

PROGRESS REPORT ON AHGA BUMBLEBEE PROJECT 30 October 2007

Introduction

This report has been prepared for the information of the AHGA Committee and industry contributors to the HAL bumblebee project and is current as at 31 October 2007.

Currently the AHGA, acting principally on behalf of producers of greenhouse and hydroponic tomatoes, plus producers of other crops that may benefit from pollination assistance, has a submission before the Australian government seeking approval for the live importation of *Bombus terrestris* onto the Australian mainland. The aim is to establish a commercial production facility to supply tomato producers with artificial bumblebee hives for crop pollination purposes. The submission is at the stage where, after a period of public and government comment, the AHGA is required to respond to these comments in order for the Minister for the Environment and Water Resources (DEWR) (formerly Environment and Heritage (DEH)) to make a determination.

In the period 19-23 October 2007 Dr Griffiths travelled to Australia and with Biocontrol Solutions participated in a range of activities associated with this stage of the project to provide a response to the DEWR. The consultants met with bumblebee specialists both scientific and commercial in New Zealand on Saturday 20 October 2007 in the Hotel Grand Chancellor Auckland Airport boardroom to discuss an agenda of the key issues identified by the DEWR from the collated comments. Issues included the natural behaviour of *B. terrestris* (BT) in NZ, its distribution in NZ, any negative impacts on native bees and birds in NZ, pests and pathogens of BT in NZ, any human health issues associated with BT in NZ, commercial rearing issues in NZ, transportation of BT in NZ, greenhouse use of BT in NZ, weed spread associated with BT in NZ, honeybee issues in NZ etc. This occupied a whole day and was very fruitful. The NZ participants demonstrated a high level of knowledgeability and scientific impartiality. On Sunday 21 October we visited one of the commercial bumblebee rearing facilities to observe firsthand the methodology and safeguards involved.

Later Sunday 21 October we flew to Launceston via Brisbane for meetings in Devonport at the Brandsema's operation on Monday 22 October to discuss the potential and logistics of commercially producing BT for pollination purposes should approval be granted by the DEWR.

On Tuesday 23 October we met with members of DEWR to discuss aspects of the report, to introduce ourselves as the architects of the supplementary report currently in preparation and to experience the atmosphere in which the supplementary report will be assessed. In response to a question from the DEWR we have committed to having the response into them by December 31 2007. An indication of this was requested to enable them to alert the incumbent Minister who has, under the legislation, to respond within 30 days of receiving the response.

At this stage substantial progress has been made in responding to the raised issues. A further update will be provided to you at this time.

Stephen Goodwin & Marilyn Steiner
Biocontrol Solutions 31 October 2007.

APPENDIX 1.

AUSTRALIAN HYDROPONIC AND GREENHOUSE ASSOCIATION

SUBMISSION TO

**THE HOUSE OF REPRESENTATIVES STANDING COMMITTEE ON
AGRICULTURE, FISHERIES AND FORESTRY**

**INQUIRY INTO THE FUTURE DEVELOPMENT OF THE
AUSTRALIAN HONEY BEE INDUSTRY**

JUNE 2007

BACKGROUND

The Australian Hydroponic and Greenhouse Association (AHGA) welcomes the opportunity to make a submission to this enquiry. While honeybees are not of direct interest to the Association, the executive recognises that there are several synergies between honeybees and bumblebees. For over 10 years, the AHGA has been attempting to import bumblebees onto mainland Australia for crop pollination purposes. To give you a brief background on this, bumblebees are used in every developed country in the world except Australia to improve the pollination of a wide range of crops, both in the greenhouse (tomatoes, capsicums, eggplant, strawberries, berry fruit) and in the field (almonds, apples, stone fruit, avocados). They do not replace honeybees, but operate in concert with them or in situations where honeybees are not able to adequately pollinate the crop. This particularly applies to solanaceous crops such as tomatoes, which require a good buzz pollinator. Their use overseas over the last 20 years has resulted in substantial yield increases, enhanced crop quality, major labour savings and greatly reduced pesticide use. Bumblebees are managed in similar ways to honeybees, with commercially available hives. These differ from those of honeybees in that each contains a single queen and an initial 50 workers, with a hive life span of only 4-8 weeks. They are then exchanged for new ones, using them only during the pollination period, which is crop specific.

The great majority of bumblebees are native to temperate regions of the Northern Hemisphere. There are several species which co-exist with each other and with native bees, honeybees and other nectar and pollen feeders. They are considered not only benign, but essential to pollination of many plant types. Both in Europe and North America, bumblebee populations are declining alarmingly. There are currently major efforts to explore the reasons for this decline and to try to enhance their survival. The most common species in Europe is the large earth bumblebee, *Bombus terrestris*, which has several subspecies adapted to cold and warm climates. New Zealand imported the cool temperate-adapted English subspecies, *Bombus terrestris audax*, along with three other species, about 150 years ago for pollination of European crop plants. It also has concerns about dwindling populations. It is this subspecies which found its way to Hobart, Tasmania in about 1993 and which has since established itself in varying numbers across a variety of habitats in that State. The same subspecies was brought from England to NSW and Victoria in the late 19th and early 20th century, but none established. Birds were named one of the main predators.

The major crop serviced by commercial bumblebee hives world-wide is greenhouse tomatoes. The hives are technologically very advanced and production is limited to a handful of companies. The AHGA originally attempted to introduce bumblebees onto the mainland for broader pollination services. The first permission was sought from AQIS in 1995, when it was referred to the Australian Nature Conservation Agency, then Environment Australia, now Department of Environment and Heritage, for an environmental assessment. An Environmental Impact Statement funded by the Horticultural Research and Development Corporation (now Horticulture Australia Ltd) was carried out by the Tasmanian Museum from 1999-2002, which indicated minimal potential for any environmental impact. The AHGA then lodged an application with DEH in 2004 to amend the List of Specimens Suitable for Live Import under the Environment Protection and Biodiversity Conservation

Act 1999. Then followed a protracted period when the Terms of Reference for a decision on this request were posted and agreed to, a major 120-page report was submitted by the AHGA in 2006, and substantial public comment followed, which must now be addressed. The report can be found on the DEH website (<http://www.environment.gov.au/biodiversity/trade-use/invitecomment/pubs/bombus-terrestris.pdf>). The issue is one of prime importance for the sustainability of the greenhouse vegetable industry in Australia, so it is still being vigorously pursued.

Some other facts relevant to bumblebees:

- Bumblebees carry very few pests and diseases relevant to honeybees, and these can be screened for and excluded. They do not carry Varroa.
- They are highly unlikely to compete with honeybees—they are far less numerous, and the colony dies out every year leaving only new, hibernating queens. Bees are absent during winter as they hibernate.
- Bumblebees store food only for immediate use. They have no reserves so cannot survive periods of food shortage, unlike honeybees.
- They are docile and rarely sting unless provoked.

So where are the synergies between honeybees and bumblebees?

INFORMATION RELEVANT TO THE ENQUIRY

Role in Agriculture and Forestry Clearly honeybees are critical to the effective pollination of many Australian field crops and tree crops. They are also dependent on some native plants, particularly flowering trees, for honey production and for food supplies for overwintering and propagation. An issue raised by many of the submissions was the denial of access or threat of exclusion from major resources in public forests. In the same way that environmentalists applied the so-called ‘precautionary principle’ to restrict honeybee access in State and public parks, they have actively and successfully lobbied the public and State governments to have bumblebees refused entry onto mainland Australia under any circumstances. An assumption of serious negative environmental impact has been made on even flimsier ‘evidence’ than exists for honeybees. A concerted scaremongering campaign over many years has labelled the innocuous bumblebee a flying cane toad, another European wasp, the next rabbit, a threat to one’s children and a carrier of Varroa, which it most certainly is not. The 2006 AHGA report challenged much of the research and debunked many of the allegations. However, as John Tadman (Submission 30) explains so well, the Rio Precautionary Approach has been replaced by the Precautionary Principle. This introduces complete paralysis of thinking and places the burden of truth on the proponent to show that no negative effect will ever occur, a clearly impossible task (and certainly not applied to the impact of humans in the environment). It also allows one to conveniently ignore the far more measurable, massive effect that land clearing, overgrazing, pesticides, pollution, urbanisation and habitat fragmentation are having on native flora and fauna, against which competition for resources (a natural process and not necessarily harmful) pales to insignificance. Unfortunately the smear campaign against bumblebees has been very successful in distorting the perceptions of

both the public and State politicians, to the extent that there is a political precautionary principle being applied, just in case. The AHGA contends that any negative effect is likely to be minor and limited in time and scale, and that a reasonable compromise should be possible. As a Precautionary Approach, the current AHGA proposal is to put managed hives fitted with queen excluders into secure greenhouses, and not to release bumblebees into the environment. Honeybees, except in exceptional circumstances, clearly need to be allowed access to resources in State and public forests to enable the industry to remain viable and for essential crop pollination services to be maintained. Bumblebees are equally important to the expanding greenhouse tomato industry, and potentially to other crops.

Alternative pollinators In light of the possible demise of feral honeybees from threats such as Varroa and colony collapse disorder, alternative pollinators may be urgently required. Ann Dolin (Submission 9) greatly overstates the case that Australian native bees are capable of filling the gap. There have been notable successes, such as *Trigona carbonaria*, but the great majority of native bees are solitary and do not lend themselves to mass production and pollination on demand. Nor are most adapted to pollinating the European crop plants on which we depend. They cannot be relied on, and reliability is of the essence in modern crop production systems. Ms Dollin makes a case for native blue banded bees being a substitute for bumblebees in tomato production greenhouses, but the rhetoric does not match the reality resulting from two funded research projects targeting this issue to date. Mass production is nowhere in sight. The AHGA nevertheless supports research into mass production systems for those native pollinators that do show real promise. It would also like to see the door left open for the possible future importation of bumblebees, proven commercial pollinators, for field use. In Israel, bumblebees are used in irrigated crops where they do not naturally occur and could not and do not survive once the commercial hives are removed. A similar system could work very well in Australia. Unlike honeybees, feral *Bombus terrestris audax* would be very limited in its ability to survive most of the climate extremes in Australia, and may not survive the predation of ants and birds even in climatically suitable areas.

Biosecurity The AHGA strongly supports strengthening the under-resourced Australian Quarantine and Inspection Service and Biosecurity Australia to keep out feral animals, pests and diseases. This includes feral bumblebees from overseas. The AHGA wishes to bring in only certified disease-free, clean bumblebees in a managed hive system. It also would like to see a major expansion in pest and disease diagnostic facilities and expertise, to better detect and diagnose problems in not just honeybees but also in native bees and bumblebees. The demise of CSIRO's taxonomic expertise, which depends increasingly on the unpaid expertise of retirees, is a concern. Quarantine facilities also need to be expanded and given a more permanent home. Varroa mite is known to be a vector of several viruses that where present exacerbate its effects. It would be helpful to monitor for these viruses (and others) in Australia in advance of Varroa arriving here. We need to be proactive, not reactive.

Colony collapse disorder is a major concern in the US at the moment, and other countries report similar problems. Whether it might also be affecting other pollinators is apparently not known, because there are few funds available to study the issue outside of honeybees. While pests and diseases are rarely shared between honeybees, bumblebees and native bees, if the problem turns out to be general suppression of the immune system due to exposure to

pesticides, making the bees more susceptible to pests and diseases, then the outlook is bleak indeed. Australia needs to be part of this research effort and not sitting in wait for researchers in the US to come up with a cause. The impact of pesticides (particularly chronic effects) on natural enemies and pollinators is poorly studied. For all we know it may be a revisitation of Silent Spring. For example, there has been controversy for several years surrounding neonicotinoids and honeybees in France and Canada, still largely unresolved. These pesticides are known to be highly toxic to bees in very small amounts. Given the unknown cause of colony collapse disorder in the US, there is an urgent need to document any reports of honeybee (or native bee) disappearances or declines in Australia, and to investigate the circumstances and likely causes.

Professional training and development The AHGA believes industry training in modern beekeeping is vital to the professionalism and long-term future of the honeybee industry, and would like to see such training expanded to include alternative pollinators. The latter might also lend themselves to provision of pollination services and perhaps provide a buffer for honeybee producers in case of the demise or decline of the honeybee.

Graeme Smith, President, AHGA

18 June 2007