NSW APIARISTS' ASSOCIATION INC.

ABN: 89 417 216 326

SENATE RURAL AND REGIONAL AFFAIRS AND TRANSPORT REFERENCES COMMITTEE

Inquiry into the future of beekeeping and pollination service industries in Australia

Public Hearing Tuesday, 20 May 2014

Brisbane, QLD

Follow-up information from the NSW Apiarists' Association

To the Senate Standing Committee on Rural and Regional Affairs and Transport

The NSW Apiarists' Association (NSWAA) would like to take this opportunity to thank the Committee for the occasion to appear at the Hearing for the *Inquiry into the future of beekeeping and pollination service industries in Australia*.

We provide this further information for the benefit of the Committee, and to clarify a number of points that were raised during the Brisbane Hearing.

We would also like to invite the committee to visit the beekeeping business of one of the members of the NSWAA Executive, Mr Neil Bingley.

This operation is located in Sutton (which is a 20 minute drive north east of Canberra). We feel that seeing a beekeeping business first hand will help to provide the Committee with a deep understanding of the industry. We can organise a tour of this facility and an opportunity for the Committee to discuss any questions with beekeepers and others involved in the industry.

Casey Cooper
President
New South Wales Apiarists' Association

Further information
Please note, unless otherwise stated the information below refers to Australian commercial beekeepers and their businesses.

The NSW Apiarists' Association represents the commercial beekeepers of NSW.

It is commercial beekeepers that are essential for providing the pollination services upon which billions of dollars of the Australian economy depends. But it is also commercial beekeeper numbers that are in serious decline.

What do bees do, and why should anyone but a beekeeper care?

Bees collect nectar and use it to make honey, which they store as a carbohydrate source for their energy needs

- Excess honey can be harvested by beekeepers for sale

Bees collect pollen as a protein source

- In the process of collection pollen and/or nectar bees transfer pollen between plants, and therefore provide pollination services required by many plants to develop seeds and fruits

- It has been estimated that at least one in every three mouthfuls of food we eat is dependent on honey bee pollination services

- Two thirds of Australia's food industries dependent on honey bee pollination

- The pollination services provided by honey bees are estimated to be worth $4-6 billion nationally

- Currently a great deal of this pollination occurs "for free", due to wild bees (defined below) or beekeepers placing hives in the proximity of crops without receiving payment

The Australian beekeeping industry is struggling, and we are the last remaining significant beekeeping country in the world without a bee pest called varroa. If/when this mite arrives, our wild colonies will be decimated and it will be the last straw for many beekeepers – so ***we will face a pollination crisis***. The cost of producing many crops will significantly increase, and therefore so will food prices, and we will also become more dependent on imported food.

We accept that the Government does not prioritise using taxpayer funds to help unviable industries. However, although the beekeeping industry is very small and the impact of losing our honey production industry would be minimal for the nation – a loss of pollination services would be catastrophic. And this small industry is doing everything it can within its resources, but this won't be enough. It is in the public interest to ensure we have enough managed bee colonies to ensure we have enough food.

Which bees are which (and do they live in colonies or hives)?

A colony is a "family" of bees, usually consisting of:

- One queen
    - Who is the mother to all of the bees within the colony
    - She lays up to 2000 eggs a day
- Tens of thousands of worker bees
    - Female - and produced from a fertilised egg from the queen
    - They keep the hive clean, defend it, build wax comb, collect nectar and pollen and produce honey
- Hundreds of drones (depending on the time of the season)
    - Male - and produced from an unfertilised egg from the queen
    - Their only purpose is to mate with virgin queens from other colonies

A hive is a specially constructed box, which has been designed to house a colony of bees

- Hives are designed to allow excess honey to be removed, without damaging the part of the hive that houses the queen and the brood (baby bees) so that the colony remains strong and able to keep making honey and/or pollinating crops

<u>Native bees</u>

- Australia has 100s of species of native bees; most of these are solitary species (that is they don't live in colonies and so don't produce large honey stores) – and are not species that could generally be helpful for large scale crop pollination
- Australia does have some native social bees, and some of these can be kept in hives and "managed" to an extent
    - But these bees are smaller, more sensitive to temperature variations (so they cannot survive in as large a geographical range as honey bees, nor survive extreme weather incidents as well as their introduced cousins), they are slower to reproduce their colonies, and unlikely to be helpful for large scale horticultural industries pollination needs
    - They are also tropical, so cannot live in the southern areas of Australia
- As our native bees are only distantly related to European honey bees, they are *not* susceptible to the diseases that affect European bees (so these bees do not present a disease risk to our native bees)

<u>European honey bees - *Apis mellifera*</u>

- These are the bees kept by commercial and most recreational beekeepers in Australia
- They were introduced to Australia in the early 1800s, and have become well established and endemic throughout our environment
- There is little-to-no evidence that these bees have a detrimental effect on the Australian environment, in fact it has been shown in various instances that they contribute to biodiversity due to their pollination services

Managed bees

- This refers to the colonies of bees (European honey bees - *Apis mellifera*) that beekeepers keep in hives in order to be able to collect honey and/or provide pollination services
- The hives can be moved long distances (1000s of kilometres), as often occurs in commercial beekeeping operations, to either place the bees in an area where there is an excess of nectar available (so that they will produce large stores of honey) or to provide pollination services (for example in almond orchards)
- Beekeepers check their colonies for pest and diseases regularly, and manage these in various ways depending on particular issues that can arise
- Bee colonies cannot remain healthy or grow unless the bees have access to good nutrition (that is, sufficient pollen and nectar from flowering plants that are not contaminated with agricultural chemicals)

Wild (or feral) bees

- These are colonies of European honey bees (*Apis mellifera*) that have become established in the environment, outside of managed bee hives – usually living in trees or cliff overhangs, or sometimes in artificial structures (under bridges, roof spaces, etc.)
- Although these colonies are unmanaged, they are currently responsible for a considerable amount of the pollination services provided by bees in Australia – probably more than 70%
- If a diseases like varroa becomes establish in Australia, it will only take a few seasons before most of these wild colonies are wiped out (as without treatment varroa is deadly to *Apis mellifera* colonies that are naive to the mite)
    - We are already seeing a decline in wild colonies due to pests such as the small hive beetle in some areas, to the significant detriment of local farmers who have been relying on them for pollination (often without realising it)

Asian honey bees (sometimes just referred to as Asian bees) – *Apis cerana*

- Found naturally throughout southern and south eastern Asia (but not in Australia)
- These are natural hosts for some pests and diseases that severely affect European honey bees – and are consequently of great concern to the beekeeping industry, as an incursion of these bees may lead to an introduction of varroa or other diseases, which could decimate our European honey bee population (both managed and wild)
- We have already had an incursion of these bees into Cairns (north Queensland) – which has now become established in that environment; it was purely a matter of luck that this particular swarm wasn't carrying varroa
- Due to the large nature of our boarders and the number of sea ports we have, it is of grave concern to the beekeeping industry that another swarm will arrive (most like as a "stowaway" on a boat), be carrying varroa and

become established in our environment before it is picked up. If these bees interact with our European honey bees they could spread deadly pests and diseases, with extremely detrimental consequences.

Unless otherwise stated, in the points below we are discussing managed European honey bees and wild European honey bees.

The nature of the Australian commercial beekeeping – and why it is different to other agricultural industries

Beekeepers cannot rely on land they own for their crop production (and therefore income) – rather, they need access to native flowering plants when they are flowering and producing nectar.

Around 70-80% of the commercial honey produced in Australia comes from eucalypt and native forests.

However, most eucalypts do not flower (and therefore produce pollen and nectar) annually. Some have a 2-3 year flowering cycle, and others much longer – with some species flowering only once every 10-12 years. These flowering events are further affected by extreme weather conditions (heat waves, floods, drought, etc.) as well as bush fires (both controlled and uncontrolled).

Beekeepers also need to move their "livestock" hundreds and sometimes thousands of kilometres during spring, summer and autumn to chase nectar flows (for the building up of their colonies and honey production) or to provide pollination services.

Beekeepers look after the environments they utilise – their livelihoods depend on it. They are also extremely good botanists, and often have generations of knowledge about plants and their flowering patterns of our unusual native flora.

When beekeepers move their hives into a particular area, they do so when there is a significant "nectar flow" on – so other organisms in that environment that also use and collect nectar are not disadvantaged because there is a glut at that point in time.

Why are beekeepers being locked out of public lands (such as State Forest, National Parks, Travelling Stock Routes, etc.)?

Beekeeping sites in places such as State Forests and National Parks are registered and defined. This makes sense for both beekeepers and the managers of these public lands.

- If any beekeeper could turn up at any time with any number of hives, the availability of nectar could become insufficient due to excessive competition
- It is important to know who is access sites should there be any biosecurity issues

However, despite the lack of supporting evidence (and the fact that European honey bees are now endemic across most of the country) there have been numerous pushes by various organisations charged with managing public lands to exclude beekeepers. This appears to sometimes be for environmental "reasons", and other times due to management/cost recovery policies and a lack of understanding of the nature of beekeeping and its fundamental differences to other agricultural industries such as grazing.

A cynic might also suggest that in some instances managed bee hives are an easier target than feral pigs, goats, foxes, etc. – which clearly posse a much, much, much greater threat to the Australian environment than bees.

In NSW of particular concern to the beekeeping industry are issues with State Forests, National Parks and Travelling Stock Routes

- Approximately 45% of commercial beekeeping sites are in State Forests
- 35% are in National Parks and
- 20% are within Travelling Stock Routes and Reserves

<u>State Forests</u>

- Up until relatively recently NSW commercial beekeepers had arrangements with State Forests that meant they could book bee sites in Forest areas, and renew these areas annually. Many beekeepers had ongoing access to sites, and they had a lifetime of local knowledge about the flowering patterns of the eucalypts and other species in the area.
- However, in a review of their operating procedures State Forests now propose to lease sites for a maximum of five years and then to open them to tender – so a beekeeper may have access to a site for 5 years, but during this time there may be no significant flowering event (so no good sources of nectar and pollen, so no point putting your bees there), then a year or two after there is a flowering event but the beekeeper no longer has access, unless they are in a position to out-bid anyone else interested in the site.
- Another issues could be a flowering event is due during a five year lease period, but bushfire goes through, or extreme weather conditions occur, meaning the predicted nectar flow doesn't occur. While this can happen at the moment, beekeepers who are already in sites have the first option to renew their leases, so they can build their business plans around this. The proposed changes will make it impossible to plan business expenses, as the cost of sites will be unpredictable. Without security of tenure beekeeping enterprises may become unviable.

National Parks

- Many beekeeping sites have been lost to industry over the past 50 years because these sites were lost if lands managed under other jurisdictions where gazetted to National Parks
- There is a policy that if a site does not have a current beekeeping permit (that is, if a beekeeper is not registered to use the site at that particular time - as may be the case if the transfer to National Parks occurs in a year when the local eucalypts are not flowering) it is never available again as a beekeeping site
- There was also a policy that beekeeping sites within National Parks can not be transferred to other beekeepers (for example if a beekeeper sold their business to another apiarist, the new owner could not access the sites), so again these have been lost permanently to industry
- There are also access issues – when beekeepers are allowed to lease some sites, but the access or roads are not maintained, or gates are locked, beekeepers are effectively being locked out, while on paper National Parks appears to be complying with providing access

Travelling stock routes

- These were managed by LHPA (Livestock Health and Pest Authority) in a way that they can be booked and used by beekeepers – providing a very important floral resource in many areas
- But now LLS (Local Land Services) are looking at managing them under a new system, which might include selling some areas to private land owners or other bodies, which would mean these areas would be lost to the beekeeping industry

The Victorian Government recently instigated an integrated State Beekeeping policy, which has been very positive for the Victorian beekeepers.

The Committee will have been made aware of this from various submissions to the Inquiry. Instigating this type of policy nationally, or at least recommending that something similar be done in all States and Territories, would be of relatively little cost to Government but of huge benefit to the beekeeping industry.

Commercial beekeeper numbers and why they are declining

Beekeepers are struggling because:

- There is an inability to plan business activities and expected income and costs due to insecurity around access to resources, as well as all the “normal” pressures faced by agricultural industries around the impact of drought, flooding, bush fires, etc.
- There are low returns for honey production/pollination services
- The aging population of commercial beekeepers; with few new players entering the profession
- There are low levels of tertiary education within the industry
- There is little to no training or educational opportunities

It should also be noted that the number of amateur/recreational/hobbyist is in fact increasing. However, these beekeepers usually have 1-5 hives, are stationary (that is their hives stay in the one place) and are not in a position to provide pollination services needed for the agricultural industry. Some may also pose a biosecurity risk due to a lack of understanding of bee pests and diseases.

Although the increasing numbers of these recreational beekeepers reflects the growing public interest in bees, and the public awareness of their importance and that they are under threat.

Why just letting the introduction and spread of varroa "sort out" the industry is an appalling idea for Australia

The wild (or feral) bees population will be decimated – currently this population is providing more than 70% of our pollination services.

Many beekeepers are already struggling, and then they'll be faced with dying hives and a significantly increased management cost – as has been seen in all other comparable countries when varroa arrives. Consequently, many beekeepers will be lost to industry completely.

As commercial beekeeping knowledge is to a large extent passed on from father to son, or sometimes through very informal apprenticeship arrangements, and the information is rarely written down, and because beekeeping in the Australian environment is very different from other countries, a loss of these beekeepers will mean the irretrievable loss of generations of knowledge.

The beekeeping businesses that do survive will face higher management costs and will also lose significant numbers of their managed colonies. They will eventually be able to build up higher numbers again, but probably not to the number they had before varroa arrived, and the populations of wild bees won't reach anything like their current numbers again.

The net impact of all of this is that there will not be enough bees – managed or wild – to provide Australia's pollination needs.

If honey prices are up, why aren't beekeepers who currently earn money for pollination moving to honey production?

- The honey drought is a product of the fact that there are very little flowering resources available at the moment to provide them with the nectar they need for honey production
- Insecurity around access to floral resources as outlined above

If providing pollination services provides a stable income, why don't more beekeepers do this?

Pollination of crops like almonds is "hard" on managed bees. They do not receive ideal nutrition and are mixed with so many other colonies that it provides an ideal situation for the spread of bee diseases.

A great deal of work is required to get the colonies up to the required strength before they can be placed on the almonds (or other crops) – and due to the timing of the flowering event this sometimes has to happen in winter, when the bees would normally have been left to conserve their strength until they naturally emerged and become more active as the weather warmed and good nutrition became available for them to reproduce.

If beekeepers move away from traditional chemical-free sources of nectar and pollen (as most are currently relying on from native forest) to providing horticultural pollination services, there is also an increase in the risk of exposure to agricultural chemicals – and there have been numerous incidents of beekeeper losing significant number of their colonies due to spay events, including insecticide drift off crops like cotton.

So pollination is not an "easy buck" – and despite the issues above, beekeepers are paid around $80 a hive, which is not a huge sum considering the overheads and risks.

If managed honey bees are so important - why don't pollination dependent industries appreciate their importance, and pay for their services?

In some instances, like almonds, they do. This is because without placing bees in almond orchards as they start flowering, almond farmers would end up without a crop at all.

However, many other farmers argue they don't need to pay for pollination services because:

- They are not aware of the positive impact of honey bees on their yields
- They are receiving free services from unmanaged or incidentally placed managed colonies in their area (often without realising it)
    - Although the yields will usually be lower than when purposely placed colonies of honey bees are used

Why would anyone pay for something they are currently getting for free (especially when it's something they have that they are barely aware of)?

This issue is further compounded by the fact that large farming businesses rely heavily upon agronomists for advice on when and what to plant, what pesticides and fertilisers to use, etc.

- Agronomists are employed by companies that produce and sell seed, fertilisers and pesticides
- It is extremely unrealistic to expect that an agronomist is going to advise a farmer to use bees – even when there is published scientific evidence that bees will increase yield by very significant amounts (often much higher than using a different strain of the crop, or fertilising at a certain time, etc.) – because the agronomist's company does not sell bees
    - This is made even less likely considering that the agronomist's company sells large amounts of pesticides that are fantastic for killing bees in their millions…

We need more research and communication of the impact of managed honey bees on crop yield in the Australian horticultural context – but this is not something the tiny beekeeping industry can do by itself.