

**Senate Standing Committee on Economics**  
**ANSWERS TO QUESTIONS ON NOTICE**  
Innovation, Industry, Science and Research Portfolio  
Additional Estimates Hearing 2010-11  
23 February 2011

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**AGENCY/DEPARTMENT:** COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION

**TOPIC:** Biodiversity impacts of the Asian honey bee incursion

**REFERENCE:** Question on Notice (Hansard, 23 February 2011, E9).

**QUESTION No.:** AI-4

**Senator MILNE**—..... When you say it is serious for Australia's biodiversity, since it can spread all over the country and has spread into highland areas in New Guinea, therefore temperate areas in Australia are vulnerable, what are we talking about in terms of biodiversity impacts, displacement of native bees, nectar feeding animals, insects, et cetera?

**Dr Johnson**—Right now I could only answer that in general terms. I would be happy to provide a more detailed answer to you on notice. You are correct; the impact would be significant from a competitive point of view with other pollinators in the environment. It would have an impact on nesting sites for native birds and animals. Also, the bee as a vector for the varroa mite would also have likely consequences to the honey bee industry and queen bee producers. I would be happy to provide a more detailed answer to you.

**ANSWER**

Impact of Asian honeybees on the environment if not eradicated:

- The environmental costs have not been determined and would be difficult to assess. What is known of the Asian honeybee's biology suggests a high risk to the environment.
  - The Asian honeybee is likely to cause a decline in the native bird, insect and animal population due to competition for nesting sites as it chooses much smaller cavities to nest in than the European honeybee. It also forms smaller colonies than the European honeybee and swarms (produces new colonies) more frequently. Asian honeybees will form more colonies per unit area than European honeybee colonies. Because of this, they also colonize new areas where European honeybees have not been able to because of their need for larger sized nesting cavities. For this reason, nesting sites of native birds and animals will be desirable habitation for Asian honeybees and the number of native birds and animals could be reduced meaning a negative biodiversity impact.
  - The Asian honeybee presents a threat to European honeybees, native bees and other insects. If high densities of feral Asian bee colonies exist, it will mean that the Asian honeybee will be able to utilize nectar flows much more rapidly than European honeybees which could also affect native bees and other insects.

### **Impact of Asian honeybees on pollination if not eradicated**

- If Asian honeybees can pollinate commercial crops as well as *A. mellifera* (European honeybees); (there is no information on this, but one would have to assume that they will collect any pollen and nectar that is available), then incidental pollination (pollination not paid for by the grower) might actually increase due to Asian honeybees, as it has occurred in the Solomon Islands, due to the bees being able to utilize smaller nesting cavities (see above).
- Beekeepers will still be needed to pollinate large commercial crops, such as almonds, canola etc, because there will simply not be enough nesting cavities available in such crops to house the number of feral Asian honeybees required to carry out efficient pollination. Beekeepers will incur added costs as a result of getting their hives ready for pollination, but this is not considered likely to be great in the scheme of things.
- If Asian honeybees became widespread in Australia it would be difficult to detect new incursions of the same bee from the New Guinea region. Such new incursions would only be detected if the bees involved were carrying varroa mites. By the time these mites were detected the new incursion (with mites) would likely not be able to be eradicated. Further, the varroa mites that would be introduced by those new incursions would presumably be the same strain of mites that recently switched-host to become damaging pathogens of European honeybees in PNG. Those mites would cause the same effect as *Varroa destructor*, the mite that has decimated European honeybees globally and in that event they would have a serious detrimental effect on managed pollination. If those new mites occurred at the same time as an incursion of *Varroa destructor*, then the impact would probably be catastrophic for commercial beekeeping, and hence paid pollination services.

### **Impact of Asian honeybees on feral populations of *Apis mellifera* if not eradicated**

By the time the Asian honeybee population has reached its maximum carrying capacity in tropical regions of Australia, the bee would be expected to have totally replaced the feral *A. mellifera* population as it has done in the tropical Solomon Islands. Any feral *A. mellifera* colonies produced from managed colonies after that point would be short-lived. Because of the small size of the feral Asian honeybee colonies and their propensity to rob it is likely that this will also be the case in temperate regions (although one may find that feral *A. mellifera* fare better in temperate regions). Thus, it is likely that once the environmental carrying capacity for Asian honeybee is reached in Australia, there will be no permanent feral population of *A. mellifera*, only a small population of short-lived *A. mellifera* feral colonies (those recently swarmed from managed colonies).