# AUSTRALIA'S HONEYBEE NEWS

"The Voice of the Beekeeper" www.nswaa.com.au Volume 16 Number 6 November - December 2023



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#### **NSW APIARISTS' ASSOCIATION INC. EXECUTIVE COUNCIL**



L-R: Candice Clifford - Secretary Treasurer, Matthew Skinner - Vice President, Neil Bingley - President, Zac Alcock, Sam Lockwood, Ray Hull.

#### **New Executive Council**

At the NSW Apiarists' Association Inc. AGM held on 18 and 19 May 2023, new members of NSWAA Executive Council were elected by our members. We would like to introduce our new Executive Council for 2023 as follows: Neil Bingley – President – neil.bingley@nswaa.com.au Matthew Skinner – Vice President – matthew.skinner@nswaa.com.au Ray Hull – Executive Councillor – ray.hull@nswaa.com.au Zac Alcock – Executive Councillor – zac.alcock@nswaa.com.au Sam Lockwood - Executive Councillor - sam.lockwood@nswaa.com.au

#### **Executive Portfolios**

Australia's Honeybee News - Neil Bingley Biosecurity - Matthew Skinner Conference - All Finances - Sam Lockwood Honeyland - Ray Hull Resourses - Zac Alcock

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## AUSTRALIA'S HONEYBEE NEWS

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# PRESIDENT'S REPORT



President's Report November 2023

#### Season

Southern NSW has had good production from Canola, Yellow Box, Mugga Iron Bark and Green Mallee all of which have now finished. Ground flora was almost a non-event as the dry weather set in. Future prospects look reasonable over summer, but no rain is wanted but forecasts now indicate heavy rains over the next few weeks.

#### Varroa

Now that we have transitioned to management, I hope that the imposed regulations are minimal, and the proposed education package is presented to all commercial beekeepers in a user-friendly way. My biggest concern is the initial spread of mites and the probable reinfestation from feral and mismanaged colonies.

#### Honey Prices

It is extremely disappointing to see continual decline in the wholesale price of our produce. The removal of premiums for choice straight line honeys is in my view a backward step. Our industry pushed for many years to have these premium honeys marketed as straight lines, now our packers and their perceived inept marketing have decided to blend all these honeys and give producers a much lower return overall. Not much has changed over the last few decades when it comes to promoting our product. Another recent development is some packers dictating to beekeepers which honeys they will purchase. This move makes remaining viable extremely difficult.

#### Executive Business

Some members or otherwise seem intent on criticising NSWAA on Facebook without first giving your elected members the opportunity to hear your concerns firsthand. Please contact your representatives before posting online. On September 28, Doug Somerville, Matt Skinner and I attended Martin Place offices to meet with the Agriculture Minister Tara Moriarty. Issues discussed were the varroa response and our request to have minimal DPI interference moving forward.

On October 20, Zac Alcock and I had a Zoom meeting with the Environment Minister's Lead Cathy Brown and Claire Allen – policy NPWS to discuss the continual loss of resource through the non-recognition of private land bee sites on future transfer to National Park estate. It was disappointing that there didn't seem to be any appetite to accommodate our concerns. The other issue raised was the transfer of National Parks to indigenous control and the possible further loss of resource.

On the same day, Matt Skinner and Ray Hull attended a

round table discussion in Sydney on Honey Traceability run by the Export Council of Australia.

Our executive meeting was held at Tocal on November 3 where updates from DPI, AHBIC and a transition to management update by Shane Hetherington, Chief Plant Protection Officer, and Shannon Mulholand, Deputy Incident Controller NSW DPI.

#### Conference

Conference 2024 will be held at The Range Wagga Wagga on May 23-23. The theme is 'Varroa- The Changing Face of Apiculture in Australia'. We are currently arranging a variety of speakers on varroa and varroa management in commercial apiaries. Due to The Range being on the outskirts of Wagga Wagga, NSWAA have arranged to have curtesy buses to pick up and drop off from several motels in Wagga Wagga.

Please refer to the flyer in this issue regarding accommodation.

#### Next Meeting

Our next executive meeting will be held on March 1 at Panthers Bathurst.

This meeting will be open to Branch Presidents and one enthusiastic member from each branch with leadership potential.

Neil Bingley President

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#### **Imported Honey Fighting Fund**

July 2023

#### Imported honey continues to be a priority issue for beekeeping industry in Australia.

The current threats to the Australian beekeeping industry mean that it has never been more important to **protect and promote our industry** to ensure our long-term viability.

Monitoring imported honey products and gathering authenticity data will strengthen AHBIC's ability to lobby on behalf of industry to increase testing of imported honey and improve current testing protocols.

AHBIC is asking for your donation into the imported honey fighting fund, enabling us to establish the **imported honey testing program**. The program will confidentially gather baseline authenticity data from imported honey on retail shelves building a database of deidentified data to present to government strengthen our voice.

Without the support of industry, AHBIC does not have the funds to facilitate this campaign at the level that is needed. AHBIC will be treating the investigation with integrity and anonymity and will not be naming and shaming adulterated samples as this impacts all honey sales.

By supporting the Fighting Fund AHBIC will be able to randomly test off-the-shelf imported honey for its **integrity**. The results will be used to build a solid, data driven de-identified platform to advocate on behalf of industry to government for policy reform.

Your contribution can be recognised on our website or you can choose to remain anonymous.

#### **Terms and conditions**

- You will receive a tax invoice/receipt and notification via email from AHBIC upon successful payment.
- A Voluntary Contributions is **not a tax deductible donation**. You may however be able to claim your contribution as a business expense.

If you prefer to complete a paper form, please email AHBIC - <u>ahbic@honeybee.org.au</u>

Or visit our website: <u>www.honeybee.org.au</u>





#### Industry Update – 50 506 Days of Response

10<sup>th</sup> November 2023

#### Varroa Update

The total number of infected premises across NSW has risen to 347. These infested premises are located just outside the ORANGE zones. No changes to the ORANGE or GREEN zones will occur under the transition to management, however, the heat map will gradually change as infected premises are confirmed. Recent changes have been applied to the Sydney basin on the heat map.



# Monitoring hives & Reporting results

Monitoring hives to check for mites is regulated and should at the very least be completed and reported every 16 weeks as per the Emergency Order across GREEN and ORANGE Zones, at a rate of 10 hives each apiary or 10% whichever is greater.

Acceptable methods under the NSW Emergency Order are:

- Sugar Shake
- Alcohol Wash
- Soapy water wash
- Authorised Officer applied miticide strip and mat activities by the DPI.

Beekeepers looking for information to review alcohol wash method and equipment details can visit either this Bee Biosecurity Officer <u>VIDEO</u> or the <u>BEE PEST BLITZ</u> website.

Beekeepers are reminded to report Varroa to the department under the Emergency Order, if a person detects more than 5 Varroa mites in a hive, they must treat all the hives at the premises using a method approved by the APVMA, complying with all label directions and permit conditions no later than 14 days after the date on which Varroa mite is detected.

It is critical that beekeepers then perform mite monitoring as soon as practicable after treatment application to determine efficacy of treatment. If mite counts are low then continue with regular monitoring until mites reach threshold and then repeat treatment.

#### **Reimbursement former PURPLE Zones – Claim deadline**

Commercial beekeepers from the 3 to 6 km Southern NSW PURPLE zones, who declared their hive locations to the NSW DPI before the 20 September 2023 deadline, are eligible for Owner Reimbursement Costs(ORC's). Providing they meet the eligibility beekeepers have until **next Saturday the 18 November 2023** to lodge Owner Reimbursement Cost (ORC) applications for forgone honey. Do so by contacting the hotline 1800 084 881. Applications received after 18<sup>th</sup> November may not receive ORC payments.



#### **Chemical Treatment Table**

| Product name<br>Current 10/11/23                      | Bayvarol <sup>®</sup><br>PER94055v2   | Apivar<br>PER94153   | FormicPro®<br>PER94055v2   | Apiguard <sup>®</sup><br>PER93639   | Api-bioxal™                             |
|---|---|--|--|---|---|
| Registration Status                                   | Emergency use<br>permit active<br>Full Registration<br>submitted                              | Registered   | Emergency use<br>permit active<br>Full Registration<br>progressing<br>(Formerly Mite Away<br>Quick Strips) | Registered  | Full Registration progressing           |
| Active ingredient                                     | Flumethrin  | Amitraz  | Formic acid  | Thymol  | Oxalic acid                             |
| Chemical Type   | Synthetic<br>pyrethroid   | Synthetic<br>formamidine   | Organic acid   | Organic extract   | Organic acid                            |
| Product Type and                                      | plastic strips  | plastic strips   | gel strips   | gel product   | dribbling, fogging                      |
| dose for full size<br>hive                            | 4 strips per brood<br>chamber   | 2 strips per brood<br>chamber  | 2 strips per brood<br>chamber  | 50g per hive  | ТВА                                     |
| Temperature/hive<br>type limitations for<br>treatment | Not critical  | Not critical   | Only treat when<br>ambient daytime<br>temps are between<br>10 °C – 29.5°C                                  | Only treat when<br>ambient daytime<br>temps are<br>between 15°C –<br>40°C | No                                      |
| Treat with supers on<br>hives                         | Yes<br>But comb honey<br>cannot be collected<br>and sold if treated<br>when supers<br>present | No   | Yes  | No  | ТВА                                     |
| Treatment time  | 6-8 weeks   | 6 to 10 weeks  | 7 days   | 2 weeks then<br>additional tray<br>for 4 weeks<br>(Total of 6<br>week)    | No details - not an<br>approved product |
| Can nuclei colonies<br>be treated                     | Yes – (2 strips per<br>nuc)   | Yes - (1 strip per nuc)  | Colonies need to be<br>a minimum of 6<br>frames of bees  | Yes (25g per<br>nuc)  | No details - not an<br>approved product |
| Withholding period                                    | Not required when used as directed  | 0 days after removal of<br>strips Do not harvest<br>honey when strips are<br>in. | 2 weeks from the<br>end of treatment   | 0 days but honey<br>tainting may<br>occur                                 | No details - not an<br>approved product |

You can reach out to AHBIC via:

Varroa Coordinator

**Bianca Giggins** 

bianca@honeybee.org.au 0402 467 780

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#### Honey Bee Industry Development Officer Report

#### Madlen Kratz

Honey Bee Industry Development Officer Tocal Agricultural College, NSW Dept. of Primary Industries T: 02 4939 8948 273 E: madlen.kratz@dpi.nsw.gov.au

#### Understanding viruses – honey bee viruses in Australia

With varroa establishing in Australia, its associated viruses are on the forefront of everyone's mind, in particular the most commonly known virus, Deformed Wing Virus (DWV), which appears to be the most prevalent infection in *A. mellifera* globally. DWV is a virus that causes well-defined disease symptoms in infected bees. However, there are many more viruses associated with honey bees than DWV. These include more than 20 different viruses worldwide. Many of the viruses persist in apparent infections and cause no overt signs of disease; however, they can dramatically affect honey bee health and shorten the lives of infected bees under certain conditions. A sub-group of those more than 20 associated viruses of honey bees have been detected in Australia in the past.

How will the varroa mite contribute to their spread and what does this mean for Australia?

#### Viruses

Virus are microscopic organisms that consist of a small segment of genetic information (either DNA or RNA) surrounded by a protein coat. A virus cannot replicate alone; instead, it must infect cells and use components of the host cell to make copies of itself. Once a virus has found the right host, it can reproduce at a fast rate. Over time, viruses can also be transformed. A good human example is the coronavirus and its several mutations over the last years.

#### How do viruses spread?

Generally speaking, viruses can spread through direct contact such as touch or through contact with contaminated surfaces or through sneezing (small droplets in air).

In social insects, viruses and other pathogens can spread rapidly from close contacts among nestmates, food sharing and periods of confinement. Viruses can also spread through airborne transmission of fanning behaviour (hive cooling). Spread between colonies may also occur during foraging at flowers, robbing behaviour and through transmission by a vector such as the varroa mite. In this case, varroa mites acquire the virus from infected bees and transmit it to uninfected bees.

#### Honey bee viruses

More than 20 viruses have been identified to infect honey bees worldwide. The most common are (see Table 1 for symptoms):

- Deformed wing virus (DWV)
- Black queen cell virus (BQCV)
- Israeli acute paralysis virus (IÁPV)
- Kashmir bee virus (KBV)
- Acute bee paralysis virus (ABPV)
- Chronic bee paralysis virus (CBPV)
- Sacbrood virus (SBV)

Viruses infect all developmental stages and castes and are commonly present in colonies. When colonies are under stress, virus levels can increase causing reduced worker longevity and brood survival and colony loss in winter or early spring. Viruses such as BQCV can also cause colony death by preventing the development and emergence of a new queen following queen loss.



| Virus                                   | Transmission  | Lifestage infected | Symptoms  |
|---|---|--------------------|---|
| Acute bee paralysis<br>virus (ABPV)     | Horizontal primarily through<br>feeding, Varroa parasitism  | Brood and adults   | Paralysis, trembling, inability to<br>fly, darkening and loss of hair on<br>thorax and abdomen                              |
| Black queen cell<br>virus (BQCV)        | Horizontal primarily through<br>feeding, Varroa parasitism,<br>possible vertical transmission<br>through eggs | Brood and adults   | Dead queen larvae or prepupae<br>sealed in queen cells with dark<br>brown to black walls                                    |
| Chronic bee<br>paralysis virus          | Horizontal primarily through<br>feeding and contact, possible<br>transovarial                                 | Adults             | Trembling inability to fly, bloated<br>abdomens, black hairless bees  |
| Deformed wing virus                     | Horizontal primarily through<br>feeding, venereal, transovarial,<br>transspermal, Varroa parasitism           | Brood and adults   | Deformed wings in emergent bees, premature aging of adults  |
| Israeli acute paralysis<br>virus (IAPV) | Horizontal primarily through<br>feeding, transovarial, venereal,<br>transpermal, Varroa parasitism            | Brood and adults   | Similar to ABPV. Also, reduced<br>mitochondrial function, and<br>possible disturbance in energy-<br>related host processes. |
| Kashmir bee virus<br>(KBV)              | Horizontal primarily through<br>feeding, transovarial, Varroa<br>parasitism                                   | Brood and adults   | Weakening of colonies but no<br>clear field symptoms  |

Table 1. Viruses commonly detected in honey bee colonies – adapted from DeGrandi-Hoffman and Chen 2015

#### Viruses in Australia

The last published survey for honey bee viruses was conducted in by Roberts et al. (2015) from 1,240 hives from VIC, NSW, WA, SA, TAS and NT representing 155 apiaries. The survey identified five common viruses from 10 genetic markers.

Five of the 10 viruses tested for were consistently detected in Australian honeybees and are summarised in Table 2 along with their percentage of detection. For example, Black queen cell virus (BQCV) was detected in 65% of all tested samples in 2015. Roberts et al. state that: "LSV1 and LSV2 are new records for most regions of Australia, having been first identified by the authors in Cairns, QLD, in both *A. mellifera* and *A. cerana* (Roberts & Anderson 2013)."

**Table 2.** Honey bee virus detections in Australia from two surveys, one by Hornitzky in 1987 conducted across the eastern states of Australia and a national survey by Roberts et al. in 2015.

|                               |              | Year of detection and<br>prevalence |      |
|-------------------------------|--------------|-------------------------------------|------|
| Virus marker                  | Abbreviation | 1987                                | 2015 |
| Slow paralysis virus          | SPV          | -                                   | -    |
| Deformed wing virus           | DWV          | -                                   | -    |
| Sacbrood virus                | SBV          | 14%                                 | 35%  |
| Black queen cell virus        | BQCV         | below 5%                            | 65%  |
| Kashmir bee virus             | KBV          | below 5%                            | -    |
| Israeli acute paralysis virus | IAPV         | -                                   | 21%  |
| Acute bee paralysis virus     | ABPV         | -                                   | -    |
| Chronic bee paralysis virus   | CBPV         | below 5%                            | -    |
| Lake Sinai virus 1            | LSV1         | -                                   | 37%  |
| Lake Sinai virus 2            | LSV2         | -                                   | 21%  |

Two further viruses that were not detected in the 2015 study were detected by Hornitzky in 1987 in the Eastern states and included Kashmir bee virus (KBV) and Chronic bee paralysis virus (CBPV). Another virus detected

in 1987 that was not tested for in 2015 is Cloudy wing virus (CWV) and was present in less than 5% of all samples.

It should also be noted that the survey in 1987 conducted virus testing only across the Eastern States of Australia unlike the 2015 study which was a national survey. Different methods were used to test for viruses, which should be taken into account as well.

The detection of virus in samples from specific states and its frequency in 2015 are shown in Figure 1.



Figure 1. Prevalence of five viruses in Australia during winter, spring and autumn (n = sample size). – adapted from Roberts et al. 2015. Victoria (VIC), New South Wales (NSW), QLD (Queensland), SA (South Australia), KUN (Kununurra, WA), NT (Northern Territory), WA (Western Australia), KI (Kangaroo Island).

#### Nutrition, immunity and viral infections

While good nutrition may not reduce virus levels, it can improve bees' tolerance and resilience to viral infections.

Adult bees parasitized during development show:

- Suppressed immunity
- Increased susceptibility to various pathogens
- Reduced longevity
- Reduced body weights

In some instances, pollen feeding increased the longevity of workers parasitized during development. Pollen feeding in varroa infested hives has also shown to significantly increase overwinter survival.

#### What does this mean for Australia?

Since the varroa incursion in June 2022, virus testing has not detected deformed wing virus (DWV). For now, Australia seems to be free of the major virus that is causing great concern and leaving damaging impacts on honey bees at a global scale.

Further and ongoing virus testing is required to fully understand the presence and spread of viruses in Australia with the presence of *Varroa destructor*. For now, we cannot say how quickly the viruses will spread and cause damaging effects on honey bee health, but one thing is certain, viruses now have a means to spread at a much faster rate.

Just because visual symptoms such as shrunken and crumpled wings from the DWV (Figure 2) aren't present doesn't mean that colonies aren't suffering from the impacts of other viruses.

Most importantly we need to stay on top of the health of our bees!



Figure 2. Honey bee suffering from deformed wing virus (circled in yellow).

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Plant Profile

#### Plant Profile: messmate (Eucalyptus obliqua)

The following plant profile is from *Honey & Pollen Flora of South-Eastern Australia* by Dr. Doug Somerville. This book focuses on the value of plants to nectar and pollen-eating animals, honey bees in particular. The result of over 30 years of research, it brings together scientific knowledge and the experience of hundreds of beekeepers into a valuable reference work. The book can be purchased from Tocal College here: www.tocal. nsw.edu.au/publications/bees

#### Honey and pollen flora feedback form:

NSW Department of Primary Industries values your experience working plants for honey and pollen. We would love to hear your feedback on the plant profiles republished in the Honey Bee News. Any help you can provide will be considered in the next update of Dr. Doug Somerville's *Honey & Pollen Flora of South-Eastern Australia*. Please submit your feedback here:



# Honey and pollen flora of South-Eastern Australia

Understanding the biology of flora and its value to honey bees is the foundation of successful beekeeping.

The flowers on which bees forage have a major impact on stocking rates and the level of nutrition available to the colony. Whether a beekeeper owns one hive or a thousand, the principle is the same.

The result of over 30 years of research, this book distills both scientific knowledge and the opinions of hundreds of beekeepers into a reference work that will be the cornerstone of floral understanding in apiculture for years to come.

The publication includes a star rating system to rate each flowering species for their value to bee nutrition. Plants are ordered in botanical family groups with annual flowering charts and geographical distribution maps.

**The author** *Dr Douglas Somerville has a master's degree in Agricultural Extension and Rural Development and a PhD in Honey Bee Nutrition and Floral Biology.* 

RRP \$175 available from Tocal College www.tocal.nsw.edu.au



122-05



#### Messmate

#### Eucalyptus obliqua

Generally of minor to medium importance as a source of nectar and pollen, although some beekeepers specifically target this species. Other beekeepers rate this species very low. Timber from this species is pale brown to brown and straight-grained. It splits readily and is easily worked, but is not as durable as many other hardwoods.

**Habit:** A medium-sized to large tree, 15–60 m high and 1–3 m in trunk diameter. The trunk is straight and of good form and usually about two-thirds the tree's height.

**Occurrence:** Found mainly on the eastern fringe of the Northern and Southern Tablelands of NSW, but it is also found at higher altitudes. It occurs on hills and in mountainous country on a wide range of soils. It grows well in wet sclerophyll forests.

Its range extends throughout Vic., into Tas. and SA. Occurs in association with shining gum (*E. nitens*), monkey gum (*E. cypellocarpa*), brown barrel (*E. fastigata*) and manna gum (*E. viminalis*).

**Bark:** The bark is brown, fibrous, deeply furrowed and persistent to the small branches. Although this species is sometimes classified as a stringybark, its bark fibres are shorter than those of the typical stringybark.

**Leaves:** Adult leaves are alternate, stalked, obliquely lanceolate and 10–16 cm x 2–3 cm. They are rather thick, dark green and concolorous. The intramarginal veins are distinct.

**Buds:** Buds are stalked, club-shaped and 7 mm x 5 mm. The peduncle is somewhat angular and 8–12 mm long. The operculum is short, often much shorter than the calyx tube, hemispherical with a small point or conicalacute. The calyx tube is conical or pear-shaped and tapers down to the stalk.

Buds are produced in early summer and carried for 12-14 months.

Flowers: The inflorescence is axillary and umbel-like, usually with 7–11 flowers.

Flowering usually occurs over summer in NSW and Qld, and autumn in Tas. Stable weather is important during flowering. If rain or hot winds are experienced the flowering will be adversely affected. It often stops flowering rather suddenly.









#### Flowering events every 3-4 years

**Fruit:** Fruits have stalks and are ovoid, sometimes cylindrical or pear-shaped, truncate and 8–10 mm x 8–9 mm. The disc is wide and usually depressed. Valves are small and deeply enclosed, 3 or 4.

Honey: Under favourable conditions provides stimulating nectar. Although it is capable of providing a surplus of honey and good breeding conditions, it is not generally considered reliable. Good yields can be expected every 5–6 years. It is of only minor to medium importance as a source of nectar. Its honey is rather dark.

**Pollen:** Prolific quantities of pollen are collected. Of medium importance as a source of pollen.

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23

#### 2023 NSWAA AGM MOTION OUTCOMES

#### Southern Tablelands Branch Motion – received by email on 24 April 2023

"NSWAA Executive to investigate ways to enable those that donate honey or money towards honey to Honeyland to be able to claim a tax deduction for the donation of honey or money towards Honeyland honey."

Motion: Laurie Kershaw

Seconded: Zac Alcock

#### Motion carried.

**Result:** Advice was sought from an Accountant who advised that no tax deduction is able to be claimed for the donation of honey or money towards Honeyland honey as NSWAA does not hold the status of "deductible gift recipient" and is not eligible to.

#### Motion put forward by Malcolm Porter – received 18 May 2023

"The positions of President and Vice President not to be vacated from the Executive simultaneously but in alternate years."

Moved: Malcolm Porter

Seconded: Jon Lockwood

#### Malcolm rescinded his motion.

## Motion put forward by Michael Fogarty as an amendment to Malcolm Porter's motion – received from the floor

"The incoming Executive to consider options for modifying the constitution to ensure that position of President and Vice President not be vacated on the same year, but on alternate years."

Moved: Michael Fogarty

Seconded: Neil Bingley

Motion carried.

**Result:** Following consideration and discussions, the Executive were not able to come to a consensus for any way for this to practically occur.

#### Motion put forward by Mark Lawrence Piggott – received from the floor

"NSWAA to directly lobby the Federal Government to become directly and more involved with the Varroa Emergency, and to investigate and improve quarantine at airports and seaports in response and prevention of further pest and disease incursions."

Moved: Mark Lawrence Piggott Seconded: Michael Fogarty

#### Motion carried.

**Result:** As a State organisation, NSWAA do not have jurisdiction to liaise with Federal Government, AHBIC hold Federal jurisdiction, so, accordingly, NSWAA are unable to directly lobby the Federal Government regarding the issues raised in this motion. When the NSWAA Executive meet again next with the relevant State Minister, we will raise this matter for them to discuss with their Federal counterpart.



NSW Apiarists' Association Inc 2024 AGM, Conference & Trade Exhibition 23 - 24 May 2024

The Range Function Centre, Wagga Wagga NSW



The 2024 NSW Apiarists' Association AGM, Conference and Trade Exhibition is being held at The Range Function Centre, 308 Copland Street, Wagga Wagga NSW on Thursday, 23 and Friday, 24 May 2024. A Hospitality Evening where delegates will have the opportunity to meet with our Guest Speakers is also being held on Wednesday evening, 22 May 2024.

*Wednesday, 22 May 2024:* Tocal College will be running a *VARROA TRAINING COURSE* at The Range Function Centre for NSWAA Conference delegates

*Saturday, 25 May 2024:* Riverina Branch will be hosting a Field Day outdoors at The Range Function Centre

#### Varroa – The Changing Face of Apiculture in Australia

We have secured limited discounted accommodation rates for our delegates at the following motels:

Carlyle Suites & Apartments, 148 Tarcutta Street, Wagga Wagga - 02 6933 6100

Garden City Motor Inn, 2 Day Street, Wagga Wagga - 02 6921 3646

Bolton on the Park, 59-63 Tarcutta Street, Wagga Wagga - 02 6921 6222

Lawson Riverside Suites, 117-121 Tarcutta Street, Wagga Wagga – 02 6921 2200

Centralpoint Motel & Apartments, 164-166 Tarcutta Street, Wagga Wagga – 02 6937 2300

Please telephone the motel directly and advise that you are booking to attend the NSW Apiarists' Association's AGM and Conference to reserve one of these rooms.

Please note that there are a limited number of rooms held and accommodation in Wagga Wagga can book out quickly so get in fast to secure your accommodation.

Conference registration details will be provided in due course Keep an eye out for updates!



A message of support to all beekeepers

Here at Nuplas, we recognise that this is a challenging time for the beekeeping industry, with concerns about Varroa Mite and the difficulties of keeping operations going in a tough market. We've spoken to many commercial and hobbyist beekeepers from all over Australia and have heard first-hand of the issues they are facing.

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We want to help support the industry that we all love, to help keep as many people in beekeeping as we can. So, we are offering a 10% discount to anyone who has had hives affected by Varroa Mite to help you get back up and running. We also wanted to give ourselves and others a greater knowledge and understanding of the problems Varroa poses and ways we can deal with it. To kick off our 'Expert Series' we have spoken to prominent biologist and beekeeper Randy Oliver about topics including selective breeding, hive hygiene, disease control and living with Varroa.

Nuplas takes pride in being at the forefront of innovation and information and we hope that by sharing this with you, we can assist in keeping the beekeeping industry and community strong for a long time to come.

Ben Joyce Director, Nuplas Apiarist Supplies

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# Randy Oliver



Get access to our full interview with biologist, beekeeper and Varroa management expert, Randy Oliver. Discover his tips and where to start with Varroa Mite, his views and experience with synthetic and natural miticides, and hear his words of encouragement to Australian beekeepers. Randy is our first guest as part of our Expert Series, with more interviews and discussions coming soon.

# **10% discount** for Varroa Mite affected beekeepers

If you have been affected by Varroa Mite, we're offering you a 10% discount on Nuplas plastic beekeeping products such as frames, boxes and lids to help replace your hives.

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#### PROPOLIS IN AUSTRALIA

Beekeepers look to untapped potential of propolis, or 'bee glue', as alternative revenue stream by <u>Courtney Wilson</u>



Propolis is a sticky resinous substance found in bee hives.

A by-product of honey production largely discarded in Australia could provide an alternative income source for beekeepers across the country.

Hidden within the walls of their hives, bees blend up a unique mix of materials that scientists believe holds untapped potential in Australia.

Propolis is a sticky, resinous substance that's sometimes referred to as "bee glue".

Bees use propolis as a powerful sterilising agent as well as to seal gaps in their hives against predators and the elements.

'Propolis is used by the bees because they don't have an immune system," Queensland beekeeper Murray Arkadieff said.

"Bees forage within a 7 kilometre radius of the beehive, so that means they cover about 210km<sup>2</sup>," he said.



Murray Arkadieff has been a beekeeper his entire life.

Mr Arkadieff said the bees were able to look throughout that 210km<sup>2</sup> and search for parts of plants that could be used to polish their hives.

The bees not only forage for nectar and pollen, but also for other parts of the natural environment such as sap or bark.

"They bring that back to the beehive and they can mix it all together and it turns it into a really strong antimicrobial, anti-fungal, antiviral and antibacterial material, which they polish their entire hive with," he said.

#### Propolis and its medicinal wonders

Propolis also has benefits for people and is used in many different countries in medicines, dietary supplements, and cosmetics.

"Propolis contains high polyphenolic compounds," organic chemist from the University of the Sunshine Coast Trong Tran said.

"Australian propolis is very diverse and it also shows very comparable, even higher antioxidant activities compared with the other well-known propolis in the world, Dr Tran said"

Despite being part of a well-established industry elsewhere, in Australia there isn't large-scale commercial propolis harvesting and processing.

"We've always mainly been focused on liquid honey production," Mr Arkadieff said.

"It's not something that Australians have looked into in a massive way, which is why it's such an exciting opportunity for the industry."

Peter Brooks is part of the research team from the University of the Sunshine Coast that has been part of the Australian Propolis Project, an initiative supported by the federal government's Agrifutures organisation.

"When we started talking to beekeepers about what they were interested in they were saying: 'Well this propolis product that they throw out, it's got a lot of value, so how could we use that in some of our research?" Dr Brooks said.



Samples of propolis were collected from different areas around the country and were sent to the lab to be analysed.

"Like everything, if you're throwing something away that you could be making money for — it could be a new source of income."

To begin with, scientists needed to ensure that Australian propolis was valuable, given its specific properties were largely unknown.

#### A buzzing opportunity for beekeepers

Hive and Wellness Australia, formerly known as Capilano, asked its 1,200 beekeepers nationally to consider participating in a trial collection of propolis.

#### **Christopher Golding**

Apiary Sites Coordinator | Policy and Programs Officer, Food Safety NSW Department of Primary Industries christopher.golding@dpi.nsw.gov.au



#### Summer update

#### Fire safety

The Bureau of Meteorology has declared an El Nino event for Summer 2023-24. We can expect hot and dry conditions throughout NSW this summer and the possibility of drought conditions developing. Beekeepers should familiarise themselves of fire-preparedness for hives set down in bushfire prone areas. DPI maintains guidance on its website (<u>https://www.dpi.nsw.gov.au/</u> <u>animals-and-livestock/bees/management/seasonal-</u> <u>management/beekeeping-during-bushfire-periods</u>).

If you need to visit a National Park or State Forest in the coming months, it is advisable to contact National Parks and Wildlife Services (NPWS) or Forestry Corporation to confirm closures or seek access to hives. If there is a fire near your hives, call the Rural Fire Service to discuss options at **1800 679 737.** 

#### Enhancements

The DPI Apiary Service Desk continues to roll out enhancements to the BPASS system to improve functionality for beekeepers. Recent updates improve processes for invoicing and permit details for beekeepers in BPASS. These processes resolve consolidates the details captured in site records and permits and eliminates

Samples collected from all over the country were sent to the University of the Sunshine Coast for analysis.

"Of those samples that came back I think there was around 55 per cent that showed high antioxidant compounds," said Jessica Berry, an industry liaison officer with Hive and Wellness Australia.

Dr Tran leads the research team, which is focused on finding out which samples hold the higher antioxidant value, and why.

He thinks one reason might be that about 80 per cent of Australia's plants are endemic, and so aren't found anywhere else.

"So we can expect that Australian propolis is unique to other areas in the world," he said.

The complete article can be found at; <u>https://www.abc.</u> <u>net.au/news/2023-07-23/australian-beehives-propolis-</u> <u>alternative-revenue-for-beekeepers/1026252560</u> the previous need for manual updates. This fix resolves an anniversary invoicing issue previously identified by beekeepers and the Apiary Sites team.

Space for Longitude and Latitude coordinates has also been built into the system. This is a necessary upgrade for site applications on Crown Lands with capacity for integration into LLS and Forestry sites as well.

These improvements will also allow DPI to expand the functionality of BPASS in the near future.

#### August EOI outcome

The DPI Apiary Sites program ran a call for Expressions of Interest for vacant apiary sites between 2 August and 1 September. While 152 sites were initially advertised, 73 were withdrawn because they were caught up in Varroa eradication declaration zones during the advertising period. Thirteen of the remaining 79 sites received applications from 24 beekeepers and all have now been allocated, including eight vacant National Parks sites.

The next EOI is anticipated for mid-December and will run for eight weeks. The extended advertising period is to accommodate end of year holiday periods and provide an opportunity for interested beekeepers to inspect new sites in person. Please keep an eye out for announcements regarding the EOI in their near future.

Condolences

NSWAA extends sincere condolences to Malcom & Debbie Porter & family on the passing of Malcolm's mother Val.

Val was the wife of Ted Porter who was president of the NSWAA Central Tablelands branch for many years & Val used to provide sandwiches & scones with jam & cream after the branch meetings.

Val also attended the annual conferences.

Our thoughts are with the Porter family



#### **HONEY BEES SWITCH FEEDING**

New study uses video to show honey bees switch feeding mechanisms as resource conditions vary by Stephanie Baum , Phys.org



Credit: Pixabay/CC0 Public Domain

Within nature, the compatibility of animals' feeding mechanisms with their food sources determines the breadth of available resources and how successfully the animals will feed. Those who feed on the nectar of flowers, such as honey bees (Apis mellifera), encounter a range of corolla depths and sugar concentrations. The nectar of flowers comprises the prime source of energy and water for honey bees, who are dominant pollinators throughout the world.

Regional climate conditions contribute to plants producing <u>nectar</u> in various volumes and concentrations, and evaporation and pollinator feeding frequently leaves the nectar reservoirs of flowers below capacity. Thus, honey bees' ability to feed "profitably" under naturally varying resource conditions is advantageous.

An international research team has studied the feeding mechanisms of honey bees and has reported on how these bees switch between using suction and lapping to derive maximum benefit from flowers of varied sizes and concentrations of sugar. The team's study, titled "Honey bees switch mechanisms to drink deep nectar efficiently," is published in *Proceedings of the National Academy of Sciences(PNAS)*.

Prior research has studied suction and lapping feeding behaviors in honey bees, but this paper notes that earlier studies have included an "unnatural condition of virtually unlimited nectar supplies. Such large nectar pools are rare in the flowers they visit in the wild."

In this study, the team shows that during feeding, the distance between the honey bees' mouthparts and the nectar, as well as the concentration of sugar within the nectar, are determining factors in whether the bees procure it via suction or lapping.

Microparticles showing how a honey bee sucks deep nectar. Credit: *Proceedings of the National Academy of Sciences* (2023). DOI: 10.1073/pnas.2305436120

The feeding mechanism of honey bees consists of a long, thin proboscis that includes a pair of labial palpi inside a pair of elongated galea (lobes). This structure serves as a <u>feeding tube</u>, and the bee's hairy glossa (tongue) is situated inside. For this study, the researchers pre-starved honey bees, fed them sucrose solutions of 10%, 30%, and 50% w/w contained in capillary tubes, and used high-speed videography to record the bees' feeding behavior with each. Blue dye, which had no nutritional effect, was added to each solution for visual contrast, and the bees tolerated it well.

At the 10% w/w concentration, bees inserted their proboscides deep into the solution and extended their tongues beyond the proboscis tubes to suction the liquid until they could no longer reach the meniscus.

At 30% w/w—an approximate concentration commonly found in nature, according to the research—the bees began by quickly lapping the solution, slowing down as the liquid level receded, and gradually switched to suction until the liquid receded beyond their reach.

Microparticles showing how a honey bee sucks deep nectar. *Proceedings of the National Academy of Sciences* (2023). DOI: 10.1073/pnas.2305436120

At 50% w/w, the bees lapped the solution, beginning rapidly and slowing as the liquid receded, and did not transition to suction at all. Notably, the bees showed a smaller decrease in lapping frequency at 50% w/w than during their transitions to suction at 30% w/w.

The researchers conclude that short-distance lapping helps honey bees most efficiently gather nectar to fill the maximum collection capacity of their tongues, but lapping at longer distances would be less efficient than suction due to more time needed for capillary filling. The decreased lapping frequency observed with the thickest of the tested nectars indicates an allowance for the capillary rise needed for maximum tongue-saturation capacity.

In summary, regardless of nectar depth, lapping is a better strategy for honey bees collecting nectars of high sugar concentrations, and suction is faster for those with lower concentrations of sugar.

The team also believes that the feeding mechanism switching behavior may be a unique ability among this species. Noting a <u>previous study</u> published in *Soft Matter* in which <u>bumble bees</u> (Bombus terrestris) did not switch between feeding behaviors with nectars of varying viscosities, the team in this study also used a solution of 10% w/w with bumble bees to test whether this would change according to their distance from the liquid, but it did not; the bumble bees only exhibited lapping.

Furthermore, previous research with orchid bees (Euglossini) has shown that they mainly use their long proboscides to procure nectar via suction, but that they have exhibited both suction and lapping with small amounts (films) of nectar. However, there is currently no

# BEE BIOSECURITY OFFICER

#### **Daniel Martin**

Bee Biosecurity Officer Plant Biosecurity and Product Integrity | Primary Industries Department of Regional NSW Wagga Wagga Agricultural Institute Pine Gully Rd, Wagga Wagga, NSW 2650 M 0475 947 516 E daniel.martin@dpi.nsw.gov.au t

#### NSW Bee Biosecurity Officer – Daniel Martin

By way of introduction my name is Daniel Martin and I have recently commenced in the role of Bee Biosecurity Officer (BBO) with the NSW Department of Primary Industries (DPI). This is a newly established BBO position.

Based in Wagga Wagga I will be working closely with beekeepers and beekeeping clubs and associations in southern NSW to promote best practice bee biosecurity through the adoption of the Australian Honey Bee Industry Biosecurity Code of Practice. I will be attending and participating at club and association events and key agricultural field days. A significant component of my role will involve supporting the delivery of bee biosecurity projects including the delivery of training activities to beekeepers. I will be liaising with and assisting BBOs Rod Bourke and Sam Giggins as required.

I have 25 years' experience in the honey bee industry, most notably as Leading Biosecurity Apiary Officer with Agriculture Victoria for 10 years. During my employment with Agriculture Victoria my main roles focussed on bee biosecurity compliance operations and endemic and exotic pest and disease awareness,

evidence to show that orchid bees make this switch based on corolla depth or nectar properties.

The research team included members from China's Sun Yat-Sen University School of Aeronautics and Astronautics and School of Advanced Manufacturing, The University of Washington Department of Biology and Burke Museum of Natural History and Culture in the U.S., South Africa's University of Pretoria Department of Zoology and Entomology; Belgium's Université libre de Bruxelles, Nonlinear Physical Chemistry Unit and Université de Mons, Laboratoire InFlux; and Kiel University's Department of Zoology in Germany.

More information: Jiangkun Wei et al, Honey bees switch mechanisms to drink deep nectar efficiently, *Proceedings of the National Academy of Sciences* (2023). DOI: 10.1073/pnas.2305436120

Journal information: <u>Proceedings of the National</u> <u>Academy of Sciences</u>, <u>Soft Matter</u> training and surveillance, including involvement in the Victorian component of the National Bee Pest Surveillance Program. A significant achievement during my employment with Agriculture Victoria was my involvement in the initiation and development of the Beekeeper State Quarantine Response Team (SQRT), whereby beekeepers received nationally accredited biosecurity training for the purpose of assisting the department to conduct surveillance in the event of honey bee emergency response, such as an exotic pest incursion.

I'm fortunate to be a past recipient of a Winston Churchill Fellowship which involved visiting the USA to investigate integrated Varroa mite control for the future benefit of Australian beekeepers.

More recently I performed the role of Surveillance Coordinator Team Leader during the Varroa mite emergency response.

I look forward to my continued involvement in the NSW honey bee industry with a particular emphasis on enhancing honey bee biosecurity through engagement with recreational and commercial beekeepers alike. Please feel free to contact me on 0475 947 516 or email: daniel.martin@dpi.nsw.gov.au







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**ISA** 

### Technical Specialist, Honey Bees Report

Elizabeth Frost

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## **Absconding swarms and Varroa management**

Catching swarms has long been a source of free bees to many recreational and small-scale beekeepers. Swarming is a honey bee hive's method of reproducing itself, sending out its genes further afield for the ongoing success of the species. Ideally, beekeepers take steps to prevent swarming through various management methods, given swarming results in losing about half the hives' population, lost honey production, an alarming nuisance to the general public, and poses a risk that the hive won't successfully raise a new queen.

Feral hives or managed hives which aren't actively managed to prevent swarming, typically send out reproductive swarms annually from spring through summer. The majority of swarms are reproductive swarms, however, there is another type of swarm. An absconding swarm occurs when the hive is so badly impacted by pests that the hive becomes inhospitable to the point where the bees abandon the hive entirely. This can happen when a hive is heavily infested by small hive beetle larvae and adults. This can also happen if Varroa mite numbers get too high.

Since the Varroa Mite Emergency Response shifted from Varroa eradication to transition to management of Varroa on 19 September 2023, the Varroa mite Emergency Order no longer contains restrictions on catching swarms in NSW. Beekeepers can catch swarms and keep them again in NSW. However, any beekeeper in the remaining 'Management Zones' (previous Eradication 'Red' Zones) should assume that swarms they catch in the Management Zone will have one or more Varroa mites in them.

Where Varroa is newly established, feral hives and neglected registered and unregistered hives are a major source of mite invasion into actively managed hives. This invasion can result in rapid increases in mite numbers in even well-managed hives, making monitoring for mite levels across all apiaries a minimum of four times a year critical.

On 30 September, I caught a swarm myself in the Newcastle/Central Coast Management Zone. According to the NSW DPI Varroa mite heat map, the location where I caught the swarm had a high number of Varroa detections. The swarm size was roughly 1.5 litres in volume (of bees!), which is quite small, leading me to suspect it was an absconding swarm. Due to the swarm location in the NSW DPI Varroa mite heat map, I expected to find phoretic Varroa mites hitching a ride in the swarm (Fig. 1).



Figure 1. Two Varroa mites feeding and hitching a ride on the underside of a honey bee's abdomen. Food and Environment Research Agency, Crown Copyright.

I collected my 300 bee sample from the swarm and did my mandatory surveillance test for Varroa. A total of 37 mites came out of that sample, which is a 12% Varroa infestation requiring immediate treatment (Table 1). NSW DPI currently advises beekeepers in NSW wishing to catch a swarm to start a managed hive that:



- You must register as a beekeeper and declare the location of your bees to DPI, understanding the obligations of managed hives as per the Emergency Order will apply, including requirements for monitoring, reporting and if necessary, treating for Varroa if detected at the treatment threshold
- The swarm may already be infested with Varroa, so NSW DPI recommends beekeepers complete a surveillance action (alcohol wash, soapy water wash, or sugar shake test) immediately to determine if Varroa is present
- If 6 or more Varroa mites are found, you must treat the hives within 14 days (and treat all hives at that apiary).

Table 1. Treatment Thresholds by Colony Phase: Varroa % = # Varroa/100 adult bees (adapted from Honey Bee Health Coalition 2022 by E. Frost). In brackets (# mites found) is the total mites found in an alcohol wash, soapy water wash, or sugar shake of 300 worker bees.

| Colony Phase                                     | Varroa %<br>Wait – immediate control not needed | Varroa %<br>URGENT – Control immediately |
|--|---|--|
| <b>Dormant</b><br>(broodless period)             | <b>Under 1%</b> (less than 3 mites found)       | Over 1% (3-5 mites found)                |
| <b>Population Increase</b><br>(typically Spring) | <b>Under 2%</b> (less than 6 mites found)       | <b>Over 2-3%</b> (6-9 mites found)       |
| <b>Peak Population</b><br>(typically Summer)     | <b>Under 2%</b> (less than 6 mites found)       | Over 3% (9+ mites found)                 |
| <b>Population Decrease</b><br>(typically Autumn) | <b>Under 2%</b> (less than 6 mites found)       | <b>Over 2-3%</b> (6-9+ mites found)      |

To learn more about Varroa monitoring, treatment thresholds, and control tools, follow the QR code (Fig. 2) to read the NSW DPI factsheet 'Varroa mite management options for NSW.' This factsheet is guided by New Zealand and North American resources on Varroa monitoring, decision-making and control, as they are most applicable to the conditions and management styles of beekeeping in Australia. Our unique climates, length of brood rearing and honey production seasons, nutritional and pathogen landscapes compared to the rest of the world, may mean adjustments to Varroa management recommendations specific to Australia are needed. With time and experience, we will better understand Varroa population development in Australian honey bee hives.



Figure 2. NSW DPI factsheet 'Varroa mite management options for NSW.'



Figure 3. 2023 Tocal Beekeepers' Field Day YouTube recording

Additional recommended reading and videos

NSW Department of Primary Industries, *Managing your hives with Varroa*. <u>www.nsw.dpi.gov.au</u> Goodwin, M., Taylor, M. (2007). Control of Varroa: A Guide for New Zealand Beekeepers. New Zealand Ministry of Agriculture and Forestry.

The Honey Bee Health Coalition (2022). Tools for Varroa management: A guide to effective Varroa sampling and control. <u>www.honeybeehealthcoalition.org</u>



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# BEE BIOSECURITY OFFICER REPORT

Rod Bourke - NSW Bee Biosecurity Officer NSW Department of Primary Industries - Biosecurity NSW Tocal Ag College, Tocal Rd Paterson NSW 2320 Ph: 02 4939 8946 Mob: 0438 677 195 Email: rod.bourke@dpi.nsw.gov.au

#### My observations on managing varroa mites in management zone bee hives

BIOSECURITY

PROGRAM

The varroa response transition to management (T2M) was called in late September and everything changed with regards to how DPI approached the situation. The emergency response started wrapping up the loose ends (hive euthanasia and hive reimbursements etc.) and it tapered off as a transition phase began.

Very importantly it also changed how beekeepers dealt with varroa mites in their hives. It was no longer illegal to catch swarms, no longer required to euthanise swarms or managed hives that were located within red zones. If hives are found to have varroa mites, you must now manage the pest instead of the apiary being euthanised. You can also now keep beehives within the management zone (some of the former red zones), just as long as you report the location. This was a momentous time for many whom had their hives euthanised during the former Emergency Response phase and since been without their much-cherished bees for quite some time.

Being able to keep bees again is both a time of celebration but also a time to mourn, as the "good old days of beekeeping" (from before small hive beetle arrived) have slipped even further behind us forever. We now have two bee pests that will complement each other's effectiveness at taking out bee colonies if not managed properly, so it is time to up our game. Education and practical hands-on experience dealing with mites will be the key to achieving a successful outcome.

Varroa is a very serious pest of honeybees, so we should not be in any way complacent about its presence within our hives or in monitoring for and treating it, otherwise you may be in for serious colony and financial losses. But Australia is a very different situation to what is now seen in most other longer term established varroa beekeeping countries, we cannot just assume the worst-case varroa scenario is already happening here. There are so many unanswered questions about how quickly the mites are spreading and impacting hive health under current conditions that I have started running a number of small trials to try to gauge their **current** impacts.

#### Moving bees back into varroa country

As soon as I could, I moved a small number of my surviving "clean" hives back onto a former red zone apiary site that had previously held 68 hives (euthanised in September 2022). It was a good feeling to have some bees back there and being close to home base as I was becoming tired of the 5-hour return drive where these bees had sat since 2021. I am based in a red zone so it had not been easy to get gear out to these hives, and with the ongoing response there had been some uncertainty about hive management decisions. This meant that these hives had not been pushed hard nor nearly as productive as they could have been, but at least I still had some hives left to play with.

Bayvarol strips and sticky mats were added soon after their arrival and checked 24 hours later. One hive already had 2 mites on the mat! Within a week all hives had mites on their mats. This monitoring has been ongoing and every week that I pull mats out there are varying numbers of mites on them.

One thing that was very quickly noticeable was how adding the Bayvarol strips impacted on the bees using the frame area near each strip. Where a frame had previously been a nice solid slab of capped brood there was now no brood left around the strip location, and the entire area had been chewed out by the bees to clean it up and maintain bee space. The same was seen on frames that contained pollen...it was a bit messy! Adding strips to a brood box will impact the productivity of that colony, but if the means justify the ends, then it needs to be done.

I initially put the 4 Bayvarol strips for each colony down through the metal queen excluder, as it's nice and quick, they sit nicely and there is no way that they can slip down between frames and get lost. Having since removed the excluder 2-3 times on each colony to do work I can see that this is not always the best way to use them. If you are adding strips at a time of the season when no brood work is being done then by all means put them through the excluder, but if it is spring or other times when much work is being done on the brood then it may be more practical to attach strips to individual frames so that they stay only in that position until they are removed.







2 different frames showing area affected near strips



Sticky mat under 4 strips showing much debris/cleaning activity by bees.

#### Locally caught swarm.

As the transition to management phased in, we caught a tiny little swarm/absconding colony of bees that you would normally not even bother with...unless you had not had any bees in over a year. They were such a tiny colony that I decided to only alcohol wash a small number of them and found 3 mites on 92 bees. This works out at a 3.3% infestation rate  $(3/92 \times 100=3.26\%)$ infestation) or around 9-10 mites in a normal  $\frac{1}{2}$  cup (~300 bee) wash.

This colony received a smaller dose of miticide (always refer to usage instructions of each individual miticide product to get the appropriate dosage rate for it, as they are different for every product)

and within hours I saw dead mites being thrown out the front of the nuc box. Starting with a small colony always means that initially they don't seem to do anything much, but after 6 weeks they are now starting to get going and the strips don't come out for another 2 weeks (Bayvarol is used for 6-8 weeks maximum).

#### Heavily infested hive.

I got a call about an alcohol wash with a 50% infestation rate, so Sam Giggins (the new BBO-Surveillance replacing Mark Page, who moved to the Tocal Honey Bee Education Coordinator role) and I headed down to the Central Coast the next day to check it out. The hive had been sitting in the Red Zone but had not been euthanised, so it had been exposed to mites for quite a while. It was a beautifully set up flow hive with the bees working ok, but there was not much honey in the flow frames. We opened an observation window and quickly saw varroa mites on bees, and some bees even had 2 mites feeding on them. Obviously when you can visually see mites on live bees then that is a really good indication that there are high levels of mites in a colony.

The colony had 7 pretty solid frames of healthy brood (no signs of any type of brood disease symptoms) and good honey and pollen stores below the excluder, but there was not a large bee population above the excluder. This colony would have looked good had it been late winter, but for mid-October it had definitely started to slide backwards.

We did an alcohol wash and removed 277 mites from 328 bees, which was both a shock and also quite amazing.  $277/328 \times 100 = 84.45\%$  infestation rate, which is a significant infestation level.

Mark Goodwin told me that before the viruses arrived into NZ that they had seen their bees tolerate quite high mite loadings without noticeable negative impacts on the colony health, so what we were seeing here is probably a similar situation to the early days in NZ.



High mite count.



It is good to see lots of dead mites on the sticky mat.

The colony had Bayvarol added (4 strips) and a sticky mat (in a tray below a mesh bottom), and 30 minutes later there were already 51 mites on the mat. Each week we have removed the sticky mat and added a new one, and for the first two weeks there were very high numbers of mites present (many thousands). The third mat went in at a pretty important time in a miticide treatment phase, just after the last of the capped brood that had been present when the Bayvarol was first added had hatched out. When miticides go into a colony they immediately start killing phoretic mites (mites on adult bees), but they cannot get at any reproductive mites that are protected under capped brood...until the brood hatches.

Often, around 60-70% of a colony's mites are under the capped brood, so it takes weeks to get at all of them after strips are added. Over the next 2 weeks all of that infested capped brood hatches out, and those mites are mostly knocked out by your miticides. At the same time all the new engorged larvae that are being capped are going in without any great number of mites to feed on them and bother their pupal development (the odd mite probably slips through the miticide gauntlet, but not in numbers enough to cause any issues).

Around 2 weeks after miticide strip application there will be an improvement in the colony as healthier bees start being born (that have not been fed upon by mites during pupation), so over the course of a 6–8-week miticide strip control treatment you should see a noticeable improvement in colony health and performance.

When the third sticky mat came out there was a noticeable and drastic decrease in the number of varroa mites seen on the mat, with less than 100 visible. A week later a similar number was observed. What these last 2 mats indicate are that on average perhaps 200 mites were killed with miticides over 14 days, which were likely mostly mites reinvading the hive. This works out at around 14 varroa mites per day that have been entering

this hive on returning forager bees. Stronger colonies would generally experience higher reinvasion rates and weaker colonies less, depending on external mite loadings in an area.

At removal of the fourth sticky mat there was noticeably increased entrance activity of returning and departing bees, the hive had far more bees working in the top box and the honey stores were also vastly improved. If no treatment had been started then this would not have been the case, but perhaps a slime out would be on the cards.

All of this indicates that whilst the colony had been suffering due to heavy feeding on the bees' fat body (bee liver) by mites, that there were no noticeable viral impacts, which is really good news for us at this time. Varroa associated viruses can really make beekeeping extremely difficult if you don't control mite numbers. If we are lucky enough to not be seeing viral impacts yet, then we have a really good opportunity to learn how to manage mite numbers now, before just one mistake wipes out large numbers of your hives (viruses won't give you a second chance).

Once mites become established in an area you will never fully escape from them, and they will keep spreading, so be prepared for them to reach your bees at some point soon, or later. Please do regular alcohol washes and report everything as required on the DPI varroa website. Keep an eye out for mites, take a deep breath when you find your first mites, and then start getting ready to do your first treatment. Then learn about the other available mite products, as you will need to rotate products and cannot just use the same one all the time. Getting educated with the different miticides will be a priority for all of us.



The National Bee Biosecurity Program is funded by the honey bee industry through a component of the agricultural honey levy, with state governments contributing in-kind resources. Plant Health Australia manage the program on behalf of Australian Honey Bee Industry Council.



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#### HONEY BEE NAVIGATION

NEW RESEARCH REVEALS A QUITE INTERESTING FACT ABOUT HOW HONEY BEES FIND THEIR WAY HOME – WITHOUT A GPS ANIMAL STUDIES and three hours. Throughout the experiment, the head

BY KAMAL SAINI



New research reveals a quite interesting fact about how Honeybees find their way home – without a GPS Image Credit: E Bullinger, U Greggers, R Menzel

Researchers have known for a century that honeybees are exceptional navigators. They can find their way around using their sense of smell, the sun, the pattern of polarized light in the sky, vertical landmarks that stand out in the view, and maybe even the Earth's magnetic field.

They are also smart learners who can make connections between different memories to figure out rules.

A recent study published in Frontiers in Behavioral Neuroscience has demonstrated that honeybees, like early pilots, rely on the dominant linear landscape features to navigate and find their way back home. This finding suggests that bees use similar strategies as humans when it comes to orientation and spatial navigation.

"Here we show that honeybees use a 'navigation memory', a kind of mental map of the area that they know," explains lead author Dr. Randolf Menzel, "to guide their search flights when they look for their hive starting in a new, unexplored area.

"Linear landscape elements, such as water channels, roads, and field edges, appear to be important components of this navigation memory."

Menzel and his colleagues gathered 50 seasoned forager honeybees in late summer of 2010 and 2011 in the town of Klein Lüben in Brandenburg and affixed a 10.5-mg transponder to their backs.

They then set them free in a new test area that was too far away for the bees to remember. In the test area, there was a radar that could pick up on the transponders from up to 900 meters away.

The most remarkable feature of the testing location was a pair of parallel irrigation ditches that ran from southwest to northeast in a direction parallel to one another.

When honeybees are in an area they don't know well, they fly in loops in different directions and over different distances, all centered on where they were released.

The researchers used a radar to follow each bee's precise exploratory flight route for anything between 20 minutes and three hours. Throughout the experiment, the bees soared up to nine meters above the ground.

Foragers were taken from five hives, and their native environment surrounding hives A and B was similar to the experimental region in regards to the number, width, length, and angle of linear landscape components, mainly irrigation channels.

The areas around hives D and E were quite different from the test region, whereas the area surrounding hive C was in the middle.

In the test location, there were no vertical components that stood out or other markers that honeybees are known to use to navigate.

Menzel et al. began by simulating two distinct sets of random flight patterns, each of which was centered on the location of the release place and was produced using a unique technique. Since the flight patterns the researchers saw were very different from these, they decided that the honeybees didn't just fly around randomly looking for food.

After that, the researchers employed sophisticated statistics to examine the flight direction and frequency throughout each  $100 \times 100$  meter block inside the test region.

They demonstrated that honeybees spend an excessive amount of time swarming around the irrigation channels. Analyses showed that these kept guiding the bees' flights even when they were more than 30 meters away, which is the farthest such landscape features can be seen by honeybees.

This suggests that the bees remembered them for a considerable amount of time.

"Our data show that similarities and differences in the layout of the linear landscape elements between their home area and the new area are used by the bees to explore where their hive might be," adds Menzel.

Crucially, machine learning techniques revealed that the test area's irrigation channels were most useful for forecasting the exploratory flights of bees from hives A and B, less helpful for bees from hive C, and least helpful for bees from hives D and E.

This indicates that the bees sought to generalize what they observed in the test region to their navigational memory of their home area, which was likely based on linear landscape components.

The authors concluded that elongated ground structures are significant features of honeybees' navigation memory, as flying animals, including bats and birds, recognize such structures in a map-like aerial view and consider them highly appealing as guiding structures. This finding underscores the importance of linear landmarks for navigation across multiple species.



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#### AUSTRALIAN HONEY BEE INDUSTRY COUNCIL (AHBIC)

Chairman: Stephen Targett CEO: Danny le Feuvre Ph: 0402 467 780 Email: ahbic@honeybee.org.au Website: www.honeybee.org.au Mailing address: PO Box 42 Jamison Centre Macquarie ACT 2614

#### AGRIFUTURES - Honeybee & Pollination Annelies McGaw Manager

Ph: 02 6923 6913 0407 987 738 Email: Annelies.McGaw@agrifutures.com.au Website: www.agrifutures.com.au

#### AUSTRALIAN QUEEN BEE BREEDERS ASSOCIATION (AQBBA) Secretary: Mr Richard Simms, 40 Kyle Rd Murwillumbah NSW 2484 Ph: 0468 481 768 Email: AQBBA21@gmail.com

#### **CROP POLLINATION ASSOCIATION (CPA)**

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#### AUSTRALIAN BEE JOURNAL

The Journal of the Victorian Apiarists' Association Inc. Published monthly Annual subscription:\$82 Australia / \$120 overseas For more information and a free sample copy Contact: The Editor PO Box 42, Newstead VIC 3462 Email: abjeditors@yahoo.com

#### **THE BUZZ!**

South Australian Apiarists' Association Newsletter Published 5 times annually Included in annual membership subscription to SAAA (minimum subs \$100.00) For further information please contact: The Secretary, SAAA PO Box 45 Salisbury SA 5108 Ph; 0419 982 102 Email: secretary@saaa.org.au

#### THE AMATEUR BEEKEEPER

Bi-monthly newsletter for The Amateur Beekeepers' Association Inc.. Email: editor@beekeepers.asn.au

#### THE NEW ZEALAND BEEKEEPER

Official Journal of Apiculture New Zealand Inc. www.nba.org.nz Accounts & Subscriptions: Pauline Downie PO Box 25207 Wellington 6146 New Zealand Phone: 04 471 6254 Email: secretary@nba.org.nz Advertising: Certa Solutions PO Box 2494, Dunedin 9044, New Zealand Ph: 0800 404 515 Email: beekeeper@certasolutions.co.nz

#### **Member Benefits**

- Provide a means for the commercial apiarists of NSW to be represented through a common organisation
- Lobby to maintain access to essential floral resources
- Help to secure your Industry's future
- Provide strong representation to Government
- Membership Badge
- Copy of Biosecurity Manual for Beekeepers
- Annual subscription to Australia's Honeybee News the NSWAA bi-monthly journal & FREE classified advertisment in journal
- Annual State Conference & Trade / Feild Days
- Support beekeepers in all regions through 9 NSWAA branches
- Provide opportunities to meet other beekeepers & NSW DPI representatives at meetings, workshops & conferences
- WFI Insurance for Rural Business, Business & Strata -1300 934 934. WFI provides commission to NSW Apiarists' Association (NSWAA) to help member benefits. Please let your local Area Manager know you are a member to receive this benefit for the Association - Ms Jane Jones Mob: 0417 943 451 E: jane.jones@wfi.com.au
- Discounts available through Bee Hive Incentive Program
- SCHUTZ (Australia) Pty Ltd IBCs special members; rate

#### **Membership Subscription Rates**

The Association Membership year runs from: 1 March to 28 February

#### Note: Rates from 1 March 2017

| 0 to 10 hives              | \$100.00        | 1 vote   |
|----------------------------|-----------------|----------|
| 11 to 200 hives            | \$200.00        | 2 votes  |
| 201 to 400 hives           | \$300.00        | 4 votes  |
| 401 +                      | \$1.00 per hive | 6 votes  |
| 700 +                      | \$1.00 per hive | 8 votes  |
| 1001 +                     | \$1.00 per hive | 10 votes |
| Over 1500 hives            | \$1.00 per hive | 12 votes |
| Affiliated/Retired/Student | \$65.00         | 1 vote   |
| Honeybee News subscriber   | /member         |          |
|                            | \$65.00         | 0 vote   |

#### Junior Beekeeper Club

Are you an aspiring beekeeper, written a story or poem, taken a photoor painted a picture about bees or beekeeping?

Then we want to hear from you!

All you need to do is get permission from your parents to have it published & send it to

> info@nswaa.com.au Participants will receive a certificate from NSW Apiarists' Association

# Classifieds

#### For Sale

FD Hino 2004. 10,400 GVM. 313,000 kms. March 2024 rego Good tyres, new clutch, slave cylinder & master cylinder 30,000km ago 21ft tray with Ezy Loader 200, tool boxes, bull bar both good condition. Will separate. \$43,000 + GST Contact Nigel 0428 462 365

#### Wanted

Late model, single axel truck set up for bees with late model Ezy Loader or will buy truck & loader separately. Contact Nigel 0428 462 365

#### Honey for Sale

Type: Eucalyptus Honey\* Honey Origin: Western Australia Price: From \$5.2/kg Quantity: 1 – 30 IBCs (Food Grade IBC) Storage Place: 20 km from Sydney CBD Contact: Rose Phone: 0430112002 Email: sydney.wh@outlook.com \* Certified by B-Qual \* Audited by Safe Food Australia

## **Cover** Photos

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Email it to honeybeenews@icloud.com

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for inclusion

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