



**Next meeting** | Wednesday 6<sup>th</sup> March 2019

**Where** | Main Hall, Johnsonville Community Centre, Moorefield Rd

**Editor** | Eva Durrant [edurrant@xtra.co.nz](mailto:edurrant@xtra.co.nz)

## Topics for March meeting

**Beginners session** Upstairs meeting room 6.45pm

**Topic** Honey extraction and cleaning the extractor

**Main Meeting** In the main hall at 7.30pm

**Speaker: Jernej Bubnič, Slovenian beekeeper and bee veterinarian. Jernej will talk about beekeeping in Slovenia.**

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## Note from the President

It was great to see so many members for the February meeting despite it falling on a public holiday. There have been a few mumbles about us holding our meeting on public holidays, however due to the permanent booking with the Johnsonville Community Centre (the first Wednesday of the month) the logistics of re-arranging it to the following day or week is too muddy and confusing for all, so it will remain as is.

I have to voice my disappointed with the actual response of people enrolling for the beginners' courses. From the initial canvassing we had over 60 people showing interest in attending the course, however the actual bookings amounted to 10 people which doesn't make it viable to run. A lot of preparation and planning goes into these courses, with not only resources being purchased but people giving up their time to make it happen. As a club we are committed to providing future educational courses to members but will require minimum numbers for a course to run, which will be 15 participants. Plans are afoot to create an intermediate beekeepers' course, along with queen rearing.

The clubs committee met last week and have planned out the agenda for the next few months. I am delighted to announce that we have managed to secure the speaking servicing of some top-quality international speakers who will provide some diversity and different perspectives to beekeeping. We are also working towards holding a cooking evening during the middle of the year, with discussions underway with one of New Zealand premier chefs. We intend for him to not only talk about the use of honey and bee products in cooking but will also give a cooking demonstration. Further details will be provided closer to the time.



## Note from the President (cont)

There has been a lot of discussion in the media about a proposed commodity levy being introduced. For most of our club members it won't affect them as it is targeting the semi and commercial keepers (those with 26 hives or more). The levy will be applied to every kilo of honey produced. There is great debate into the pros and cons of the levy which I am not going to go into, however if you wish to find out more, it is suggested you speak to Frank Lindsay at the next club meeting.

A new feature for each meeting will be a **Sales Table**, giving members the opportunity to showcase and sell their honey and beeswax products, and hive related jigs, guards, inventions, etc.

**James Withington**

## Sales Table

**Members are invited to bring and sell**

**hand-made bee related products**

**Creams and balms, wax products, mead, etc., and**

**hive gizmos**



# Beekeeping Quiz

## Varroa destructor



1. What is the length of the Varroa mite's life-cycle?
2. When did varroa first appear in NZ?
3. Why do varroa mites prefer to infest drone cells?
4. How does the varroa mite damage the bee?
5. How do varroa mites spread?



Varroa mite on a honeybee pupa (Getty Images)

Answers on page 12



# Replacement queens, a true Cinderella Story



by Jay Evans, Research Leader for the  
USDA Honey Bee Lab in Beltsville, MD.

Honey bee colonies and beekeepers alike can't afford to take queen rearing lightly. During supercedure events, swarm preparation, or emergency queen replacement, nurse bees must reach a quick consensus on which female larvae will receive royal care. Two recent articles from leading bee scientists offer contrasting views for how that choice is made. Ramesh Sagili and colleagues suggest that nurse bees make an economic choice, by tending to invest in well-fed young larvae as their future queens. Presumably, young female larvae that are large for their age will develop into more robust queens. Sagili and colleagues starved clusters of first-instar female larvae for four hours by blocking out nurse bees with a mesh screen. They then placed combs containing these clusters, alongside clusters of larvae that had been fed normally, into colonies that were ready to raise a replacement queen. Food-deprived larvae, while still viable, were far less likely to be picked as replacement queens. Interestingly, the discrimination against skinnier larvae was not observed when starved and normal larvae were placed into queen cups, suggesting that the stimulus of these cups outweighed any cues nurses might use to pick the most queen-worthy larvae. As further evidence that nurse bees can smell starvation, or that starving larvae tend to beg more for food (or both), larvae that had been deprived of food were fed more often and for longer periods. Thus, nurse bees did their best to get these larvae caught up in terms of worker development, despite tending to pass them over as future queens. Their work is described in "Honey bees consider larval nutritional status rather



## Replacement queens, a true story (cont)

than genetic relatedness when selecting larvae for emergency queen rearing”, Scientific Reports 8:7679, <https://www.nature.com/articles/s41598-018-25976-7>, 2018

This and other experiments suggest that physical cues and/or chance are the main forces driving which larvae are chosen for the queen route, but this need not be the case. Much thought and work have gone into testing whether there might be a birthright for royalty. This could come in two ways. First, since queen bees mate prolifically, most females in the nest are only half-sisters. If a nurse bee had the power to choose a full sister as the next queen, this nepotistic act would benefit her greatly (especially since the dads of full or ‘super’-sisters are haploid and hence give an exact version of themselves to all of their daughters, a tale for another day). As appealing as nepotism seems, it is not a frequent occurrence in bee colonies, arguably because a nepotistic trait would lead to poor queen



regulation over time, if not outright battle. There is another way for a genetic bias to present itself. Perhaps there are blue-blooded lineages of honey bees whose members inevitably aim for a royal seat. This, too, can lead to an unstable state, where successful royalty begets more royalty until the ratio of queen-destined larvae gets out of whack, at its extreme leading to dozens of feuding royals and not a lot of stinging or foraging. Still, when this trait is rare there is an opportunity for such royalty genes to hang around.



## Replacement queens, a true story (cont)

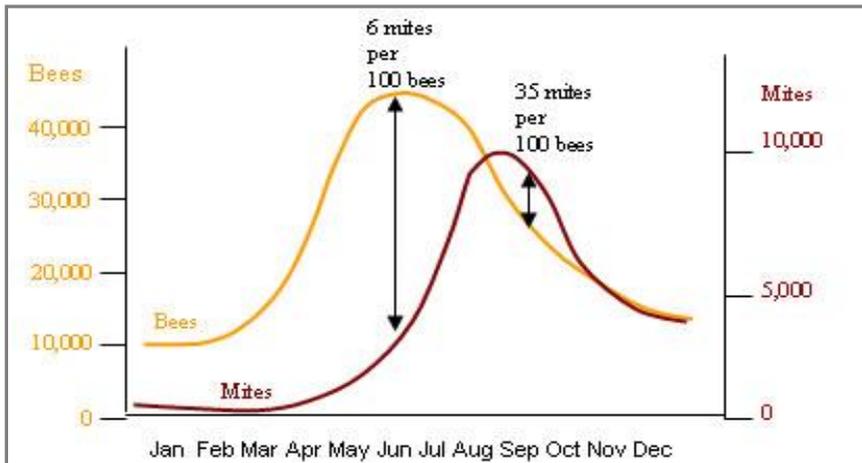
James Withrow and David Tarpy present strong evidence for ‘royalty’ lineages in honey bees. Using a form of DNA fingerprinting, they show a tendency for some lineages to be over-represented as queens (“Cryptic ‘royal’ subfamilies in honey bee (*Apis mellifera*) colonies” *PLoS ONE* 13(7):e0199124, <https://doi.org/10.1371/journal.pone.0199124>, 2018). Chosen royals are extremely rare, and in fact the authors propose that queen bees are even more promiscuous than currently thought, and some of the most rare lineages (patrilines) show this royal bias. So how does this trait arise and why don’t royal lineages predominate? Mechanistically, royal-leaning larvae must attract special attention from nurse bees, perhaps like the starved larvae above, but without going through starvation. Since nepotism is not involved, these ‘feed-me-well’ cues must be perceived by average nurse bees. The authors argue that the other forms of queen replacement, namely supercedure and pre-swarming, slow the rise of royal lines. Here, queen-destined larvae are laid in preformed queen cells and it seems implausible that a queen aspirant could determine her own birth order in such a way as to land in a queen cell.

A true fairy tale skips over the gritty details, but if you are interested in which changes occur inside chosen queens when they start on a royal path, numerous scientists have tackled this. One way involves measuring how larvae turn on specific genes that lead to the proteins best suited for royalty or a life of work. Xu-Jiang He and colleagues have provided a complete view of these caste-biased genes in their recent paper, “A comparison of honeybee (*Apis mellifera*) queen, worker and drone larvae by RNA-Seq” in *Insect Science*, <https://onlinelibrary.wiley.com/doi/full/10.1111/1744-7917.12557>, 2017). This topic is fascinating to me personally and in fact is the very question that brought me into bees 20+ years ago. Diana Wheeler, Gloria deGrandi-Hoffmann and I recount the ways specific genes can lead to queens or workers in “Honey bee queen production: Tight genes or too much food?” *American Bee Journal*, 140(2), 136-137, 2000). The next time you induce a queen event in your colonies, or watch as one unfolds, remember the many forces inside new queens and their nestmates that can affect the outcome.



# Population dynamics of varroa in a honeybee colony

From [ScientificBeekeeping.com](http://ScientificBeekeeping.com)



*Simplified bee and mite population growth curves for a temperate climate. The mite growth curve lags behind the bee curve. Note how the number of mites per hundred bees greatly increases in the fall months (USA). A colony is unlikely to survive a fall infestation rate this high.*

Let's start by seeing just why it is typical for varroa to become a problem in the fall.

Both the mite and bee population are at their lowest just before the first brood emerges in spring. The bee population climbs at a quicker rate than the mite population until midsummer, when the bees start to ramp down. The mites get off to a slower start, and then hit their stride during drone rearing season in spring and summer. **Note how the mite to bee infestation ratio climbs dramatically in early Autumn.**



dynamics of varroa in a honeybee colony (cont)

When that occurs, the bees really feel population the impact of varroa—brood is stressed or dies, viruses run rampant, and the generation of bees that will form the winter cluster is weakened and vulnerable. For a review of the insults that varroa parasitism visits upon a honeybee colony, see the excellent New Zealand guide cited at the end of this article (Honey Bee Health Coalition).

A key point to remember is that the relative infestation (percent, or mites per 100 bees) is more important than total mite population—a large colony can handle more mites than a small one. At much above a 2% infestation in spring, honey production drops off severely. At much above 5% in fall, colony winter survival suffers (although the fall “economic injury threshold” numbers by various authors range from 1% to 11%) (Currie & Gatien 2006). We will return to percent infestation, and economic injury levels in my next article.

Unchecked, varroa can really multiply! A 12-fold increase is typical in a short season consisting of 128 days of brood rearing (Martin 1998). However, its population can increase 100- to 300-fold if brood rearing is continuous! (Martin and Kemp 1997).

## Honey Bee Health Coalition

The goal of the Coalition is reversing recent declines in honey bee health and ensuring the long-term health of honey bees and other pollinators.

<http://honeybeehealthcoalition.org>

See this site for videos that demonstrate techniques and products for combatting Varroa mites, including:

Apivar Apistan or Checkmite, Formic acid, HopGuard, Oxalic Acid, Sanitation, screen bottoms, Drone brood removal, Re-queening and Essential oils.



## Chartwell Apiary

### Over-wintering nucs

John Burnet

The Club is currently making up about 20 nucs using bees and honey stores from the club hives and queens from Gary Jeffrey (West Coast). These will be over-wintered at our Chartwell apiary in new solid wooden nuc boxes (for warmth) and will enable the Club to provide nucs to new beekeepers early in the spring without them having to wait for the availability of newly mated spring queens. These overwintered nucs will have a 2 - 3 month head-start on the spring nucs which are often not available until mid-Dec.

All beekeepers are reminded that autumn and winter is a good time for checking all hive-ware and repairing and replacing all decaying frames and boxes. Also, many beekeepers found that they had insufficient hive-ware over December and early January when the flow was at its peak and urgently tried to acquire, assemble and prepare new gear for their unexpected splits and swarms. To avoid this summer scramble now is the time to purchase and prepare additional hive-ware in preparation for next season's flow.

Boxes and frames can be assembled – however, don't embed wax foundation in your frames at this early stage as it will dry out and warp long before they are required by the bees. If foundation frames are put on the hive now when there is no honey flow on, bees will simply make holes in them.

### **FOR SALE**

50 litre stainless steel honey tank with honey gate for sale  
on behalf of Catlins Honey. \$95.00

Frank Lindsay will bring it to the meeting on Wednesday



# SNI BEEKEEPING GROUP INC

## AUTUMN FIELD DAY

**COME AND JOIN US ON SUNDAY 24th MARCH 2019**

at the Waireka Honey Centre, Cnr State Highway 1 & Rongotea Rd

SNI MEMBERS \$25 PER PERSON - NON MEMBERS \$35 PER PERSON

SORRY NO FAMILY CONCESSIONS

Membership 1 April 2019—31 March 2020 \$10 per person

**10am Start**

**GUEST SPEAKER: JERNEJ BUBNIČ Project Helena: Slovenian Beekeeper**

**INCREASING HIVES** From 2 to 500 - How to do this

Pitfalls and Positives

*WINTER NUCS: Polystyrene Hives*

*AUTUMN/WINTER MITE CONTROL: THE ITALIAN EXPERIENCE*

*OXALIC & GLYCERINE MITE STAPLES*

*WASP CONTROL*

**ARGENTINIAN ANTS: A sandy area problem**

**REQUEENING: QUEEN INTRODUCTION METHODS**

**WINTERING DOWN HIVES**

**LUNCH AVAILABLE \$10 each    RAFFLES: \$2 TICKET OR 3 FOR \$5**



# Beekeeping Quiz Answers

## Varroa destructor

- 1 Mites reproduce on a 10-day cycle
- 2 In 2000
- 3 Drones are in the cell for 24 days, three days longer than a worker bee. These extra days enable the varroa mite to reproduce an extra time.
- 4 The mites feed on the fatty tissue of adult honey bees for sustenance, leaving wounds open to diseases and viruses.
- 5 Varroa mites spread in several ways:



**Robbing** - When a colony has been weakened by the mite it becomes a target for robbing bees. Not only do the robbing bees take honey but also carry away large numbers of mites.

**Drifting-** Poor apiary design will allow young bees to 'drift' into neighbouring hives and bring varroa with them.

**Migrating Bees** from collapsing colonies abscond from their own hive with the robbers and increase the mite load in the robbers' hive.

**Swarming** - A swarm from an infested colony will carry mites with it. It is important to test any swarm for the mite and treat it before introducing it to the apiary.

## Further reading on Varroa destructor:

[http://www.entnemdept.ufl.edu/creatures/misc/bees/varroa\\_mite.htm](http://www.entnemdept.ufl.edu/creatures/misc/bees/varroa_mite.htm)



**UPDATE – 1<sup>st</sup> March 2019**  
**From the CE, Karin Kos**

## **Biosecurity Act review**

At the Primary Production Select Committee a few weeks ago, the Ministry for Primary Industries (MPI) advised it is reviewing revenue streams as part of an overhaul of the Biosecurity Act. As part of this review, MPI is considering whether or not to establish a levy for biosecurity events. This would mean levying ahead of an event occurring to establish a pool of money for biosecurity response.

A question that many in the primary sector, including ours, will no doubt be asking is: What does that mean for the existing funding mechanism through the Government Industry Agreement (GIA)? That partnership sees that the Government and primary industry signatories share decision-making, responsibilities and costs of preparing for – and responding to – biosecurity incursions.

Our industry has not signed a GIA, although we've done considerable groundwork on it. We need to know a lot more about the review and the potential impact on the future of a GIA and will be approaching the Ministry on behalf of members for clarity. We'll keep you updated on this matter.



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## March Checklist

- Test for varroa mite levels and treat if necessary
  - Extract honey
  - Requeen hives
  - Check for wasp damage
  - Sell or store honey crop
  - Store honey supers or return to hives
- 

Taken from **Practical Beekeeping in New Zealand** by Andrew Matheson & Murray Reid

More information from the **kiwimana** website

### March Check

Firstly, inspect and assess, then close up the hive, plan your work then go back a few days later and work your plan.

#### Things to consider:

1. Can I condense honey to one box?
2. Are there frames not being worked or empty?
3. Too much space?
4. Brood levels dropping?
5. Brood in two levels?
6. Dampness?



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## Oxalic acid results

### Stewart Keene

Stewart soaked 25g of oxalic acid onto a paper towel and placed this on top of the first brood box and left it for two weeks. He treated two hives; the bees in the first hive removed half of the towel. "It seems to work" wrote Stewart.

The first one shows the size of paper towel with varroa, the other is a close-up.



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## Newsletter contributions



If you have any interesting news or facts about bees, beekeeping, beekeepers, etc, and wish to share these with club members -send them to the editor:

Eva Durrant [edurrant@xtra.co.nz](mailto:edurrant@xtra.co.nz) or call on 027 311 8700

Contribution deadline: before the end of the month prior to next meeting



## Interesting Websites

### An Inside Look at How the Varroa Mite's True Diet Was Discovered

<https://entomologytoday.org/2019/02/21/inside-look-how-varroa-mite-diet-discovered/>

(site suggested by Werner  
Stephen)



### From the BEE CULTURE Magazine

**Research Triangle Park, N.C.** Bayer and Project Apis m. today announced an additional \$325,000 funding for Healthy Hives 2020, an initiative dedicated to improving honey bee health, raising Bayer's total investment in the program to \$1.3 million.



Project Apis m.



<https://www.beeulture.com/catch-the-buzz-healthy-hives-2020-gets-a-325000-boost-from-bayer-bee-care-and-project-apis-m-for-honey-bee-health-research/>



## Who can I speak to?

**President** - James Withington 0272 851206 [jwithington2016@gmail.com](mailto:jwithington2016@gmail.com)

**Vice-President** - Tricia Laing 0274 766540 [tricialaing48@gmail.com](mailto:tricialaing48@gmail.com)

**Treasurer** - John Burnet (04) 232 7863 [johnburnet@xtra.co.nz](mailto:johnburnet@xtra.co.nz)

**Secretary** - Jane Harding (04) 421 2417 [janeh@xtra.co.nz](mailto:janeh@xtra.co.nz)

Best times to reach Jane are evenings, and Friday Saturday/Sunday

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