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AUSTRALIA'S HONEYBEE NEWS

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COVER: The Duke & Duchess of Cambridge chatting to Bruce White at *Honeyland* PHOTO: Dr Shona Blair

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Neil Bingley, Lamorna Osborne, Rob Michie, Shona Blair, Kate McGilvray, Casey Cooper

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Hunter Valley	Col Wilson	02 4930 4950	Patricia Heenan	02 4997 5681
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PRESIDENT'S REPORT



As we go into winter the unusually warm autumn many of us experienced has meant bees have not packed down for winter which has seen them flying and eating stores they had to see them through winter.

I have a few things to cover in my first report since Conference, and after a year as President I am hitting my stride – thanks as well to the help of all of the Executive (past and present) and the many others who contribute huge amounts of time for our Association.

I'd like to take this opportunity to especially thank Mal Porter, who served on the Executive over the past year, and whose insight and time was much appreciated. Mal continues to give his time to the Association as the President of the Central Tablelands Branch at Bathurst. Mal's place on the Executive has been filled by Dr Lamorna Osborne who is the President of the Illawarra Beekeepers Association NSW - part of the Amateur Beekeeping Association of NSW. Lamorna is a GP in the Sutherland Shire in Sydney and is also interested in the medical uses of honey. The rest of the Executive Council is as it has been for the past year, which incudes Neil Bingley, Rob Michie and Dr Shona Blair, with Neil as our new Vice-President. Thanks to Rob who filled that role so well last year. Also thanks to Dr Doug Somerville, who continues to provide input above and beyond the call of duty to our Industry and Association. And a big thank you to our Secretary, Kate McGilvray, for all her efforts on our behalf.

HEARING FOR THE SENATE INQUIRY INTO THE FUTURE OF BEEKEEPING AND POLLINATION SERVICE INDUSTRIES IN AUSTRALIA

I attended a Public Hearing for the *Inquiry into the Future of Beekeeping and Pollination Service Industries in Australia*, in Brisbane on 20 May.

I was asked to give evidence to the Senate Committee on behalf of our Association. The Committee thanked us for our written submission to the Inquiry, and commented on its comprehensive coverage of our Industry and the issues we face. At the Hearing I gave an overview of some of the big issues and answered various questions from the Committee. While they appeared to be genuinely engaged in the Inquiry, and seemed to understand the overall importance of bees, they didn't seem to have a firm understanding of the details of our Industry, and how it is different from others in the agricultural sector. Because of the gaps in their understanding, the Executive and I prepared a follow-up letter for the Committee in an attempt to help them understand the unique position of our Industry.

NEONICOTINOIDS AND OTHER INSECTICIDES RESEARCH AND STEWARDSHIP SYMPOSIUM

On 9 April I attended this Symposium, which was held in Canberra, on behalf of the Association. It was organised to provide a forum at which a number of issues related to neonicotinoids and honey bees could be discussed. More than 80 representatives from government agencies, the honey bee industry, pollination-reliant crop industries, chemical companies and researchers attended.

There were some excellent presentations on the Industry and on the global issues that honey bees are facing – and the key message from these was that there are many complex factors at play, and no one thing is to blame for the falling populations being seen in many countries.

The overall message from the researchers involved in the chemical companies and crop industries was that neonicotinoids are unlikely to be presenting any greater threat to honey bees and crop pollination than other pesticides that have been in use for many years (unless used incorrectly, of course – which is true of any pesticide). However, much of the research and communication around these and other pesticides seems to come from groups with vested interests.

The presentations were all very informative, but due to the full program and high number of attendees, the day didn't provide much opportunity for real discussion between the beekeeping industry and others such as farmers groups, pesticide companies and bodies such as APVMA.

More information, including copies of the presentations, can be found at: http://www.planthealthaustralia.com.au/about-us/events/neonicotinoids-and-other-insecticides/

FORESTRY CORPORATION

The Executive has received *Discussion paper – Review of bee permit administration*, from the Forestry Corporation. We are quite disappointed with the Review as it stands, because it goes against much of what we have been advocating for with the Corporation for the past two years. We are continuing to push back hard on this, and are doing everything we can to try and get our beekeepers access to sites in a way that means they can manage their businesses without extra burdens.

KEITH MCILVRIDE MEMORIAL AWARD

The inaugural Keith McIlvride Memorial Award was presented at the Conference Dinner. This was presented to a very deserving member of our Association, Neil Bingley. Throughout his working life Neil has given a great deal of time and effort to the Association. He has served on the Executive Council for more than 13 years, and he also puts a huge amount of work into supporting *Honeyland* at the Easter Show each year, with transporting stock to Sydney, setting up the stand and then taking it all down again at the end of the Show and storing things for us. Congratulations Neil!

WORKSHOP – WHERE IS THE ASSOCIATION HEADED AND WHAT DO WE WANT FROM IT?

On 7 May the NSWAA held a workshop the day before Conference to explore the future directions of the Association. Greg Mills did a great job of facilitating, and it was really good that all of the Branches were represented and that all of the participants actively engaged in the day. Thanks to all who participated.

We generated loads of ideas and it was good to see that although there are some issues, most of our members seem to want the same things from the Association. Our next step is to decide which of all of the ideas we can actually afford to do - in terms of cost, but also in terms of the time it takes for all of our volunteers to work towards our common goals. Once the Executive have digested the outcomes we will be planning the next stage so that our Association can do the most it can for its members with the resources it has.

CONFERENCE

Conference this year was in Narrabri and it saw a great line up of local speakers including scientists: Nural Cokcetin on the prebiotic effects of eating Australian honey, Dr Robert Banks on the opportunities and benefits for genetic improvement in the honey bee industry, Professor Ben Oldroyd on mating between *Apis cerana* and *Apis mellifera*, and Dr John Roberts on varroa in Papua New Guinea and pathogens in Australian honey bees.

The National Biosecurity Levy was a key topic for discussion at this Conference. We heard from AHBIC representatives Craig Klingner and Ian Zadow on the model and proposed funding, and Sam Malfroy (PHA) who has also been closely involved. A ballot was carried out during our Conference, and now we need to wait and see how all of the other States vote.

Of course we heard reports relevant to our Industry from Ian Zadow (AHBIC), Ben Hooper (RIRDC, Sam Malfroy (PHA) and Dr Doug Somerville (DPI). Warwick Bratby outlined the new Forestry Corporation structure. Unfortunately Warwick will be retiring soon; he has been very approachable for the Executive to work with over access issues over the past few years. John Macarthur-Stanham spoke about the Local Land Services and we will be continuing to work with this body to fight for good access to resources they manage. There was an overview of beekeeper access to areas where coal seam gas mining is taking place, from Kym Baily (Santos). Although he assured that beekeeper access won't be much affected and that the amount of land clearing needed for new mines has been reduced due to improved technologies. However the rather slick presentation left one wondering if we are hearing the full story on the impact of fracking and their other activities.

We had a presentation from Adam Kay (Cotton Australia) on the cotton industry and beekeepers, and there is obviously a need for more research into the usefulness of bees to cotton yield. We also need to work out better ways for communication between beekeepers and cotton farmers to ensure bees don't get sprayed.

We would like to see others take some more responsibility, rather than pushing all of the responsibility for protecting the bees onto the beekeepers. Andrew Hawkins and Simon Smith from the EPA spoke about the role of the EPA particularly in reference to spraying events that affect beekeepers. Sadly these bodies seem happy to "talk the talk" but do very little in terms of actually protecting our bees from spray incidents. However, I would urge all beekeepers to go through the proper EPA channels if anything happens to your bees that you think is related to spraying, then make more noise about it in the public arena if you don't get a reasonable outcome.

Craig Klingner gave a great talk on his experiences during his trip to China to learn about their beekeeping industry. James Kershaw's talk about his trip to Dakota in the US to learn about their beekeeping operations was also really interesting. Jaye Hughes gave a great talk on the use of social media for our Industry – although lots of us are a bit put off by this technology, Jaye showed us the reach it can have. And Dr Shona Blair told us what the Wheen Bee Foundation is up to.

Mark Page will be going to Marcus Oldham Rural Leadership Program this year. Congratulations to Mark and we look forward to hearing about his experience at Conference next year.

CONFERENCE SPONSORS

Thank you to Capilano Honey for sponsoring the Wine & Cheese Night and Tutt Bryant Equipment who sponsored the Conference morning teas. Also the following sponsors for their support of Conference: Clark Equipment, Hornsby Beekeeping Supplies, RIRDC, Santos, Steritech and Weerona Apiaries.

TRADE SHOW

Once again the Trade Show was a great success, providing everyone with the opportunity to see products and services available to the Industry and to talk directly to suppliers (often over a cup of tea and a scone, or at the Wine & Cheese night). A very big thanks to Therese Kershaw for all of her hard work and time she put into organising and running the Trade Show for us.

OUR VOLUNTEERS

There is no way we would be able to run Conference without the help of our volunteers. A huge thanks to the ladies on the front desk, Lyn White, Raelene Michie, Barbara Bingley (who also made the baskets for the speakers) and Debbie Porter who all worked tirelessly with registrations and our fundraising raffle.

THE PILLIGA TRIP

On the Saturday after Conference we had a trip through the Pilliga Scrub where the local beekeepers showed off the area they work for breeding and honey production, when times are good we can spend more than eight months a year in the Pilliga.

The Northern Tablelands Branch put on a great BBQ lunch for all that attended, and they even managed to throw a few vegi sausages on the Barbie (but surprisingly there were only a few takers...).

Thank you to Bill Weiss, Carl Cooper, Rob Michie, Mal Porter and *Hound* (Brian Woolfe) for showing us the Pilliga and not burning the sausages.

LOCAL LAND SERVICES (LLS)

While in Narrabri I met with the (Chair of the North West LLS), Conrad Bolton (member of the Steering Committee for Traveling Stock Routes (TSR)), Ken Flower (General Manger LLS North West) and John Macarthur-Stanham (Chair of the LLS). We discussed the future of beesites in LLS-managed areas. It seems at this point there will be little change from the arrangements we had with the Livestock Health and Pest Authority (LHPA). The Executive continue to advocate for Industry access to beesites on public lands managed by these groups.

HONEYLAND

This year *Honeyland* was very successful. We were lucky with good weather, school holidays, a Royal visit and lots of publicity about the shortage of honey.

A big part of the success of *Honeyland* comes from donations by individual beekeepers and honey packers of product. The donation of River Gum from Harold and Judy Saxvik and Yellow Box from Bert and Nardine Seagrave was very much appreciated. Thank you also to Rainforest Honey, Superbee, Beechworth Honey, Golden Nectar Real Leatherwood, Capilano and Natures Beez Honey.

The other reason that *Honeyland* is such a success for the Association is that so many volunteers put so much time and effort into helping us. Special thanks to the Bingley family, particularly Neil and Brett, who transported much of the product, and managed both the set-up and packing-up.

Of course the success would not be possible without the volunteers who worked so hard throughout the Show, selling honey and talking to the public, it would be impossible for us to run *Honeyland* at all – so thank you to everyone who helped. A particular mention to those who helped in the BeeZeebo and to Doyle Egelhoff for providing the bees. Although we can find it a bit annoying, the public love the bee demonstrations and I'm sure this helps us sell more honey.

A final big thank you to Bruce White. Bruce puts months of work into organising *Honeyland* and then works tirelessly to run it throughout the Show. Some of my younger Executive members were knackered after just working three days, but Bruce was there all day every day for the two weeks. We are very grateful to have Bruce giving so much of his time for the Association.

We aren't the only ones who appreciated Bruce's work and beekeeping skills – the Royal couple had a great chat to Bruce about bees, their importance for pollination and whether or not the Queen will crawl up your trouser leg...

DPI STAFF

A warm welcome to Elizabeth Frost from the US who is taking Nick Annand's place at DPI. Elizabeth's contact details are included in this edition with her report on page 10.

Casey Cooper State President



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2014 CONFERENCE **RESOLUTIONS**

MOVED: J Kershaw SECONDED: S Blair

That NSWAA consider allowing those who have completed the Marcus Oldham rural leadership course to sit in on a number of executive meetings to gain a perspective of the running of the NSWAA.

MOVED: N Bingley SECONDED: S Blair

That this Conference endorses the best management practice for the transportation of open entrance beehives.

MOVED: G Porter SECONDED: R Porter

Nominations should remain open for new or existing executive nominees until morning tea on the second day of the Conference so as to give conference attendees the best opportunity to canvas and nominate candidates for the position of executive.

MOVED: N Bingley SECONDED: C Cooper

That NSWAA recommends that the FCAAA be wound up ASAP and the contingency funds be transferred to AHBIC, managed by the current producer member bodies and operated under current guidelines.

NEW MEMBERS A warm welcome to the following new members:

Tanya Annin PA&LJBurton Richard Campbell Frank Cavasinni Otto Drenkhahn Tara Er

Michael Fogarty Stephen Fuller Philip Hannay Melanie Hofsteters Todd Huxley Michael Kiem

Allan Miller & Rebecca Weiss

Jovan Mizdrak Mitchell Pearce Steven Smith

Dan McArdle

Wagga Amateur Beekeeping Club

David Walker Steve Webber Eastern Creek Yenda

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Please be advised that if you have not paid your Association membership fees, which were due on 1 March this will be your last edition of Honeybee News.

PESTICIDES WIPE **OUT BEEHIVES**

THE LAND Rebecca Sharpe 27 May 2014

MASSIVE bee deaths, totalling more than 80,000 hives, have been reported following almond pollination in California, with a further 400,000 hives affected.

Reports suggest about 60 per cent of the 1.7 million hives placed among the almonds were affected by "bee-friendly" pesticides.

The news of pesticide damage hits hard for the Australian apiary industry which totals less than 450,000 hives across the country, with NSW totalling some 260,000 hives.

Central West beekeeper and Crop Pollinators Association president Bryn Jones, together with his father Warren, have been fighting the same battle against pesticides.

"There has been a significant loss of hives from the Warren, Gin Gin and Boggabri areas in what is believed to be spray drift," Bryn said.

Batch-mixing of chemicals, which is believed to have happened in California, is common practice in Australian agriculture according to Warren Jones.

"When the bees start dying, there is a big problem in the environment," he said.

Warren spent 34 years as an advisory officer to the NSW Department of Agriculture, specialising in bee diseases, crop pollination and pesticides and said new systemic pesticides were creating the "perfect storm".

"Particularly the neonicotinoids group which also carry warnings not to use treated crop material for grazing or to be fed to other livestock," he said.

"Nearly all seeds are coated with a dressing, usually neonicotinoids which are systemic, then you go and add a fungicide spray which is also systemic and then comes the foliar spray, also systemic."

"The combination of these chemicals can increase the toxicity of the chemicals within the plant by more than 1000 per cent."

"It also means that the maximum residue level (MRL) management of our food chain for human protection needs looking at."

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THE FROST REPORT

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CALIFORNIA QUEEN

Greetings! Let's get acquainted. My name is Elizabeth Frost and I am pleased to introduce myself as a NSW DPI Honey Bee Development Officer. I'll be working out of the Tocal Agricultural College and collaborating with Doug Somerville during the interim of Nick Annand's leave.

I am a native of California and have worked closely with queen breeders, researchers and migratory beekeepers in the United States for the past six years. I got my start working for Sue Cobey at the University of California, Davis after completing my (major) degrees (in English and Italian and a minor degree in Entomology). During the next four years I maintained breeder and research colonies, acted as a teacher's aide for queen rearing and instrumental insemination courses, raised queens, facilitated research projects with Dr. Eric Mussen and Dr. Brian Johnson and collected bee semen for annual collaborative breeding efforts between California queen breeder stocks and imported stock from Europe. A fun fact, I collected 550 microlitres of bee semen while working with Sue just three days before flying from San Francisco to Sydney, a personal record!

My next round of employment was with the Bee Informed Partnership, the brainchild of Dr. Marla Spivak of the University of Minnesota and Dr. Dennis vanEngelsdorp of the University of Maryland. I worked as a seasonal technician with queen breeders and migratory beekeepers in Minnesota and North Dakota during summer months and queen breeders in California during fall, winter and spring months.

Technician teams provided hive assessment, *Varroa* and *Nosema* sampling and hygienic trait testing prior

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to breeder selection. Working on both the Midwest and California Technician Teams provided an invaluable look at 14 California queen breeding businesses and 15 Midwestern migratory businesses and the varying management strategies among them. If there's more than one way to skin a cat there are certainly more than 14 ways to raise a queen bee. The key is to figure out the best methods!

Prior to applying for the Honey Bee Development Officer position I visited Australia for the first time from December 2013 through February 2014. During this time I worked in Queensland for NT Bees, catching queens, running cell-bars, smoking-up cell builders and providing instrumental insemination instruction to queen breeders Graham Beech and Corinne Jordan-Ivers. In New South Wales I helped pull and extract honey for C.F. Horner & Son/Flora Glen Apiaries and had the good fortune to examine the Horner's unique isolated mating set-up. In Western Australia I inseminated queens and moved nucs for Ron Clark of Boss Lady Queens and was able to have a few valuable bee-related yarns with Dr. Rob Manning of DAWA and Tiffane Bates of CIBER. As a result of these travels I fulfilled my goal of gaining a better understanding of the Australian queen breeding industry in particular and the bee industry in general.

Now, what can I do for you? The major output of my time with the NSW DPI will be a practical guide to queen bee rearing and breeding based on the national competency training guidelines. Among other things I will provide instruction at the Tocal Bee Field Day in October. I am excited to be a Honey Bee Development Officer for this State and look forward to speaking with you on all things bee-related.

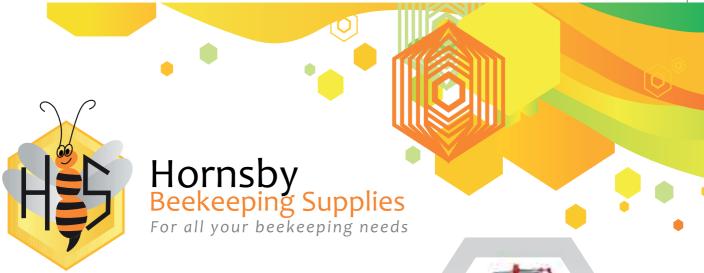
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USDA-FOCUS ON HONEY BEE HEALTH

Statement of Jeff Pettis - 29 April, 2014
Research Leader USDA - Agricultural Research Service
Testimony before the House Committee on Agriculture
Subcommittee on Horticulture, Research, Biotechnology and Foreign Agriculture United States of America

Chairman Scott, Ranking Member Schrader and members of the subcommittee, I am Dr Jeff Pettis, Research Leader of the Bee Research Laboratory in Beltsville, Maryland, a research laboratory dedicated to honey bee health and part of the USDA Agricultural Research Service. I am pleased to appear before you to discuss a serious threat to the honey bee and thus our food security in the United States.

Ultimately, if no long-term solutions are developed to slow bee decline, consumers will pay more for the food they buy. The foods that bees are responsible for pollinating tend to be the foods that add vital nutrients, flavour and diversity to our diet: the fruits, nuts and vegetables that maintain health. Bees pollinate more than 90 crops and are responsible for \$15 billion in added crop value. Over half the nation's bees are needed to pollinate almonds alone, a \$3 billion crop with increasing acreage.

One of the biggest problems facing honey bees and beekeepers today is the varroa mite. The varroa mite's full name is Varroa destructor, and it is perhaps the most aptly named parasite ever to enter this country. Varroa destructor is a modern honey bee plague. It has been responsible for the deaths of massive numbers of colonies both within the United States and worldwide. This mite is native to Asia where it normally parasitizes Apis cerana, the eastern or Asian honey bee, an entirely different species of honey bee from Apis mellifera, or the western honey bee, that was brought to the New World by Europeans, and on which the US now depends for crop pollination. Asian honey bees have some natural defences against the mite and consequently are rarely seriously affected by the Varroa. European honey bees, on the other hand, have been devastatingly susceptible to varroa mite damage. The simple act of feeding by Varroa, where it pierces the skin of the bee to suck blood, can introduce bacteria and weaken the immune system of bees. Varroa mites also transmit an array of destructive viruses to honey bees, such as deformed wing

When Varroa destructor was first found in the Unites States in 1987, beekeepers managed more than 3 million colonies for crop pollination and their winter losses were typically about 10 to 15 percent. Today, beekeepers are having trouble maintaining 2.5 million managed colonies, winter losses are averaging over 30 percent a year, and the economic sustainability of beekeeping is at the tipping point. Beekeepers have identified varroa mites as a major problem. The costs of mite controls and replacing hives that only live 1-2 years, as opposed to living 3-5 years before the arrival of Varroa, are all accumulating to the point where varroa mites are making beekeeping no longer financially viable in this country.

For commercial beekeepers, there are currently only three fast-acting treatments for varroa mites: the miticides fluvalinate, coumaphos, and amitraz. While there are also a number of folk remedies and organic treatments, none work as well as these other treatments and all involve more labour and costs to apply. However, varroa mites are adapting and becoming resistant to fluvalinate and coumaphos. Some new treatments are in the pipeline but even a new effective miticide will only provide a short-term solution because it is only a matter of time before the varroa mite will adapt to that miticide as well, continuing the destructive cycle. What beekeepers truly need are long term solutions to varroa mites.

The beekeeper's best hope is research that can build better tools to reduce the size of the varroa mite problem. Researchers at USDA's scientific agencies--the Agricultural Research Service (ARS) and the National Institute of Food and Agriculture (NIFA) are on that trail right now. In ARS, scientists are working with a total budget of approximately \$11 million dollars in FY2014, with approximately \$3 million targeting Varroa specifically. Additional temporary funding of \$1.3 million in 2013 has been provided on bee health through the Areawide Program of ARS. These funds have helped augment the base funds and allow scientists to work closely with commercial beekeepers to try and improve colony survival.

ARS scientists are developing improved best management practices to help beekeepers deal with immediate issues of overcoming varroa mites. By applying microbiological, genomic, physiological, and toxicological approaches, we are creating new tools for beekeepers to build and maintain healthy bee populations. For long-term solutions, ARS is looking to the genetics of both the mite and the honey bee. ARS has an active breeding program designed to increase resistance mechanisms in European honey bees. For example, some bees have a propensity for nest cleaning and grooming behaviours and these have been exploited in breeding programs as control measures. ARS is also working on improving epidemiological nation-wide monitoring of pest and diseases, biochemical disruption and a host of other possibilities.

NIFA is supporting extramural research, extension, and educational programming to scientists, extension specialists and educators to address declines in pollinators. Dozens of competitive and capacity grants are focused on novel strategies to manage the varroa mite, which are expected to better protect pollinators from this devastating pest. Since 2010, NIFA has awarded competitive grants on pollinator health worth an estimated \$13 million dollars, including approximately \$2.6 million targeting Varroa specifically. Varroa does not act alone on bee health and thus many of these projects take a holistic approach, looking into the multiple factors affecting honey bees and other pollinators. In one NIFA funded project, University of Minnesota extension specialists are assisting honey bee queen breeders in selecting for hygienic behaviour, a trait that helps bees defend against varroa mites and other diseases. In another, Cornell scientists are testing the hypothesis that giving colonies smaller hives will provide the mites fewer opportunities to reproduce and this will lower the per capita level of mite infestation of the

The work at USDA is part of a government-wide response to the large and ongoing declines in pollinator populations in the US and world-wide. The President's FY 2015 budget proposes over \$71 million for USDA alone to focus on this issue. This includes a \$25 million initiative to create an Innovation Institute on Pollination and Pollinator Health, a competitive program that will be managed by NIFA. As a measure of the seriousness with which the varroa issue is regarded, USDA hosted a Varroa Summit in February of this year. More than 75 representatives and researchers from beekeeping organizations, agricultural commodity groups, the crop protection industry, universities and federal agencies such as APHIS, ARS, NIFA, NRCS and EPA attended to discuss research needed to solve the problem of varroa mites. The attendees identified numerous specific short-term and long-term research priorities. Most of these concerned the need to develop the underpinnings for new approaches to controlling varroa mites: finding natural biocontrol agents, developing RNA interference as a control measure, developing area-wide management practices and improving best management practices, and identifying

genetic markers and breeding for bee traits that will provide varroa survivability. Attendees also recognized the need for more extensive communication between researchers and beekeepers for collection of epidemiological and economic varroa mite data and for transmitting new information from researchers on techniques for controlling varroa. One potential outcome of the Varroa Summit will be an increased level of collaboration between scientists and more public-private and Federal-university partnerships.

But even if the varroa mite problem were solved today, this would not by itself solve all of the problems facing honey bees and beekeepers. In the last 20 years, a whole host of new honey bee pathogens—viruses, bacteria, fungi, mites—have entered the United States. We know that the effects of viruses in particular are significantly exacerbated when coupled with the presence of Varroa. Colony collapse disorder, a syndrome for which scientists still do not have a cause, continues to take a toll on apiaries. Exposure to pesticides in the environment may be weakening bee colonies, possibly making them more susceptible to other stresses. A lack of diversity in nectar and pollen sources may also play a major role in stressing honey bee colonies. The loss of honey bees may also reflect a much larger issue of general pollinator declines, with honey bees acting as an indicator species. The relative contributions of different stressors for CCD is not well understood and solving this problem will take an all hands on deck approach, including research, public education, increased foraging lands and public/private partnerships to address CCD and the larger loss of pollinators.

To meet today's increasing pollination demands, we need well over 3 million managed honey bee colonies in this country. To do that, we need to make beekeeping profitable again and that starts with controlling Varroa destructor.

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MORE THAN HONEY: THE FUTURE OF THE AUSTRALIAN HONEY BEE AND POLLINATION INDUSTRIES

Report of the inquiry into the future development of the Australian honey bee industry. House of Representatives, Standing Committee on Primary Industries and Resources, May 2008.

List of recommendations:

Current and future prospects

1. The Committee recommends that the Australian Government provide the necessary leadership, funding and organisational resources to establish and run Pollination Australia.

Pollination Australia never got off the ground. An alliance between industries reliant on honey bee pollination, driven by the Almond Board and the Australian Honey Bee Industry Council (AHBIC) made moves in this direction, but there was never a formal structure. They attracted a \$25,000 grant from a cosmetic company but no government funds. The Pollination R&D committee was established under Rural Industries Research and Development Corporation (RIRDC) at about the same time. This committee is in the process of amalgamating with the Honey Bee Research and Development (R&D) committee to save on administrative costs under RIRDC.

Bees in Agriculture

2. The Committee recommends that the Australian Government fund research and training in the provision of paid pollination services as part of its contribution to Pollination Australia.

The business plan developed for Pollination Australia also identified a mechanism and governance structure for the Pollination R&D Program that is jointly funded by RIRDC and Horticulture Australia Limited (HAL). The Program has invested approximately \$1.6 million in research, development and extension activities consistent with the priorities of the Pollination Five-Year R&D Plan 2009-2014.

3. The Committee recommends that the Australian Government fund research into alternative pollinators as part of its contribution to Pollination Australia.

This relates to the development of native bee species for use in commercial pollination. There are between 1,500 and 2,000 native bee species within Australia, providing a vast pool of potential pollinators. Unfortunately there is very little basic information on this subject and there are no specific funding bodies which are targeting this area of science.

The Pasture Seeds Program of RIRDC have funded and published a research report about alternative pollinators (Native Australian Bees as Potential Pollinators of Lucerne). There have also been attempts historically to import and establish leaf-cutter bees, with limited success.

4. The Committee recommends that the Australian Government alter labelling requirements for agricultural chemicals to reflect their impact on honey bees and other pollinating insects.

A workshop on Pesticides and the Health of Insect Pollinators was hosted by Australian Pesticides and Veterinary Medicines Authority (APVMA) in July 2013 in Canberra. The 19 participants were mainly Federal government department representatives with responsibilities to insect pollinators and chemical registrations in Australia. Each had different responsibilities, for example. - consideration of chemical test data requirements, risk assessment methodology and label statements. Discussion on a recently completed report on the issue of agricultural chemical labelling as it refers to honey bees was also tabled and discussed.

Neonicotinoids and other insecticides—research and stewardship symposium was hosted by Plant Health Australia (PHA) in Canberra on the 9th April 2014. There were approximately 80+ participants, including representatives from chemical companies, apiarists' associations, government officials and seed or grower organisations.

A project funded by RIRDC through the pollination program, in conjunction with the Victorian Government, published a report about the impact on honey bees of agricultural chemicals from information on labels. The title: Honeybee Pesticide Poisoning - A risk management tool for Australian farmers and beekeepers.

Resource security

5. The Committee recommends that the Australian Government, in conjunction with State and Territory governments, establish guidelines for beekeeper access to public lands and leasehold lands, including national parks, with a view to securing the floral resources of the Australian honey bee industry and pollination dependent industries.

This project was completed in December 2007 with the publication of "National Best Management Practice for Beekeeping in the Australian Environment" guidelines. This project was conducted by NSW DPI staff via funding from Department of Agriculture Fisheries and Forestry – Canberra (DAFF). The guidelines are available on the New South Wales Department of Primary Industries (NSW DPI) and AHBIC web sites.

Related to this recommendation, RIRDC expects to invest in a research project in 2014, through the Pollination Program, to address the following research priority: 'Evaluate which types of public lands have management objectives compatible with access by managed honey bees and those that do not have such objectives'.

6. The Committee recommends that the Australian Government provide incentives for the planting and conservation of melliferous flora under Commonwealth funded revegetation projects and carbon credit schemes. RIRDC funded and published, through the Honey bee Program, the following very popular book that identifies herbs, shrubs and trees that provide nectar and pollen attractive to honey bees, by climate zone and rural and urban landscapes: 'Bee Friendly: A planting guide for European honey bees and Australian native pollinators.'

7. The Committee recommends that the Australian Government fund research into the impact of fire management on the Australian honey bee industry with a view to establishing honey bee industry friendly fire management practices.

This is an issue for State government agencies managing government lands. To my knowledge there has been no activity associated with this recommendation.

Biosecurity

- 8. The committee recommends that the Australian Government maintain and enhance the National Sentinel Hive Program with a view to ensuring that:
 - all major ports are covered by sentinel and bait hives:
 - all beekeepers are brought under the program, with priority given to those operating in the vicinity of port facilities;
 - arrangements are made for an effective program of pre- border security; and
 - o government provides funding adequate to achieving the above objectives.

On 4 November 2008, the Minister for Agriculture, Fisheries and Forestry, the Hon. Tony Burke MP, announced that, consistent with Recommendation 8 of the committee's report, the government will provide \$300,000 over the next two years to continue the National Sentinel Hive Program. This money was provided from the Commonwealth Department of Agriculture to Animal Health Australia (AHA) who were coordinators of the project at the time.

In January 2012 the management of the National Sentinel Hive Program was transferred from AHA to Plant Health Australia (PHA). Along with this transfer, the remaining commonwealth funding for this project was transferred to PHA for continuation (approximately \$150,000). This funding actually lasted until June 2013, not the two years originally envisaged (i.e. no one did anything in the years previous, so the money just sat there). This followed the transfer in responsibility for bees at a national level from Animal Biosecurity to Plant Biosecurity. Upon the transfer to PHA, the name of the surveillance program was changed to the National Bee Pest Surveillance Program to reflect a transition to a more broadly based surveillance program for bee pests and pest bees.

Historically, the surveillance program was funded entirely by the Commonwealth government. PHA worked with the Department of Agriculture, HAL and the AHBIC to make this program a cost shared initiative from July 2013. From this date, HAL and AHBIC each contribute \$75,000 per annum, with the Department of Agriculture contributing \$60,000 per annum.

PHA have made numerous improvements to the National Bee Pest Surveillance Program (NBPSP), by increasing the frequency of testing at high risk ports, adding additional high risk ports, including a range of other surveillance techniques to be conducted. The NBPSP is now one of the world's leading and coordinated bee surveillance programs.

Projects funded by RIRDC associated with this recommendation include: Risk assessment of ports for bee pests and pest bees; BeeForce: Improving high risk surveillance; BeeForce: developing the regional model.

9. The committee recommends that the Minister for Agriculture, Fisheries and Forestry request that the Australian Pesticides and Veterinary Medicines Authority fast track the pre-registration of pesticides and other chemicals necessary to combat a Varroa incursion.

PHA has taken over the management and renewal of registered chemicals for this purpose from the Federal Department of Agriculture. Bayvarol, Apistan and ApiGuard are all registered for emergency use. For the past 18 months PHA have worked with Department of Agriculture and BASF to register Mite Away quick strips. This application will soon be submitted to APVMA.

- 10. The committee recommends that the Australian Government improve the nation's incursion response capacity by providing for:
 - Better education of those charged with border protection;
 - o Improved diagnostic capacity for pests and diseases;
 - The establishment of national diagnostic protocols;
 - The establishment of a national integrated pest and disease management protocol; and
 - The establishment of a comprehensive biosecurity research program for the honey bee and pollination dependent industries.

The Varroa Continuity Strategy was created as a result of the 2008 inquiry. PHA are the principal agency to promote, coordinate, implement and report on the progress of the strategy. Funding of \$75,000 for this role was provided by the Federal Government from 2011 until 2013.

PHA formed the Varroa Continuity Strategy Management Committee (VCSMC) in October of 2011 and its membership consisted of honey bee scientists, government representatives, R&D agencies and industry representatives from the honey bee industry and pollination-reliant industries. The VCSMC (and project) was finalised in June 2013. Many major reports were produced as part of this project, and some projects are still continuing with industry and R&D agency funding.

Related to this recommendation, investment has been made through RIRDC and HAL in the following publications and resources: The Industry Biosecurity Plan for Honey Bee Industry (outlines key threats to the industry, risk mitigation plans, identification and categorisation of exotic pests and contingency plans and is available from PHA); Biosecurity manual for honey bee industry – reducing the risk of exotic and established pests affecting honey bees; Biosecurity online training module that provides advice on keeping honey bees healthy using industry best practice; A Honey bee biosecurity threats brochure that describes established and exotic pests of honey bees in Australia.

- 11. The Committee recommends that the Minister for Agriculture, Fisheries and Forestry establish a new honey bee quarantine facility as a matter of urgency, this facility to be commissioned prior to the closure of the current facility at Eastern Creek, and that:
 - This facility is integrated into a national honey bee and pollination research centre;

- This facility have a containment laboratory for research on honey bee genomics and biotechnology;
- The Minister for Agriculture, Fisheries and Forestry enter into immediate negotiations with his New South Wales counterpart to establish the new honey bee quarantine facility at the Elizabeth Macarthur Agricultural Institute, Camden, or some other suitable location.

The existing bee quarantine facility at Eastern Creek in Sydney will be closed by August 2015. The beekeeping industry were told that the new bee facility will be built at Melbourne. There was no choice, either Melbourne or nothing, even though the Melbourne site will be technically very difficult for the beekeeping industry to use. There was no consideration for a facility to be built at the Elizabeth Macarthur Agricultural Institute (EMAI) in Sydney.

There was no activity as a result of the 2008 inquiry to build a national bee research and diagnostic facility for bees.

12. The Committee recommends that the Minister for Agriculture, Fisheries and Forestry direct Biosecurity Australia to complete the import risk analysis for drone semen by the end of 2008.

A Draft generic import risk analysis for honey bee semen, technical issues paper was produced in August 2002 by Biosecurity Australia. Due to the length of time since this report was completed, there is apparently a need to update this risk analysis.

Related to this, RIRDC has invested in a project to develop a test of 'Africanization' of imported semen in honey bees, which is due for completion in 2016. If successful, the test could be part of biosecurity measures to allow beekeepers to import semen more safely from countries where 'killer bees' exist. There are numerous countries where African bees do not exist from where semen could be imported.

13. The Committee recommends that the Australian Government, in conjunction with State and Territory governments, establish and fund a national endemic bee pest and diseases control program.

A RIRDC funded meeting was conducted in Canberra in March 2013 between industry and government agencies titled 'American foulbrood Future Management Workshop'. From this workshop it was agreed that a collective or national biosecurity approach be adopted for exotic preparedness and endemic diseases of honey bees. A strategy was produced with several action items. The Federal government provided a \$67,000 grant to AHBIC to facilitate the process and progress some of these action items, including increasing the levy on honey produced to fund future activities in this area. Also, in parallel with this activity PHA funded by RIRDC, are developing the national biosecurity program and code of practice.

- 14. The Committee recommends that the Australian Government, in conjunction with State and Territory governments, establish bee biosecurity regions based on natural boundaries, being:
 - Eastern Australia, including New South Wales, Victoria, Queensland, Australian Capital Territory and South Australia;
 - Tasmania;
 - Western Australia;
 - o Northern Territory; and
 - Kangaroo Island.

This is a decision each state will make depending on the pathogen or pest to be controlled. This scenario already exists.

15. The Committee recommends that the Australian Government, in conjunction with State and Territory governments, establish a national system of registration for beekeepers, bee hives and apiary sites.

There is no beekeeping registration system in the ACT and the system in Tasmania is currently voluntary. All other states have a compulsory registration system. To my knowledge no state government DPI records or registrars apiary sites. This may have happened over 100 years ago in NSW, but due to the regular movement of apiaries in the course of beekeepers carrying out their business of commercial beekeeping, the central recording of bee hives is not feasible. If there was an attempt to do this, the cost of beekeeper registration would be astronomically high.

Apiary sites are leased by state governments to beekeepers for the placement of bee hives on government managed land. There may or may not be a requirement of the conditions of the use of those sites to report to the authorities when the sites are being occupied.

16. The Committee recommends that the Australian Government commit \$50 million per annum in pursuit of biosecurity measures and research in support of the Australian honey bee industry and pollination dependent industries.

There have been various financial commitments by the Federal Government, over time, to specific biosecurity and research programs but not the exact amount stated in the 2008 inquiry report. RIRDC and HAL play a key role in managing industry and government money for beekeeping biosecurity and research outcomes. The current program budget for R&D through RIRDC on honey bee related areas is \$807,000.

Economic and trade issues

17. The Committee recommends that the Australian Government request the Australian Competition and Consumer Commission to investigate pricing practices for honey within the honey bee industry and the retail sector.

Not sure what this recommendation is alluding to but it is believed that the Australian Competition and Consumer Commission (ACCC) has not conducted any investigation.

18. The Committee recommends that the Australian Government request the Productivity Commission investigate the long term viability of the Australian honey bee industry in respect of industry organisation, marketing structures and the financial viability of producers and packers.

Again, it is believed that nothing has happened with this recommendation.

19. The Committee recommends that the Department of Immigration and Citizenship look at the skilled migration program with a view to further refining opportunities for the honey bee industry and the emerging pollination industry.

Skilled workers available to work in Australian have been a major constraint to beekeeping businesses in recent years. The 457 visa scheme has tightened up requirements, requiring high level English reading and writing skills which are not necessarily demonstrated by skilled international beekeepers.

20. The committee recommends that the Australian Government develop product standards for honey and other bee products with regard to food standards and chemical contamination in line with those in force in the European Union, and that all imported honey products are tested against this standard.

Only 5% of imported honey is tested, even though chemical contamination of honey on the world trading stage is a major issue. AHBIC have in place a honey quality residue committee that is likely to be working on this space.

Contaminates that should be routinely tested for with all imports include: Chloramphenicol, Nitrofurans, Oxytetracycline, Sulfonamides, Streptomycin, Macrolides, Phenol, C4 Sugars, Paradichlorobenzene, and Amitraz.

21. The Committee recommends that the Australian Government develop labelling standards to more accurately reflect the place of origin and composition of honey and honey bee products.

There has been no action on this recommendation even though there is a definite need to protect Australian produced honey and honey bee products.

22. The Committee recommends that the Australian Government pursue the development of a uniform international standard for the testing and labelling of honey bee products and the removal of all tariffs on honey bee products.

This is never likely to happen as each country will have their own priorities. Unfortunately, Australian honey was left out of the free trade agreement between South Korean and Australia.

23. The Committee recommends that the Australian Government, in consultation with industry, reduce inspection charges, if possible, for queen and packaged bees.

Inspection charges are set by the state DPI's. In NSW this has been \$130/hour since at least 2008. There may be different charges in each state. For example, it is believed that Tasmania charges \$100 and Western Australia approx. \$250.

The document processing and administration fees are charged by Australian Quarantine and Inspection Service (AQIS). In March 2009 they were \$48 per unit price; in April 2014 they were \$70.50.

Research, extension and training

24. The Committee recommends that the Australian Government establish a national centre for honey bee and pollination industry research, training and extension, funded as per Recommendation 16.

An attempt to establish a Honey bee and Pollination Cooperative Research Centre was made in 2012. Unfortunately, there were insufficient funds and support to allow this proposal to progress.

- 25. The Committee recommends that the Australian Government alter research funding arrangements to allow for:
 - voluntary contributions to research funding to be matched by government funding; and
 - o a levy on pollination services to be allowed under

Voluntary contributions can be accepted by RIRDC to add to their pool of R&D funds but the issue is the gross undervaluation of the Australian honey bee industry. The Federal government matches R&D expenditure up to 0.5% of the Gross Domestic Product (GDP) of the honey bee industry. The current Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) valuation for the honey bee industry is \$76 million. This figure should be a combination of the value of production of both honey production and pollination services, plus any other bee related products. The figure provided by ABARES seems to substantially undervalue the beekeeping industry and, as such, effectively restricts the amount of funds that are available for R&D.

There has been no attempt to change the laws surrounding levies to include services delivered such as pollination fees, even though the beekeeping industry has supported and encouraged this as a strategy to increase the R&D activity in this area.

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The venom from a deadly Australian spider offers promise of a new bio-pesticide that kills key insect pests but leaves honey bees unharmed

The insect-specific Hv1a/GNA fusion protein bio-pesticide is a combination of a natural toxin from the venom of the funnel web spider and snowdrop lectin. Researchers at Newcastle University in the United Kingdom says feeding acute and chronic doses to honeybees – beyond the levels they would ever experience in the field – had only a very slight effect on the bees' survival and no measurable effect at all on their learning and memory.

Publishing their findings in the journal *Proceedings of the Royal Society B*, the researchers say the insect-specific compound has huge potential as an environmentally-benign, bee-safe bio-pesticide and an alternative to the chemical neonicotinoid pesticides which have been linked to declines in pollinator populations.

Prof Angharad Gatehouse of the Newcastle's School of Biology says the university's findings suggest that Hvla/GNA is unlikely to cause any detrimental effects on honeybees. "Previous studies have already shown that it is safe for higher animals, which means it has real potential as a pesticide and offers us a safe alternative to some of those currently on the market," he says.

The Commonwealth Scientific and Industrial Research Organization lists 14 deaths from funnel web bites since 1927, but there have been none since anti-venom was developed in the 1980s. The spiders are medium-to-large in size, with body lengths ranging from 1 cm to 5 cm (0.4" to 2"). Their primary range is the east coast of Australia and they are found in New South Wales, South Australia, Victoria, and Queensland. The only Australian states or territories without funnel-webs are Western Australia] and the Northern Territory. During the research, involving scientists from Newcastle and Durham Universities and the Food and Environment Research Agency, the bees were exposed to varying concentrations of the spider/snowdrop bio-pesticide for seven days. During this time the research team carried out a series of memory tests and recorded any changes in behaviour. Unlike many other pesticides, Hv1a/GNA is not absorbed through the exoskeleton and had to be ingested by the insects.

It is also different from other pesticides in that it affects an underexplored insecticidal target – calcium channels. These are more diverse than commonly targeted insecticide receptors, such as sodium channels, and offer the potential for more species-specific pesticides. "Calcium channels are linked to learning and memory in bees so it's vital that any pesticide ... does not interfere with this process," says research lead Erich Nakasu, a PhD student at Newcastle University.

"Although Hv1a/GNA was carried to the brain of the honeybee, it had no effect on the insect, which suggests the highly selective spider-venom toxin does not interact with the calcium channels in the bee."

The larvae are also unaffected by the Hvla/GNA, as they are able to break it down in their gut. Dr Geraldine Wright, one of the authors on the paper who heads up Newcastle University's Honeybee Lab, last year led the research highlighting the damaging effect of neonicotinoids on bees' ability to learn and remember and subsequently communicate to their hive mates. "There is now substantial evidence linking neonicotinoid pesticides to poor performance and survival in bees and what we need now is a clear directive from government to develop and introduce bee-safe alternatives," she says

Gatehouse says Hv1a/GNA isn't going to be one silver bullet. "What we need is an integrated pest management strategy and insect-specific pesticides will be just one part of that," he says.



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HONEYLAND REPORT 2014

A highlight of *Honeyland* this year was a visit by their Royal Highnesses the Duke and Duchess of Cambridge, William and Kate.

As soon as the Duchess entered the Dome. She made a beeline to the *Honeyland* live bee cage where she chattered about her brother owning beehives, asked about Australian bees and our honey. She thought I was game not wearing a bee veil, the Duchess called the Duke over and he asked about queen bees and was very aware how important bees were to agriculture and the world's concern about the decline in the world bee population.

Honeyland volunteers present during the royal visit were Dr Shona Blair, Nural Cokcetin and Mark Page, as the area was restricted for the visit only three volunteers were allowed to be present.

A lot of factors fell into place this year, school holidays, the Royal Visit, good weather later in the show and a lot of publicity about honey being in short supply. This resulted in a very successful show for the Association.

A special thanks goes to the Bingley family - Neil and Brett provided a lot of the transport and organised the setting up and packing up of *Honeyland*. Also the Kershaws for providing a depot for some of the stock we required.

Donations of product by honey packers for the promotional bags from Rain Forest, Superbee, Beechworth, Golden Nectar (R. Stephens), Capilano and Natures Beez Honey were very much appreciated and gave the purchasers the chance to taste different honeys.

Honeyland was decorated by Margaret and Bruce Blunden a very professional job. The theme being pollination and bee security. Wheen Bee Foundation posters were also used.

The donation of River Red Gum honey from Harold and Judy Saxvik and the Yellow Box from Bert and Nardene Seagrave was very much appreciated, of the five floral types of honey for sale River Red Gum was the most popular, others being Leatherwood, Stringybark, Ironbark and Yellow Box.

This year volunteers were members of the NSWAA, The Amateur Beekeeping Association, North Shore Beekeepers Association, TAFE beekeeping students and friends of beekeepers.

All the volunteers worked just like the workers in a bee hive with a blend of previous volunteers and first timers, all the tasks were carried out without the need to ask. **Volunteers were:**

Bruce White, Brett Bingley, Neil Bingley, Doyle Egelhoff, Paul Drew, Margaret Blunden, Geoff Manning, Liane Colwell, Andrew Wight, Wayne Hammond, David Cowling, Lynn White, Doug Purdie, Kevin Haswell, Brian Woolfe, John Knox, Bill Weiss, Carl Cooper, Ken Jackson, Lurline Tanner, Cate Burton, Shannon Schmidt, Jenny Farrell, Tamara Mantchakidi, Bob Perkins, Julie Lockhart, Wendy Wilson, Dave Wilson, Lamorna Osborne, Bill Dick, Warwick Smith, Casey Cooper, Enid Whitby, Eric Whitby, Debbie Porter, Malcolm Porter, Nural Cocketin, Seda Cocketin, Laurie Kershaw, Therese Kershaw, Rob Michie. Raelene Michie, David Lord, Cecilia MacDonald, Sheryl McIntosh, Shona Blair, Rhonda Smith, John Benfield, Noelene Benfield, Warren Williams, Robyn Croslands, Ann Hawke, Tony Hawke, Lindsay Howes, Vicky Baistow, Rick Keyess, Agnes Baistow, Mark Page, Irwyn Doherty, Rosemary Doherty, Dave Thompson, Geoff Smith, Debbie Smith, Nicki Smith, Brendon Smith, Kay Moore, Melanie Hofsters, Wayne Hammond, John Mansfield, Tara Er and Juanita Di Angelo.

Volunteers that offered to help but I had enough were Reg Marsh, Neil Peadon, Peter Ives, Joy Hood, Damian White, Jenna Barker, Suzette Deville, Andrew Jenkins and Lee & Bruce Hughston were to come but Lee needed a heart operation.

Bee Demonstrations

The following members did live bee demonstrations four times a day during the show using the Sydney Branch Bee Zeebo: Casey Cooper, Mal Porter, Doyle Egelhoff, Paul Drew, Wayne Hammond, Dr Lamorna Osborne, Bruce White, Tamara Mantchakidi, Geoff Manning, Geoff Smith, Brian Woolfe, John Knox and David Lord. A special thanks goes to Doyle Egelhoff for supplying the bee colonies used in the demonstrations.

Media Coverage of Honeyland

Radio interviews were done by Casey Cooper, Cate Burton, David Cowling and Bruce White. A newspaper article appeared in the Daily Telegraph, China TV videoed *Honeyland* and another production company doing a show on Australian sustainable food featured *Honeyland*. The show will be on Fox with a claimed, audience of at least 44 million worldwide.

Honeyland plays an important part at the show by educating the public about beekeeping, the importance of bees to agriculture recruiting new members and promoting the sale of apiary products and helping fund Association activities.

Special thanks to the other two members of the show committee Shona Blair and Neil Bingley, the rest of the executive and everyone stock was purchased from and packed the Association's labelled honey.

Also Kate McGilvray who made all the arrangements with the Royal Agricultural Society to stage *Honeyland* and Elaine Rogers from the RAS for her strong support.

Bruce White OAM Co-ordinator Honeyland



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Attendees at the "WHERE IS THE ASSOCIATION HEADED AND WHAT DO WE WANT FROM IT?" workshop held on 7 May in Narrabri





On Saturday 10 May, following Conference a mixed bunch ventured into the Pilliga with three very capable guides:





Australia's Honeybee News May/June 2014





Casey Cooper presenting Neil Bingley with the inaugural Keith McIlvride Award at the Conference Dinner





Casey Cooper, Rob Michie & Bill Weiss - What a great day - thanks to the hospitality of the Northern Tablelands Branch





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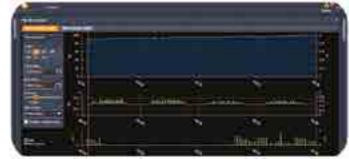
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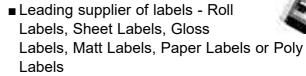
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BEEKEEPERS' FIELD DAY

NORTHERN TABLELANDS BRANCH

The Northern Tablelands Branch held a Beekeepers' Field Day at Glen Innes on the 8 March with approximately 80/90 participants attending. The Branch provided a BBQ lunch to all who attended.

All round it was a huge success with everyone learning heaps on the day! A bus load of 25 beekeepers travelled up from the Mid North Coast. The beekeepers were predominately recreational.

Thank you to Doug Somerville and Nick Annand for addressing this field day.

Topics covered included:

- Opening a bee hive
- Nutrition
- Pests & diseases of honeybees
- Requeening a hive
- Sugar feeding techniques
- Compliance

The branch members found it was great to interact with the recreational beekeepers and they were all thirsty for knowledge. The response by these beekeepers was very positive and a follow up field day would be very worthwhile in the future.

Tina Woolfe







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INTERSPECIFIC MATINGS BETWEEN APIS CERANA AND APIS MELLIFERA DOES IT HAPPEN AND WHAT DOES IT MEAN FOR THE INDUSTRY?

PROJECT SUMMARY

Professor Ben Oldroyd and Dr Emily Remnant

The Issue

An Asian honey bee, *Apis cerana*, became established in Cairns in 2007. This new invasive species is likely to have various adverse effects on the natural environment and on the beekeeping industry. This Summary addresses two of the most important issues confronting the beekeeping industry: do interspecific matings occur between the invader and endemic *A. mellifera* and if matings do occur, does it matter? Previous studies in Japan showed that if there are no other males to mate with, *A. mellifera* queens will mate with *A. cerana* drones. After such matings eggs either fail too hatch, hatch into drones, or, rarely, into female clonal offspring of the queen.

Outcomes

Overlapping mating times

Drones of both species fly at similar times of day, so there is opportunity for queens and drones of different species to meet and mate.

Similar mating places

Honey bees mate on the wing at specific places called drone congregation areas (DCA). *A. mellifera* mate in clearings surrounded by trees – suburban sports fields are commonly used. *A. cerana* mate adjacent to trees facing an open area. We surveyed likely spots in Cairns with a sex-pheromone drone trap suspended from a helium balloon. We found two *A. cerana* DCAs in parks, but no *A. mellifera* DCA. However, the *A. cerana* DCAs were near places that would be very suitable for an *A. mellifera* DCA. So interspecific matings seemed likely.

A DNA test shows that interspecific matings occur in Cairns

We developed DNA tests to determine if we could find *A. cerana* sperm in the spermathecae of *A. mellifera* queens and *A. mellifera* sperm in the spermathecae *A. cerana* queens. We tested 12 *A. mellifera* queens from Cairns and 4 had mated with one or more *A. cerana* males. We tested 22 *A. cerana* queens, but none had mated with *A. mellifera* drones.

No evidence of hybrid eggs

We tested 213 eggs from three naturally-mated queens mated in the Cairns area with our DNA test. The three queens all had *A. cerana* sperm in their spermatheca. We did not detect any hybrid eggs. Therefore we assume that hybrid eggs do not hatch and are removed by nurse workers.

Interspecific artificial insemination

We used AI to cross five *A. mellifera* queens with sperm collected from *A. cerana* drones. We tested the eggs of these queens with our DNA test (Table 1). One queen produced heterospecific eggs. One queen produced a thelytokous worker. That is, the egg fertilized itself and produced a copy of the queen's genotype. Thelytoky is a potential major worry for the industry. In South Africa there is a thelytokous strain of honey bee called *A. mellifera capensis*. Workers of this strain enter production hives and parasitise them with their eggs. These workers never do any work, so the host colony quickly collapses and dies.

Queen number	Insemination		Brood sampled	Offspring sex
	Number of drones used	Volume of semen(µl)		
1	21	2	Pupae	24 drones 1 thelytokous worker
2	5	0.5	Pupae	All drones
3	8	0.5	Eggs	9 interspecific hybrids
4	9	0.5	Pupae	All drones
5	11	0.5	Pupae	All drones

Implications

A. mellifera queens that mate in areas where A. cerana colonies are present are very likely to encounter A. cerana males and mate with them. Depending on the proportion of A. mellifera and A. cerana males that mate with the queen, the fertility of the queen will be reduced – her eggs will not hatch. This will reduce the productivity of colonies headed by A. mellifera queens that mate in A. cerana areas.

Recommendations

- Every effort should be made to restrict the expansion of the area occupied by A. cerana.
- We do not recommend restrictions on queen rearing in areas where *A. cerana* is present.
- We have shown that thelytoky can be induced by interspecific crosses. We think it very likely that somewhere, some time, thelytoky will be induced in an A. mellifera queen in Queensland following natural mating with A. cerana. Although we consider it unlikely that the worker offspring of such a queen would develop as a social cancer, as happens in South Africa, beekeepers should be alert to the possibility. We see no specific action that could be taken to prevent this possibility.

Glossary

AI: Artificial insemination

DCA: Drone congregation area. A place in the landscape where drones gather in flight to mate with virgin honey bee queens Heterospecific: different species

Spermatheca: The sperm storage organ of the honey bee queen Thelytoky: A form of virgin birth common in some social insects, particularly ants. In early embryogenesis, two of the pro-nuclei fuse as if one acted as a sperm.

Acknowledgements

We thank Madeleine Beekman, Anna Koetz and Maurice Damon for help with this research. We performed the instrumental inseminations in the laboratories of Biosecurity Australia at Cairns airport. We thank James Walker for the use of this facility.

Further reading

For the full report on this project see: Remnant, E. J., A. Koetz, K. Tan, E. Hinson, M. Beekman, and B. P. Oldroyd. 2014. Reproductive interference between honey bee species in Australia and China *Molecular Ecology* 23:1096-1107.

For further information or a copy of the scientific paper

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SICK BEES

PART 18b Colony Collapse Revisited

by Randy Oliver - ScientificBeekeeping.com



Boston, MA – The likely culprit in sharp worldwide declines in honeybee colonies since 2006 is imidacloprid, one of the most widely used pesticides, according to a new study from Harvard School of Public Health.

The "Harvard" Study

For the past month (I'm writing these words in April) it's been one danged headline after another claiming that the "culprit" for Colony Collapse Disorder has finally been convicted. The recent press release above was quickly juiced up by reporters eager to make the alleged wrongdoer sound even more sinister:

"US study says nerve agent causes Colony Collapse Disorder" [1]

"Nerve agent"? The reporter is gratuitously pandering to public fear! Imidacloprid was developed as a "reduced risk" product to replace the nasty organophosphate insecticides (parathion, chlorpyrifos, coumaphos), which were indeed derived from deadly nerve gas. But let's not let facts ruin a good story...

I and many others have been publicly critical of the Harvard study. Tellingly, the authors acknowledge that their paper was rejected when submitted to American scientific journals. Meaningful criticism of scientific studies is the norm—scientists, in their search for the truth, are often each other's most serious critics. This is an important point—in this case it is not necessarily the actual experiment that is being criticized; rather the controversy is about the conclusions and overreaching claims made by the authors.

Indeed, in my evaluation, rather than damning imidacloprid, the results of the trial actually appeared to demonstrate a <u>lack</u> of adverse effects from feeding that insecticide to colonies of bees, and certainly did not create the accepted symptoms of CCD!

I'm not going to belabor the criticism of the study here--by the time you read this article, I'm sure that the paper will be thoroughly dissected for your inspection at ScientificBeekeeping. com.

A Healthy Skepticism

If you believe everything you read, better not read - Japanese Proverb

Colony Collapse Disorder has been a field day for the alarmists in our society. In their apocalyptic view, our poor bees are functioning as the canary in the coal mine, indicating that the End of the World as We Know It is imminent. Now don't get me wrong! I've got 20/20 vision looking forward, and can see that there are serious environmental problems created by the seven billion resource-hungry human beings inhabiting the fragile skin of this finite planet. But age has tempered my uncritical swallowing of every "The Sky is Falling" claim.

I'm fully aware that there are legitimate problems and concerns with bees, pesticides, transgenic organisms, and corporate agriculture. But we are best served if the debate is logical and buttressed by evidence, as opposed to being based upon irrational fears, misinformation, and fallacious arguments.

Fear is a commodity. Lots of folk have a vested interest in selling it to the public, or to distract us from something else. The media know that sensationalism sells! Fiction is often more interesting than fact. Unfortunately the press is not interested in boring details—"soundbite science" and fear mongering make the headlines; critical analysis gets buried on Page 11, if it makes the paper at all.

More to the point, special interests add their own spin in order to garner support, solicit donations, or to push a legislative or regulatory agenda. CCD has been a poster child for all the above.

Like the Blind Men and the Elephant, CCD could appear to be something different to everyone, depending upon how your glasses are tinted. And if you're a researcher, you can dang well bet that your particular field of expertise deserves funding in order to help solve the mystery and that if you mention CCD in the press release, that you will get media attention!

Reality Check

Allow me to quote from an excellent review by Dutch bee researcher Tjeerd Blacquière [2]:

"In recent years the public in Europe and the USA has been overrun with stories about vanishing bees and with the curse in the quote attributed to Einstein: when the bee disappears, mankind will not survive for more than a few years... What is true about these stories, and how severe are the effects? Yes, there are serious problems. Yes, bees are very important for nature and man. Yes, we need to act. But where to start? What is causing the troubles? "

"From the recent public fuss about the honeybee colony losses in Europe and North America's 'colony collapse disorder' the impression arises that the world population of honeybee colonies is rapidly declining. Be it true for those regions, it is far from true worldwide. Based on FAO statistics ...the world honeybee stock... has steadily increased."

[What <u>have</u> changed are the sorts of colony morbidity and mortality being observed]:

"Traditionally, losses of colonies only became apparent in spring, when after winter beekeepers visited their hives for the first spring check...in recent years more colonies seem to be lost during winter...and autumn...In the USA the rapid population loss of colonies, especially in autumn, has been named 'colony collapse disorder' (CCD). This rapid dwindling of entire bee colonies very much appealed to the imagination of the public, as if the bees had gone to find a better world."

It seems pretty clear that beekeepers are routinely experiencing annual colony loss rates above historical norms, although history is filled with episodic events of high mortality. A winter loss rate of 5-10% was the old standard. Losses in the US over the past few years have averaged about 30%. Some would have us believe that colony losses in Europe are also universally at unacceptably high levels; in reality though, they have been

highly variable from year to year, and from country to country, with no clear pattern [3].

An appropriate quotation: "Mankind have a great aversion to intellectual labor; but even supposing knowledge to be easily attainable, more people would be content to be ignorant than would take even a little trouble to acquire it"—Samuel Johnson (1709-1784)

There are excellent reviews of the actual situation, freely available on the internet. I suggest that any beekeeper interested in knowing the true facts read them (I put some recommended reviews in References).

A Critical Analysis

So perhaps now would be a good time to cut through the spin, the suppositions, and the unsubstantiated claims about the causes for CCD. Heck, I goaded the "Beekeeper Taliban," so why not ruffle some more feathers? But before we start butchering sacred cows, let's agree on some terminology:

A Clarification of Terms

- Colony morbidity or "weakening" relates to the incidence
 of unhealthiness. One might notice slower colony build up,
 poor brood patterns, decreased honey production, increased
 queen supersedure or failure, small populations in fall, or
 poor wintering.
- Colony mortality is a generic term for any colony losses which often, but not necessarily, happen during the fall and winter. Starvation, queen failure, tracheal mite, AFB, outright pesticide poisoning, and weakness of colonies in fall are typical causes.
- Colony depopulation is the dwindling to nothing of the colony population over time, a result of the attrition of adult bees exceeding recruitment from the rearing of additional brood. This process can happen slowly or quickly. Known causes are high levels of varroa, viruses, or nosema; or winter losses associated with poor nutrition or late-season exposure to some pesticides.
- Colony Collapse defines a specific (depending upon the author) set of "symptoms"—namely the seemingly <u>sudden</u> disappearance of the adult population of the hive, plus the distinctive characteristic of leaving brood behind (which differentiates it from "normal" collapse due to varroa). Additionally, in some cases, there appears to also be a lack of hive scavengers in the abandoned hives.
- The **causative agent** of a disease is the pathogen, toxin, or other factor responsible for the observed signs of illness.

It's important to keep the differences between the above terms straight, since they are often loosely thrown about to inappropriately support one point of view or another.

Can you trust your spin doctor?

When I first heard that European beekeepers were protesting that a new insecticide (Gaucho) was killing off their bees, memories of Rachel Carson, DDT, and the plight of the raptors came flooding back. My gut reaction was, here we go again—technology has created a new monster! It made for a great story: evil German pesticide manufacturer destroying the environment, poor innocent bees suffering from it, and beleaguered French beekeepers bravely waging a David vs. Goliath battle (of course a few movies were soon produced following these popular storylines).

In recent years, the public's confidence in authority has been shaken, and today distrust of Big Government, Big Corporations, and Big Money runs rampant. The Internet now gives Joe Public access to more information than any single person can possibly digest. So we depend upon "experts" to think for us.

Unfortunately, the Internet also has spelled the demise of good editorship and well-researched investigative journalism. It has also given new life to the quote that "A lie can travel halfway round the world while the truth is still putting on its shoes" (this quote is generally misattributed to Mark Twain). What happens is that unsubstantiated claims resonate with the public, go viral, and become urban legends. Most folk simply aren't willing to do the homework necessary to sort fact from fiction.

So one must be careful to ask whether they can trust their favorite "spin doctors." It is ever so easy to fall into the trap of "confirmation bias."

Confirmation Bias

"For what a man more likes to be true, he more readily believes"--Francis Bacon (1561-1626)

It is human nature that once you've formed an opinion on something that you tend to only pay attention to supportive evidence, and to gloss over anything to the contrary. I find myself as guilty of this as any. For example, once I reached the opinion that *Nosema ceranae* was not a major problem, it was all too easy to find studies and field observations that supported my biased point of view; and conversely, to find fault with any reports that suggested that that parasite was actually harmful.

On the other hand, there is no greater delight for me than to prove myself wrong on something! I force myself to continually question any and all of my personal opinions and biases. Plus I feel that I owe it to my ever-trusting readers to report objectively and truthfully. So I continued to observe, experiment, and examine data that was contrary to my opinion, which eventually led me to reevaluate my assessment of *Nosema ceranae*! (I promise you that if indeed cell phones are eventually found to be the actual cause of CCD, I'll be the first to let you know...)

CCD is still a hot topic in the public's eye. Editors and bloggers know that their readers are eager to witness the public crucifixion of the pesticide manufacturers—it's a guaranteed way to sell magazines, to get more hits on your blog, or to have your scientific paper cited. The result is continual confirmation bias—such that the public only hears, again and again, that it is GMO's and/or seed treatments causing CCD (most folk have these two pretty much jumbled up in their minds as a single evil entity).

In reality, there is a great body of scientific research that is simply deemed too "boring" to make the popular press, and therefore the public seldom hears what the majority of the bee research community feels are the most likely causes of colony mortality. But by all means, don't take <u>my</u> word for anything—I recommend that you research the facts yourself! The papers and web pages in References would be a good start.

Some helpful advice

In my lifetime, I've been told to live in fear of commies, DDT, fluoride in the water, red dye #2, animal fat, the mercury in my fillings, and Saddam's weapons of mass destruction. As it turns out, those fears were all unfounded and overblown.

Today the internet has helped to boost the level of fear in the populace to an all-time high. The current hobgoblins—vaccinations, chemtrails, liberals, GMO's, cell phone radiation, high fructose corn syrup, and neonicotinoid insecticides—have people trembling in their shoes. This is surprising, given that we are actually living in the safest period in human history, water and air pollution have been largely cleaned up, life expectancy is longer than ever, and today's pesticides are much safer than the older generations of chemicals!

Yet, impassioned activists still find a receptive audience when they play to fear about the imagined demise of the honey bee. They demonize their alleged villains, often twisting the facts to fit their beliefs.

You may find in their writings:

- Spurious correlations or circumstantial evidence
- Unfettered speculation and conjecture masquerading as fact
- Unwarranted expansion from unsubstantiated suppositions (try to say that one three times real fast!)
- Wild extrapolations from minor bits of data

The problem is that these extremists foment unfounded fear and passion in a public that is rightfully worried about environmental issues

May I suggest that you take pronouncements from anyone who is vehement, adamant, or absolutely certain about anything with a grain of salt? The more fervent, fanatical, or impassioned the speaker (I personally watch for frothing about the mouth), the less you may wish to trust their objective judgment.

Sorting opinion from fact

"The fact that an opinion has been widely held is no evidence whatever that it is not utterly absurd; indeed in view of the silliness of the majority of mankind, a widespread belief is more likely to be foolish than sensible." --Bertrand Russell (1872-1970)

Need I say more?

Some examples of spin doctor malpractice

Example 1—GMO's as the cause of CCD

Perhaps this will surprise you, but some zealots actually fabricate preposterous stories about their bugaboo of choice. One anti-GMO blogger has a thoroughly convincing webpage [4] that definitively links CCD to GMO's (the battle of the acronyms?). The author posted compelling full-color photomicrographs (Figure 1; what could be more convincing than pictures taken through a microscope?) of dissected bee guts that demonstrated the damage caused by the bees' ingestion of pollen from GMO crops.

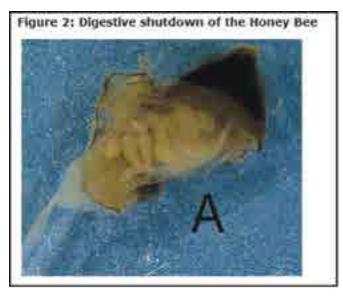


Figure 1. This photo was offered as definitive proof that GMO's were the cause of CCD! In actuality, the photo had been reproduced, with the caption altered, from the original study on CCD by Dennis van Engelsdorp [11], in which neither the words "GMO" nor "digestive shutdown" were ever mentioned!

Photo reprinted here by permission.

The anti-GMO author's "research" sounds very scientific. He concludes that:

"The proof is obvious that one of the major reasons of the bees' decline is by the ingestion of GMO proteins. As seen above, it is certain that the digestive shutdown is due to hard material in the digestive tract that compromises the immune system. Circulatory problems would without doubt [sic]. Could it be that humans are going through the same process with the rise of Colon Cancer? As seen below in the comparison of the healthy bee and the unhealthy bee, it is obvious that the bees that are ingesting GMO pollen are having severe digestive problems, so severe that the disease is terminal."

The problem is that the author was so obsessed with proving that GMO's caused CCD that he started just making things up (there is no "hard material" in Bt corn; nor does hard material in the digestive track compromise the immune system)!

What the author of the above webpage is guilty of is "deductive reasoning"—conclusions that were "obvious" to him might have been less obvious to a more objective observer.

Example of deductive reasoning:

I observe unusual death of my colonies. My favorite bogeyman (cell phones, GMO's, some pesticide) surely kills bees. Therefore, that bogeyman must be the culprit! Deductive reasoning is the basis of faith-based reasoning—the faith comes first, and then you search for any sort of evidence that might possibly be construed to lend support to that belief.

I can almost guarantee that any experimental results from some labs will be interpreted to support the premise that the neonics are the root cause of colony collapse (they've already got their minds made up). Other scientists, tongue in cheek, refer to this practice as "painting the bulls eye around the arrow." Some of the recent papers purporting to have found a "link" between systemic insecticides and CCD certainly fall into this category.

On the other hand:

Example of inductive reasoning:

I observe unusual death of my colonies. I will objectively look for any clues as to what may be killing them, come up with some testable hypotheses, and then perform experiments to determine which explanations hold up to scrutiny (in other words, the Scientific Method).

Dr. Dennis vanEngelsdorp, Dr. Jeff Pettis, the staffs at the Beltsville Bee Lab and Penn State University on the East Coast, and Dr. Jerry Bromenshenk in the West, have been diligently and objectively searching for the causal factors of CCD. I applaud these hardworking researchers for their Herculean efforts!

I suggest to the reader, that if your favorite spin doctor is using deductive (mind already made up) reasoning, that you take his prescription with a healthy dose of skepticism!

Other extremists conjure up "linkages" or "association" between their boogeyman and CCD:

Example 2—Windmills as the cause of CCD Headline: "Wind Farms May Be Responsible For Mass Honeybee Disappearance" [5].

"The drastic increase in the number of wind farms in the United States began between 2004 and 2005, and has blossomed to cover vast sections of the country today, as seen on the blue map below" (Figure 2; I had to substitute a similar map in green due to copyright restrictions; the orange map was created by Dr. Jerry Bromenshenk).

"Interesting to note is the time frame of drastic increases of the number of wind farms from 2004 to 2005...This time frame becomes very important, because it is also the exact time when massive disappearances of honey bees began to be reported, beginning in 2005, with drastic increases in the years to follow. ...the direct link to wind farms for the massive die off can be made."





Figure 2. A compelling case for the clear "direct link" between wind farms and incidence of CCD!

The question is, is the apparent association between windmills and CCD causal, or merely coincidental?

Some More Terms Koch's Postulates

When tasked with the challenge of identifying the proximate cause of a disease (such as colony collapse), medical investigators follow a logic laid out by Dr. Robert Koch (pronounced "Coke") in 1884, who nailed the pathogens responsible for anthrax and tuberculosis. In his day, people would superstitiously blame disease upon a wild diversity of suspects. Dr. Koch postulated a series of logical tests to apply to any suspected cause of a specific disease.

Koch's Postulates (which I've here greatly generalized, shortened, and simplified):

- 1. Is the suspect factor always associated with the disease?
- 2. Will the suspect factor *always* create the same symptoms?

In other words, if something is causing CCD, then you should (1) always find it present when colonies collapse; and (2) you should be able to experimentally induce CCD by introducing or applying that factor to healthy colonies.

So let's apply to Koch's Postulates to windmills and CCD:

- 1. Are windmills always present when CCD occurs? I asked some CCD investigators; the answer was no!
- 2. Can you create CCD in healthy colonies by placing them near windmills? Again no, since many apiaries thrive in the presence of wind towers. So, the windmill/CCD "direct link" does not pass the test of Koch's Postulates.

Important note: the second postulate is the one in which I place my greatest faith—if some factor is truly the cause of CCD, then you should be able to isolate it and then experimentally introduce or apply it to healthy colonies, and create CCD under controlled conditions. I will present examples of experimentally-induced colony collapse later in this series.

Circumstantial evidence due to "association"

It is easy to dream up spurious correlations such as the one above—scientists are always forced to sort them out. For example, the sales of women's swimwear at Walmart would surely correlate with the number of drowning incidents in the Midwest. The obvious question then is whether it is plausible that the factor (swimsuit sales) actually <u>causes</u> the disease (drowning), rather than merely being <u>associated</u> with it. I'm not hearing of any groups calling for the banning of women's swimwear, although I'm sure that an activist could easily solicit a million signatures for a petition to do so!

Scientists use another test when looking for explanations:

Occam's Razor

Named after medieval monk William of Occam, it can be loosely summarized as:

The simplest explanation is usually the right one.

The application of Occam's razor would suggest that the apparent link between swimsuit sales and drowning could be most simply explained by the fact that one is far more likely to drown if one is swimming (I'll bet that you had already figured that one out by yourselves). Occam's razor helps us to avoid superstitious, convoluted, fantastic, or biologically implausible explanations.

When folk blame CCD upon an exposure to some factor that causes no observable effects at the time of exposure, but through some convoluted sequence of events causes colonies to collapse several months (and several brood cycles) later, they are not applying Occam's razor, which would suggest a more parsimonious explanation.

For example, the application of Occam's razor suggests that prior to blaming any other suspect; one should first determine whether varroa levels had gotten high in those colonies during the previous summer, or whether nosema levels were high at the time of the collapse. In other words, first eliminate the most obvious suspects (Fig. 3).





Figure 3. Before one blames colony collapse upon some exotic factor, one should first eliminate the most common causes of colony depopulation—such as high varroa levels in late summer leading to in-hive epidemics of Deformed Wing Virus (above), other viruses, or a high prevalence of nosema in the colony population.

A case of premature misaccusation?

Several recent headlines, and some activist groups, claim to have "linked" systemic insecticides to CCD—as in the following sentence from a letter sent to the EPA: "Clothianidin is a widely used pesticide linked to a severe and dangerous decline in pollinator populations."

For good measure, such a claim of linkage is generally followed by an exaggerated claim of impending doom, as from the same letter: "As we are sure you appreciate, the failure of the agency to provide adequate protection for pollinators under its pesticide registration program creates an emergency with imminent hazards: Food production, public health and the environment are all seriously threatened, and the collapse of the commercial honeybee-keeping industry would result in economic harm of the highest magnitude for US agriculture." Wow, does Chicken Little come to mind?

I can envision the scene at the EPA when presented with the letter. The EPA risk assessors have carefully read every bit of published research on clothianidin, and then some, and know fully well that no one has ever produced any actual evidence linking it to pollinator decline [6]. So they drop the letter into the round filing cabinet, write the beekeepers a polite response [7], and continue their accelerated comprehensive re-evaluation of these pesticides [8].

For the record, beekeepers have every right and reason to question the safely of any pesticide. But the mere act of questioning certainly doesn't prove that a pesticide is actually causing harm! Not all of our beekeeper representatives wanted to send that letter to the EPA; suffice it to say that there were strong words. Some of us want the bee industry to stick to facts and evidence!

When beekeepers make exaggerated and unsubstantiated claims, they stand the risk of damaging their credibility in the eyes of the regulatory agencies. This is a dangerous game to play! On one hand, it's good to drum up public support for our beleaguered industry; but on the other hand, if we lose credibility with the regulators, they may simply dismiss us as being uniformed and irrational. We should also keep in mind the story of The Little Boy who Cried Wolf. What kind of audience are beekeepers going to get at EPA the next time we beg them to review another pesticide?

In reality, the EPA is very much the beekeepers' friend—they go out of their way to make sure that pesticides are registered so as to cause the least amount of harm to honeybees [9]. I assure the reader that EPA is well aware of any and all issues and suspicions involving the neonicotinoid insecticides. It doesn't help our cause when we insult the Agency, and tell them how to do their job, as was done in a recent petition also signed by some beekeepers: "EPA has frankly dropped the ball... [and] should promptly suspend the registration of clothianidin and issue a stop sale" [10].

On what grounds? I'm not saying that neonics are necessarily innocent (we'll get to them in my next article); what I'm saying is that it is premature for beekeepers to demand a conviction without any actual evidence! The Farm Lobby would not give up of one of their favorite insecticides without a fight (they have no love for radical environmentalists nor the EPA), and as a beekeeper, I'd rather that farmers not consider me as "the enemy."

The unfortunate thing about the situation is that the leadership of our bee industry has become polarized on this issue, and for merely pointing out the facts, one can get labeled as being a shill for the pesticide companies! How absurd! For crying out loud, the neonics were developed to be the very sort of "reduced risk" insecticides that we environmentalists had long asked for. They are hardly perfect, but they appear to be a damn sight better than those that they replaced.

In my humble opinion, rather than using deductive reasoning and weak arguments in calling for an unlikely ban, beekeepers would be better served sticking to the facts and supporting the USDA action plan [12] for determining the cause(s) of increased colony losses. If a link to the systemic pesticides is found, I'm confident that the EPA will act decisively!

Evaluating the Primary Suspects

The focus of this article is to put the suspects for CCD and increased colony mortality to the test. So next month I will use the Scientific Method and apply Koch's Postulates and Occam's razor to each suspect cause of CCD:

- Environmental factors
- Chemical agents
- Beekeeping practices
- Biological agents

As always, I strive to be an equal opportunity offender—if there is anyone whose feathers I have not yet ruffled, I don't want you to feel left out, so please let me know!

Further Reading (free downloads):

Examples of how the public has been misled by bad science, bad reporting, and hysteria. Lieberman, A, et al (2004) A review of the greatest unfounded health scares of recent times.

http://www.acsh.org/docLib/20040928_fvf2004.pdf; also check their home page for more recent unfounded fears.

One of the best overall objective reports is from a European think tank called OPERA. I highly recommend: OPERA (2011)

Bee health in Europe - Facts and Figures http://www.pollinator.org/PDFs/OPERAReport.pdf

Another excellent overall review of colony mortality in Europe is by the French Food Safety Agency: AFSSA (2009) Mortalités, effondrements et affaiblissements des colonies d'abeilles (Weakening, collapse and mortality of bee colonies). http://www.afssa.fr/Documents/SANT-Ra-MortaliteAbeilles.pdf

COLOSS (Prevention of COlony LOSSes): the international cooperative network investigating colony loss: http://www.coloss.org/publications

The definitive report on CCD in the US: VanEngelsdorp, D, et al (2009) Colony Collapse Disorder: A Descriptive Study: http://www.plosone.org/article/info:doi/10.1371/journal.pone.0006481

A special issue of Journal of Apicultural Research focuses on colony losses. Several good papers are open access: http://www.ibra.org.uk/articles/JAR-SPECIAL-ISSUE-Colony-Losses

Interesting blogs by Bill Frezza "When Scientists, Lawyers, and Journalists go Viral" http://www.realclearmarkets.com/articles/2011/01/10/when_scientists_lawyers_and_journalists_go_viral_98825.html and "The Financially Driven Erosion Of Scientific Integrity" http://cei.org/op-eds-articles/financially-driven-erosion-scientific-integrity

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- http://www.epa.gov/pesticides/about/intheworks/honeybee. htm
- 7. http://www.epa.gov/pesticides/about/intheworks/clothianidin-response-letter.pdf
- 8. http://www.epa.gov/pesticides/about/intheworks/clothianidin-registration-status.html
- 9. http://www.epa.gov/opp00001/ecosystem/pollinator/index.html
- 10. http://www.panna.org/sites/default/files/CFS-Clothianidin-Petition-3-20-12.pdf
- 11. vanEngelsdorp, D, et al (2006) "Fall-Dwindle Disease": Investigations into the causes of sudden and alarming colony losses experienced by beekeepers in the fall of 2006.
- 12. http://www.freshfromflorida.com/pi/plantinsp/apiary/fall_dwindle_report.pdf
- 13. The 2007 USDA CCD Action Plan: Any beekeeper concerned about CCD should familiarize himself with this excellent plan that details how the USDA is attempting to determine the actual cause(s) of CCD http://www.ars.usda.gov/is/br/ccd/ccd actionplan.pdf

Updates to the above: http://www.extension.org/category/ccd

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

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

Excerpts from the May Report

ASIAN BEES FOUND ON HORN ISLAND

Foraging Asian bees were found on Horn Island in Torres Strait on 14 May 2014. No varroa were found on these bees but we will have to wait until they find a nest to see if there are varroa present. The Queensland Department of Agriculture, Fisheries and Forestry is to carry out some DNA testing to see if it can be determined where they originated from. Those results are not available as yet. Possibilities are Cairns, islands in the northern part of Torres Strait were the Asian bee has been present since 1993 or another source.

Horn Island is where a lot of freight comes by sea from Cairns and freight from the northern islands in Torres Strait also comes to. When more information is received it will be passed on.

RENEWAL OF ALUMINIUM PHOSPHIDE

AHBIC has received the renewal for aluminium phosphide for the use against small hive beetle in stored bee supplies. The registration is until 30 June 2024. Full details of the registration can be found at http://permits.apvma.gov.au/PER14820.PDF

FREE TRADE AGREEMENT - JAPAN

The Free Trade Agreement (FTA) recently completed with Japan had some good news for Australian honey producers. There will be a phasing out of the tariff, which currently stands at 22.5%, over 10 years. There will be a quota imposed starting at 80 tonnes which doubles to 160 tonnes over 10 years. Currently there is no quota and in 2013 we exported 99 tonnes to Japan. So we are starting from a smaller figure but in light of the scarcity of honey at present, the quota should not impact us this year. AHBIC is still making representations on the upcoming FTA with China and still continues to have the EU tariffs removed.

SUPPLY OF RAW PROPOLIS TO JAPAN CALLS FOR EXPRESSIONS OF INTEREST

1. Background: The Australian Trade Commission in Fukuoka has been contacted by a Japanese Natural Health Foods company which manufactures to GMP standards to source raw propolis from Australia. The company has indicated that it would be interested in providing a long term contract to bee- keepers in Australia who are prepared to supply raw propolis to them. Their initial requirement is 50kgs per annum and they are prepared to pay full market price but it is important to understand that they require propolis in its raw form and it must be produced entirely in Australia and not re-exported from Australia. The company appreciates that the growth of propolis may be a new development for the Australian industry but is prepared to work with Australian Honey Bee Industry Council Members to secure supply on a long term basis.

2. Expressions of Interest: AHBIC members are invited to submit an expression of interest to the Australian Trade Commission in Fukuoka by e-mail and information should include:

- Full contact details of company including ABN number; Background of company, company profile and experience as a honey\propolis producer;
- Experience in exporting honey (if any) or honey related
- Interest in producing raw propolis and capacity to do so Year's membership of AHBIC

Expressions of interest are requested to be sent to the Australian Trade Commission in Fukuoka by no later than 30th June 2014 to: Tom Yates Consul General\Trade Commissioner Australian Trade Commission, Fukuoka, Japan. E-mail: tom.yates@ austrade.gov.au Tel: +8190-734-5055

AHBIC AGM

As previously advised our AGM will be held at the Mantra Hotel at Melbourne Airport on Wednesday 9 July 2014. This follows the Victorian Apiarists' Association (VAA) Conference on Monday 7 and Tuesday 8 July. There is a vacancy for Chairman and two (2) Executive members. Nominations for Chairman need to be with the Executive Director by 11 June, 2014. Nominations for the Executive can be received up until the AGM. It is usual for the delegates to the AGM to attend the VAA Conference.

For more information contact the AHBIC Office.

AUSTRALIAN HONEY IMPORTS AND EXPORTS ANALYSIS UPDATE 2014

Period	Combined Imports Tonnes	Combined Exports Tonnes		Packed Exports Tonnes	Bulk Exports Tonnes	Packed Exports Tonnes	Packed Exports %	Bulk Exports Tonnes	Bulk Exports %
Mar-14	975	1,036	Mar-13	628	408				
Dec-13	485	1,075	Dec-13	621	454				
Sep-13	809	1,233	Sep-13	652	681				
Jun-13	766	1,251	Jun-13	760	491				
YTD	3035.3	4,595	YTD	2,661	1,934	2,661	58%	1,934	42%
Mar-13	414	1,165	Mar-13	574	591				
Dec-12	652	1,065	Dec-12	576	489				
Sep-12	1113	1,036	Sep-12	626	410				
Jun-12	1049	1,157	Jun-12	609	548				
Total	3,228	4,423		2,385	2,038	2,385	54%	2,038	46%
Mar-12	975	1,305	Mar-12	544	761				
Dec-11	782	1,501	Dec-11	543	957				
Sep-11	831	961	Sep-11	422	539				
Jun-11	658	1,104	Jun-11	529	675				
Total	3,246	4,871		2,038	2,832	2,038	42%	2,832	58%

- The above data shows the balance between imports and exports remains constant over the three years shown.
- Packed bulk honey decline is a result of poor crops and shows a declining trend over three years.
- Overall exports up on last year but still remain below the 2011/12 period.
- * In close proportion, imports mainly remain from three main origins being Argentina, China and New Zealand accounting for 90% of all imports which has been consistent over the three years.

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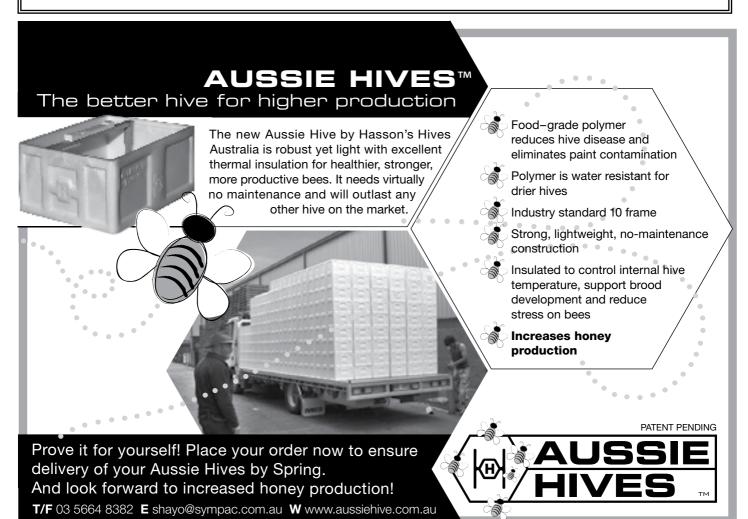
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