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Australia's national parks, botanic gardens, natural regions and green spaces are being overrun by an **invasive pest** that is mostly unnoticed. This is yet another type of cattle that has escaped from captivity and is free to roam.

Contrary to common belief, **feral colonies of the invasive European honeybee (*Apis mellifera*)** in Australia are neither "wild" nor "good" for the Australian environment. The truth is that feral honey bees compete for food and habitat with native creatures, disrupt native pollination systems and pose a major biosecurity risk to our honey and pollination sectors.

We are painfully aware of the devastation caused by invasive species as ecologists operating across Australia. There is rarely a simple, one-size-fits-all solution. But we need to take feral bees out of the "too hard" category.

The parasitic **Varroa mite's** advent and expansion in New South Wales threatens honeybee colonies. So it's time to reconsider our relationship with the beloved European honeybee and focus on the ferals.

## What Causes a Hive to Become feral?

When a controlled hive produces a "**swarm**," **European honey bees become feral**. This is a swarm of bees that has left the hive in search of a new home. The swarm eventually settles, whether in a natural hollow or an artificial structure like a nesting box.

**Australia has one of the greatest feral honey bee concentrations in the world**, with up to 150 colonies per square kilometer. Feral honey bees are recognized as a "key threatening process" in New South Wales, but not elsewhere.

Most land-based ecosystems in Australia have been successfully invaded by feral honeybees, including woodlands, rainforests, mangrove-salt marsh and alpine and dry environments.

They can efficiently collect enormous amounts of nectar and pollen from native plants, which would normally supply food for native creatures such as birds, mammals and flower-visiting insects like native bees. Their foraging activities affect seed generation and genetic diversity in native plants, while also pollinating weeds.

Unfortunately, feral honey bees have replaced butterflies as the most common visitors to many native floral plants.

## Are Feral Bees Beneficial to Agriculture?

**Honeybees that have gone rogue can pollinate crops.** However, they compete for nectar and pollen with controlled hives. They can also serve as a reservoir for honey bee pests and diseases like the Varroa mite, which jeopardize agricultural output. This is because many farms rely on honeybees from commercial hives to pollinate their crops.

**Reduced feral honey bee density would thus improve both honey production** and the A\$14 billion crop pollination sector.

Improved management of wild honeybees would not only assist to decrease the biosecurity concern but would also boost pollen and nectar availability for controlled hives. It would also raise demand for managed honeybee pollination services for crops that rely on pollinators.

## What Are Our Current Alternatives?

Due to the magnitude of the feral colony invasion and the limited tools available to property managers, addressing this issue will be difficult.

If the **current parasitic Varroa mite epidemic in NSW becomes uncontrollable**, it may lower the number of feral hives, which would be beneficial to the ecosystem. Fewer feral hives would also benefit the honey sector.

There are targeted ways for removing feral colonies on a small scale that are being used in the Varroa mite emergency response. This includes the placement of **poison (fipronil) bait stations in mite-infested areas**.

While this strategy appears to be effective, the high toxicity of fipronil to honeybees restricts its usage in areas without managed hives. Furthermore, the potential impacts on non-target, native species that feed on the bait or poisoned hive are unknown and must be thoroughly investigated.

Feral hives can be physically removed where they can be accessed. However, in many environments, **feral colonies are high up in trees, in difficult terrain**. Because of this, as well as their sheer numbers, removal is impractical.

Another issue with hive elimination is uncontrolled swarming from managed and feral colonies on the outskirts of the extermination zone. There are currently no viable alternatives for the targeted large-scale elimination of feral colonies across Australia's extensive natural habitats.

## Where Do We Go from Here?

**Feral honey bees have had unrestricted access** to Australia's natural environment for far too long. Given the significant and well-documented hazards they represent to natural systems and industry, the **time has come to devise effective and realistic control methods**. We urgently need to develop new strategies in addition to improving existing ones. One intriguing example is the use of **traps to capture bee swarms**, which is being done in Victoria's Macedon Ranges. However, in bigger sizes, this may be too expensive.

Existing efforts for other animals could be a good place to start. The practice of utilising pheromones to catch cane toad tadpoles, for example, might be extended to drones (male bees) and swarms. Once techniques have been devised, we can model a variety of approaches to find the best one for each instance.

**Developing long-term control methods should be a top focus right now since it will benefit industry, biosecurity and native ecosystems.** If there is one thing we can take up from the recent Varroa outbreak, it is that we can no longer disregard the dangers that wild honeybees bring. In Australia, we don't know how to regulate them yet, but it's not through want of trying.