson of the VAA Melbourne club I also have a major responsibly for the organization and content of its monthly meetings of which beekeeping education is a major component.

This concludes the AHBIC Education Committee Report.

Updates in Education: AHC32016 – CERT III in Beekeeping

The Certificate III in Beekeeping (AHC32010) has been superseded for the better, making it a more rigorous nationally accredited qualification made up of sixteen units of competency versus ten units of competency. The updated qualification is entitled AHC32016 - Certificate III in Beekeeping.

To view the updated qualification visit: training.gov.au/Training/Details/AHC32016 There is a grace period within which applicants may still enrol in the old qualification which requires ten units of competency versus the current sixteen unit requirement.

Contact me for more details regarding enrolment in the current or superseded qualification. Pricing has not yet been updated to correspond with the increase in required units.

SAVE THE DATE

Nationally accredited course dates across NSW
Visit www.tocal.nsw.edu.au/courses/bees Tocal College's new bee-centric webpage for course descriptions, dates and locations around NSW for spring and summer 2016/2017.

Current nationally accredited courses and dates on offer are as follows:

Beginning in Bees (2 days, $390, GST free)
- 18-19 August (Tocal)
- 20-21 August (Camden)
- 30-31 August (Scone)
- 3-4 September (Yanco)
- 11-12 October (Tocal)
- 22-23 October (Grafton)
- 29-30 October (Camden)
- 10-11 December (Camden)

Queen Bee Breeding (2 days, $475, GST free)
- 14-15 September (Tocal)
- 6-7 December (Tocal)

Online Pests & Diseases of Honey Bees (Flexible 6-month completion period, $475)
- Enrol anytime, anywhere
- Face to face courses TBD

Native Stingless Bees (NON-ACCREDITED, 1 day, $180, GST free)
- 13 October (Tocal)

TO ENROL PLEASE CONTACT KIM GRIFFITHS AT:

(02) 4939 8881 or kim.griffiths@dpi.nsw.gov.au

EMERGING STRAIN OF HONEYBEE VIRUS PROVES EVEN MORE DEADLY

Michael Irving
30 June 2016

With honeybee populations dwindling worldwide, researchers have identified an emerging strain of virus as more deadly to honeybees than the established type.

Viral infections have been identified as a major factor in the continued decline of bee colonies, including the devastating, parasite-transmitted Deformed Wing Virus (DWV). Now, European researchers have shown that a recently-identified second strain of DWV is even more virulent than the established type, and the study calls for a better understanding of the genetic diversity of pathogens to help fight them.

The study, conducted by scientists in London, Belfast, and Germany, examined both strains of the virus, DWV-A and DWV-B. Lab tests found that the latter was much deadlier, with infected colonies collapsing faster than those infected with DWV-A.

"Scientists have been searching for a cause or causes for the increased colony mortality that beekeepers have experienced over the past decade," says Professor Robert Paxton, of Martin Luther University in Germany. "The emergence of DWV-B in Europe may be just that cause."

The researchers also conducted field tests in Great Britain to determine the prevalence of each strain, and found that both were widespread throughout the country.

"Our study reveals the geographic distribution of this virulent virus genotype in honeybees across Great Britain," says Professor Mark Brown of Royal Holloway, University of London. "This may help us understand regional differences in honey bee mortality."

While DWV-A is commonly found around the globe, little is known about the status of DWV-B outside of Europe. Conflicting studies have reported both its presence and absence in North America, but either way, the researchers express concern that "Europe may be an important source of and/or route for the global spread of emerging and re-emerging DWV strains."

The team concludes that its findings, along with the knowledge gaps it reveals, highlight the need for a better understanding of the genetic diversity of pathogens, in order to better coordinate efforts to combat them.

The research was published in the journal, *Proceedings of the Royal Society B*.

Source: Royal Holloway, University of London.

INTERSTATE MOVEMENT of BEES

From NSW to other States

All States except the ACT require a health certificate to be issued by an Inspector before bees, beehives, apiary products and used appliances are brought in.

A standard certificate is used for all movements from NSW to Queensland, South Australia, Victoria, Tasmania and Western Australia, and can be found at:

http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0003/116976/health-cert-apiary-products-movement.pdf

The Northern Territory has its own health certificates, one for apiary products and used appliances, and the other for queen bees, escorts, queen cells and package bees, which can be found at:

http://www.nt.gov.au/d/Primary_Industry/Content/File/biosecurity/bees/Products_NTHealthCert.pdf
and http://www.nt.gov.au/d/Primary_Industry/Content/File/biosecurity/bees/HandPickedQueensPackages_NTHealthCert.pdf

The Inspector must make due inquiry to confirm they have no reason to doubt the correctness of the beekeeper's declaration on the certificate.

If the Inspector has any doubts about the completeness or truth of the information required in the Health certification for honeybees and apiary products certificate, then they must not sign the certificate. If necessary to confirm any information, they may inspect the source apiary at the beekeeper's request and expense.

Inspectors are not to sign blank certificates. The beekeeper must complete his/her section first, the Inspector then makes ‘due inquiry’ and finally signs and dates the certificate, and stamps it with the Regulatory Services stamp.

Before the certificate is issued, the Inspector must check the register of beekeepers to confirm whether the beekeeper is currently registered. If the beekeeper is not registered, the certificate may still be issued, but evidence is collected with a view to prosecution under section 6(1) of the Apiaries Act.

A health certificate is published on the NSW DPI website - look under forms:

http://www.dpi.nsw.gov.au/content/agriculture/livestock/honey-bees/forms

If you have any issue obtaining a blank health certificate, please contact Mick Rankmore, preferably via email.

Mick Rankmore | Regulatory Specialist,
Apiaries Biosecurity Compliance
Department of Primary Industries
35-37 Abbott Street | PO Box 546 | Gunnedah NSW 2380
T: +61 2 6741 8374 | M: +61 (0) 0402 078 963
E: michael.rankmore@dpi.nsw.gov.au
W: www.dpi.nsw.gov.au

AUSTRALIAN CHALKBROOD RESEARCH UPDATE:

Making great progress toward understanding Australian chalkbrood

The number of colonies infected with this disease and the severity of infection has been on the rise over the past few years in Australia. As there are no "treatments" to cure chalkbrood and no organized effort toward breeding resistance into our bee stocks is currently underway, beekeepers are struggling with what to do. Consequently, RIRDC has provided funding for our three year project aimed at understanding Australian chalkbrood and developing resistance to it.

For those of you unfamiliar with the disease, Chalkbrood is caused by a spore forming fungus- *Ascosphaera apis*. These spores are extremely stable, living in the hive architecture for a long time. As you will learn later in the article, we have successfully cultured fungus from mummies collected over 20 years ago! The brood food for developing larvae can be contaminated with these spores and if conditions are right, the spores germinate in the gut causing larval death. The larva dries up and the result is a chalky looking bit that either hangs out in the comb or is removed by the house bees and can be found on the bottomboard or in front of the entrance.

The disease can be found any time of the year, but predominates in the spring when the brood area is rapidly expanding outpacing the amount of bees available to regulate the hive temperature. This is also when beekeepers are making increases with splits. Larvae are most susceptible just as they are capped over and even a 2-3 degree temperature drop for just a few hours is enough to cause an infection. If weak splits are made and there aren't enough bees to regulate the brood temperature, outbreaks can be devastating for that new colony.

What we are doing about it

The initial goals of this project are to determine:

- Where Australian *A. apis* originated
- If the original incursion has evolved into different strains of *A. apis*
- And if those strains vary regionally

To do this we are working with mummies from the original outbreak in Queensland in 1993 collected by Denis Anderson, mummies collected as part of the national pest and disease survey conducted by John Roberts in 2014-2015, and with the help of beekeepers collecting infected larvae from their colonies in 2015-2016.

The beekeepers collecting samples were identified through a national recruitment effort Last spring, we sent out an expression of interest to the state associations for participation in the project. Beekeepers were asked to sample infected brood according to protocol and send it back to us for culturing.

The unhelpful 32%

Of the 19 beekeepers that raised their hands to participate, only 13 returned the samples requested and 5 of them still haven't returned the empty sample kits. Sadly, 2 of the non-empty kit returning beekeepers are from Victoria. If you have one of our empty sampling kits in your possession- or know someone that does- please return it in the self addressed postage paid envelope we provided so that it can be redeployed to another beekeeper in the spring.

Onto good news

With the help of John Roberts and participating beekeepers, chalkbrood infected larvae was sent to us in Victoria where we cultured it in petri dishes promoting the growth of *A. apis*. The culturing process is fairly simple, but requires clean laboratory conditions. First, the mummies were washed in a bleach solution to disinfect the surface. Next, they were cut into smaller pieces and placed in a 30 C incubator for 2-5 days until the hyphae (vegetative branching structures) grew. After hyphae were plentiful, a single hyphal tip was transferred to a new petri dish and the process was repeated. Finally, after the secondary culture was growing well, the mycelium (a bunch of hyphae) were transferred to a vial containing growth broth and were shaken in a 30 C water bath for 5 days until they formed a big clump.

DNA will be extracted from this big clump of mycelia and primers will be used to look at the section of the *A. apis* genome that can tell us if there are different strains in the samples. If differences are detected, we will create a phylogenic tree (tree of life) and look at the relatedness of the different strains. This molecular work is underway as you read this article! Come spring, we will have a good idea if Australian *A. apis* is unique to the world and if we have more than one strain we are dealing with.

Recruiting more beekeepers!

As mentioned before, **we need a few more beekeepers** around Australia to raise their hands to participate in chalkbrood sample collection. We have a few requirements of participating beekeepers:

- Current registration with their relevant state DPI (if applicable);
- Owning 50+ colonies;
- Kept bees for at least 10 years;
- Move colonies less than 150 km radius (negotiable);
- Can identify early stages of chalkbrood infection (training provided);
- Has knowledge of local flowering habits;
- Can keep detailed notes;
- Can complete online survey s;
- Can commit to sending samples twice a year for two years

If you meet these requirements and would like to participate, please contact us at: beescientifics@gmail.com.

The next steps

Come spring we will start to have a good idea of the type of chalkbrood we are working with and can move onto the next round of investigation: breeding resistance to the disease. We will be challenging colonies and larvae with chalkbrood infection to identify susceptible and resistant colonies. **Here is another opportunity for local Victorian beekeepers to support this valuable research.** Specifically, we are looking for beekeepers to provide nucs and potentially bee sites around Bendigo at the end of September.

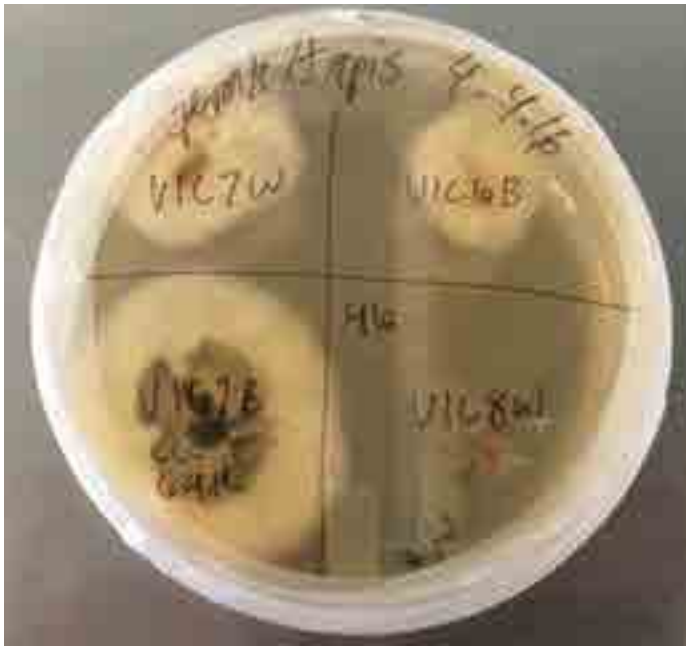
We will hold an information session in Bendigo in late August with more information. If you are interested in attending the information session or would like to hear more about the project, please email beescientifics@gmail.com with your enquiry.

Other ways to help

While it is generally commercial beekeeprs who have the bee resources to support this project, honey bee health is important to us all. Smaller scale beekeepers and bee lovers can help provide resources through a tax deductible financial donation to the Honey Bee Health Fund at La Trobe University. Find more information at http://www.beescientifics.com/donate/.

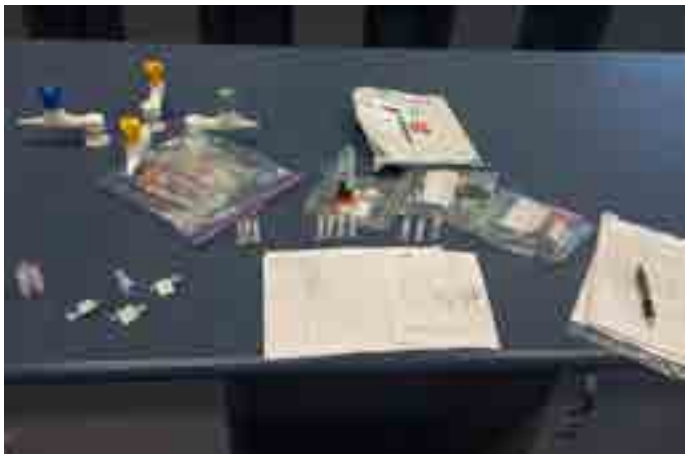
Find additional information about this project including more pictures on our website:

www.beescientifics.com.



The collected samples are cultured in the lab in petri dishes by placing them in an incubator at 30C and held for 3-5 days.

The white ball is *A.apis* mycelia that has grown in nutrient broth by continuously shaking it in a 30C water-bath for 5 days. DNA will be extracted from this clump and used for genetic analysis.



One of our sample kits returned by a participating beekeeper. Each vial contains a chalkbrood infected larva.

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3

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5

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AUSTRALIAN HONEY BEE INDUSTRY COUNCIL

Executive Director: Trevor Weatherhead Phone: 07 5467 2265
Mailing Address: PO Box 4253 Raceview QLD 4305 Email: ahbic@honeybee.org.au
www.honeybee.org.au

AHBIC ANNUAL REPORT FOR 2015 – 2016

This year has seen another year of increased activity that has been undertaken on behalf of the Australian beekeeping industry.

I would like to thank the Executive, Committee Chairs and those who served on Committees for the work they have carried out during the year. AHBIC is completely funded by voluntary contributions by beekeepers, honey packers plus honey bee industry supporters and it only the work of these volunteers that has made our achievements this year possible.

The many issues covered are:

Code of Practice and National Bee Biosecurity Program
This has progressed slowly. As at the time of writing this report New South Wales, Victoria and South Australia have appointed Bee Biosecurity Officers. Tasmania and Western Australia are in discussions with their Departments. Queensland is having problems with their Department not wanting to appoint a Bee Biosecurity Officer but wanting to use the money within the existing framework as projected jobs.

Levies
The new honey levy came into effect on 1 July 2015. The increase allows for the funding of the Bee Biosecurity Officers, funding of the National Bee Pest Surveillance Program and the PHA levy.

The queen bee levy was set at zero from 1 August, 2015. This was because it cost more to collect that it collected. By setting at zero it could be re-introduced at a later time if circumstances permitted and the 12 levy principles are followed.

AHBIC is in discussion with the Department to have the levy returns being able to be submitted online. Currently this is not available and several levy payers have asked for this capability. Being able to submit the returns online will reduce the levy collection costs in the long run.

Categorisation
Categorisation has progressed slowly. There have been teleconferences of the affected parties and more information is being sort to help with the process. There are further meetings scheduled to advance the process.

National Residue Survey
The European Union carried out an audit of the National Residue Survey (NRS) in Australia this past year. They have asked for several changes which are:

- More regular sampling. Previously the sampling as carried out once a year but now they require it monthly.
- No batching of samples for analysis.

These changes will mean that the cost of the program will increase. We are still awaiting an estimate of the increase from the Department.

Inquiries
During the year, AHBIC put submissions into the following inquiries:

- Bumble bee inquiry
- Taxation reform
- Regulation of Australian agriculture
- Roadmap for Insect Pollination Risk Assessment
- Cost recovery design
- FSANZ re GM soybeans

Post Entry Quarantine Station
The facility at Eastern Creek has closed and the new facility at Mickleham near the Melbourne airport is now open.

AHBIC has made representation to the Department to have the protocol varied but these approaches were unsuccessful. On current indications it seems this facility has not been used to date and will not attract much use.

The changes sought were an attempt to make the facility more acceptable to use whilst maintaining the integrity of the importation process.

Biosecurity
The National Bee Surveillance Program is being reviewed.
There has been a review of the Biosecurity Manual for Beekeepers and copies have been made available to all States. It is available on the PHA website.

Food Safety
Our Food Safety Committee has been dealing with several issues. These include:

- GMO's in honey for the EU
- PA's in honey
- Labelling and composition of imported honey
- A standard for the antibacterial activity in honey

With the PA's issue the Food Safety Committee has prepared an industry information sheet which will be available at the upcoming State conferences.

The Department of Agriculture and Water Resources reported a honey shipment from Iran in December 2015 that contained C4 sugars plus a shipment of honey from Greece in February 2016 which did not meet the reducing sugars standard. Appropriate action was taken.

Exports of live bees
The market to Canada was still in place for this past season.

The report by Dr. John Roberts on the health of Australian honey bees and also his report on the disease status of the *Apis cerana* in north Queensland are being forwarded by the Department of Agriculture and Water Resources to the United States Department of Agriculture to show that the USA should now re-open their country to imports of live bees from Australia.

Memberships
AHBIC is currently a member of Plant Health Australia (PHA) and Apimondia.

AHBIC has resigned from Animal Health Australia (AHA). There has been a transfer of some money from the Honey Bee Disease Contingency Fund to the Contingency Fund at PHA. The remainder will be transferred when all accounts are finalised. Hopefully this will be by the end of June, 2016.

Finances
I would like to thank all those who have made a voluntary contribution to AHBIC this past year. Without the support of these packers, beekeepers and honey bee industry supporters AHBIC would not be able to function.

The AHBIC voluntary contribution is paid by packers and beekeepers to allow AHBIC to continue its representative work. We would urge all beekeeper and packers to become voluntary contributors to AHBIC.

Meetings
During the year meetings were held with:-

- Plant Health Australia

- Animal Health Australia
- Levies Collection Unit
- National Residue Survey staff
- Food Import Section at the Department of Agriculture
- Minister Joyce's staff
- Assistant Minister Anne Ruston and staff
- Senator Williams and Scott Buchholz MHR
- Country of Origin Labelling Committee
- Almond Board of Australia
- Quota unit of the Department of Agriculture and Water Resources
- Australian Pesticides and Veterinary Medicines Authority

Quarantine
We have had an interception of *Apis florea* in Melbourne in August 2015 plus one in Brisbane in May 2016. Thankfully all exotic bees were destroyed and they carried no sign of exotic mites, so the Australian honeybee population remains safe to date.A report was received that small hive beetle is now established in Brazil.

Import risk assessment of drone bee semen
The Import Risk Assessment (IRA) was put out for comment. The Department has received submissions and is working through the submissions received.

BeeConnected
CropLife Australia has established an app for beekeepers, growers and spray applicators to use to try to stop the death of bees due to pesticide applications. AHBIC would encourage beekeepers to use this app as it is another way of trying to ensure that you do not have your bee poisoned.

Spraying canola
Beekeepers realise that farmers need to spray crops to protect them from insect attack. One of the problems that beekeeper are confronted with is chemical that is chosen for use. Often the chemical is one that is very dangerous to honey bees or in some cases is not registered for use for the particular crop.

With canola this past year the use dimethoate was of concern to beekeepers because of its high residual value. We continue to liaise with grower groups in an attempt to find common ground where the grower protects their crop and honey bees are not put at undue risk.

Auctioning of bee sites in New South Wales
AHBIC has supported the New South Wales Apiarists Association Inc. in their deliberations with the New South Wales Forestry Corporation on bee site auctions.

AHBIC sees the proposal for bee site auctions as being detrimental to New South Wales beekeepers if adopted.

Australian Queen Bee Breeding Group
After several years the Australian Bee Breeding Group (AQBBG) is being would up. There has been a lack of orders over the past couple of years despite advertising that has been carried out. This has meant that the program is not financially viable hence the decision to wind it up.

B-QUAL
B-QUAL Australia Pty Ltd is also owned by AHBIC and is managed on AHBIC's behalf by Aus-Qual Pty Ltd and run by a B-QUAL Australia Pty Ltd Board. The Board has undertaken a review of the program and it is expected that many more beekeepers will now take on the B-QUAL program.

Dr. Nicholas Chantler AM has been appointed to the Board to replace, Bill Winner who resigned. We thank Bill for his many years of service to the Board.

ABARES survey
The Minister for Agriculture and Water Resources, Barnaby Joyce, gave the Australian Bureau of Agriculture and Resource Economics and Science (ABARES) an allocation of money to carry out a survey of the beekeeping industry.

That survey is currently being undertaken and we await the results.

Honey month
Honey month is again being held this year but unfortunately some States are not participating. Honey Month presents an excellent opportunity to show case our industry to the public.

We would encourage all states and organisations who want to promote the honeybee community to consider getting on board to make Honey Month bigger and better every year.

Honey exports
With the establishment of the Japan Free Trade Agreement, the quota system came into effect. This means that anyone exporting honey to Japan and wanting to avail themselves of the reduced tariff needs to have a quota allocated to them. This is available through the Department of Agriculture and Water Resources.

The new quota came into effect on 1 April 2016 and is 96 tonnes. The tariff also reduces from 1 April 2016.

Plant Health Australia
As mentioned previously, AHBIC is a member of Plant Health Australia (PHA).

Sam Malfroy has left PHA after four (4) years there in which he carried out a substantial amount of work on beekeeping matters. Sam has been awarded the AHBIC Award of Excellence and it was presented to Sam by our Chairperson, Ian Zadow, at the New South Wale Apiarists Association dinner on 13 May.

PHA currently carries out the following work on behalf of our industry:
- National Bee Pest Surveillance Program
- PHA levy helps run the National Bee Biosecurity Program
- Revision of Bee Biosecurity Manual
- BeeAware newsletter
- BOLT course

Ian Zadow - Chairman
13 May 2016

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BEEKEEPERS TAKE TO STREETS

A small army of bee hunters has taken to the streets of Townsville searching for any signs of Asian honey bees – the hosts of the parasitic varroa mite.

Varroa mite response director Ashley Bunce said Biosecurity Queensland was leading the eradication effort with support from industry following the discovery of varroa mites in a nest of Asian honey bees found at the Townsville Port in late June.

"A second nest of Asian honey bees with a single varroa mite were discovered in Annandale last week," he said.

"We now have 12 additional surveillance officers with bee keeping experience, working with our Biosecurity Inspectors scouring parks, streets and other public land for any signs of feral bees.

"Townsville residents will be able to clearly identify members of the surveillance team by their high-visibility vests with 'Biosecurity Queensland' on the back.

"There's also been a fantastic response from the Townsville public wanting to assist in eradicating varroa mites, and anyone with beekeeping experience who wishes to be part of the surveillance effort should contact us on 13 25 23.

"We're very grateful to the Birdlife Townsville group which is doing its bit by collecting the pellets of Rainbow bee-eater birds at roosting sites at Annandale, Anderson Gardens and the Townsville Common.

"Examining the pellets from these birds is a surveillance method used to detect the presence of Asian honey bees within the feeding range of the birds."

Mr Bunce said the success of any response to a pest or disease outbreak was highly dependent on the cooperation of the affected industry and the local community.

"We're asking commercial and hobby beekeepers to check their hives and report any signs of mite activity to Biosecurity Queensland on 13 25 23," he said.

"The community can also help by reporting feral nests so that they can be checked and destroyed."

Varroa mites have the potential to significantly damage the Australian bee industry, disrupting honey production and pollination services.

For more information visit www.daf.qld.gov.au or call 13 25 23.

QLD Department of Agriculture and Fisheries - 28 July 2016

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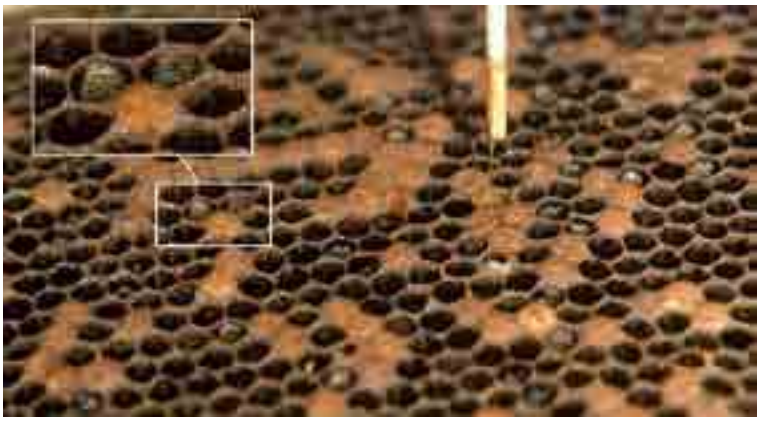

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AUSTRALIAN HONEY BEE INDUSTRY COUNCIL

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FOR THE LATEST NEWS GO TO THE AHBIC WEBSITE: **www.honeybee.org.au**

Excerpts from June/July AHBIC News

HONEY IMPORTS AND EXPORTS AUSTRALIA

Quarter	Imports Tonnes	Exports Tonnes
September 2013	1,111	1,272
December 2013	646	1,111
March 2014	957	1,070
June 2014	1,451	949
TOTAL	**4,165**	**4,402**

Top 5 Import countries for 2013 – 14
China, New Zealand, Argentina, United Kingdom, USA
Top 5 Export countries for 2013 - 14
United Kingdom, Singapore, China, Hong Kong, Malaysia

Quarter	Imports Tonnes	Exports Tonnes
September 2014	2,479	932
December 2014	2,136	984
March 2015	2,077	1,052
June 2015	2,762	1,213
TOTAL	**9,454**	**4,181**

Top 5 Import countries for 2014 – 15
China, New Zealand, Argentina, Brazil, India
Top 5 Export countries for 2014 – 15
China, Canada, Malaysia, Philippines, United Kingdom

Quarter	Imports Tonnes	Exports Tonnes
September 2015	2,360	1,223
December 2015	3,328	1,228
March 2016	2,439	1,062
June 2016		

AHBIC AGM
The Australian Honey Bee Industry Council (AHBIC) AGM was held in Townsville on 15 July, 2016. Most AHBIC delegates took the opportunity to attend the Queensland Beekeepers Association conference in the two preceding days.

It was a good chance for all delegates to be able to hear firsthand the work being carried out in Townsville to find and destroy Asian bees. A separate report is in this newsletter.

The AHBIC Executive for 2016-17 is:
Chairperson: Lindsay Bourke
Deputy Chairperson: Craig Klingner
Executive Members: Neil Bingley, Casey Cooper, Ian Zadow, Peter McDonald
Executive Director: Trevor Weatherhead

The AHBIC AGM will be held in South Australia in 2017.

Some for the highlights from the AHBIC AGM were:

- AHBIC formally adopted the Code for Practice and the National Bee Biosecurity Program. These can be found on the AHBIC website at http://honeybee.org.au/programs/code-of-practice-and-national-bee-biosecurity-program/
- AHBIC has endorsed the holding of a national bee conference in 2018. Ben Hooper has been appointed as the Chair.
- 2018 will be the 21st year for AHBIC and this will be celebrated at the national bee conference.
- Lindsay Bourke was elected as Chairperson. Thank you to Ian Zadow for his time as Chairperson.
- Nominations for the Executive were received from Ian Zadow, Kevin MacGibbon, Peter McDonald and Phillip McHugh. Ian Zadow and Peter McDonald were elected in the ballot.
- Thank you to Trevor Morgan for his time on the Executive.

ASIAN BEES & *VARROA JACOBSONI* - TOWNSVILLE
All of those who receive this newsletter would have received information via updates I have sent out. The last one was No.4. I have been asked why I have not put out anymore updates. The answer is that up until last Friday there have been no new developments and I don't want to fill your inboxes with emails that contain no new information. (***See Page 34 for all reports).***

If there are new developments then I will send out a new update. So please take the absence of any updates as meaning that there have been no new developments.

So to last Friday. The Consultative Committee on Emergency Plant Pests (CCEPP) met. The CCEPP is made up of representatives from the Federal Government, State and Territory Governments and the affected industries. Plant Health Australia (PHA) has observer status.

At that meeting the Queensland Department of Agriculture and Fisheries (QDAF) presented their Response Plan. The CCEPP determined that the *Varroa jacobsoni* was an Emergency Plant Pest (EPP) and that eradication was feasible. So the Response Plan will now be submitted to the National Management Group (NMG) which will make a determination on accepting the Response Plan and whether to move into an eradication plan that will be administered under the Emergency Plant Pest Response Deed (EPPRD). The NMG has membership similar to the CCEPP except that the members are higher level officers from within the Departments.

Affected industries for the CCEPP are:
Australian Honey Bee Industry Council, and a number of pollination-reliant industries, including:

- Almond Board of Australia
- Apple and Pear Australia
- Australian Macadamia Society
- Australian Mango Industry Association
- Australian Melon Association
- AUSVEG
- Avocados Australia
- Canned Fruit Industry Council of Australia
- Cherry Growers of Australia
- Grain Producers Australia
- Onions Australia
- Raspberries and Blackberries Australia
- Strawberries Australia
- Summerfruit Australia.

It is chaired by Australia's Chief Plant Protection Officer from the Department of Agriculture and Water Resources.

On the Townsville front, it has been determined that the Asian bees from IP2 at Annandale are related to IP1. IP1 and IP2 are not closely related to previous incursions in Townsville in 2009 and 2014. Extra staff have now been employed in Townsville to help with the surveillance work.

ASIAN BEES & VARROA JACOBSONI - TOWNSVILLE

4 updates issued by AHBIC

UPDATE – NO.1 - 4 July 2016

Further to advice previously sent out to member bodies, the following has been approved for circulation to all industry members:

- An Asian honey (Apis cerana) bee hive has been found at the port in **Townsville, Queensland**. Scientific analysis of the bees has confirmed that **two varroa mites** (Varroa jacobsoni) were present on two of the bees.
- The single hive was found within the hollow metal support of a container stand which has been in a storage yard close to the port for at least two years.
- Biosecurity staff from the Australian Government removed the hive and sent it for further diagnostic testing and analysis. A total of around 5000 bees were collected and removed from the site.
- A bee industry expert has been consulted and, after inspecting the hive, was able to advise that it is likely that it is possible that the hive had been there for up to two years.
- A check of the surrounding area has found no further Asian honey bees or their hives. Traps and sentinel hives that are already in place around the port as part of the National Bee Pest Surveillance Program have not collected any exotic bees or mite pests over the past two years.
- Testing will be done to see if these bees have any relationship to the Asian honey bee that is already present in areas of Far North Queensland, or bees that were associated with previous detections at the Townsville port – with the last detection having occurred in 2014.
- While Asian honey bees are established in areas of Far North Queensland, varroa mites are not known to be present in that population.
- The national Consultative Committee on Emergency Plant Pests met on Friday 1 July 2016 to confirm the identification of the pests, and discuss the required response activities for Varroa jacobsoni. It has previously been determined that Asian honey bees cannot be eradicated from Australia, so response activities are only focused on the varroa mites.
- Australia has well established arrangements in place for responding to exotic pests, such as varroa. This is a nationally significant pest that will see all efforts put in place to prevent it from establishing in Australia.

The Consultative Committee on Emergency Plant Pests is due to meet again this week.

UPDATE NO. 2 - 10 July 2016

To date **no further Asian bees**, **Apis cerana**, have been found in Townsville. Further examination of the original comb has revealed three (3) more Varroa jacobsoni in worker comb making five (5) in total.

The V. jacobsoni mites detected in Townsville are on Asian bees, A. cerana. It is currently believed that these forms of varroa mite do not readily transfer between host species – that is, if the mite is found on Asian bees, it does not readily move to European honey bees.

On Monday 4 July, 2016 a Movement Control Order for an area of 10kms around the Port of Townsville was issued.

The Queensland Department of Agriculture and Fisheries, QDAF**,** are in the final stages of preparing the Response Plan. This will be submitted to the Consultative Committee on Emergency Plant Pests, CCEPP, this coming week.

The Queensland Beekeepers Association (QBA) President, Robert Dewar, and I will arrive in Townsville this coming Monday. The QBA conference is on Wednesday and Thursday and the AHBIC AGM is on Friday.

QDAF have organised a meeting for local beekeepers on Tuesday evening. This is what they have included in their invitation:

- Beekeepers are invited to attend an information session in Townsville on Tuesday night to hear the latest information about the varroa mite detection and response activities.
- Biosecurity Queensland officers will provide details of surveillance activities underway, and how beekeepers can protect their hives from varroa mite and other biosecurity threats.
- Industry representatives will also make presentations at the meeting.

Surveillance activities update:

- Biosecurity Queensland is implementing a **quarantine and surveillance program** within a 10 km radius of the Townsville port after confirming detection of varroa mites (Varroa jacobsoni) in an Asian honey bee (Apis cerana) hive at the port.
- The hive has been **destroyed** and no further feral Asian honey bees or varroa mites have been detected to date.
- **Restrictions** have been imposed on the movement of bees, bee hives, bee products (excluding honey), and used bee keeping equipment from the Townsville area to prevent any possible spread of the mite.
- Officers are currently focusing their surveillance efforts within a 2 km radius around the site of the detection. **Biosecurity Queensland** is working with the Federal Government to conduct this surveillance.
- A range of methods are being used to conduct the surveillance including sweep netting flowering plants and setting feeding stations to attract any foraging bees.
- Biosecurity staff are also checking catch boxes and sentinel hives that are set permanently around the port as part of the **National Bee Pest Surveillance Program**.
- The department will continue discussion through the National Consultative Committee on Emergency Plant Pests to determine required ongoing response activities for the varroa mite.
- It has previously been determined that Asian honey bees cannot be eradicated from Australia. While response activities are focused on eradicating any varroa mites, this will involve destroying any Asian honey bee nests that we find.
- While Asian honey bees have been established in parts of Far North Queensland centred around Cairns for some years, varroa mites are not known to be present in this population.
- Varroa mites are a **serious pest** and a threat to the local honey bee industry. Certain species and strains can infest European honey bees, killing off hives and severely affecting honey production and pollination services.
- Asian honey bees are the natural host of this species of varroa mite.

If you know of feral bee hives in the Townsville area, or see Asian honey bees or suspect your bees have been affected, call the **Biosecurity Queensland** on **13 25 23**. Follow Biosecurity Queensland on Facebook and Twitter (@BiosecurityQld).

UPDATE NO. 3 - 12 July 2016

On Sunday 17 July 2016, a nest of Asian bees, Apis cerana, were found in a bird box at a residence in Annandale, Townsville. This is the second find in Townsville following the original find on 27 June. Examination of the bees has found no Varroa jacobsoni and the comb is still being examined.

This find is around 9 kilometres from the original find at the port of Townsville.

A Scientific Advisory Panel (SAP) formed to advise the Consultative Committee on Emergency Plant Pests (CCEPP) has met and, while the deliberations are confidential, at this stage I can report that it was a positive meeting.

UPDATE NO. 4 - 20 July 2016

An update has been received to say that a varroa mite was found in the comb of the Asian bee nest at Annandale. This now becomes IP2. This find is not surprising. Surveillance is now being carried out in the Annandale area around where this nest was found.

Trevor Weatherhead
Executive Director - AHBIC

CANADIAN HONEY COUNCIL BLAMES TRANSSHIPPED CHINESE HONEY FOR DESTROYING HONEY MARKET

By Alan Harman
Catch the Buzz -23 July 2016

Canada is under siege from mountains of cheap honey suddenly pouring in from strange suppliers, and the Canadian Honey Council believes the honey is being transshipped to disguise its true origin – China, the well-known marketer of low-quality, tainted product.

Unusual volumes entered Canada in the first quarter of this year from countries as diverse as Thailand, Vietnam, Myanmar, Saudi Arabia, Moldova and even Zambia.

The statistics, supplied to *Bee Culture* by the council, show Zambia shipped 2,395kgs in the first quarter with a value of C$19,862.

It is the only country in southern Africa to suddenly find a growing market in Canada.

It is all the more dramatic because Zambia shipped just 10,985kgs for all of last year.

Moldova, on the other hand, began boosting shipments in 2012, rising from just 480kgs in 2011, to 6,900kgs the next year. Last year it was 6,966kgs, but it started this year with a 1,838-kgs first-quarter windfall.

In four of the five years from 2009, Vietnam sent just 20kgs of honey to Canada. But in 2013 it popped up with sales of 19,209kgs and last year was 17,843kgs, a figure overwhelmed by its first-quarter sales this year of 29,360kgs.

Ukraine exported 5kgs to Canada in the four years before 2015 when shipments soared to 445,421kgs. Last year the total was 155,262kgs and this year's first quarter saw 26,254kgs land in Canada.

Myanmar, still better known as Burma, shipped no honey to Canada between 2009 and 2013 as a result of international sanctions, but then moved 58,200kgs in 2014 and 201,002 kgs last year. The bees had to be working extra hard for it to be able to boost its shipments to 140,701kgs in this year's first quarter.

Council executive director Rod Scarlett doesn't think it is bees doing the overtime.

He believes most of the honey entering Canada is produced by China and marketed by other players in an elaborate honey-laundering industry involving third countries.

"It is a slow process in getting the message out," he tells *Bee Culture*.

It may not in fact be pure honey, but a blend of honey and corn syrup.

"We have a serious food-fraud problem," Scarlett is quoted as saying in Vancouver newspapers.

The council is asking the Canadian Food Inspection Agency to expand its operation from not only looking at food safety but also at food fraud.

What raises suspicions about the origins of the imported honey is that Saudi Arabia, for instance, is one of the world's larger importers of honey, while Myanmar is a tiny player.

Saudi Arabia jumped from 5,439kgs in 2012 to 27,023kgs in 2013 and 61,610kgs a year later. Last year total shipments to Canada were 36,484kgs. This year it has exploded to 22,491kgs in just the first quarter.

Thailand has a similar record. It shipped only 579kgs of honey to Canada in the five years from 2009 before soaring to 764,835kgs last year and then to 171,680kgs in this year's first quarter.

Spain is also a suspect in the transshipping scheme. Its Canadian shipments ranged between 2,000 and 6,000 kgs for years before dramatically increasing to 75,514 kgs in 2014 and then 766,116 kgs in 2015. In this year's first quarter it sent 123,053 kgs.

"What we've seen in the latest import stats, is that countries … have unusually high imports into Canada," Scarlett tells the *Western Producer* farm weekly. "It's countries that really don't produce a lot of honey."

China has a reputation for poor-quality honey loaded with contaminants and is working hard to avoid using a "Made in China" label on the product, he says.

Twice this year, US federal agents in Chicago have seized 50-ton shipments of Chinese honey with fake documentation claiming it came from Vietnam.

"Honey is coming to Canada from countries that have no tradition of honey production, so we know it's being transshipped," Scarlett says. "That honey – and I use the term loosely – is 50 cents a pound, or more, cheaper, so it drives down the price for everyone."

What is happening with Canada is remarkably similar to the situation with Australia 17 years ago.

A media investigation into the scale of the Australian honey re-labeling operations, found that up to 2,228t of Chinese honey was shipped to Australia, mainly through Singapore, and then re-exported to the United States in the 2001-02 financial year at a time when the US had banned Chinese honey.

A survey of the Australian beekeeping industry at the time released by the Australian Rural Research and Development Corp. showed that Australia's honey imports from bee-less Singapore jumped from zero to 1,447t that financial year.

At the same time, Singapore's honey imports from China rose from 2t in 2000-01 to 751t the following year.

Not coincidentally, Australian exports to the US rose from 108t in 1999-00 and 168t in 2000-01 to 2,344t in 2001-02 – a year when Australian honey production was decimated by the worst drought since European settlement in 1788.

This time around, there's no honey from Singapore, but what is happening in Canada has seen the price paid to

Canadian producers fall from C$5.35 a kilogram (US$1.88/lb.) last year to about C$2.85 (US$1/lb.) this year – below the cost of production for most apiarists.

"This is having a huge impact on honey producers, especially on the Prairies where most of the bulk honey for export is produced," Scarlett says. "Typical cost of production is around C$3.30 a kg (US$1.15/lb), so there are a lot of guys sitting on honey or selling it at a loss just for the cash flow."

He says this year's unprecedented shipments of honey from Saudi Arabia, Moldova and Zambia during the first quarter this year are puzzling.

As is China, the world's biggest honey producer, in shipping only C$910 (US$702) or 165kgs worth of honey to Canada in the first quarter, while shipments from its immediate neighbors totaled more than C$1.1 million (US$848,264).

The *Canadian Broadcasting Corp* reports Manitoba beekeepers say the low prices as a result of the imported honey glut could force some out of business.

Allan Campbell, who co-owns Durston Honey Farms near Dauphin, Man., tells the broadcaster he is still sitting on some of last year's crop and not even lowering prices is making it move.

"I've spoken with many different producers who are still sitting on tons and tons of last year's honey," Campbell says. "To make matters worse, there seems to be quite an issue with Chinese honey being transshipped through other countries and coming into the country illegally."

Canadian Honey Council chairman Kevin Nixon tells the CBC that beekeepers across Canada are dealing with the same issues. "The market is saturated globally, and it is affecting all of us right now," he says. "We've been told there is a global over-supply of honey."

Nixon says Chinese honey loaded with antibiotics was essentially shut out of the North American market the mid-2000s.

"They started shipping it to other countries, and those countries re-exported it," Nixon says. "We're seeing honey coming from Vietnam, Thailand and Myanmar."

Nixon says the honey can be traced through its pollen and floral patterns.

"This isn't about food safety; this is about food fraud," he says. "This is really damaging to the industry."

Nixon believes large amounts of the transshipped honey are also entering the US and those imports are affecting Canada's southern market.

The Saskatoon-based *Western Producer* quotes Ron Phipps, a global honey expert, as saying in a report for the American Honey Producers Association that with both Thailand and Ukraine, the number of hives and level of beekeeping activity does not justify the quantity of honey exported.

"A review of Thailand's honey trade over the past 10 years reveals a correlation between sharp increases in export and increases of imports of honey from China and its surrogates," Phipps wrote.

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Whats Happening to the Bees? - Part 3

by Randy Oliver - ScientificBeekeeping.com

First published in: American Bee Journal, April 2014

In the last installment of this article I explored the limiting factors of the honey bee realized niche* prior *to the influence of humans. So let's now look at how the populating of Europe by modern humans affected the honey bee.

Setting The Stage: The Origins Of The Players

Let's first set the stage. The time frame of interest runs from about 10,000 years ago through about 400 years ago. This period spans the time from the last "ice age" (technically, the *glacial period*; during which it was too cold for bees to inhabit the area), covers the invasion and colonization of the warming continent by both bees and modern humans, and ends with when humans started transporting the honey bee across oceans.

Apis mellifera

The honey bee evolved long prior to the time frame of interest. Recent research [1] suggests that the genus *Apis* originally developed in Europe, and then spread into Asia (where it evolved into several different species), into North America (where it later went extinct), and into Africa (via Spain/Morocco). It was in Africa that the species *Apis mellifera* evolved, and then later migrated back into Europe and the Middle East, branching in various ecological habitats (realized niches) into locally-adapted subspecies.

Then came a prolonged Ice Age, during which there were periods of cold and dry glaciation interspersed by periods of warming (as we are currently enjoying). During the cold periods, ice covered northern Europe, and honey bees were forced to follow suitable habitat southward, retreating into warmer "refugia." During the warm (and wetter) periods, ice retreated and Europe could temporarily revegetate, allowing honey bees to expand their ranges back again northward. The current races of bees in Europe recolonized the region from such refugia as the climate warmed about 10,000 years ago [2]. I've shown the distribution of the named races (subspecies) of *Apis mellifera* in the map below (Fig. 1). The satellite image shows the differences in climate and vegetation in the various regions. Of note is that the first "keeping" of bees appears to have begun in the Fertile Crescent of the Middle East with *A. m. jemenitica* and *syriaca*.

Figure 1. Subspecies of Apis mellifera in Europe and the Mediterranean region. Our domesticated stocks in the US primarily derive from the temperate-adapted ligustica (Italian), carnica (Carniolan), and perhaps caucasica. The feral population of bees in the US also contains the mellifera (German dark) lineage [3]. Map by the author; satellite image from Google Earth; subspecies distribution from various sources [4].

Practical application: each subspecies of honey bee is adapted to a specific habitat and climate. The "best" bee for any region is that which has already undergone countless generations of adaptation. Although the Italian bee is very popular among many beekeepers, it is certainly not the best adapted bee for non Mediterranean [5] conditions.

Homo sapiens

At the end of the last glacial period, modern humans also moved up into Europe from Africa, displacing the cold-adapted Neanderthals (as did the bees, modern humans also evolved into different races in the region). These hunter-gatherer human populations were at first not dense enough to exert an appreciable impact on the honey bee. This changed with the advent of pastoralism and agriculture—initially slash and burn, then later improved by the invention of the plow. The adoption of agricultural practices facilitated the niche of *Homo sapiens*—by greatly increasing the carrying capacity of the habitat (mainly by the farming of grain)–thus allowing the human population to begin its exponential growth (to be later limited by epidemics of infectious diseases).

Practical application: as we shall see, the factors of migration, locally-adapted races, displacement of existing populations, the farming of grain, and epidemics of infectious diseases will greatly affect the honey bee over the ensuing years.

Early Changes In The Honey Bee Niche Due To Humans

OK, now that I've set the stage, let's take a look at how the early expansion of humanity into the native range of the honey bee affected the limiting factors of the bee's niche (I will cover more recent impacts later). Allow me to address each of the limiting factors that I've previously covered, in turn.

Limiting factor: The weather

Weather is the day-to-day expression of climate. For hundreds of thousands of years, the climate of Europe oscillated between periods of cold/dry and warmer/wetter, which of course greatly affected the local weather. The fundamental niche of the honey bee is limited by cold and prolonged winters, by extreme summer heat, and by lack of water and nectar-producing plants (especially forbs—herbaceous flowering plants other than grasses). For thousands of years at a time, parts of Europe simply did not provide conditions that met the requirements of the bees' fundamental niche, causing the extirpation of local populations or entire species. Keep in mind that any species has "edges" to its range, past which the species is stressed, or cannot successfully live. Slight changes in weather at the edges can temporarily make that habitat unsuitable for bee survival.

Practical application: for example, cold, wet summers in

England may not allow bees to store enough honey to make it through the winter. Ditto for drought-prone California. And an unusually severe northern winter will challenge colonies of Italian bees.

We humans have little ability, other than by fervent rain dancing, of changing tomorrow's weather; however, we do have the ability to change the climate on a local basis, and likely even at the global scale. Climate then may affect the weather.

The burgeoning human population in Europe and the Mediterranean started grazing herds of domesticated mammals and cutting down the forests [6]. This loss of the shading forest cover likely resulted in the warming of central Europe, and the desertification of the Mediterranean region [7]. Such deforestation likely favored bees in central Europe (due to creating better conditions for forbs), but created drier (and less favorable) microclimates in the Mediterranean.

The Human Deforestation Of Europe
Let's look at the vegetation of Europe at the beginning of this period of time (Fig. 2):

Figure 2. The vegetation of Europe around 4,500 years ago, just before the main agricultural and deforestation phase by humanity in the region [8].

Note the extensive forest cover in the natural range of the honey bee in Europe and the Mediterranean at this time in geological history. Not shown is the range of the honey bee in the moister areas of the Middle East and northern Africa, which were also densely forested. Adams [9], by reviewing data on fossils of pollen, tracked the destruction of these forests by humans over the course of a few thousand years (accelerated about 3000 years ago by the invention of the iron axe and saw). The deforestation of the habitat brought about major changes in two limiting factors of the niche of the honey bee—the abundance of forage, and the availability of nest cavities.

Limiting factor: Carrying capacity of the habitat
Although some trees provide pollen in the spring, and a few, nectar, dense forest is not prime honey bee habitat, since the tree canopy shades out flowering low-growing forbs and shrubs. It was only in natural meadows and openings of such forest that there would have been suitable forage for bees over most of the season. However, such ancient trees would have furnished abundant nest cavities.

When humans invaded those areas, they practiced slash and burn agriculture, clearing the forests for pasture or crops, or cutting trees for structures, monuments, shipbuilding, or charcoal. These forests were largely devastated by the end of the Roman Empire. Although we abhor such devastation of virgin forests today, it was likely of benefit to the honey bee, as it allowed sunlight to hit the ground, favoring the growth of bee-friendly forage plants in the pastures and cropland (remember, herbicides had not yet been invented) (Fig. 3).

Figure 3. When I'm asked to give presentations to local groups interested in gardening for the benefit of pollinators, I like to open with this slide to illustrate a point–that by cutting down pine trees (which are of no value to honey bees), one allows sunlight to hit the understory of flowering plants. Since we have suppressed natural wildfires in California, formerly open land is being reclaimed by dense pine and oak forests. Such change has been detailed for my county at [10].

Thus, by clearing the forests (by approximately 75% in central Europe), humans improved (*facilitated*) one aspect of the realized niche of the honey bee, since such clearing favored the growth of a greater abundance of forage plants. But there was a flip side to this.

Limiting factor: Predation
Humans (by virtue of possessing a sweet tooth, climbing ability, and wood-cutting tools) are a formidable predator of the bee. This may well be one of the reasons that the Savannah Bee (*Apis mellifera scutellata*) so fiercely protect their nests (their long exposure to human predation would have selected for those colonies which were able to successfully deter human honey hunters).

Hunter-gatherers do not waste energy on hunting prey that does not give a positive return on investment. It takes a considerable investment in energy, pain, and risk of life and limb to harvest the combs from a small-entranced cavity high in a hollow tree (this may be one reason that European bees prefer to nest high in trees [11]. It was only once humans had their bellies full of grain that they had the luxury of satisfying their sweet tooth by making serious efforts to attack well-defended colonies high above ground.

As the human population became more dense, the pressure of predation on the honey bee would have increased greatly, favoring the survival of bees that possessed three traits—cryptic and inaccessible nesting, vigorous defense of that nest, and frequent swarming so that colony reproduction was greater than the loss due to human predation.

Limiting factor: Nesting cavities
The clearing of ancient forests affected another parameter of the honey bee niche. The falling of each hollow bee tree eliminated one available nest cavity. As hollow trees became rarer and rarer (and tended to remain rare in regrown managed forests), there would have been fewer and fewer places for honey bees to nest. The few remaining "bee trees" would have been targeted by honey hunters, who, with the use of steel axes and saws found it easier to simply fall a tree than to climb it. Each of these destructive predations by humans eliminated yet another increasingly rare nest cavity.

So by this time point in history, two major factors of the realized niche of honey bee had been altered by humans—there would have been more herbaceous and shrub forage available, but fewer nest sites. And such change created opportunity for humans to adapt from being honey hunters to honey farrs.

Adaptation And Change In Business
On two occasions in recent years, speakers [12] have suggested at conferences that those of us in the bee business read the

motivational booklet *Who Moved My Cheese?* [13]. I recently did so. It's a cute little parable that can be read in minutes, but summarizes important lessons in recognizing business opportunities and adapting to changes in business niches. Two of these lessons are to:

Anticipate and Monitor Change, and then

Adapt To Change Quickly
Like it or not, *things change.* Niches, whether ecological or in business, change continually. Those who adapt may enjoy success; those who don't, go extinct. Both the honey bee and their keepers have learned to exploit various realized niches, and those niches change over the years. As I mentioned before, both bees and humans are highly adaptive species. Honey bees adapt by the process of genetic (and epigenetic) trial and error that we call *evolution*. Human beekeepers, generally blessed with larger brains, have the capacity to recognize upcoming changes in their niche, and the associated pitfalls and business opportunities.

However, human nature is such that many will waste their time lamenting about how difficult or impossible change is, rather than quickly adapting. On the other hand, those who are innovative and cognizant of business opportunities consistently make money.

Let me state emphatically that I do not consider myself to be any sort of great beekeeper or business guru. But what I have noticed over the years are inherent differences in the business attitudes of those beekeepers who always seem to be complaining, compared to those who are able to afford shiny new trucks. Throughout this article I will return to adaptations in the business of keeping bees made by successful beekeepers. So let's return to the change in the niche of traditional honey hunters in the homeland of the European honey bee.

The Creation Of A Niche For Bee-keeping
Honey hunters would have put themselves out of business once they cut down all the hollow trees. That situation created a novel business opportunity, since there would now exist an insufficient number of natural nest sites for the number of colonies that could be supported by the local forage. All that a human entrepreneur needed to do would be to *facilitate the bees' realized ecological niche* by supplying them with what had now become the major limiting factor—the lack of suitable nest cavities. And voilà, as the business niche of honey hunting dwindled, those skilled at plundering bee trees could adapt to become…bee-keepers! This supplying of nest cavities would have been especially successful in the Fertile Crescent once it lost its forests, and would also have allowed bee-keepers to expand the honey bee's range into arid areas naturally lacking trees or rock cavities.

This beekeeper in Yemen supplies his bees with nest cavities in a landscape lacking such naturally. Honey from Yemen fetches a high price—over $100 per pound by mail order [14]. The growing popularity of beekeeping in Yemen today suggests that the beekeepers there may soon reach the carrying capacity of the land [15]. Photo by Gillian Duncan [16].

The honey bee, when kept as livestock, exhibited a trait that made them highly desirable to peasant farmers—a colony's ability to exploit floral resources over an area of at least 30 square miles (80 km^2) [17]. This trait meant that the bee-keeper could exploit the production from land which he did not own (as beekeepers typically continue to do to this day).

Practical application: early "beekeepers" needed only to provide artificial nest cavities in areas where natural cavities had become scarce. The bees otherwise took care of themselves—foraging far and wide, and voluntarily returning home with the goods.

The practice of bee-keeping appears to have began in the Middle East, and then spread to other regions [18]. Early beekeepers, depending upon materials at hand, created all sorts of nest cavities (hives), such as horizontal or vertical hollow logs, clay pots or tubes, or straw skeps [19]. Horizontal hives were the norm in desert and Mediterranean climes; log gums, vertical hives, and skeps were often used in northerly (cold winter) regions. Once humans controlled the nest sites of the honey bee, thus began…

The Domestication Of The Honey Bee
Domestication: adaptation to intimate association with human beings.
Primitive beekeeping was not much different from predatory honey hunting, other than the hunters providing homes for their eventual prey within which to store the precious honey. So long as early bee-keepers practiced destructive harvesting (killing the colony in order to consume both brood and honey combs), little selective breeding would likely take place, due to the temptation to harvest the the most productive hives.

Clever beekeepers in the Mediterranean region (especially in the clay-rich Fertile Crescent) got around this problem by using horizontal clay tubes as hives, with the entrances to the front, and a removable plug in the back. Since bees tend to store honey away from the entrance, these beekeepers could harvest honey from the rear with a minimum of stinging by smoking the bees off the *honey* combs, *without disturbing the broodnest*. What a concept! Instead of killing the colony, one could "milk" it. (These tube hives were especially amenable to this practice, prior to the invention of movable frame hives. However, nondestructive harvest methods were also invented by "forest" and skep beekeepers [20] in northern regions).

The next thing they learned was how to propagate new colonies by transferring combs of brood and scoops of bees to new hives. They even learned how to transfer queen cells and virgin queens.

Practical application: this control of the queens meant that these beekeepers could then practice selective breeding, the foundation of the process of domesticating a species. I'm surprised by how few modern day beekeepers in this country selectively breed their own locally-adapted stock (since these "primitive" beekeepers were doing it 3000 years ago!).

Domestication is a sort of symbiotic mutualism, in which both the humans and the selected animals benefit. Beekeepers would certainly select for propagation those colonies that were most productive and amenable to being worked. Milner [21] explains:

The gentle behaviour of the major races of honey bee may be due, of course, to selection for this quality over many generations; even the "skep" beekeepers of former days would, no doubt, tend to destroy the worst tempered bees and retain the gentler colonies.

Not only would beekeepers select from local stock, but even import more desirable stock. Three thousand years ago, in the ancient city of Tel Rehov in Israel, commercial beekeeping was practiced [22] using a gentle, productive strain of bees imported from Turkey!

Limiting factor: Competition for food
Let's suppose that beekeepers have now increased the available supply of skeps, gums, or Langstroth hives until the bee population is no longer limited by the number of nesting sites, but by something else? And now we get to the meat of the

issue—competition for food resources. There is a limit to the number of colonies of bees that any area, no matter how rich in flowering plants, can support. That limit is called the *carrying capacity* of the landscape, and is commonly used to calculate how many livestock a pasture can support.

Beekeepers in my neck of the woods would no more brag about how much honey they made in a particular location than would a fisherman brag about the location of his favorite fishing hole. Should one do so, he'd likely find hundreds of new hives sitting on top of him the next season. This would be a perfect example of Garret Hardin's influential concept of *The Tragedy of the Commons* [23], in which he points out that it may be to the *individual herder's benefit* to add yet one more head of livestock to the common pasture, but to the *herder community's detriment* once the addition of another animal exceeds the carrying capacity of the land (beekeepers today in some jurisdictions have wisely (and self-protectively) mitigated this inherent and inevitable problem by limiting commercial apiaries to registered locations, typically no closer than two miles apart) (Fig. 4).

Figure 4. The Tragedy of the Commons exemplified. Locations of registered apiaries (blue dots) in North Dakota [24]. I added a 2½-mile-radius red circle in the center to indicate the area covered by the typical foraging range of a colony. Clearly, the forage areas of many of these locations overlap.

And what sort of carrying capacities will various landscape types support? Studies have found natural colony densities of from 1–25 per square mile (the lesser density typical in temperate forests; the higher density in tropical areas, esp. with Africanized bees) [25]. Beekeepers of managed hives generally limit their apiary sizes so as not to exceed the carrying capacity of the land to produce a surplus honey crop.

Practical application: for example, in good forage areas of Montana and the Dakotas, beekeepers try to keep commercial apiaries a minimum of 2 miles apart. If such apiaries were placed on a 2-mi grid, that would allow 4 sq. mi. of forage area per apiary. Even at a high stocking rate of 48 hives per apiary, the stocking density would be only 12 managed hives per sq. mi. (6/mi^2 at 24 hives per yard).

How does the density of managed hives in the European bee's native range compare? Eva Crane cites records of hive density in Hungary in the late 1700's of 30 to 460 per square mile! In the European Union today, in which beekeepers in some areas are complaining of poor colony performance, there are some 15 million reported managed hives, which works out to nearly 9 hives per square mile (perhaps exceeding the natural carrying capacity of the land).

By comparison, in the U.S. (which contains roughly the same percentage of arable land) the average density is only about 1 hive per square mile. Of course, *average* density over a continent does not reflect the actual hive loading of any particular area. Especially in the U.S., hives tend to be moved around, as opposed to the often stationary apiaries in Europe, and during summer, over half of all hives are located in only six states, accounting for only 16% of the U.S. land mass. However, even in those six states, the density of hives only starts to approach that of Europe as a whole!

Practical application: The Tragedy of the Commons definitely applies to beekeeping, since bees can't be fenced in. I was driven out of a very good area in Nevada by beekeepers who moved in thousands of hives to the extent that I could hit another apiary with a thrown stone from any of my long-time locations. California has also reached that point in many areas, as beekeepers step on each others' toes looking for any favorable place to place hives.

When I hear of all the bee problems in Europe, I wonder as to how much beekeepers there have contributed to the problem by overstocking hives on the available pasture. I'll return later to the impact of modern agricultural practices upon the carrying capacity of agricultural land for bees.

Limiting factor: Reproductive success rate

In the absence of natural nest cavities, the survival of the honey bee depended in many areas upon the provision of such nest sites by humans, in the form of some sort of managed "hives." And that fact gave beekeepers control over the reproductive success of any particular colony. By choosing which colonies were allowed to reproduce, beekeepers would rather quickly have been able to domesticate the bee by providing nest cavities only to those most amendable to husbandry. It would only have been in the scattered relict forests that wild, unmanaged populations of bees would have been able to survive. And this finally brings us to what I suspect is a major factor negatively affecting honey bees today:

The Price Of Domestication

Are honey bees truly a domesticated animal? And if so, how has that favored or hurt them? I'm out of space for now, but it gets more interesting…

A Note And Acknowledgements

Although I've spent considerable time in researching this article, my interpretation of the evidence is largely speculative. If anyone can add to this subject, please let me know.

As always, I am greatly indebted to my colleague Peter Borst, without whose research assistance I could not write these articles. And I cannot express how much I grateful I am for the words of appreciation from beekeepers worldwide, as well as their donations that support my research, writing, and website maintenance.

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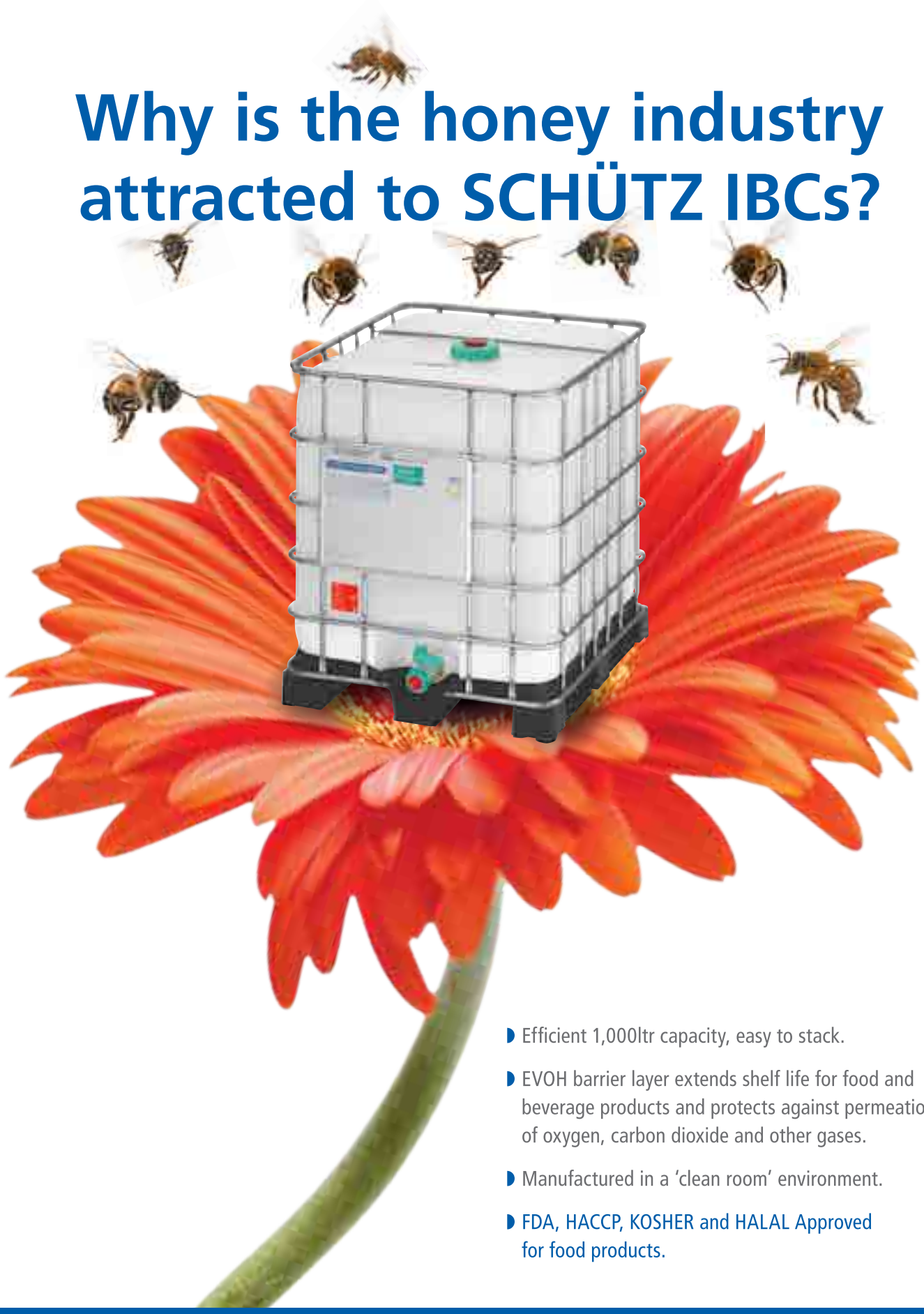

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