Department of Primary Industries

NSW DEPARTMENT OF PRIMARY INDUSTRIES REPORT

Written by Daniel Bogema, Rod Bourke, Daryl Cooper, Ania Deutscher, Elizabeth Frost, Nick Geoghegan, Bianca Giggins, Victoria Gow, Stephen Green, Michael Hornitzky, Madlen Kratz, Kelly Lees, Stanislav Nenov, Mark Page, Kevin Tracy

2021 NSW Apiarists' Association Conference

New South Wales Department of Primary Industries (NSW DPI) is grateful to the NSW Apiarists' Association (NSWAA) for the opportunity to highlight some of our activities and achievements for the past 12 months in the NSWAA proceedings. Our team responsibilities include biosecurity and vocational education, compliance, apiary sites on public lands, laboratory diagnostics, research, development, extension and emergency response.

NSW BEEKEEPER REGISTRATION STATISTICS – Current at 23 April 2021

REGISTRATION CLASS	NUMBER REGISTERED BEEKEEPERS	NUMBER REGISTERED HIVES
Business	1,087	309,090
Recreational	8,602	37,005
Recreational Concession	2,465	14,596
TOTALS	**12,154**	**360,691**

NSW DEPARTMENT OF PRIMARY INDUSTRIES STAFF

Rod Bourke - Bee Biosecurity Officer (Commercial) – Based at Tocal, Rod educates NSW commercial beekeepers about their responsibilities under the Biosecurity Act 2015 and The Australian Honey Bee Industry Biosecurity Code of Practice.

Daryl Cooper - Leader Qld Fruit Fly, Regulatory Specialist Apiaries – Based at Yanco, Daryl has worked with the NSW Department of Primary Industries since 2003 as a Regulatory Officer. Daryl is appointed inspector under the Biosecurity Act 2015. Daryl is keen to continue promoting biosecurity in the bee industry in NSW by conducting targeted compliance operations in southern NSW.

Ania Deutscher – Senior Bacteriologist Veterinary – Based in Menangle at the Elizabeth Macarthur Agricultural Institute, Ania leads NSW DPI's Veterinary Bacteriology Diagnostics team. Ania and her team perform the diagnostic tests for AFB, EFB and other bee diseases and are also involved in various bee related research activities.

Elizabeth Frost –Technical Specialist Honey Bees – Based at Tocal, Liz works as DPI's technical authority on honey bees. Liz co-manages the "Plan Bee" Honey Bee Genetic Improvement Program, provides technical advice and drives research, development, and extension initiatives. She is the main point of contact between DPI and honey bee and pollination dependent industries and government agencies.

Nick Geoghegan – Program Coordinator Apiculture Resource – Based at Orange Head Office, Nick's work includes the rollout of the apiary sites on Public Land program; simplifying beekeeping on public sites with a consistent approach across government departments and fairer and more accessible allocation of available sites.

Bianca Giggins – Bee Program Administration Assistant – Based at Tocal, Bianca joined NSW DPI formally in 2020 and provides administrative support to the Certificate III in Beekeeping qualification and Beekeeper Traineeship Program.

Stephen Green – Regulatory Officer Apiaries – Stephen is based at Grafton and currently holds a position of Regulatory Specialist Apiaries, focusing much of his compliance effort on ensuring the compliance of NSW beekeepers against requirements under the Biosecurity Act 2015. Stephen managed the emergency feed allocation response for the beekeeping industry in the 2019/20 bushfire season.

Michael Hornitzky – Consultant – Retired NSW DPI microbiological diseases and diagnostics research team leader and bee researcher, Michael now works for NSW DPI as a consultant at the Elizabeth Macarthur Agricultural Institute focused on EMAI's honey bee pest and disease diagnostic services.

Madlen Kratz – Honey Bee Industry Development Officer – Based at Tocal, Madlen joined NSW DPI in 2020. Madlen's background is in honey bee research focused on nutrition, foraging behaviour, and pollination in Western Australia.

Kelly Lees – Education Officer Honey Bees - Based at Tocal, Kelly joined NSW DPI in 2020 and coordinates the Certificate III in Beekeeping qualification and is responsible for the development, delivery and compliance of accredited beekeeping training and assessment resources.

Stanislav "Slavi" Nenov – Bee Manager – Based at Tocal, Slavi joined NSW DPI in December 2020. Slavi worked for 14 years in the Tasmanian industry with TAS Honey Company, R Stephens Pty Ltd and Daybreak Apiaries, and before that in his home country Bulgaria where he manages hives additionally for Varroa mite and harsh winter conditions. Slavi's queen breeding experience includes a season with NZ's lead queen breeder David Yanke as well as breeding his own queens.

Mark Page – Bee Biosecurity Officer Surveillance – Mark is based at Tocal and is charged with fulfilling NSW duties to the National Bee Pest Surveillance Program including sampling to detect any new pest or disease incursion as well as floral sweeping for exotic bees to NSW. Mark also provides education for amateur beekeeping groups and the public on the specific needs required to keep bees; hive registration, the Biosecurity Act 2015 obligations, bee pest and disease identification.

Kevin Tracy – Beekeeping Traineeship Development Officer – Based at Tocal, Kevin delivers the Beekeeping Traineeship Program which works with new entrants to the beekeeping industry employed by commercial beekeepers where they receive a mix of on the job training and training delivery through Tocal College Registered Training Organisation (91166).

BEE BIOSECURITY OFFICER REPORT

Written by Rod Bourke
Email: rod.bourke@dpi.nsw.gov.au
Mobile: 0438 677 195

It is now almost a year since the Australian Honey Bee Industry Biosecurity Code of Practice (the Code) became a condition of registration in NSW on 1st July, 2020. I have since spent a lot of time promoting the many benefits of the Code to all categories of beekeepers over the last 12 month period. COVID did impact my getting out to physically visit branches for the first half of this period and until recent months the holding of branch meetings has generally been less frequent. This has decreased my overall number of trips over the last 12 months.

I believe that face-to-face meetings and training are always very beneficial, so in 2021 I have again been getting out as much as I can to revisit NSWAA branches, other bee clubs as well as work at events like the Tocal Field Day. I have also presented 2 sessions of the Tocal Honeybee Biosecurity course to around 55 beekeepers at Tamworth and Yanco, which is a great way to update beekeepers about their bee pest and disease issues.

I attended as an observer on one DPI bee compliance operation in the Northern Tablelands area last November, where a number of serious biosecurity issues were encountered.

My main concern arising from the last 12 months is that some commercial beekeepers have made little or no attempt to take up the Code and follow its requirements. Many have admitted to me that they have undertaken absolutely no exotic mite surveillance, don't have up to date records (or any records at all), have not completed any biosecurity training, have not notified DPI on any of their diseases or submitted a pooled honey sample for AFB culture. These are all legal requirements and enforceable by NSW DPI's Compliance team. I would like to see beekeepers following their legal obligations.

My role is to assist beekeepers to take up the Code and to improve their overall levels of bee biosecurity, all of which enables their businesses to become more efficient and profitable. At some point NSW DPI Compliance (whom I do not work for) will start ensuring that NSW beekeepers are complying with the Code and Biosecurity Act by actively auditing them. Failure of beekeepers to be Code compliant will result in fines and may negatively impact on the operations of their business and market access.

Therefore I ask all beekeepers to be smart and choose the "easy way" right now whereby they actively start following the Code and implement it fully within their business operations, keep good records and fill in their Appendix 1 every year. I am here to help you achieve this, so please use me as a resource to get you on track. The "hard way" is where DPI Compliance fully investigates your non-compliant beekeeping business and you are not going to get off lightly if you are in breach of your requirements. Prevention of a problem is always better than a cure, so instead of being a problem beekeeper please do the right thing and follow your obligations.

BEE BIOSECURITY OFFICER SURVEILLANCE REPORT

Written by Mark Page
E: mark.page@dpi.nsw.com.au
M: 0409 299 415

NSW DPI has once again promoted Sugar Shake Season and this initiative has again been supported by the NSW Apiarists' Association and the Amateur Beekeepers Association. This program covers a wide area of surveillance for exotics such as varroa and is also helping beekeepers familiarise themselves with the Australian Honey Bee Industry Biosecurity Code of Practice. The Code outlines the requirement to conduct two surveillance inspections for arthropod pests per year. Alcohol wash and drone uncapping are also acceptable methods of surveillance under the Code and all beekeepers are required to keep records of their surveillance activities.

The NSW component of the National Bee Pest Surveillance Program has met all current Milestones to date. Delivery of the program continued through COVID-19 with some long days visiting the ports due to not staying overnight. Guidelines are relaxing this year, making port visits easier.

The DPI Biosecurity and Food Safety team have been busy developing the training material for a Bee Emergency Response Team (BERT) in conjunction with Tocal College, with the pilot online component feedback received and our first pilot face to face training day completed. The training has now been validated and as I write we are in the process of enrolling the first round of 30 beekeepers with experience to potentially participate in an exotic pest emergency response.

Due to COVID-19 our community engagement program of visiting beekeeping clubs, field days, shows and conferences delivering on The Code has been somewhat limited. We are still working with recreational and industry associations to keep engaging wherever possible and slowly returning to face to face. Key messaging is currently going out through our Bee Biosecurity Newsletter and Facebook group.

"AFB near me" notifications are now being listed monthly on the DPI website and this has also seen the ABA use this information to notify members in these postcodes, a great initiative. It has also been picked up by some Facebook groups who are sharing this useful information.

NSWAA – NSW DPI COMPLIANCE REPORT

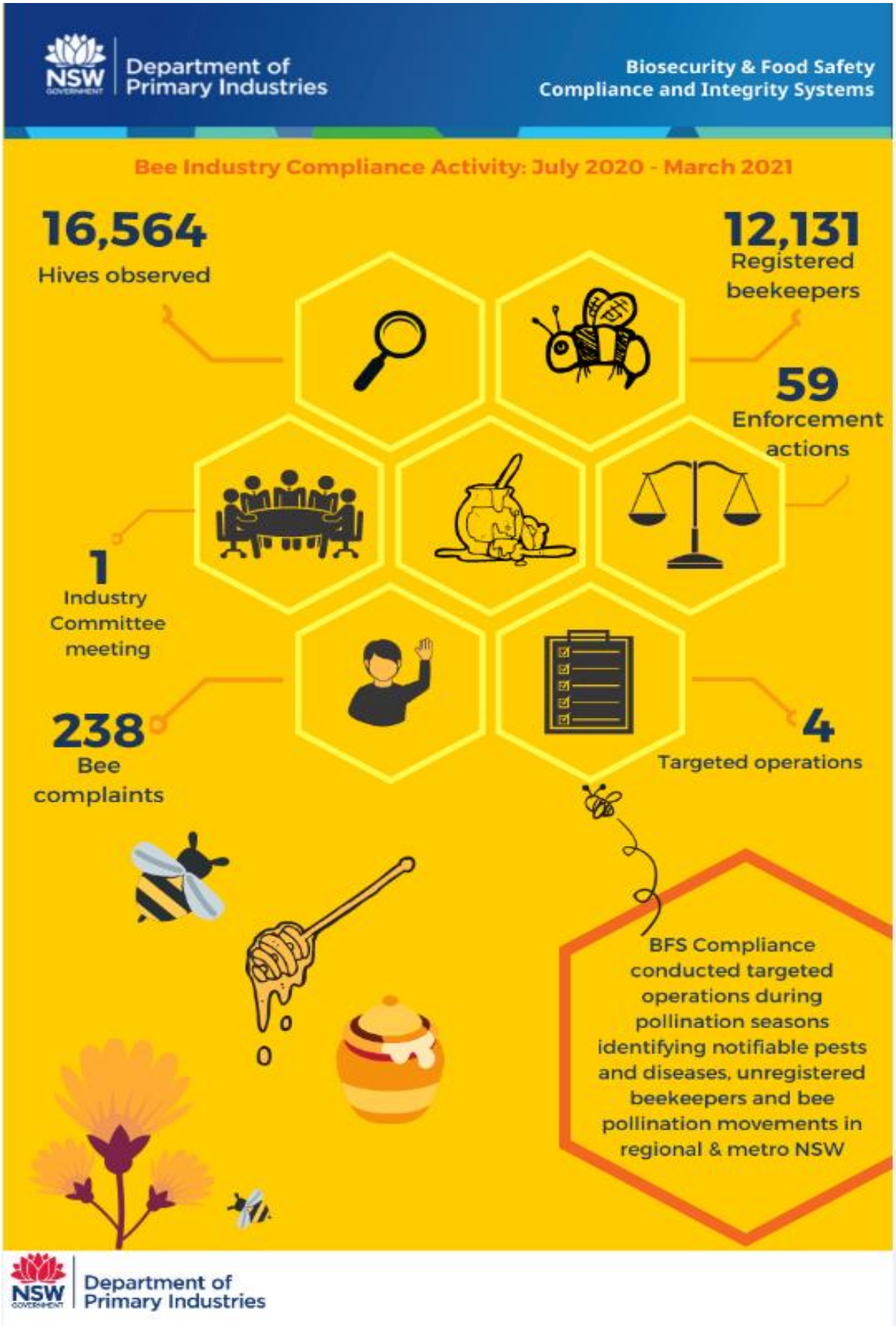
Written by Daryl Cooper
NSW DPI Biosecurity Helpline: 1800 680 244
NSW/ACT Domestic quarantine: 1800 084 881 Option 2 or email: quarantine@dpi.nsw.gov.au
For import & Export http://www.agriculture.gov.au

Biosecurity compliance activities

The biosecurity compliance services to beekeepers are provided through Biosecurity & Food Safety's Compliance and Integrity Systems team, overseen by the Director Compliance and Integrity Systems.

The bee industry compliance snapshot on the following page has been developed to provide stakeholders with an overview of some of Biosecurity & Food Safety Compliance and Integrity Systems' broad and diverse compliance activities under the *Biosecurity Act 2015*, including:

- coordinating compliance advice and information to beekeepers,
- market access services,
- assisting in the detection, control and eradication of exotic diseases and pests,
- targeted investigations (including bee health investigations, nuisance bee investigations, export certification),
- nuisance bee complaints, and
- emergency management activities.


Department of Primary Industries
Biosecurity & Food Safety
Compliance and Integrity Systems
Bee Industry Compliance Activity: July 2020 - March 2021
16,564
Hives observed
12,131
Registered beekeepers
59
Enforcement actions
1
Industry Committee meeting
238
Bee complaints
4
Targeted operations
BFS Compliance conducted targeted operations during pollination seasons identifying notifiable pests and diseases, unregistered beekeepers and bee pollination movements in regional & metro NSW
Department of Primary Industries

Biosecurity compliance operations conducted: May 2020 to March 2021

Operation Griffith & Hillston pollination	
Location	Hillston & Griffith districts
Date	August 2020
Objectives	The Hillston & Griffith districts have a large commercial almond industry. This annual apiary compliance operation was developed to assess the biosecurity risk imposed to commercial apiary enterprises by situating substantial numbers of beehives in close proximity in an intensive pollination event.
Apiary sites inspected	132
Hives inspected	11,818
Enforcement actions	• 3 Biosecurity Directions • 2 Penalty Notices

Operation Sunraysia	
Location	Sunraysia region on the border of NSW and Victoria
Date	September 2020
Objectives	The Sunraysia region on the border of NSW and Victoria has a large commercial almond industry dependent on the Murray River irrigation system. Operation Border Patrol was developed as an annual compliance event to assess the biosecurity risk imposed to commercial apiary enterprises. The operation was carried out jointly by the NSW Departments of Primary Industries and Agriculture Victoria. The operation was successful in bringing together the efforts of the two jurisdictions to address the risks with this pollination event.
Apiary sites inspected	29
Hives inspected	2,530
Enforcement actions	• 3 Biosecurity Directions • 3 Written Warnings

Operation Tablelands	
Location	Northern Tablelands regions
Date	November 2020
Objectives	Operation Tablelands was developed to assess the incidence and biosecurity risk of honey bee diseases around the Northern Tablelands districts of Glen Innes and Inverell NSW.
Apiary sites inspected	20
Hives inspected	1,736
Enforcement actions	• 2 Biosecurity Directions

Operation Blind Melon	
Location	Sunraysia region
Date	December 2020
Objectives	This was the first apiary operation conducted within melon pollination in the Sunraysia region. This operation was successful in identifying and minimising or eliminating several biosecurity risks associated with notifiable apiary diseases within the melon pollination areas.
Apiary sites inspected	14
Hives inspected	480
Enforcement actions	• 3 Biosecurity Directions

Enforcement actions

From May 2020 to March 2021, the Compliance and Integrity Systems Authorised Officers issued the following enforcement sanctions:

- 31 Written Warnings,
- 18 Biosecurity Directions,
- 7 Biosecurity Undertakings,
- 2 Penalty Notices, and
- 4 Seizure Notices

Penalty Notices: issued May 2020 to March 2021

Date	Location	Reason	Number issued
Aug 2020	Koonadan	Failed to comply with mandatory measures (Honey exposed to robber bees).	1
		Failed to discharge biosecurity duty when dealing with American Foulbrood in bee hives.	1
		TOTAL	**2**

Seizure Notices: issued May 2020 to March 2021

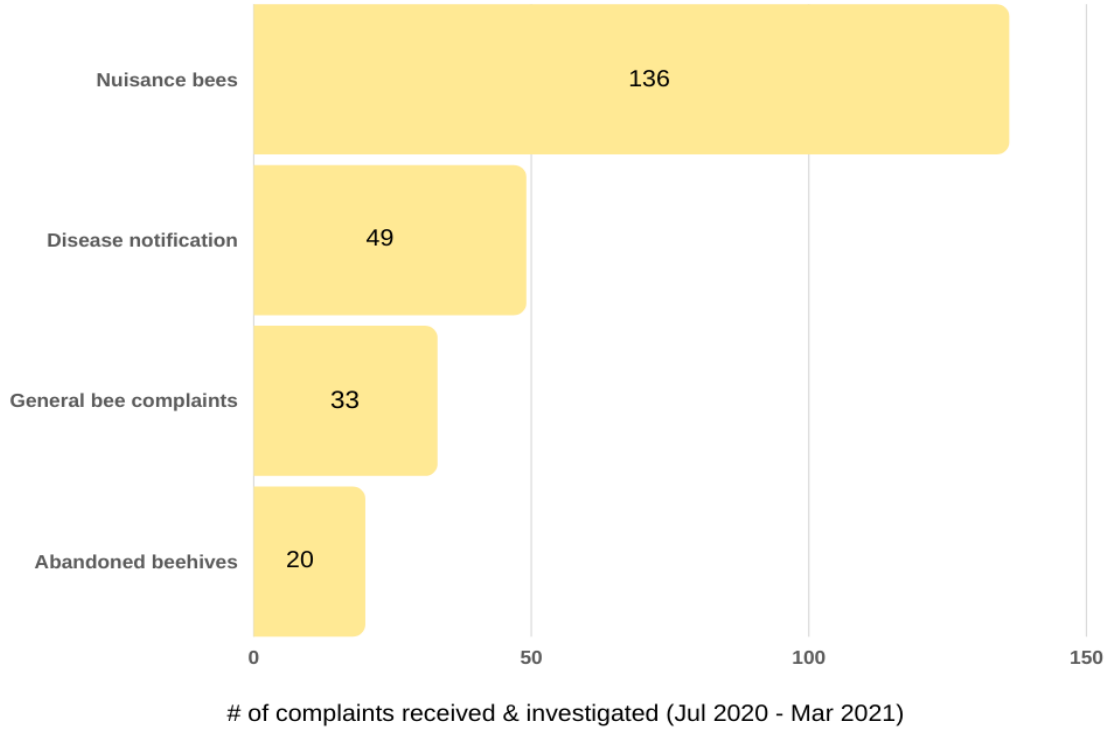
Date	Location	Details of seized item	Number issued
May 2020	Cootamundra	9 dilapidated beehives and associated apiary equipment harbouring apiary pests and determined to be a deceased estate	1
June 2020	Kerr's Creek	82 dilapidated beehives and associated apiary equipment harbouring apiary pests and determined to be a deceased estate	1
June 2020	Bywong	14 dilapidated beehives and associated apiary equipment harbouring apiary pests and determined to be a deceased estate	1
Oct 2020	Murrawombie	281 beehives and associated apiary equipment reasonably suspected of being infected with American Foulbrood (Notifiable apiary pest).	1
		TOTAL	**4**

Market Access

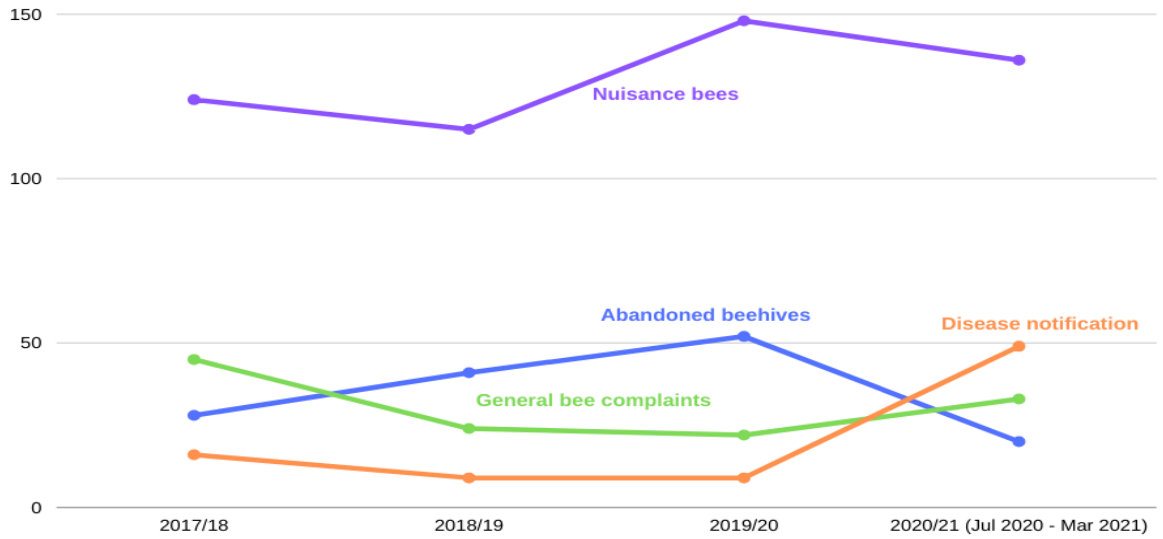
Service provided to Industry 2020-2021	Commodity numbers	Details of service provided	Number of certificates issued
Queen Bee Certification (Interstate)	100k+ Queen bees	Authorisation of Health Certificates after due enquiry of apiary facility	219
Queen Bee Certification (Export)	7120	Authorisation of Health Certificates after physical inspection of queen bees, escorts & apiary facility	5
NRS (National Residue Survey)	15 samples	Samples collected from honey packers for residue testing for national program	4
Certification of live honeybees & Apiary products (Interstate)	Honey kg 27500 64000 hives	Authorisation of Health Certificates after due enquiry & conduct inspections if required	67
		TOTAL	**295**

Complaint investigations

For the reporting period (1 July 2020 to 31 March 2021), the Biosecurity Food Safety Compliance and Integrity Systems team received 238 complaints relating to the apiary industry. The breakdown of the bee complaint categories is represented in the graph below:



The graph below shows the trend of the number of complaints investigated over the last four (4) financial years i.e. from 2017/18 to 2020/21.

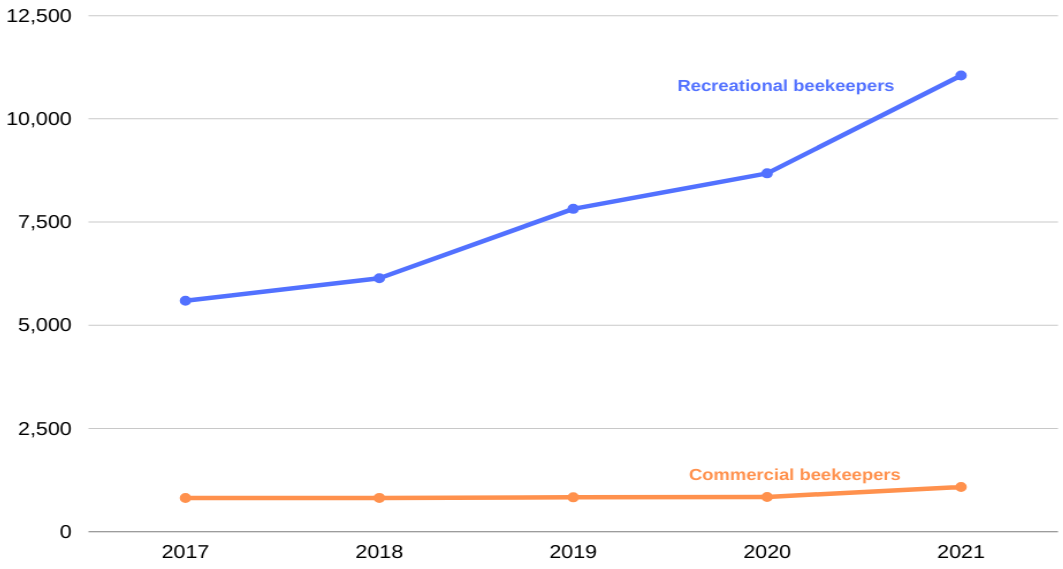


# of complaints received & investigated (over 4 FYs 2017/18 - 2020/21)

Beekeeper registrations

Over the past four (4) years there has been a continual growth in the number of registered beekeepers in NSW. This growth has occurred within both the commercial and recreational sectors. During this time, recreational beekeeper registrations have shown 97% growth from 5,592 registrations (in the year 2017) to 11,051 (to March 2021).

During the same period there has been a 33% growth in commercial beekeeper registrations from 814 (in the year 2017) to 1,080 (to March 2021).



Beekeeper registrations (commercial and recreational beekeepers)

OPERATION TABLELANDS: November 2020
Commercial apiary industry biosecurity management in NSW

Written by Stephen Green

Purpose

Operation Tablelands was developed to assess the incidence and biosecurity risk of honey bee diseases around the Northern Tablelands districts of Glen Innes and Inverell NSW. The aim of this operation is to gauge the extent of compliance with the Biosecurity Act 2015 Part 3 in relation to the General Biosecurity Duty.

Background

Neglected and abandoned hives are a major threat to the health of managed beehives. They can be responsible for spread of notifiable diseases due to potential for them to become weakened by diseases such as American Foul Brood (AFB), and become a source of infection for other hives when field bees rob stores from these neglected hives.

The *Biosecurity Act 2015* and the *Biosecurity Regulation 2017* allows DPI to take compliance and enforcement action against beekeepers who fail to report AFB to ensure biosecurity threats are managed and risks are mitigated against their general biosecurity duty. As well as taking appropriate compliance action, the operation aimed to raise awareness, provide education and undertake enforcement action where appropriate.

What we did

A total of 20 apiary inspections, representing 11 beekeepers were carried out as part of Operation. 79 brood inspections, from a total of 1736 hives, were conducted.

Key biosecurity indicators

Biosecurity and Food Safety Compliance officers assessed the following key biosecurity indictors during on-site inspections to determine if there was a biosecurity risk present:

1. Was there any disease or pests present at the apiary?
2. Did the apiary pose a biosecurity risk to surrounding apiaries?
3. Were the beehives in a state of neglect or abandonment, or were they being managed appropriately to minimise and manage a biosecurity risk?
4. Were the hives identified with the owner's registration Number?
5. Is the owner of the hives registered?
6. Is there any evidence of the use of Oxytetracycline antibiotic in hives exhibiting symptoms of AFB?

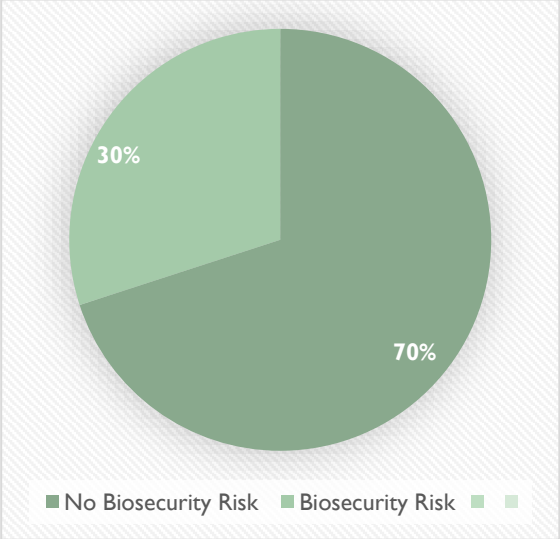
Weak hives infected with AFB were determined to be a significant biosecurity risk.

What we found

Inspection results

Of the 20 apiaries, managed by 11 beekeepers (79 hives) inspected:

- **70%** posed no biosecurity risk;
- **30%** posed a biosecurity risk.
- OTC detected in 1 hive.



A total of 5 apiary sites (representing 4 beekeepers) showed symptoms of AFB which were later confirmed by laboratory examination. A further single site showed symptoms of EFB, which was later confirmed by laboratory examination. OTC was detected in 1 hive, however AFB could not be detected in this hive.

Compliance and enforcement action

The 6 sites presenting as biosecurity risk were managed by 5 different beekeepers. 3 beekeepers took action to destroy and removed AFB infected hives within 24 hrs following verbal Directions. These beekeepers also received warnings regarding complying with the notification requirements.
2 beekeepers received written Biosecurity Directions within 48 hrs. These directions were complied with and evidence of compliance provided within the stipulated time frame.

Action/Sanction issued	Number of Beekeepers
Biosecurity Direction	2
Verbal Direction	3
Letter of Warning	0
Penalty Infringement Notice	0
Prosecution	0

Strategies to manage biosecurity risk

Biosecurity and Food Safety Compliance officers proposed the following strategies for beekeepers identified as posing a biosecurity risk in a bid to mitigate these risks: e.g.

- ongoing disease surveillance programs;
- regular suspect brood sample tests;
- removing & culling weak hives from loads;
- compilation of management plans with BBO;
- disease spread mitigation, such as bee proofing affected hives.

Outcomes

Operation Tablelands was successful in identifying beekeepers who fail to comply with their Biosecurity Duty associated with the monitoring and reporting of notifiable disease within apiaries. Continued surveillance and future operations and enforcement actions will be required to provide confidence that beekeepers continue to address the biosecurity risks associated with their industry. The results of this operation provide an example of how government, industry and the public all have a role in sharing the responsibility and benefits for Biosecurity.

Next steps

The DPI strongly urges any grower new to beekeeping to undergo training in beekeeping management and disease control. The Department's Bee Biosecurity Officers and Tocal College can offer specialized training or advise to ensure beekeepers are aware of their biosecurity obligations under the Biosecurity Act 2015.

Part of the ongoing strategy to manage beekeeper biosecurity compliance and reporting of notifiable diseases will be to continue to engage with the local beekeeping and blueberry industries.

More information

For further information visit:
https://www.dpi.nsw.gov.au/biosecurity
Training:
https://www.tocal.nsw.edu.au/courses

2020 BEE DISEASE DIAGNOSTICS & RESEARCH AT ELIZABETH MACARTHUR AGRICULTURAL INSTITUTE (EMAI)

Written by Ania Deutscher, Michael Hornitzky and Daniel Bogema

In 2020, 835 honey samples were tested for American Foulbrood (AFB) spores by the Bacteriology Diagnostic Laboratory at the Elizabeth Macarthur Agricultural Institute (EMAI), Menangle. This is the largest number of AFB honey tests processed in a single year. Of this number, 264 were for projects (including the AFB Minimisation Strategy) and 117 samples were from interstate or overseas. An analysis of the results is provided in the Update – AFB Minimisation Strategy 2020, which is provided elsewhere in the NSW Apiarists' Association Conference Proceedings.

In addition, 347 submissions (larval smears/brood combs) were received for AFB and European Foulbrood (EFB) testing by microscopy. Of these, 134 were AFB positive and 73 were EFB positive. AFB and EFB testing by microscopy is free of charge for NSW registered beekeepers; therefore, we encourage beekeepers to send in samples for testing when they suspect disease.

Positive AFB brood test results are included in NSW DPI's AFB Near Me alerts (https://www.dpi.nsw.gov.au/animals-and-livestock/bees/pests-diseases/foulbrood-disease/afb-near-me). The Bacteriology Diagnostic Laboratory continues to work with NSW DPI Compliance to ensure the monthly AFB Near Me alerts contain the most accurate and up to date information.

In the research space, a project to investigate the use of genomic sequencing for tracing AFB sources commenced mid-2020. This project, led by Research Scientist Daniel Bogema at EMAI, takes advantage of the extensive *Paenibacillus larvae* (cause of AFB) isolate collection at EMAI, which contains isolates sourced from most Australian states. The project currently plans to sequence 300 *P. larvae* isolates, plus an additional 100 *Melissoccus plutonius* (cause of EFB) isolates. Funding was obtained through the Australian Centre for Genomic Epidemiological Microbiology (Ausgem), a research centre with funding from University of Technology Sydney (UTS) and NSW Department of Primary Industries (NSW DPI). Further funding is being sought to bolster this work and construct an online database to identify linked AFB detections and aid AFB outbreak tracing.

TOCAL COLLEGE EDUCATION REPORT

Written by Bianca Giggins, Kelly Lees, and Kevin Tracy
Email: beekeeping@dpi.nsw.gov.au

The past year 2020/2021 has been a busy one for the Education team here at Tocal and the Certificate III in Beekeeping. We have continued to deliver this industry course across a wide range of platforms under some challenging circumstances.

COVID19 in 2019/2020 saw the postponement of a large proportion of our face-to-face training with a shift to an online focus. Topic focused webinars were added to allow students to engage with their trainers in the virtual space, with a high level of student engagement. We continued to enrol students as the pandemic rolled on with a lot of interest in the course. We currently have 80 students across a number of cohorts in various stages of their training including 11 trainees across NSW and QLD. We are currently enrolling our ninth intake for commencement in Spring 2021.

In response to the pandemic, the 41st Annual Tocal Beekeepers Field Day went virtual for the first time with a live stream. A range of highly qualified speakers from around the globe imparted their bee knowledge including Jamie Ellis from the US talking about worker bees, Claire Densley and Martin Hann from Buckfast Abbey discussing pheromone communication and Adrian Grew breaking down the making of nucleus colonies. Talks were also conducted by DPI staff. The education team also conducted two live Q&A webinars after the morning and afternoon sessions where viewers could ask speakers questions. We sold 836 free tickets

to the event with a peak concurrent view during the day of 295 people joining us to watch live. The recordings of both sessions available on YouTube have had close to 4000 views to date.

With the lifting of pandemic restrictions in Spring, Tocal recommenced face-to-face education delivery. We had a busy few months fitting in all the students who had had training postponed with Cert III training courses and short courses running almost every week.

The long drought and a challenging bushfire season made for a difficult year for students and beekeepers in NSW. The NSWAA applied for, and successfully secured partially subsidised funding for their members to participate in Tocal College accredited beekeeping training in honey bee biosecurity, rearing queen bees and other courses. The training is part-subsidised for two years, with beekeepers required to contribute just half their course fee. Tocal College will be delivering this training on the road throughout NSW to beekeepers in areas of need. The training aims to assist NSWAA beekeepers and give them additional skills in times of difficulty.

Tocal has continued to deliver funded training through State Training Service initiatives with seasonal management training held in Bega in March 2021 to a group of 24 beekeepers.

Finally, Tocal College went ahead this year with a live Graduation Ceremony after last year's celebration was cancelled. We had a small number of graduates in the Cert III in Beekeeping, with numbers being impacted by the challenging year experienced by the nation. We are on track this year to have at least 20 graduates in 2022.

The Honey Bee Education Team look forward to continuing to work with industry to provide quality training to the commercial beekeeping sector in NSW. Enquiries for beekeeper training can be directed to the Tocal College Honey Bee Team via email: beekeeping@dpi.nsw.gov.au

JOB OPPORTUNITY – Traineeship Program: A full time role will be available with NSW DPI Tocal College from 1 July 2021 to join Tocal College's Bee training team. As the demand for beekeeping training continues to grow for both amateur and commercial beekeepers, this role will support the current program.

Traineeships are a growth area for the beekeeping industry and Tocal College. Working with commercial beekeeper employee trainees, there is no better way to gain industry insights, whilst training the next generation of professional beekeepers in NSW and QLD and continually improving educational resources.

Beekeeping traineeships are available to paid employees of beekeepers and can be enrolled in throughout the year at Tocal College. Traineeships can attract substantial subsidies for employers and are a great way to foster best practice in the next generation of beekeepers and sustain the Australian Beekeeping Industry. For more information and to apply visit: https://www.tocal.nsw.edu.au/traineeships/beekeeping-traineeship

PUBLICATIONS REPORT CARD
Written by Victoria Gow

Books distributed from 1 April 2020 to 31st March 2021:

Bee Agskills	2,423
AgGuide: Healthy bees	877
AgGuide: Queen bee breeding	552
AgGuide: Australian native bees	542
AgGuide: Honey	400
AgGuide: Pollination	173
Honey and pollen flora of South-Eastern Australia	466
TOTAL SOLD	5,433

During the 12 month period from 1 April 2020 until 31 March 2021. A total of 5,433 publications were distributed Australia-wide with an average of 453 bee publications distributed per month. Bee AgSkills is the top publication with 2,423 copies sold. Strong interest in biosecurity has seen steady sales of Healthy Bees AgGuides sold in this period.

Look for our new publication 'AgGuide: Products of the hive' later this year!

Tocal offers seven beekeeping publications available as both hard copy and digital ebooks. Search the Tocal website: https://www.tocal.nsw.edu.au/publications for the latest titles and to order copies. All of these titles are used to support learning in the Certificate III in Beekeeping qualification. There is a discount available to Beekeeping associations for Tocal publications used to train members.

For more information please contact **Victoria Gow, Publications Officer, Tocal College**
T: (02) 4939 8867
E: victoria.gow@dpi.nsw.gov.au

Bee Agskills – A Practical Guide to Farm Skills

Provides a basic guide to some of the skills and practices of bee production. The book contains step-by-step instructions, diagrams and full-color pictures. 114 pages Contributors: Nick Annand, John Rhodes, Doug Somerville, Elizabeth Frost

AgGuide - Healthy bees: managing pests, diseases and other disorders of the honey bee

Pests and diseases can attack specific stages in the lifecycle of the honey bee and they can also attack specific castes. This publication covers the management of pests, diseases and other disorders of the honey bee. 82 pages. Contributors: Doug Somerville, Nick Annand

AgGuide – Queen bee breeding

The definitive publication on queen bee breeding in Australia. Covers cell raising, grafting, nutrition, pests and diseases, reproductive biology, genetics, mating apiaries, queen banking, controlled mating, package bees and much more. 174 pages. Contributors: Elizabeth Frost, Doug Somerville

AgGuide - Australian native bees

Combining the substantial expertise of many of Australia's leading native bee researchers, this book is a guide to observing and keeping Australia's broad range of native bee species.

174 pages. Contributors: Anne Dollin, Katja Hogendoorn, Tim Heard, Saul Cunningham, Romina Rader, Manu Saunders, Tanya Latty, Caragh Threlfall, Tobias Smith, Megan Halcroft, Danielle Lloyd-Prichard

AgGuide – Honey: harvesting and extracting

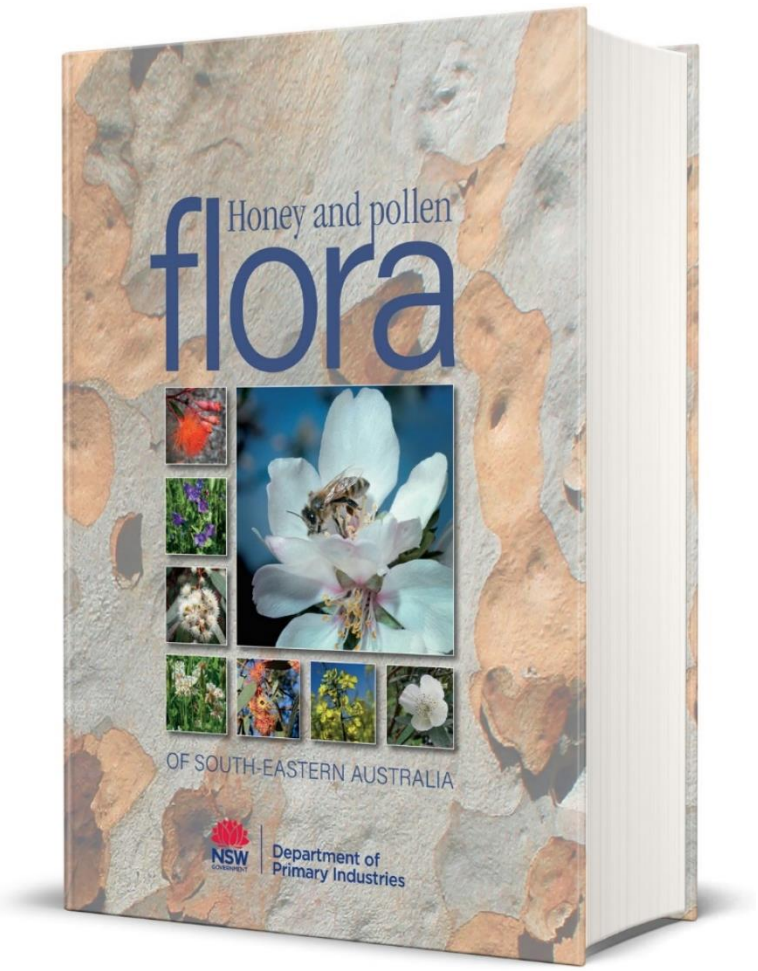
This book informs beekeepers of best practices so that their hard work results in a product of optimum quality. It also informs beekeepers of the threats to honey quality which can occur through poor handling skills or poor design of facilities. It includes references to legislation about food production, where relevant. It shows the way to document procedures so that they can be used as evidence of best practice. 122 pages. Contributors: Bill Winner, Doug Somerville, Elizabeth Frost

AgGuide – Pollination using honey bees

Beekeepers and growers of horticultural crops, broadacre crops and pastures all benefit from bees visiting flowers. This book informs the beekeeper about preparing and maintaining bees so that they are fit for the pollination task and informs the grower about creating an environment for best results. It describes the specific bee stocking rate required for more than sixty plant species and includes a section on making a business agreement between grower and beekeeper. 152 pages. Contributors: Doug Somerville, Elizabeth Frost

Honey and pollen flora of South-Eastern Australia

Written by Doug Somerville
Honey and Pollen Flora of South-Eastern Australia launched at the 40th annual Beekeeping field Day at Tocal 12th October 2019 it has so far sold 842 copies. The book includes plant profiles of 515 species including descriptions, soil preferences and flowering periods. A 'star rating' system assists the reader in evaluating individual flowering species and their relative value to beekeepers (where available) for both pollen and nectar production.



INTENSIVE LIVESTOCK INDUSTRIES REPORT

Written by Elizabeth Frost and Madlen Kratz

Elizabeth Frost (Technical Specialist Bees)
E: elizabeth.frost@dpi.nsw.gov.au
M: 0473 731 273

PLAN BEE: National Honey Bee Genetic Improvement Program

Written by Elizabeth Frost and Dr. Nadine Chapman (University of Sydney)

Plan Bee is supported by funding from the Australian Government Department of Agriculture, Water and the Environment and research and industry partners, as part of its Rural Research and Development for Profit program. Kicking off in July 2020 and running through to December 2023 under AgriFutures management, the program is investigating innovative breeding technology and partnering with commercial queen breeders to increase the power of their production records for targeted queen and drone selection. Funding will be sourced to deliver this program beyond the December 2023 grant period as queen breeding research is long-term.

Data update

Data is the lifeblood of this program and collaboration with queen bee breeders and beekeepers to help collect, record and store data is critical to its success.
Dr Nadine Chapman and Elizabeth Frost, lead researchers on this program have been on the road during March/April, meeting queen bee breeders and Plan Bee Manager Slavi Nenov, working with them to collect data for use in the program as well as to secure bees for future genetic testing.

The team is also working on a manual that will guide queen bee breeders on the most efficient and effective ways to capture and record data so that it is of a consistent and high quality. Extensive online workshops have been well-attended from commercial beekeepers across Australia.

Research hive update

Plan Bee – Bee Manager Slavi Nenov started at DPI Tocal College in December 2020 and has since built up 200 full strength hives and 50 nucleus hives, headed by a mix of naturally mated queens of known origin and artificially inseminated queens AI'd by Elizabeth Frost from the Plan Bee breeder queens. NSW beekeepers John Lockwood, Mark Caguioa, Ray Hull, Stephen Targett, Frank Malfroy, Jenny Douglas and Mal Porter have invested in Plan Bee with their donation of labour, bees, and queens and are sincerely thanked. A huge thank you also to Tiff Bates, John Davies and other Better Bees WA members, NSW queen breeders the Horner family, Casey Cooper, Jamie

Baggs, Frank Malfroy and Jenny Douglas, as well as Corinne Jordan (QLD), Trevor Bain (SA), the Stephens family (TAS) for donating queens to start up the seed stock for the program giving us a nationally representative starting population. 200 production colonies headed by AI and naturally mated queens will be tested under commercial beekeeping conditions starting with 2021 NSW almond pollination.

Plan Bee program goals include:

- Standardised selection criteria to improve honey bee performance, decrease the cost and impact of disease, increase the amount of honey produced, and value of hives as pollination units
- Literature review of past and current bee breeding programs both in Australia and overseas to ensure that we implement best practice
- Modelling of breeding structures to determine the optimal set-up for the program
- Economic modelling and a business plan to ensure a sustainable program
- Genetic diversity study
- Genetic analysis to establish pedigrees and genetic merit
- Online database for any queen breeder to house production records in to generate estimated breeding values for selection traits
- Increase value of honey bee colonies as pollination units through crop-specific knowledge of colony characteristics associated with pollination
- Determine the needs of beekeepers and growers through surveys and workshops
- Extension programs that increase the capacity and skills of queen bee producers, beekeepers, and pollination contractors
- Survey of domestic queen sales to understand buyer and seller patterns and thus help to grow the market
- A strategic plan for the distribution of queens from the program

Plan Bee Team

- AgriFutures Australia – Paul Blackshaw and Annelies McGaw
- NSW Department of Primary Industries – Elizabeth Frost and Slavi Nenov
- Sydney University – Nadine Chapman and Benjamin Oldroyd
- University of New England Animal Genetics and Breeding Unit – Robert Banks
- Better Bees WA Inc – John Davies and Tiffane Bates
- Wheen Bee Foundation – Fiona Chambers

Who supports us

In addition to funding from the Australian Government Department of Agriculture, Water and the Environment as part of its Rural Research and Development for Profit program, Plan Bee is further supported by cash and in-kind contributions from AgriFutures Australia, NSW Department of Primary Industries, University of Sydney, University of New England, Better Bees WA Inc, Wheen Bee Foundation, CostaGroup, Olam, Beechworth Honey, Monson's Honey and Pollination, Auston, South Pacific Seeds, and commercial beekeepers.

Follow us: www.agrifutures.com.au/partnerships/rural-rd-for-profit-program/plan-bee/

Professional Beekeepers Community of Practice (CoP) - managed within AgriFutures ExtensionAUS™ platform, Professional Beekeepers CoP is a website which gets current, relevant information to professional beekeepers from credible sources on topics like: new research, professional beekeeper case studies, pests and diseases, nutrition, queen breeding, seasonal management, education, beekeeping for profit.

Follow us on the web: extensionaus.com.au/professionalbeekeepers/home

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Other outcomes and contributions

- COVID-19 Almond Pollination Transport Taskforce, Tocal Honey Extraction & Beekeeping Training Facility grant and construction, NSW Government 'Agritourism and small-scale agricultural development' amendments (Frost)
- Published "*Breeding for improved fertility traits in honey bees*" by Frost et al. in CSIRO-UNE AGBU Breeding Focus Conference Proceedings, reviewer for Association for the Advancement of Animal Breeding and Genetics conference
- AgriFutures grant 2: extensionAUS Professional Beekeepers 2.5 day online professional development workshop delivered for 18 contributors (Frost)
- AgriFutures grant 3: Project lead Dr. Jamie Ayton (NSW DPI) on chemical composition of Australian honeys study receiving AU samples with assistance of Elizabeth Frost and Madlen Kratz
- Collaboration with University of New England AgriFutures Project Progressing implementation of genetic selection in Australian Honey Bees (Frost)
- Delivered accredited training through Tocal College Using Bees for Pollination and Artificial Insemination of Queen Bees (Frost)
- Speaker at CSIRO/UNE AGBU Breeding Focus Conference, Tocal Beekeepers Field Day, SA Bushfire Recovery Queen Breeding Training, EFB/AFB Flow Hive and Bee Emergency Response Training educational recording (Frost).

Written by Madlen Kratz (Honey Bee Industry Development Officer)
E: madlen.kratz@dpi.nsw.gov.au
M: 0427 348 521

It has been an exciting year since joining the Department of Primary Industries in May last year. In fact, I can't believe it has been a year already! During the last 12 months I have focused on industry engagement through research, outreach activities and training (beekeepers field day, courses taught at Tocal, Tocal field days, conferences and apiary association meetings). Currently I am working on two projects in the honey bee nutrition and pollination space.

Honey bee nutrition and supplementary feeding:

The honey bee nutrition study is a small grant project co-funded by AgriFutures and NSW DPI that focuses on the utilisation and palatability of commercially available supplementary feeds. The objectives of this project are to:

- test the efficacy of supplementary feeding by examining how well honeybees utilise different supplementary feeds.
- examine the palatability of various pollen supplements by providing bees with a choice of patties fed inside the hive and from open feeding at various feeding stations

Honey bee pollination of blueberry flowers:

NSW DPI Project leads: Sophie Parks, Melinda Simpson, Leanne Davis and Madlen Kratz

This work is part of the collaborative project *Novel technologies and practices for the optimisation of pollination within protected cropping environments* under the Australian Government Department of Agriculture and Water Resources' Rural R & D for Profit Program, coordinated by Hort Innovation. Partners include NSW DPI, Plant and Food Research Australia, the University of Adelaide, the University of New England, the University of Tasmania and other representatives including the beekeeping and netting industries, and several horticultural industries (berry, apple, onion, sweet cherry). It addresses pollination issues that limit the optimal production of some horticultural produce under cover.

Protective covers such as bird netting, hail netting and high tunnels can affect the flight path of honey bees and potentially limit pollination in blueberry crops. The project investigates flower attributes that attract honey bees to blueberry flowers such as flower morphology and pollinator reward (nectar and pollen) under protective covers. Our project aims to:

- evaluate several blueberry varieties for their flower morphology, abundance and quality of pollen and nectar
- assess flower attractiveness through flower visits by honey bees
- assess the effects of cover types on pollination and fruit set
- examine nectar production by blueberry plants in response to irrigation regime to better understand the environmental and agronomic conditions affecting nectar production and quality

Research is taking place on commercial farms located on the Mid-North Coast and Northern NSW and at the Wollongbar Agricultural Institute, with findings and guidelines communicated to the honey bee and berry industries.

APIARY SITES PROGRAM UPDATE

Written by Nick Geoghegan

BPASS Launch

The launch of the Apiary Sites Portal "BPASS" in August 2020 marked a major milestone in bringing the management of public apiary sites onto a single, online platform and service desk. For the first time, apiarists can go to the same place to apply for new sites, renew and find more information about their existing apiary permits and licenses. The rollout to Forestry Corporation (FCNSW) and National Parks and Wildlife Service (NPWS) sites was completed in August and October meaning almost 70% of sites are now online.

Local Land Services (LLS) are finalising the site and permit data from their regions. We hope to announce a launch date for LLS soon; allowing users to renew their LLS permits and apply for initial available sites.

Development of the technology platform was a $560k investment by NSW Government including extensive piloting of the key functionality, workshops with beekeepers and professional testing resources. Key learning since launch include:

- With the intention to simplify the login process and the process for checking registration, the login system for the Biosecurity and Food Safety's "Byte" system was used. However less users than expected had used "Byte" at the time of launch so significant numbers of users required assistance to register and login for their first time.
- The first major permit renewals – NSW National Parks required significantly more support for beekeepers than expected. Many calls were due to login issues and merging accounts with different company and apiarist names. Over 84% of sites have been renewed but NPWS and DPI have applied flexibility to ensure beekeepers with technology limitations are not disadvantaged. Less than 20 users have elected to receive invoices by physical mail rather than access via BPASS.
- Apiarists identified capabilities that could enhance the mapping functionality including GPS pinpointing and visibility of site numbers on the "My Sites" map. Enhancements to the maps as well as the renewals process are currently being scoped for development.

Over 230 apiarists have logged into the system to renew permits, apply for new sites or to view their existing permits.

Greater availability of the Apiary Site Service Desk

As management of apiary permits has largely transitioned to DPI the number of enquiries from apiarists to the DPI service desk has increased while the major technology milestones have been completed. To accommodate this growth DPI has restructured the service desk resourcing so that the existing Apiculture Resource Coordinator role (occupied by Nick

Geoghegan currently) will now work part-time 2.5 days per week but will be supported by a 3.5 day a week role sitting within the biosecurity and food safety team. Niki Peirson has been appointed to this role. This should ensure:

- Easier support for login issues with resources for Byte and BPASS support in the same team
- Greater knowledge sharing between the apiary sites and biosecurity teams
- Greater availability across business hours and holiday periods
- While retaining capability to progress enhancements to BPASS and the apiary sites program.

Public Lands Audit

As part of NSW Government's bushfire recovery program, a project has been funded to identify potential apiary sites on public lands which are not part of the existing NPWS, FCNSW and LLS structure. Commencing shortly and estimated to run over the next 6 months, DPI will be working closely with the NSWAA and the NSW government agencies to identify potentially suitable lands as well as resolve limitations which currently constrain their use. Potential sites identified in this process will eventually be published through the expression of interest process on the BPASS portal; allowing beekeepers across NSW the opportunity to identify new sites.

SAVE THE DATE!

42st Annual Tocal Beekeepers' Field Day – Saturday 16 October 2021: 9am – 4pm
Tocal College, 815 Tocal Road, Paterson NSW 2421

Tocal Beekeepers' Field Day is the longest running bee field day in Australia. Filled with numerous activities, presentations by subject matter experts, a trade show, live demonstrations, honey tastings and food vendors available all day, it is not to be missed. In its 42nd year, Tocal Beekeepers Field Day is run collaboratively by the Amateur Beekeepers Association, NSW Apiarists Association, Department of Primary Industry and Tocal College. Tours of the new Tocal College Honey Extraction and Beekeeping Training Facility will be available. See you there!

ACKNOWLEDGEMENTS

NSW DPI staff who enable us to deliver quality publications, accredited training and online resources are gratefully acknowledged: Noeleen Clarke, Sally Friis, Jessica Green, Vicki Gow, Natacha Hes, Aleisha Holmes, Jennifer Laffan, Ruth Luckner, Vicki Magann, Simone McCarthy, Dean Morris, Stephanie Presland, Sophie Smethurst, Michelle Smith, Keran Richards, Julie White, and Jayne Wood. Thanks also go to our industry and research collaborators, subject matter expert contract trainers, Tocal College Administration, Domestic Services and Maintenance Staff who keep us operational.
