Constant work to keep Australia varroa free

Australia is the largest land mass to maintain its varroa free status but it is not without much work to keep it this way. As a large island nation there are many biosecurity systems in place to actively watch the main ports and entry points that bring important cargo to Australia but can also inadvertently bring many unwanted exotic bees pests including Varroa mite. Australia's bees and beekeepers are often referred to as the world luckiest being so far isolated from many of the worlds most common bee pests but nothing is left to luck in maintaining this global privilege and being the protectors of the world's healthiest stocks of honeybees.

In May 2016 Trevor Weatherhead, now the Chairman of the Australian Honey Bee Industry Council, received a phone call from the Australian Governments Department of Agriculture. He was asked to attend the quarantine office at Eagle Farm in Brisbane to look at combs from an Asian bee nest that had been found in a container rack in the port of Townsville and had been identified as also having *Varroa jacobsoni* on the bees.

Examining the comb Trevor, an experienced beekeeper, could see that it was old and, as the container had been there for about 2 years, it was obvious it could be up to 2 years old.

When an incursion of any sort relating to bees or other exotic pests is found in on Australian soil or in an Australian port an urgent meeting is called of the Australian Government's Consultative Committee on Emergency Plant Pest (CCEPP). They meet to consider the response to the incursion. An eradication plan is developed and put in place.

Interestingly the eradication response is jointly funded by the Australian Government and the main industries which would be negatively impacted if the pest (in this case *Varroa jacobsoni*) were to establish in Australia. The list of industry bodies and governments who are a party to the eradication plan were:

- Australian Honey Bee Industry Council
- Almond Board of Australia
- Apple and Pear Australia
- Australian Lychee Growers Association
- Australian Macadamia Society
- Australian Mango Industry Association
- Australian Melon Association
- AUSVEG (the Vegetable Growers Association)
- Avocados Australia
- Canned Fruit Industry Council of Australia
- Cherry Growers of Australia
- Grain Producers Australia
- Raspberries and Blackberries Australia
- Strawberries Australia
- Summerfruit Australia
- All State Governments
- Australian Government

Each of the industry organisations above are signatories to the Emergency Plant Pest Response Deed (EPPRD) and collect a small biosecurity levy from the sale of their products which is paid into a biosecurity fund managed by the Australian Government. These funds accumulate and are then used for an eradication effort when an exotic pest incursion is detected.

Whilst the eradication program for the 2016 incursion was being enacted, there were two other separate incursions from unrelated Asian bees found at the port of Townsville and these also had *Varroa jacobsoni* on the bees. These were in May 2019 and April 2020 but each time they were found quickly on arrival limiting the likelihood of establishment. Examination of the comb showed that these had not been there for long before they were discovered.

An eradication plan was put in place for the May 2019 incursion and then extended to account for the April 2020 incursion.

A National Management Group manages the eradication program which includes detailed surveillance and containment strategies and the use of the best available science and sound beekeeping knowledge.

The Townsville 2016 incursion was officially declared to be eradicated by the National Management Group on 1 July 2020. In August 2021, the 2019 and 2020 detections were declared eradicated. Before declaring an incursion eradicated many years of surveillance activities need to be undertaken without any detections of the pest in the area or broader areas.

So how does Australia successfully do this?

Over the five years that the eradication plans were in place the major reason for the successful eradication of the Varroa mite was the dedication of the staff and volunteers that were part of the eradication program. From the manager down to the team and volunteers out walking the streets looking for bees their dedication and professionalism is vital. The public and scientists also played an important role in supporting their efforts.

The Australian Honey Bee Industry Council organized, coordinated and paid for beekeeper volunteers to go to Townsville from all around Australia to help out with the program. Initially the main emphasis for the volunteers was to train the local beekeepers in how to conduct sugar shakes, alcohol washes and drone uncapping to check for Varroa.
The volunteers put sticky mats within the bottom boards of surveillance hives when the acaricides strips were put in the hives. The program regularly inspected for any sign of the pest.
As it had been reasoned from the beginning that *Varroa jacobsoni* would probably not be reproducing on the honey bees the same way as *Varroa destructor* does, then it was vital that local hives were tested on a regular basis. The experience from Papua New Guinea was that it took up to 20 years before *Varroa jacobsoni* learnt how to reproduce on honey bees, therefore no destruction of hives was carried out but monitoring was vital. There was no movement *of Apis mellifera* honeybee hives allowed out of the Townsville City Council area.

Over the time there were many other factors that also led to the successful eradication.

All flowering plants in the area were constantly monitored for any signs of Asian bees which are the natural host of Varroa. News about the eradication efforts was spread through a local communications campaign. The citizens of a large regional town and area were mobilized to report any sightings of Asian bees starting in the 2016 incursion. The majority of nests found subsequent to the 2016 incursion were from reports from the public

Even one very special species of local bird was used to help the eradication effort. The Rainbow Bee Eater, *Merops ornatus* was unaware that its regurgitated pellets were being collected and scientifically examined for any signs of Asian bee wings and varroa. This method had been developed in 1998 by Dr. Glen Bellis from Darwin when Australia had the Asian bee incursion in Darwin. It proved crucial in detecting the April 2020 incursion when undigested wings of the Asian bees were found in the collected pellets and alerted staff to the presence of Asian bees that had not been seen by human eyes out foraging on flowers.

Photo: Peter Bray Rainbow Bee Eater bird

Putting up helium balloons with queen bee pheromone was also used to attract drones of Asian bees. This was developed from work by Dr. Ros Gloag in Cairns.

Beelining also played a vital role. This involves watching bees and following their flight patterns back to their nests. This had been developed in the 1990's from the initial work by the late Dr. David Banks, Barbara Waterhouse and Judy Grimshaw. This method was refined during the unsuccessful eradication attempt on the Asian bees in the Cairns area starting around 2010.

Australia is one of the few places in the world to successfully eradicate the Varroa mite. The National Management Group (NMG) has declared that the *Varroa jacobsoni* incursion in Townsville has been eradicated and we are now free of this pest in Townsville.

The Australian Honey Bee Industry Council estimate that around AUD$5 million was spent on the three incursions.
The successful eradication and continued surveillance program for exotic bee pests in Australia continues to evolve as the beekeeping community, scientists, Government and pollination dependent industries continue to work together to combine their knowledge, expertise and funds. Townsville is now a "high watch" port and work is being carried out to look at the pathways of Asian bees coming into Townsville so that incursions of the Asian bee, particularly when it is carrying the Varroa mite, can be prevented.

The job of keeping Australia Varroa free will never be done and efforts around Australia's coastline is a 7 day a week job only made possible through the dedication, diligence and

watchful eyes of local beekeepers, port workers, the public, scientists and their institutions and Government departments all working together.

Long live Australia's Varroa free status!

Edited by Jodie Goldsworthy – Oceania Regional President, from text and information supplied by Trevor Weatherhead AM (Chair of the Australian Honey Bee Industry Council)

Photo: Australian Government DAWE - 2016 Asian Bee nest on a Container Stand in Townsville Queensland

Photo: Trevor Weatherhead - Teaching local beekeepers how to use the sugar shake method of mite detection

Photo: Trevor Weatherhead - Using helium balloon to attract Asian bee drones