

BEEKEEPERS.ASN.AU



Amateur
Beekeepers
Association
NSW

THE AMATEUR BEEKEEPER

NEWSLETTER FOR MEMBERS
OCTOBER • NOVEMBER 2021

AFB

We answer your
tricky questions

7 TIPS FOR BEEKEEPING IN A PANDEMIC

EYE SCIENCE
Honeybee Vision
Explained

How to be a
SWARM
collector

Why
BROOD
INSPECTIONS
Matter





Amateur Beekeepers Association

NSW

- 3 President's letter.
AFB checks. Swarm collecting
- 4 Better beekeeping in a pandemic.
Seven things to consider
- 5 Are you on the ABA Swarm
System? Tips for getting calls
- 6 Honey Bee vision. How *Apis
mellifera* sees the world
- 9 AFB Awareness: Inspect your hives
in October
- 10 What to do if you think it's AFB.
Decision tree
- 11 Tricky questions about AFB: we
investigate your queries
- 14 Club news: Junior field day; club
upgrades planned
- 15 The other honey makers
- 17 The many benefits of thorough
brood inspections
- 14 Learn from home. Contact us



4

5

6



14



17



The *Amateur Beekeeper* is the journal of the Amateur Beekeepers Association of NSW Inc. It is distributed to members six times a year, in December, February, April, June, August and October. Contents are for general information only and should not be taken as legal advice.

The editor will consider adverts from businesses relevant to beekeepers to run free of charge where they contain a discount or special offer to ABA members. Please email editor@beekeepers.asn.au

Do you have a story or photo you'd like to be considered for the next issue. Send it in to editor@beekeepers.asn.au

President's report

LOOKING FORWARD TO NORMAL

As we head into the final quarter of 2021, we are beginning to tentatively look forward to getting back together face-to-face! Some clubs are preparing to dust off their chairs and data projectors, while others are settling in to brand new homes. We have a whole "generation" of new members who haven't met their fellow club members yet, and are excited to get their first glimpse inside a club hive.

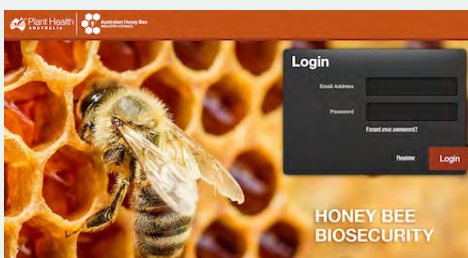
We know now that we can't take anything for granted, but, fingers crossed, it looks like 2022 might be our first "normal" year for some time.

Of course while we languish in lockdown, it's a whole different story inside our hives, where business is booming, and life surges on into spring and early summer.

Colonies are rapidly building strength, preparing to swarm, and potentially spreading disease. As beekeepers we are focused on preventing swarms, catching swarms, and vigorously monitoring for disease – particularly American Foulbrood (AFB) in October.



Now's a good time to take another good look through your 2021/22 ABA Member Pack – and slip that AFB slide kit into your pocket next time you head out to inspect your hives. Our article in this issue provides lots of support on what to do if you find AFB. The kit contains instructions on confirming the diagnosis before you lock up and destroy your bees.



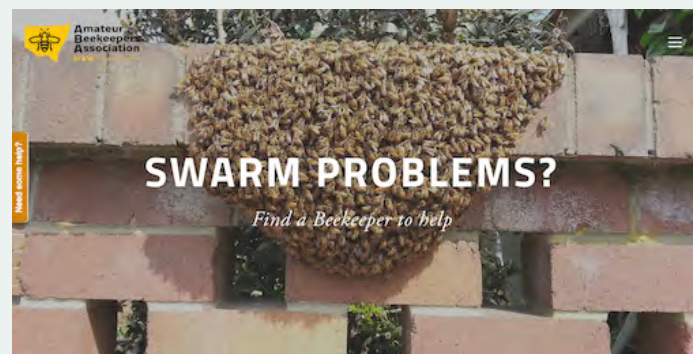
If you're not confident that you know what you're looking for, it's never too late to brush up on your skills, and the free Biosecurity Online Training (BOLT) course is a great place to learn and test your knowledge. Head to planthalthaustralia.com.au/resources/training/biosecurity-online-training/ or follow the printed instructions in your 2021/22 Member Pack.

Have you already completed the BOLT course (or other training such as the Certificate III in Beekeeping)? You can now log into the ABA Portal at beekeepers.asn.au/portal and keep track of important beekeeping information in your member 'Journal'. You can use the Journal to record training and your state government registration details. You can also set up a reminder to let you know when it's time to renew that rego! The Portal is where you'll find and be able to download your Public & Products Liability insurance certificate (if you opted for insurance along with your ABA membership), and check your Swarm System details (if you registered to collect swarms as a community service).

If you're on the Swarm System, it's a good idea to make sure your swarm message is up-to-date and clear. This information is what the public see (at beekeepers.asn.au/swarms) when they urgently need someone to help with a colony of unwanted visitors.

Tailor your message to make sure you get the calls you want. Weekends only? Not above 3 metres? Happy to help with bees in buildings? Keep it precise and accurate – so the right people can reach you..

While you are looking at the Swarm System, check you have listed postcodes you are willing to travel to (and not just where you live). If you're taking a break from rescuing bees, please remove your name. You can simply relist later if you find you miss the great swarm collecting adventure!



Sheila Stokes president@beekeepers.asn.au

Looking after bees in times of COVID

Seven lessons for beekeeping during a pandemic



Know the rules It's important to keep up to date with public health order regulations. The rules may affect where you can travel or who you can gather with to talk about bees. If you are not sure, in NSW go to nsw.gov.au/covid-19/rules (Don't rely on what people say on Facebook. It's better to do your own checking.) Beekeepers have been granted no special exemptions from the current NSW health order. However the legislation allows for various circumstances where beekeepers need to leave home to manage bees and fulfill the legal obligations they have as a registered beekeeper. Consider your situation, destination and reasons for your activity and then be prepared to justify your actions if challenged.



Be prepared. Lockdowns might prevent you dashing to a beekeeping supplies store when you suddenly discover you need more . . . beetle traps . . . foundation . . . spare boxes . . . glass jars. Think ahead and stock up on anything you might need this season. It may be easier to order online or by phone for home delivery. Expect delays. And possibly expect some equipment to be hard to source if supply chains are disrupted.



Tap the brains trust. Find a local network of beekeepers through your local club, social media groups or community. If your club isn't having face-to-face meetings, you can still get advice relevant to your location. Some groups run online meetings to make it easy for everyone to participate, and hold question and answer sessions.

Buddy up — virtually. If your bees are somewhere you can't reach, consider if someone local might be able to help you out. (Make sure everyone is complying with the health order rules.) Offer to pay, or promise to repay the favour.



Use the 'new world' to learn online. A bevy of great new sources of info has popped up. Watch expert speakers or attend conferences from home. Many online resources are free or low cost. Do the Biosecurity Online Training course — see your membership pack for details.



Think ahead. Try to anticipate what your bees will need and don't rely on being able to inspect them quite as regularly, particularly if they are not at your home. Are hives/lids/bases secure from wild weather? Is the hivesware in good condition? Should you do something about that beetle problem now?

If we've sent you notification of AFB reported nearby, be extra vigilant at your next inspection. Don't put any tasks off to next time. Requeen now? Add extra boxes now? Extract now? Plan if you need to move bees, or borrow equipment. Lockdown boundaries change. Rules may change at short notice.



Catch up and upskill. If your bees are at your home, use any extra time you have now to catch up on tasks, maintenance, preparation. This may be a golden opportunity to expand your skills and experience. Build that dedicated bee shed, Long Lang, solar wax melter you've always wanted. Become a champion honey exhibitor! Pour killer candles! Buy another bee book!



Follow the money. Work out how you are going to sell your honey. Old channels (local markets, that table in the office lunchroom) may not work so well now. Demand for local honey is high — you just need to work out where your customers are looking. Home deliver? Talk to a farm that does subscription boxes? Set up a website.



Calling all swarm catchers

Do you enjoy a challenge? Are you looking to expand your apiary? Why not list yourself on the ABA Swarm System?

What is the Swarm System? The ABA Swarm System is a searchable database which allows a member of the public who has found a swarm to contact a registered beekeeper to collect that swarm.

Where do people find the Swarm System? The Swarm System can be found on the ABA website at beekeepers.asn.au/swarms

It is the most visited page on the ABA website, with over 6400 page views in the past month alone!

How does it work? The Swarm System is based on postcodes. When a member of the public enters the postcode where the swarm is located, they see a list of all ABA members who have volunteered to catch swarms in that area.

The member of the public sees your contact details and gets in touch directly. That way you can ask for all the information you require, such as size, location and accessibility of the swarm.

What if you get a call that you can't help with? If you are not available to catch a swarm, or it sounds too difficult for you to handle, advise the caller to try someone else on the list.

Who can list on the Swarm System? Any current ABA member may list on the Swarm System, as long as they are registered as a beekeeper in their state and have some experience collecting swarms. You must be prepared to collect swarms as a community service and not profit from the service i.e. you can't be running a swarm removal business. You may ask for a nominal fee to cover your expenses, but you need to make this clear upfront.

How do you get started? Go to beekeepers.asn.au/swarms, and click the Beekeeper login button that looks like this:

 [Beekeeper login](#)

If you have Public & Products Liability insurance

cover via the ABA, you already have a profile in the system – just click Forgot to set a new password.

What are the basic swarm collection rules?

Display your registration number and phone number on swarm catch boxes.

Do not go onto private property without the owner or occupier's permission. Ask before setting up equipment or, for instance, pruning plants.

Wherever possible, leave the catch box with the swarm in place until dusk, so that you collect up any scout bees and don't leave stranded bees behind to cause a nuisance.

Be courteous and professional. Don't put yourself or others in a dangerous situation. And warn any bystanders to keep themselves and any pets/animals at an appropriate distance.

If you arrive at a swarm's location and realise you cannot help, you should explain just that and suggest the member of the public makes another arrangement.

Are you covered by insurance?

Public & Products Liability insurance offered as an optional extra with ABA membership includes cover for beekeeping activities such as swarm collection.

Please note this policy is insurance to cover harm to others (public liability). For details or to get insurance, go to beekeepers.asn.au/insurance

BLUE MOUNTAINS BEEKEEPER ALISON WEBB CATCHES HER FIRST SWARM IN EARLY OCTOBER AT FAULCONBRIDGE. THE LARGE SWARM OF BEES HAD SETTLED ON A NEIGHBOUR'S GREVILLEA AT HEAD HEIGHT.



SCIENCE

The world through honey bee eyes

Rusty Burlew investigates the fascinating facts of bee vision

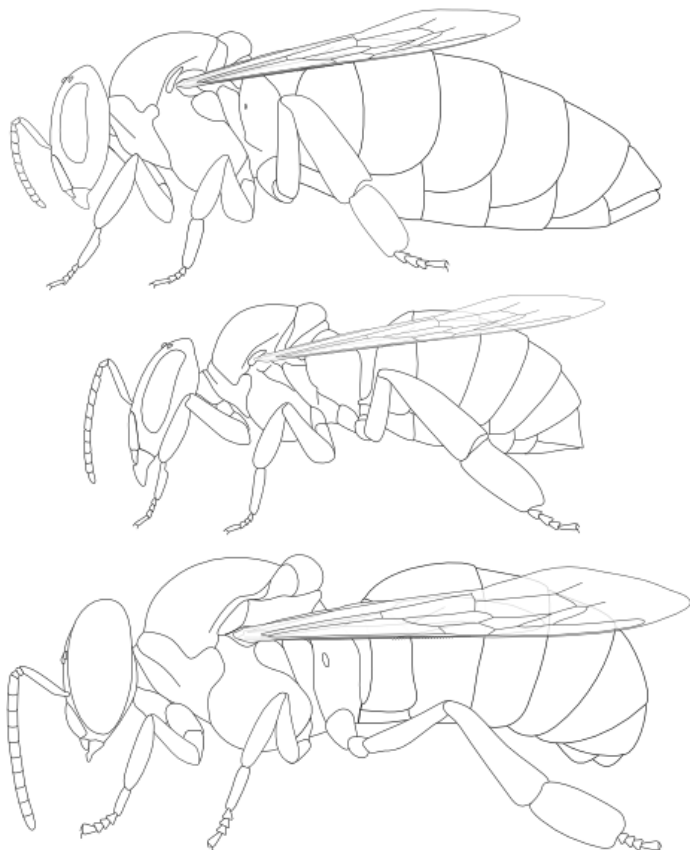
“THE BETTER TO see you with, my dear!” said the Big Bad Wolf to Little Red Riding Hood. The words sound ominous. Were they spoken by a bee, even a wolf might quiver in fear, especially when he saw those outsized peepers and the three little backup cameras. Time to run!

Why so many?

Honey bees are not alone in having multiple eyes. Nearly all the *Hymenoptera* have five eyes, including the bees, wasps, and ants. Many flies also have five eyes and most spiders have eight. And don't forget that some molluscs and crustaceans have eyes on stalks. Talk about creepy.

Bees' eyes come in two varieties. In female honey bees, the two large compound eyes dominate the sides of the head and the three ocelli form a triangle on the vertex—a forehead of sorts.

Although the compound eyes of workers are quite large compared to the body, the eyes of drones are crazy big, extending to meet at the top of the head. In fact, drones' eyes actually displace the ocelli, pushing them towards the base of the antennae.



A WORKER'S COMPOUND EYE (PICTURED ABOVE)

Shiny and black, the compound eyes of a worker take up most of her face. Although these eyes appear smooth and glassy, each comprises roughly 6900 hexagonal plates. Each of the exposed surfaces is flat like a piece of glass, and all the plates fit together in a pattern similar to a piece of honeycomb—each of the six sides butting against another to form a continuous surface.

We call each of the flat plates a facet, just like the cut surfaces of a diamond. Directly beneath each facet is a lens that collects light, and below that is a long cone that extends into the bee's head. The cone contains retinal cells that detect light. After the light travels through the lens, the retinal cells pass the information to the central nervous system. Like a complex computer, the central nervous system combines all the visual messages into a mosaic picture of the bee's surroundings.

Do you remember disco balls from the 1970s? They were spherical and covered with individual mirrored facets that reflected light. As the ball rotated, light hit the mirrors and bounced off them, travelling in thousands of directions. I like to imagine the compound eyes working like a disco ball in reverse. Instead of reflecting light, the eye facets collect and combine the images into one big picture stitched together by the bee's brain.

Drones and queens have the same eye arrangement as the workers, but the number of facets is different. The compound eyes of a drone are much larger, each having 8600 facets. The larger size and the top-of-

THE QUEEN (TOP LEFT) AND WORKER (MIDDLE) HAVE SIMILAR SIZED EYES. THE DRONE (BOTTOM LEFT) HAS MUCH LARGER EYES, DOMINATING THE HEAD

(C) ADAM TOFILSKI. HONEYBEE.DRAWWING.ORG

RUSTY BURLEW has studied agriculture, honey bees and the environment for over 30 years. You can read more of her work on the popular and world famous blog: honeybeesuite.com

*This article first appeared on beelistener.co.uk
Used by permission of the author*



A DRONE'S (TOP) EYES ARE MASSIVE COMPARED TO A WORKER BEE'S

the-head placement enable the drones to find queens in the three dimensions of open space.

As they all cruise around a drone congregation area, the drones must be able to find, track, and approach a virgin. Even if the virgin is flying above the drone, he can pinpoint her location with his extra-large sensitive eyes.

Queens, the largest of the bees, have the fewest facets in their compound eyes, numbering about 4000 in each. Since queens don't spend much time foraging and navigating, their eyes are less important. Even when the queen does fly—during mating and swarming—workers stay by her side, guiding her along. Everything about the queen's body centers on survival and reproduction, and all else is secondary.

The curved arrangement of flat plates is especially good for detecting subtle movement. If you wiggle a diamond ring in a ray of light, the slightest movement is amplified into a noticeable flash of light. In a similar way, the facets capture a slight movement in a bee's environment and send a warning message to the brain.

"What was that?" says the brain to the bee. It could be something like a light breeze or a cloud passing over the sun, but it could also be a bird, a wasp, or a hungry mantis looking for a meal. It seems like the smallest creatures have the most eyes, all of them constantly checking for creatures that are bigger and hungrier.

Honey bees have trichromatic vision, much like humans. Trichromatic means there are three separate types of receptors for receiving colour information. Humans, and many other mammals, are sensitive to blue, green, and red. Honey bees are sensitive to ultraviolet, blue, and green—a shift to shorter wavelengths.

In fact, honey bees are especially sensi-

tive in the range that includes ultraviolet, blue-violet, green, yellow, and a shade called "bee purple," which is a synthesis of ultraviolet and yellow.

The colour red, which has a very long wavelength, is invisible to bees. Red objects appear like "black holes" simply because the colour receptors fail to detect them.

Flowers that have petals on the red end of the colour spectrum—for example red, orange, and brownish-purple—often have ultraviolet nectar guides that point to the centre of the flower. By following these "street signs," bees can find the centre of the flower even if they can't see the main petals.

Ultraviolet light also aids in bee navigation. As Karl von Frisch discovered, dancing bees direct their sisters to a flower patch by describing the location of the patch relative to the position of the sun. The really crazy part—the closest thing to a miracle I can imagine—is the bees recalculate the angle as the day wears on. So when the bee goes home or returns to the patch later in the day, she can recalculate the direction based on the new position of the sun.

On cloudy days when the sun is not visible, the bee knows where the sun is because, unlike white light, ultraviolet light penetrates clouds. The bee can "see" the sun, even on days when we cannot.

When bees are close to home or in familiar territory, they often use other types of navigational markers. They may follow hedgerows, rivers, roadways, fields, buildings, tree lines, or anything else that looks familiar. Experiments have shown that older bees are more likely than younger ones to use landmarks, which



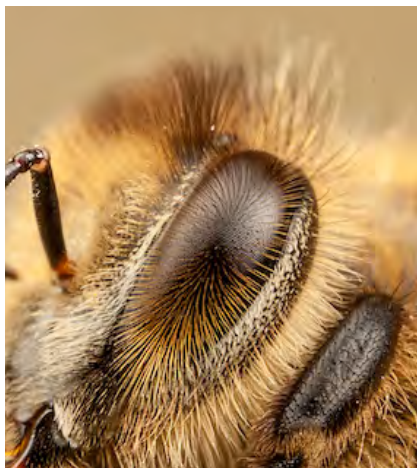
makes sense because the landscape becomes more familiar with every trip.

In *The Buzz about Bees*, Professor Jürgen Tautz describes it this way, “Bees use earthbound and celestial cues as aids to orient themselves outside the nest, and will make their way from one landmark to the next along each part of the journey to their goal. For this, they use trees, bushes, and other conspicuous features in the landscape. . . During [orientation flights] bees leave the hive each time in different directions, and so map the location of the nest relative to its surroundings.”

Experiments show that honey bees are more likely to use the angle of the sun for distant, high-speed travel into unfamiliar territory. But as bees approach their home territory on the return trip, they slow their flight speed and use familiar visual landmarks.

A bee’s ocelli are much smaller than the compound eyes and do not form images in the brain. Instead, each of the three ocelli has a single lens topping a series of retinal cells that detect changes in light levels. The retinal cells of the ocelli are especially sensitive to blue and ultraviolet light.

Because the ocelli are near the top of the head, they can collect information about the sky and the horizon. They aid navigation and orientation, alerting the bee to its position in relation to the sun. In addition, they are helpful for detecting danger approaching from above. If you’ve ever tried to stalk a bee with a net or a camera, you know how well the system works!



Honey bees are one of the few bee species that have hairy eyeballs. The hairs – technically called setae – grow out of the spaces between the facets, just like weeds jutting through cracks in a sidewalk. The hairs detect air movement across the eyes, something

that helps them navigate in windy conditions. Just like the pilot of a plane or boat needs to compensate for wind and tides, so must a honey bee compensate for varying wind speed and direction.

Most wild bee species forage within a few hundred metres of their nest, so assorted navigational tools, such as hairy eyeballs, are not necessary. But since honey bees travel so far afield—several kilometres or more—they need dependable ways to find their way back home.



Of course, honey bees seem to have backup systems for just about everything. Besides splendid vision and hairy eyes, honey bees also use olfactory cues and magnetic sensors to find their way around.

When they are flying full tilt, honey bees can travel over 30 kilometres per hour. Unless the eyes are quick to respond to images, the foragers might miss things like flowers. In fact, the ground would appear blurry and vague.

Laboratory experiments have shown that honey bees can discern black and white stripes at 300 stripes per second. By contrast, humans can only detect 15–20 stripes per second before the images blend together.

If you are old enough, you may remember 16 mm home movie cameras. They recorded many images on a strip of film. After processing, projectors replayed them at 18–24 frames per second. This was fast enough that, instead of looking like a series of still images, our brains “thought” they saw moving images.

If the playback was too slow, the images looked jerky. If played too fast, they looked comical or cartoonlike. But even at proper speeds, a honey bee watching a movie at 24 frames per second would yawn. Instead of perceiving moving images, the bee would see a series of still shots, much like a sleep-inducing PowerPoint presentation.

Ho-hum, just another B(ee)-rated movie.

Beekeepers are ingenious at harnessing bee vision. For example, knowing how bees navigate allows us to reduce drift in the bee yard. Drift occurs when bees go home to a different hive than they left. It probably arises from confusion, especially when multiple hives are close together and their scents intermingle.

By tracking bees, we know they are likely to go to the outermost hives, rather than those in the middle. If they are carrying payloads of pollen or nectar, those outermost colonies are happy to let them in. By the end of the season, the outer hives may contain significantly more bees than the others.

When hives were marked with bold markings such as broad horizontal or vertical stripes or bright colours, the bees were more likely to find the right home. But Jürgen Tautz warns us, “Shape and colour

are not learned as quickly as odours, taking three to five training sessions to achieve proficiency.”

Some beekeepers use this information to train bees before moving a hive a short distance. One beekeeper painted a long, wide board with bright stripes like a zebra crossing and placed it in front of her hive like a runway. She let the bees get used to it for a week (the training period) and then moved the hive and the board to the new location. The bees adjusted to the new location easily because they could recognize their private runway from the air.

It also works when moving multiple hives long distances because the bees can easily sort themselves into the proper hive. The visual clues are easier for the bees to identify than a tangled mix of pheromones.

Bee vision is one of those things we easily overlook in our zeal to attribute most bee behaviour to pheromones and instinct. So the next time you gaze deeply into the enormous eyes of a honey bee, remember this: they have powers of vision we can only imagine. Knowing how that vision works will give you expanded opportunities for skilled honey bee management.

REFERENCES

Winston ML. *The Biology of the Honey Bee*, Harvard University Press.

Mattingly, RL. *Honey-Maker: How the Honey Bee Worker Does What She Does*, Beargrass Press

Sammataro D and Avitabile A. *The Beekeeper's Handbook*. Charles Scribner & Sons.

Tautz J. *The Buzz about Bees*. Springer-Verlag.



BIOSECURITY

American Foulbrood Awareness Month

Every October beekeepers are reminded to check for AFB

AT LEAST TWICE each year all beekeepers must conduct a thorough brood inspection, looking for signs of pests and diseases.

This is a requirement of the Australian Honey Bee Industry Biosecurity Code of Practice – a requirement of registration as a beekeeper. But more than that: it's good management to check your bees regularly.

Signs of American Foulbrood disease aren't welcome news in any apiary. There is no treatment, only the requirement to euthanise infected colonies.

Do you know what to look for?

Luckily you can find a wealth of information for free online. For starters, we have a round-up of resources here: beekeepers.asn.au/resources-1/2017/8/16/american-foulbrood-a-guide-to-the-best-online-information

Learn to recognise typical symptoms, from dwindling numbers, sunken and greasy looking capped brood, perforated cappings, patchy brood, ropey larvae, and dried up scales at the bottom 'v' of each brood cell.

On the following pages, we've compiled a range of information to help you narrow down the disease, and deal with a positive diagnosis.

For this project, we asked members and clubs to pose the tricky questions they needed answered. We took on the challenge. And many hours of research later . . . here is what we all need to know about AFB.

See following four pages.

Hornsby Beekeeping Supplies
For all your beekeeping needs

Bee Club

WE OFFER
5% OFF
FOR CLUB MEMBERS

f hornsbybeekeeping
i hornsbybeekeeping

INFO@HORNSBY-BEEKEEPING.COM
WWW.HORNSBY-BEEKEEPING.COM

When you think it's American Foulbrood (AFB)



Recognise the symptoms
Check the info at beeaware.org.au
via this QR code

AFB is a notifiable disease in all parts of Australia. In NSW contact DPI on **1800 084 881** within 24 hours of recognising symptoms

Frames of honey can be taken for extraction but care is needed to prevent spreading AFB spores. Stainless steel extractors must be scrubbed and washed clean afterwards.

"Yes, I'm sure"

Either way: act as if hive is infectious and minimise the risks of spread via tools, equipment or clothing. Bag up anything you may have used inspecting this hive, in case it needs sterilising or destroying. Reduce the entrance if there is a danger of another colony robbing the hive

"I'm not certain"

Get a laboratory diagnosis. (it's free if you suspect AFB infection.) Take a sample and send it to the state veterinary lab. Use the kit sent to you with ABA membership. Or refer to beekeepers.asn.au/afb

Do you wish to reuse hive components?

No

Yes

Kill the bees with petrol and burn everything.

1. Close up hive entrance at dusk, once field bees have returned.
2. If hive has a vented bottom board, strap hive then turn it upside down and place solid board over vented base (now 'lid'). Tape any other vents.
4. Place a petrol soaked rag under the lid and close. Bees will die within 15 minutes

Contact your local council for rules around open pit fires. If allowed, dig a pit large enough to contain all items to be destroyed and to ensure any honey or wax does not escape the pit. Burn. Cover ash with at least 30 centimetres of soil. If plastic cannot be burnt, it must be irradiated before sending to landfill.

You must euthanise your bees ASAP

Frames, honey and comb that you wish to retain/reuse must be taken off the hive before you euthanise bees with petrol (see left). Shake bees on these frames into a tub of soapy water to kill them. Materials to be sent for irradiation should be stored in bee-proof bags until treated by steritech.com.au Do not reuse hive boxes, lids etc., within four weeks of petrol exposure. Frames exposed to petrol must be burnt.

It is AFB

The lab will notify the DPI, so you don't need to notify them again

Results

Not AFB

Open up hive entrance Monitor hive closely. It could have other problems. Learn to identify diseases You were fortunate this time – but stay vigilant!



Amateur Beekeepers Association NSW

Answers to tricky Questions: American Foulbrood (AFB)

October is AFB Awareness Month. We surveyed clubs and biosecurity officers for questions that members want answered

Q How do I deal with plastic hives and components that have been exposed to AFB? You have only two legal and effective options in NSW: get the plastic irradiated or burn it. It is illegal to simply throw it away – AFB spores are very resilient and can remain dormant for decades. For the same reason burying infected material on your own property without burning is not a legal option either. (The same rules apply to wooden hives.)

If you are planning to incinerate any infected material, remember this: open pit burning of waste material requires relevant local council or EPA permission; you may also need a permit from your local fire service (see item below). Authorities will consider if burning this waste will impact on others or the environment.

If you don't have anywhere to light an open fire, don't wish to burn plastic or aren't allowed to, consider contacting a waste disposal contractor who collects biohazardous waste for incineration.

Irradiation treatment will sterilise your equipment but the treatment may shorten its lifespan. (See item on Flow frames.) After the equipment has been irradiated it can be reused, thrown in general waste or taken to the council tip.

It gets slightly more complicated if you live in a council area that bans bee equipment -- sterilised or not -- from the local tip. Orange, for example, has a longstanding ban on accepting beekeeping equipment due to concerns that exposed components could spread disease through adjacent commercial apiaries. The ban applies even if equipment has been irradiated. Check with your council for any special disposal arrangements for beekeeping equipment.

The critical lesson here: before you buy beekeeping equipment, consider the options at the end of its useful life. Depending on your location, some materials may be more difficult than others to deal with effectively or legally.

Q. Is there a way to save my bees? I really don't want to kill them.

There's no middle ground here: you must euthanise colonies with AFB. Beekeepers have a legal obligation to stop the spread of AFB.

If you have read online that beekeepers can save AFB infected colonies, it is probably by a technique called 'shaking bees' – which moves the colony into clean hives. Shaking is taught to beekeepers in Tasmania and some countries with different protocols and priorities for managing AFB.

The idea with shaking bees from the old frames is that you are removing comb that harbours spores and the bees consume any tainted honey if forced to start anew. Studies show shaken colonies testing positive to AFB a year to 18 months later, presumably due to the AFB spores carried into the new hive.

Using petrol to kill bees is quick. It is the best option to save other colonies from a similar fate.



Q: Am I allowed to incinerate my hives?

Burning of materials, like plastic and beehives, is controlled in NSW under the Protection of the Environment Operations (Clean Air) Regulation.

Unauthorised incineration is prohibited at all times in all council areas in the Sydney, Wollongong and Newcastle regions, and in other NSW council areas listed in the Regulation.

That means that anyone wanting to burn hives must obtain an 'open burning approval' from the EPA or the local council.

Before granting approval, the EPA or local council will consider the impact of burning on regional and local air quality and amenity.

More information: epa.nsw.gov.au/your-environment/air/open-burning-reducing-pollution

In addition you also need to check with [Fire and Rescue NSW](#) or the [Rural Fire Service](#) to obtain a fire permit.

More answers to tricky questions: American Foulbrood (AFB)

Q Why does honey sent for irradiation foam up?

Honey expands during irradiation. This is why Steritech stipulates that containers containing honey should not be more than two-thirds full and must be double bagged to prevent leakage. It is also why frames should be extracted prior to treatment. Irradiation does not leave any chemical residue in honey but it does alter its composition. A study of honey irradiated in Malaysia showed: colour changes; reduced moisture, vitamin C and vitamin E levels; as well as reduced hydroxymethylfurfural (HMF) levels. HMF levels increase naturally as honey ages.

Q. Can I put a new hive in a spot where there's been an AFB infected hive? Do I need to wait a while before restocking?

Although AFB spores can remain dormant in the soil for decades, the risk that they will transfer back into a new hive, either through beekeeper activities or via, for instance, bees' dirty feet, is extremely low. Nevertheless, a beekeeper should be extremely careful about collecting up all material that could be infected. Never leave burr comb, wax and propolis scrapings or dirty tools lying around.

The much greater risk is from restocking an apiary without understanding where the original infection came from. Be especially diligent about checking your remaining hives for signs of AFB. Sending a honey sample for analysis by the state veterinary laboratory will tell you if your hives are carrying subclinical levels of AFB. (Copy the form supplied in your ABA sampling kit, sent to members with this year's membership.) If you suspect nearby unmanaged or badly managed colonies are harbouring AFB, you should report the problem to the DPI via a [Traceback Form](#)

Q. Does bleach get rid of AFB?

We hear this question a lot. Quite simply: bleach at the right concentration kills some AFB spores but it isn't 100 per cent effective. It doesn't kill spores trapped in or under wax or propolis. In some jurisdictions in Australia and overseas where irradiation isn't available, bleaching may be an option. The same goes for spraying hives and components with disinfectant, pressure hosing, blowtorching, or scrubbing with hot soapy water. Since all leave a potential reservoir of spores to cause trouble later they aren't approved by NSW authorities.

Q. Can a hive survive with subclinical levels of AFB?

A honey test can show if a hive is harbouring AFB spores before symptoms of infection are visible. In such cases, the test result provides a warning that AFB could develop in the future, but conversely it may not. Careful monitoring of the hive is needed and the colony euthanised the moment an AFB infection develops.

A range of different studies have looked at how many spores need to be present in a hive for it to develop a clinical (visible) infection. The results vary, largely because different colonies exhibit different levels of hygienic behaviour -- their speed and ability to eject unhealthy material. Breeding bees with strong hygienic traits is one line of research to help fight the prevalence of AFB. But for the moment, remember that bees are not immune to AFB, so careful management and early

Q. How do I treat my clothing?

If you are sending equipment for irradiation, include your suit, veil, gloves and any other material you want sterilised. Some plastics are affected by the process so you might want to avoid sending clothing with plastic zips.

Otherwise, clothing can be washed with regular detergent. Add a cupful of soda crystals to the wash to help remove propolis.

Leather gloves are difficult to keep clean and harden when washed. If you are not ready to abandon gloves altogether, you might want to try disposable nitrile gloves on their own or over your regular gloves. Dishwashing gloves or industrial safety gloves are other options, depending on the level of sting protection you want. Chemical-safe gloves have the added advantage of a gauntlet to protect your arm

Q: Can I keep honey from infected hives?

AFB does not affect humans so the honey is safe for consumption. Obviously you shouldn't feed it back to other bees.

If it's only a small amount and you are going to burn the hive, you should consider if it's worth the extra precautions needed during handling and extraction to prevent the spores spreading.

Any frames and honey exposed to petrol must be destroyed.

Yet more answers to tricky questions: American Foulbrood (AFB)

Q. How infectious is AFB really?

It depends on how you look at it. Just one decaying larva can produce 2.5 billion spores. Fewer than ten spores are needed for a fresh larva to become infected. Adult bees are not affected by AFB spores but can ingest them, particularly while cleaning out an infected cells, and carry the spores in their gut for more than two months. If fed back to larvae or stored as honey, the cycle continues. This is why once a colony has evidence of AFB, it is destined to enter a downward spiral from which it won't recover.

Various experiments show that billions of AFB spores need to be introduced into a colony in order for it to develop a clinical infection. That's why beekeeper activities where high concentrations of spores may be involved, such as swapping frames between hives, reusing infected boxes or components, feeding infected honey, exposing infected material, or introducing infected bees, are high risk.

Foraging bees are low risk, but robber bees bringing back quantities of infected honey or pollen from another source are high risk. This is why strong hives that rob weaker hives – possibly because the weaker hives are already dwindling due to infection – are at high risk.

AFB infections are widespread in NSW. In the past 14 months, NSW DPI reported AFB cases in 171 postcodes, with the ABA sending out 1600 alert notices to members in those affected areas.

Q. I've heard Flow frames will become brittle if irradiated. Is that true?

Flow frames do have limited capacity to withstand irradiation treatments. The polypropylene used in Flow frames can withstand around 25 to 30 kGy. (Ionising radiation is measured in KiloGrays.)

Steritech's Brisbane facility will irradiate beekeeping material at 10 kGy, which means Flow frames can withstand two, possibly three, treatments before becoming brittle. Steritech's NSW and Victorian facilities routinely operate with higher levels of radiation. This is why the [manufacturers of Flow hives recommend](#) you send Flow frames to Brisbane if they need irradiating.

Check your model number: BZ8 frames have a different composition and can tolerate only one round of radiation at 10 kGy.

Some other types of plastic used in hives, such as polycarbonate, can withstand irradiation.

Q. What's hot wax dipping?

The Honeybee Industry Biosecurity Code of Practice specifies that beekeepers can submerge AFB infected materials for 10 minutes in a vat of wax heated to at least 150°C. Unless you have equipment constructed for the purpose, serious protective clothing and specific training, don't try it.

The technique is designed for commercial enterprises processing hive ware in volume. It's fraught with dangers for the recreational beekeeper. You risk leaving active spores on equipment. And you risk a very nasty accident – wax has a low flash point.



PURCHASE ONLINE

Brood Sampling Kit

You need to act quickly if you suspect AFB. So make sure you have a brood sampling kit at the ready each time you inspect your hives.

The ABA kit contains instructions, glass slides, mailers and a laboratory form – all you need to send suspected AFB brood samples off for scientific diagnosis. ABA members are sent a kit with 2021/22 membership. Extra kits are available for \$4 plus postage at beekeepers.asn.au/shop

Please specify if you want a NSW/NT kit or QLD kit. (The laboratory forms are different for each state.)

The kit should be used to confirm an AFB infection. It is not a screening kit for symptom-free hives.

CLUB NEWS

Early days

Cumberland Beekeepers have been showing school students the basics

BEFORE THE winter/spring lockdown restrictions came into force, Cumberland Beekeepers held their first Apiary Field Day at Chifley College Bidwell Campus. At the June gathering, new junior club members and Bidwell College students were able to learn about the basics of beekeeping.

First they learned about personal protective equipment, basic tools used in hive inspections and the elements that make up a hive. Then young attendees were able to practice working an empty demonstration hive and lighting a smoker.

All attendees got the chance to help inspect the brood in the club's working hives. "The young participants all undertook the tasks with enthusiasm and demonstrated a great interest in the process," says club treasurer Martin Ratcliff.



School students learn how to inspect a hive during the Cumberland Beekeepers' Field Day last June

Club Grants

What would you do with \$1000? ABA affiliated clubs tell us how they are planning on spending their 2021-22 grant

Northern Beaches	A second BroodMinder system for monitoring hive health, and a Flow hive
Blue Mountains	Shed and new equipment at the club apiary at Lawson
Macarthur	Security camera to counter vandalism at the club apiary
Eurobodalla	Gazebo and fold-up tables for market stalls, plus new hives
Bathurst	Secure storage at the RFS building where the club meets
Nepean	Freezer for storing comb over winter, and ventilated base boards
Parramatta	Software subscriptions for a range of online learning projects
Gold Coast Regional	Upgrades to club hives and a digital refractometer to test member's honey
Inner West	Equipment to expand the club apiary and a freezer for member's frames
Orange	Flow super to educate and support members

The other honey makers

Manu Saunders explains how honey bees are not the only nectar gatherers

THERE ARE seven species of *Apis* honey bee in the world, all of them native to Asia, Europe and Africa. *Apis mellifera*, the western honey bee, is the species recognised globally as “the honey bee”. But it’s not the only insect that makes honey. Many other bee, ant and wasp species make and store honey. Many of these insects have been used as a natural sugar source for centuries by indigenous cultures around the world.

By definition, honey is a sweet, sticky substance that insects make by collecting and processing flower nectar. The commercial association between honey and honey bees has mostly developed alongside the long-term relationship between humans and domesticated honey bees. This association is also supported by the [Codex Alimentarius](#), the international food standards established by the United Nations and the World Health Organisation. The Honey Codex mentions only “honey bees” and states that honey sold as such should not have any food additives or other ingredients added.

Biologically, there are other insect sources of honey. Stingless bees (*Meliponini*) are a group of about 500 bee species that are excellent honey producers and are also managed as efficient crop pollinators in some regions. Stingless bees are mostly found in tropical and subtropical regions of Australia, Africa, Southeast Asia and the Americas.

Their honey is different in taste and consistency to honey bee honey. It has a higher water content, so it’s a lot runnier and tastes quite tangy. Stingless bee honey is an important food and income source for many traditional communities around the world.

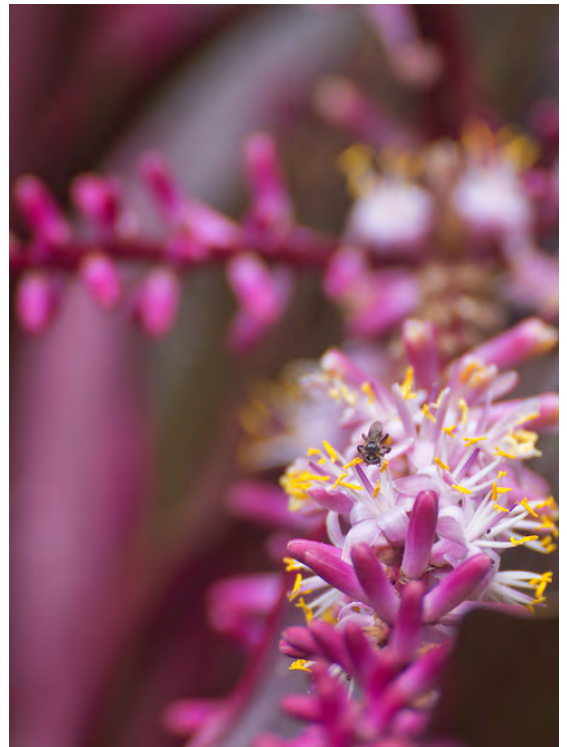
Harvesting “sugarbag”, as it’s known in Australia, is an important cultural tradition for indigenous communities in northern and eastern regions.

Stingless bee honey production hasn’t reached the commercial success of honey bee honey, mostly because stingless bee colonies produce a lot less honey than an *Apis* honey bee hive and are more complicated to harvest. But keeping stingless bees in their native range for honey, pollination services and human well-being is an increasing trend.

Bumblebees also make honey, albeit on a very small scale. The nectar they store in wax honey pots is mostly for the queen’s consumption, to maintain her energy during reproduction. Because very

few bumblebee colonies establish permanently, they don’t need to store large quantities of honey. This makes it almost impossible to manage these bees for honey production.

Bees aren’t the only *hymenoptera*s that make honey. Some species of paper wasps, particularly the Mexican honey wasps *Brachygastra* spp., (pictured left) also store excess nectar in their cardboard nests. Local indigenous communities value these wasps as a source of food,



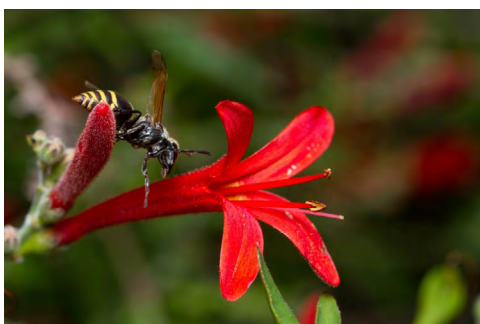
SMALL AUSTRALIAN NATIVE STINGLESS BEE ON A BROMELIAD FLOWER NEAR KURANDA IN TROPICAL NORTH QUEENSLAND, AUSTRALIA

Manu Saunders is a research fellow at the University of New England. [Article Reprinted from](#)

THE CONVERSATION



MYRMECOCYSTUS ANTS STORING NECTAR TO PREVENT COLONY FAMINE PHOTO BY GREG HUME CC-BY-2.5



**RED HEAD ANT (MYRMECOCYSTUS)
HONEYPOT CLOSE UP**

income and traditional medicine.

Ants have similar lifestyles to their bee and wasp cousins and are common nectar foragers. Some species also make honey.

“Honey pot ant” is a common name for the many species of ant with workers that store honey in their abdomens. These individuals, called repletes, can swell their abdomens many times the normal size with the nectar they gorge. They act as food reservoirs for their colony, but are also harvested by humans, particularly by indigenous communities in arid regions



These ants don't just collect nectar from flowers, but also sap leaks on plant stems (called extrafloral nectaries) and honeydew produced by hemipteran sap-suckers like aphids and scale insects.

Aphids and scale insects aren't all bad – they produce a delicious sugary syrup called honeydew. We mostly

know these insects as garden and crop pests: warty lumps huddled on plant stems, often coated in sticky honeydew and the black sooty mould that thrives on the sugar.



Males of these insect species are usually short-lived, but females can live for months, sucking plant sap and releasing sweet sticky honeydew as waste from their rears. The sugar composition varies greatly depending on both the plant and the sap-sucking species

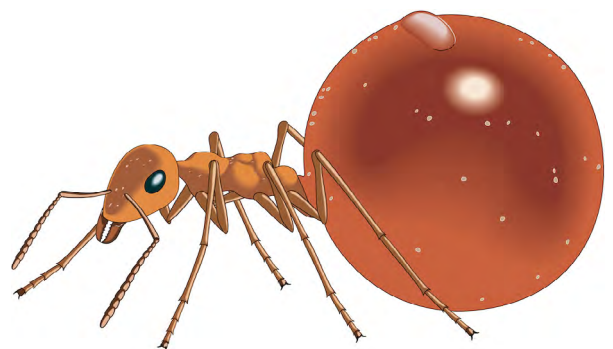
Honeydew has long been a valuable sugar source for indigenous cultures in many parts of

the world where native honey-producing bees are scarce. Many other animals that seek out floral nectar, like bees, flies, butterflies, moths and ants, also feed on honeydew. It's an especially valuable resource over winter or when floral resources are scarce, and not just for other insects; geckoes, honeyeaters, other small birds, possums and gliders are all known to feed on honeydew.

It's also an indirect source of honey bee honey: plant sap that has been recycled through two different insect species! Honey bees are well-known honeydew collectors. In some parts of Europe, honeydew is an important forage resource for bee colonies

Honeydew honeys have a unique flavour, depending on the host tree the scale insects were feeding on. Famous examples of this specialty honey are the German Black Forest honey and New Zealand's Honeydew honey.

So why not find out a bit more about what insects are producing honey in your local region?



THIS ARTICLE IS REPUBLISHED FROM THE CONVERSATION UNDER A CREATIVE COMMONS LICENSE



Healthy brood box. Healthy bees.

Bee Biosecurity Officer Rod Bourke,

**NSW Department of Primary Industries, explains
why good beekeeping starts with the bottom box**



For all successful beekeepers the aim is ALWAYS quality (of each colony) over quantity (hive numbers). That's because good bees in spring result in great bees for the season – unless you then have a run of bad luck or do everything wrong.

To have quality bees you need to regularly get into the brood box and understand what you are looking for – undertake training or get a mentor – and try to minimise nutritional and locational stresses on the hive.

Proper management of the brood box achieves

- reduction in all brood diseases (because you pick them up early)
- reduced problems with poor quality queens (because you find and can resolve issues earlier)
- increased brood laying ability (as you can supply more free space and cleaner combs when needed)
 - reduction in swarming (because you are managing strength and space in the hive, removing swarm cells and replacing older queens before they swarm)
- increased population of bees (because you stopped them swarming)
- increased honey production (because you had more bees to do the field work).



Spending time and money on managing your

brood box makes economic sense. To neglect this work will cost you money.

With spring here it is extremely important for all beekeepers to be getting right into their brood boxes to do this very important hive management. At the very least you should be looking to replace two or three older brood combs with either new wax foundation or pre-drawn wax coated plastic foundation.

The single most important thing is that you do regularly replace older brood frames and go through your brood box regularly to assess frames, check the bees' health and monitor/manage strength.

As brood frames age, the amount of stored pollen increases. This stored pollen will get used only if there are inadequate amounts of fresh pollen coming in. For most beekeepers this old pollen becomes a drawback in spring when their bees are working good quality fresh pollen sources.

Without adequate space in the brood box bees will swarm, even if they have plenty of room above the excluder to store honey. So if you want good bees for the season then work your brood box regularly – in spring and throughout the season.

Regularly rotating out old combs can also greatly reduce your chances of an AFB outbreak from a previous robbing event (where your bees had stored contaminated honey around the brood nest). AFB spores will happily sit in old honey for decades and still burst back into life if fed to a young larval bee. So look at brood frames full of old honey as a potential biosecurity threat. There may be no AFB spores in that old honey, or there could be BILLIONS. That means taking out that honey as soon as you can in spring and getting a new, clean workspace into the brood box. Removing these old honey combs has averted many AFB outbreaks, so by making it part of your seasonal management you will get better bees.

I've often observed that weak to medium strength colonies often prefer drawing and laying out new wax foundation over moving back into old brood combs that they retreated from over winter. Sometimes these old brood combs seem to act as a barrier for their expansion (mouldy or too much work to clean up). By getting a new foundation in between them and the edge of their brood nest you can often coax weaker colonies to start laying more brood. If there is no nectar flow when this is done then light sugar syrup feeding

may need to be used (sparingly). However in many areas there is always something good happening so syrup is not required.

There are beekeepers out there that rarely replace old combs in their brood boxes because they believe it is either "too expensive" or feel that queens prefer laying in older combs (weaker failing queens definitely do).

The facts do not support that theory.

Over time those beekeepers will end up with unhealthy hives and also smaller bees that were reared in smaller brood cells, due to successive layers of cocoons from previous generations. The cost of new comb can often mostly be covered by any honey recovered from old frames that were removed, and the extra new bees produced from the new foundation will kick-start that colony and enable more honey to be produced than the colony otherwise may have.



If you don't have enough time to manage those brood nests properly then you are probably running too many hives and also not getting nearly enough out of every hive as you possibly could.

If you get a slime-out, the best thing to do is immediately block the hive up, bag it, freeze it (to kill all stages of SHB) and then decide if you will burn the whole lot or irradiate and clean up the mess later.

Often it is better to just burn most of it.

As anyone who has had to clean up a slime-out would know, it can be a horrible job. Try to prevent it at all costs. I would much rather deal with an AFB hive (at least you can extract the honey), irradiate and reuse it than deal with the slimy mess that same hive may become a month or two later if not managed properly.

(at least you can extract the honey), irradiate and reuse it than deal with the slimy mess that same hive may

Therefore make it a priority to do a MINIMUM of two full brood checks each season (if not a few more), manage your queen and keep on top of beetle numbers.

NSW Bee Biosecurity Officer Rod Bourke can be contacted on 0438 677 195 or rod.bourke@dpi.nsw.gov.au

42nd Annual

2021 Tocal Beekeepers' Field Day


Free event 

Saturday 16 October from 9am on Tocal College Youtube

Over 13 presenters confirmed including:

- Ashley Zamek - Hort innovation
- Jody Gerdts - Bee Scientifics
- Dan Cook - QUT
- Mel Parker - Beekeeper
- Dr Cooper Schouten - SCU, Bees for Sustainable Livelihoods - ACIAR
- Soumi Paul Mukopadhyay - NSW DPI
- Tobias Smith - Native bee expert
- Belinda O'Rourke - EMAI Disease Diagnostics
- Fiona Chambers - When Bee Foundation
- Anneliese Austin SCU - Bees for Sustainable Livelihoods - ACIAR

For more information
www.etocal.com/2021bfd


Follow us! 

www.fb.me/TocalBees

Register at our Eventbrite page




Department of
Primary Industries



Tocal
COLLEGE
RTO 91166



NSW
Amateur
Beekeepers
Association
NSW



Email: tocal.bees@dpi.nsw.gov.au

EDUCATION

Learn from home

READ If you enjoyed the story about honey bee vision in this issue, be sure to check out honeybeesuite.com, the website of Rusty Burlew. It's filled with interesting, well researched information on all aspects of bees and beekeeping, with posts written

INSTAGRAM Follow the stunning and inspiring posts from commercial Warré beekeeper Tim Malfroy at [#malfroys_wild_honey](https://www.instagram.com/malfroys_wild_honey) Tim produces honey and honeycomb from 300 Warre hives located across the Blue Mountains and Central Tablelands and was awarded Delicious magazine's 'Outstanding Artisan' of 2021

WEBSITE beefriendlyfarming.org.au provides guidelines for farmers and gardeners wanting to encourage healthy pollinator populations on their properties. It sets standards for planting pollinator forage, providing nesting habitat, and integrated pest management

LISTEN Looking for something to fill in a spare 15 minutes? Honeybee Obscura is a short, in-depth review of all things to do with honey bees, with American hosts and beekeeping experts Kim Flottum and Jim Tew. Check out the list of past topics at honeybeeobscura.com

IMAGES Marvel at the wonderful images by Eric Tourneret, aka 'The Bee Photographer', on his many assignments around the world documenting beekeepers and their hives thehoneybeesphotographer.com

DO YOU HAVE A FAVOURITE bee podcast, website or other resource? Tell us about it at editor@beekeepers.asn.au

FEEDBACK

We're listening!

DO YOU have comments on how the ABA is run? Want to share your ideas? Think you could contribute to our association? The ABA is run by volunteers who give their time, energies and expertise to assist members, raise the profile of recreational beekeeping and lobby for appropriate support for beekeeping across our geographical network.

Our organisation has grown rapidly and needs volunteers to help implement our next wave of projects. Don't be shy! Email us at feedback@beekeepers.asn.au



WHAT'S YOUR STORY?

DO YOU HAVE A CONTRIBUTION OR IDEA FOR A FUTURE ISSUE OF THE AMATEUR BEEKEEPER?

SEND YOUR DETAILS and suggestions to editor@beekeepers.asn.au

YOUR ABA

The Amateur Beekeepers Association represents recreational beekeepers in industry forums, and provides a range of services to affiliated beekeeping clubs and members.

Do you skills and some spare time to help run the association. We are currently looking for members with business or organising skills who are keen to lend a hand either on a regular basis or when we have special projects..

Contact us if you think you could help.

ABA EXECUTIVE

Sheila Stokes president@beekeepers.asn.au
Ana Martin, secretary@beekeepers.asn.au
and membership@beekeepers.asn.au
Lyllal Zweck treasurer@beekeepers.asn.au
Bruce White biosecurity@beekeepers.asn.au
Sue Carney editor@beekeepers.asn.au
and publicofficer@beekeepers.asn.au
Kathy Knox kathy.knox@beekeepers.asn.au