AHB TMG Minutes

Meeting Two of the Asian Honey Bee Transition Management Group (AHB TMG)

Teleconference held on Tuesday 20th December, 2011

Attendees: Colin Grant DAFF (Chair), Lois Ransom DAFF, Mikael Hirsch DAFF, Kareena Arthy DEEDI, Jim Thompson DEEDI, Neil O'Brien DEEDI, Rick Symons DEEDI , Lindsay Bourke AHBIC, Greg Fraser PHA, Rod Turner PHA, Sharyn Taylor PHA, Sam Malfroy PHA (Secretariat) and Jenna Taylor PHA.

Apologies: Nil

Item 1 – Welcome by the Chair

The Chair welcomed the Members of the Asian Honey Bee Transition Management Group (AHB TMG) to the teleconference.

The Chair reinforced the need for urgency in progressing objectives of the AHB T2M program and this was agreed by all Members.

Item 2 – Terms of Reference

Terms of Reference (ToR) for the AHB TMG as broadly outlined in the PHA management contract and "Plan for the Transition to Management of the Asian Honey Bees" were provided. The group felt a more formal set of ToR need to be developed and it was agreed these would be provided to Members for comment shortly after the meeting.

Item 3 – Governance Arrangements

Chair:
It was confirmed that DAFF would provide the Chair for the AHB TMG.

Membership:
Discussion was held regarding engagement of the Federal Council of Australian Apiarists Association (FCAAA) with activities of the AHB T2M program. PHA agreed to follow up with FCAAA to determine if they are satisfied with their current level of engagement.

Secretariat and Administration Support:
Members agreed that PHA would provide secretariat and administration support to the AHB TMG and the Scientific Advisory Group (SAG) to the Program.

Roles and Responsibilities:
PHA and DEEDI will continue to work together to finalise detail within the operational plans for each of the 6 Australian Government funded projects in the AHB T2M.

It was raised whether industry money provided for the AHB T2M program could be allocated toward the National Sentinel Hive Program. It was agreed that while industry funds can be used for optimising surveillance and detection techniques within specific projects in the AHB T2M, the National Sentinel Hive Program is a separate program considering options for national surveillance arrangements for exotic bee pests. Funds are being sought separately for this purpose. PHA agreed to consult with AHBIC and FCAAA out of session regarding the progress and future of the national sentinel hive program.

The Rural Industries Research and Development Corporation (RIRDC) are managing funds on behalf of FCAAA for the FCAAA component of the AHB T2M program and, as a result, PHA has been contacted by RIRDC regarding research proposals that could be of benefit to the AHB

T2M. The Chair stated industry can allocate their funding component as they see fit however, it was stressed that this should form part of an integrated plan with the other funding partners. It was agreed that PHA, FCAAA and AHBIC, with comment from DEEDI, will coordinate industry funds, in clear support of specific objectives outlined in the Industry Projects 1 and 2 in the AHB T2M. PHA agreed to contact AHBIC, FCAAA, RIRDC and DEEDI to initiate the process of reviewing the RIRDC research proposals.

Item 4 – Communication

A draft communication protocol was tabled. It was agreed that as PHA is an observer to the AHB TMG, it will refer all media enquiries on the AHB T2M to the DAFF Media Unit. The Chair stated that media enquiries on the AHB T2M will be managed by the DAFF Media Unit. It was considered appropriate that DEEDI would manage media enquiries regarding the operational components of the AHB T2M.

Communication for the SAG was discussed, and it is the expected that each Member of the SAG will direct any media enquiries to the Chair of the SAG for forwarding to the appropriate agency. Minutes for SAG meetings will be uploaded to the AHB T2M website following approval from the AHB TMG. The Chair reinforced that it is not the responsibility of individual SAG members to respond to media enquiries.

It was agreed that a Q & A document will be developed by PHA for the Program. Once endorsed by the AHB TMG, this document will be uploaded to the AHB T2M website.

Item 5 – Reporting

Update from the SAG Chair: Rod Turner

It was noted that the SAG had held one face to face meeting and one teleconference at which the AHB T2M projects and an upcoming field trip organised to Cairns on the 18th and 19th of January 2012 were discussed. It was noted that all Members of the SAG fund their own flights and accommodation for SAG meetings.

Update from DEEDI: Neil O'Brien

Neil O'Brien provided information on the status of the T2M program. It was noted that 526 swarms and nests had been detected since May 2007. Infestation is currently still within the containment zone and all detections currently being reported have arisen from public notifications.

Item 7 –Future Meetings

It was agreed that the AHB TMG would meet monthly via teleconference. PHA will send out proposed dates for the next six meetings (from January to June inclusive) for confirmation.

Item 8 – Close of Meeting

The Chair thanked the Members of the AHB TMG and closed the meeting.

AHB TMG Minutes

Meeting Three of the Asian Honey Bee Transition Management Group (AHB TMG)

Teleconference held on Tuesday 24th January, 2011

Attendees: Colin Grant DAFF (Chair), Lois Ransom DAFF, Glynn Maynard DAFF, Robyn Martin DAFF, Tegan Honing-Wassenburg DAFF, Kareena Arthy DEEDI, Jim Thompson DEEDI, Neil O'Brien DEEDI, Rick Symons DEEDI, Lindsay Bourke AHBIC, Stephen Ware AHBIC, Trevor Weatherhead AHBIC, Greg Fraser PHA, Rod Turner PHA, Sharyn Taylor PHA, Sam Malfroy PHA (Secretariat) and Jenna Taylor PHA.

Apologies: Nil

Item 1 – Welcome by the Chair

The Chair welcomed the Members of the Asian Honey Bee Transition Management Group (AHB TMG) to the teleconference. The Chair commended the members of the TMG, the SAG as well as PHA and DEEDI for the progress made within the program and on finalising action items in the last month.

Item 2 – Update on Secretariat Activities: PHA

The Members agreed that minutes of Meeting two provided an accurate record and are to be uploaded to the Website.

All Members agreed that the Terms of Reference should be placed on the website.

Item 3 – Update on Project Activities: PHA

PHA advise that it has worked with DEEDI to finalise contracts for the 6 Australian Government (AG) Projects. Contracts have been put in place for 2 years, with payment in the second year contingent on satisfactory progress in completion of activities in the first year. The first payment had been made according to the contracts, and this payment had been received by Queensland. All Members agreed that the contract process had proceeded well.

DEEDI stated that (as listed in the contract) a progress report will be provided to PHA on the 1 February 2012. This report that will outline all activities that have been completed in accordance with the AHB T2M program and will be provided to the AHB TMG for comment to allow delivery and outcomes of the objectives of the AHB T2M program to be assessed.

Item 4 – Corporate Governance

Industry raised the issue of Corporate Governance in particular the implementation of *Section 5* of the Transition to Management Plan and with particular reference to *Section 5.2.*

Industry noted that under the terms of the agreement the Management Group consisting of senior representatives of each of the funding bodies was to oversee program establishment, monitor its delivery and consider any triggers arising that would necessitate a review of the program.

Further under *Section 5.2 iv* a series of indicators had been identified that highlighted when the program was at risk including: *Section iv Significant deviation from agreed budget including over-expenditure or savings against any program component or activity area.*

Industry indicated that operational and financial information being provided did not allow them to make it a judgemental decision on whether or not progress was being made in accordance with the overall Transition to Management Plan.

Mr Colin Grant responded that the contracts required Biosecurity Queensland to manage operational and financial progress. The contracts between the Queensland and Commonwealth Government were confidential and would remain so.

It was further noted that this matter should be minuted so that Industry representatives were clearly aware of their corporate responsibility and accountability to the Transition to Management Plan.

Item 5 – Update on the SAG: Rod Turner (Chair of the SAG)

The Chair of the SAG provided an update regarding activities of the SAG including their 2-day visit to Cairns on the 18th and 19th of January. Major points that were noted included:

- a field trip throughout the Cairns region to assess the urban and natural environments in which AHB is present
- control and surveillance activities being undertaken
- a debrief from DEEDI staff working on the T2M program on operational activities and data collection
- a formal meeting of the SAG at the Cairns DEEDI office. From this meeting, the SAG provided seven recommendations to the TMG.

The seven recommendations arising from the SAG were outlined and discussed. Recommendations were;

> **SAG Recommendation 1:** To contact RIRDC to put out a tender for research proposals that are specific to *Apis cerana* java strain and the objectives of the AHB T2M program. These research proposals are to be funded from the industry provision of $400,000 and the SAG is to provide scientific advice and feedback on the research proposals received.

The TMG agreed with this recommendation and that PHA will meet with RIRDC to implement this process.

> **SAG Recommendation 2:** To document and video the DEEDI staff expertise in bee lining, floral sweep netting, monitoring bait stations and traps, bee eater roosts etc. so that the techniques and expertise can benefit any future incursions or detections.

The TMG agreed with this recommendation and DEEDI stated that they have started documenting their techniques and processes. DEEDI will consider the possibility of recording these techniques on videos.

> **SAG Recommendation 3:** That a rigorous and extensive scientific study be conducted on the usefulness and practicality of Fipronil in remote poisoning of Asian honey bee in the Cairns region.

The TMG agreed with this proposal and DEEDI stated that all possible information relating to this trial will be forwarded to the SAG for scientific feedback and advice. The Chair requested that the Chair of SAG follow this up with DEEDI.

> **SAG Recommendation 4:** To undertake pollen analysis on the stored comb of previous nest detections which are freeze stored by DEEDI. This activity will enable

assessment of what the bee is feeding on at specific times of the year. The SAG recommended that this become a component of AG Project 4 and to drop the nectar analysis as listed in AG Project 2, which would not provide as many answers as a pollen analysis.

The TMG agreed with conducting pollen analysis of stored comb instead of nectar analysis as listed in AG Project 2. It was requested that PHA and the SAG follow up on who could be appropriate to conduct this experiment.

SAG Recommendation 5: To drop the tomato dust experiment as listed in AG Project 2 and focus all efforts on remote poisoning experiments using Fipronil.

The TMG agreed to drop tomato dust from AG Project 2.

SAG Recommendation 6: To develop appropriate scientific methodology for floral sweep netting in the outer areas of the containment area in Cairns to gain greater confidence of absence or presence of the Asian honey bee.

The TMG agreed with implementing this improved surveillance method and DEEDI agreed to follow up with the SAG in regards to how to design and implement such a floral sweep netting program.

SAG Recommendation 7: For the AHB T2M program to undertake preliminary micro-satellite work to determine if differences can be observed between the Australian, Solomon Islands and Papua New Guinean populations of *Apis cerana* Java strain. This information could be critical in determining if a new incursion is detected, or is in fact from the Australian population.

The TMG agreed with this proposal and DEEDI stated that this activity is already underway within the program.

Item 6 – Update from DEEDI: Neil O'Brien

Neil O'Brien provided an update to the SAG on project activities during the Cairns meeting and advised the Members that a full written report, as stated in the contracts, would be provided by the 1 February 2012 outlining the work that has currently been conducted in alignment with the objectives of the AHB T2M plan.

Item 7 – Future Meetings

The Chair outlined the list of future meetings (February – June 2012) that were listed in the agenda and stated that it is the objective to hold a monthly meeting until June 2012. The Members agreed that meeting times may be able to be reduced to thirty minutes.

Item 8 – Summary and Close of Meeting

The Chair again thanked all Members for their hard work in progressing the AHB T2M program and closed the meeting.

AHB TMG Minutes

Meeting Four of the Asian Honey Bee Transition Management Group (AHB TMG)

Teleconference held on Wednesday 29th February, 2012

Attendees: Colin Grant DAFF (Chair), Glynn Maynard DAFF, Tegan Honing-Wassenburg DAFF, Neil O'Brien DEEDI, Rick Symons DEEDI, Stephen Ware AHBIC, Trevor Weatherhead AHBIC, Greg Fraser PHA, Rod Turner PHA, Sharyn Taylor PHA, Sam Malfroy PHA (Secretariat) and Amy Forbes PHA.

Apologies: Lois Ransom DAFF, Kareena Arthy DEEDI, Lindsay Bourke AHBIC and Jenna Taylor PHA.

Item 1 – Welcome by the Chair

The Chair welcomed the Members of the Asian Honey Bee Transition Management Group (AHB TMG) to the teleconference.

Item 2 – Action items from previous meeting

The action items from Meeting 3 were tabled and discussed. The TMG members stated that all of the action items from the previous meeting had been initiated and were progressing well. The Chair commended the TMG on their role in progressing the AHB T2M.

Item 3 – Update on Project Activities: PHA

Plant Health Australia (PHA) provided an update to the Members of the TMG on the Asian honey bee website. It was discussed that PHA had uploaded AHB documents to the website, minutes from previous AHB SAG and AHB TMG meetings as well as information regarding the TMG and SAG which were all available to be accessed by the general public and industry.

PHA also stated that the minutes from Meeting 3 of the TMG and minutes from Meeting 3 and 4 of the SAG had been distributed to members of the TMG for approval and placement on the Asian honey bee website. The Members of the TMG endorsed the draft minutes that were distributed and the Chair acknowledged that these minutes were ready for placement on the Asian honey bee website.

Item 4 – Update on the SAG: Rod Turner (Chair of the SAG)

The Chair of the SAG provided an update to the TMG regarding the recent teleconference the SAG held on the 15th of February.

The Chair of the SAG outlined the 9 Recommendations to the TMG that were provided by the SAG at this meeting. These included:

> **Recommendation 1:** The SAG agreed with the Asian honey bee odour detection dog review conducted by DEEDI and recommended that the dog no longer be used within the AHB T2M program.
>
> **Recommendation 2:** That the draft pathway analysis document prepared by DAFF in 2008 be updated to include a domestic pathway analysis, and a specific section relating to pathway analysis of the current AHB incursion, as well as the potential introduction of other pest *Apis* spp..

Recommendation 3: The SAG recommends that the nectar analysis outlined in AG Project 2 be dropped from the AHB T2M program.

Recommendation 4: That the dropped nectar analysis be replaced by the pollen analysis that is currently being conducted in a joint external project between UNE and CSIRO which will identify pollen resources used by AHB nests collected in areas with different plant communities.

Recommendation 5: For PHA to follow up with RIRDC in regards to the approved 'call for research proposals' and for these to be distributed to relevant researchers in a timely manner.

Recommendation 6: For the SAG to be allowed to comment on the research proposals received by RIRDC.

Recommendation 7: For the SAG to be directly involved in re-designing the Fipronil remote poisoning experiment based on the DEEDI document, including the testing of variables such as concentration of Fipronil, how many foragers are present on the bait station and distance to the hive etc.

Recommendation 8: For DEEDI to conduct experiments on minimising the impact of Fipronil remote poisoning on non-target organisms with direct scientific input from the SAG.

Recommendation 9: For the beginning of the Fipronil experimental document to be rewritten to include how and where Fipronil is used to provide context of how widely used this chemical is in order to provide information for the general public and stakeholders.

All Members of the TMG acknowledged these recommendations; however, the Chair stated that the role of the SAG is to provide specific technical and scientific information, not to be approving any changes to the AHB T2M. The Chair of the SAG acknowledged this, but added that these were recommendations by the SAG for consideration by the TMG and that they were based on scientific and technical aspects of the AHB T2M. The Members and Chair of the TMG accepted these recommendations and it was agreed that they were to be followed up out of sessions by the relevant parties.

DEEDI stated that the SAG had provided valuable input in the experimental design of the Fipronil trial, however questioned the level of input that the SAG could provide on specific details of the experiment and operational activities. The Chair stated that it is not appropriate for the SAG to be commenting on specific details regarding operational activities of DEEDI staff in Cairns, and that the SAG should focus on providing advice on the overarching scientific principals and experimental design of the trial.

Item 5 – Discussion: Sharepoint

PHA provided an update on the setup of Sharepoint for the Members of the TMG. It was discussed that documents for comment by the TMG, such as draft minutes from meetings would continue to be coordinated through email with the secretariat. PHA explained that all Members of the TMG would gain read only access to the Sharepoint site, and that this would contain all documents relevant to each meeting such as agenda's and attachments, as well as finalised minutes and action item lists from each meeting.

Item 6 – Update from DEEDI: Neil O'Brien

DEEDI stated that 29 nests so far this year had been detected in the Cairns area and that nests were still being destroyed at the edge of infestation area, while detections of AHB foragers were not being followed up in the KIA, in accordance with the AHB T2M.

One nest had been detected within the National Park at Lake Barrine. DEEDI informed the TMG that discussions had been held with Department of Environment and Resource Management (DERM) about whether this nest could form part of the Fipronil remote poisoning experiment. DERM gave permission for the AHB nest to be destroyed using localised insect spray, however, objected to the use of Fipronil in remote poisoning. It was stated that these discussions with DERM are ongoing.

It was discussed that the Fipronil trials had begun, and that it is about a week process to identify, beeline, train onto a feeding station, record forager activity and ultimately destroy an AHB nest. So far, one nest had been destroyed in the Fipronil remote poisoning experiment, and DEEDI stated that more would follow in the coming weeks, depending on weather conditions.

A question was asked about whether DEEDI would still appreciate the beekeeping industry sending up volunteers to assist in the AHB T2M, specifically the Fipronil trials. DEEDI stated that they would be happy to receive industry volunteers and that this would greatly aid in the advancement of the T2M.

It was also stated that interviews would start shortly for the mapping and information position, as well as the junior and senior scientist, as well as the senior community engagement officer shortly.

Item 7 – Future Meetings

The Chair outlined that these meetings would be hard to complete in the thirty minute timeframe that was proposed at Meeting 3 of the TMG, and instead the Chair proposed that the next meeting which is scheduled for the 27th of March be conducted for 1 hour. All members of the TMG agreed with this proposal.

Item 8 – Summary and Close of Meeting

The Chair thanked all Members of the TMG for their hard work in continuing to progress the AHB T2M program and closed the meeting.

AHB TMG - Minutes

Meeting Five of the Asian Honey Bee Transition Management Group (AHB TMG)

Teleconference held on Tuesday 27th March, 2012

Attendees: Colin Grant DAFF (Chair), Glynn Maynard DAFF, Robyn Martin DAFF, Leanne Herrick DAFF, Neil O'Brien DEEDI, Rick Symons DEEDI, Lindsay Bourke AHBIC, Trevor Weatherhead AHBIC, Greg Fraser PHA, Rod Turner PHA, Sharyn Taylor PHA, Sam Malfroy PHA (Secretariat), Sophie Peterson PHA and Jenna Taylor PHA.

Apologies: Lois Ransom DAFF, Kareena Arthy DEEDI and Stephen Ware AHBIC

Item 1 – Welcome by the Chair

The Chair welcomed the Members of the Asian Honey Bee Transition Management Group (AHB TMG) to the teleconference.

Item 2 – Approval of Minutes from previous meeting

The minutes from Meeting 4 were tabled and changes were recommended by the Members before placement on the website. These included:

- That the issues surrounding an AHB nest in a National Park in the Cairns region were discussed in relation to the remote poisoning experiment. It was stated that the Department of Environment and Resource Management (DERM) in Queensland had refused Fipronil be used to destroy the nest, and preferred the conventional method of localised insect spray to destroy the AHB nest.
- To clarify the SAG recommendations 3 and 4. Members stated that these recommendations should state that a pollen analysis is to replace the nectar analysis in AG Project 2 and that this pollen analysis is be completed by the external research project conducted by UNE and CSIRO. This has already commenced with assistance from BQ.
- That the issue of volunteer beekeepers was raised in relation to assisting in the remote poisoning trials and that BQ had stated their willingness to continue to accept beekeeping industry volunteers to help in the AHB T2M.

PHA agreed to make these amendments out of session and place the minutes from Meeting 4 on the website shortly after the meeting.

Item 3 – Action items from previous meeting

The Action Items from Meeting 4 were tabled and discussed amongst the Members.

- BQ stated that the odour detection dog program had ceased following the BQ review and the advice received from the SAG.
- PHA stated that they are still looking at avenues for an expanded pathway analysis, which includes the feedback from the SAG, to be conducted.
- BQ confirmed that the nectar analysis project listed in AG project 2 has been dropped and replaced with the pollen analysis conducted by the joint UNE and CSIRO external project.
- PHA stated that the call for research proposals was well underway and that this would be addressed in the update from the SAG.
- Both BQ and PHA confirmed that a revised methodology for the remote poisoning trials of AHB nests had been provided by the SAG.
- PHA stated a sharepoint site had been established and that this would be covered in the update of project activities from PHA.

The Chair and Members agreed that all action items have either been completed or are well underway.

Item 4 – Update on Project Activities: PHA

Plant Health Australia (PHA) provided an update to the Members of the TMG on the development of the Sharepoint site for Members of the TMG and the SAG. An explanation was provided on how the sharepoint site would work, what documents would be uploaded and how the site would be used over the course of the AHB T2M. PHA stated that they would send out user specific usernames and passwords, as well as instructions to each Member of the SAG and the TMG in the coming days to explain this process.

Item 5 – Update on the SAG: Rod Turner (Chair of the SAG)

The Chair of the SAG stated that research proposals had been received by RIRDC on the four main areas of research that is to be conducted with the industry money. The Chair outlined that the four areas of research included:

- The development of an attractant specific to *Apis cerana* Java strain for the use in bait stations
- Determining the disease status of *Apis cerana* Java strain in the Cairns region
- The inter-specific mating potential between *Apis cerana* Java strain and *Apis mellifera*
- Developing a strategy to address concerns of countries that import Australian honeybees

It was stated that all of these proposals were considered at the recent RIRDC meetings in Melbourne of the Pollination Committee and the Honey Bee Advisory Committee. PHA stated that they have now received the research proposals and the feedback from the joint RIRDC meeting and that a teleconference would be held next week for SAG consideration of the research proposals. Once this is finalised, and agreement is made, full research proposals can be requested.

The Chair stated that PHA seemed to be handling this situation well and requested that once these projects linked to the AHB T2M are finalised, that information about the research and who is conducting them be placed on the website.

Item 6 – Update from DEEDI: Neil O'Brien

Neil O'Brien gave an update on AHB activities in Queensland. This report is attached as attachment A.

Item 7 – Future Meetings

The Chair stated that the next meeting was scheduled for the 10th of April. Members discussed that this was a short turnaround between meetings and requested that the next TMG meeting be delayed until the meeting scheduled on May 15th. PHA stated that issues relating to the SAG research proposals and other aspects of the T2M program needed to be discussed and approved by the TMG at the next meeting. It was proposed that these changes could be delivered out of session. The Chair and Members all agreed with this proposal.

Item 8 – Summary and Close of Meeting

The Chair thanked the Members of the AHB TMG for their participation in the teleconference and closed the meeting.

Attachment A

Asian honey bee Transition to Management Program

Biosecurity Queensland, Department of Agriculture, Fisheries and Forestry – Queensland

Progress Summary

Prepared for Transition to Management Group meeting Tuesday 27 March 2012

Highlights

- **Operations -** Maintaining operational delivery, despite ongoing wet weather. Operational focus is: responding to public reports of swarms and nests, destroying all infestation, conducting surveillance around edge of known infested area.
- **Public reports -** continued high number of public reports - 266 public reports received in 2012. 46 resulted in the detection of an AHB nest or swarm. So far in 2012, 17% of all public reports have resulted in the detection of an AHB nest or swarm
- **Detections -** 46 detections of AHB nests and swarms to date for 2012. Since May 2007, a total 579 detections of AHB nests and swarms have been detected and destroyed.
- **Remote nest treatment -** progressing well. Trials on 7 nests. One destruction with 973 bees, 2 abandoned due to green ant attacks, 4 under ongoing monitoring as first treatment did not destroy. Trials are very labour intensive - total 260 hours in one month. Improved engagement with environmental agencies has increased their level of understanding the T2M Program and the remote nest treatment trials. Prepared an update report for SAG. Fact sheet prepared. Some media interest about the trials. Summary of trials has been placed on PHA website.
- **Community engagement –** increased engagement with environmental groups, indigenous groups, industry, pest controllers and transport industries.
- **Bee industry engagement -** the focus of bee industry engagement has been about their observed impacts of AHB on A. Mellifera, involvement in remote nest treatment trials, Restricted Area strategy, nest/swarm destruction when AHB program staff cannot attend, attending bee conference, and use of volunteers over winter.
- **Local DAFF engagement –** the focus has been on integrated operations, bee free zones/bee suppression zones, laboratory strategy, sweep netting process.
- **Strategies being documented –** movement of hives within and outside the Restricted Area, Restricted Area maintenance/timeframe and associated impacts on overseas trade, staged transition process with key deliverables.
- **Staffing** – 11.5 full time equivalent staff. Staff attrition and long term leave is delaying delivery of some projects. New recruitment processes underway for additional staff.
- **Finances –** staff attrition and delays in recruitment may result in a small surplus for end of June 2012.

AG1 – Limiting impact on Urban Communities

AG1 A.(i) (iii)
- ✓ New website update approved and in process of being implemented

AG1 A.(ii)
- ✓ Social media postings prepared for Toad Day out and planned for FNQ Pest Advisory Forum.
- ✓ An event calendar has been created to arrange regular social media postings and align with events in the AHB T2M program

AG1 C. ✓ Web Customer Journeys being developed

AG1 D.(i) ✓ Transition Phase strategy and Document developed and in process of being communicated/ placed on internet
✓ New AHB T2M Brochure approved and in process of being printed
✓ Remote Treatment Fact Sheet explaining Fipronil use developed and in use.
✓ Training packages for rangers, controllers and apiarists developed.

AG2 – Developing and making available a suite of control measures for AHB

AG2 A. ✓ Literature review to better understand AHB almost completed.

AG2 B. ✓ Meetings with local bee keeper organisations continue.
✓ AHB T2M Bee Industry Liaison committee formed and teleconference held.

AG2 B.(i) ✓ Detection and destruction strategies have been documented
✓ Validation of rates of effort for all detection and destruction methods impacted by the Remote Treatment trials.
✓ Videoing of detection and destruction methods is underway.

AG2 B.(iii) ✓ Bait station use and design documented
✓ Validation of effectiveness impacted by the Remote Treatment trials.

AG2 C.(i) ✓ Remote Treatment trials in progress (See summary document)

AG3 – Limiting impact on honey production

AG3 A(iii) ✓ Attended February meetings in Cairns & Townsville
✓ Attended and conducted a swarm treatment and collection session.
✓ Cairns Beekeepers have established a local AHB T2M Liaison committee that we are meeting with.
✓ Discussions held with industry re use of industry volunteers over winter

AG3 D. ✓ Met with a number of stakeholders (apiarist, Biosecurity DAFF, DERM, Wet Tropics Management Authority & Indigenous rangers to discuss technologies to assist with the mitigation of AHB impacts.

AG3. D.(i) ✓ Commenced collection of PCR samples for trials
✓ Collecting bee samples for bee disease research by Denis Anderson

AG3 E. ✓ Meeting with apiarist locally and at state level discussed adoption and implementation of management strategies.
✓ Planning to attend NSW & Qld bee conferences

AG4 – Limiting impact on natural environment

AG4 A. ✓ Continue to meet with indigenous groups and rangers (DERM rangers Mossman, Yarrabah, Jabalani Yabinji Aboriginal Corporation
✓ Training delivered to Yarrabah rangers on bee identification, destruction and beelining
✓ Meetings held with Department of Environment and Heritage and WTMA regarding AHB T2M Plan and role environment organisations can play. These meetings will continue.
✓ Collecting pollen from AHB nests to assist with UNE/CSIRO pollen analysis research

AG5 – Optimising early detection of new incursion of AHB

AG 5 B.(i) ✓ Surveillance strategies and techniques documented

AG5 B.(ii) ✓ Validation of surveillance techniques impacted by the Remote Treatment trials.
✓ Discussions regarding Surveillance strategies around Cairns Air and Sea ports have progressed with general agreement between QLD Biosecurity and DAFF Biosecurity. AHB Suppression Zone now being considered for the Cairns Seaport and strategies and procedures are being fleshed out

AG5 C. ✓ Laboratory analysis of AHB detections within AHB Suppression Zones discussed and being progressed.

AG5 D.
- ✓ QLD Biosecurity and DAFF Biosecurity have reached general agreement regarding an integrated surveillance strategy and are currently fleshing this out.

AG6 – Critical intervention to limit long distance spread

AG6 A.
- ✓ Existing movement controls continue
- ✓ Strategies regarding the Restricted Area are being discussed with industry. Have identified that the trade implications have to be discussed with DAFF Biosecurity.

AG6 B.
- ✓ Pathway analysis and strategy is ongoing

AG6 C.
- ✓ Operations to minimise spread through pathways continue
- ✓ Strategy to minimise spread through pathways is being documented.

AG6 D.
- ✓ Meetings with transport business and workers continue
- ✓ Met with TWU organiser, addressed Queensland Council of Unions monthly meeting, article in union journal resulted.

QG1 – Protecting Queensland's social amenity and public assets

QG1 A.(i)
- ✓ Operations to contain, suppress and destroy AHB continue

QG1 A.(ii)
- ✓ Strategy to cease government intervention developed and being documented.

QG1 B,
- ✓ Surveillance strategy to determine extent of infested area developed and being developed.

QG2 – Improving operational efficiency and effectiveness

QG2 B.
- ✓ Detection and destruction strategies have been documented
- ✓ Professional videoing of techniques are currently underway
- ✓ Bait station use and design documented
- ✓ Validation of rates of effort for all detection and destruction methods impacted by the Remote Treatment trials.
- ✓ Validation of effectiveness impacted by the Remote Treatment trials.

QG2 C.
- ✓ Spatial analysis has commenced with identification and verification of data. Discussions have commenced regarding the process to use.

QG2 D.
- ✓ Spread analysis has commenced with identification and verification of data. Discussions have commenced regarding the process to use.

QG2 E.
- ✓ Technical analysis of nests and honeycomb continue where possible

AHB TMG – Minutes

Meeting Six of the Asian Honey Bee Transition Management Group (AHB TMG)

Teleconference held on Tuesday 15th May, 2012

Attendees: Colin Grant DAFF (Chair), Lois Ransom DAFF, Glynn Maynard DAFF, Leanne Herrick DAFF, Neil O'Brien DAFF Queensland, Rick Symons DAFF Queensland, Lindsay Bourke AHBIC, Trevor Weatherhead AHBIC, Stephen Ware AHBIC, Rod Turner PHA, Sam Malfroy PHA (Secretariat) Greg Fraser PHA, Jenna Taylor PHA and Alison Cleary PHA.

Apologies: Kareena Arthy DAFF Queensland

Item 1 – Welcome by the Chair

The Chair welcomed the Members of the Asian Honey Bee Transition Management Group (AHB TMG) to the teleconference.

Item 2 – Approval of Minutes from previous meeting

The minutes from Meeting 5 were tabled and discussed. The TMG agreed that the minutes provided an accurate summary of the meeting and were ready to be placed on the AHB website by PHA.

Item 3 – Action items from previous meeting

The action items from Meeting 5 were tabled and discussed. The TMG stated that all of the action items from the previous meeting had been initiated and were progressing well.

Item 4 – Update on Project Activities: PHA

PHA provided an update on management aspects of the program as well as documents that had recently been uploaded to the AHB TMG Sharepoint portal.

Item 5 – Update on the SAG: Rod Turner (Chair of the SAG)

The Chair of the AHB Scientific Advisory Group (AHB SAG) provided a summary of the research proposals that were submitted through RIRDC. This summary is attached as Attachment A.

It was raised by the Chair of the SAG that some projects would go beyond the end date of the AHB T2M, which is June 2013. The Chair of the TMG stated that as long as the Honey Bee industry contribution is allocated to projects in accordance to the AHB T2M, then the research projects are not restricted by the June 2013 timeline. The TMG agreed with this motion and stated that all of the projects listed will benefit the AHB T2M and supported the Honey Bee industry money to be spent on these research projects.

Item 6 – Discussion on letter received to the AHB TMG from the Cairns District Beekeepers Association

The Chair of the TMG tabled a letter from the President of the Cairns District Beekeepers Association. The letter requested that the TMG consider funding the development and implementation of an accredited 2-day workshop for beekeepers to deal with an established Asian honey bee (AHB) population. The TMG supported the concept of developing an accredited training course for beekeepers to deal with AHB, specifically focusing on AHB biology and behaviour, training beekeepers to look for exotic mites such as Varroa as well as how to report exotic pest detections.

It was raised that the remaining money from the honey bee industry could be used to help deliver this outcome as this would directly link to the transition to management of AHB for beekeepers and the honey bee industry. PHA agreed to talk out of session with AHBIC and BQ about how a training workshop such as this could be developed and delivered to beekeepers in the Cairns region.

Item 7 – Discussion on media article published on the 15th of May regarding a 'suspect' AHB attack in Townsville

The Chair of the TMG tabled a recent media report of a suspect AHB attack on a young man in Townsville and asked Biosecurity Queensland for an update on the situation.

Biosecurity Queensland stated:

- The media report was that a teenager had been stung 100 times by bees in Townsville
- That a Townsville beekeeper had called the Biosecurity Queensland Call Centre on Monday 14th of May 2012 suggesting that the bees 'sounded' like the behaviour of AHB
- The beekeeper and a Senior Biosecurity Inspector from Townsville visited the area where the teenager was stung and conducted surveillance - they were unable to find the exact location where the teenager was stung. They observed no bees in the general locality.
- At this stage, there was no information to suspect that the bees are AHB.
- The location is approximately 10kms from the Townsville Port. After the Townsville pre border detection of AHB, surveillance was conducted in the general area of this location with no bees detected.

The TMG requested that Biosecurity Queensland provide an update to each Member of the TMG once the honey bee colony is found and identified. (**Please note:** on the 19th of May the honey bee colony was discovered which attacked the teenager and they were identified as the European honey bee (*Apis mellifera*) by Biosecurity Queensland)

Item 8 – Update from DEEDI: Neil O'Brien

Neil O'Brien provided an update on AHB activities in Queensland. This report is attached as attachment B.

Item 9 – Future Meetings

The Chair stated that the next meeting was scheduled for the 27th of June. However, due to the programs operating well it was agreed that after the June meeting, then the AHB TMG meetings should only be held every two months, until the final three months of the AHB T2M in which meetings should be held every month. The TMG agreed with this proposal for future meetings of the AHB TMG. PHA stated that they will continue to be the agency to contact during out of session for any emergencies or any information relating to the AHB T2M.

Item 10 – Summary and Close of Meeting

The Chair thanked the Members of the AHB TMG for their participation in the teleconference and closed the meeting.

Attachment A

Asian Honey Bee Scientific Advisory Group Summary – Rod Turner

AHB TMG Meeting, 15th of May, 2012

Organisation – The University of Newcastle
Principal Researcher – David Guez
Project Title – Develop an attractant specific to *A. cerana* Java strain

Project Summary – This project will determine whether or not it is possible to improve the spontaneous visit rate of feeding stations by giving them flower like characteristics and to use this new feeding system to attempt exclusion of *Apis mellifera* and native bees. The researchers will determine if the use of odorants from Lychee, Mad hatter and Coral Vine can improve spontaneous visitation and recruitment to the bait station. The researchers will also determine the attractiveness of Cymbidium species and to see whether the chemical composition of the semio-chemical produced exclusively attracts *Apis cerana*.

Organisation – The University of Sydney
Principal Researcher – Ben Oldroyd
Project Title – Inter-specific matings between *A. cerana* and *A. mellifera*?

Project Summary: This project will quantify the threats to the Australian honey bee industry associated with interspecific matings by the following experiments: 1) In Cairns, the researchers will perform reciprocal artificial inseminations of *A. cerana* and *A. mellifera*. The researchers will study the eggs of the queens to determine if there is embryogenesis. The researchers will allow some brood to emerge in an incubator to quantify the proportion of offspring that are haploid males, inviable hybrids and thelytokous females. The researchers will use microsatellites to confirm the maternity and (lack of) paternity in the offspring. 2) In the Solomon Islands where there are extremely dense populations of the Java strain of *A. cerana*, the researchers will determine the drone flight time of the males of both species to see if there is overlap. If logistically feasible, the researchers will determine the location of DCAs of *A. mellifera* and *A cerana*. Finally, the researchers will examine the offspring of *A. mellifera* queens that we allow to naturally mate with *A. cerana* males.

Organisation – AgEconPlus Pty Ltd
Principal Researcher – Michael Clarke
Project Title – A strategy to address concerns of countries that import Australian honeybees

Project Summary: This study will need to collate and confirm available information on USDA concerns and the concerns of other importing nations; work with a parallel study to understand the pest and disease status of the Asian bee and the implications of *Apis cerana* and *Apis mellifera* interactions; work with the scientific community to understand the range of possible risk treatment options for exports; consult with industry to understand the costs and benefits of implementing options; develop a draft risk strategy that includes consultation results and have this strategy refined following feedback from the Australian industry and key importing countries.

Organisation – CSIRO
Principal Researcher – John Roberts
Project Title – Establishing the disease status of *A. cerana* Java strain in the Cairns region

Project Summary – The objectives for this study are to establish the disease status of the Asian honeybee and the European honeybee in the Cairns region. With this information the researchers will aim to identify the possible transferability of pathogens from the Asian honeybee to the European honeybee in the Cairns region. Identification of honeybee pathogens will involve a two-pronged approach. One approach (1) will engage metagenomic sequencing while the other approach (2) will use standard laboratory procedures as described by Anderson (1990, J. Apic. Res. Vol 29: 53-59) and Chen (2004, J. Inv. Path. Vol 87: 84-93). Metagenomic sequencing of DNA and RNA from pooled samples of *A. cerana and A. mellifera* will be performed at the Biomedical Research Facility based at the Australian National University. Genomic sequence data will be analysed and compared with public sequence databases to assemble partial genomes and identify known and unknown pathogens. The second approach will use bioassays involving the injection of honeybee extracts into pupae and adults of both *A. cerana* and *A. mellifera* to propagate viruses. PCR and serology techniques will be used to identify known viruses. Injected bees that show signs of disease, but are negative in PCR and serology tests, will be further tested to isolate novel pathogens.

Organisation: CSIRO
Principal Researcher – Simon Barry
Project Title – Risk assessment of ports for bee pests and pest bees

Project Summary – This project will estimate the relative likelihood of establishment of pest bees and/or bee pests at Australian ports based on the best available information. The researchers will do this by combining likelihood of entry with likelihood of establishment. To estimate likelihood of entry, the researchers will analyse shipping records and combine this with available interception data. The researchers will develop a species distribution model for A*. mellifera* and *A. cerana* to underpin estimates of likelihood of establishment across Australia's ports. This project directly links with other research conducted on this topic, including the recently completed ABARES report 'A benefit-cost framework for responding to an incursion of Varroa destructor'.

Asian honey bee Transition to Management Program

Biosecurity Queensland, Department of Agriculture, Fisheries & Forestry

Attachment B: Progress Summary

Prepared for Transition to Management Group meeting on 15 May 2012

Highlights

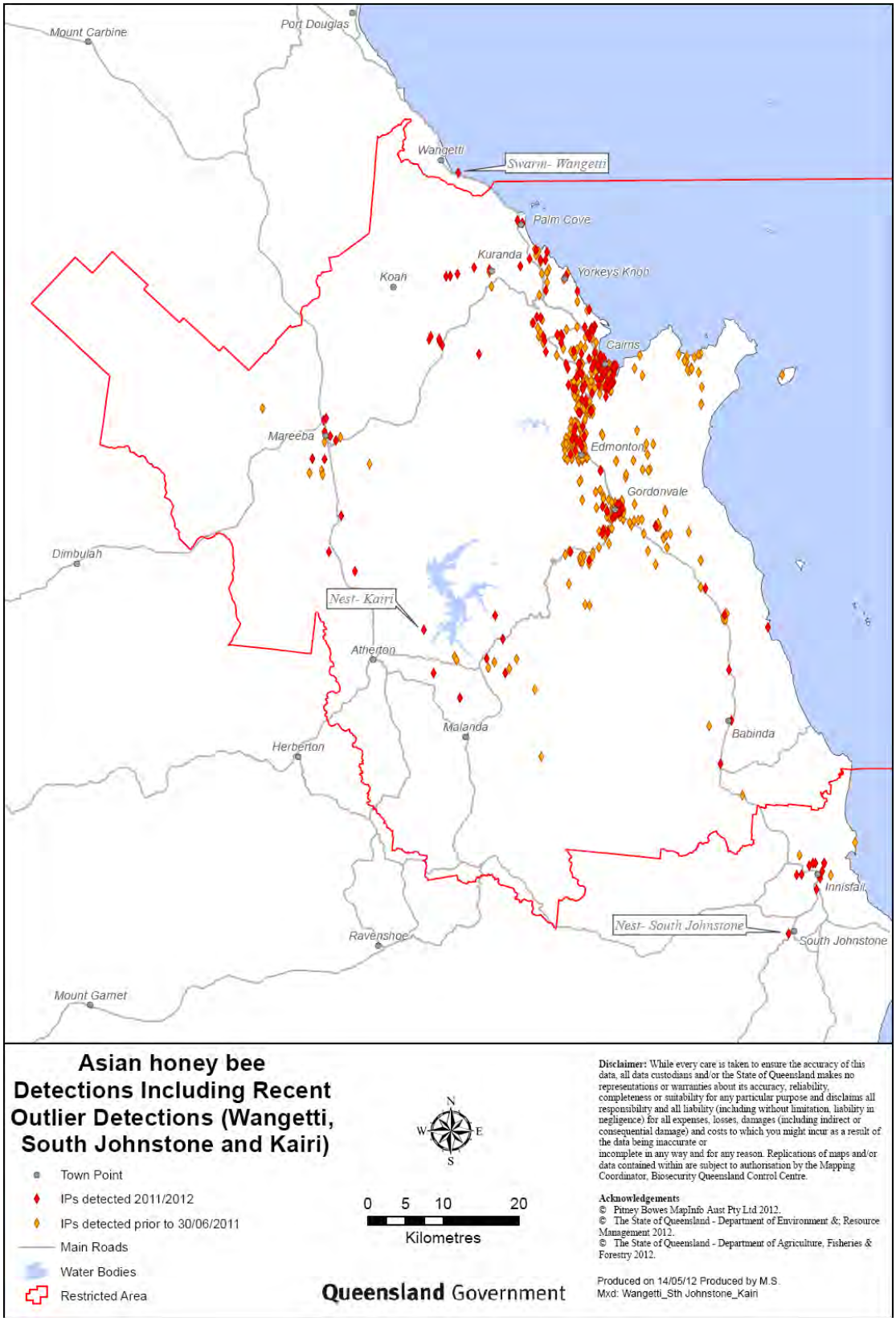
- **Operations** – Ongoing wet weather through April affected operational delivery. Operational focus continues to be: responding to public reports of swarms and nests, destroying all infestations, and conducting surveillance around edge of known infested area. Infestation has been suppressed and contained close to known areas of infestation around Cairns, the northern beaches of Cairns, west to the Atherton Tablelands and around Innisfail.
- **Public reports -** continued high number of public reports, though slightly impacted by wet weather – 323 public reports received in 2012. In 2012, nearly 18% of public reports result in AHB detection. A community engagement strategy is being developed to encourage increased levels of public reporting.
- **Detections -** 58 detections of AHB nests and swarms to date for 2012. Since May 2007, a total of 602 AHB nests and swarms have been detected and destroyed. Three significant detections in April and early May (See Map, Attachment A.).
  - Wangetti Beach (2km outside restricted area) - in week ending 23 April, the AHB team received a public report of a swarm about 2km from the Restricted Area (RA) between Ellis Beach and Wangetti Beach (north of Palm Cove). The swarm was hit by a motorist and the motorist reported it about a week later (and provided a sample). Surveillance to date has detected no foragers or nest.
  - South Johnstone (Approximately 17 kms south of the restricted area) - on 10 May, a member of the public reported an AHB nest under a house in South Johnstone - near the sugar mill. This is approximately 6kms south of the previously most southern AHB detection at Innisfail. The landowner had killed the nest 3 days earlier and notified AHB staff when they were conducting targeted floral sweeping in the area. A sample of the dead bees has been positively identified as AHB. Of interest is that the landowner easily killed the nest. We will be working with the landowner to develop some good messages/tools for the public to use to manage AHB infestation (once the program stops responding to detections under the T2M Plan). On 11 May, AHB staff conducting targeted floral sweeping detected foraging AHB 5km south-west of the South Johnstone detection. Surveillance is continuing.
  - Kairi ('in fill' infestation within restricted area) - on 11 May, a member of the public reported suspect AHB foragers within the restricted area on the Atherton Tablelands near Kairi (west of Lake Tinaroo) – the field staff then almost immediately detected the nest. This nest is 5kms north-west of the nearest known detection at Yungaburra and 12 kms south-east of a detection in Tolga. It represents a 'fill in' in the known infested area.
- **Spread mapping –** Attachment B is a spatial representation of AHB spread every six months since May 2007. The map appears to suggest a slowing of spread since December 2010, however it is possibly the result of reduced operational activity (this is being further analysed). In early 2011, reduced staffing levels resulted in operations shifting from eradication to management – currently, almost all detections are the result of public reports rather than operational surveillance. In the last 12 months, the spread map suggests that the area of infestation is slowly increasing due to localised spread.
- **Remote nest treatment -** Trials conducted on 12 nests (see Attachment C for a full summary of the results to date).
  - 5 nests - dead after one treatment
  - 1 nest - dead after 2 treatments

- 2 nests - one treatment has occurred and nest has not been destroyed. Initially, AHB numbers decreased significantly, however AHB numbers are increasing. A second treatment will be conducted.
- 2 nests - one treatment did not destroy nests; nests were manually destroyed (one nest had *A. mellifera* robbing it, the other had been active for 64 days and bees could not be trained back onto station)
- 2 nests - trial aborted.
- Research has commenced into off target impacts of fipronil, fipronil residue testing on honey and honeycomb, and how much fipronil a foraging bee can carry.

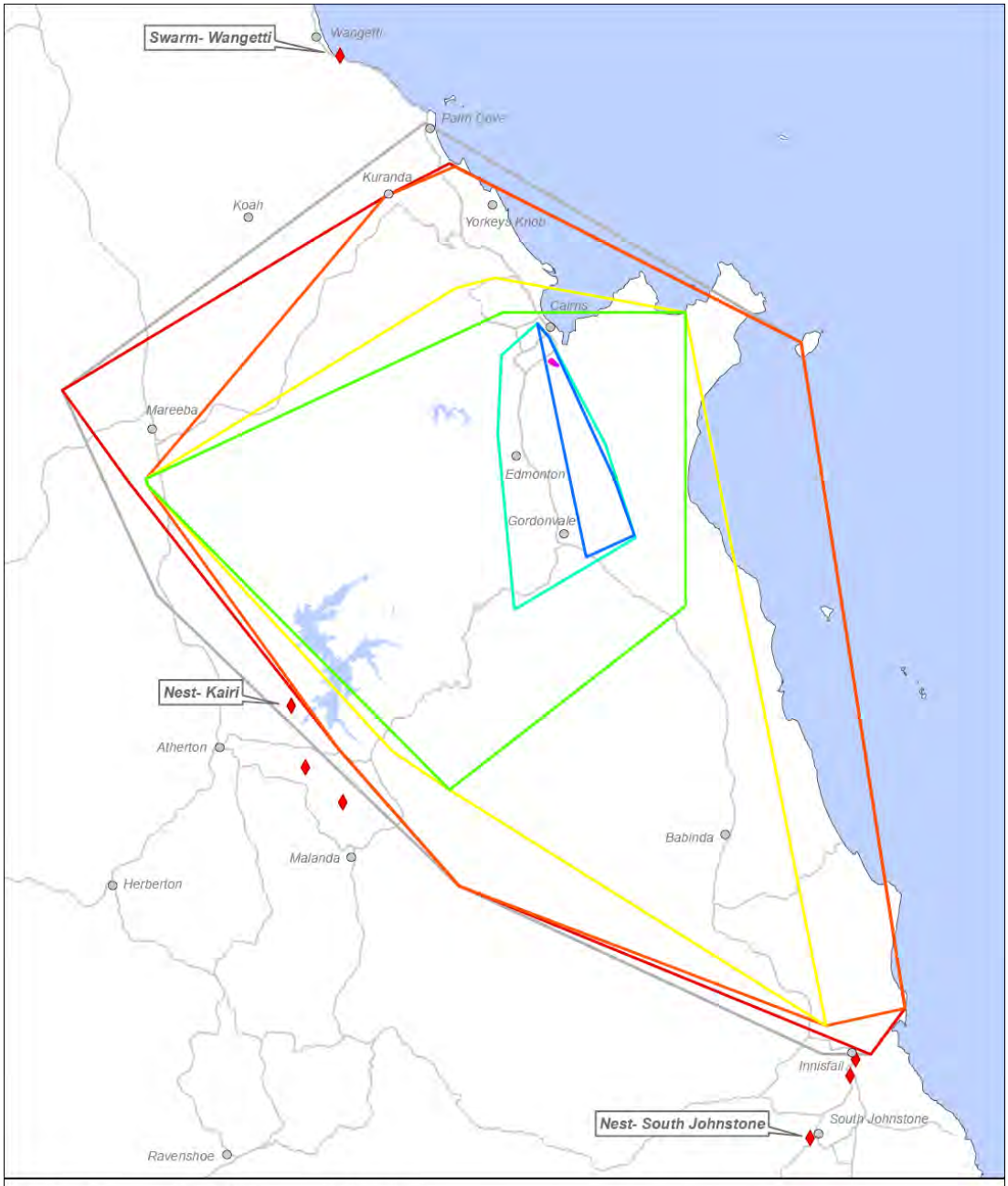
- **DNA technology –** there has been good progress in the research to develop tools to detect AHB DNA in bee-eater pellets, feeding station/trap liquor and sand, and flowers, and to test whether DNA can differentiate between AHB populations in Queensland. A PCR test has been developed and tests positive for AHB DNA, and tests positive to AHB DNA in bee eater pellets and trap liquor and sand, but needs to be further refined and tested in field conditions. Full details in Attachment D.
- **Community engagement –** ongoing engagement with environmental groups, indigenous groups, industry, pest controllers and transport industries. Strong engagement of environmental sector to increase understanding of AHB T2M Program, including meeting with Scientific Advisory Group for WTMA. New AHB T2M Brochure has been developed and is in use. Training packages for rangers, pest controllers and apiarists have developed and training being planned.

- **Bee industry engagement -** the focus of bee industry engagement has been about their observed impacts of AHB on *A. mellifera*, involvement in remote nest treatment trials, Restricted Area strategy, nest/swarm destruction when AHB program staff cannot attend, attending bee conference, use of volunteers over winter, and research being conducted that they can be involved with.
- **Local DAFF engagement –** continuing to work with DAFF-Biosecurity (AQIS) about integrated operations for bee free zones/bee suppression zones. Biosecurity Queensland has produced maps of the High Risk Port area identifying floral sources, which DAFF Biosecurity (AQIS) has used to conduct fortnightly floral sweeping. Biosecurity Queensland will conduct bee lining to find nests of foragers that have been detected by DAFF Biosecurity in their sweep netting – this will help determine resource requirements to bee line a single forager back to the nest.
- **Strategies being documented –** movement of hives within and outside the Restricted Area, Restricted Area maintenance/ timeframe and associated impacts on overseas trade, staged transition process with key deliverables and strategy to minimise spread of Asian honey bee through pathways including maintenance of bee suppression zones.
- **Staffing** – 11.5 full time equivalent staff delivering AHB T2M Program in Cairns.
- **Finances –** staff attrition and delays in recruitment may result in a small surplus for end of June 2012.
- **T2M Projects –** progress against all T2M projects are defined in attachment E.

Attachment A. Asian honey bee detections including recent outlier detections (Wangetti, South Johnstone and Kairi)



Attachment B. **Asian honey bee Known Infested Area (6 Month Intervals) and 'Outlier Detections between January-December 2012**



Asian honey bee Known Infested Area (6 Month Intervals) and Outlier Detections

- Town Point
- IPs Outside 2011 KIA
- Main Roads
- Jan to Jun 2007
- Jul to Dec 2007
- Jul to Dec 2008
- Jan to Jun 2009
- Jul to Dec 2009
- Jan to Jun 2010
- Jul to Dec 2010
- Jan to Jun 2011
- Jul to Dec 2011
- Water Bodies

N W E S

0 5 10 20

Kilometres

Queensland Government

Disclaimer: While every care is taken to ensure the accuracy of this data, all data custodians and/or the State of Queensland makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs to which you might incur as a result of the data being inaccurate or incomplete in any way and for any reason. Replications of maps and/or data contained within are subject to authorisation by the Mapping Coordinator, Biosecurity Queensland Control Centre.

Acknowledgements
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© The State of Queensland - Department of Environment &; Resource Management 2012.
© The State of Queensland - Department of Agriculture, Fisheries & Forestry 2012.

Produced on 14/05/12 Produced by M.S.
Mxd: 2011 KIA with outlier IPs

Attachment C. REMOTE NEST TREATMENT - SUMMARY RESULTS @ 11 May 2012

Trial #	**Nest locality**	**Date of treatment/s**	**Nest Activity prior to trial and/or nest size S,M,L**	**Target**	**Achieved** No. of bees (% relative to nest activity) Foraging distance Exposure time	**Result** Red – nest dead Grey – aborted Green – still active	**Hours prepare/ conduct trial (2 staff)**	**Noteworthy Observations**
Trial 1 IP556	House cavity	28.2.12	3692 bees entered nest in 60 min/Large	No. bees - 1000 Foraging distance – 80m Exposure time – 60mins	No. bees – 973 (26.4%) Foraging distance – 82m Exposure time – 60mins	**Nest DEAD at 24 hrs**	26.25hrs	Strong foraging before trial on regular station, reduced foraging on bait station at 30min, no foraging at 45 min
Trial 2 IP 563	House cavity	5.3.12				**Trial abandoned**	14.5hrs	Prior to start of trial, nest was being attacked by Green Ants – nest destroyed by predators
Trial 3 IP 569	Tree cavity	6.3.12	Nest activity not able to be counted due to height of nest/Nest busy -Large?	No. bees – 500 Foraging distance – 80m Exposure time – 60mins	No. bees – 201 Foraging distance – 76m Exposure time – 60mins	**Trial aborted**	81.75 hrs	Strong foraging on regular station before trial, reduced foraging on bait station at 30min, 3 foragers at 45min. Monitoring at 24 hrs found that foragers remaining on feeding station are from a different nest (confirmed by beelining) – **when nest was checked at 49 days *mellifera* were found in the nest.**
Trial 4 IP 557	House cavity	5.3.12	1600 bees entered nest in 60 min/Medium?	No. bees – 150 Foraging distance – 80m Exposure time – 60mins	No. bees – 150 (9.4%) Foraging distance – 74m Exposure time –	**Nest DEAD at 31 days after initial treatment (21 days after**	54.75 hrs	Strong foraging before trial and for duration of time bait station in field. Significantly lowered nest activity at 24 hrs, nest under attack by

		13.3.12	1300 bees entered nest in 60 min/Medium?	No. bees – 150 Foraging distance – 80m Exposure time – 60mins	20mins No. bees – 128 (12.4%) Foraging distance – 74m Exposure time – 30 mins	**second treatment)**		Green Ants at 48 hrs. Activity appeared to increase after 48 hrs (green ants numbers less). Second treatment conducted at 240 hrs with nest activity since remaining low (green ants observed again at 336 hours following 2nd treatment).
Trial 5 IP 567	House cavity	8.3.12	2198 bees entered nest in 60 min/Large?	No. bees – 500 Foraging distance – 80m Exposure time – 60mins	No. bees – 322 (14.6%) Foraging distance – 80m Exposure time – 60mins	**Nest manually destroyed at 64 days**	36.25 hrs	Strong foraging on station before trial, reduced foraging at 30min, 2 foragers at 40min, 0 foragers at 60min Very low nest activity between 24 hrs and 33 days. Significantly increased activity from 34 days. 2nd treatment was planned but bees could not be trained back onto station. Nest was destroyed at 64 days.
Trial 6 IP 562	House cavity	13.3.12	5524 bees entered the nest in 60 min/Large?	No. bees – 500 Foraging distance – 80m Exposure time – 60mins	No. bees – 400 (7.4%) Foraging distance – 80m Exposure time – 30mins	**Nest DEAD at 37 days (888hrs)**	52.25 hrs	Strong foraging activity on regular station before trial, reduced foraging on bait station by 30 minutes. Significantly lowered nest activity at 24hrs and activity has remained low and steady since; declined to zero by 888hrs.

Trial 7 IP566	Bird box	21.3.12	606 bees entered nest in 60 min/very small (approx.500-1000 bees in colony)	No. bees – 50 Foraging distance – 80m Exposure time – 60mins	No. bees – 42 (6.9%) Foraging distance – 25m Exposure time – 12mins	**Nest DEAD at 6 days**	28.75 hrs	Couldn't move station to 80m, bees would not cooperate. Trial conducted at 25m instead. Low foraging activity on station before trial, low foraging activity at 12 minutes. Inspection at 24 hrs – very low activity (lots of drones flying around entrance) Inspection at 48 hrs and 120 hrs – low activity 20-30 bees remaining on comb. Nest dead at 6 days (144hrs). Ants consumed most dead bees at bottom of box, only exoskeleton parts remaining.
Trial 8 IP 578	In tree cavity	4.4.12	Busy. Count could not be done as 12m high in tree	No. bees – 600 Foraging distance – 80m Exposure time – 60mins	No. bees – 580 (% na) Foraging distance – 80m Exposure time – 40mins	**Nest still ACTIVE at 34 days**	92.5 hrs	Strong foraging on station before trial, reduced foraging at 20min, 5 foragers at 40min. Nest activity decreased dramatically, stayed low until day 16. Starting to increase in numbers. Targeted for 2nd treatment.
Trial 9 IP589	In tree cavity	10.4.12	Busy. Count could not be done as 12m high in tree	No. bees – 1200 Foraging distance – 80m Exposure time – 60mins	No. bees – 1110 (%na) Foraging distance – 84m Exposure time – 40mins	**Nest still ACTIVE at 28 days**	93.5 hrs	Strong foraging on station before trial, reduced foraging at 30min, 25 foragers at 30min, 0 bees at 40 minutes. Nest activity decreased dramatically, increasing

								from day 16. Targeted for 2nd treatment.
Trial 10 IP593	In house cavity	17.4.12	3390 bees entered nest in 60 minutes	No. bees – 800 Foraging distance – 80m Exposure time – 60mins	No. bees – 800 (23.6%) Foraging distance – 80m Exposure time – 34mins	**Nest DEAD at 24 hrs**	20.75 hrs	Busy nest and strong foraging on station before trial. Reduced foraging by 20 mins. No activity was seen from 24 hrs. Checked with endoscope at 9 days, confirmed dead.
Trial 11 IP591	In compost bin	18.4.12	3096 bees entered nest in 60 minutes	No. bees – 700 Foraging distance – 80m Exposure time – 60mins	No. bees – 484 (15.6%) Foraging distance – 80m Exposure time – 60mins	**Nest DEAD at 24 hrs**	18.75 hrs	Bees started showing signs of poisoning at 20 minutes. 2-5 bees on station by 40 minutes, 0 by 50 minutes. No activity seen at 24hrs. Nest extracted from bin at 6 days.
Trial 12 IP558	In incinerator	19.4.12	5916 bees entered nest in 60 minutes	No. bees – 1200 Foraging distance – 80m Exposure time – 60mins	No. bees – 1022 (17.3%) Foraging distance – 80m Exposure time – 60mins	**Nest manually destroyed at 48hrs**	10.75 hrs	Busy nest and strong foraging on station before trial. Reduced foraging by 30 mins. Nest activity severely reduced at 24hrs (2 bees entering nest). Mellifera found to enter nest at 48hrs. Decision made to abort to avoid off-target impact from mellifera robbing honey.

Attachment D.

Biosecurity Queensland AHB T2M Program – DNA Technology Update

AG3 D (i) *A. cerana* detection and population identification using DNA technology

A test has been developed to detect the presence of Apis cerana DNA. The test has been challenged with Apis Mellifera and with field collected, assorted insect tissues from the Cairns region and shows no cross-reaction. The test detects DNA from a single bee abdomen that has been diluted 1 in 10^6 (around 25 fentagrams of DNA) so it is quite sensitive.

Development of PCR to detect *A.cerana* in bee eater pellets

- A single *A.cerana* wing from a bee eater pellet has been shown to produce viable DNA - showing DNA is not destroyed in the bird gut and tests **positive** in a PCR test.
- However, as yet, no extraction procedure has produced a positive PCR reaction from whole pellets without pre-processing (separating of wings).
- Work continues to chemically reduce inhibition from the sample contaminants, although semi-skilled manual separation of suspect tissue seems a more practical alternative prior to testing.

Adapt the PCR test to detect *A.cerana* in trap liquor

Feeding stations and traps are made of sand and/or sugar syrup. Research is focussed on whether the PCR test can detect AHB DNA in liquor or sand (whether AHB are trapped in the liquor or have visited and not been trapped).

- Tissue placed in trap liquor and stored at 38 deg C for 1 week tested **positive**.
- This tissue had been stored in Ethanol so a field trial placing a fresh bee in a trap and leaving it in field conditions for 2 weeks is currently being conducted. This experiment will conclusively determine this part of the project.

Trap Liquor component

- Naked DNA placed into trap liquor is detectable through an optimised DNA extraction protocol
- Trap liquor that has had Apis cerana feed on it in a field trial tested **positive** to Apis cerana DNA.
- The number of bees required to feed on the trap and how robust the method is require further field trials. 3 repeats of the same sample all tested positive. Research is ongoing on liquor samples of known history (number of bees feeding/ duration/ delay to testing) to determine these parameters.

Sand component

- Research has shown that sand seeded with DNA can be extracted and will test **positive.**
- Trials of sand that had bees land on it tested **negative** probably due to insufficient DNA transfer. Research is ongoing.

Adapt the PCR test to detect *A.cerana* in flower parts

Work has commenced in this area and is ongoing.

Identification and differentiation of *A. cerana* populations in QLD

Work has commenced in this area and is ongoing.

Attachment E – progress against T2M projects

AG1 – Limiting impact on Urban Communities

AG1 A.(i)	✓	Website has been updated
AG1 A.(ii)	✓	Social internet posting for FNQ Pest Advisory Forum. An event calendar has been created to arrange these to be regular and match events in the AHB T2M program
AG1 A. (iii)	✓	Future website changes being planned to meet changing phases.
AG1 B.(ii)	✓	Remote Treatment Trial update placed on PHA website.
AG1 C.(i)	✓	Customer journeys being considered.
AG1 D.(i)	✓	Transition Phase strategy and Document developed and awaiting final approval.
	✓	New AHB T2M Brochure printed and in use.
	✓	Training packages for rangers, pest controllers and apiarists developed and training being planned.
AG1 D.(i)	✓	Communication Strategy completed and approved.
AG1 D.(ii)	✓	Staged transition process implementation plan completed and being implemented
AG1 D.(iii)	✓	Operational plan completed. Plan is adjusted as necessary
AG1 D.(iv)	✓	Draft response area policy to be approved.
AG1 D.(v)	✓	Draft information and training packages completed and being adjusted as required following discussions with industry and stakeholders.
AG1 D.(vi)	✓	Discussions with industry and stakeholder representatives are ongoing. Met with Committee member of the Nth Qld Pest Managers Institute; Natural Resource Manager, local Council; Wet Tropics Management Authority staff including Executive Director, Operations Manager, Research manager, Community Engagement Officer; QPWS District Ranger and Indigenous Rangers Liaison Coordinator and Natural Assets manager from Regional Organisation of Councils.

AG2 – Developing and making available a suite of control measures for AHB

AG2 A.	✓	Literature review to better understand AHB has been delayed due to Remote Treatment trials..
AG2 B.	✓	Meetings with local bee keeper organisations continue.
	✓	Meetings with AHB T2M Bee Industry Liaison committee continue.
AG2 B.(i)	✓	Detection and destruction strategies have been documented
	✓	Validation of rates of effort for all detection and destruction methods continues to be delayed due to the Remote Treatment trials.
AG2 B.(iii)	✓	Bait station use and design documented
	✓	Validation of effectiveness continues to be delayed due to the Remote Treatment trials.
	✓	Analysis underway to assess effectiveness of traps
AG2 C.(i)	✓	Remote Treatment trials on 12 nests (See attachment C)
	✓	Research has commenced into off target impacts of fipronil, fipronil residue testing on honey and honeycomb, and how much fipronil a foraging bee can carry.

AG3 – Limiting impact on honey production

AG3 A(iii)	✓	Attended April bee keeper meetings in Cairns
	✓	Cairns Beekeepers AHB T2M Liaison committee continue to meet.
AG3 D.	✓	Met with a number of stakeholders (apiarists, Biosecurity DAFF (AQIS); Dept of National Parks, Recreation, Sport and Racing; Wet

Tropics Management Authority & Indigenous rangers) to discuss technologies to assist with the mitigation of AHB impacts.

AG3. D.(i) ✓ Continued research into DNA technology to detect AHB and differentiate between AHB populations in FNQ - strong progress being made. A PCR test has been developed that tests positive for AHB DNA, and tests positive to AHB DNA in bee eater pellets and trap liquor and sand, but needs to be further refined and tested in field conditions. See Attachment D.

AG3 E. ✓ Meeting with apiarist locally and at state level discussed adoption and implementation of management strategies.

AG4 – Limiting impact on natural environment

AG4 A.
- ✓ Continue to meet with indigenous groups and rangers, QPWS District Ranger and Indigenous Rangers Liaison Coordinator, Dept of National Parks, Recreation, Sport and Racing & Wet Tropics Management Authority to discuss technologies to assist with the mitigation of AHB impacts in the environment.
- ✓ Met with Scientific Advisory Group for WTMA to discuss T2M Program and associated research
- ✓ Addressed Cape York Peninsular Pest Management Advisory Group meeting.
- ✓ Training packages enhanced and dates for training being determined.

AG5 – Optimising early detection of new incursion of AHB

AG 5 B.(i) ✓ Surveillance strategies and techniques first draft documented and being reviewed and edited.

AG5 B.(ii)
- ✓ Validation of surveillance techniques impacted by the Remote Treatment trials.
- ✓ Discussions ongoing with DAFF Biosecurity (AQIS) regarding surveillance strategies around Cairns Air and Sea ports.
- ✓ Biosecurity Queensland has produced maps of High Risk Port area identifying floral sources, which DAFF Biosecurity (AQIS) has used to conduct fortnightly sweep netting.
- ✓ Biosecurity Queensland will conduct bee lining to find nests of foragers that have been detected by DAFF Biosecurity in their sweep netting – this will help determine resource requirements to bee line a single forager back to the nest.

AG5 C. ✓ Laboratory analysis of AHB detections within AHB Suppression Zones discussed with DAFF Biosecurity and being progressed.

AG5 D. ✓ Biosecurity Queensland and DAFF Biosecurity have reached general agreement regarding an integrated surveillance strategy - discussions continue.

AG6 – Critical intervention to limit long distance spread

AG6 A.
- ✓ Existing movement controls continue
- ✓ Feed back from Bee industry and market access advice from Biosecurity DAFF indicates for the time being the Restricted Area and regulatory controls need to continue.
- ✓ Discussing with industry ways to simplify the current movement process and develop a “code of practice”.

AG6 B. ✓ Pathway analysis and strategy is ongoing

AG6 C. ✓ Operations to minimise spread through pathways continue

	✓	A strategy to minimise spread of Asian honey bee through pathways including maintenance of bee suppression zones has been drafted for discussion.
AG6 D.	✓	Completed contact with main Transport companies (shipping/rail/freight) in Cairns to address critical intervention to limit long distance spread of AHB and in the process of organising suitable times for training opportunities

QG1 – Protecting Queensland's social amenity and public assets

QG1 A.(i)	✓	Operations to contain, suppress and destroy AHB continue
QG1 A.(ii)	✓	Strategy to cease government intervention developed and being documented.
QG1 B,	✓	Surveillance strategy to determine extent of infested area being developed.

QG2 – Improving operational efficiency and effectiveness

QG2 B.	✓	Detection and destruction strategies have been documented
	✓	Bait station use and design documented
	✓	Validation of rates of effort for all detection and destruction methods impacted by the Remote Treatment trials.
	✓	Validation of effectiveness impacted by the Remote Treatment trials.
QG2 C.	✓	Spatial analysis has commenced with identification and verification of data. BioSirt up to date with all positives. Map showing spread since 2007 created.
QG2 D.	✓	Spread analysis has commenced with identification and verification of data. Discussions have commenced regarding the process to use.
QG2 E.	✓	Technical analysis of nests and honeycomb continue where possible

AHB TMG Minutes

Meeting Seven of the Asian Honey Bee Transition Management Group (AHB TMG)

Teleconference held on Wednesday 27th June, 2012

Attendees: Colin Grant DAFF (Chair), Louise Clark DAFF, Glynn Maynard DAFF, Rick Symons DAFF Queensland, Craig Jennings DAFF Queensland, Russell Gilmour DAFF Queensland, Lindsay Bourke AHBIC, Trevor Weatherhead AHBIC, Rod Turner PHA, Sam Malfroy PHA (Secretariat) Greg Fraser PHA, Brad Siebert PHA, Susanna Driessen PHA and Jenna Taylor PHA.

Apologies: Kareena Arthy DAFF Queensland, Neil O'Brien DAFF Queensland, Lois Ransom DAFF and Stephen Ware AHBIC.

Item 1 – Welcome by the Chair

The Chair welcomed the Members of the Asian Honey Bee Transition Management Group (AHB TMG) to the teleconference.

Item 2 – Discussion and acceptance of Minutes from previous meeting

The minutes from Meeting 6 were tabled and discussed. The TMG agreed that the minutes provided an accurate summary of the meeting and were ready to be placed on the AHB website by PHA.

Item 3 – Action items from previous meeting

The action items from Meeting 6 were tabled and discussed. The TMG stated that all of the action items from the previous meeting had been initiated and were progressing well.

The issue of the remaining Industry contribution to the AHB T2M was discussed amongst the TMG. The possibility of using the remaining Industry contribution to fund Industry Liaison Officer (ILO) training for the honey bee industry was proposed. The Chair stated that the Honey bee industry is best placed to come up with a plan and funding model for the remaining industry T2M contribution, which could then be considered by the AHB TMG. It was agreed that AHBIC would propose how the remaining funds could be spent in accordance with the AHB T2M.

BQ added that training packages outlining reporting requirements and identification and control of AHB was already being delivered to beekeepers in the Cairns region.

Item 4 – Update on the SAG: Rod Turner (Chair of the SAG)

The Chair of the AHB Scientific Advisory Group (AHB SAG) stated that the SAG had not met since the last TMG meeting. However, the Chair of the SAG stated that they are currently holding discussions with Biosecurity Queensland about an appropriate date and time to hold the next SAG meeting. This meeting will discuss elements of the Fipronil remote poisoning trial, the results gathered so far and also research activities that Biosecurity Queensland are conducting over the coming months.

Item 5 – Reporting from DAFF Queensland (Russell Gilmour)

Russell Gilmour provided an update on AHB activities in Queensland. This report is attached as attachment A.

Several questions were raised by AHBIC concerning some aspects of the report provided by BQ, as well as from first-hand accounts of beekeepers in Cairns.

The first question was in regards to the industry training for beekeepers provided by BQ and the public liability that beekeepers may face in responding to AHB calls. Biosecurity Queensland clarified that the training provided was about informing beekeepers that are on an AHB swarm list how to respond to reports of suspect AHB and that BQ was not asking beekeepers to advise any person on how to kill AHB. It was discussed that the concept of having this list is in place, just as there is for the European honey bee swarm list, was to ensure the people on the list had the skills to identify AHB and to respond to calls from the public and then confirm the identity of the bee. It was not to advise the public on how to kill bees. AHBIC requested that BQ follow up about where the public liability may lay for beekeepers with AHBIC directly.

AHBIC requested that PHA contact the APVMA about the likelihood that Fipronil could be registered for beekeepers for commercial use after the AHB T2M. Biosecurity Queensland stated that they have already held preliminary discussions with the APVMA and that it is required for Industry to act on this and present a case to the APVMA. The Chair requested that PHA and AHBIC follow up with APVMA out of session in regards to this issue, and what kind of research would need to be completed for this registration to occur, and potentially what chemical competency standards would need to be completed by beekeepers to use this chemical in the control of AHB after the AHB T2M finishes in June 2013.

AHBIC also requested that a report conducted on the effects of the AHB eradication program on local beekeepers and farmers be released for the public. Biosecurity Queensland stated that this report is being built on for further reports, however, stated that they would be happy for this report to be provided to AHBIC.

Biosecurity Queensland also outlined priorities for the next three months of the AHB T2M which included:

- Continued community engagement through training and the show circuit, as well as Bee Alert Week
- Complete the literature review on the Asian Honey Bee (Java genotype)
- Hold a SAG and analyse the data and interpretation of results for the Fipronil remote poisoning trials
- Assist DAFF Biosecurity for surveillance of ports
- Assist researchers who are conducting research as part of the AHB T2M in the Cairns region

Item 6 – Future Meetings

The Chair stated that PHA will follow up out of session with both DAFF, AHBIC and Biosecurity Queensland regarding possible dates for future meetings of the AHB T2M, The TMG agreed that meetings would be held every two months from now, starting late August, October, December, February and then monthly in April, May and June until the AHB T2M finishes on June 30 2013.

Item 7 – Summary and Close of Meeting

The Chair stated significant progress had been made on the AHB T2M. The Chair recommended that the SAG hold a teleconference within the next 2 weeks to discuss the Biosecurity Queensland report and to provide technical advice on elements of the AHB T2M.

Once the SAG had held the teleconference, the Chair requested that Biosecurity Queensland and PHA work on creating a short summary document that could be placed on the AHB website which outlines major research activities that Biosecurity Queensland will be working on over the next 3 months.

The Chair thanked the Members of the AHB TMG for their participation in the teleconference and closed the meeting.

AHB TMG Minutes

Meeting Eight of the Asian Honey Bee Transition Management Group (AHB TMG)

Teleconference held on Tuesday 21st August, 2012

Attendees: Colin Grant DAFF (Chair), Vanessa Findlay DAFF, Louise Clark DAFF, Neil O'Brien DAFF Queensland, Russell Gilmour DAFF Queensland, Lindsay Bourke AHBIC, Trevor Weatherhead AHBIC, Stephen Ware AHBIC, Rod Turner PHA, Sam Malfroy PHA (Secretariat) Brad Siebert PHA and Jenna Taylor PHA.

Apologies: Glynn Maynard DAFF, Rick Symons DAFF Queensland and Greg Fraser PHA.

Item 1 – Welcome by the Chair

The Chair welcomed the Members of the Asian Honey Bee Transition Management Group (AHB TMG) to the teleconference.

The Chair welcomed Vanessa Findlay to the AHB TMG as the new Chief Plant Protection Officer and stated that Dr Findlay would be chairing all future meetings of the AHB TMG till the program comes to a close in June 2013. The members welcomed Dr Findlay to the AHB TMG.

Item 2 – Discussion and acceptance of Minutes from previous meeting

The minutes from Meeting 7 were tabled. The Chair stated these minutes were accepted out of session between the members of the AHB TMG and that they have since been placed on the AHB website. All members agreed that they provided a true and accurate record of Meeting 7.

Item 3 – Action items from previous meeting

The action items from Meeting 7 were tabled and discussed. The Chair stated that all of the action items from the previous meeting had been initiated and were progressing well. The Chair requested that by Meeting 9 AHBIC present proposals to the TMG on the best way to spend the remaining industry contribution for the AHB T2M.

The Chair also noted to the TMG that the summary of the program that was requested at Meeting 7 had been provided to the TMG as an attachment to this meeting. PHA stated that this summary had been placed on the AHB website after consultations with BQ.

Item 4 – Reporting from DAFF Queensland (Russell Gilmour)

Russell Gilmour provided an update on AHB activities in Queensland. This report is attached as attachment A.

Some of the key issues that BQ discussed with the TMG included:

- Since May 2007, there have been 720 detections of AHB nests and swarms
- There have been three recent significant detections at Port Douglas, Paddy's Green (west of Mareeba) and Atherton which have extended the known infested area
- BQ is currently in the process of collecting video footage of bee lining and AHB identification and AHB nest destruction
- BQ is continuing to assist external researchers who have been funded by the industry contribution and university students who are working on the AHB T2M
- The literature review has been completed and will be released in the near future to stakeholders and industry

The Chair requested that BQ clarify the issue of liability to beekeepers that was raised at Meeting 7 of the TMG.

BQ stated that following feedback from the beekeeping industry about how to manage AHB in the future, it was agreed that beekeepers would not advise any person on how to destroy an AHB nest or swarm nor destroy AHB nests or swarms on behalf of T2M Program. Therefore there are no public liability issues for beekeepers. Also, any beekeepers helping external researchers are doing so at their own accord, not at the request of the T2M Program. Any industry volunteers that assist in the AHB T2M do so under supervision of the T2M Program following an extensive induction process. Volunteers are therefore covered for any public liability provided they follow BQ's T2M Program procedures and direction. The TMG accepted this explanation and the Chair thanked BQ for clarifying the public liability issue.

BQ also stated that they had distributed a researcher's report to both AHBIC and PHA that was conducted into the effects of the AHB eradication program on local beekeepers and farmers. The report could also be provided to SAG. This report was completed a few years ago by a visiting international student as part of a university degree and had been distributed at the request of AHBIC. BQ stated that aspects of this report were being picked by other documents being produced in the T2M Program, and placing this document on the AHB website may be of little value. The TMG agreed and stated that it would not be placed on the website. The Chair thanked BQ for following up on their action items.

Item 5 – Update on the SAG: Rod Turner (Chair of the SAG)

The Chair of the SAG, Rod Turner, stated that a SAG meeting was held on the 12th of July and provided a summary of this meeting and the key issues that were discussed. This included:

- The SAG stated that the bee trap efficacy report provided by BQ demonstrated that this method of surveillance was not effective and that this method of surveillance should discontinue.
- The SAG recommended that BQ continue to work on the detection of *Apis cerana* DNA from bee eater pellets and trap liquor with these strategies of surveillance showing considerable promise.
- There was some conjecture in the SAG regarding the continuation of the microsatellite allele research in AHB, with some in the SAG believing that money should be diverted from other programs to continue this research. Others in the SAG believed that this research should not be continued, despite the interesting science, because money would have to be diverted from other more worthwhile projects and that the continuation of this project did not fall under the scope of a transition to management program.
- The SAG stated that the Remote nest treatment report prepared by BQ demonstrated the effectiveness of Fipronil, however, more work was needed to refine the process. The SAG also acknowledged the amount of work conducted by BQ to get these results. Other options to continue the trial, such as lowering the Fipronil dosage rate, as well as observation hives was discussed by the SAG. The Chair of the SAG stated that the Fipronil trials have ceased for now, pending further advice from the SAG.

The Chair of the SAG stated that two letters were written to the APVMA and BASF (the chemical company that owns the toxicological data package of Fipronil) regarding the potential registration of a product that could be used to remotely control AHB after the AHB T2M. The Chair stated that no response has yet been received.

It was discussed that once a response was received from both organisations, that a SAG should be called to discuss the response as well as the future of the remote nest treatment trials conducted by BQ. The Chair agreed with this course of action.

Item 6 – Future Meetings

The Chair stated that PHA will follow up out of session with DAFF, AHBIC and Biosecurity Queensland regarding possible dates for future meetings of the AHB T2M. The Chair stated that the next TMG meeting would be held in late October, and then every 2 months in December, February and then monthly in April, May and June until the AHB T2M finishes on June 30 2013.

Item 7 – Summary and Close of Meeting

The Chair stated that the end of the AHB T2M is approaching and that only 10 months remain until the program comes to a close in June 2013. The Chair requested that all members continue to provide clear progress reports which list the achievements of the program and milestones that have been met.

The Chair explained that all of the program work needs to be documented and finalised by this date so that the community, the pest control industry, and the honey bee industry have the tools and information available to manage AHB into the future.

BQ stated that they will continue to provide detailed quarterly reports for the TMG, as well as reports for each TMG teleconference clearly documenting the progress on aspects of the AHB T2M.

AHBIC expressly thanked Dr Colin Grant for his considerable efforts in the AHB T2M and for being an effective Chair of the AHB TMG.

The Chair thanked the TMG for their contribution to the AHB T2M, the role that the members have played in progressing this program and closed the meeting.

Asian honey bee Transition to Management Program

Biosecurity Queensland, Department of Agriculture, Fisheries & Forestry

AHB Transition to Management, August 2012 Progress Summary

Prepared for Transition management Group meeting on 21/8/12

Detections

As at 17 August 2012 detections since 1 July 2012 were

- Nests – 44
- Swarms – 19
- Foragers/PID's – 13

720 detections of AHB nests and swarms to date, since May 2007.

Significant detections that extended the known infested area (see Attachment A.) were at

- Port Douglas
- Paddy's Green, west of Mareeba
- Atherton

Public Reports

As at 17 August 2012 there have been 63 reports of suspect Asian honey bee since 1 July 2012, leading to the detection of 46 AHB nests/swarms.

Compliance

As at 17 August 2012 eleven "Movement" licenses have been issued since 1 July 2012. However most of these have been to AHB Program staff who were moving bees to shows and collecting swarms for research.

An "analysis of movement control efficiency, cost and compliance for the Asian honey bee incursion in Cairns" is currently underway with a report due to be finalised by end of August 2012.

HIGH LIGHTS

✓ **Community Engagement**

- The Asian honey bee website has been revamped with comprehensive information tailored at identification and what the public can do to help minimise the spread. This has a focus with stakeholders and what you can do if Asian honey bees are a nuisance in the community.
- A step by step guideline for industry has been developed and will be accessible via the web site suggesting the recommended methods in how to manage swarms or nests of Asian honey bees.
- The community focused Fact Sheet has taken the next step in transitioning to the community learning to live with Asian honey bees.
- A booklet, for national biosecurity agencies, of validated detection and destruction tools has been drafted and is being reviewed to include new

improvements through the T2M program's research. This will be finalised once the results and methods from the scientific efficacy trails are known (trials are being continuing over the coming months).

Workshops

- The first round of workshops in the Known Infested Area were successfully delivered and well received by critical stakeholders; beekeepers, indigenous rangers & traditional owners, QPWS rangers, Transport industries, pest controllers, and Local Government staff.
- Evaluation of these workshops has indicated that the consultation phase that preceded the development of training material resulted in the workshop content being highly regarded as relevant to their industries.
- All stakeholder groups were interested in attending with the largest interest being from the pest control industry with the session booked out.
- Stakeholder groups have requested another round of training sessions, which will be held around the outer edge area of the Known Infested Area.

Workshops consisted of:

- A presentation on the shift in the direction of the AHB program and what role these groups will play in the community.
- Identification training, quality photos were used to test people's knowledge on the differences between AHB and European honey bee. Live samples were contained in display hives with viewing sections so groups could see the see two species together.
- Trainees visited floral sources and shown how to identify feeding foragers and given multiple demonstrations in different situations of swarms and nest removal and destruction.
- Trainees were tested on there practical ability to demonstrate the capability of managing an AHB situation. Demonstrations of each workshop were tailored for each stakeholder.
- Trainees received education about eradication programs on the three tramp ant species and their areas of infestation with a focus on the ability of all the community to help out by reporting suspect ants. Live samples were used for identification training.
- Evaluation forms for AHB workshops were obtained from all key stakeholders that attended. These have been analysed and evaluated and will be used to record and improve delivery of future workshop sessions.

Key findings from the evaluation process of the 60 attendee during the first round of workshops found;

- attendees considered the live displays of both species to be indispensable regarding their confidence level in being able to identify the pest bee
- all stakeholders identified that they would like video footage available, covering multiple demonstrations of swarm and nest management techniques. This is in progress.
- The Pest industry in particular noted that material updates on new destruction products, developed through current scientific trails, need to be passed on to the industry.

District Agriculture Shows

- A joint effort between the AHB T2M team and the Cairns and Tablelands District Beekeepers Association attending six district shows in Far North Queensland proved to be successful and enhanced relations between the local industry and the program.

During these events the AHB team addressed close to 2,000 enquiries and conducted public demonstrations on AHB identification and management.
- The local club provided beekeeping equipment, a display hive of European honey bee and expertise in apiary issues.
- The two interactive displays of bees, Asian honey bee and European honey bee, helped Biosecurity Queensland and the local industry to engage with the community and lift the profile the Asian honey bee program. These tools were aimed to assist the community in identification of the pest bee and their options available to them when living along side with Asian honey bees.

✓ **Industry engagement**
- 21 volunteer beekeepers worked with the program at various times during July and August, the most we had at any one stage was 12. The significant number of inductions impacted on operations.
- Some of the volunteers expressed disappointment that the Transition to Management program was not an active eradication program and refused to conduct surveillance activities (as they wanted to be destroying AHB nests).
- As the program transitions from operations to more science and community engagement focus, it will be increasingly difficult to accommodate Industry volunteers.

✓ **Remote Treatment**

The progress report for the "Remote Treatment Trials provided to the TMG in June was also provided to the Scientific Advisory Group in July for consideration. Remote Treatment trials are suspended pending further advice.

✓ **Asian honey bee Literature review**

The Asian honey bee literature review has been completed and submitted for approval prior to release to stakeholders and industry.

✓ **Spatial and spread analysis**
- Computer modelling of AHB spread over time has commenced.

✓ **External researchers**

The program collaborated with and assisted visiting researchers: Dr. David Guez (University of Canberra); Dr. Dennis Anderson and Dr. John Roberts (CSIRO); Prof. Ben Oldroyd and Eloise Hinson (University of Sydney); and Dr. Caroline Gross (University of New England).
- The program commenced working with two James Cook University students who took up the opportunity to work under the supervision of our Senior Scientist for the program as part of their studies. A University of Queensland student spent two weeks working with the science team and provided valuable assistance.

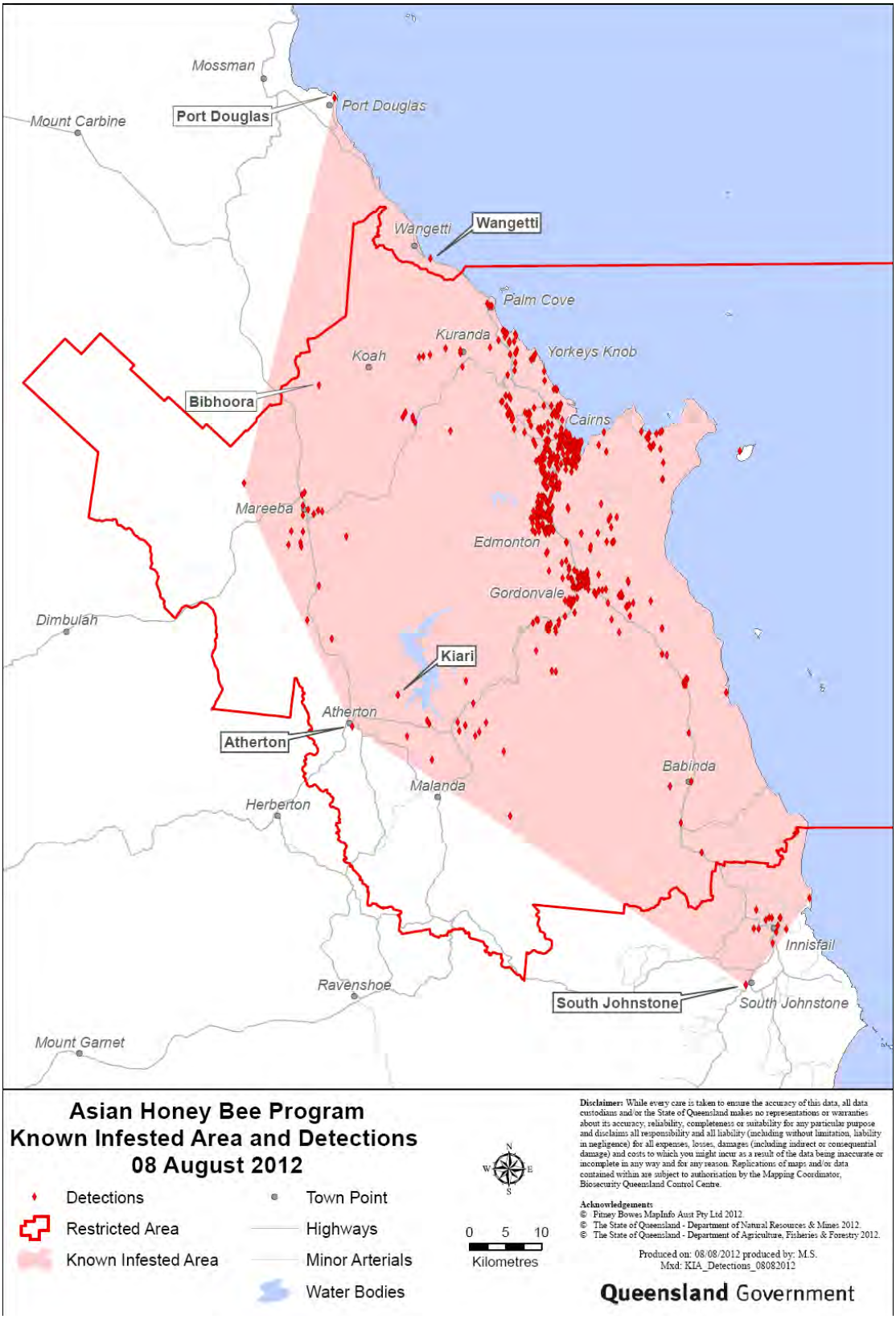
✓ **DAFF Biosecurity**

The "High Intensity Surveillance" trial was reviewed as it has provided very few nests for testing. It was decided to increase the regularity of testing from fortnightly to weekly.

SIGNIFICANT FUTURE ACTIVITIES

- Cessation of response in the Known Infested Area – anticipated end September 2012.
- Validate efficacy of detection and destruction methods.
- Trial and improve bait/feeding station designs.
- Analysis of nests and swarms detected since 2007.
- Complete spatial analysis and spread analysis of current AHB infestation.
- Determine population dynamics and drivers of spread.
- Continue working with DAFF biosecurity regarding AG5 targets.
- Continue community and industry engagement activities and additional training sessions around the edge of the Known Infested Area.
- Continue to work with transporter businesses to ensure awareness and management information is in place to reduce the risk of spread.
- Complete and distribute Tools for responding to an AHB incursion – Standard Operating procedures for national biosecurity agencies.
- Video AHB techniques used in the program.
- Develop agreed management strategies to mitigate the impact of AHB on industry.

Attachment A.



AHB TMG Minutes

Meeting Nine of the Asian Honey Bee Transition Management Group (AHB TMG)

Teleconference held on Tuesday 16th October, 2012

Attendees: Colin Grant DAFF (Chair), Glynn Maynard DAFF, Tegan Honing-Wassenburg DAFF, Neil O'Brien DAFF Queensland, Mike Ashton DAFF Queensland, Russell Gilmour DAFF Queensland, Anna Koetz DAFF Queensland, Lindsay Bourke AHBIC, Stephen Ware AHBIC, Greg Fraser PHA, Nicholas Woods PHA, Sam Malfroy PHA (Secretariat) Brad Siebert PHA and Jenna Taylor PHA.

Apologies: Vanessa Findlay DAFF, Louise Clark DAFF, Trevor Weatherhead AHBIC, Rod Turner PHA

Item 1 – Welcome by the Chair

The Chair welcomed the Members of the Asian Honey Bee Transition Management Group (AHB TMG) to the teleconference.

Item 2 – Discussion and acceptance of Minutes from previous meeting

The minutes from Meeting 8 were tabled. The Chair stated these minutes were accepted out of session between the members of the AHB TMG and that they have since been placed on the AHB website. All members agreed that they provided a true and accurate record of Meeting 8.

Item 3 – Action items from previous meeting

The action items from Meeting 7 were tabled and discussed. The Chair thanked PHA for posting the final minutes from Meeting 7 on the AHB website, as well as organising all future meetings of the TMG till June 2013 when the AHB T2M comes to a close.

AHBIC stated that considerable thought had been given to how to spend the remaining $22,000 from the Industry contribution. Mr Ware stated that AHBIC had decided to spend the remaining funds on developing a 1-day AHB course for beekeepers, and people that may be involved in their eradication, such as pest controllers. Mr Ware elaborated that this would fit under the AHBIC education committee and would meet both education and chemical competency standards.

Mr Ware discussed with the group that it would be best however that the development of this workshop was not completed until more scientific information was provided by BQ, such as standard operating procedures for various surveillance and destruction techniques, as well more information regarding AHB population dynamics. The Chair agreed with Mr Ware's reasoning for developing this workshop at a later date. The Chair requested that AHBIC keep all Members of the TMG informed of the development of the AHB course. Mr Ware stated that the TMG would be informed of the development the workshop, with the first stage developing a proposal in the coming months.

PHA explained to the TMG that although a SAG had recently been held, discussions on redesigning and restarting the remote nest treatment trials had not yet commenced. PHA stated that they had written to both the APVMA and BASF on the 15th of August, however, no formal response from either had been received. PHA requested whether BASF would support the possible registration of a Fipronil based product after the AHB T2M for use by beekeepers in control of AHB with the supply of the Fipronil toxilogical package. PHA also requested that APVMA review the Remote nest treatment and highlight any areas that needed clarification or further testing.

AHBIC questioned whether a future Fipronil based product for AHB control still required the support of BASF through the supply of a toxilogical package, as other products for the honey bee industry, such as Apithor, which contained Fipronil were currently being used. PHA stated that it was their understanding that BASF still needed to support this application with the supply of the toxilogical package, and that if it was not supported, a product could not be registered after the AHB T2M. Mr Fraser stated to the committee, from personal discussions with BASF, that BASF would not consider supporting a Fipronil package which targeted bees as it went against their international stewardship arrangements.

The Chair requested that PHA try to receive an answer from APVMA and BASF as soon as possible on this situation, and once received, that a SAG be called to discuss the future of the remote nest treatments.

The Chair stated that all of the action items from the previous meeting had been initiated and were progressing well.

Item 4 – Change in AHB T2M management within BQ

Mr Ashton (Director of Plant Biosecurity and Product Integrity) explained the recent changes in management of the AHB T2M, and that Mr O'Brien would no longer be directly involved in the management of the AHB T2M. Mr Ashton stated that he would now be managing the AHB T2M, as the program had since moved to Plant Biosecurity and Product Integrity area of DAFF Queensland. Mr Ashton explained to the TMG his past experiences in similar programs, including Citrus Canker, Sugarcane Smut and Papaya fruit fly eradication programs. Mr Ashton stated that there would be no changes to ground activities and staff of the AHB T2M.

Item 5 – Reporting from DAFF Queensland

Mr Gilmour provided an update of AHB activities in Queensland. This report is attached as attachment A.

The Chair thanked BQ for their report and emphasised that the end of the program was now only 8-9 months away, and that by the end of the year there needed to be clear direction of the TMG and BQ passing the responsibility of AHB to the public, community and honey bee industry for management in the future.

AHBIC requested that BQ provide a date when volunteers would no longer be required. BQ stated that they had not thought of a particular date, but would work with AHBIC out of session to agree to a particular date.

Item 6 – Literature review discussion

The Chair stated that literature review was very comprehensive and that BQ had effectively completed what was requested of them in AG Project 3.

Dr Koetz added that seven recommendations were provided by the SAG and they had since been incorporated into the literature review. Some of the changes accepted included:

- Changing the title of the literature review from *'Asian honey bee (Apis cerana javana)'* to *'The Asian honey bee (Apis cerana) and its strains – with special focus on Apis cerana Java genotype'*.
- Changing the taxonomy of the bee from *Apis cerana javana* to *Apis cerana* Java genotype as it is not a recognised subspecies.
- BQ stated that they had attempted to obtain the Indonesian Master's thesis on AHB, however have had no luck, and because of this, this Master's thesis had not been included. The Chair stated that DAFF had an Agricultural Counsellor situated in

Indonesia and if required, would be more than happy to help out in retrieving this Master's. BQ agreed to provide the Chair with details of the Master's thesis so DAFF could forward these to the Agricultural Counsellor situated in Indonesia.

- Expanding the section of *Apis cerana* Java genotype in PNG and the Solomon Islands
- Contacting Dr Denis Anderson for personal communication references in the literature review
- Highlighting more clearly (when possible) where information is lacking in regards to *Apis cerana* Java genotype

The TMG agreed with the changes recommended by the SAG.

AHBIC stated that they were not happy with some aspects of the literature review from an industry point of view, and that former research mistakes had been perpetuated in this literature review. The Chair reiterated to the TMG that a literature is a neutral document and that is not an attempt to change the science, but merely reflect the current literature.

The Chair stated that the majority of the TMG support the literature review, but there was a desire for Industry to provide constructive feedback in its development and before its release. The Chair requested that if AHBIC had any comments, which were backed up by peer reviewed information/research, then this should be forwarded to PHA. PHA agreed to work through comments with AHBIC and BQ out of session.

It was agreed that once these comments had been received and incorporated, and supported at the next TMG meeting in early December, then the literature review would be released and placed on the AHB website. There was discussion regarding the possibility of possibly releasing future versions of the literature review as more information comes to hand, such as the Indonesian Master's, or from the Industry funded research projects. BQ's view was that any release of new information should be in the form of a supplementary report or addendum to the published literature review.

Item 7 – Summary and Close of Meeting

The Chair thanked the TMG for their contribution to the AHB T2M and closed the meeting.

Queensland Government

Progress Summary Report, October 2012

Asian honey bee Transition to Management Program

Biosecurity Queensland, Department of Agriculture, Fisheries & Forestry

This document is prepared for the Transition to Management Group meeting on 16 October 2012. A number of appendices are included to provide greater detail.

Contents

Program highlights

Detections and public reports

There have been 776 detections of AHB nests and swarms to date, since May 2007. Since 1 July 2012 the program has detected the following;

- Nests – 82
- Swarms – 39
- Foragers/PID's – 21

There have been 166 public reports of suspect AHB since 1 July 2012, leading to the detection of 66 AHB nests/swarms.

A significant detection that occurred since the last report, 21 August 2012, and caused an extension of the KIA (see Appendix 2) was in an area known as Arriga, west of Atherton.

Compliance

18 "Movement" licenses have been issued since 1 July 2012. However most of these have been to AHB Program staff that were moving bees and collecting swarms for research.

An "analysis of movement control efficacy, cost and compliance for the Asian honey bee incursion in Cairns" has been completed and a report is being prepared. Once finalised, the report will be circulated to the AHB TMG out of session for their consideration.

DAFF Biosecurity

- The "High Intensity Surveillance" trial, using one detection method, continues within 800m of the Cairns international and Torres Strait seaport area.
- 2 swarm and 2 nests were collected and provided to Aus. Gov DAFF to assist the development of laboratory procedures.

Industry engagement

- 7 volunteer beekeepers worked with the program at various times during August and September.
- Local beekeeper meetings are attended monthly. State wide industry liaison meetings are held monthly.
- Discussions are occurring regarding how bee keepers can assist the Department with future reports of suspect bees including AHB.

Community Engagement

- Engaged with approximately 300 members of the public at "Carnival on Collins", Cairns with an interactive live bee display,
- Attended the Annual Tableland Garden Expo (in partnership with Tableland regional council).

- Presentation delivered at the Quarterly Far North Queensland Pest Advisory Forum (Mossman). Focus on identification and tools available for the community, live bees we used for identification purposes - 95 in attendance encompassing local and state government agency staff, traditional owners and private property owners.
- Presented at the Pest Management Institute Conference in Townsville– 87 in attendance from a wide geographical area extending from Sydney and Brisbane to Cooktown and as far west as pest control operators from Mount Isa.
- Facilitated the collaboration between Apiary officers and the T2M program by initiating monthly teleconferences and the sharing of informaiton. This state wide group effort will continue monthly by teleconferences and where possible monthly hands on training opportunities with the Northern Apiary officer so that we can work together towards cessation of government intervention.
- Completed a Guideline for industry destroying swarms or nests of Asian honey bees and a Fact Sheet for the community about what tools are available and what they can do if Asian honey bees are a threat to their safety.
- Developed media plans for the cessation of swarm and nest destruction in the known infested area (KIA) and the release of the Literature review.
- Remote treatment video finalised and formatted to be included in new website content.

Workshops

Workshops have been completed inside and around the edge of the KIA, these sessions focused on the following critical stakeholders; beekeepers, indigenous rangers & traditional owners, Queensland parks and Wild Life rangers, transport industries, pest control operators, and state/Local Government agency staff.

- A workshop completed at The Centre for Tropical Agriculture (Mareeba) for Plant Biosecurity and Animal Biosecurity staff, beekeepers and regional pest control operators
- A workshop completed for indigenous rangers in Cardwell and the Hinchinbrook shire local government staff
- Hands on demonstrations conducted as part of the Pest Management Institute Conference in Townsville.

A report has been completed - An evaluation of the Asian honey bee workshops conducted in the KIA for critical stakeholders (see Appendix 3)

Science

- A draft literature review on Asian honey bee was completed and submitted to the Scientific Advisory Group for discussion. Following comments from the SAG the literature review was edited and is now ready for consideration regarding public release.

- Surveillance efficacy trials commenced in September 2012. Two trials have been conducted to date. Five further trials are planned. Trials will be conducted monthly until March 2013.

- Trials to improve the effectiveness of bait stations, their design and attractant effectiveness have commenced. We are liaising closely with Dr David Guez, University of Newcastle.

Spatial and spread analysis

- Modeling of AHB population dynamics and drivers of spread: Computer modelling of AHB spread over time is progressing. Once computer modelling output data is provided by BQ Intelligence, the Senior Scientist will commence analysis and interpretation.

- Spatial analysis of current AHB infestation: All data required for spatial analysis has been compiled by the GIS officer. Analysis and interpretation will commence in October 2012.

External researchers

- The program is continuing to collaborate with and assist visiting researchers, incl. Prof. Ben Oldroyd and Eloise Hinson (University of Sydney), Dr. David Guez (University of Newcastle), Prof. Caroline Gross (University of New England).

- Work continued with three James Cook University students who took up the opportunity to work under the supervision of our Senior Scientist for the program as part of their studies. Data has been collected, students are now writing up their reports.

Current and future program activities

- Cessation of government intervention activities in the Known Infested Area (KIA).
- Continue to finalise strategies and policies relating to Asian honey bee (AHB) and other bee responses post 30 June 2013.
- Increase awareness and delivery of informaiton and skills to critical and key stakeholders in North Queensland (with a focus on the closest major towns to the KIA).
- Continue various community engagement activities e.g. web update, social media, media releases, radio interviews etc.
- Continue trials to validate efficacy of detection and destruction methods.
- Collaborative trials to improve effectiveness of bait stations, their design and attractant effectiveness.
- Continue spatial analysis and spread modelling.
- Continue to collaborate with and assist visiting researchers.
- Continue to work with DAFF Biosecurity regarding the High Risk Area trial and other AG5 activities.

APPENDIX 1 - AHB T2M Work Plan Progress Report.

AG1 – Limiting impact on Urban Communities
Objective – informed community and apiary and pest controller industries able to identify AHB and take actions to reduce the impact of AHB on human health, amenity and honey production

Project Number	T2M Deliverable	Actions/strategies	Due Date	Comments/status
A.(i)	Website and facebook site established (adapted from existing sites)	Existing DAFF QLD website maintained	Ongoing	**COMPLETED AND ONGOING** • Informaiton updated in April 2012 and also included an online reporting capacity. This allows the public to submit photographs and reports of AHB through the Biosecurity Queensland website. • Complete revamp of all content informaiton pages in June 2012, included enhanced identification of species and tools to help differentiate between swarms and nest. • Stage 2 of the revamped web content (including images and reports) will be available by the end of October. • More website updates are ready to be uploaded pending the completion of some program activities. • Website is planned to be maintained routinely and reviewed every three months.
(ii)		New DAFF QLD web and social media features approved	29.2.12	**COMPLETED AND ONGOING** • Biosecurity Queensland facebook and twitter pages are active and have been used to launch AHBT2M activities such as attendance at shows etc • A regular social media reporting framework including event calendar has been developed with DAFF QLD's social media unit - regular reports are provided on social media activity including the number of posts from Biosecurity Queensland and the public.

(iii)		DAFF QLD website is refreshed	Initial : 31.3.12 Revised: 31.7.12	**COMPLETED AND ONGOING**
				• See comments from AG1A.(i)
				  ○ refreshed in April 2012.
				  ○ revamped June 2012
				  ○ next stage to be loaded by end of October
				• Website is routinely evaluated, updates will be documented.

B.(i)	Information reviewed and updated as program outcomes are delivered and information is tested	DAFF QLD website is regularly updated as T2M program is delivered	Ongoing	**COMPLETED AND ONGOING** See comments from AG1A.(i)
(ii)		PHA website www.asianhoneybee.net.au is used as national portal for agreed AHB information, and information is regularly provided to PHA for updating to the website	First information provided to PHA by mid Feb 2012 ongoing	**COMPLETED AND ONGOING** • 2 scientific documents placed on PHA website • All Management Group minutes are placed on the PHA website • All Scientific Advisory Group minutes are placed on PHA website. • Documents and information regularly provided as they come available.
C.(i)	Customer journeys developed for DAFF QLD website	Develop customer journeys for agreed AHB processes	**30.6.12**	**DISCONTINUED FOLLOWING REVIEW** • **With recent Machinery of Government changes following a change of government, the use of customer journeys has ceased.**
D.(i)	Develop comprehensive strategy to manage cessation of government funding of transition by 30 June 2013,	Develop and implement a Community Engagement and Communications Plan.	Developed by 31.12.11 Implementation – ongoing	**COMPLETED AND ONGOING** • AHB T2M CE and Communications Plan developed and approved 17 November 2011. • A draft cessation strategy to manage the cessation of government funding is being reviewed.
(ii)		Develop staged transition process to implement	Developed by	**COMPLETED AND ONGOING** • Staged transition process has been developed and implementation

	underpinned by significant engagement & communications plan	T2M plan, with key milestones of 30.6.12 and 30.6.13	29.2.12 Implementation – ongoing	is ongoing.
(iii)		Develop T2M Work Plan that identifies timeframes for delivery of the T2M Plan projects and activities.	Developed and agreed by 29.2.12 Implementation – ongoing	**COMPLETED** • Work Plan developed – provides a clear line of sight between the Australian Government and Queensland Government projects under the T2M Plan and the work to be delivered by Biosecurity Queensland. Industry funded projects are being managed through a different process.
(iv)		Develop an operational plan that integrates all T2M projects and activities under program delivery areas of: program management, community engagement/industry liaison/compliance, operations and science.	Developed and agreed by 29.2.12 Implementation – ongoing	**COMPLETED AND ONGOING** • The Operational Plan is an internal Biosecurity Queensland planning document to guide operational delivery of the separate elements of the T2M program. • Many T2M Plan activities under the six Australian Government projects and two Queensland Government projects are inter-related and utilise the same human resources. • Operational Plan has been reviewed and updated in July to articulate each program components remaining tasks.
(v)		Decide on geographical areas BQ will respond to a public call out and which areas to refer to pest controller	Developed by 30.6.12 Implemented by 1.7.12 &	**COMPLETED** • Policy has been developed in consultation with Apiary officers, Comm. DAFF. Maps have also been produced by AHB T2M to support the policy and ensure its translation is clear. • Hands on workshops have been provided critical stakeholders to teach those stakeholders within the KIA and on the Edge of the KIA.

			ongoing	• Information and AHB skill development sessions are in progress for key stakeholders in North Queensland (See Appendix 3).
(vi)		Develop first draft of information and training packages for pest controllers, apiarists and other key stakeholder groups	31.3.12	**COMPLETED** • Information and training package developed.
(vii)		Discuss training package content with industry representatives, incorporate changes and be ready for full launch	Finalised by 30.6.12 Implemented – ongoing	.**COMPLETED** • A consultation process was conducted with all critical stakeholders to discussion the content and their desired skills. (see Appendix 3) • The outcomes of these discussions have given direction for the workshop content and additional tools to be developed.
(viii)		Complete withdrawal of government management and funding, with community/industry having the knowledge to manage AHB	30.6.13	**ON TRACK** • The strategy under AG1.D(i) to manage cessation of government management and funding of AHB will ensure all areas of government, community and industry is empowered to manage AHB impacts. This document has been drafted and is in review.

AG2 – Developing and making available a suite of control measures for AHB Objective – safe and effective control measures are available and approved for use to reduce impacts of AHB on community, honey production and the natural environment				
Project Number	**T2M Deliverable**	**Actions/strategies**	**Due Date**	**Comments/status**
A.	Desktop review and analysis to better understand	Literature review and analysis conducted	Initial: 31.3.12 Revised	**COMPLETED** • A draft literature review was completed and submitted to SAG for comment. Taking into account the SAG comments an the

	how others manage AHB		due date: 31.7.12	draft literature review has been submitted to the Transition Management Group.
B.	Develop integrated control strategies for different industries to minimise impacts of AHB, including identifying any off target impacts (especially balance between AHB and commercial European honey bee in the same environment to minimise impact on honey production)	SAG to consider and advise on priorities, and provide scientific oversight	31.1.12	**COMPLETED** • Was discussed at initial SAG meeting in November 2011 and 18-19 January 2012. • At the January meeting, SAG was given an overview of AHB program operations. • SAG identified Remote Treatment trials as highest priority.
		Stakeholder and industry engagement to identify priorities and needs	Commenced by 31.1.12 Ongoing	**IN PROGRESS** • Two industry liaison groups are meeting on a monthly basis, one at a State level and the other at a local level. • Regular collaboration is occurring as necessary regarding, community/industry engagement material, response procedures etc. • An initial survey was conducted in February 2012 with 9 beekeepers to investigate priorities and needs. • A more comprehensive survey is being developed to finalise the need from industries and to identify any known impacts.
(i)	Validate efficacy of detection and destruction methods and strategies as essential elements of deploying different control methods	Detection and destruction methods and strategies fully documented	31.12.12	**IN PROGRESS** • Standard Operating Procedures (SOPs) for each surveillance method and destruction method have been developed and will be updated following science trials and analysis to improve these. • A review of all SOPs has commenced so they can be made available to other Government agencies and industry. This includes adding detail to SOPs such as high quality images, videos and tips. • SAG has recommended that video footage of all detection and destruction techniques be uploaded to the web – as important training tools.

				○ Quotes are being sought for these videos to be created. ○ pending the outcomes of the scientific efficacy trials • A video of Remote Treatment Trails has been completed and will be available on the website by the end of Oct. • Amateur video footage has been captured of staff killing swarms and nests. This has been used to complement workshop content provided to critical stakeholders.
		Rates of effort and validation of all methods	31.3.13	**IN PROGRESS** • Based on existing data and field observations, a preliminary assessment of rates of effort has been undertaken. • Experimental design for determining efficacy of surveillance methods has commenced and two trials completed.
(ii)	Determine the timing of implementing these methods and strategies to maximise effectiveness of control methods	• Seek advice from stakeholder and industry • Develop toolkit	30.6.12 Reviewed by 30.6.13	**IN PROGRESS** • Relationship established with local beekeepers through attendance at monthly meetings and a liaison committee. • A training and induction package has been developed with industry input. • Delivery of this package has commenced and is ongoing.
(iii)	Determine effectiveness of bait stations, their design and attractant effectiveness	Document bait station use and design	31.12.12	**IN PROGRESS** • Bait station SOP has been developed and trials to improve the bait station have commenced. The SOP will be updated on completion of the trials.
		Validate effectiveness	31.12.12	**IN PROGRESS** • Trials have commenced to test this surveillance technique around known locations of AHB.
(iv)	Understand AHB behaviour to better inform development of targeted control	Desktop review and analysis of AHB behaviour in FNQ	31.1.12	**COMPLETED** • An analysis of AHB behaviour was finalised in January 2012 and is available on the PHA website.

	measures			
C.	Investigate alternative control techniques and attractants	SAG to consider and advise on priorities, and provide scientific oversight	31.1.12	**COMPLETED** • SAG has made some recommendations to PHA & RIRDC. o Develop an attractant specific to A. cerana Java strain, Dr. David Guez.
(i)	Finalise development of remote poisoning • Validate techniques • Refine protocols to reduce risk of non-target poisoning and minimise adverse effects on environment and native fauna	Experimental design for research developed and endorsed	31.1.12	**COMPLETED** • Research Trials completed. • Final report completed.
		Revised permit is approved by APVMA	31.12.11	**COMPLETED** • Approved by APVMA in December 2011 o The permit requires that only DAFF QLD use the chemical and is valid until 1 July 2015. o PHA is currently corresponding with APVMA regarding this matter.
		Research trials conducted, techniques validated and final report prepared	Commenced in January 2012 Complete 30.12.12	**COMPLETED/SUSPENDED** • Research trials were conducted and a report submitted to SAG. • Further trials were suspended while PHA seeks information from APVMA and the chemical registrant.
(ii)	Tomato dust – a potential control to be researched and validated	SAG to advise on appropriateness	31.1.12 – on advice of SAG, will not be conducted	**DISCONTINUED** • **TMG approved that this research will not be conducted, see comments below** • This research was suggested by industry volunteers. SAG discussed the research at the initial SAG meeting in November 2011 and 18-19 January 2012. • SAG recommended that this research is not conducted. • The Transition Management Group approved this recommendation on 24 January 2012.
(iii)	Nectar analysis – analysis of nectar	SAG to advise on appropriateness	31.1.12	**DISCONTINUED** • **TMG approved that this research will not be conducted, see**

	that AHB is foraging on to identify potential attractants for use in traps			**comments below** • Was discussed at initial SAG meeting in November 2011 and 18-19 January 2012. • Initial advice from SAG is that a pollen analysis would provide a better indicator of foraging activity rather than nectar analysis. • SAG has recommended conducting a pollen analysis of honeycomb stored since beginning of the program. • The Transition Management Group approved this recommendation.
(iv)	Pollen analysis – analysis of pollen in AHB honeycomb determine plants that AHB is foraging on	This research is being conducted by CSIRO/JCU. BQCC Cairns is providing assistance as required.		**ONGOING COLLABORATION** • **The Cairns AHB T2M team is providing support to the researcher, Professor Caroline Gross.** • At its meeting on 18-19 January 2012, SAG recommended a pollen analysis of honeycomb stored since 2007. • In 2007, M K Macphail of the Australian National University conducted a pollen analysis on one AHB nest. The report has been provided to PHA and SAG. • Caroline Gross is conducting CSIRO/UNE research project on the effects of AHB on other pollinators. As part of this research, pollen is being extracted from all nests detected since December 2011. • SAG identified this as a priority and RIRDC will be supporting this work. • This links with AG4.
(v)	Research into pheromone use to attract and/or detect AHB in order to increase trap sensitivity	This research is to be conducted by other parties through RIRDC funding that was supported by the SAG.	31.1.12	**ONGOING COLLABORATION** • **The Cairns AHB T2M team is providing support to the researcher, Dr David Guez.** • Was discussed at initial SAG meeting in November 2011 and 18-19 January 2012. • SAG supported a proposal for RIRDC funding of a project that includes Cairns plants that were considered attractive to AHB, as well specific overseas orchids.

AG3 – Limiting impact on honey production Objective – beekeepers in areas where AHB is established maintain honey yields and quality				
Project Number	**T2M Deliverable**	**Actions/strategies**	**Due Date**	**Comments/status**
A.(i)	AHB behaviour research is critical to identify elements of differential control of AHB and European honey bees in the context of honey production. Developing an understanding of AHB behaviour will guide development of targeted control measures through: • Literature review and engagement with apiarists in the Cairns area who have had experience with both honey bees	Conduct literature review, conduct analysis, compare behaviour and identify opportunities that support differential control.	Initial: 31.3.12 Revised: 31.7.12	**COMPLETED** • Library of relevant literature has been collated. • A full literature review has been completed and submitted to TMG.
(ii)		Desktop review and analysis of AHB behaviour in FNQ	Initial: 31.1.12 Revised: 31.7.12	**COMPLETED** • Refer to AG2.B.(iv) • A document regarding observational behaviour of AHB in the Cairns area has been completed and is available on the PHA website. • SAG considered the report on 19 January 2012.
(iii)		Engagement with local apiarists	Commenced by 31.12.11 Completed by 30.6.12	**COMPLETED AND ONGOING** • Engagement with local apiarists has been an ongoing feature of the program since 2007 – this is continuing. • Since 1 July 2011, the program has attended all local bee keeping association meetings and provided updates on program activities. • A report from local apiarists on the impact of AHB on commercial honey production within AHB infested areas is yet to be developed although recent observations were provided. see AG2. B(ii) • A new survey of local apiarist is being developed.

	• Analysis to understand what is known and not known about AHB in relation to mating, behaviour, foraging habits, weather impacts, etc. • Compare the behaviour between AHB and European honey bees to identify opportunities that support differential controls			
B.	Development of management strategies • Based on outcomes of Project 2, develop and test management strategies targeted at limiting impact of AHB on	Using outcomes of literature review and behaviour analysis, work with industry to develop management strategies for use by industry	Strategies developed by 15.6.12 Strategies tested by 31.12.12	**IN PROGRESS** • Also links with AG4 • The literature review and behavioural analysis will be used as key reference documents to identify additional opportunities for control of AHB. • Engagement with local industry has commenced regarding the need for management strategies in the future pending outcomes of the literature review. see AG2.B(ii)

	honey production in areas where AHB is established			
C.	Model the population dynamics and drivers of spread as they impact on the management of EHB hives	SAG to consider and advise	31.1.12	**COMPLETED** • Was discussed at initial SAG meeting in November 2011 and 18-19 January 2012.
		Report on modelling of AHB population dynamics and drivers of spread	31.12.12	**IN PROGRESS** • AHB data has been reviewed, Geodata sets produced and computer modelling commenced. • Earlier work conducted by a person external to the program and whilst eradication was being conducted is being replicated using the updated data.
D.	Develop technology to assist industry to mitigate AHB impacts	SAG to consider and advise on priorities for technology development	31.1.12	**COMPLETED– SEE RIRDC APPROVED RESEARCH PROJECTS** • Was discussed at initial SAG meeting in November 2011 and 18-19 January 2012. • SAG and RIRDC have addressed this.
		Stakeholder and industry engagement to identify needs and priorities for technology development	Commenced by 31.3.12 ongoing	**COMPLETED AND ONGOING** • Consultation process with apiarist, transporters, pest controllers, environmental groups etc. completed. Refer to Appendix 3 and Ag1.D(vii).
		Additional technologies to be developed, as required (to be determined)		**COMPLETED – SEE RIRDC APPROVED RESEARCH PROJECTS** • SAG and RIRDC have addressed this and funded projects have commenced. o Develop an attractant specific to *A. cerana* Java strain, Dr. David Guez o Inter-specific mating between *A. cerana* and *A. mellifera*, Prof. Ben Oldroyd o A strategy to address concerns of countries that import Australian honeybees, Michael Clarke

				○ Establishing the disease status of *A. cerana* Java strain in the Cairns region, John Roberts CSIRO ○ Risk assessment of ports for bee pests and pest bees, Simon Barry
(i)	Develop PCR testing to more quickly detect the presence of AHB in trap syrup etc as indicators of the need for management of European honey bee hives	Report on PCR tools for detection of AHB	31.12.12	**IN PROGRESS** • At its meeting on 18-19 January 2012, SAG recommended Biosecurity Queensland continue to finalise the PCR research. • A test for the specific detection of *Apis cerana* DNA has been developed. The test is sensitive to approximately 0.5-5 ng of *Apis cerana* DNA and has shown no cross-reaction to *Apis mellifera* or any native insects that were trapped when lure syrup was placed in AHB free areas of far north Queensland. DNA extraction methods for whole bee, sugar syrup and wings removed from bee-eater pellets have been investigated and optimised for each sample type. This work provides proof of concept for a molecular surveillance program for AHB in far north Queensland.
	Undertake preliminary microsatellite work to determine if difference can be observed between Australian, Solomon Islands and PNG populations of AHB Java strain.		31.12.12	**COMPLETED** • On SAG advice, TMG 3 approved **-** undertake preliminary microsatellite work to determine if difference can be observed between Australian, Solomon Islands and PNG populations of AHB Java strain. • Preliminary microsatellite studies showed a distinct difference between AHB in Queensland from those in the sampled populations of PNG. One of the two PNG populations identified included samples from the Solomon Islands. The work identified that there may have been two incursions into QLD, but the number of samples tested was insufficient to be certain. Hence, the pilot study demonstrated the utility of the increased panel of loci and it is recommended that a larger-scale project be undertaken to include all QLD samples (and determine if there has been more than one incursion), and more samples from potential source populations (of the Java strain and others) to identify the most

				likely source of the QLD incursion(s)."
F.	Develop approaches with the honey industry for adoption and implementation of management strategies		Commenced by 31.3.12 ongoing	**IN PROGRESS** Also links with AG1 and Industry project 2.

AG4 – Limiting impact on natural environment Objective – tools and strategies are available for implementation to mitigate the impact of AHB in ecologically significant areas				
Project Number	**T2M Deliverable**	**Actions/strategies**	**Due Date**	**Comments/status**
A.	Engagement with indigenous communities and environment sectors (linked with AG1)	Meet with indigenous groups and rangers, and environmental groups	First meeting by 31.12.11 Ongoing	**IN PROGRESS** • Meetings held with a range of indigenous groups. • Discussions held with Queensland Environmental Protection Agency and other ranger groups. • Permission was granted by Queensland Parks and Wildlife Service for AHB information posters to be placed in campgrounds in National Parks bordering known infested areas. • Workshops conducted with indigenous rangers & TO's, QPW rangers in and around the KIA.
		Deliver education/training packages that will foster indigenous and environmental contribution to AHB program	First training session by 31.3.12 Ongoing	**IN PROGRESS** • Comprehensive training package completed. • Training delivered to stakeholders in and around the KIA. This is now being extended out to groups in North Queensland by attending, pest advisory forums,
B.	Utilise tools and	Indigenous communities	Ongoing	**IN PROGRESS**

	strategies developed for control measures (Project AG2) and limit impact on honey production (AG3)	and environmental sector utilise tools and strategies to control AHB	- Tools and strategies utilised as they are developed	• Techniques developed and workshop training provided. See Appendix. 3
C. Relates to AG2.C(iv)	Pollen Analysis – analysis of pollen in AHB honeycomb determine plants that AHB is foraging on	Collect pollen from Apis cerana collected in the Known Infested area to determine if competing with Apis mellifera and Native Bees. Also to determine flower preference.	TBA	**ONGOING COLLABORATION** • **The Cairns AHB T2M team is providing support to the researcher, Professor Caroline Gross.** • TMG approved on 24.1.12 to remove nectar analysis research from the T2M Plan and to replace it with pollen analysis under AG4. • This work is being conducted by CSIRO/UNE and the program has provided more than 9 samples to date.

AG5 – Optimising early detection of new incursion of AHB Objective – any new incursions of AHB are detected rapidly and tested to determine the presence or absence of emergency bee pests in accordance with provisions of the EPPRD				
Project Number	**T2M Deliverable**	**Actions/strategies**	**Due Date**	**Comments/status**
A.	Conduct differential sensitivity testing to determine the comparative effectiveness of all available detection methods e.g. sentinel hive		31.12.12	**IN PROGRESS** • Discussions have been held with Australian Government DAFF-Biosecurity on developing an appropriate way to undertake bee surveillance in port areas with an established population of AHB and ways to conduct differential sensitivity testing for different detection methods. 4 meetings to date. • Floral sweeping by Australian Government DAFF-Biosecurity commenced in April 2012 and a Bee trap efficiency paper has been produced.

	strategy vs strategic sampling of surveillance traps			• SAG advice is also to be obtained. • In the Cairns Port area all nests and swarms that are reported by the public are being destroyed. These destruction activities are used to check for known bee pests and diseases. All nest and swarms collected by the AHB T2M are provided to A DAFF
B.(i)	Determine efficacy of surveillance strategies and techniques to determine likely detection rate in bee free zones and around ports in the context of established AHB populations	Surveillance strategies and techniques fully documented	31.3.12	**IN PROGRESS** Links with T2M AG2.B.(ii) • Standard Operating Procedures (SOPs) for each surveillance and destruction method have been developed. • A review of all SOPs has commenced so they can be made available to other Government agencies and industry. This includes adding detail to SOPs such as high quality images, videos and tips. • SAG has recommended that video footage of all detection and destruction techniques be uploaded to the web – as important training tools. • Video footage has been taken of nests being destroyed and removed from a tree – this footage will be used to develop a training video. • A surveillance trial has been developed and is in progress to assess an optimal surveillance strategy. Australian Government DAFF-Biosecurity is conducting the floral sweeping surveillance component of the trial while Biosecurity Queensland is conducting the bee lining and destruction components. To date 3 nest/swarms have been detected, destroyed, and 2 analysed for presence of mites. These data are not sufficient to determine efficacy of the surveillance strategy and increased resources are being applied currently.
(ii)		Rates of effort, efficacy and validation of surveillance methods	31.12.12	**IN PROGRESS** • Discussions held with SAG and Biosecurity Queensland Intelligence Unit to determine methodology for collating evidence to determine rates of effort and validation of techniques

				• In April 2 scientists and a Spatial and Information Management Officer to collate information and analyse the surveillance methods were employed.
	Develop an appropriate scientific methodology for floral sweep netting in the outer areas of the containment area to gain greater confidence of absence or presence of AHB	Floral sweep netting at edge of known infested area data analysed and documented.		**IN PROGRESS** • TMG 3 approved - develop an appropriate scientific methodology for floral sweep netting in the outer areas of the containment area to gain greater confidence of absence or presence of AHB • The program has a targeted floral sweep netting procedure it is using and reviewing with a view to improve it. The program has shared this with the Commonwealth DAFF Biosecurity who is working with us to develop a general sweep netting technique.
C.	Establish a strategy for laboratory analysis of AHB detections within bee free zones and around ports as an early detection strategy for any new incursions that could carry mites or viruses		Strategy developed by 31.3.12	**COMPLETED AND ONGOING** • Strategy used during the eradication phase of the program is continuing to be utilised. Areas of responsibility for the Cairns port area have been agreed. A joint surveillance trial is in progress in the high risk sea port area. • All AHB detections are routinely tested for presence/absence of mites and diseases. No mites/diseases have been detected. • A formal state-wide policy is developed and discussion with DAFF Biosecurity is occurring.
D.	Partner with the Northern Australian Quarantine Strategy (NAQS)	Develop and implement integrated operational plan and surveillance strategy with NAQS	Initial discussions held by 31.12.11	**IN PROGRESS** • Regular discussions with Australian Government DAFF-Biosecurity have been held to coordinate surveillance activities. 4 meetings to date. • The focus of recent meetings with Australian Government DAFF-

	program of DAFF to develop integrated operations focussed on early detection of new AHB incursions and any quarantine pests that they may carry		Strategy and plan developed by 30.4.12 Integrated operations commenced by April 2012 and ongoing	Biosecurity has been to identity current operational procedures and resources focussed on early detection of new AHB incursions and current laboratory capacity, including identifying areas of responsibility in the Cairns Port area. • Floral observations and bee lining in the Cairns Port Area to date has not generated sufficient numbers of nests to allow for effective surveillance for exotic mites. It has demonstrated that technique as effective to detect the presence of *Apis* species.

AG6 – Critical intervention to limit long distance spread
Objective – critical interventions and their points are identified and analysed to inform the Varroa action plan; awareness and control information is in place to support spread threat reduction strategies before significant long distance spread occurs; AHB impact is limited as much as possible in strategic areas as elements of long distance spread intervention strategies

Project Number	T2M Deliverable	Actions/strategies	Due Date	Comments/status
A.	Maintain existing movement controls for an interim period and collect information on their efficacy, cost, compliance	Maintain Restricted Area and existing movement controls, until movement control policy has been reviewed	Ongoing, until determined	**IN PROGRESS** • A Restricted Area remains in force and movement licenses are being predominately issued to move bees or beekeeping equipment into or within the restricted area. • Applications for movement licences are assessed and approved as required. No movement licences have been declined. • 9 AHB staff are appointed as Inspectors under the Exotic Diseases in Animals Act 1981

	etc.			• Discussions with Biosecurity Queensland Apiary Officers and local bee keepers regarding various bee pests including AHB are ongoing.
		Develop strategy to cease/amend Restricted Area and movement controls to transition to management • Amend Restricted Area, as required	Strategy developed by 30.6.12 RA rescinded by 30.6.13	**IN PROGRESS** • Restricted area will be maintained until this strategy is developed • A Biosecurity QLD internal paper has considered the Legislative Options re the Restricted Area. • Following discussions with industry and Australian Government DAFF-Biosecurity it has been decided to leave the restricted area as it currently stands. • A project that was supported by SAG and funded through RIRDC will assist in guiding this strategy.
		Collect information and conduct analysis of movement control efficiency, cost and compliance	Commenced by 31.1.12 Completed by 31.12.12	**IN PROGRESS** • Analysis of current data and strategies to limit long distance spread has commenced. This will guide the ongoing discussions with industry about the development of any certification system. • The cost, compliance and efficiency of movement controls have been considered and a consultation document, "Biosecurity Precautions for Beekeepers Moving European Bee Hives Within and Out of the Asian Honey Bee Restricted Area" produced for discussion with industry. Following discussions with industry and Australian Government DAFF-Biosecurity, it was agreed to retain the current Restricted Area and movement controls. It is planned to have further discussions with industry and Canadian Government representatives.
		Finalise policy on movement of European honey bee hives from within the Restricted Area to outside the Restricted Area	31.3.12	**COMPLETED AND AWAITING REVIEW** • A draft Protocol to Allow Movement of Hives out of the Asian honey bee Restricted Area was developed in consultation with local beekeepers. The draft protocol has been placed on hold after receiving advice from Australian Government DAFF-Biosecurity about the possible trade implications if bees moved outside the restricted area.

				• Discussions have been held with the bee industry about an industry managed certification system for moving European honey bees within the restricted area
B.	Conduct pathway analysis to better understand likely pathways and potential for spread through pathways implicated in the long distance spread of AHB with a primary focus on effective strategies to minimise long distance spread through transport vectors	• Advice from SAG • Collate data • Analyse data • Develop strategies	Commenced by 31.3.12 Completed by 31.3.13	**IN PROGRESS** • A strategy to address concerns of countries that import Australian honeybees has been supported by SAG & RIRDC, and a specific research project has been completed and documented. o A strategy to address concerns of countries that import Australian honeybees, Michael Clarke • All AHB data to date has been collated into BioSIRT and Geodata sets established.
C.	Implement operations to minimise spread through those pathways, including developing bee free zones around transport hubs, ports, etc and review and revise their	Develop and implement strategy to minimise spread through pathways, including strategy to create and maintain bee free zones	Strategy developed by 31.3.12 Implementation - ongoing	**IN PROGRESS** • A strategy to minimise the spread of Asian honey bee through pathways including the maintenance of bee suppression zones has been drafted. Consultation with transport industries has identified that there will be no certification system. An awareness campaign will be launched including posters and web informaiton will be launched to increase the awareness of transport bodies to not aid the spread of bees. • All nests and swarms that are reported by the public are still being destroyed although cessation of government intervention is planned to occur soon. • In conjunction with the high intensity surveillance trial being

	efficacy after one year			conducted by DAFF Biosecurity all AHB swarms and nests are being destroyed around transport hubs and the port to help limit the spread. • A review of the dispersal pathways from Cairns suggests current strategies are effective as there has been no known long distance dispersal from Cairns. Ongoing engagement with transport industries is effective. • A formal bee free zone is not possible – A joint trial with Australian Government DAFF-Biosecurity and Biosecurity Queensland has commenced to assess the feasibility of a bee suppression zone. • The remote poisoning trials will be trialled around the transport hubs and port.
		Review strategy and revise efficacy within 12 months of implementation	31.3.13	**IN PROGRESS** • This is linked back AG2 (B) and is in progress.
D.	Work with transporter businesses in the development of monitoring systems, providing training in the recognition of AHB and what to do when AHB is suspected	Review existing transport industry systems and develop any monitoring systems (that may minimise spread through pathways) for implementation by the transport industry	30.6.12 ongoing	**IN PROGRESS** • Discussions with industry are ongoing. • A guideline for industry destroying SWARMS AND NEST OF Asian honey bees has been developed and awareness has been increases to informaiton transport industries what tools they have available. • A poster is being developed to aid in getting the informaiton out to the wider national audience.
		Deliver information and training packages for transport industries	1st session delivered by 31.3.12, ongoing	IN PROGRESS • Information and training package developed, based on the engagement with transport industry undertaken since 2010. • Discussions held with 50 high risk businesses with relevant AHB literature placed in their offices. This will encourage staff of businesses that are at a high risk of inadvertently moving bees to look out for and report AHB. These companies are at a high risk of inadvertently moving bees and are an effective passive

				surveillance tool to report suspect AHB. • The engagement process with transport industries has shifted since 1 July 2011 – engagement now focuses on the important role transport companies play role in preventing the spread of AHB from Far North Queensland. • Extension materials, such as posters <u>are being developed and will be extended out to the national audience to build awareness about not moving bees.</u>
E.	Review the varroa mite management plan and revise, as appropriate *(There is a reference to DAFF's Varroa Continuity Strategy which mentions the need for movement controls. PHA chairs the Management Committee for implementation of the Continuity Strategy - so this T2M deliverable will link in with PHA and the*		Revise by 30.6.12 Revise by 30.6.13	COMPLETED AND ONGOING • Discussions have taken place between the Animal Biosecurity & Welfare program and Plant Health Australia. • Biosecurity QLD has conducted a significant review of our bee pest and pest bee surveillance work which centres on early detection. A Queensland Bee Surveillance program has been updated and is being implemented. o With respect to varroa, commercial beekeepers are being asked to contribute to early warning surveillance by cooperating in the Qld Bee Surveillance Program and undertaking alcohol washes on samples from their commercial hives. This activity is serving to replace early detection methods that relied on the sugar shake method and the use of acaracide strips. o Furthermore, Biosecurity QLD is strengthening the sentinel hive program in 3 ports - CNS, TSV and BNE.

	Varroa Continuity Strategy)			

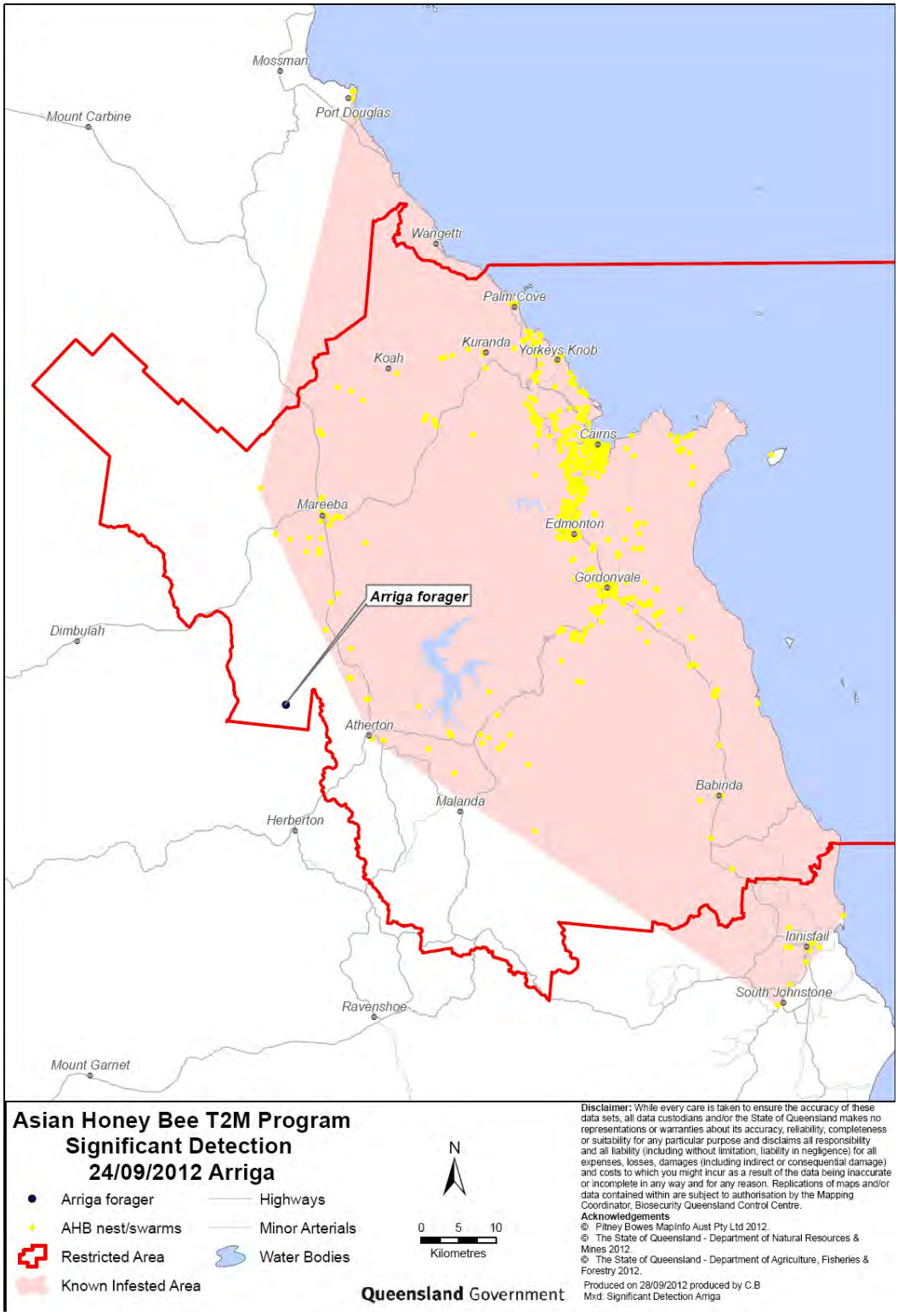
QG1 – Protecting Queensland's social amenity and public assets Objective – Queensland's social amenity and assets are protected				
Project Number	**T2M Deliverable**	**Actions/strategies**	**Due Date**	**Comments/status**
A.(i)	Contain AHB to the vicinity of known infested areas Suppress AHB infestations in strategic areas Destroy AHB infestations around edges of infested area and in areas with high social amenity value	Conduct operations to contain, suppress and destroy AHB • Develop revised operational strategy and plan to deliver T2M operations • Develop revised destruction policy & surveillance strategy to reflect T2M focus	Ongoing	**IN PROGRESS** • A T2M Work Plan has been completed and implemented. – See AG1D.(iii) • A revised operational plan is completed, implemented and updated as required. See AG1D.(iv) • A summary report of AHB Surveillance and Destruction activities since 1 July 2011, and maps, has been completed quarterly. • 3 staff trained to be licensed Pest Controllers. 2 staff have since resigned. • All AHB nests and swarms detected from public callouts or detected along the edge of the known infested area are destroyed. • Since 1 July 2011, 82 nests and 39 swarms have been detected, as at 12 October 2012. • Since May 2007, a total of 776 AHB nests and swarms have been detected and destroyed, as at 12 October June 2012. • Surveillance activities have primarily consisted of trap maintenance and targeted floral sweeping activities along the edge of the known infested area so as to detect any spread of AHB. • Targeted floral sweeping surveillance has focussed along the edge of the known infested areas - the Atherton Tablelands, Innisfail/South Johnstone and northern beaches.

				• Surveillance suggests the AHB infestation is becoming more established in known infested areas and new detections have occurred increasing the size of the known infested area. • Active bee eater roosts are monitored and pellets are collected for analysis of AHB presence/absence.
(ii)		Develop strategy to cease government intervention, respond to fewer public call outs, undertake less surveillance	Strategy developed by 31.3.12 Complete cessation of operational activity by 30.6.13	**IN PROGRESS** • A strategy has been documented and is in the final stages of approval.
B.	Conduct surveillance to determine extent of known infested area	Develop and implement staged surveillance strategy to deliver on T2M projects QG1, AG1-6	Strategy developed by 31.3.12 Complete cessation of operational activity by 30.6.13	**IN PROGRESS** • Since January 2012, the shift in operational focus of the Transition to Management Program (from proactive detection and destruction of AHB to validating remote treatment research, developing operational tools for use by industry and community to minimise the impacts of AHB, and engaging industry and community to understand the role they play in managing AHB) means there is less resources available for operational detection and destruction activity. The net effect of less detection and destruction is an increase in AHB population that will spread laterally in all directions. • At this stage, our continued compliance and industry engagement activities appears to be effective as there is no known long distance spread of AHB through transport pathways. • Surveillance is ongoing.

QG2 – Improving operational efficiency and effectiveness Objective – determine efficacy of current operational techniques and operational delivery				
Project Number	**T2M Deliverable**	**Actions/strategies**	**Due Date**	**Comments/status**
A.	Review of efficacy of odour detection dog surveillance. With eradication no longer being the focus of the program, determine whether odour detection dog is a cost effective operational tool	• Review conducted by Coordinator and BQCC Senior Dog Handler, with input from AHB Program Dog Handler and BQ Senior Dog Handler • Recommendation to be made to GM ABW for decision	Finalise review by 31.12.11 Final decision by 31.1.12	**COMPLETED** • Review found that it was not cost effective to use the odour detection dog for T2M activities. The dog has ceased operational duties on the AHB program and has been re-trained for use in other Biosecurity Queensland programs.
B.	Quantify efficacy of current operational techniques	Refer to AG2 B.(ii)-(iv)		**IN PROGRESS** • Refer to AG2 B.(ii)-(iv) • This is ongoing as research and analysis is conducted as the team transition through the different phases of the program.
C.	Undertake spatial analysis of current AHB infestation to guide to future surveillance activities	• Identify, collate and review all information • discuss information required to conduct spatial analysis needs • conduct spatial analysis	Commence analysis by 1.3.12 Finalise by 30.8.12	**IN PROGRESS** • AHB data has been reviewed, Geodata sets produced and computer modelling commenced. • Earlier work conducted by a person external to the program and whilst eradication was being conducted is being replicated using the updated data.
D.	Undertake spread analysis	• Identify, collate and review all information	Commence analysis by	**IN PROGRESS** • AHB data has been reviewed, Geodata sets produced and

	of current AHB infestation to guide future management strategies	• discuss information required to conduct spread analysis needs • conduct spread analysis	1.3.12 Finalise by 30.8.12	computer modelling commenced. • Earlier work conducted by a person external to the program and whilst eradication was being conducted is being replicated using the updated data.
E.	Undertake technical analysis of all nests and honeycomb to guide the spread and spatial analysis		ongoing	**IN PROGRESS** • Nests have been analysed for ○ age, queen cells, estimation of drones and workers, assessment of pollen and nectar. • More than 140 nests and swarms have been analysed for exotic mites. Some results are pending but all results received to date have been negative. • Swarms were analysed to estimate size. • Honeycomb detected since December 2011 are being analysed as part of a UNE/CSIRO research project – refer to AG2C.(iv).

Appendix 2 Current Known Infested Area at 12 October 2012



Queensland Government

Appendix 3 An evaluation of AHB workshops

An evaluation of Asian honey bee workshops conducted in the known infested area

for critical stakeholders

Department of **Agriculture, Fisheries and Forestry**

This publication has been compiled by Brett Ross-Reid. Acknowledgments go to Brenda Foley, Dr Anna Koetz and Russell Gilmour from the Asian honey bee Transition to Management program, Biosecurity Queensland, Department of Agriculture, Fisheries and Forestry

Contents

Introduction

The Asian honey bee (AHB) Transition to Management (T2M) program, Biosecurity Queensland (BQ), is conducting workshops with critical stakeholders to provide a range of safe and effective tools for the management of AHB. Critical stakeholders were identified as stakeholder groups that are vital to the success of the program in transitioning to management. These are the people that will be called upon by the community to assist, and are therefore critical to the programs success.

Other key stakeholders have been recognised as business or operational organisations that will be affected by having to live with Asian honey bees but not be called upon to action, therefore have been not identified as needing hands on workshops.

AHB are known to nest in small urban cavities (e.g. letter boxes and roof eaves etc.) and as a result, are expected to become a public nuisance due to this behaviour. In order to achieve this, the AHB, T2M program has worked to develop a training package for critical stakeholders. The aim of the 3-hour workshop sessions was to ensure trainees were;

1. Informed of the current status of the T2M program and the staged approach towards cessation
2. Armed with background knowledge, information regarding the behaviour and ecology of the AHB, their swarms and nest, and identification skills
3. Provided with multiple hands on demonstrations of safe destruction techniques for swarms and nest, which have been evaluated by BQ.

The objective of these workshop sessions was to ensure that the critical stakeholders in the known infested area (KIA) were able to identify AHB and were confident in their ability to take actions to reduce the impact of AHB on human health, social amenity, the environment, help to minimize it's spread throughout Australia and for the community to be aware of this transition.

Trial Phase

An AHB workshop was trialled at the Quarterly Far North Queensland Pest Advisory Forum (FNQPAF) on the 24th of November at the Centre for Tropical Agriculture, Mareeba and delivered to 59 attendees. The audience consisted of local government staff from three different regional offices (including Parks & Gardens/Land management officers), Queensland Parks and Wildlife Service (QPWS) staff, and DAFF Biosecurity staff (previously known as AQIS).

The following report does not include the evaluation data collected from the trial workshop. However, the trial workshop evaluation feedback helped determine what could be improved and included for future training sessions on the management of the AHB. This trial was well received and its purpose was essential in identifying areas for improvement and gave stakeholders the opportunity to be involved in shaping future workshops sessions.

Consultation phase

Stakeholders were consulted regarding the development of the workshops to ensure that each group had the opportunity to identify the information and techniques they would like to see included in order to assist the community with the management of Asian honey bees in the Cairns and surrounding areas Consultation was sought from the following critical stakeholder groups; the environmental sector, transport industries, the honey bee industry, indigenous rangers and traditional owners, local government agencies and the pest management industry. Meetings were held and stakeholders were given the opportunity to help tailor future training sessions to their needs. This ensured that stakeholders were up to date with the direction of the program and ready to receive the appropriate training in the management of the pest bee. A key contact was identified within each stakeholder group, whose role was to help facilitate, champion the importance of the training and bring together their staff.

It was identified through the consultation phase with the indigenous rangers and traditional owners that a full-day training session would be required in order to cover extra topics needed to ensure that traditional owners were able to care for their country. The additional surveillance and detection skills such as floral sweeping and how to beeline a forager bee to find a nest was included.

Delivering the workshops

Workshops were held with each critical stakeholder groups (as identified above) during the months of June/July, 2012.

All workshops were held at Department of Agriculture Fisheries and Forestry buildings in the Cairns CBD, with 64 critical stakeholders attending the workshops over this period.
A list of presentation topics can be found in Appendix A). All hands-on demonstrations were tailored to meet the key stakeholders' needs in relation to the likelihood of encountering the pest bee in their everyday work environment.

A half-hour presentation was also delivered to all stakeholders at the workshops on other BQ eradication programs (Tramp Ants) in the Cairns area. These were aimed at providing current information on the status of each eradication programs in the Cairns area and what they can do to help achieve the program objectives. Live ants were used to aid in the identification of each of these species.

What we learnt

At the completion of each of the workshops each attendee was asked to fill out an evaluation survey form (see Appendix B for an example). This consisted of five rating categories for each section of the workshop. Trainees were asked to tick the appropriate box to rate the quality and appropriateness of the workshop. Attendees were also asked to suggest sections of the workshop that could be improved, omitted or added to future workshops.

For each of the six stakeholder groups the evaluation was used to assess the effectiveness of the training session and to determine how confident the trainees felt they would be in managing AHB situations that may occur in their everyday work operations. Each of the categories from 'Poor' to 'Excellent' was given a numerical value from 1 to 5. For each attendee these results were then summed and their final value assigned to an overall category of; 'Poor' ≥ 12, 'Below Average' =13 – 24, 'Average' = 25 – 36, 'Above Average' = 37 – 48 and 'Excellent' ≥ 49. Only 'Excellent' and 'Above Average' were recorded for each of the workshops (Figure 1).

Following is a summary of suggestions and responses received from the trainees:

- All attendees said that the live bees and finding live bees in the environment were an integral part to their ability and confidence in correct identification.
- Most stakeholders suggested that they would like to assist BQ with a real life swarm or nest removal to gain more confidence in carrying out destruction of a swarm or nest. Alternatively, a DVD or YouTube video would be useful, with multiple examples of nest and swarm management.
- Pest industry in particular noted that material updates on new treatment processes developed need to be passed onto industry for future use.

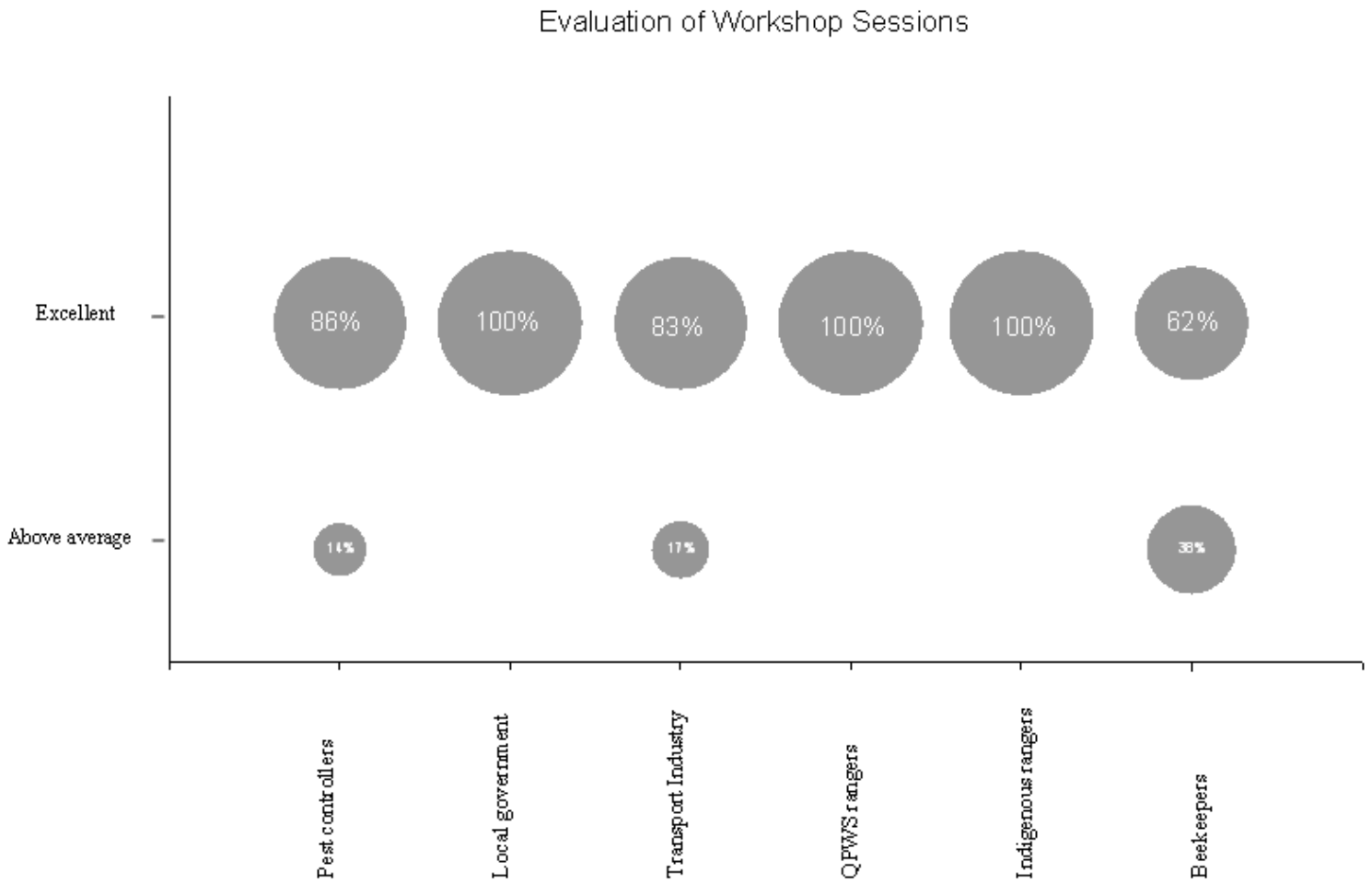


Figure 1. Summary of how different stakeholder groups felt the AHB workshops were conducted.

Outcomes

Through the evaluation of the workshops it is evident that conducting consultation with the critical stakeholders in the development of the workshops was indispensible. However, beekeepers found the workshop to be too focused on reactive methods of managing AHB and not proactive methods of keeping AHB out of an area. When questioned further they felt that the destruction of swarm and nest techniques provided were appropriate and professionally demonstrated and that they would be confident in using them.

The workshops and consultation with the stakeholders also identified the need for tools to be developed for the stakeholders to be able to access and use to teach other staff members post the cessation of the program. The following tools were identified for development;

1. Video footage of nest and swarm management
2. Step by step guides in how too (Guideline for industry destroying swarms and nest of Asian honey bees)
3. Information for businesses to hand out to the community (Community Fact sheet)
4. Improved online resources (Complete overhaul of website information that is more interactive with the stakeholder) including improved Identification material
5. Information for the transport industry that could be posted up in tea rooms, depots, ports and possibly in vehicles and vessels to build awareness about the importance of not moving bees

The drafted step by step “Guideline for industry destroying swarms and nest of Asian honey bees” was reviewed by expert bee handlers and was considered to be highly detailed and quoted to be “perfect in being able to teach new people, in the world of bees, how to handle them”. This will become available on the BQ website. This, in conjunction with a video, should be adequate in providing the industry with the tools to assist the community to manage Asian honey bees into the future.

In conclusion the workshop structure and content was found to be appropriate and should continue to be used as a template and added to future workshop sessions. Further workshops with the critical stakeholders are planned for areas such as Townsville, Atherton Tablelands, Cooktown and the Hinchinbrook region.

Community extension of workshops completed in the KIA

In order to highlight to the community that these critical stakeholders had the skills to manage AHB situations, a community extension launch was carried out to emphasise the programs transition towards living with Asian honey bees. This launch consisted of an intense community awareness campaign that utilised the regional show circuit in Far North Queensland. Multi media tools (such as facebook and twitter), media releases and variable messaging signs were used to encourage the public to come and find us during the six regional shows that boasted interactive exhibits including live bee displays for identification purposes and mock demonstrations on safe swarm destruction. The AHB team engaged with a wide variety of people and addressed close to 2000 enquires. The focus of the exhibits was to ensure the message delivered, in and around the known infested area, was moving towards “living with Asian honey bees” and the community were aware of the

tools available for them to call upon and utilize. The media were invited to attend and conduct radio and TV interviews, which were played and screened locally during prime time TV, to aid the extention of this informaiton to the community in surrounding regional areas.

Following are approaches that should be considered for future community engagement:

- Live samples and if possible an excursion out into the environment will be crucial to install a sense of confidence in trainees being able to identify exotic species. BQ should make every effort to produce live samples of species in their natural form, teach the community what they look like and where they are likely to be found foraging. For stakeholders to completely feel confident in being able to manage the pest bee they require hands on involvement in examples of destruction techniques. Alternatively, all stakeholders thought that a video would be adequate that highlighted multiple destruction techniques and scenarios, which they could use to help them manage the pest and further educate and teach staff into the future.
- Appropriate notice and connection, regarding any scientific work or surveillance done by BQ, needs to be made with traditional owners from each traditional area where work is being proposed. Elders from indigenous communities assign a Traditional Ecologist to their traditional land to ensure that the knowledge, for example, of traditional burial sites, local ecological systems and traditional methods are protected and passed on. Discussion with the group Abriculture could prove useful in order to develop a transparent system or protocol in which government agencies can appropriately communicate with indigenous communities.
- Presenting and extending additional information on other BQ eradication programs in the Cairns area highlighted the willingness of local government agencies, pest control operators and traditional owners to assist with ongoing surveillance of these pests. This appears to be a clear opportunity for BQ to develop systems to utilize the other government agency field staff to collectively fight the eradication war on pests. Preliminary discussions with local leaders in these stakeholders groups have identified the preparedness for surveillance to be integrated into normal working operations of QPWS rangers and local government workers. Pest control operators were also willing to collect samples of suspicious ants from backyards around Cairns to highlight possible infestations. Where possible BQ should try to include these

stakeholder groups in the outset of eradication programs and involve these members of the community already working to improve the environment.

- To address the pest management industry concerns regarding new treatment processes developed, the program will begin discussions with the Australian Environmental Pest Management Association (AEPMA) and state and national industry leaders, to investigate what avenues might be available, to get AHB information out to the wider Pest management audience. Articles of importance, regarding AHB and its management may be implemented into leading industry magazines to update and provide the pest management industry with any new found or leading treatment processes that may be developed throughout the life of the T2M program.

Appendix A - *Workshop structure*

The Asian honey bee workshops begun with a presentation that covered the following;

- The shifts in the direction of the AHB program and what role critical stakeholders will play in the community in relation to future AHB management.
- Identification training using quality photos was utilised to test people's knowledge on the differences between AHB and European honey bee. Live samples were contained in display hives with viewing sections so groups could see the see two species together.
- Trainees visited floral sources and were shown how to identify feeding foragers and given multiple demonstrations in different situations of swarms and nest removal and destruction.
- Trainees were tested on there practical ability to demonstrate their capability of managing an AHB situation. Demonstrations of each workshop were tailored for each stakeholder.
- Trainees received education about eradication programs on the three tramp ant species and their areas of infestation with a focus on the ability of all the community to help out by reporting suspect ants. Live samples were used for identification training.
- Evaluation forms for AHB workshops were obtained from all critical stakeholders that attended. These have been analysed and evaluated and will be used to record and improve delivery of future workshop sessions.

Trainees were provided with hands-on demonstrations and the opportunity to be tested in multiple methods and scenarios including:

- Removal of different sized swarms (small, medium and large) and what different equipment is needed.
- How to execute "bagging technique" method of swarm removal in the most common areas swarms are found (trees and shrubs, dwellings, a BBQ, rubbish bins, containers, and vehicles)
- How to destroy a nest of AHB, including multiple scenarios where certain equipment may be needed
- How to execute a nest destruction in the most common circumstances and how to troubleshoot and prepare for different scenarios e.g. trees, rubbish bins, brick work and/or wall cavities, containers, BBQs, letter boxes, and items around urban areas that bees commonly take up residence in)
- Other detection and surveillance techniques developed by BQ, such as floral sweeping and bee lining were demonstrated during the hands-on section of the workshop to the Indigenous rangers and traditional owners.

Appendix B – *Example evaluation form*

Evaluation Form — Asian honey bee training session

Please take a few minutes to answer the following questions so we can ensure future training is as meaningful and relevant as possible.

Presenter's Name: ___Brenda Foley__&___ Brett Ross-Reid _____ Date: _05 /07/2012__

Your name *(optional)*: _____

Your organisation *(optional)*: _____

How would you rate the following: (Please tick the appropriate box.)

Presentation	Excellent	Above average	Average	Below average	Poor
Structure of presentation					
Relevance of topics covered					
Standard of presentation					
Knowledge of presenter					
Length of presentation					

Demonstration	Excellent	Above average	Average	Below average	Poor
Demonstration of removing a swarm					
Demonstration of killing a nest					
Quality of demonstration					
Knowledge of presenter					
Appropriate demonstration material used					
Number scenarios provided					
Your confidence level of nest and swarm management					

What areas of the presentation/demonstration did you find most useful?

_____

_____

What areas of the presentation/demonstration did you find least useful?

_____

What items or activities would you like to see added to this presentation?

_____

_____

Other comments:

_____

_____

_____

_____

_____

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AHB TMG Minutes

Meeting Ten of the Asian Honey Bee Transition Management Group (AHB TMG)

Teleconference held on Tuesday 11th December, 2012

Attendees: Colin Grant DAFF (Chair), Rose Hockham DAFF, Nin Hyne DAFF, Mike Ashton DAFF Queensland, Russell Gilmour DAFF Queensland, Lindsay Bourke AHBIC, Trevor Weatherhead AHBIC, Ian Zadow AHBIC, Rod Turner PHA, Sam Malfroy PHA (Secretariat) and Jenna Taylor PHA.

Apologies: Vanessa Findlay DAFF, Glynn Maynard DAFF, Louise Clark DAFF and Greg Fraser PHA.

Item 1 – Welcome by the Chair

The Chair welcomed the Members of the Asian Honey Bee Transition Management Group (AHB TMG) to the teleconference.

Item 2 – Discussion and acceptance of Minutes from previous meeting

The minutes from Meeting 9 were tabled. The Chair stated that comments were provided and these minutes were accepted out of session between the members of the AHB TMG. The Chair stated that the minutes had since been placed on the AHB website and all members agreed that they provided a true and accurate record of Meeting 9.

Item 3 – Action items from previous meeting

The action items from Meeting 9 were tabled and discussed.

The Chair proposed that the AHBIC action item of developing a 1-day AHB training course with the remaining industry funds be considered at the next meeting of the AHB TMG once more of the AHB T2M documents had been finalised. AHBIC agreed to this proposal.

The TMG discussed that many of the action items such as AHBIC's literature review feedback, receiving a response from the APVMA regarding the Fipronil trials and holding an AHB SAG had been actioned and would be discussed later in the teleconference.

The Chair stated that DAFF had failed to obtain a copy of the Indonesian Master's thesis through connections with the DAFF Indonesian Agricultural Counsellor. The Chair stated that DAFF would try other avenues to obtain a copy of this Master's thesis. Mr Weatherhead stated that if the copy retrieved is written in Indonesian, then AHBIC may have avenues of translating the document into English.

The Chair stated that despite this, the majority of the action items from the previous meeting had been finalised.

Item 4 – Literature Review discussion

The Chair tabled the literature review comments by AHBIC for the AHB TMG consideration. The Chair proposed that considering the number of comments, that a select group of nominated representatives from PHA, DAFF, AHBIC and BQ review AHBIC's feedback on the literature review out of session and report back to the AHB TMG at the next teleconference scheduled in February 2013.

Mr Ashton supported this motion, given the fact that it was BQ's belief that many of the comments were either past comments that had been dealt with, or had referenced wrong page numbers and sections. Mr Weatherhead stated he did not know that this was the case, and had

made comments on the latest copy of the lit review they had received. The AHB TMG felt that a review committee of AHBIC's comments would be able to effectively deal with these concerns. Mr Bourke stated that AHBIC felt that the literature review is an attempt to reframe the opinion of the AHB, as well as an attempt to justify the decision to cease eradication. The Chair stated that this was not the case, and that the selected representatives would review any possible issues that AHBIC had with the literature review.

Mr Turner stated that PHA would coordinate feedback on the literature review. AHBIC nominated Trevor Weatherhead as their representative to review AHBIC's comments. The Chair nominated Dr Glynn Maynard as the DAFF representative. Mr Turner stated PHA will contact each of the representatives to organise a teleconference in early 2013 to review the literature review comments.

Item 5 – Fipronil remote nest treatment

The Chair tabled the response received from the APVMA and passed to Mr Turner. Mr Turner discussed with the AHB TMG that the letter received from the APVMA had raised some key concerns of the Fipronil remote nest treatment trials, and possible registration for beekeepers after the AHB T2M, including:

- Lack of efficacy data
- The method had not proven to be successful
- Lack of environmental data (indirect effects on wildlife and residues in dead colony wax and honey)
- Concerns regarding how this could be incorporated into apiary practices as well as avoiding exposure to European honey bees, commercial honey production and the food system.

In summary, the Mr Turner stated that the APVMA would require comprehensive data packages and environmental packages which would come at a great cost to the honey bee industry if they were to pursue this avenue. AHBIC stated that they understood these concerns, particularly with Fipronil being involved in apiary management practices and its possible effect of European honey bees.

Mr Turner stated that the SAG proposed that Fipronil trials should be re-evaluated in March 2013 once more work had been conducted on trap design and attractant work. The Chair proposed that the AHB TMG adopt the SAG's recommendation. The AHB TMG endorsed this proposal.

Item 6 – Reporting from DAFFQ

Mr Gilmour stated industry volunteers were scheduled to arrive in Cairns in January 2013. AHBIC asked BQ whether volunteers were still required for the AHB T2M program. Mr Gilmour stated that there was only 6 months left in the AHB T2M, and that it would be preferred that volunteers do not come to Cairns post March 2013, considering the majority of this time will involve writing up scientific reports as part of the AHB T2M, not field work which is what volunteers are interested in. Mr Bourke stated that Mr Weatherhead would be filling the duties of Executive Director of AHBIC, and that Mr Weatherhead would pass on these comments to Mr Bill Weiss of the Federal Council of Australian Apiarists' Associations (FCAAA) who coordinates the industry volunteers.

The Chair tabled the AHB T2M Progress Report (Attachment A). Mr Gilmour provided a summary to the AHB TMG of the program highlights since the last AHB TMG meeting in October 2012.

The Chair tabled the AHB T2M Cessation Strategy (Attachment B). Mr Ashton discussed with the AHB TMG that the Cessation Strategy identified KPI's and what needed to be achieved in

the AHB T2M to successfully complete all milestones and deliver the program by 30th June 2012. The Chair thanked BQ for the Cessation Strategy and stated that it effectively highlighted the final 6 months of the program and what was hoping to be achieved in the wind-down phase of the AHB T2M. The Chair requested that progress reports from this date are linked to the Cessation Strategy so that milestones up to 30th June 2013 can be ticked off.

The Chair tabled the Combined Analysis and Minimising Spread Report (Attachment C). Mr Gilmour stated that this report described risk pathways for long distance spread of AHB and detailed the movement controls that have been imposed in QLD to reduce the long distance spread of AHB. The Chair thanked BQ for this report.

Item 7 – Update from the SAG

Mr Turner discussed with the AHB TMG that an AHB SAG was held on the 4th of December which considered the Fipronil remote nest treatments and the BQ Science Program Update (Attachment D). Mr Turner stated that although there was not unanimous support, the SAG endorsed the BQ science proposal for the AHB T2M. Comments from the SAG included that work should specifically focus on the attractant and trap design, with a view to revisit the possibility of conducting Fipronil trials in March 2013. The AHB TMG supported this proposal.

Mr Ashton discussed with the TMG that the original work plan agreed upon at the start of the AHB T2M had required significantly more time and resources being invested to complete assigned projects than was initially envisaged, especially the Fipronil trials. As a result, some of the science project milestones had not yet been achieved. Mr Ashton stated that he believed the proposed changes would provide a more complete and comprehensive outcome for the science projects and ultimately deliver greater benefits to the honey bee industry. Mr Ashton added that although some milestones may be delayed with this approach, all milestones will be delivered by 30 June 2013 and requested that payment per milestones in December 2012 is allowed. The AHB TMG endorsed this proposal.

Item 8 – Next AHB TMG meeting

The Chair stated that the next AHB TMG was scheduled for the 19th February 2013.

Item 9 – Summary and Close of Meeting

The Chair thanked the TMG for their contribution to the AHB T2M and closed the meeting.

Queensland Government

Asian honey bee Transition to Management Program

Progress Summary Report, December 2012

This document is prepared for the Transition to Management Group meeting on 11 December 2012. A number of other documents are provided separately to provide greater detail.

Department of **Agriculture, Fisheries and Forestry**

Contents

Other relevant documents provided separately include

- **Asian honey bee Transition to Management – Cessation Strategy**
- **Asian honey bee Transition to Management Science projects – Progress update November 2012**
- **An analysis of movement controls and compliance for the Asian honey bee incursion in Cairns including a strategy to minimise the spread of Asian honey bee through pathways, 2012 – 2013**

Program highlights

Detections

Over the last two months, the cessation of government intervention activities in the Known Infested Area (KIA) has been introduced in a staged approach, due to Asian honey bee (AHB) nests being required for scientific purposes and to ensure that the community was aware of the tools available to them. Program response activities have now ceased in the KIA except for suspect new incursions or where there is a risk of aided spread.

Those detections suspected to be a new incursion, or where there is a risk of aided spread, and those on the edge or outside of the KIA are still being responded to and destroyed in accordance with the 'Responding to public notifications of Asian honey bee' policy (referred to herein as the Response Policy).

In the past 2 months a significant effort has been made to conduct surveillance on the edge of the KIA to provide some confidence of where the edge was for the Response Policy and also to assist with the spatial analysis report. While the team was conducting the surveillance they also provided each household in the area an AHB Factsheet to encourage public reporting. Appendix 2 is an up to date map of the KIA including the most recent extension. Appendix 3, 4 and 5 are maps that indicate the surveillance effort on the edge.

Detections of Interest since the last TMG meeting include:

<u>Inside the KIA (high risk area of Cairns, seaport)</u>

- IP 803 – AHB were detected flying around a container barge recently arrived from Thursday Island and Seisa. Sea Swift reported the bees to the Australian Department of Agriculture, Fisheries and Forestry (ADAFF) who contacted Biosecurity Queensland (BQ). Loading of the vessel was observed in Torres Strait, upon arrival in Cairns the hull was opened and left unattended for approximately one hour. ADAFF staff believe that this one hour window provided the opportunity for the bees to enter the hull. The bees were not observed during the loading of the vessel in the Torres Strait. BQ staff collected and killed the clumped bees and any remaining bees were sprayed. ADAFF analysed 2,200 bees for the presence of external and internal mites. Unfortunately no queen bee was detected in the collected bees.
- IP 806 - a nest was detected and destroyed in a stack of pallets at the Sea Swift shipping depot on Tingira St, Portsmith on the 13 November 2012 following a public report made to ADAFF who then contacted BQ. This is in accordance with the Response Policy.

On the edge of the KIA (outside of RA)

- IP 797- A nest was detected in a roof cavity of a resort in Port Douglas by a pest controller and reported to BQ on 30 October 2012. BQ identified the bees in the laboratory and arranged for a pest controller to destroy the nest.

Public reports

One hundred and twenty one public reports of Asian honey bee have been received since 16 October 2012 bringing the total number of reports since 1 July 2012 to 287.

Compliance

A report, 'An analysis of movement controls and compliance for the Asian honey bee incursion in Cairns including a strategy to minimise the spread of Asian honey bee through pathways, 2012 – 2013', is provided separate to this document.

Biosecurity Queensland

Two policies, *'Responding to public notifications of Asian honey bee'* and '*Responding to public notifications of bee pests and pest bees other than Asian honey bee'*, have been developed to guide BQ staff on how to respond to public notifications of AHB and other pest bees and bee pests.

These policies have been implemented by BQ for all public notifications of suspect AHB and for public reports of other pest bees and bee pests. The policies integrate the activities of AHB T2M program staff and other BQ staff, e.g. Apiary Officers, as a step towards transitioning responsibility for responding to public reports of suspect AHB from the AHB T2M program.

Biosecurity Queensland has reviewed the ADAFF document '*A honey bee industry and pollination continuity strategy should Varroa become established in Australia – May 2011'*. No changes are proposed to the strategy at this time

Industry Engagement

- Following discussions with industry the process of licensing movement of bees and high risk materials has been improved and the policy surrounding the legislative requirements has undergone review.
- Discussions with the Industry liaison committee regarding the creation and maintenance of an Industry response list are underway and conditions are being drafted.
- Volunteers continue to contact the program regarding working with the program. Recently Bill Weiss arranged for an American with a keen interest in bees to work with the program. This volunteer has plans to write a report on his return to

America to support the freeing up of Australian bee imports. We are advised that two groups already organised for January will still be coming.

Community Engagement

- Apiarist/Beekeepers survey developed and currently being delivered to Beekeepers as far south as Ayr.
- Conducted presentation, along with science, to Townsville beekeeping club meeting (~40 people) and delivered Apiarists Survey
- Conducted presentation, along with science, to ADAFF and BQ staff in Townsville (~20people). Further extension of these sessons for other ADAFF centres in the state is being considered.
- Transitioned Customer Call Centre to an 'all Bee enquiry CSC system'. This was to integrate our response with BQ Apiary Officers and Zone Leaders around the state to assist with implementation of the response policies that have been developed.
- Households around the edge of the KIA have been given AHB Factsheets to encourage public reporting of suspect AHB. This will help delimit the extent of the infestation and track the spread of AHB in north Queensland.
- A poster has been developed specifically for the transport industry and is due to be delivered (during December) to all high risk transport hubs in the KIA to build awareness and help minimise the spread of Asian honey bee through transport industry pathways. This will also assist ADAFF with the high risk area surveillance trial around the port of Cairns.

Science

- Surveillance efficacy trials continued with two more trials conducted in November and December 2012. Three further trials are planned.
- Trials to improve the effectiveness of bait stations, their design and attractant effectiveness have commenced. We are liaising closely with Dr David Guez, University of Newcastle.
- Work done by three James Cook University students was completed. They conducted trials on different attractants, and have written up their reports. The Senior Scientist will check the data analysis and collate a combined report.
- Competition experiments between AHB and EHB have commenced. Data collection will be finalised by the end of December.
- A Science update was prepared for the Science Advisory Group (SAG) to review those deliverables that are overdue or falling behind. A revised work plan has been proposed and discussed with the SAG.

Spatial and spread analysis

- Modelling of AHB population dynamics and drivers of spread: preliminary computer modelling of AHB spread over time has been conducted. The Senior Scientist has commenced analysis and interpretation.
- Spatial analysis of current AHB infestation has been finished and a draft report submitted to the Science Advisory Group.

External researchers

- The program is continuing to collaborate with and assist visiting researchers, incl. Prof. Ben Oldroyd (University of Sydney), Dr. David Guez (University of Newcastle), Prof. Caroline Gross (University of New England).
- The Science team is also collaborating with Anne and Les Dollin from the Australian Native Bee Research Centre.

Current and future program activities

- Continue to finalise strategies and policies relating to Asian honey bee (AHB) and other bee responses post 30 June 2013.
- Continue to undertake surveillance around the perimeter of the KIA to delimit and track the spread of AHB in north Queensland.
- Continue to respond to reports of suspect new incursions of AHB in far north Queensland and around the edges of the KIA.
- Increase awareness and delivery of information and skills to critical and key stakeholders in Queensland and Australia.
- Continue various community engagement maintenance activities e.g. web update, social media, media releases, radio interviews etc. As well as continue to develop a video capturing destruction techniques, build awareness nation wide regarding the movement of bees from the KIA and ongoing development of a Asian honey bee manual to help with extension of the most current information to ADAFF and other BQ staff around the state.
- Continue to work with ADAFF regarding the High Risk Area trial and other AG5 activities.
- Science:
    - Analysis of historical data (public reports, bee-lining and bee eater pellet surveillance) to determine efficacy
    - Detection efficacy field trials (next round: Dec 2012)
    - Analysis of destruction efficacy
    - Trials currently under way to improve trap design & attractiveness
        - Using different sugar concentrations
        - Using different bait station designs
        - Using different trap attractants
        - Using different trap designs
        - Attractiveness of *mellifera* and *cerana* queen pheromone
        - Attractiveness of *Cymbidium floribundum* orchid
    - Collect, analyse & report on apiarists survey
    - Finalise spatial analysis
    - Report on spread modelling
    - Continued nest, comb & swarm analysis
    - Continued sample identifications
    - Other current experiments/observations
        - Nest observations (wild & hived)
        - Direct cerana vs. mellifera competition experiment
        - Cerana/mellifera drone flight timing
    - Collaborations
        - Pollen analyses, mangrove flowering seasonality
        - Cerana/mellifera cross-mating
        - Trap attractants and designs

Appendix 1 - AHB T2M Work Plan Progress Report

AG1 – Limiting impact on Urban Communities
Objective – informed community and apiary and pest controller industries able to identify AHB and take actions to reduce the impact of AHB on human health, amenity and honey production

Funding and reporting milestones	Status/comments
Milestone 1, 2 & 3	**COMPLETED** *Note: See previous progress reports for further details*
Milestone 4 – due 31/12/12 ($75,000) • Communication strategy developed to manage communication and engagement following cessation of this project	**COMPLETED** *Note: 'Asian honey bee Transition to Management Cessation Strategy' completed. Provided separately, December 2012.*
Milestone 5 – due 15/6/13 ($75,000) • Final report on activities undertaken in this project	

Project Number	T2M Deliverable	Actions/strategies	Due Date	Comments/status
A.(i)	Website and facebook site established (adapted from existing sites)	Existing DAFF QLD website maintained	Ongoing	**ONGOING** *Note: Website is planned to be maintained routinely and reviewed every three months.*
(ii)		New DAFF QLD web and social media features approved	29.2.12	**COMPLETED** *Note: A regular social media reporting framework including event calendar has been developed with DAFF QLD's social media unit - regular reports are provided on social media activity including the number of posts from Biosecurity Queensland and the public these are scheduled to continue.*
(iii)		DAFF QLD website is refreshed	Initial : 31.3.12. Revised: 31.7.12	**COMPLETED** *Note: Website was completely refreshed in October/November 2012.*
B.(i)	Information reviewed and updated as	DAFF QLD website is regularly updated as T2M program is delivered	Ongoing	**COMPLETED** *Note: Website is routinely evaluated, updates will be documented. updated* ○ *April 2012.* ○ *June 2012.*

Project Number	T2M Deliverable	Actions/strategies	Due Date	Comments/status
	program outcomes are delivered and information is tested			*October/November 2012.*
(ii)		PHA website www.asianhoneybee.net.au is used as national portal for agreed AHB information, and information is regularly provided to PHA for updating to the website	First information provided to PHA by mid Feb 2012 ongoing	**COMPLETED** **ONGOING** *Note: Documents including reports were updated and resubmitted during November, this is planned to continue as outputs are finalised through to 30 June 2013.*
C.(i)	Customer journeys developed for DAFF QLD website	Develop customer journeys for agreed AHB processes	**30.6.12**	**DISCONTINUED FOLLOWING REVIEW** *Note: Recent Machinery of Government changes following a change of government, the use of customer journeys has ceased.*
D.(i)	Develop comprehensive strategy to manage cessation of government funding of transition by 30 June 2013, underpinned by significant engagement & communications plan	Develop and implement a Community Engagement and Communications Plan.	Developed by 31.12.11 Implementation – ongoing	**COMPLETED** *Note: Implementation of plan continues through to 30 June 2013.*
(ii)		Develop staged transition process to implement T2M plan, with key milestones of 30.6.12 and 30.6.13	Developed by 29.2.12 Implementation – ongoing	**COMPLETED** *Note: Implementation of plan continues through to 30 June 2013.*
(iii)		Develop T2M Work Plan that identifies timeframes for delivery of the T2M Plan projects and activities.	Developed and agreed by 29.2.12. Implementati	**COMPLETED** *Note: Implementation of plan stages continues through to 30 June 2013.*

Project Number	T2M Deliverable	Actions/strategies	Due Date	Comments/status
			on – ongoing	
(iv)		Develop an operational plan that integrates all T2M projects and activities under program delivery areas of: program management, community engagement/industry liaison/compliance, operations and science.	Developed and agreed by 29.2.12 Implementation – ongoing	**COMPLETED** *Note: Implementation of plan stages continues through to 30 June 2013.*
(v)		Decide on geographical areas BQ will respond to a public call out and which areas to refer to pest controller	Developed by 30.6.12 Implemented by 1.7.12 & ongoing	**COMPLETED** *Note: Implementation of new response policy has occurred.*
(vi)		Develop first draft of information and training packages for pest controllers, apiarists and other key stakeholder groups	31.3.12	**COMPLETED**
(vii)		Discuss training package content with industry representatives, incorporate changes and	Finalised by 30.6.12 Implemented – ongoing	**COMPLETED** *Note: "An evaluation of Asian honey bee workshops conducted in the known infested area, for critical stakeholders' report was provided to TMG in October 2012.*

Project Number	T2M Deliverable	Actions/strategies	Due Date	Comments/status
		be ready for full launch		
(viii)		Complete withdrawal of government management and funding, with community/industry having the knowledge to manage AHB	30.6.13	**IN PROGRESS** • The strategy under AG1.D(i) to manage cessation of government management and funding of AHB will ensure all areas of government, community and industry is empowered to manage AHB impacts. • 'Asian honey bee Transition to Management Cessation Strategy' completed. Provided separately, December 2012.

AG2 – Developing and making available a suite of control measures for AHB Objective – safe and effective control measures are available and approved for use to reduce impacts of AHB on community, honey production and the natural environment	
Funding and reporting milestones	**Status/comments**
Milestone 1	**COMPLETED** *Note: See previous progress reports for further details*
Milestone 2 – due 1/2/12 (no payment) • Validate efficacy of detection and destruction techniques available for use by commercial pest controllers and for the purposes of integrated control strategies for industry • Refine protocols to reduce the risk of non-target poisoning	**IN PROGRESS** • Science Update to SAG, Dec 2012, details current status. • Protocols to reduce risk of non-target poisoning completed.
Milestone 3 – due 15/6/12 ($175,000) • Investigate and report on alternative control measures or attractants for AHB including, but not limited to, the options provided in the AHB T2M Plan • Investigate and report optimal design of bait stations for attracting AHB	**IN PROGRESS** • Science Update to SAG, Dec 2012, details current status. • RIRDC and the SAG have identified trials to be conducted by external researchers which will contribute to this.

Milestone 4 – due 31/12/12 ($175,000) • Report on integrated control strategies for industry • Report on optimal control strategies for AHB	**IN PROGRESS** • Science Update to SAG, Dec 2012, details current status. • RIRDC and the SAG have identified trials to be conducted by external researchers which will contribute to this.
Milestone 5 – due 15/6/13 ($175,000) • Final report on activities undertaken in this project	

Project Number	T2M Deliverable	Actions/strategies	Due Date	Comments/status
A.	Desktop review and analysis to better understand how others manage AHB	Literature review and analysis conducted	Initial: 31.3.12 Revised due date: 31.7.12	**COMPLETED** *Note: 'The Asian honey bee (Apis cerana) and its strains – with special focus on Apis cerana Java geno type – Literature review' has been provided to the Transition Management Group.*
B.	Develop integrated control strategies for different industries to minimise impacts of AHB, including identifying any off target impacts (especially balance between AHB and commercial European honey bee in the same environment to minimise impact on honey	SAG to consider and advise on priorities, and provide scientific oversight	31.1.12	**COMPLETED** *Note: SAG identified Remote Treatment trials as highest priority.*
		Stakeholder and industry engagement to identify priorities and needs	Commenced by 31.1.12 Ongoing	**ONGOING** *Note: Two industry liaison groups meet on a monthly basis, one at a State level and the other at a local level.* *Regular collaboration is occurring as necessary regarding community/industry engagement material, response procedures etc. An initial survey was conducted in February 2012 with 9 beekeepers to investigate priorities and needs. A more comprehensive survey has commenced to finalise the need from industries and to identify any known impacts.*

	production)			

(i)	Validate efficacy of detection and destruction methods and strategies as essential elements of deploying different control methods	Detection and destruction methods and strategies fully documented	31.12.12	**IN PROGRESS**
				• Standard Operating Procedures (SOPs) for each surveillance method and destruction method have been developed and will be updated following science trials and analysis for improvement.
				• An Asian honey bee manual is being developed to be available to other Government agencies and industry documenting destruction and detection technique and systems that are recommended in order to respond to new incursion. This will include detail to high quality images; make reference videos and guidelines that are available.
				  • SAG has recommended that video footage of all detection and destruction techniques be uploaded to the web – as important training tools.
				  ○ Quotes are being sought for the creation of a destruction video, which will capture the top 3 methods evaluated by science for inclusion. .
				  ○ Due to difficulty filming bees and scientific efficacy trials still in process it has been decided to not video detection techniques as the AHB manual will provide these techniques in greater detail.
				  • A video of Remote Treatment Trails has been completed and is available on the website.
				  • Amateur video footage has been captured of staff killing swarms and nests. This has been used to complement workshop content provided to critical stakeholders.

		Rates of effort and validation of all methods	31.3.13	**IN PROGRESS** • AHB trap efficacy has been analysed and reported. • Data was compiled and is ready for analysis to determine efficacy of public reports, bee-lining and bee eater pellets. • Efficacy of floral observation surveillance methods has

				commenced and three trials completed.
(ii)	Determine the timing of implementing these methods and strategies to maximise effectiveness of control methods	• Seek advice from stakeholder and industry • Develop toolkit	30.6.12 Reviewed by 30.6.13	**COMPLETED** • Relationship established with local beekeepers through attendance at monthly meetings and a liaison committee. • A training and induction package has been developed with industry input. • Delivery of this package has been completed to all beekeepers through club attendance in Far North Queensland. • Assistance will be provided to industry as they develop an industry training package regarding pest bees and bee pests and diseases (AHBIC currently developing a proposal).
(iii)	Determine effectiveness of bait stations, their design and attractant effectiveness	Document bait station use and design	31.12.12	**IN PROGRESS** • Bait station SOP has been developed and trials to improve the bait station have commenced. The SOP will be updated on completion of the trials. • AHB trap efficacy has been analysed and reported.
		Validate effectiveness	31.12.12	**IN PROGRESS** • AHB trap efficacy has been analysed and reported.. • Trials are underway to improve bait station design and attractiveness.
(iv)	Understand AHB behaviour to better inform development of targeted control measures	Desktop review and analysis of AHB behaviour in FNQ	31.1.12	**COMPLETED** *Note: ''Asian honey bee (Apis cerana javana) in Cairns, Far North Queensland: Foraging, nesting and swarming behaviour' was provided in January 2012 and is available on the PHA website. It is hoped to update this document prior to the program ceasing on 30 June 2013.*
C.	Investigate alternative control techniques and attractants	SAG to consider and advise on priorities, and provide scientific oversight	31.1.12	**COMPLETED** *Note; SAG has made some recommendations to PHA & RIRDC.* ○ *Develop an attractant specific to A. cerana Java strain, Dr. David Guez.*
(i)	Finalise	Experimental design for	31.1.12	**COMPLETED** *Note: Research Trials completed and report available on Plant Health Australia*

	development of remote poisoning • Validate techniques • Refine protocols to reduce risk of non-target poisoning and minimise adverse effects on environment and native fauna	research developed and endorsed		*website*
		Revised permit is approved by APVMA	31.12.11	**COMPLETED** *Note: Approved by APVMA in December 2011* ○ *The permit requires that only DAFF QLD use the chemical and is valid until 1 July 2015.* ○ *PHA is currently corresponding with APVMA regarding this matter.*
		Research trials conducted, techniques validated and final report prepared	Commenced in January 2012 Complete 30.12.12	**COMPLETED/SUSPENDED** *Note: Research trials were conducted and a report submitted to SAG. Further trials were suspended while PHA seeks information from APVMA and the chemical registrant.*
(ii)	Tomato dust – a potential control to be researched and validated	SAG to advise on appropriateness	31.1.12 – on advice of SAG, will not be conducted	**DISCONTINUED** *Note: TMG approved that this research will not be conducted.*
(iii)	Nectar analysis – analysis of nectar that AHB is foraging on to identify potential attractants for use in traps	SAG to advise on appropriateness	31.1.12	**DISCONTINUED** *Note: TMG approved that this research will not be conducted.*
(iv)	Pollen analysis – analysis of pollen in AHB honeycomb determine plants that AHB is	This research is being conducted by CSIRO/JCU. BQCC Cairns is providing assistance as required.		**ONGOING COLLABORATION** *Note: The Cairns AHB T2M team is providing support to the researcher, Professor Caroline Gross.*

	foraging on			
(v)	Research into pheromone use to attract and/or detect AHB in order to increase trap sensitivity	This research is to be conducted by other parties through RIRDC funding that was supported by the SAG.	31.1.12	**ONGOING COLLABORATION** *Note: The Cairns AHB T2M team is providing support to the researcher, Dr David Guez.*

AG3 – Limiting impact on honey production Objective – beekeepers in areas where AHB is established maintain honey yields and quality	
Funding and reporting milestones	**Status/comments**
Milestone 1	**COMPLETED**
Milestone 2 – due 1/2/12 (no payment) • Literature review and report from apiarists on the impact of AHB on commercial honey production within AHB infested areas • Report on behaviour of AHB compared to European honey bee to identify opportunities for control	**IN PROGRESS** • "The Asian honey bee (*Apis cerana*) and its strains – with special focus on *Apis cerana* Java geno type – Literature review" has been provided to the Transition Management Group • A report from local apiarists on the impact of AHB on commercial honey production within AHB infested areas is in progress. Regular meetings have been held with the local bee keeping association. • "Asian honey bee (*Apis cerana javana*) in Cairns, Far North Queensland: Foraging, nesting and swarming behaviour" was provided in January 2012 and is available on the PHA website. It is hoped to update this document prior to the end of the program ceasing.
Milestone 3 – due 15/6/12 ($102,500) • Report on management strategies of AHB within the infested area to reduce the impact on commercial honey production and pollination services • Evaluation of outputs of project 2 for field application for industry	**IN PROGRESS** ▪ Science Update to SAG, Dec 2012, details current status.

Milestone 4 – due 31/12/12 ($87,500) • Report on modelling of AHB population dynamics and drivers of spread • Report on PCR tools for detection of AHB • Report on the outcomes of Project 2 for field application for industry	**IN PROGRESS** • Spatial analysis report submitted to SAG • 'Detection of *Apis cerana* DNA from bee eater pellets and trap liquor' and 'May 2012: Short study of microsatellite alleles in Asian honey bees sourced from PNG/Solomon Isalnds and north Queensland: summary of data interpretation' papers submitted June 2012'. • Currently the test developed will specifically detect *Apis cerana* DNA from sugar syrup samples that had exposure to as low as 50 feeding bees. Work is continuing to determine the minimum number of feeding bees required to deposit a detectable amount of DNA. An updated report is expected before Christmas.
Milestone 5 – due 15/6/13 ($87,500) • Final report on activities undertaken in this project	

Project Number	T2M Deliverable	Actions/strategies	Due Date	Comments/status
A.(i)	AHB behaviour research is critical to identify elements of differential control of AHB and European honey bees in the context of honey production. Developing an understanding of AHB behaviour will guide development of targeted control	Conduct literature review, conduct analysis, compare behaviour and identify opportunities that support differential control.	Initial: 31.3.12 Revised: 31.7.12	**COMPLETED** *Note: Library of relevant literature has been collated.* *'The Asian honey bee (Apis cerana) and its strains – with special focus on Apis cerana Java geno type – Literature review' has been provided to the Transition Management Group*
(ii)		Desktop review and analysis of AHB behaviour in FNQ	Initial: 31.1.12 Revised: 31.7.12	**COMPLETED** *Note: ''Asian honey bee (Apis cerana javana) in Cairns, Far North Queensland: Foraging, nesting and swarming behaviour' was provided in January 2012 and is available on the PHA website. It is hoped to update this document prior to the program ceasing on 30 June 2013.*
(iii)		Engagement with local apiarists	Commenced by 31.12.11 Completed by 30.6.12	**ONGOING** *Note: Engagement with local apiarists has been an ongoing feature of the program since 2007 – this is continuing. Apiarists and beekeepers in Far North Queensland have been updated with the most current knowledge regarding Asian honey bees in Australia and what is known of there behaviour overseas.*

Project Number	T2M Deliverable	Actions/strategies	Due Date	Comments/status
	measures through: • Literature review and engagement with apiarists in the Cairns area who have had experience with both honey bees • Analysis to understand what is known and not known about AHB in relation to mating, behaviour, foraging habits, weather impacts, etc. • Compare the behaviour between AHB and European honey bees to identify opportunities that support differential controls			
B.	Development of	Using outcomes of	Strategies	**IN PROGRESS**

Project Number	T2M Deliverable	Actions/strategies	Due Date	Comments/status
	management strategies • Based on outcomes of Project 2, develop and test management strategies targeted at limiting impact of AHB on honey production in areas where AHB is established	literature review and behaviour analysis, work with industry to develop management strategies for use by industry	developed by 15.6.12 Strategies tested by 31.12.12	• Also links with AG4 • The literature review and behavioural analysis will be used as key reference documents to identify additional opportunities for control of AHB. • Engagement with local industry has commenced regarding the need for management strategies in the future pending outcomes of the literature review. • Apiarists' survey is being conducted to determine whether the industry requires any management strategies, given that AHB are not impacting on EHB in Cairns.
C.	Model the population dynamics and drivers of spread as they impact on the management of EHB hives	SAG to consider and advise	31.1.12	**COMPLETED** *Note: Was discussed at initial SAG meeting in November 2011 and 18-19 January 2012.*
		Report on modelling of AHB population dynamics and drivers of spread	31.12.12	**IN PROGRESS** • Preliminary computer modelling has been done but is showing that modelling is of little value due to lack of data and computer model not finalised. Interpretation and report in progress.
D.	Develop technology to assist industry to mitigate AHB impacts	SAG to consider and advise on priorities for technology development	31.1.12	**COMPLETED– SEE RIRDC APPROVED RESEARCH PROJECTS** *Note SAG and RIRDC have addressed this.*
		Stakeholder and industry engagement to identify	Commenced by 31.3.12	**COMPLETED** *Note: Consultation process with apiarist, transporters, pest controllers, environmental groups etc. is ongoing. "An evaluation of Asian honey bee*

Project Number	T2M Deliverable	Actions/strategies	Due Date	Comments/status
		needs and priorities for technology development	ongoing	*workshops conducted in the known infested area, for critical stakeholders' report was provided to TMG in October 2012.*
		Additional technologies to be developed, as required (to be determined)		**COMPLETED – SEE RIRDC APPROVED RESEARCH PROJECTS** *Note: SAG and RIRDC have addressed this and funded projects have commenced.* ○ *Develop an attractant specific to A. cerana Java strain, Dr. David Guez* ○ *Inter-specific mating between A. cerana and A. mellifera, Prof. Ben Oldroyd* ○ *A strategy to address concerns of countries that import Australian honeybees, Michael Clarke* ○ *Establishing the disease status of A. cerana Java strain in the Cairns region, John Roberts CSIRO* ○ *Risk assessment of ports for bee pests and pest bees, Simon Barry*
(i)	Develop PCR testing to more quickly detect the presence of AHB in trap syrup etc as indicators of the need for management of European honey bee hives	Report on PCR tools for detection of AHB	31.12.12	**IN PROGRESS** • A test for the specific detection of *Apis cerana* DNA in body parts or whole bees left behind in trap syrup has been developed. DNA extraction methods for sugar syrup and wings removed from bee-eater pellets have been investigated. Both need optimising as they are not feasible at the moment. This work provides proof of concept for a molecular surveillance program for AHB in far north Queensland. • Currently the test developed will specifically detect *Apis cerana* DNA from sugar syrup samples that had exposure to as low as 50 feeding bees. Work is continuing to determine the minimum number of feeding bees required to deposit a detectable amount of DNA.
	Undertake preliminary microsatellite work to determine if difference can		31.12.12	**COMPLETED** *Note: On SAG advice, TMG 3 approved - undertake preliminary microsatellite work to determine if difference can be observed between Australian, Solomon Islands and PNG populations of AHB Java strain.* *Preliminary microsatellite studies showed a distinct difference between AHB in Queensland from those in the sampled populations of PNG. One of the two PNG populations identified included samples from the Solomon Islands. The work*

Project Number	T2M Deliverable	Actions/strategies	Due Date	Comments/status
	be observed between Australian, Solomon Islands and PNG populations of AHB Java strain.			*identified that there may have been two incursions into QLD, but the number of samples tested was insufficient to be certain.*
F.	Develop approaches with the honey industry for adoption and implementation of management strategies		Commenced by 31.3.12 ongoing	**IN PROGRESS** Also links with AG1 and Industry project 2.

AG4 – Limiting impact on natural environment Objective – tools and strategies are available for implementation to mitigate the impact of AHB in ecologically significant areas.	
Funding and reporting milestones	**Status/comments**
Milestone 1, 2 & 3	**COMPLETED**
Milestone 4 – due 31/12/12 (no payment) • Report on tools and strategies for suppression of AHB in the natural environment (incorporating outputs of Project 2 and linking with Project 3)	**IN PROGRESS** • Science Update to SAG, Dec 2012, details current status.
Milestone 5 – due 15/6/13 ($20,000) • Final report on activities undertaken in this project	

Project Number	**T2M Deliverable**	**Actions/strategies**	**Due Date**	**Comments/status**
A.	Engagement with indigenous communities and environment sectors (linked with AG1)	Meet with indigenous groups and rangers, and environmental groups	First meeting by 31.12.11 Ongoing	**Ongoing** • Workshops have been completed with with indigenous rangers & TO's, QPW rangers in Far North Queensland. Discussion are routinely held with Queensland Parks and Wildlife Service, including indigenous rangers and traditional owners and peak environmental bodies covering Far North Queensland. Forums • Forum such as; Cape York Peninsular Pest Advisory Committee, For North Queensland Pest Advisory Forum, and JOG meetings with NAQS and scientific Committee meetings held through WETMA will be used to continue the extention of information to ranger and environmental groups.
		Deliver education/training packages that will foster indigenous and environmental	First training session by 31.3.12 Ongoing	**Completed** • Comprehensive training package was extended to all indigenous communities through training indigenous rangers in

		contribution to AHB program		and around the KIA. • These groups will be provided with additional tools and informaiton by attending and presenting at pest advisory forums (as stated above)
B.	Utilise tools and strategies developed for control measures (Project AG2) and limit impact on honey production (AG3)	Indigenous communities and environmental sector utilise tools and strategies to control AHB	Ongoing - Tools and strategies utilised as they are developed	**COMPLETED** • Techniques in the management of AHB have been extended to indigenous rangers and environmental workers in and around the KIA.
C. Relates to AG2.C(iv)	Pollen Analysis – analysis of pollen in AHB honeycomb determine plants that AHB is foraging on	Collect pollen from *Apis cerana* collected in the Known Infested area to determine if competing with Apis mellifera and Native Bees. Also to determine flower preference.	TBA	**ONGOING COLLABORATION** *Note: The Cairns AHB T2M team is providing support to the researcher, Professor Caroline Gross.* •

AG5 – Optimising early detection of new incursion of AHB Objective – any new incursions of AHB are detected rapidly and tested to determine the presence or absence of emergency bee pests in accordance with provisions of the EPPRD.	
Funding and reporting milestones	**Status/comments**
Milestone 1	**COMPLETED**

Milestone 2 – due 1/2/12 (no payment) • Investigate the establishment of bee free zones around high risk areas • Report on assessment of optimal surveillance strategies for detection of AHB • Provision of quarterly summary reports throughout the program on surveys of AHB populations for presence of bee pests	**COMPLETED** • Establishment of bee free zones not practical. High Risk area surveillance trial in progress • 'Optimising early detection of new incursions of AHB - Collaboration between DAFF Biosecurity and Biosecurity Queensland' paper provided June 2012. • Surveillance Quarterly reports produced.
Milestone 3 – due 15/6/12 ($100,000) • Report on assessment of optimal surveillance strategies and risk based surveillance for detection of AHB, including efficacy of detection methods	**IN PROGRESS** • Science Update to SAG, Dec 2012, details current status.
Milestone 4 – due 31/12/12 ($50,000) • Report on identification and detection methodologies that can assist with rapid detection of new incursions of AHB	**IN PROGRESS** • Science Update to SAG, Dec 2012, details current status.
Milestone 5 – due 15/6/13 ($50,000) • Final report on activities undertaken in this project	

Project Number	T2M Deliverable	Actions/strategies	Due Date	Comments/status
A.	Conduct differential sensitivity testing to determine the comparative effectiveness of all available detection methods e.g. sentinel hive strategy vs strategic sampling of surveillance		31.12.12	**IN PROGRESS** • Floral observations by Australian Government DAFF-Biosecurity commenced in April 2012 • An AHB trap efficacy paper has been produced and submitted. • In the Cairns Port area all nests and swarms that are reported by the public are being destroyed. These destruction activities are used to check for known bee pests and diseases. All nest and swarms collected by the AHB T2M are provided to A DAFF.

	traps			
B.(i)	Determine efficacy of surveillance strategies and techniques to determine likely detection rate in bee free zones and around ports in the context of established AHB populations	Surveillance strategies and techniques fully documented	31.3.12	**IN PROGRESS** Links with T2M AG2.B.(ii) • Standard Operating Procedures (SOPs) for each surveillance and destruction method have been developed. • A manual is being put together to incorporate the available detection and destruction techniques, incorporating the efficacy outcomes from science, includeing such as high quality images, videos and tips, so they can be made available to other Government agencies. • A surveillance trial has been developed and is in progress to assess an optimal surveillance strategy. Australian Government DAFF (ADAFF) is conducting the floral observation surveillance component of the trial while Biosecurity Queensland is conducting the bee lining and destruction components. ADAFF has recruited some indigenous rangers to assist with collecting AHB.
(ii)		Rates of effort, efficacy and validation of surveillance methods	31.12.12	**IN PROGRESS** • Detection efficacy trials in progress • See AG2B(ii) for more detail
	Develop an appropriate scientific methodology for floral sweep netting in the outer areas of the containment area to gain greater confidence of absence or presence of AHB	Floral sweep netting at edge of known infested area data analysed and documented.		**IN PROGRESS** • Detection efficacy trials in progress. See AG2B(ii)

C.	Establish a strategy for laboratory analysis of AHB detections within bee free zones and around ports as an early detection strategy for any new incursions that could carry mites or viruses		Strategy developed by 31.3.12	**COMPLETED AND ONGOING** *Note: Strategy used during the eradication phase of the program is continuing to be utilised. Areas of responsibility for the Cairns port area have been agreed. A joint surveillance trial is in progress in the high risk sea port area. All AHB detections are routinely tested for presence/absence of mites and diseases. No mites/diseases have been detected.* *A policy 'Responding to public notifications of Asian honey bee' has been and provided to TMG, December 2012.*
D.	Partner with the Northern Australian Quarantine Strategy (NAQS) program of DAFF to develop integrated operations focussed on early detection of new AHB incursions and any quarantine pests that they may carry	Develop and implement integrated operational plan and surveillance strategy with NAQS	Initial discussions held by 31.12.11 Strategy and plan developed by 30.4.12 Integrated operations commenced by April 2012 and ongoing	**IN PROGRESS** • Meetings with Australian Government DAFF continue. • The focus of recent meetings with Australian Government DAFF-Biosecurity has been to identity current operational procedures and resources focussed on early detection of new AHB incursions and current laboratory capacity, including identifying areas of responsibility in the Cairns Port area. • Floral observations and bee lining in the Cairns Port Area to date has not generated sufficient numbers of nests to allow for effective surveillance for exotic mites. It has demonstrated that technique as effective to detect the presence of *Apis* species.

AG6 – Critical intervention to limit long distance spread
Objective – critical interventions and their points are identified and analysed to inform the Varroa action plan; awareness and control information is in place to support spread threat reduction strategies before significant long distance spread occurs; AHB impact is limited as

much as possible in strategic areas as elements of long distance spread intervention strategies.

Funding and reporting milestones	Status/comments
Milestone 1 & 2	**Completed**
<u>Milestone 3 – due 15/6/12</u> ($100,000) • Report on cost, compliance and efficacy of movement controls to limit spread of AHB that could occur with European honey bee hives and risk material such as containers, machinery, vehicles and freight	**Completed** • 'An analysis of movement control efficiency and compliance for the Asian honey bee incursion in Cairns including a strategy to minimise the spread of Asian honey bee through pathways, 2013 – 2013' provided December 2012.
<u>Milestone 4 – due 31/12/12</u> (no payment) • Report on pathway analysis for AHB including identification of pathways for long distance spread • Develop and report on evaluation of training for transporter businesses • Report on links with activities occurring within implementation of Varroa Continuity Strategy • Implementation of an industry managed certification system for movement of European honey bees and risk material such as containers, machinery, vehicles and freight	**Completed** • 'An analysis of movement control efficiency and compliance for the Asian honey bee incursion in Cairns including a strategy to minimise the spread of Asian honey bee through pathways, 2013 – 2013' provided December 2012. • 'An evaluation of Asian honey bee workshops conducted in the known infested area for critical stakeholders' was provided October 2012. • Varroa continuity strategy reviewed by QLD. • Industry certification scheme discussions continue
<u>Milestone 5 – due 15/6/13</u> ($50,000) • Final report on activities undertaken in this project	

Project Number	T2M Deliverable	Actions/strategies	Due Date	Comments/status
A.	Maintain existing movement controls for an interim period and	Maintain Restricted Area and existing movement controls, until movement control policy has been	Ongoing, until determined	**IN PROGRESS** • A Restricted Area remains in force and movement licenses are being predominately issued to move bees or beekeeping equipment within or out of the restricted area.

	collect information on their efficacy, cost, compliance etc.	reviewed		• The process for applying for movement licences has been enhanced to reduce the regularity of applying for a license. No movement licences have been declined. • Discussions with Biosecurity Queensland Apiary Officers and local bee keepers regarding various bee pests including AHB are ongoing.
		Develop strategy to cease/amend Restricted Area and movement controls to transition to management • Amend Restricted Area, as required	Strategy developed by 30.6.12 RA rescinded by 30.6.13	**IN PROGRESS** • A strategy to cease the Restricted Area is developed and discussions with industry and other stakeholders is planned.
		Collect information and conduct analysis of movement control efficiency, cost and compliance	Commenced by 31.1.12 Completed by 31.12.12	**COMPLETED** *Note: 'An analysis of movement control efficiency and compliance for the Asian honey bee incursion in Cairns including a strategy to minimise the spread of Asian honey bee through pathways, 2013 – 2013' provided December 2012.*
		Finalise policy on movement of European honey bee hives from within the Restricted Area to outside the Restricted Area	31.3.12	**COMPLETED** *Note: A draft Protocol to Allow Movement of Hives out of the Asian honey bee Restricted Area was developed in consultation with local beekeepers. The draft protocol has been placed on hold after receiving advice from Australian Government DAFF-Biosecurity about the possible trade implications if bees moved outside the restricted area.* *Discussions have been held with the bee industry about an industry managed certification system for moving European honey bees within the restricted area*
B.	Conduct pathway analysis to better understand likely pathways and potential for spread through pathways	• Advice from SAG • Collate data • Analyse data • Develop strategies	Commenced by 31.3.12 Completed by 31.3.13	**IN PROGRESS** *Note: The paper 'An analysis of movement control efficiency and compliance for the Asian honey bee incursion in Cairns including a strategy to minimise the spread of Asian honey bee through pathways, 2013 – 2013' provided December 2012 contains this analysis.* *A specific research project has been completed by Michael Clarke and documented, 'A strategy to address concerns of countries that import Australian honeybees'.*

	implicated in the long distance spread of AHB with a primary focus on effective strategies to minimise long distance spread through transport vectors			
C.	Implement operations to minimise spread through those pathways, including developing bee free zones around transport hubs, ports, etc and review and revise their efficacy after one year	Develop and implement strategy to minimise spread through pathways, including strategy to create and maintain bee free zones	Strategy developed by 31.3.12 Implementation - ongoing	**ON GOING** • A strategy to minimise the spread of Asian honey bee through pathways including the maintenance of bee suppression zones has been drafted. Consultation with transport industries has identified that it is impractical to put restrictions on these vectors and that the use of education, training and public awareness is the only effective measure and there is no need for a certification system. An awareness campaign will be launched including posters and web informaiton to increase the awareness of transport bodies to not aid the spread of bees. • All nests and swarms that are on the edge or outside of the KIA are still being destroyed. Cessation of government intervention has come into effect within the KIA. • In conjunction with the high intensity surveillance trial being conducted by DAFF Biosecurity all AHB swarms and nests are being destroyed around transport hubs and the port to help limit the spread. • A review of the dispersal pathways from Cairns suggests current strategies are effective as there has been no known long distance dispersal from Cairns. Ongoing engagement with transport industries is effective.

				• A formal bee free zone is not possible – A joint trial with Australian Government DAFF-Biosecurity and Biosecurity Queensland has commenced to assess the feasibility of a bee suppression zone. • The remote poisoning trials will be trialled around the transport hubs and port.
		Review strategy and revise efficacy within 12 months of implementation	31.3.13	**IN PROGRESS** • This is linked back AG2 (B) and is in progress.
D.	Work with transporter businesses in the development of monitoring systems, providing training in the recognition of AHB and what to do when AHB is suspected	Review existing transport industry systems and develop any monitoring systems (that may minimise spread through pathways) for implementation by the transport industry	30.6.12 ongoing	**IN PROGRESS** • Discussions with industry are ongoing. • Guidelines for industry destroying swarms or nests of Asian honey bees has been developed and awareness has been increases to informaiton transport industries what tools they have available. This is available along with and Asian honey bee fact sheet on BQ and PHA websites • A poster is being developed to aid in getting the informaiton out to the wider national audience and will be extended throughout January.
		Deliver information and training packages for transport industries	1st session delivered by 31.3.12, ongoing	IN PROGRESS • Engagement with transport industry focuses on providing them with awareness about the important role they can play preventing the spread of AHB. • Extension materials, such as posters are being developed and will be extended out to the national audience to build awareness about not moving bees.
E.	Review the varroa mite management plan and revise, as appropriate		Revise by 30.6.12 Revise by 30.6.13	**COMPLETED** *Note: Discussions have taken place between the Animal Biosecurity & Welfare program and Plant Health Australia. Biosecurity Queensland has reviewed the document 'A honey bee industry and pollination continuity strategy should Varroa become established in Australia – May 2011' and no changes are proposed at this time.*

QG1 – Protecting Queensland's social amenity and public assets Objective – Queensland's social amenity and assets are protected				
Project Number	**T2M Deliverable**	**Actions/strategies**	**Due Date**	**Comments/status**
A.(i)	Contain AHB to the vicinity of known infested areas Suppress AHB infestations in strategic areas Destroy AHB infestations around edges of infested area and in areas with high social amenity value	Conduct operations to contain, suppress and destroy AHB • Develop revised operational strategy and plan to deliver T2M operations • Develop revised destruction policy & surveillance strategy to reflect T2M focus	Ongoing	**ONGOING** • Cessation of government intervention has come into effect within the KIA in accordance with the AHB T2M plan. • All nests and swarms that are in high risk port areas or transport hubs, on the edge or outside of the KIA are still being destroyed. • Surveillance is now focussed along the edge of the known infested areas - the Atherton Tablelands, Innisfail/South Johnstone and northern beaches. • Active bee eater roosts are monitored and pellets are collected for analysis of AHB presence/absence.
(ii)		Develop strategy to cease government intervention, respond to fewer public call outs, undertake less surveillance	Strategy developed by 31.3.12 Complete cessation of operational activity by 30.6.13	**Completed** *Note: 'Asian honey bee Transition to Management Cessation Strategy' completed. Provided separately, December 2012.*
B.	Conduct surveillance to determine extent	Develop and implement staged surveillance strategy to deliver on	Strategy developed by 31.3.12	**IN PROGRESS** *Note: 'Asian honey bee Transition to Management Cessation Strategy' completed. Provided separately, December 2012.*

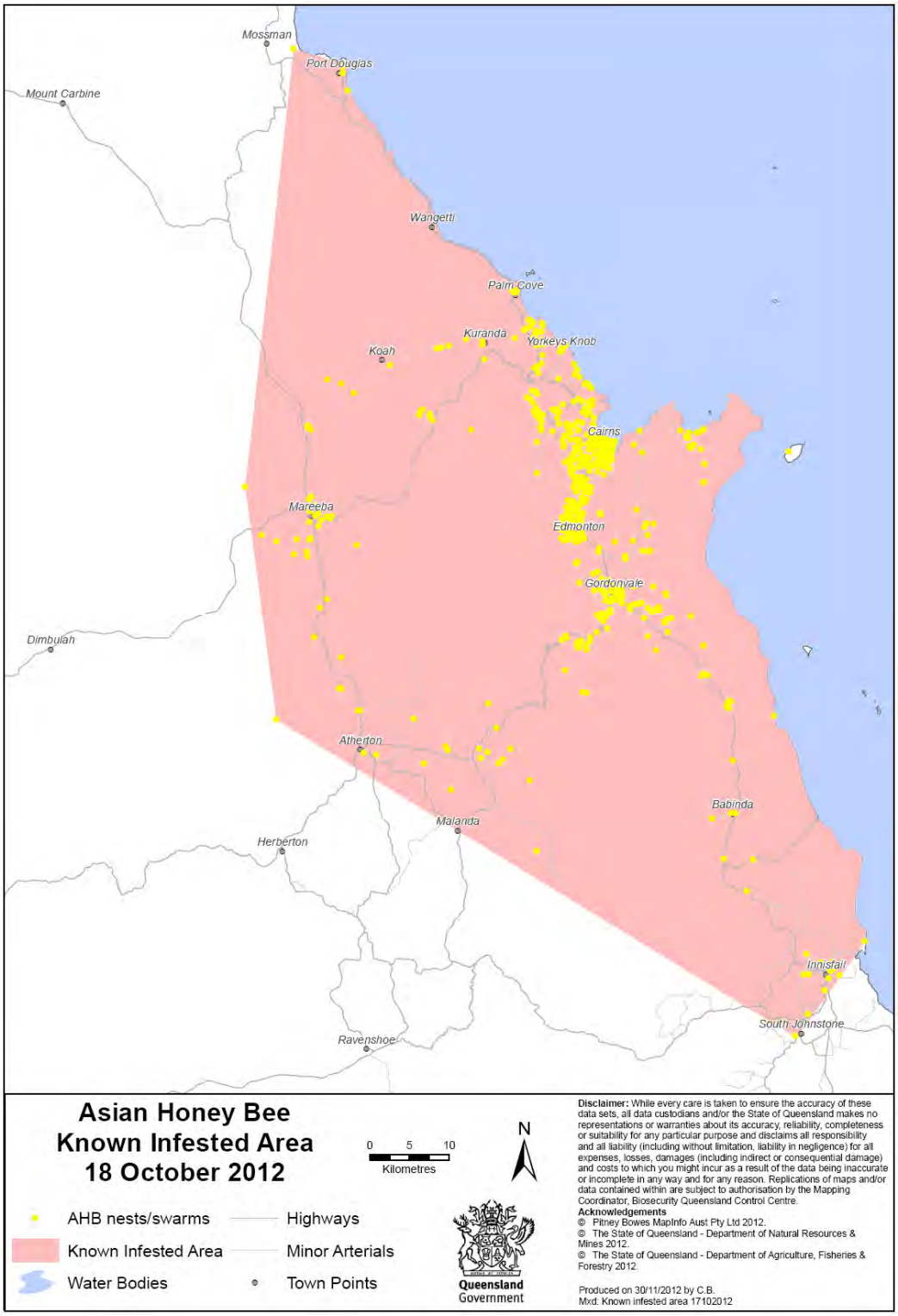
	of known infested area	T2M projects QG1, AG1-6	Complete cessation of operational activity by 30.6.13	• Surveillance is ongoing.

QG2 – Improving operational efficiency and effectiveness Objective – determine efficacy of current operational techniques and operational delivery				
Project Number	**T2M Deliverable**	**Actions/strategies**	**Due Date**	**Comments/status**
A.	Review of efficacy of odour detection dog surveillance. With eradication no longer being the focus of the program, determine whether odour detection dog is a cost effective operational tool	• Review conducted by Coordinator and BQCC Senior Dog Handler, with input from AHB Program Dog Handler and BQ Senior Dog Handler • Recommendation to be made to GM ABW for decision	Finalise review by 31.12.11 Final decision by 31.1.12	**COMPLETED** *Note: Review found that it was not cost effective to use the odour detection dog for T2M activities. The dog has ceased operational duties on the AHB program and has been re-trained for use in other Biosecurity Queensland programs.*
B.	Quantify efficacy of current operational techniques	Refer to AG2 B.(ii)-(iv)		**IN PROGRESS** • Refer to AG2 B.(ii)-(iv) • This is ongoing as research and analysis is conducted as the team transition through the different phases of the program.
C.	Undertake spatial analysis of	• Identify, collate and	Commence analysis by	**IN PROGRESS**

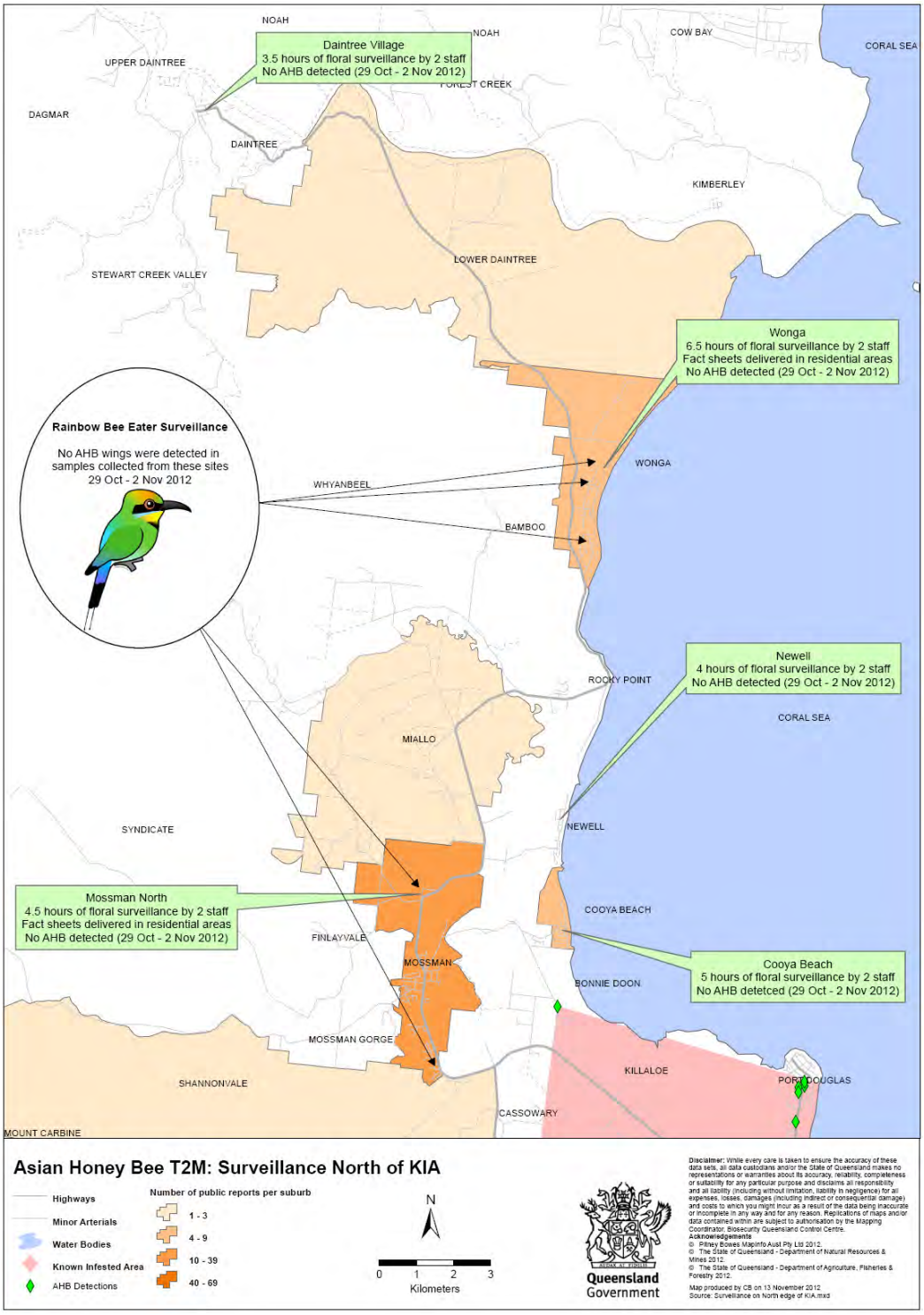
	current AHB infestation to guide to future surveillance activities	review all information • discuss information required to conduct spatial analysis needs • conduct spatial analysis	1.3.12 Finalise by 30.8.12	• Spatial analysis has been completed and a draft report submitted to SAG.
D.	Undertake spread analysis of current AHB infestation to guide future management strategies	• Identify, collate and review all information • discuss information required to conduct spread analysis needs • conduct spread analysis	Commence analysis by 1.3.12 Finalise by 30.8.12	**IN PROGRESS** • Preliminary computer modelling has been done. Although modelling output appears of little use due to lack of data and computer program issues, interpretation is underway.
E.	Undertake technical analysis of all nests and honeycomb to guide the spread and spatial analysis		ongoing	**IN PROGRESS** • Nests have been analysed for o Size, weight, number of capped and uncapped queen, worker and drone cells, and assessment of pollen and nectar. • More than 140 nests and swarms have been analysed for exotic mites. Some results are pending but all results received to date have been negative. • Swarms were analysed to estimate size and composition. • Honeycomb detected since December 2011 are being analysed as part of a UNE/CSIRO research project – refer to AG2C(iv).

Appendix 2 - Current Known Infested Area at 18 October 2012

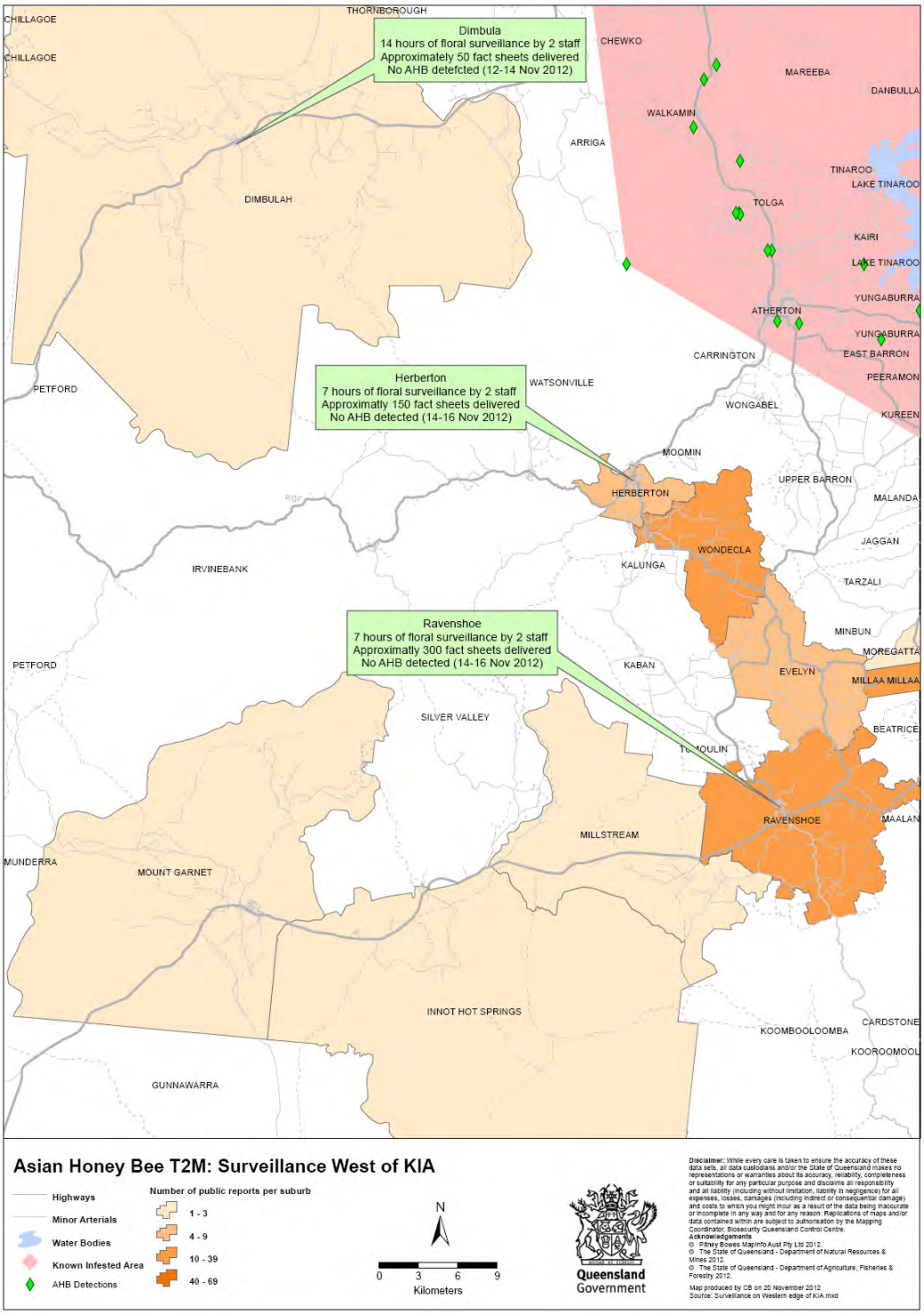
Note: 18 October 2012 was the last detection that extended the KIA.



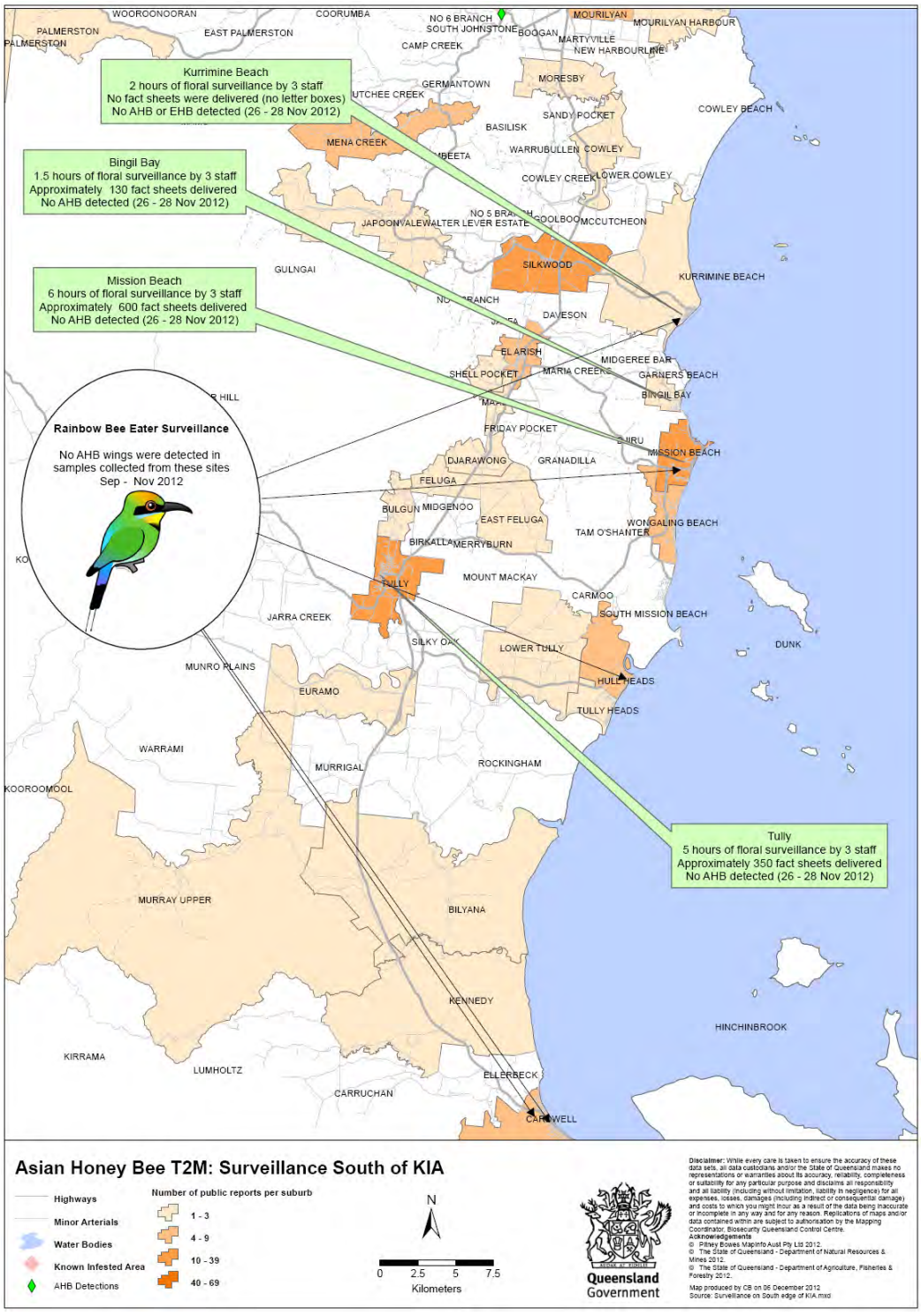
Appendix 3 – Surveillance north of the KIA



Appendix 4 – Surveillance west of the KIA



Appendix 5 – Surveillance south of the KIA



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Queensland Government

Asian honey bee Transition to Management

Cessation Strategy

Department of **Agriculture, Fisheries and Forestry**

This publication has been compiled the Asian honey bee Transition to Management program of Biosecurity Queensland, Department of Agriculture, Fisheries and Forestry.

Contents

Background

Asian honey bees were first detected in Cairns in far north Queensland on 4 May 2007. Since their detection, Queensland has conducted a significant response to the Asian honey bee (AHB) incursion.

In April 2010, the National Management Group (NMG) agreed to national cost shared funding for the AHB eradication program, backdating the funding to 1 July 2009, under the provisions of Australia's formal emergency pest response arrangements. The program was nationally funded between 1 July 2009 and 31 March 2011.

In January 2011, the NMG decided that it was not technically feasible to eradicate AHB and national cost shared funding for the eradication program ceased in March 2011. In response to this decision, a national 'Transition to Management Plan' was developed comprising a suite of projects designed to help industry and the community adapt to living with the pest bee.

The Australian and Queensland Governments are providing $2 million and $600,000 respectively over the 2011-12 and 2012-13 financial years to fund the implementation of the plan through the Asian honey bee Transition to Management (T2M) Program. The Queensland Department of Agriculture, Fisheries and Forestry (QDAFF) has been contracted to implement the key components of the program. The Australian Honey Bee Industry Council is providing $400,000 funding through the Rural Industry Research and Development Corporation to support complimentary key research activities regarding Asian honey bee.

Key objectives of the AHB T2M Program 'centre on developing the ability of the community, landowners, honey bee industry and commercial and hobby apiarists to identify AHB and apply mitigating and control measures to limit its impact on human health and amenity and honey production'[1]. The program will cease on 30 June 2013.

From 1 July 2013, the response to AHB by government will focus on the early detection of new incursions of AHB and other bee pest and diseases including the maintenance of pest information data and distribution.

This strategy document outlines the goals needed to be achieved to make cessation of the AHB T2M program successful and the stages in which management of AHB will transition from eradication to long term management by affected stakeholders.

Strategy

The primary goal of the AHB Transition to Management plan is to transition from a state of AHB eradication to a program of management, acknowledging that the bee

[1] Plan for Transition to Management of the Asian Honey Bee Version 1 – November 2011

will continue to spread and become widespread within urban and rural areas of Australia where the environment favours its survival.

A key aspect of this transition is to empower industry and the community to manage the pest bee. This will enable the government to cease assisting with the destruction of AHB nests and swarms in Queensland unless they are considered to be a new incursion.

Cessation of government management of AHB will be possible through strategically reducing operational surveillance and destruction activities in the known infested area (KIA), rescinding movement controls and increasing community engagement, industry liaison and scientific research to provide the required strategies and tools for the bee industry and the community to manage the impacts of AHB.

Implementation

The Asian honey bee Transition to Management Program has outlined the intended approach through staged phases (see Attachment A) to achieve the goal of transition of management of AHB.

The program has developed a significant engagement and communications plan and strategy to cease government intervention by responding to fewer public notifications and undertaking less surveillance activities.

The activities this strategy generates will engage individuals, communities, local government, agriculture and environment agencies, production and service industries e.g. pest controllers. They will aid in developing knowledge, tools, and actions to cope with the ongoing presence of AHB with a view to lessening the social, environmental and economic impacts of this pest. Access to information, techniques and resources to facilitate this response will provide for effective ongoing management by individuals, communities, local government and industries, without government intervention. A draft 'Cessation Timetable' (Attachment B) has been developed in conjunction with this strategy to guide the chain of events involved in the remainder of the Asian honey bee Transition to Management program.

Reference documents

The following documents support this strategy:

- *Plan for Transition to Management of the Asian Honey Bee – Version 1 – November 2011*
- *Asian honey bee Transition to Management Work Plan*
- *Asian honey bee Transition to Management Communication and Community Engagement Strategy*
- *Responding to public notifications of Asian honey bee* policy.
- *Strategy to minimise the spread of Asian honey bee through pathways 2012-13*

Target Audience

- Bee industry
- Community
- Scientists
- Australian DAFF staff
- QDAFF staff
- Pest controller industry
- Transport industry

Key Performance Indicators

Cessation will be possible when the following objectives and outcomes have been achieved:

- **The general community has an awareness of AHB and their role and responsibilities in its management.**
  - Stage 1
    - Produce and distribute a 'Fact Sheet' about AHB and how the public should respond to AHB nests and swarms.
    - Update the Biosecurity Queensland website with comprehensive details on Asian honey bees, including identification, how to manage them, produced and available.
    - Community engaged through a variety of methods e.g. media releases, TV and radio interviews, attending community festivals and regional shows.
  - Stage 2
    - Ensure the community and industry are informed and up-to-date regarding the status of the transition to management program and where they can access assistance.
    - The Customer Service Centre processes are updated to provide a clear decision tree regarding AHB, new incursions, those inside and outside the KIA and reflect the current status of government intervention.
- **Transport companies are alert to actions that will limit the spread of AHB.**
  - Stage 1
    - Intensively engage with transport industries inside the KIA and surrounding edge. Consult and develop a method to incorporate the awareness of AHB into the transport industries to reduce the risk of aided spread of AHB through commercial transport pathways.
  - Stage 2
    - Produce and develop a poster with targeted messages for transport industries.
    - Develop and deliver awareness campaigns for transport industries within a 200km radius from the edge of the KIA.
    - Engage and increase awareness with transport companies and their industry groups Queensland wide.
    - Engage and increase awareness broadly within the Australian transport industry through the peak industry body and national publications.
- **Pest control operators know how to identify and safely respond to reports of AHB.**
  - Stage 1

- Consult, develop and make available a guideline for pest controllers on what tools are available and how to use them when responding to an AHB call for help.
- Build awareness of available identification tools on the Biosecurity Queensland website with comprehensive details on Asian honey bees, including identification and how to manage them.
- Provide hands-on training workshops to pest control operators that are within and on the edge of the KIA.
- Engage and increase awareness with pest management industry in north Queensland, including hands on training.

– Stage 2

- Develop training videos picturing methods of swarm and nest destruction that the industry can use to help train other members in their business.
- Engage and increase awareness with the pest controller industry Queensland wide.
- Engage and increase awareness broadly with the Australian transport industry through peak industry body and national publications.

• **Indigenous rangers and government officers have knowledge, tools and training in AHB identification and management.**

– Stage 1

- Provide hands on workshop training sessions to indigenous rangers, local government officers, other government agencies and Biosecurity Queensland staff in the management of AHB.
- Increase awareness and availability of produced materials that they can use to deal with AHB situations.
- Conduct presentations at local and regional pest management forums to engage with large numbers of local government and state government staff to increase awareness.
- Provide hands on AHB training to the north Queensland Apiary Officer in AHB surveillance and destruction.
- Involve and consult all Queensland apiary officers and provide them with the tools to implement their responsibilities under the *Responding to public notifications of Asian honey bee* policy.

– Stage 2

- Information is made available to environmental and agricultural departments in other states and territories and the federal government regarding how to manage and control Asian honey bees.
- Integrate and document methods of validated detection and destruction techniques into an AHB manual to assist Biosecurity agencies with a toolkit to respond to and manage AHB incursions.

- **Scientific and environmental community increase their research interest in AHB and increase collaboration with Biosecurity Queensland.**
  - Stage 1
    - Literature review finalised and published.
    - Undertake research as outlined in the AHB T2M Operations Plan.
    - Collaborate with external research scientists on AHB research.
  - Stage 2
    - Outcomes of the research are released. Validate the most effective methods of detection and destruction techniques.
    - Integrate and document methods of validated detection and destruction techniques into an AHB manual to assist Biosecurity agencies with a toolkit to respond to and manage AHB incursions.
    - Guidelines and toolkit are made available for stakeholders.
    - Research findings are presented at scientific conferences and other suitable forums, e.g. Apiary industry meetings.
- **Beekeepers understand and actively manage the risks and impacts of AHB.**
  - Stage 1
    - Consult with the beekeeping industry group and address issues that affect them and what tools they need to manage AHB.
    - Provide hands-on training workshops to beekeepers that are within and on the edge of the KIA as well as to beekeepers that may be called to assist in the identification and sampling of AHB in other areas of Queensland.
    - Provide beekeepers in north Queensland with information and tools needed to identify and manage AHB.
  - Stage 2
    - Beekeepers from around Australia are advised and information is provided in how to undertake AHB surveillance through the beekeeper volunteer program.
    - Compliance with movements controls required under legislation are achieved by issuing longer term movement licences.
    - In consultation with the honey bee industry, develop and coordinate an industry response list that Biosecurity staff can utilise for assistance with suspect AHB detections.

Appendix 1 Asian honey bee - transitioning from eradication to management

The transition from eradication to management will involve:

- Reducing government surveillance and destruction activities and increasing community engagement, industry liaison and scientific research
- Maintaining operational activity until management frameworks, information packages, and transitional policies are developed and agreed upon
- Developing agreed transitional and management policies and strategies for industry and the community to implement
- Documenting and validating destruction techniques so they can be implemented by industry and the community

Situation at June - November 2011	**To be achieved by 30 June 2012**	**To be achieved by 31 December 2012**	**To be achieved by 30 June 2013**	**Situation from 1 July 2013**

• Respond to public reports of nests and swarms.
• Don't provide on-ground response to foraging bee reports within the known infested area.
• Destroy all AHB swarms and nests.
• Confirm extent of infestation through
  ○ Surveillance (bee lining, floral sweeping and traps) focussed on edge of known infested areas
  ○ Dog surveillance supporting bee lining
• Monitor traps around movement hubs.
• Monitor bee eater roosts around edge of infested area.
• Maintain Restricted Area.
• Issue permits.
• Information updates on status of program.
	• Continued engagement of transport industries, utilities and other high risk business.
	• Build industry and community capacity.
	• Develop agreed policy/processes to transition to industry and community management.
	• Landowner management of nests/swarms in built environment.
	• Cease destruction of nests and swarms, except those that pose a risk to public safety, social amenity, industry or containment.
	• Cease dog surveillance.
	• Up to date information available on web.
	• Develop framework for notification of all nests and swarms (so Government and industry can track spread, distribution and manage impacts).
	• Maintain a single database of destruction events.
		• Transport industries, utilities, and other high risk business have awareness of AHB issues. This includes developing appropriate industry codes of practise to minimise spread.
		• Training of pest controllers to destroy nests/swarms.
		• Industry aware of trade implications regarding no Restricted Area.
		• Communication strategy for post June 2013 agreed.
		• Integrated control strategies developed for consideration
		• Modelling of AHB population dynamics and drivers of spread developed for consideration.
		• Tools and strategies for suppression of AHB in the natural environment developed for consideration.
		• Identification and detection methodologies that can assist with rapid detection of new incursions of AHB developed for consideration.
		• Report on pathway analysis for AHB including identification of pathways for long distance spread.
			• Industry management of nests/swarms that impact on industry, including responding to reports of swarm and nests (industry impacts).
			• Pest controllers destroy nests/swarms.
			• Agreed industry codes of practice developed.
			• Maintain accurate information on web.
			• Improvements to trap monitoring documented for consideration regarding future use.
			• Agreement reached with stakeholders regarding any future legislative controls.
				• AHB T2M Program ceases.
				• No Government management of AHB.
				• Landowners and industry responsible for managing relevant AHB impacts.
				• Rescind the RA.
				• Government responsible for:
				  ○ maintaining pest distribution data on web
				  ○ monitoring AHB distribution
				  ○ exotic mite testing
				  ○ early detection of mites and new incursions of AHB infestation
				  ○ monitoring ports, high risk areas etc. through bee surveillance program.

Situation at June - November 2011	To be achieved by 30 June 2012	To be achieved by 31 December 2012	To be achieved by 30 June 2013	Situation from 1 July 2013
		• Report on links with activities occurring with the implementation of Varroa Continuity strategy. • Develop strategies for early detection outside known infested areas • No Government destruction of swarms and nests in the Known Infested Area.		

Appendix 2 Proposed Cessation Timetable

Note: - dates are subject to change depending on factors outside of the AHB T2M Program's control.

Month	Program/Policy	Community Engagement	Science	Operations
August 2012		Guidelines for pest controllers developed and available.	Finalise literature review	Train NQ Apiary Officer
		Web update		Propose longer movement permits.
				Beekeeper volunteer program implemented.
September 2012	7th Response policy adopted	14th Call centre script	Undertake surveillance field trials to determine effectiveness and efficacy.	Beekeeper volunteer program in force (ongoing) AB&W (apiary officers) enhance their knowledge of the AHB T2M program and requirements following cessation (ongoing)
	14th Brief Minister (literature review and cessation of destruction activities)	14th Approve media plan		
		21st Advise key stakeholders		
	Quarterly Surveillance and TMG reports	21st Implement media plan		
		Far north Queensland transport companies		
October 2012		FNQ training sessions ▪ transport companies ▪ beekeepers ▪ local/fed/state government agencies Develop transport industry extension material	Surveillance field trials	Implement "Responding to public notifications of Asian honey bee" policy and begin to cease responding in the Known Infested area.
November 2012			Surveillance field trials	Implement "Responding to public notifications of Asian honey bee" policy. No destruction of swarms and nests in the Known Infested Area.

Month	Program/Policy	Community Engagement	Science	Operations
December 2012	Quarterly Surveillance and TMG reports	Provide extension to Queensland wide transport companies Web update Update call centre script	Surveillance field trials	Implement "Responding to public notifications of Asian honey bee" policy. No destruction of swarms and nests in the Known Infested Area. .
January 2013		Provide extension to Queensland wide transport companies Bee lining and surveillance videos	Surveillance field trials	Destroy swarms and nests on the edge of the Known Infested Area. "Responding to public notifications of Asian honey bee" policy implemented state-wide and monitored by Operations Coordinator.
February 2013		Provide extension to Queensland wide transport companies LGAQ and other Queensland government departments	Surveillance field trials	Destroy swarms and nests on the edge of the Known Infested Area. "Responding to public notifications of Asian honey bee" policy implemented state-wide and monitored by Operations Coordinator.
March 2013	Quarterly Surveillance and TMG reports	National transport industry peak body Web update Update call centre script	Write up surveillance field trials Release the outcomes of the research and integrate it into the guidelines and toolkit for stakeholders. Present research findings at scientific conferences Present research findings, or summaries of, in forums attended by key stakeholders	
April 2013		National transport industry	Write up surveillance field trials	Involve AB&W staff in swarm

Month	Program/Policy	Community Engagement	Science	Operations
		peak body	Present research findings at scientific conferences	and nest responses on the edge of the KIA.
			Present research findings, or summaries of, in forums attended by key stakeholders	
May 2013		National transport industry peak body	Write up surveillance field trials	Involve AB&W staff in swarm and nest responses on the edge of the KIA
			Present research findings at scientific conferences	
			Present research findings, or summaries of, in forums attended by key stakeholders	
June 2013	Report completed Restricted area rescinded	National transport industry peak body	Complete write up of surveillance field	AHB T2M ceases all response.
	Cessation achieved		Present research findings at scientific conferences	AB&W assumes responsibility of responding as outlined in the "Responding to public notifications of Asian honey bee" policy.
		Web update		
		Update call centre script		
			Present research findings, or summaries of, in forums attended by key stakeholders	
		Make relevant information available to agriculture/ environment departments in other governments, state and federal.		

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Queensland Government

Asian honey Bee Transition to Management

An analysis of movement controls and compliance for the Asian honey bee incursion in Cairns including a strategy to minimise the spread of Asian honey bee through pathways, 2012 – 2013

Department of **Agriculture, Fisheries and Forestry**

This publication has been compiled by the Asian honey bee Transition to Management program, Biosecurity Queensland, Department of Agriculture, Fisheries and Forestry.

Contents

1 Introduction

The Asian honey bee (AHB) Transition to Management (T2M) plan requires a pathway analysis as part of determining the cost of compliance and efficacy of movement controls that are imposed to limit the spread of AHB. This document describes the risk pathways for long distance spread of AHB and details the movement controls that have been imposed in Queensland to reduce long distance spread from transport facilities and other identified risk pathways. It reports on the efficacy of these measures and provides recommendations that help in the design of a strategy to minimise the spread of AHB through to the end of the program.

The strategy builds on the AHB T2M Work Plan and is aimed at fulfilling the key objectives outlined in T2M AG Project 6 – *Critical intervention to limit long distance spread*.

The strategy will inform future development of a detailed operational plan for Biosecurity Queensland that clearly defines operational priorities aimed at minimising the spread of AHB and guide operational personnel involved in field and community engagement activities.

2 Background

Asian honey bees were first detected in Cairns in far north Queensland on 4 May 2007. Since their detection, Queensland has conducted a significant response to the Asian honey bee (AHB) incursion.

In April 2010, the National Management Group (NMG) agreed to national cost shared funding for the AHB eradication program, backdating the funding to 1 July 2009, under the provisions of Australia's formal emergency pest response arrangements. The program was nationally funded between 1 July 2009 and 31 March 2011.

In January 2011, the NMG decided that it was not technically feasible to eradicate AHB and national cost shared funding for the eradication program ceased in March 2011. In response to this decision, a national 'Transition to Management Plan' was developed comprising a suite of projects designed to help industry and the community adapt to living with the pest bee.

The Australian and Queensland Governments are providing $2 million and $600,000 respectively over the 2011-12 and 2012-13 financial years to fund the implementation of the plan through the Asian honey bee Transition to Management Program. The Queensland Department of Agriculture, Fisheries and Forestry (QDAFF) has been contracted to implement the key components of the program. The Australian Honey Bee Industry Council (AHBIC) and Federal Council of Australian Apiarists Association (FCAAA) are providing $400,000 funding through the Rural Industry Research and Development Corporation to support complementary activities regarding AHB.

Key objectives of the AHB T2M Program 'centre on developing the ability of the community, landowners, honey bee industry and commercial and hobby apiarists to identify AHB and apply mitigating and control measures to limit its impact on human health and amenity and honey production'[1]. The program will cease on 30 June 2013.

From 1 July 2013, the response to AHB by government will focus on the early detection of new incursions of AHB and other bee pest and diseases including the maintenance of pest information data and distribution.

This strategy document outlines the goals needed to be achieved to make cessation of the AHB T2M program successful and the stages in which management of AHB will transition from eradication to long term management by affected stakeholders.

3 Risk assessment for pathways and vectors

The spread of Asian honey bees is contingent on a queen being present. Foragers transported via human assisted movement are unable to establish a viable population. Therefore the movement of a nest or swarm is paramount when assessing the risk of AHB being spread through vectors and pathways.

Bee pests and diseases are however able to be spread by a single bee or via bee products and mechanical vectors such as contaminated clothing and equipment. To date, there has been no evidence that the AHB incursion in Cairns has introduced the major bee pest varroa mite (*Varroa* spp.). The disease status of AHB in north Queensland is yet to be determined. This has meant that some consideration has had to be given to individual bees, bee products and bee keeping equipment but the main factor in assessing the risk of spread of AHB was through the movement of nests or swarms.

There are four main transport modes which have the potential to facilitate long distance spread of AHB from the known infested area (KIA) around Cairns: road, rail, shipping and aviation. This assessment examines the risk of spread associated with the various types of traffic via these transport pathways. The assessment is based largely on the experience accumulated during the AHB program and the advice of relevant organisations such as the Australian Government and the transport and bee industries.

High Risk was identified as any form of transport that was capable of moving a nest or swarm and the chances of the nest or swarm being detected prior to movement was low.

[1] Plan for Transition to Management of the Asian Honey Bee Version 1 – November 2011

Medium Risk was identified as any form of transport that was capable of moving a nest or swarm but it is unlikely as it is probable that a nest or swarm would be detected prior to movement.

Low Risk was identified as any form of transport that was not likely to move a nest or swarm and the chances that a nest or swarm would be detected prior to movement was high.

3.1 Road transport

The coastal city of Cairns has three major roads heading south, west and north. The most significant is the 'Bruce Highway', a part of the National Highway system including Highway 1, which extends from Cairns south to Brisbane. It is the largest traffic carrier in Queensland at a length of 1700 kilometres and passes through or around the major coastal towns of Queensland. Next is the 'Kennedy Highway', also part of Highway 1, which carries traffic west to Mareeba where it can go as far west as Broome in Western Australia. Last and smallest of the major roads is the 'Captain Cook Highway' which services the towns north of Cairns, Port Douglas and Mossman, while also carrying tourists to the Daintree world heritage listed rainforest and Cape York.

Private and passenger vehicles – low risk

Private and passenger vehicles have been assessed as a low risk of spreading AHB as a nest or swarm of bees would very likely be noticed by drivers or passengers. It is unlikely a swarm would remain on a private or passenger vehicle when it was moving and these vehicles lack the places for a nest to form.

Road freight – medium risk

Road freight travels out of the KIA in significant volumes. The main transport hub within the RA is the Portsmith area in Cairns.

Reputable trucking and timber transporting businesses operate a 'Trucksafe' system which involves pre-departure checks by the driver during which it is highly likely a nest or swarm would be seen on the outside of the vehicle or freight. Other transport businesses also carry out checks of their loads prior to movement.

Timber yards load each piece of timber individually so would normally see any bee nests or swarms on it.

Plant and crane hire businesses thoroughly wash down and clean all plant being returned to their depot and inspect it before it is taken away by a new client.

Movement of hives and bee keeping equipment by apiarists – high - low risk

Beekeepers would notice a nest or swarm of AHB when conducting a movement of bees or equipment and if this were the only issue they would be rated a low risk. However, it is possible they may move single foragers or mites and disease as they

move high risk objects (e.g. bees, hives frame etc) which pose a high risk of spreading mites and other pests and diseases.

Note: The apiary industry has worked closely with the program and participated in information and identification workshops to ensure they can identify AHB.

3.2 Rail

Cairns has major railway lines heading south and west from the city. There is also a network of sugar cane tram lines in the region that enable harvested cane to be transported to sugar mills at Mossman, Gordonvale, South Johnstone and Tully.

Passenger trains – low risk

Passenger trains are considered a low risk as it would be expected that rail staff and passengers would observe a nest or swarm of bees prior to movement.

Freight trains – medium risk

Freight trains are loaded with heavy machinery moving containers but as freight does sit in the rail yard for a period of time prior to loading it is possible a swarm could attach itself and not be seen. This form of movement is rated higher than passenger trains and is therefore rated a medium risk.

Note: Rail staff have been particularly vigilant regarding AHB and have reported a number of swarm sightings on containers and freight at the rail yards.

Cane hauling trains – low risk

This movement was considered low risk as there is much machinery and movement around cane bins when they are loaded and they are normally moved to the mill quickly so that the harvested cane does not deteriorate. The syrup may attract foragers however the bin would not make a suitable site for a nest and a swarm would be disturbed by the machinery and movement.

3.3 Shipping

The Cairns sea port receives and freights goods internationally, nationally and locally.

International vessels – high - low risk

International passenger and freight vessels arrive and depart from the Cairns port regularly.

Passenger vessels are considered a low risk as they are only in port for a short period of time and it is very likely passengers or crew would observe a swarm.

Freight vessels are considered a high risk as they are in port for longer periods and while there is crew and machinery around the area, it is less likely a swarm or freight with a nest would be detected.

Barges and other vessels – high risk

Cargo is often left standing on the dockside in Portsmith for some time before being loaded. Marine transport and barge companies load vast amounts of cargo in a short period and are less likely to see a swarm than are land transport companies.

Royal Australian Navy – low risk

There is a naval base in Cairns however they are primarily not freight carriers. There is significant numbers of crew present on these vessels who are alert for anything out of the ordinary.

3.4 Aviation

An airport in Cairns caters to international, domestic and general aviation. Advice from the Australian Department of Agriculture, Fisheries and Forestry (ADAFF) Biosecurity is that this is not a significant pathway for AHB because, while some bees have been detected in these movements, this is not the case for AHB.

Table 1. Summary of identified pathways and vectors and

Pathway	Identified vectors	Assessed risk
Road Transport. Highways heading south, north and west from the KIA	Private and passenger vehicles	Low
	Road freight	Medium
	Movement of hives and bee keeping equipment by apiarists	High - Low
Rail. Mainline railway heading south and west from the KIA	Passenger trains	Low
	Freight trains	Medium
Cane trains. Narrow gauge cane railways heading south from the KIA	Cane hauling trains	Low
Cairns Seaport	Cargo barge services to Cape and Torres Strait communities	High
	Other cargo vessels travelling overseas and interstate	High
	Passenger vessels	Low
	Royal Australian Navy	Low
Cairns Airport	Domestic and international flights	Low

4 Responses used by the program

Legislation and regulation

Queensland has a suite of legislation that can be used to manage pests and diseases that are identified as a biosecurity risk to the State's economy, environment or social amenity.

AHB is a flying insect that will move and spread naturally but only relatively slowly and over short distances. However, AHB can also be spread quickly over long distances via a range of transport vectors as identified in section 3. If infested with mite pests or other bee pests or diseases, AHB, other bees that have been in contact with AHB, or any associated equipment or other thing that is contaminated with these pests or diseases can act as a vector for spread. Finding a legal solution that minimises the risk of spread of AHB and any associated mites or other bee and diseases, which is cost effective and does not unnecessarily impose significant additional costs or restrictions on individuals or businesses, is not easy. The cost of operating traffic control points to enforce movement restrictions 24 hours a day seven days a week is prohibitive especially given the number of transport pathways that may need to be monitored.

In this instance, the *Exotic Diseases in Animals Act 1981* was used to establish a Restricted Area in far north Queensland. The *Exotic Diseases in Animals (Acarine and Varroa Mites) Notice 2007* was made in May 2007 to declare a Restricted Area around Cairns for acarine and varroa mites and to introduce associated movement restrictions to reduce the risk of human assisted spread of these mites. Section 7 of the notice restricted the movement of bees, bee products or other things associated with bees and beekeeping within, into and out of the declared Restricted Area.

7. Restricted movements—Act, s 10A

(1) Each of the following is a restricted movement for the restricted area —

(a) moving a bee into the restricted area;

(b) moving a bee, bee product, or mechanical vector within or out of the restricted area.

Note —
See section 11 of the Act for the circumstances in which a person may make, cause or allow a restricted movement for a restricted area.

(2) In this section—

***bee** means a honey bee (Apis spp.) or native bee, and includes the egg, larva or pupa of the honey bee or native bee.*

***bee product** includes beeswax, beeswax comb, extracted honey, pollen, propolis and royal jelly but does not include processed honey bought from a supermarket or grocery store.*

***mechanical vector** means a thing, including, for example, clothing, an appliance, equipment, a container or vehicle that is, or has been, used in beekeeping or in handling, housing or storing bees or bee products.*

Examples —

- *footwear, gloves, tools or veils used for beekeeping*
- *used hive components*
- *shipping container used to carry bee* products

As no mites had been detected on AHB in the Cairns area since the initial incursion in 2007, in 2010 it was deemed necessary to revoke the *Exotic Diseases in Animals (Acarine and Varroa Mites) Notice 2007* and replace it with the *Exotic Diseases in Animals (Asian Honey Bee) Notice 2010*. This new notice changed the focus of the Restricted Area to controlling the spread of AHB rather than controlling the spread of acarine or varroa mites that may have been introduced with the pest bee. Movement

restrictions associated with the Restricted Area were unchanged under the new notice.

While these movement restrictions have minimal impact on preventing the natural spread of AHB, they are of some value in reducing the risk of long distance human assisted spread of AHB, and any associated bee pests or diseases that may have been introduced with the pest bee. The disease status of AHB in north Queensland is yet to be determined.

Other countries have expressed concern regarding the disease status of AHB in Australia and any other bees that AHB may have come into contact with. This has led to the United States of America banning the trade in European honey bees from Australia.

Under the notice, beekeepers and other businesses that move high risk objects are required to obtain a 'Licence to move' from Biosecurity Queensland to ensure the movement of bees, bee products and bee equipment is conducted in a manner not likely to cause the spread of AHB and any associated bee pests or diseases.

Transport vectors that could potentially move AHB nests and swarms within and out of the Restricted Area, such as cars, trucks, ships and aeroplanes, have not been restricted under the legislation because the costs and practicalities of enforcing compliance were prohibitive, and the impacts on individuals and businesses would have been significant. Risks associated with these vectors were deemed to be better managed through education, extension and training.

Enforcing compliance in the Cairns region

Compliance with legislation and biosecurity objectives can be achieved in a variety of ways. The compliance continuum begins at one end with education, extension and training, with regulatory action such as prosecution at the opposing end. The AHB T2M program has found education, extension and training to be the most efficient and effective tools in terms of dealing with this pest that can spread naturally through flight and by the actions of people.

Two organisations with biosecurity roles and responsibilities that work in the Cairns area are the Biosecurity group within the Australian Department of Agriculture, Fisheries and Forestry (ADAFF) and Biosecurity Queensland within the Queensland Department of Agriculture, Fisheries and Forestry (QDAFF). The AHB T2M Program is being implemented by a specialist unit within Biosecurity Queensland.

These two organisations have worked closely together over many years and continue to do so. They are conducting joint activities in accordance with the AHB T2M plan Project AG5 - *Optimising early detection of new incursion of AHB*.

ADAFF Biosecurity check all incoming planes, vessels and cargo from overseas. They do NOT check ships or barges moving within Queensland waters including from Cairns Port to other destinations such as Thursday Island, Palm Island, Brisbane, Townsville and other Australian ports in AHB-free areas.

The Asian honey bee response group within Biosecurity Queensland, which transformed into the AHB T2M Program, has undertaken compliance activities in the Cairns region.

Regular targeted engagement with barge companies, Royal Australian Navy and shipping agents in Cairns has been conducted to reduce the threat of AHB being moved on outgoing vessels.

Monitoring of the Cairns Port and City area for presence of AHB, including destruction of all nests and swarms detected, has been a priority.

Other compliance and regulatory activities conducted during the life of the response to the Asian honey bee incursion in Cairns have included:

- educating high risk businesses
- educating community and particularly beekeepers of the regulatory requirements
- issuing Movement Licenses
- investigations of unintentional long distance spread within the AHB Restricted Area, e.g. a truck arriving in Mareeba from Portsmith with a swarm of AHB attached
- investigations of suspected breaches of the legislation, e.g. volunteer beekeepers were investigated for allegedly removing bees and bee products out of the Restricted Area.

Community education and awareness

Apiarists

AHB collected from the Cairns incursion since 2007 have been tested for mite pests and, to date, have been found free. As a result, they are no longer regarded as a significant risk of spread of these pests within or from the Restricted Area. However, despite changes to the Restricted Area notice in 2010 to change the focus of the area from acarine and varroa mites to AHB, it was decided to continue to regulate beekeepers to only move high risk objects into, within and out of the Restricted Area under a 'Licence to Move' because they may be carrying as yet undetected bee diseases.

The bee industry in far north Queensland is relatively small and therefore the number of movement licences issued to beekeepers has never been high.

Between 1 July 2010 and 30 June 2011, 61 licences to move bees or bee products were issued.

Between 1 July 2011 and 30 June 2012, 77 licences to move bees or bee products were issued.

Since July 2010, only one licence to move application was declined. This was an application by a beekeeper to move hives outside the Restricted Area and was declined as there was a risk of spreading the pest beyond the Restricted Area boundary.

Currently, a beekeeper wishing to move bees or bee products into or within the RA can obtain a movement licence for up to one month. The beekeeper is required to keep and submit a movement log to Biosecurity Queensland. However, given AHB is now established and widespread within the RA, Biosecurity Queensland is moving to issuing a movement licence to beekeepers that will remain current up to the cessation of the AHBT2M Program on 30 June 2013 and removing the requirement to maintain and submit a movement log to Biosecurity Queensland.

The movement control procedures applying to beekeepers have addressed the risk of beekeepers spreading AHB and bee mites, pests and diseases.

Other sectors

Between June 2010 and July 2011 the compliance and community engagement officers engaged and trained staff from businesses within the transport and other industries which may inadvertently move AHB swarms or nests. These included trucking, plant rental, rail, aviation, military and shipping companies.

Businesses were provided extensive information regarding AHB and the risk of moving them, and the role each business played in ensuring the pest bee was not inadvertently spread by their business practises. The transport procedures used by each company were reviewed and new processes were developed to limit the likelihood that AHB were moved when freight or other items were transported. The level of receptiveness varied between companies, ranging from great interest and willingness to help to total indifference.

Approximately 25% of the compliance officer's role was allocated to compliance visits, with the rest of the time performing community engagement and other field officer activities and training. A significant focus of community engagement was educating staff from high risk businesses to check for AHB prior to moving any items.

Between late June 2010 and 31 December 2011, businesses identified as possible vectors of AHB were engaged on 532 occasions. Most of the businesses were located within the Restricted Area (RA) / Known Infested Area (KIA), with some located outside the KIA (e.g. at Tully).

As at the date of this report, there have been no reports of AHB being detected in any long-distance destinations (such as Brisbane or interstate locations) that these businesses deliver goods to. There has only been one report/detection of AHB that has moved as a result of the transport industry - the movement of a swarm in material within a skip that was transported from Cairns to Mareeba. To date, any spread within/outside the Restricted Area appears to be the result of natural spread of the pest bee.

As a result of the program's community engagement activities, staff in businesses identified as possible vectors have a high level of awareness about AHB nests and swarms, and the need to report suspect AHB. Between July 2010 and the 31 December 2011, staff in these businesses have reported 40 AHB nests and swarms in their premises, vehicles and vessels. During the same period, a total of 408 AHB nests or swarms were detected. Therefore, the program's community engagement activities with high risk businesses accounted for approximately 9% of all public reports of swarms/nests.

To date, the program's community engagement activities with businesses identified as possible vectors would appear to have addressed the risk of long distance spread of AHB.

Staff within these businesses and the pest control industry have been trained in bee destruction techniques. It is expected that prior to June 2013, high risk businesses will self-manage any AHB nests/swarms that are detected on their premises.

5 Cost of compliance

The cost of compliance to the AHB response is not easy to calculate due to the manner in which we have achieved compliance. The program has primarily used industry and community engagement as the major tool with regulatory enforcement of regulations playing a lesser role. This was due to the lack of varroa mites and other pests and diseases being present in the Cairns incursion. It is likely a different approach would have been taken if varroa mites had been known to be present.

The AHB T2M program employed a compliance officer at a cost of $122,639 (salary only) to perform compliance and industry engagement duties for the duration of the program. The program also employed two community engagement officers at a cost of $281,796 (salary only) who also played a key role in achieving compliance through industry and community engagement. If the program had decided a more regulatory approach was required it is very likely the cost would be significantly greater and would have also cost industry significantly more to comply with, e.g. operation of traffic control points are extremely costly, they cost government to operate and cost industry through delays and other requirements.

Achieving compliance through education and raising the awareness of potential vector businesses was considered to be cost effective while achieving the goal of minimising spread. However, it was the most time consuming part of the compliance officer's activities as driving to the premises of the business, talking to them and driving back is more time consuming than reviewing an application to move bees and typing up and returning the licence. It is estimated that on average each possible vector business visit took approximately 45 minutes, whereas issuing a 'Movement License' for an apiarist can be processed and issued in approximately 15 minutes. This does not take into account other compliance work such as investigations but provides a comparison of effort for primary compliance work carried out by the compliance officer.

6 Compliance efficiency

There have been no detections of AHB a significant distance from the KIA and only one known movement by a vector business since May 2007. All detections that have expanded the KIA appear to be by natural spread so compliance and community engagement activities have been highly effective in preventing long distance spread of the bee.

The low cost of compliance and the lack of long distance detections infers that compliance has been achieved effectively and efficiently.

7 Analysis outcomes and recommendations

Project AG6 – *Critical intervention to limit long distance spread* within the AHB T2M program allocated $250,000 to achieving, amongst other things, an understanding of how compliance was achieved with this incursion so that others may learn from this.

The program's effective compliance and community engagement activities with potential vector businesses and movement controls for beekeepers have had a real, tangible and positive impact on preventing the human assisted spread of AHB.

As expected, there has been natural spread of AHB, but there have been no reported/detections of AHB outside the Restricted Area that could be the result of human assisted movement by high risk businesses.

The transition to having stakeholders self-manage biosecurity risks will allow businesses to operate with less government intervention and keep compliance costs to a minimum while at the same time reducing the risk of spread of AHB. As the vast majority of Licence to Move applications were approved, the beekeeping industry could potentially self-manage movement licences in the future.

However, a decision will need to be made as to whether the Restricted Area will be maintained after 30 June 2013. The costs and benefits of a Restricted Area and ongoing movement controls need to be assessed when we are trying to minimise the spread of a flying insect which will naturally spread through flight. AHB has already spread outside the Restricted Area and, in accordance with objectives of the AHB T2M plan, government intervention and responses to AHB detections will be very different after 30 June 2013.

In considering the future of the Restricted Area, an assessment will need to be conducted on the costs and benefits of maintaining legislated movement restrictions, who will administer and enforce those restrictions after 30 June 2013, and the impacts that rescinding the Restricted Area may have on international trade of European honey bees.

The beekeeping industry currently self-manage biosecurity risks within their industry through the 'B-Qual' quality assurance program established by Australian Honey Bee

Industry Council. 'B-Qual' "…encourages beekeepers to implement management practices that reduce the potential for the introduction, production and spread of disease and parasites".

8 Minimising Spread Strategy - aims and objectives

The aim of the strategy is to minimise the spread of AHB through identified risk pathways. This will be achieved by:

- developing community engagement tools that will be publicly available (e.g. on the Biosecurity Queensland website)
- promoting the tools through community and industry engagement activities (e.g. workshops; visits to high risk premises and transport nodes to build awareness about not moving bees)
- conducting surveillance on the edge of the KIA and destroying AHB when detected to slow the spread of the pest
- working collaboratively with DAFF Biosecurity to trial early detection methods and plan areas of responsibility for responding to reports of new incursions
- working with industries in and around high risk areas to encourage early reporting and management of the pest bee
- working with industry leaders to raise awareness of AHB within the honey bee industry
- working with transport industries to promote tools to aid early detection of AHB and management to minimise pest spread
- maintaining the Restricted Area until 30 June 2013 and facilitating the movement of bees and bee products through an effective licensing system.

9 Community engagement tools used in the Strategy

Some of the communication and community engagement tools/methods used to target various audiences are described below.

9.1 Biosecurity Queensland website

The website will function as a key information source and must be designed accordingly for easy access by all stakeholders.

The web portal will be featured prominently as a link from the Biosecurity Queensland home page to maximise awareness and facilitate access to information. It will be updated regularly with critical information including:

- AHB characteristics, identification and impacts on environment, industry, community and economy
- updates on the AHB situation in Queensland
- community engagement activities
- movement controls
- what the industry can do to assist in minimising the spread of the bee
- an online reporting tool.

9.2 Customer Service Centre

The Customer Service Centre (CSC) will play a critical role in community and industry engagement, serving as the first point of contact for enquiries. To facilitate the delivery of quick and accurate answers, CSC staff will be kept up-to-date with the AHB situation and tools that are available to assist in limiting the spread of AHB.

Key communication activities will include:

- regular CSC staff briefings throughout the AHB T2M program
- review of CSC scripts
- Restricted Area information and movement controls
- capacity to register and refer any reports of Asian honey bee to the appropriate officers
- key contacts for further information
- a call register to track the content and number of calls for evaluation purposes.

9.3 Social Media

The use of social media (including Twitter) will be aligned to Biosecurity Queensland's communication objectives during the AHB T2M program. As an additional communication tool, social media can improve the way we:

- engage with our stakeholders on a more personal level
- respond to inaccurate information in the community
- highlight new events, information and tools

- deliver our services
- inform stakeholders of Biosecurity Queensland activities during a response.

9.4 Other communication and CE tools/methods

Other tools to be used may include:

- media releases
- communiqués
- signage
- paid advertising in print/electronic media
- newsletters/brochures
- letters
- face to face consultation
- community presentations with feedback sessions
- meetings/public gatherings
- questionnaires
- online tools
- posters/postcards/identification cards.

10 Legislative tools used in the Strategy

Queensland will maintain the current Restricted Area and associated movement requirements until at least 30 June 2013. As discussed in Section 4, beekeepers and other businesses moving high risk objects will continue to require a 'Licence to move' from Biosecurity Queensland until a decision is made about the continuation of the Restricted Area after 30 June 2013. This will help mitigate the risk of spread of any bee diseases that may be associated with the Cairns AHB incursion while researchers determine the disease status of the AHB population in north Queensland[2].

[2] A RIRDC project is currently underway to determine the disease status of the north Queensland AHB population.

11 Priorities of the Strategy

Community and industry engagement is the critical element that will underpin the success of this strategy. This strategy will link in with the wider communications and community engagement strategy.

Appropriate key messages have been developed and are being refined to specifically address the following:

- prevention activities that transporters and the community can take to minimise spread
- improving awareness of AHB to enhance early detection and reporting of new incursions.

The highest priority will be given to developing appropriate tools to engage potential vectors of bees from high risk areas, e.g. transport companies, and build their awareness to reduce the possibility of bees being spread.

Once tools have been developed, transporters from high risk areas will be given the opportunity to receive 'hands-on' training on the management of swarms and nests and what they should do to minimise the spread of the pest bee. Businesses will know to monitor, report AHB detections, call a pest controller or, where appropriate, kill AHB to limit their spread.

12 Expected outcomes of the Strategy

It is expected that spread of AHB will be minimised through the activities identified in this strategy. Where additional activities are identified that will facilitate meeting the objectives of the strategy, they will be evaluated through cost-benefit and cost-effectiveness analysis. Where required, the Scientific Advisory Group will be consulted.

13 Implementation of the Strategy

This strategy will be implemented for the duration of the AHB T2M Program with the expectation that after 30 June 2013 transporters and other high risk businesses will continue to monitor, kill and, where appropriate, report AHB. A policy for responding to public notifications of suspect bees will have been developed and implemented to commence on 1 July 2013.

Implementing the strategy may take a staged approach in realising the outcomes, recognising that this will best allow refinement of management and operational activities over time while also allowing for development of appropriate messaging tools over time.

More detailed actions, plans and supporting sub-strategies may be developed to facilitate achievement of the strategy objectives.

This strategy will be reviewed quarterly to ensure it remains contemporary in its approach to minimising AHB spread.

14 Evaluation and assessment of the Strategy

The strategy's success will be assessed through the ongoing review and planning process by evaluating the outcomes from policy, science and operations areas against agreed performance indicators that may include:

- Identifying further spread of AHB and the factors leading to this spread
- Limiting impact on urban communities (AG1)
- Limiting impact on honey production (AG3)
- Limiting impact on the natural environment (AG4)
- Limiting public health and social amenity impacts
- Meeting of national program targets

Specific communications and community/industry engagement aspects can be evaluated as follows:

- Media
- Media pick up of Biosecurity Queensland media releases and issues
- Number of media responses and interviews held
- Enquiries to CSC
- Letters to the Minister or Biosecurity Queensland
- Website and Twitter posts
- The number of business that integrate AHB protocols into their everyday business
- Evaluation of the website will be conducted utilising Google web service to determine:
- Number of hits to DAFF AHB web pages
- Number and nature of responses or questions posted via the website
- Evaluation of Twitter will be undertaken by:
- The number of interactions and the demographics of these interactions

- Relevance of interactions to the communication objectives
- Information acquired on mitigation actions
- Details of incidents during the T2M which posed a risk to the Department
- Details of positive comments/interactions
- Stakeholder feedback
- Number and nature of enquires managed and finalised by the CSC
- Number and nature of enquiries managed by Community Engagement Officers
- Number of requests from stakeholders for presentations, information and materials
- The rate at which unmanned information points need to be re-stocked (if used)

Surveys will be circulated to the following key stakeholders during the last quarter of the T2M for feedback regarding Biosecurity Queensland communications and community engagement activities:

- Directly affected transport industries and businesses
- Queensland Government agencies involved in the response
- The beekeeping industry, including hobbyists

Case studies may also be developed to assist in evaluation activities.

15 Consultation

Members from Biosecurity Queensland were consulted in the development of this strategy including:

- Directorate (General Manager Animal Biosecurity and Welfare; Director BQCC and PBPI)
- Program Manager, AHB T2M
- Animal Biosecurity and Welfare (Principal Veterinary Officer (Emergency Animal Diseases))

Consultation was also undertaken with the following critical stakeholder groups:

- Plant Health Australia
- Australian Department of Agriculture Fisheries & Forestry
- Local government agencies

- Utilities companies
- Australian Honey Bee Industry Council, Queensland Beekeepers Association and Cairns and Tableland Beekeepers Association
- The environmental sector
- Indigenous rangers and traditional owners
- Transport companies and industry bodies
- Pest management industry

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Queensland Government

Asian honey bee Transition to Management Science projects

Progress update November 2012

Department of **Agriculture, Fisheries and Forestry**

This publication has been compiled Dr. Anna Koetz of the Asian honey bee Transition to Management program, Department of Agriculture, fisheries and Forestry.

Summary

The AHB Science team is late in delivering several T2M deliverables. This is due to several factors:

- No Senior Scientist was employed until April 2012
- High priority was put on the remote treatment trials as requested by SAG. These trials were more time consuming than expected due to several reasons, including, for example, the difficulty of attracting bees to the syrup stations (as outlined in the Remote Treatment Update).
- The literature review was also very time consuming as it involved reading, and summarising over 300 references to ensure as much information as possible could be reviewed.
- Difficulties in keeping boxed AHB hives slowed down some trials

All projects are well under way, but we wish to review priorities and propose new timelines and due dates for the following projects:

(1) Validate efficacy of detection and destruction methods

(2) Investigate alternative control techniques and attractants

(3) Spatial analysis

T2M Science goals to be reviewed

The following two projects have milestones and targets that overlap. These are being discussed in conjunction with each other for ease of reading:

AG2 – Developing and making available a suite of control measures for AHB

AG2 Milestone 2 – due 1/2/12 (no payment)

Validate efficacy of detection and destruction techniques available for use by commercial pest controllers and for the purposes of integrated control strategies for industry

AG2 Milestone 3 – due 15/6/12 ($175,000)

Investigate and report on alternative control measures or attractants for AHB including, but not limited to, the options provided in the AHB T2M Plan

Investigate and report optimal design of bait stations for attracting AHB

AG5 – Optimising early detection of new incursion of AHB

AG5 Milestone 2 – due 1/2/12 (no payment)

Report on assessment of optimal surveillance strategies for detection of AHB

AG5 Milestone 3 – due 15/6/12 ($100,000)

Report on assessment of optimal surveillance strategies and risk based surveillance for detection of AHB, including efficacy of detection methods

Progress, issues & proposed timeline

Items in red indicate deliverables that are overdue or falling behind.

T2M Deliverable	Progress	Issues	Plan
AG2 B(i) Validate efficacy of detection and destruction methods AG5 A Conduct differential sensitivity testing to determine the comparative effectiveness of all available detection methods e.g. sentinel hive strategy vs. strategic sampling of surveillance traps (due 31/12/12) AG5 B(ii) Determine efficacy of surveillance strategies and techniques to determine likely detection rate around ports in the context of established AHB populations (due 31/12/12) AG5 B(iii) Develop an appropriate scientific methodology for floral sweep netting in the outer areas of the containment area to gain greater confidence of absence or presence of AHB	<u>Efficacy of detection:</u> • Efficacy of AHB traps – report submitted • Efficacy of public reports, bee lining and bee eater pellet surveillance – data sourced from BioSIRT, and spreadsheet available for analysis • Efficacy of floral observations & targeted floral sweeping – Experimental design for trials developed by Senior Scientist – Monthly trials underway (two rounds completed) <u>Efficacy of destruction</u> • Different destruction methods documented • Survey for consultation with field staff and pest controllers using different methods compiled	No Senior Scientist was available until April 2012. Following employment of the Senior Scientist, fipronil trials and literature review were high priority. This resulted in a substantial delay in delivering a report for AG2 B(i). The experimental design for the <u>detection efficacy</u> trials involves monthly rounds of trials, wherein two different detection methods and a number of different traps are trialled. Three to four trials/replications are essential to get an idea of variability in the data. However, to account for any seasonal variation in the resulting data, the trials should be continued for as long as possible, i.e. March 2013. <u>Destruction efficacy</u> will be based on product information and consultation with AHB field staff and pest controllers. Surveys are being conducted. Results need to be summarised and reported. Remote poisoning efficacy was previously reported.	PREFERRED • Analyse historical data (public reports, beelining and bee eater pellet surveillance), interpret and write report by March 2013 • With the help of CE, conduct, analyse and report on destruction efficacy by March 2013 • Continue the field trials until March 2013; analyse data and deliver report by June 2013 ALTERNATIVE • Complete two more rounds of field trials (Nov & Dec); analyse data and summarise. • Other analyses as above, deliver report by March 2013.

AG2 B(iii) Determine effectiveness of bait stations, their design and attractant effectiveness. • Document bait station use and design (30/03/12) • Validate effectiveness (31/12/12)	• Bait station use and design has been documented. • AHB trap effectiveness was analysed and reported on. • Dr. David Guez assisting Science team with ideas for improved bait station designs & attractants	No issues.	PREFERRED • Progress report by December 2012 • Continue trials until March 2013 • Final report by June 2013. ALTERNATIVE Do not conduct any further trials; final report by March 2013.
AG2 C Investigate alternative control techniques and attractants	<u>Alternative control techniques</u> • Trials conducted by JCU students & Snr Scientist/ Scientist to optimise/find design & attractant: – Different scents (trial in progress) – Different sugar concentrations (trial to be completed) – Different bait station colours (field trial finished) – Different bait station designs (trial in progress) – Different trap attractants & designs (trial in progress)	Bees had to be moved from our premises as they were interfering with AQIS' surveillance trial and were in close proximity to a transport company. Hive boxes are now a 15-minute drive from the offices, i.e. time to conduct trials will increase. We had a period of 2 weeks in September when our hives either absconded or died. As we are still acquiring knowledge of keeping Asian honey bees, losses do occur, slowing down the trials. One of the three JCU students dropped out of the specific subject that the trials were done for – her trial (on scent preferences) needs to be concluded.	PREFERRED • Progress report by December 2012 • Continue all trials until March 2013 • Final report by June 2013 ALTERNATIVE • Finish all trials by December 2012 • Final report by March 2012

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AG2 C(iv) Research into pheromone use to attract and/or detect AHB in order to increase trap sensitivity	• Assisting Dr. David Guez with his RIRDC-funded project (exchange of ideas; Snr Scientist caring for orchids; sourcing and supervising two Masters students) • David assisting Science team with ideas for improved bait station designs & attractants • *Cerana* queen pheromone ordered and received from Mike Lacey (CSIRO)	Dr. David Guez's trial will be conducted after June 2013, so results will not be available for the T2M final report. Trials conducted by AHB Science team are done in conjunction with project C (see above)	Continued collaboration with Dr. David Guez until June 2013. Timeline for design and attractant trials – see Project C above

The following two projects have milestones and targets that overlap. These are being discussed in conjunction with each other for ease of reading:

AG3 – Limiting impact on honey production

Milestone 2 – due 1/2/12 (no payment)

Literature review and report from apiarists on the impact of AHB on commercial honey production within AHB infested areas

Report on behaviour of AHB compared to European honey bee to identify opportunities for control

Milestone 4 – due 31/12/12 ($87,500)

Report on modelling of AHB population dynamics and drivers of spread

Report on PCR tools for detection of AHB

Report on the outcomes of Project 2 for field application for industry

QG2 – Improving operational efficiency and effectiveness

QG2 E

Undertake technical analysis of all nests and honeycomb to guide the spread and spatial analysis

Progress, issues & proposed timeline

Items in red indicate deliverables that are overdue or falling behind.

T2M Deliverable	Progress	Issues	Plan
AG3 A(i) • Literature review (incl. gaps in knowledge and AHB/EHB comparison) (due 31/03/12) • Engagement with apiarists in the Cairns area who have had experience with both honey bees - also A(iii) (due 30/06/12)	• Literature review completed, awaiting further comments before approved by TMG • Noted down AHB/EHB interactions as observed by local beekeepers • Survey written; needs to be conducted, results analysed and summarised (Science & CE collaboration)	<u>Literature review</u> Awaiting further comments before final edits. <u>Apiarists</u> Very few observations by beekeepers (two reported interactions) Previous survey was of low quality with very low participation, and was not analysed/summarised. New survey is essential.	<u>Literature review</u> Comments by industry by 9th November, changes assessed & incorporated and review sent to TMG members by 23rd November. <u>Apiarists</u> Survey to be distributed to local beekeepers by December 2012; analysed and report by March 2013
AG3 C & QG2 C-D • Model the population dynamics and drivers of spread as they impact on the management of EHB hives (AG3 C) • Undertake spatial analysis of current AHB infestation to guide to future surveillance activities (QG2 C) • Undertake spread	<u>Spatial analysis:</u> • Before leaving, mapping officer compiled all necessary data and created required maps. • Data analysis is underway. <u>Population spread modelling</u> • Before leaving, mapping officer provided data to BQ Intell Unit and created maps from preliminary modelling results. • Awaiting further results to improve first, preliminary model.	These projects have been summarised into two parts that will be combined into one report: 1. Model the population dynamics and drivers of spread and 2. Undertake spatial analysis of current AHB infestation Spatial analysis well underway and on track. Spread modelling has been hampered due to changes in the AHB team and Biosecurity Queensland. The computer model was provided to the Snr Scientist who is unlikely to have time, unless this is high priority and other projects will be put on hold.	• Continue spatial analysis, report by December 2012. • Use available preliminary modelling data and maps (albeit very rudimentary) and report on by December 2012. Note: due to general lack of data on *Apis cerana* Java genotype, and difficulty determining whether *A. cerana* nests

analysis of current AHB infestation to guide future management strategies (QG2 D)			inside rainforest, outcomes of the spatial model will be unreliable, and any further modelling/analysis will not improve the spatial model.
QG2 E • Undertake technical analysis of all nests and honeycomb to guide the spread and spatial analysis	Technical analysis prior to IP500 needs to be sourced. Analysis post IP500 is available for all extracted nests and collected swarms.	Prior to IP500: Data is not in analysable format (papercopy only or inappropriate file format) and needs to be sourced and entered.	• Continue to analyse all extractable nests and swarms until March 2013; • Report by June 2013

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Senior Scientist

Asian honey bee Transition to Management Program

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AHB TMG Minutes

Meeting Eleven of the Asian Honey Bee Transition Management Group (AHB TMG)

Teleconference held on Tuesday 19th February, 2013

Attendees: Colin Grant DAFF Commonwealth (Chair), Melissa Harte DAFF Commonwealth, Mike Ashton DAFF Queensland, Russell Gilmour DAFF Queensland, Anna Koetz DAFF Queensland, Lindsay Bourke AHBIC, Trevor Weatherhead AHBIC, Greg Fraser PHA, Rod Turner PHA, Sam Malfroy PHA (Secretariat) and Jenna Taylor PHA.

Apologies: Vanessa Findlay DAFF Commonwealth, Rose Hockham DAFF Commonwealth, Nin Hyne DAFF Commonwealth, Glynn Maynard DAFF Commonwealth, Louise Clark DAFF and Ian Zadow AHBIC.

Item 1 – Welcome

The Chair welcomed the Members of the Asian Honey Bee Transition Management Group (AHB TMG) to meeting eleven of the AHB TMG and for the first meeting of 2013.

Item 2 – Discussion and acceptance of Minutes from previous meeting

The minutes from Meeting 10 were tabled. Mr Malfroy stated that comments were provided out of session by members of the AHB TMG, and that the minutes had since been accepted and placed on the AHB website. All members agreed that they provided a true and accurate record of Meeting 10.

Item 3 – Action items from previous meeting

The action items from Meeting 10 were tabled and discussed.

The Chair stated that DAFF had attempted to obtain a copy of the Indonesian Master's thesis through connections with the DAFF Indonesian Agricultural Counsellor, with no success. The Chair stated that because the Master's thesis had not been published, it appeared to be an untraceable document through the Indonesian university archives. The Chair proposed that AHBIC follow up this action through connections that Australian honey bee scientists may have with Indonesian researchers.

Mr Malfroy questioned AHBIC on their action regarding the possible development of a 1-day AHB training course with the remaining industry funds. AHBIC stated that they would not action this item until all scientific research and reports as part of the AHB T2M were completed.

The Chair stated that despite this, the majority of the action items from the previous meeting had been finalised.

Item 4 – Literature Review discussion

The Chair opened the discussion by stating that the literature review was very comprehensive and that DAFF Queensland had effectively completed what was requested of them in AG Project 3. The Chair added that the literature review is a neutral document and not an opinion piece. It does not attempt to change the science but merely reflect information contained in the current published literature.

Mr Bourke stated that AHBIC, and the beekeepers they represent, would not approve of this literature review. Mr Bourke stated that he believed the literature review was full of inaccuracies, mainly relating to the scope of the literature review, and to practical elements of beekeeping such as foraging times.

The Chair stated that the comment period on this literature had been close to 6 months and that AHBIC had had this time to provide any peer reviewed literature to support their argument. The Chair also stated that the literature review had been reviewed by the TMG and the AHB SAG, including Professor Ben Oldroyd and Dr Denis Anderson, two noted AHB experts. Mr Ashton added that the purpose of the wide scope of the literature review was to cast a broad net over the issue, to look at experiences with AHB in Australia and in other countries, and to learn from that knowledge and experience. Mr Ashton added that he believed the purpose of the literature review was not just to help with managing the current established population of AHB in far north Queensland but also to help inform responses to future incursions of AHB, including strains other than the Java genotype.

Mr Weatherhead stated that he had sent through additional information for inclusion in the literature review but this had not been included. Dr Koetz disputed that Mr Weatherhead's comments were not included.

The Chair offered AHBIC the option of providing a counter statement to the literature review due to their extensive practical knowledge on the issue and that this could be placed on the AHB website.

The Chair proposed that the literature review be deemed finalised and be published on the AHB website. DAFF Queensland supported this motion, while AHBIC objected.

Item 5 – Reporting from DAFF Queensland

Mr Gilmour provided an update of AHB activities in Queensland. This report is attached as attachment A. Mr Gilmour summarised that:

- The AHB website is currently being upgraded with an improved image gallery;
- One more efficacy trial will be completed in the next few months;
- 3 casual staff are leaving the program to work on the electric ant program, while scientists will be employed to work on the final scientific reports; and
- DAFF Queensland was no longer responding to reports of AHB inside the KIA and were advising the public to contact pest controllers if they wanted to have AHB nests or swarms destroyed on their properties.

The Chair sought clarification on whether training provided to the pest control and transport industries had been finalised. Mr Gilmour clarified that extensive training had been provided to the pest control and transport industries, and that they had shown a willingness to continue the training packages into the future and after the AHB T2M finishes in June 2013.

Mr Gilmour tabled the 'Bait station design and attractants progress report' and provided an update on these activities. Dr Koetz added that Dr Guez, who is conducting the industry funded research, had been heavily involved in this project. This report is attached as Attachment B.

Mr Gilmour tabled the 'Detection of Apis cerana DNA from sugar syrup' and provided an update on these activities. The Chair stated that this preliminary research would be an invaluable tool as an early warning system for AHB, as it spreads throughout Australia, as well as for use in the National Bee Pest Surveillance Program. This report is attached as Attachment C.

Mr Gilmour tabled the final 'Spatial analysis report' and stated that this had been previously distributed to the AHB SAG for comment. The TMG accepted this report and the Chair stated that this could now be placed on the AHB website. This report is attached as Attachment D.

The TMG thanked DAFF Queensland for their reports.

Item 6 – The RA and trade

The Chair discussed that the trade in queen bees and packaged bees could possibly become an issue for trading partners once the AHB T2M finishes in June 2013, however, stated that DAFF would continue to argue area freedom of AHB from the major export areas in Australia. The Chair stated that the concept of area freedom is very commonly argued amongst trading partners, as long as there is a mechanism to monitor and maintain that area freedom, and as long as arguments are based on sound science.

Mr Weatherhead stated that AHBIC had been holding preliminary discussions with DAFF Queensland and were preparing to provide comment on a 'position paper' that DAFF Queensland will be finalising by mid-March on their decision to rescind both the RA and active monitoring for AHB. Mr Weatherhead discussed with the TMG that it is better to be pro-active in these arrangements, and because of this, AHBIC are attempting to find a solution to keep export markets open.

Mr Ashton stated that DAFF Queensland would continue to work with industry and the Australian Government to resolve this important issue. The Chair requested that an update on this issue be presented at Meeting 12 of the AHB TMG in April.

Item 7 – Next AHB TMG meeting

The Chair stated that the next AHB TMG was scheduled for the 16th April 2013.

Item 9 – Summary and Close of Meeting

The Chair thanked the TMG for their contribution to the AHB T2M and closed the meeting.

Queensland Government

Asian honey bee Transition to Management Program

Progress Summary Report, February 2013

This document is prepared for the Transition to Management Group meeting on 19 February 2012. A number of other documents are provided separately to provide greater detail.

Department of **Agriculture, Fisheries and Forestry**

Contents

Other relevant documents provided separately include:

- **Asian honey bee (*Apis cerana*) and its strains – with special focus on *Apis cerana* Java genotype Literature review**
- **Optimising AHB bait/feeding station design & attractants, Progress Report December 2012**
- **Asian honey bee Transition to Management Program, Spread of *Apis cerana* in Australia, 2007 – 2012**
- **Asian honey bee Surveillance Report, 1 October – 31 December 2012**
- **Detection of Apis cerana DNA from sugar syrup**
- **Transport poster**

1. Program highlights

Detections

There have been 815 detections of Asian honey bee (AHB) nests and swarms since May 2007.

Note: the program has ceased surveillance and responding to public reports in the Known Infested Area (KIA), unless the report is considered a new incursion, or where there is a risk of aided spread, or on the edge, or outside of the KIA. In these instances officers respond in accordance with "Responding to public notifications of Asian honey bee" policy. These detections are referred to as Detections of Interest and since the last TMG meeting they are:

Outside the KIA

- Nil[1]

On the edge of the KIA (outside of RA)

- Nil

Public reports

71 public reports of AHB have been received since 11 December 2012 bringing the total number of reports since 1 July 2012 to 358.

Compliance

- Following a review of the Movement licenses of bees and high risk materials process, licences can now be provided for bee keepers to move bees until 30 June 2013.

Industry Engagement

- Policy and the legislative requirements relating to the rescinding of the AHB Restricted Area (RA) have been reviewed and a draft recommendation developed to rescind the RA on 30 June 2013 when the AHB T2M Program ceases. Biosecurity Queensland is consulting with the Australian DAFF and the bee industry on this issue including the implications of a decision on the international trade in live bees from Australia.

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[1] AHB were detected on Wednesday the 9th of January 2013 in the Port of Townsville during the discharging of containers from a vessel. Response to this detection is not the responsibility of this program however we did provide some advice to Biosecurity Queensland officers who responded to the detection. No live AHB have been seen on the wharf in Townsville since the swarm was destroyed.

- Legal advice provided to Biosecurity Queensland is that volunteer beekeepers on an industry response list cannot assist in the destruction of suspect bees due to associated liability concerns for the Queensland Government. Pest controllers will be engaged to assist in the destruction and collect samples of suspect bees.

Community Engagement

- Community engagement officers completed training to take over the revitalisation and maintenance of WebPages. This has improved the program's ability to effectively update and improve the website. All AHB WebPages have been updated including embedding links to the Remote Nest Treatment video on YouTube, adding completed reports, updating the Known Infested Area (KIA) map and adding a new image gallery.
- Approval has been granted to proceed with the production of an AHB nest and swarm destruction video. A video production company in Cairns has been engaged to produce the video.
- Collaboration and input into numerous external articles for national and international magazines regarding AHB.

Science

- AHB Literature Review amended to address comments provided by industry and PHA and final version submitted to TMG.
- Spatial analysis report finalised and draft provided to SAG; final version provided to TMG.
- SOP for hiving AHB nests and swarms finalised.
- SOP and photo laboratory guide for AHB nests, comb and swarm analysis finalised.
- Rounds 5 and 6 of efficacy field trials completed.

2. Current and future program activities

Community Engagement

- Commence production of the destruction video and make it available on the internet.
- Engage and deliver transport posters to high risk transport businesses operating within the KIA to help minimise the spread of the Asian honey bees.
- Work on, complete and distribute an AHB manual to provide Biosecurity agencies with a toolkit to respond to and manage AHB incursions.

Operations

- A reduction in operations staff will occur on 25 February 2013 and this will free up resources to increase the number of staff able to assist with science and community engagement activities.
- Provide assistance to Science.
- Respond to public reports where necessary.
- Conduct surveillance on the edge of KIA.
- Destroy AHB detected on and beyond the edge of the KIA to minimise the spread of AHB.

Science

- Current field work:
  - Hiving of AHB to enable behavioural experiments
  - Nest observations
  - Establishment of drone flight timing
  - Bee eater pellet collection
  - Efficacy field trials
- Current lab work:
  - Nest/comb/swarm analysis
  - AHB identifications
  - Data entry and analysis for all lab and field work
- Reports in draft form:
  - Bait station and attractant effectiveness
  - Detection and destruction efficacy
  - AHB ecology and behaviour
  - Apiarist survey and feedback

3. Cessation Strategy progress

The general community has an awareness of AHB and their role and responsibilities in its management

Stage 1				
Key Performance Indicator	**AHB T2M Project No.**	**Due Date**	**Status**	**Comments and activities since last report**
Produce and distribute a 'Fact Sheet' about AHB and how the public should respond to AHB nests and swarms.	AG1 D. (i)	31.12.11	**COMPLETED**	• New AHB T2M brochure printed and in use. • Available on the internet. Used at Community engagement and industry events and delivered as a letterbox drop to premises in high risk areas and on the edge of the KIA. Also provided to people throughout Queensland.
Update the Biosecurity Queensland website with comprehensive details on Asian honey bees, including identification, how to manage them, produced and available.	AG1 A. (i), B. (i)	Ongoing to 30.06.13	**ON TRACK**	• All AHB WebPages have been reviewed and updated including embedding links to the Remote Nest Treatment video on YouTube, adding completed reports, updating the Known Infested Area (KIA) map and adding a new image gallery. • The website continues to be maintained and updated. • Discussions held with BQ Apiary Officers on transfer of responsibility for maintenance of the AHB website following cessation of the AHB T2M Program.
Community engaged through a variety of methods e.g. media releases, TV and radio interviews, attending community festivals and regional shows.	AG1 D. (i) – (vii)	Ongoing to 30.06.13	**ON TRACK**	• Awareness material developed and used includes brochures, identification cards, variable message signs on roadsides and a poster for display at transport companies. • Media interview conducted with ABC radio.
Stage 2				
Ensure the community and industry are informed and up-to-date regarding the status of the transition to management program and where they can access assistance.	AG1 D. (i) – (vii)	31.12.11 – 30.6.13	**ON TRACK**	• Cessation Strategy developed and approved by T2M Management Committee December 2012. • Implementation of Cessation Strategy commenced.

The Customer Service Centre processes are updated to provide a clear decision tree regarding AHB, new incursions, those inside and outside the KIA and reflect the current status of government intervention.	AG1 D. (i) – (vii)	31.12.11 – 30.6.13	**COMPLETED**	• Customer Service Centre procedures developed, approved and implemented. • Apiary and Animal Biosecurity & Welfare staff informed and participating in reporting process including response to reports in preparation for cessation of AHB T2M Program.

Transport companies are alert to actions that will limit the spread of AHB

Stage 1				
Key Performance Indicator	**AHB T2M Project No.**	**Due Date**	**Status**	**Comments and activities since last report**
Intensively engage with transport industries inside the KIA and surrounding edge. Consult and develop a method to incorporate the awareness of AHB into the transport industries to reduce the risk of aided spread of AHB through commercial transport pathways.	AG 6 D	30.06.12	**ON TRACK**	• Extension materials such as ID cards, brochures and posters supplied to transport companies. • Contact ongoing with the main shipping, rail and freight transport companies in Cairns.
Stage 2				
Produce and develop a poster with targeted messages for transport industries.	AG 6 D AG1 D. (v)	31.12.12	**COMPLETED**	• Transport poster printed and currently being distributed inside the KIA with plans for wider distribution.
Develop and deliver awareness campaigns for transport industries within a 200km radius from the edge of the KIA.	AG 6 D	31.3.12	**COMPLETED**	• Information and training package developed and provided to transport businesses throughout the KIA and beyond to Townsville.
Engage and increase awareness with transport companies and their industry groups Queensland wide.	AG 6 D	30.6.12	**ON TRACK**	• Transport poster printed, plans to distribute outside the KIA underway. Planning is underway for state-wide distribution.
Engage and increase awareness broadly within the Australian transport industry through the peak industry body and national publications.	AG 6 D	30.6.12	**ON TRACK**	• Collaboration and input into numerous external articles for national and international magazines regarding Asian honey bees.

Pest control operators know how to identify and safely respond to reports of AHB

Stage 1

Key Performance Indicator	AHB T2M Project No.	Due Date	Status	Comments and activities since last report
Consult, develop and make available a guideline for pest controllers on what tools are available and how to use them when responding to an AHB call for help.	AG 1 D (v)	31.12.12	**COMPLETED**	• Guideline for destruction of AHB nests and swarms published, provided to industry and available on internet. • Published on Biosecurity QLD website.
Build awareness of available identification tools on the Biosecurity Queensland website with comprehensive details on Asian honey bees, including identification and how to manage them.	AG1 B. (i) D. (vi)	Ongoing 30..6.12	**ON TRACK**	• Biosecurity website is promoted at over 30 community and industry events, social media and media interviews.
Provide hands-on training workshops to pest control operators that are within and on the edge of the KIA.	AG1 AG3 AG6	30.6.12	**COMPLETED**	• Hands on training has been provided to pest controllers in the KIA and as far south as Townsville.
Engage and increase awareness with pest management industry in north Queensland, including hands on training	AG3 AG6	30.6.12	**ON TRACK**	• Pest control industry representatives have been engaged and discussions regarding the AHB program continue.
Stage 2				
Develop training videos picturing methods of swarm and nest destruction that the industry can use to help train other members in their business.	AG2 B. (i)	31.12.12	**ON TRACK**	• Video script developed and video production company engaged. • Filming planned for late February - early March.
Engage and increase awareness with the pest controller industry Queensland wide.	AG6 D,	30.06.13	**ON TRACK**	• Pest control industry representatives have been engaged and discussions regarding the AHB program continue.
Engage and increase awareness broadly with the Australian transport industry through peak industry body and national publications.	AG6 D,	30.06.13	**ON TRACK**	• Collaboration and input into numerous external articles for national and international magazines regarding Asian honey bees.

Indigenous rangers and government officers have knowledge, tools and training in AHB identification and management

Stage 1				
Key Performance Indicator	**AHB T2M Project No.**	**Due Date**	**Status**	**Comments and activities since last report**
Provide hands on workshop training sessions to indigenous rangers, local government officers, other government agencies and Biosecurity Queensland staff in the management of AHB.	AG4 A. AG2	31.03.12	**COMPLETED**	• Hands on training has been provided to indigenous rangers, local government officers, other government agencies and biosecurity Queensland. • 'An evaluation of Asian honey bee workshops conducted in the Known Infested Area for Critical Stakeholders' report has been published.
Increase awareness and availability of produced materials that they can use to deal with AHB situations.	AG 4 B.	Ongoing	**ON TRACK**	• Awareness campaigns were conducted through workshops held with indigenous rangers and government officers. AHB knowledge, tools and training were delivered to these target audiences at workshops.
Conduct presentations at local and regional pest management forums to engage with large numbers of local government and state government staff to increase awareness.	AG4	Ongoing	**ON TRACK**	• Awareness has been generated at quarterly FNQ Pest forums throughout Nth Queensland regions. • A presentation and nest and swarm removal demonstration was held as part of the Northern Exposure Pest Conference (Townsville).
Provide hands on AHB training to the north Queensland Apiary Officer in AHB surveillance and destruction.	AG1 AG2	31.12.12	**COMPLETED**	• Apiary Officer has visited Cairns and worked with program staff on 2 occasions. • Nth Queensland Apiary Officer has conducted intensive engagement 3klms around the Port of Townsville after the detection of AHB at the port in January 2013.
Involve and consult all Queensland apiary officers and provide them with the tools to implement their responsibilities under the Responding to public notifications of Asian honey bee policy.	AG1 AG2	30.06.13	**ON TRACK**	• Monthly meetings are held with Apiary Officers. • Consultation and joint developments of processes to ensure smooth handover of Web, CSC, AHB materials and knowledge is occurring.
Stage 2				

Information is made available to environmental and agricultural departments in other states and territories and the federal government regarding how to manage and control Asian honey bees.	AG5 B. (i)	31.03.12	**ON TRACK**	• AHB information generated to date has been provided to a range of environmental and government stakeholders via the internet and meetings. • The AHB response manual is being drafted and will be completed when research trials have been completed.
Integrate and document methods of validated detection and destruction techniques into an AHB manual to assist Biosecurity agencies with a toolkit to respond to and manage AHB incursions.	AG5 B. (i)	31.03.12	**ON TRACK**	• Some training provided to ADAFF and Biosecurity QLD officers in North Queensland.

Scientific and environmental community increase their research interest in AHB and increase collaboration with Biosecurity Queensland

Stage 1				
Key Performance Indicator	**AHB T2M Project No.**	**Due Date**	**Status**	**Comments and activities since last report**
Literature review finalised and published.	AG2A	31.7.12	**ON TRACK**	• TMG group considering on 19 February 2013.
Undertake research as outlined in the AHB T2M Operations Plan. • Efficacy of detection and destruction methods, including edge and port surveillance • Effectiveness of bait stations • Analysis of all nest and honeycomb	AG2Bi-iii AG2C(v) AG5A AG5B(i-iii) QG2B QG2C QG2D QG2E	June 2013	**ON TRACK**	• New target dates agreed to by SAG and TMG. • Efficacy trials and data analysis on track. • Bait station trials on track. • Nest and comb data collection finished, data analysis on track.
Collaborate with external research scientists on AHB research.	AG2	31.06.13	**ON TRACK**	• Regular collaboration with external researchers including Prof Ben Oldroyd, Dr. David Guez and Prof Caroline Gross.
Stage 2				
Outcomes of the research are released.	AG2(i,iii)		**ON TRACK**	• New target dates agreed to by SAG and TMG • Research updates presented to NAQS, AQIS, local apiarists (Cairns & Townsville), JOG.
Validate the most effective methods of detection and destruction techniques.	AG2Bi-iii AG5A AG5B(i) QG2B	June 2013	**ON TRACK**	• Efficacy trials and data analysis on track.

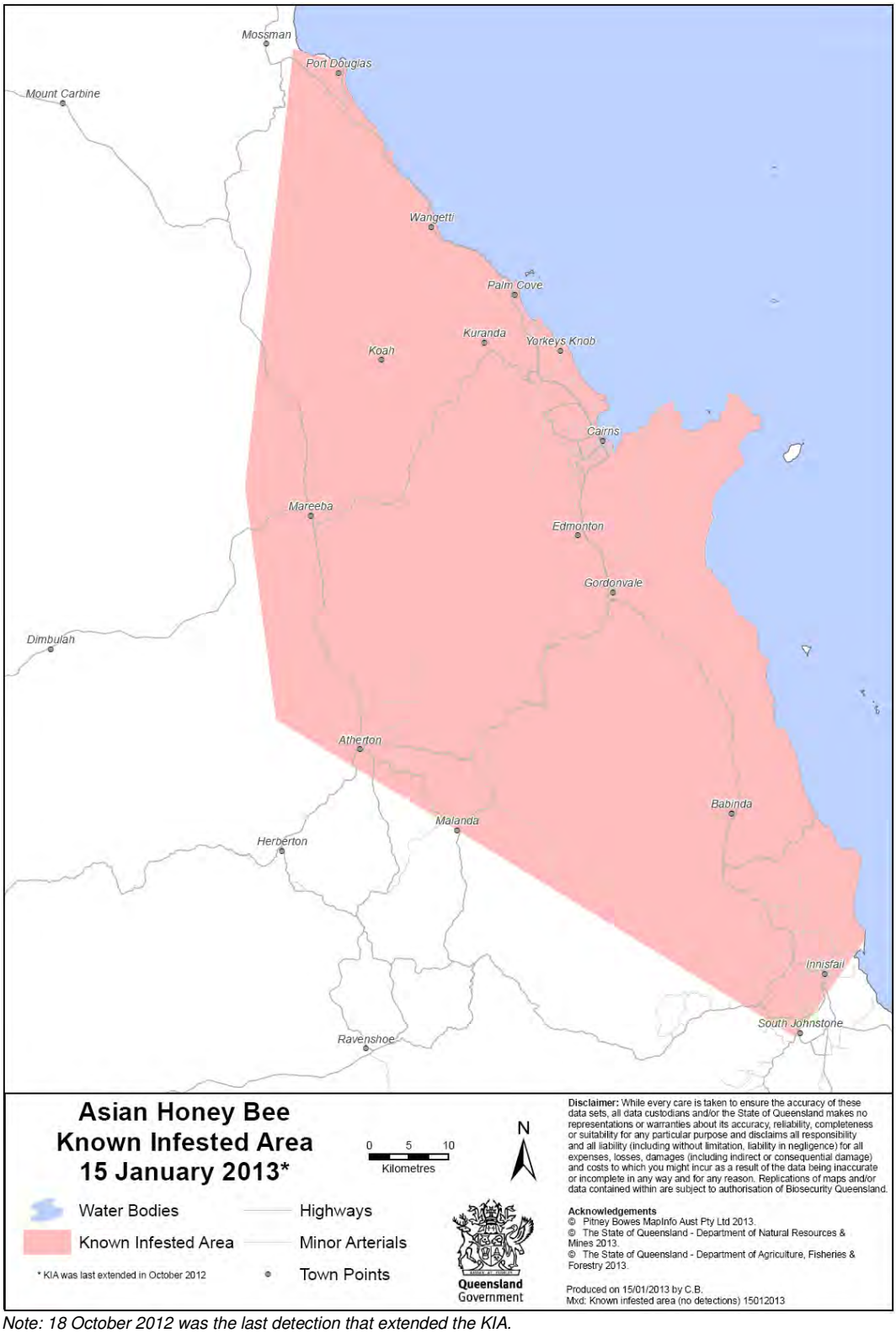
Integrate and document methods of validated detection and destruction techniques into an AHB manual to assist Biosecurity agencies with a toolkit to respond to and manage AHB incursions.	AG2(i) AG5B(i)	31.03.13 31.3.12	**ON TRACK**	• Awaiting finalisation of some of the above research.
Guidelines and toolkit are made available for stakeholders.	AG4A.	31.03.12 Ongoing	**ON TRACK**	• Awaiting finalisation of some of the above research.
Research findings are presented at scientific conferences and other suitable forums, e.g. Apiary industry meetings.			**ON TRACK**	• Contact with Industry occurs regularly. • Contact with Stakeholders occurs regularly e.g. Cape York Pest Management Advisory Group.

Beekeepers understand and actively manage the risks and impacts of AHB

Stage 1				
Key Performance Indicator	**AHB T2M Project No.**	**Due Date**	**Status**	**Comments and activities since last report**
Consult with the beekeeping industry group and address issues that affect them and what tools they need to manage AHB.	AG3 A. (iii)	31.12.11	**ON TRACK**	• Local and state liaison committees established.
Provide hands-on training workshops to beekeepers that are within and on the edge of the KIA as well as to beekeepers that may be called to assist in the identification and sampling of AHB in other areas of Queensland.	AG3 D.	31.03.12	**COMPLETED**	• Training provided to members of the Cairns and Tableland Beekeepers Association and Townsville Beekeepers Association.
Provide beekeepers in north Queensland with information and tools needed to identify and manage AHB.	AG3 D.	31.03.12	**COMPLETED**	• Attend Tableland beekeepers association meeting monthly. • Information provided to Townsville beekeepers Association meeting. • Science update given to local beekeepers (Townsville & Cairns).
Stage 2				
Beekeepers from around Australia are advised and information is provided in how to undertake AHB surveillance through the beekeeper volunteer program.			**ON TRACK**	• Volunteer program is assisting in this. • PHA and QDAFF websites contributing to this. • Collaboration and input into numerous external articles for national and international magazines regarding Asian honey bees.

Compliance with movements controls required under legislation are achieved by issuing longer term movement licences.	AG6 A.	31.12.12	**COMPLETED**	• The process of applying for movement licenses has been enhanced to reduce the regularity of applying for a license.
In consultation with the honey bee industry, develop and coordinate an industry response list that Biosecurity staff can utilise for assistance with suspect AHB detections.	AG6 D.	30.06.13	**ON TRACK**	• An industry group exists and their assistance is limited due to legal liability issues. • Where necessary pest controllers will be used for destruction of suspect AHB.

Appendix 1 - Current Known Infested Area at 15 January 2013



Note: 18 October 2012 was the last detection that extended the KIA.

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Queensland Government

Optimising AHB bait/feeding station design & attractants

Progress Report December 2012

Department of **Agriculture, Fisheries and Forestry**

This publication has been compiled by Dr. Anna Koetz of the Asian honey bee Transition to Management Program, Biosecurity Queensland, Department of Agriculture, Fisheries and Forestry.

Contents

Introduction

The AHB Science team is currently conducting experiments in order to fulfil AG2Biii and AG2C of the Asian honey bee (AHB) Transition to Management (T2M) Plan, i.e. to “determine the effectiveness of bait stations, their design and attractant effectiveness”, and to “investigate alternative control techniques and attractants”.

The current document is a progress report that provides a brief overview of the trials and experiments that have already been conducted, and the future trials planned for early 2013.

Bait/feeding station design

In consultation with Dr. David Guez, several different bait/feeding station designs have been trialled. These include:

Traps:

- Standard AHB sand/syrup trap as used in the past
- Bottle trap (plastic bottle with a fake yellow flower that surrounds the entrance hole)
- Bottle trap (plastic bottle that had the top cut off and inverted into itself)
- Sticky mats (standard and using TacGel for increased stickiness)
- Yellow, blue and white pan traps filled with detergent water
- Chicken feeder
- Automatic pet feeder

Feeding stations:

- Standard AHB sand feeding station as used in the past
- Bowls with rocks or sticks as landing platforms
- An upturned glass jar on top of different kinds of napkin-covered dishes (plastic plate, plastic bowl, ceramic plate, ceramic bowl)

Photos of all traps/feeding stations can be found in Appendix 1.

Several of the traps were trialled in conjunction with the first two rounds of detection efficacy field trials. These included the AHB sand trap, bottle traps, sticky mats and bowls traps. As part of the efficacy field trials, these traps were deployed for one week in September and one week in October at each of eight different sites (two sites each in: Gordonvale, Cairns City, Kuranda, rainforest). They were placed at

random on top of (or hung from) four timber platform stations placed in a 2x2m square (Figure 1).

Figure 1 **Trap stations set out in a 2x2m square with various traps placed on top of or hung from stations. Traps deployed in the photo are (clockwise from left): sticky mat, pheromone trap + bottle trap, AHB sand trap with lid, pan traps + bottle trap.**

In addition, all trap/feeding station designs are being trialled in proximity to hived AHB. Two sets of timber platform stations have been set up at 5m and 50m from the AHB hives. Bottle traps were also hung from a nearby fence and from the gazebo providing shade for the AHB hives.

Preliminary results and discussion

Traps:

As part of the efficacy field trials, only one bee (EHB) was trapped in a yellow plastic bowl. No other traps trapped any bees in the two weeks they were deployed.

Traps deployed near hived AHB that caught bees were simple inverted bottle traps, bottles with fake flowers, and a simple juice bottle left open. These caught AHB, EHBm and *Trigona* sp. bees.

Feeding stations:

The upturned glass jar on top of a napkin-covered plastic bowl shows the most promise as a feeding station. AHB seem to be able to land on the dry napkin and easily take up syrup from the puddle around the glass jar. The glass jar serves as a reservoir. To “top-up” the syrup, the glass jar needs to be lifted slightly. However, in dry conditions, the syrup does dry out and does not automatically “top up”. Covering the station with a lid for shade is an improvement. Automatic “topping-up” of the station would be preferable and more practical for field use. However, neither of the automatic chicken/pet feeders was visited by AHB, likely due to the inappropriate “lip” of the bowl that bees have trouble landing and feeding on. An improved landing platform will be devised.

AHB did easily feed on syrup in a bowl with rocks as landing platform.

These feeding stations seemed to work much better than the traditional AHB sand feeding station. This may be due to AHB preferring not to get sticky feet and/or because the syrup can be taken up by the bees much more easily and quickly from syrup that is not covered in sand.

Attractants

In consultation with Dr. David Guez as well as utilising ideas from local and volunteers beekeepers, several different attractants have been trialled. These include:

- Different essential oil-based scents (including lavender, rose, jasmine and orange)
- Yellow cordial
- Honey water
- EHB queen pheromone (9-ODA)
- AHB queen mandibular pheromone mix (sourced from Mike Lacey, CSIRO)
- The flowering orchid *Cymbidium floribundum*
- Different colours (yellow, blue, red, white and black)
- Different sugar concentrations

Several of the attractants were trialled in conjunction with the first two rounds of detection efficacy field trials. These included cordial, honey water, EHB queen pheromone and different colours (blue, yellow and white plastic bowls; yellow plastic flower on bottle traps – see Appendix). As part of the efficacy field trials, these attractants were deployed for one week in September and one week in October 2012 at each of eight different sites. They were placed at random on top of (or hung from) four timber platform stations 2m apart (Figure 1).

In addition, all attractants listed above have been trialled in close proximity to AHB hives. Scents, sugar concentrations and colours were trialled by James Cook University students.

Preliminary results and discussion

As mentioned previously, only one single EHB was trapped in a yellow plastic bowl during the efficacy field trials. Yellow cordial, very dilute honey water and EHB queen pheromone did not trap any bees. It is unclear whether this is due to the trap design, trap placement, or the attractant itself. Further trials will determine ideal trap placement.

Scent trial

The JCU student's preliminary results showed that AHB seemed to have no preference for any of the trialled essential oil-based scents. However, AHB seemed to dislike jasmine – visitation rates were similar for all scents but surprisingly low for jasmine. Analyses and further trials are planned for January 2013.

Sugar concentration trial

Preliminary results showed a great preference for highly concentrated sugar solution. The highest visitation rates were to 75%ww sugar solution. This is surprising but may be explained by the closeness of the feeding station (David Guez, pers. com.). Further trials are planned for January 2013 to test whether feeding station at different distances results in different sugar concentration preferences.

Colour preferences trial

Preliminary results showed a preference for blue. Blue had the highest visitation rates, whereas all other colours had similar visitation rates.

Other trials

Other trials conducted near hived AHB showed that both AHB and EHB do get trapped in simple bottle traps containing 50/50 honey and water. Efficacy of a honey/water trap needs to be evaluated.

In addition, the flowers of *Cymbidium floribundum* showed great and immediate attractiveness to AHB worker bees (Figure 2). However, this orchid is a cool-climate orchid and flowers did not last. Dr. David Guez is sourcing the synthesised chemical attractant for this orchid to use in trials.

Finally, a trial in which both EHB and AHB queen pheromone were offered at 1m from AHB hives showed slightly higher attractiveness of AHB pheromone. However, neither was highly attractive. This experiment needs to be replicated.

Figure 2 **AHB trying to get to the gauze-covered flowers of a potted *Cymbidium floribundum* in Cairns, Queensland.**

Future trials

Future trials planned for early 2013 include:

- Further improvement of the upturned-jar feeding station
- Improvement of the automatic pet/chicken feeder feeding station
- With an improved attractant, simple bottle traps will be re-trialled
- A range of further essential oil based scents will be trialled
- Honey water, molasses, EHB & AHB queen pheromone, *Cymbidium floribundum*, different sugar concentrations and other attractants will be trialled in a more rigorous experimental design with replication.
- Ideal trap placement (distance, sun/shade) will be determined

Appendix – Bait/feeding station designs

Standard AHB sand/syrup trap

Sand/syrup trap without lid

Sand/syrup trap with hood

Bottle traps

With fake flower attachment

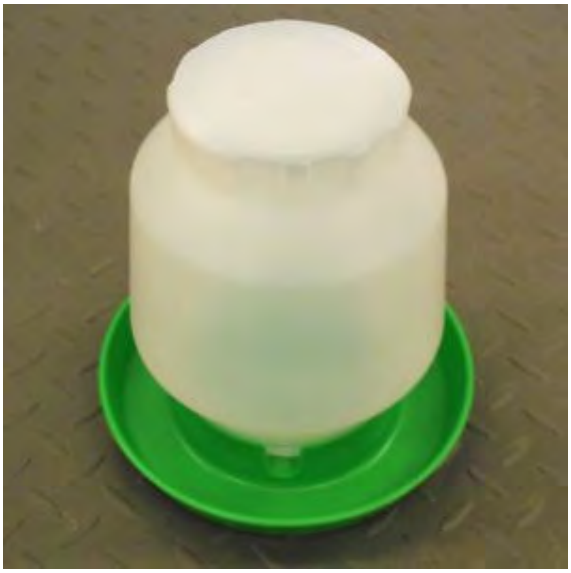
Simple inverted bottle trap

Sticky mats

Standard sticky mat – as is (left half) and with TacGel for increased stickiness (right half)

Yellow, blue and white pan traps

Chicken feeder



Automatic pet feeder

Bowls with rocks or sticks as landing platforms

Upturned glass jar feeding station

Upturned glass jar on napkin-covered plastic plate. This is an example and does not contain syrup.

AHB feeding on 75%ww sugar solution on upturned glass jar feeder.

AHB feeding on upturned glass jar feeder covered in blue paper.

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Detection of *Apis cerana* DNA from sugar syrup.

Background

In 2007, Biosecurity Qld developed a PCR based test for the identification of Asian honey bee DNA. The test was validated to provide identification of whole or part bee wings obtained from bee eater pellets. The test was known to be very sensitive and species specific.

Ongoing research into better surveillance techniques by Biosecurity Queensland scientists has produced sugar syrup based feeding stations in which bees are visually identified after feeding. It was hypothesised that effectiveness of identification may be enhanced using forensic molecular techniques to identify DNA left at the feeding station during feeding.

Technical advances in DNA technology have provided environmental management agencies around the world with the necessary tools for sight unseen detection of pests particularly in aquatic environments. Environmental DNA (eDNA) is a term associated with the background level of DNA in an ecosystem that is derived from all of the organisms that exist within the system. The DNA is released into the environment in shed tissues such as skin or gut lining, through the attack of pathogens that breakdown cell membranes or the degradation of dead organisms. The amount, durability and detectability of eDNA in the environment is necessarily subjective however studies have used detection of environmental DNA in detection of bacteria[1], fungi[2] bullfrogs[3] and asian carp[4]. A comprehensive study of environmental DNA detection as a tool for remote detection of asian carp is underway in the United States by the US Army corps of engineers, US fish and wildlife service and US geological survey[5]. It is the first national program to incorporate eDNA into a pest surveillance program with comprehensive calibration, and validation will lead the way for similar programs worldwide.

In the 1st half of 2012 a study looked into the feasibility of implementing the earlier test to look for DNA deposited in trap liquor during feeding. The report[6] concluded :

> **A test for the specific detection of *Apis cerana* DNA has been developed. The test is sensitive to approximately 0.5-5 ng of *Apis cerana* DNA and has shown no cross-reaction to *Apis mellifera* or any native insects that were trapped when lure syrup was placed in AHB free areas of far north Queensland. DNA extraction methods for whole bee, sugar syrup and wings removed from bee-eater pellets have been investigated and optimised for each sample type. This work provides proof of concept for a molecular surveillance program for AHB in far north Queensland.**

In the 2nd half on 2012 further work to determine the sensitivity of using trap liquor was conducted.

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[1] Leff et al. 1993
[2] Martin et al. 2005
[3] Ficetola et al. 2008
[4] Jerde et al. 2010
[5] http://www.asiancarp.us/index.htm
[6] Appendix 1.

Syrup samples were collected by Dr Anna Koetz in Cairns on 1 November 2012. Dr Koetz observed liquor traps allowing a limited number of bees to feed on the traps before sampling. Samples were received with the following information

Sample	Number of bees	Time of exposure
1	20	Unknown.
2	35	19
3	50	21
4	100	41
5	250	44

A new DNA extraction method for eDNA from trap liquor, based on alcohol precipitation, was used to allow for a greater sample volume at reduced cost ($5 down from $20 for consumables). 75ml of sugar syrup was extracted giving a final volume of 200uL. Four replicates were tested by PCR to allow for the redundancy as described by Ficetola et al. 2008.

Sample	Replicate	Result
20 bees	1	-
	2	+ *
	3	-
	4	-
35 bees	1	+/-
	2	+
	3	-
	4	-
50 bees	1	-
	2	-
	3	-
	4	-
100 bees	1	+
	2	+/-
	3	-
	4	-
250 bees	1	+ *
	2	+
	3	+
	4	-

* Representative positives were sequenced and found to be of *Apis cerana* origin.

Conclusions

These results indicate that by using the redundant testing regime a useful level of sight unseen detection can be achieved. As demonstrated by the 50 bee sample the test is capable of producing false negatives although this level can be reduced by testing more than one trap per location and raising the number of replicates to 5. Cost of processing per syrup sample is roughly $10 in consumables.

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Appendix 1 – June 2012 genetics report

Detection of *Apis cerana* DNA from bee eater pellets and trap liquor

Tasks

Biosecurity Queensland were tasked to develop a test for the detection of *Apis cerana* (asian honey bee or AHB) DNA. The test is required to assist in the surveillance program by providing either a more efficient or more sensitive detection tool than current methods. Advice from the surveillance team was to concentrate on two sample types:

1. Bee eater pellets, which could contain skeletal remains of consumed insects. Current work relies upon the presence of intact wings that can be morphologically identified. Wings can be quickly identified by an entomologist, the limiting factor being the necessity to find an intact wing. It would be advantageous if a DNA test could provide diagnosis in the absence of whole wings.

2. Material from the surveillance feeding traps. The traps of sugar syrup and sand rely upon a bee being caught in the syrup and morphologically identified. Ineffective capture rates left many traps empty despite bees feeding in them. It would be advantageous if a DNA test could detect when AHB have fed though not been caught.

History

In 2007 BQ were tasked with development of a simple PCR that would react with DNA from *A cerana* but not DNA from any other species. The test material was intended to be wings and wing fragments within honey-eater pellets. The resulting test was shown to detect approx. 5-50 pg *A. cerana* DNA and did not react with *Apis mellifera*. The test necessitates the separation of wings and other insect parts from the pellets prior to analysis and it was suspected the pellet material contained some PCR inhibitors. Wings are separated from the pellets with a simple floating technique. This test is ready for operational use, pending confirmation that reaction components that have superseded those from 2007 perform sufficiently.

Samples

1. Bee eater pellets were obtained from bee eater roosting sites in areas of known AHB infestation in far north Queensland. Some pellets were identified as positive by BQ entomologists while others were tested without prior processing.

   Pellet 1 – Machan's beach. Location (-16.85221,145.74518)
   Pellet 2 – McLeod St. Location (-16.92386, 145.77218)
   Pellet 3 – Kuranda. Sample processed at TAAHL and positive for AHB wings.

2. Trap samples were obtained from BQ staff in Cairns, traps were exposed to feeding bees for an hour then the top 5 mm of sand and all of the liquor were removed and stored at 4 degrees until processed. Negative samples were exposed to uninfested sites overnight prior to sampling.

3. *Apis cerana* samples were obtained from infested sources in far north Queensland. Two samples were taken from the following locations:

   IP8 – Nest located at Greenhill, Qld 4865
   IP9 – swarm located Greenhill, Qld 4865
   IP10 – Nest located at Aloomba, Qld 4871
   IP15 – Nest located at Portsmith, Qld 4870

4. *Apis mellifera* samples were obtained from the Varroa mite detection team at the Biosecurity Sciences Laboratory.

Confirmation and validation of test designed in previous study by BQ

The test designed in a previous study by Biosecurity Queensland was used as a starting point. The study had designed primers to the cytochrome B gene located on the mitochondrial DNA of *Apis cerana*. Comparison of this work and later published[7] sequence of the entire mitochondrial DNA from *Apis cerana* (Chinese origin) indicated a possible redesign of one of the two primers and a change of reagents may yield a more sensitive test.

The two sets of primers and two reagent chemistries were tested with respect to annealing temperature and serial dilution of template to determine the optimal combination for detection. Detection of AHB DNA was found to be most sensitive and robust using MyTaq DNA polymerase (Bioline, Alexandria, NSW) and the redesigned primers at 63 °C annealing. No cross reaction with *Apis mellifera* was observed and sensitivity was increased by 1 order of magnitude to detect approximately 0.5-5pg of DNA.

Bee eater pellets

A bee wing identified as *A. cerana* from a pellet was used as template to determine the viability of DNA having passed through the gut of the bee eater. Two single wings were extracted using the standard insect DNA extraction procedure developed for the Electric ant eradication program (Biosecurity Queensland) requiring a modification of the manufacturers recommended procedure applied to DNEasy Blood & Tissue Kit (Qiagen, Doncaster, VIC). Viable DNA was extracted and tested positive to *Apis cerana* by PCR and identification was confirmed through DNA sequencing of the amplicon. Wings found in bee eater pellets collected in AHB-free areas produced a negative result.

The insect extraction method was compared with the DNeasy Stool DNA extraction kit, commonly used where PCR inhibitors are likely to be present. One pellet sample was spiked with an *Apis cerana* wing. Minor changes were made to the manufacturers recommended procedure to allow for a large volume of sample, and 1 gram of pellet was used. The increased starting volume was required to accommodate homogenisation of the sample to ensure that subsampling did not exclude the small amount of *Apis cerana* skeletal tissue expected to be in the sample. It was not possible using these methods to sufficiently reduce inhibitors to allow downstream PCR processing, therefore the test can currently be used only on separated wing samples. Information has been provided by Qiagen as to a possible alternative procedure however due to a short timeframe and limited number of samples available this investigative direction has not been fully exhausted.

The results have proven the ability of the test to definitively distinguish *Apis cerana* wings from *Apis mellifera*. The test is more expensive and time consuming than morphological identification therefore has little application in its present form, though will provide a secondary analysis confirmation when morphological characteristics such as a brown streak, vein length and spurs are obscured or conflicting. Further investigation into inhibitor removal would enable the test to be undertaken without the necessity of wing removal. Should this prove successful the test could be used to screen large numbers of samples efficiently. As the DNA extraction preserves the morphology of the wings this would enable both forms of identification to be used, and a record of the find to be retained.

[7] Tan et al. PLoS ONE 6 (8), E23008 (2011) The Complete Mitochondrial Genome of the Asiatic Cavity-Nesting Honeybee Apis cerana

Trap samples

The traps essentially consist of a "takeaway food container" that is half filled with sand to provide a landing area for the bees and an amount of sugar syrup with floral attractant for the bees to feed on at the other end.

Initially, it was reported that bees were unidentifiable due to degradation as they lay trapped in sugar syrup in the field for up to a week before collection. Attempts to recreate this scenario in the lab proved unsuccessful. A fresh bee was placed in the sugar syrup and incubated at 37 °C for a month. While organism growth was observed through the increase in biomass and the production of gases, the bee itself did not require DNA analysis as it remained morphologically identifiable after this time and may have been preserved by the sugar concentration in the syrup. Field trials were setup by Cairns field staff although were impeded by wet weather so no results are available.

It was decided to apply the DNA test to the scenario in which AHB have landed on the trap, fed on the syrup and flown away. Samples of sugar syrup and sand that had been placed in a AHB-free area were used to prove the concept. Syrup sample #1 was spiked with 2 µL (1µg) of AHB DNA; syrup #2, with 10µL (5µg) of AHB DNA; syrup #3, with a single leg of an AHB; and syrup #4 remained AHB free, though would have contained native insect DNA collected in the field. Sand sample #1 was spiked with 2µL (1µg) AHB DNA; Sand #2 was unexposed sand; and sand #3 was sand that had absorbed syrup but not exposed to AHB. Samples were extracted with DNeasy blood and tissue kit. It was found that all spiked syrup and sand samples provided positive reactions.

To challenge the DNA test with field samples BQ staff prepared a trap and allowed AHB from a research colony to feed freely for a period of an hour, it was estimated that over fifty bees fed on the trap. Three replicates of 3 mL of AHB exposed syrup and a 3mL sample of unexposed AHB syrup were extracted with the DNeasy blood and tissue kit. The top 5mm of sand that had AHB land on it was washed in buffer EB (DNEasy kit component) and this was extracted using the blood and tissue kit. All replicates of the syrup tested positive for AHB DNA, however both sand samples tested negative, controls indicated reliable results.
These results demonstrate the DNA test can be used to determine if AHB have fed on a syrup sample. Further field trials to test the limitations of the test in terms of number of bees required to feed and duration of feeding have been hindered by recent weather conditions and results are not available at present. When this has been completed, the results to date will be used to develop a standardised testing regime based on DNA detection from syrup samples that can be applied in the surveillance program.

Conclusions

A test for the specific detection of *Apis cerana* DNA has been developed. The test is sensitive to approximately 0.5-5 ng of *Apis cerana* DNA and has shown no cross-reaction to *Apis mellifera* or any native insects that were trapped when lure syrup was placed in AHB free areas of far north Queensland. DNA extraction methods for whole bee, sugar syrup and wings removed from bee-eater pellets have been investigated and optimised for each sample type. This work provides proof of concept for a molecular surveillance program for AHB in far north Queensland. The test has been optimised on the following sample types:

1. Whole bee (Diagnostic speciation) - $9 per sample (includes bidirectional sequence)

2. Bee wing extracted from bee-eater pellet (Diagnostic speciation) - $9 per sample

3. Sugar syrup (Detection of presence/ absence) $22 per sample + $6 sequence for positives

Queensland Government

Asian honey bee Transition to Management Program

Spread of *Apis cerana* in Australia, 2007 – 2012

Department of **Agriculture, Fisheries and Forestry**

This publication has been compiled by Dr. Anna Koetz of the Asian honey bee Transition to Management Program, Biosecurity Queensland, Department of Agriculture, Fisheries and Forestry.

Contents

Summary

Predicting the future spread of an invading species is important in order to predict potential impacts and to make timely management decisions in anticipation of the species' arrival in an area. This report presents results for the first of these approaches, exploring historical data in order to describe the spread of the Asian honey bee (AHB; *Apis cerana*) in Australia and to estimate spread rates.

This report aimed to fulfil QG2C & QG2D of the Asian honey bee (AHB) Transition to Management (T2M) Plan, i.e. to "undertake a spatial analysis of the current AHB infestation to guide future surveillance activities", and contribute towards AG3C of the AHB T2M Plan, i.e. to "model the population dynamics and drivers of spread".

Specifically, the report aimed to conduct a descriptive spatial analysis based on historical data (2007 to 2012), in order to:

- Describe the spread of AHB between 2007 and 2012 in terms of nest and swarm numbers, distance from original point of incursion, and increase in the known infested area over time.
- Explore the rate of spread and swarming capabilities.
- Determine any relationships between the number of detections, distance and area with staff numbers, public reports and meteorological variables.
- Describe seasonal variation in detections and its potential causes.

The results show that between 2007 and 2012, AHB detections have steadily increased at a rate of 22 new detections per month. The known infested area of AHB covers 490 685 hectares (as of October 2012). Spread rates were calculated at 1.86 km/month based on the maximum distance that swarms/nests were found from the Cairns Port (original detection), and 1.42 km/month based on the increase in the known infested area over time.

However, the actual spread of AHB does not appear to follow a steady rate. Increases in both the distance from Cairns Port and the overall known infested area have slowed substantially since 2010. This may be due to several factors: (1) the spread has indeed slowed, or (2) it has come across climatic or other boundaries (e.g. the western edge may be becoming too dry), or (3) it is an artefact of reduced surveillance along the increasing (and less populated) edge of the known infested area.

Introduction

Predicting the future spread of an invading species is important in order to predict impacts and to make timely management decisions in anticipation of the species' arrival in an area (Gilbert & Liebhold, 2010; Liebhold & Tobin, 2008). There are two conceptual approaches to predicting future spread: (1) analysis of and extrapolation from past patterns of spread, and (2) computer simulations using data on life-history traits within a mechanistic model (Liebhold & Tobin, 2008).

This report presents results for the first of these approaches, exploring historical data in order to describe the spread of the Asian honey bee (AHB; *Apis cerana*) in Australia and to estimate spread rates.

An analysis of the spatial and temporal patterns of an incursion is valuable in that it can yield important information about the species that may be used to predict future spread as well as in guiding management decisions.

Estimating spread based on historical data has been advocated as a more practical approach to estimating spread rates and predicting future spread compared to spread modelling (Hastings et al., 2005). Nevertheless, there are several limitations that need to be kept in mind. Firstly, in very recent introduction/invasions, historical time-space data may not yet be available. Secondly, the assumption that future rate of spread will be the same as past rate of spread may not be valid in all cases (Liebhold & Tobin, 2008).

Historical data can be used to estimate a rate of spread, which can then be used to predict future spread. There are several ways of calculating the rate of spread from historical data. The simplest is a distance regression, which is based on the time that a species was first detected followed by a series of sampling points. A regression of the distance between each sampling point and the origin can then yield a rate of spread (Gilbert & Liebhold, 2010). Other methods include interpreting the cumulative number of detections of a species (Hastings et al., 2005) as well as area-based methods (e.g. square root area regression and boundary displacement; Gilbert, 2010}.

Gilbert & Liebhold (2010) found that the distance regression is the most robust method for estimating spread in a range of circumstances (such as small sample sizes and irregularly shaped invaded area), and so this method will be applied here.

Two previous studies have analysed the spread of AHB in Australia: Skelton et al. (2009) produced a poster detailing their results, and Davis (2011) wrote an unpublished Masters thesis analysing AHB spread in Australia. However, it needs to be noted here that data available to Ms. Davis was incomplete, and so it was imperative to repeat her analysis. Findings of both studies will be compared with the current findings.

This report aimed to fulfil AG3C, QG2C & QG2D of the Asian honey bee (AHB) Transition to Management (T2M) Plan, i.e. to "undertake a spatial analysis of the

current AHB infestation to guide future surveillance activities" and to "undertake spread analysis of current AHB infestation to guide future management strategies".

Specifically, it aimed to conduct a descriptive spatial analysis based on historical data (2007 to 2012), in order to:

- Describe the spread of AHB between 2007 and 2012 in terms of nest and swarm numbers, distance from original point of incursion, and increase in the known infested area over time.
- Explore the rate of spread and swarming capabilities.
- Determine any relationships between the number of detections, distance and area with staff numbers, public reports and meteorological variables.
- Describe seasonal variation in detections and its potential causes.

Methods

Data source

All data was sourced from BioSIRT, Biosecurity Queensland's database for any detection of AHB nests, swarms and foragers. Specifically, data gathered included the date and location of each detection (including geographic coordinates for mapping purposes as well as habitat type).

Different time periods were used for different analyses:

The overall description of the spread (current situation, nest and swarm numbers over time, staff levels) covers all detections between May 2007 and 30th October 2012.

Data for spatial analyses including distances between nests, swarms, and from Cairns Port covers all detections between May 2007 and 30th June 2012.

Analyses

The number of nests and swarms detected between May 2007 and October 2012 was graphed over time, using both new detections per month as well as cumulative numbers.

The relationship between the number of new detections (swarms and nests combined, nests only and swarms only) and five meteorological measures was determined using a regression analysis. Meteorological variables were chosen to represent the wet-tropical weather found in North Queensland: daily rainfall (mm), maximum daily temperature (˚C), daily 9am humidity (%), daily evaporation (mm) and daily sunshine hours. In addition, to determine a lag-effect, the number of detections was also correlated with the same five meteorological variables for the

month prior to the detection. The meteorological variables were sourced from the Bureau of Meteorology (www.bom.gov.au) and downloaded as averages for each month between January 2010 and October 2012. Detections prior to 2010 were excluded form this analysis due to comparatively low new monthly detection numbers that would have skewed the data.

The relationship between staff levels and the number of detections (nests and swarms combined) per month was also determined using a regression analysis. In addition, the relationship between differences in staff levels from one month to the next with the differences in maximum distance from Cairns Port between months was determined using a regression analysis.

In addition, the relationship between the number of public reports of bees and the number of detections per month was explored. The number of public reports of bees per month was sourced from the Queensland Government Call Centre Service. Public reports were divided into total number of reports relating to any bee enquiry, and the total number of reports relating specifically to suspect bees.

Spread

Spread rates were explored in several ways, including distance regression, infested area expansion, and swarming distance estimations.

For the distance regression, the distance of any nest and swarm to the point of origin of the AHB incursion (the Cairns Port where the first nest was detected in May 2007 – 16.94611S, 145.76935E) was measured using ESRI ArcGIS software (Version 10.5) and plotted. A line was then generated that connected the point of origin with the furthest-most detection found. The slope of this line estimated the maximum possible rate of spread of AHB between May 2007 and October 2012.

For the square root area regression, minimum convex polygons were drawn around the furthest-most detection points for each 6-monthly period since May 2007, using ArcGIS. These included calendar-year periods (January to June, and July to December) as well as wet/dry season periods (dry season: May to October; wet season: November to April). The square root of the invaded area, calculated from the minimum convex polygons, was then plotted and regressed over time to estimate the rate of spread.

To gain an understanding of possible swarming distances, the distances between any nest and its nearest known existing nest, as well as any swarm and its nearest known existing nest, were also made. In addition, the ‘swarming capability’ of the AHB incursion was explored. Assuming that a single colony can double by splitting (exponential growth) it is possible to calculate how often the first and subsequent colonies had to double to reach the current number of detections. This number of splitting events can then be used to determine how often colonies must have split over time.

All statistical analyses were made using GenStat (14th edition, 2011). Statistical significance was set at $p < 0.05$.

Results

Current situation (October 2012)

Between May 4th 2007 and October 31st 2012, there were 799 detections of *Apis cerana*, including 260 swarms and 539 nests. The known infested area (known infested area) covered 490 685 hectares (October 2012) and extended from near Mossman in the north, to South Johnstone in the south, and to near Mareeba in the north-west and Atherton/Malanda in the south-west (Figure 1).

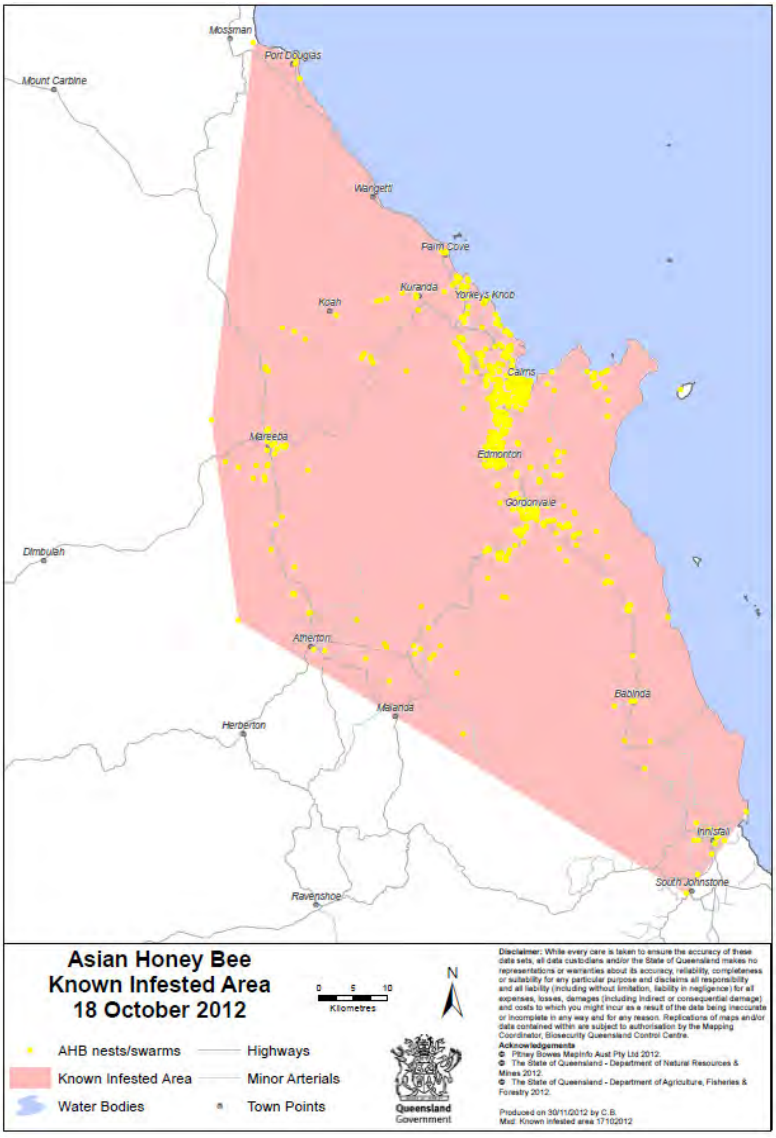


Figure 1 **Map of the AHB known infested area in Cairns, Queensland, Australia; current as of 18th October 2012.**

Nest and swarm numbers over time

The cumulative number of total detections (nests and swarms combined) remained very low between May 2007 and December 2008. It then slightly increased in 2009 and then considerably increased from 2010, with a relatively steady rate of increase thereafter (Figure 2). The steady rate of increase since April 2010 and October 2012 was 21.7 new detections per month (Figure 3).

The number of new detections varied greatly over time, with a maximum of nine new detections per month until December 2009. From January 2010, the number of new detections per month remained more consistent overall but varied between 3 and 47.

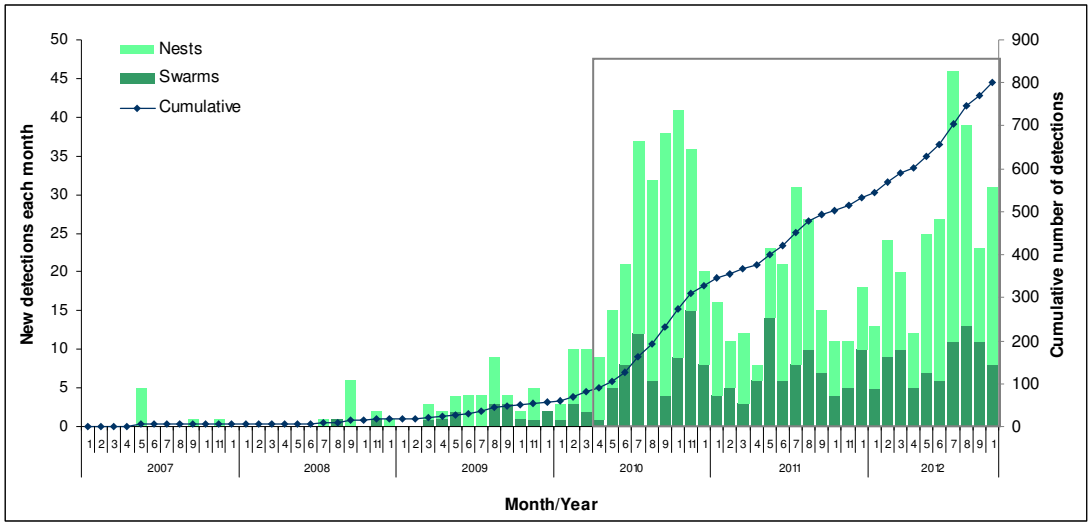


Figure 2 **Stacked bar graph of the number of new AHB swarm and nest detections and the cumulative number of detections over time (2007-2012). Grey box indicates data source for Figure 3 (below).**

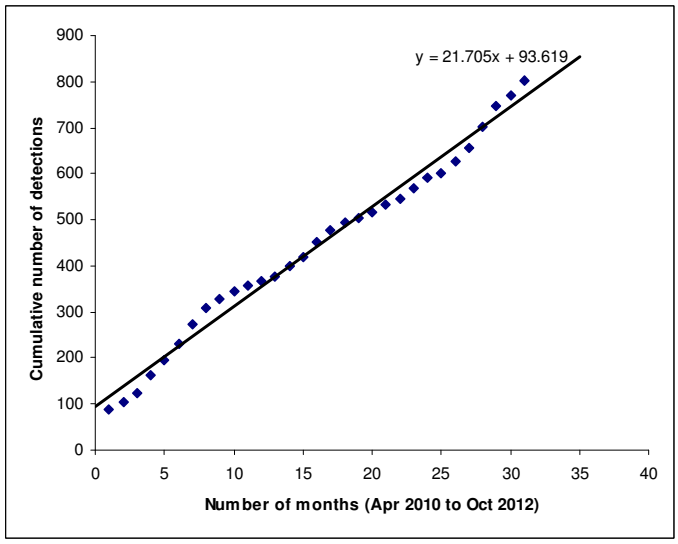


Figure 3 **Cumulative number of detections over time (April 2010 to October 2012) showing a fitted line and its equation to derive the slope (=number of new detections per month)**

The variation in the number of new detections (swarms and nests combined) between 2010 and 2012 was significantly, negatively correlated with monthly rainfall, average daily maximum temperature and average daily 9am humidity (statistical results can be found in Appendix 1).

The number of new detections was also significantly, negatively correlated with the average rainfall in the month prior as well as with average maximum temperature in the month prior, i.e. the hotter and wetter the month, the fewer detections were made in the following month.

The relationship between meteorological variables and detections was mainly driven by nest detections – between 2010 and 2012 the number of nest detections was significantly, negatively correlated with monthly rainfall, monthly rainfall in the month prior, average daily maximum temperature, average daily maximum temperature in the month prior, and average daily 9am humidity, and average evaporation in the month prior (Appendix 1).

Similarly, the number of swarm detections was significantly, negatively correlated with monthly rainfall, monthly rainfall in the month prior, and average daily maximum temperature in the month prior (Appendix 1).

The number of detections (swarms and nests combined, nests only and swarms only) was not correlated with the number of public reports received in the same month. However, the total number of detections and the number of nests detected were correlated with staff numbers - the higher the staff levels, the more nests were detected (Appendix 1).

Distance of nest location from Cairns Port over time

The maximum distance that nests were detected from the Cairns Port increased very little until mid-2008, when nest distance started to increase in a step-wise fashion until April 2010, after which distances remained relatively steady (Figure 4).

Differences in staff levels were not correlated with differences in distance from Cairns Port ($F=0.11$, $p>0.05$; Figure 4).

Using the distances from Cairns Port of all detected nests and swarms (Figure 5), the average rate of spread from was calculated at 240m/month for nests (slope $b=8.0268$, i.e. 8m/day) and 300m/month for swarms (slope $b=10.001$, i.e. 10m/day). The maximum possible rate of spread from this data was 1863m/month (slope $b=62.125$, i.e. 62m/day; Figure 5).

Plotting the maximum rate of spread (1.86km/month) as concentric circles for each year following the first detection, as well as the actual known infested area for the same years, shows a mismatch between the two (Figure 6). The actual spread was much slower and seemed to spread south and west more so than north (Figure 6).

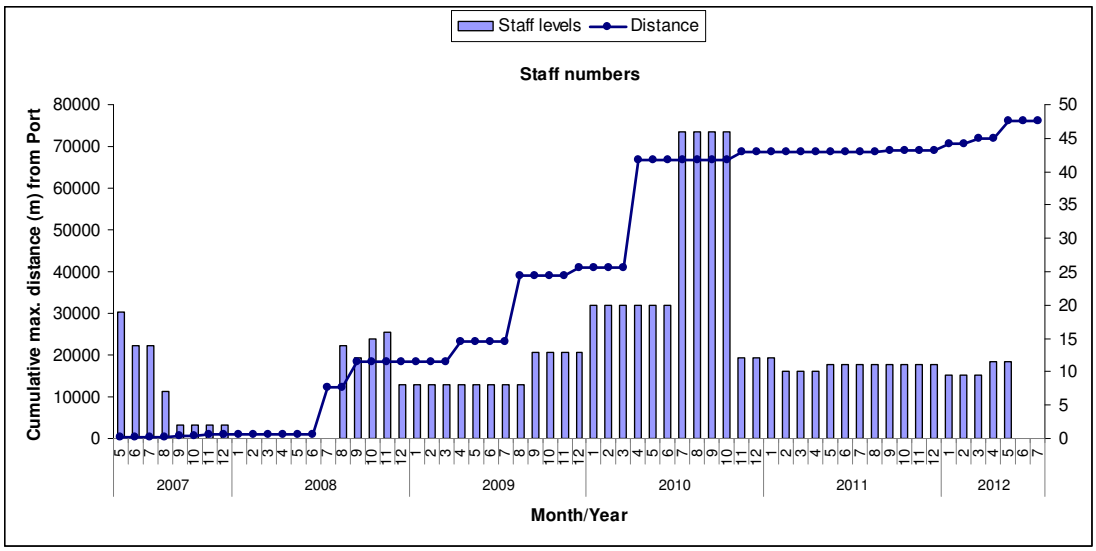


Figure 4 **Maximum distance (meters) of nest detections from the Cairns Port (monthly increments) from 2007 to 2012. Also shown are AHB team staff numbers.**

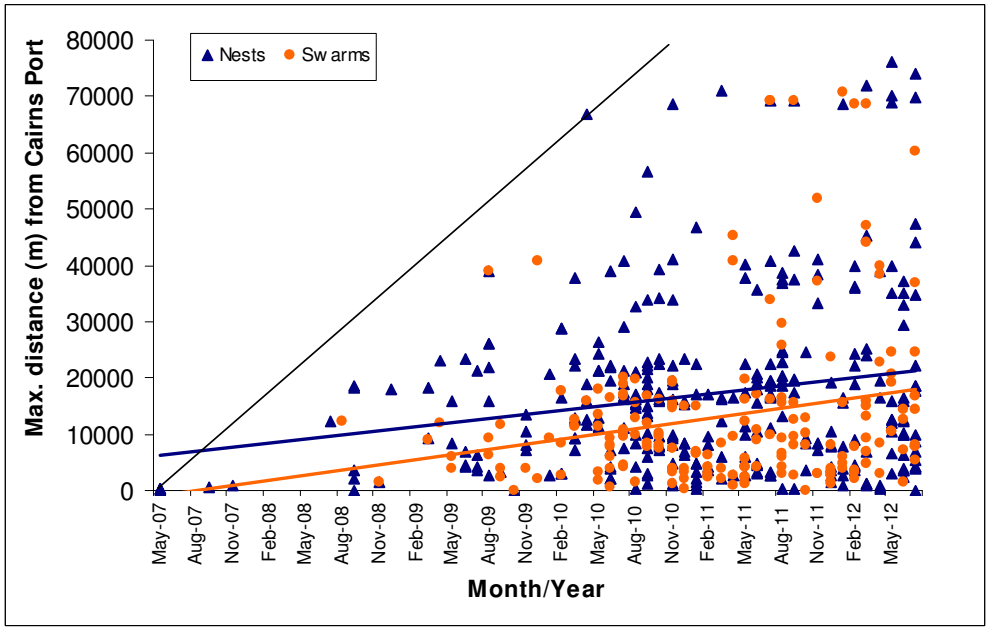


Figure 5 **Distance (meters) from the Cairns Port of nest detections (blue triangles) and swarm detections (orange circles) from 2007 to 2012. Blue line indicates average rate of spread based on nest detections, orange line depicts average rate of spread based on swarm detections, black line connects the maximum potential level of spread.**

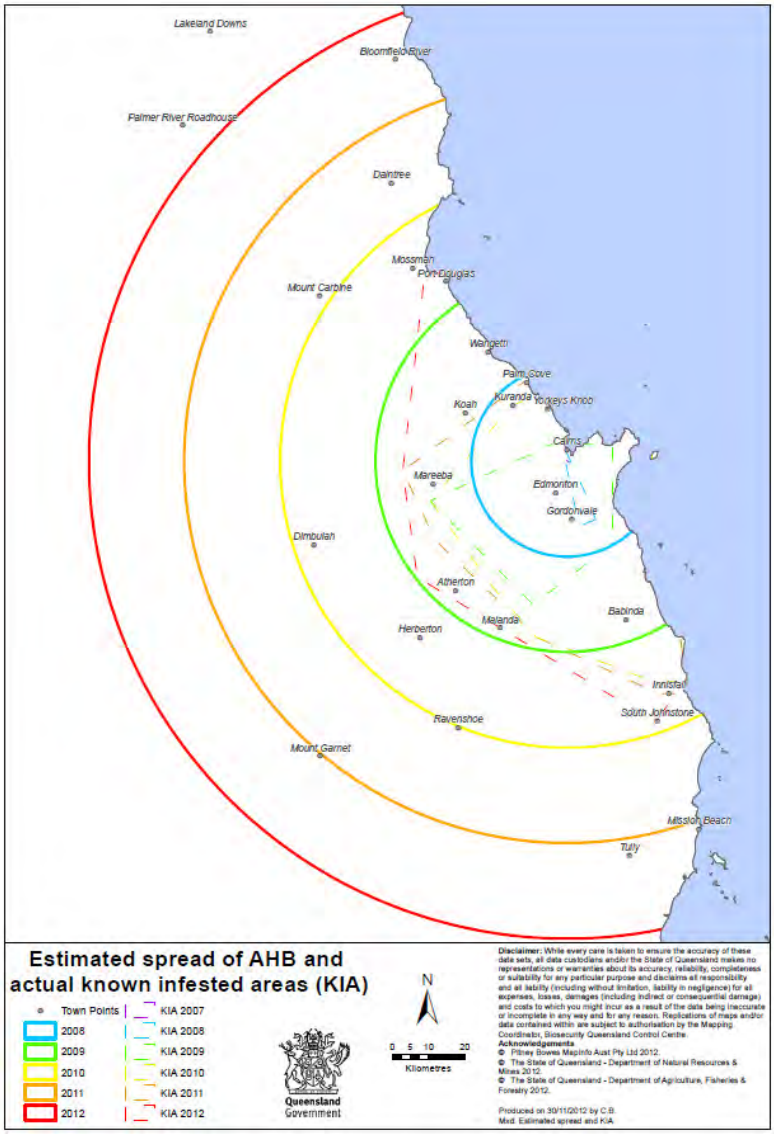
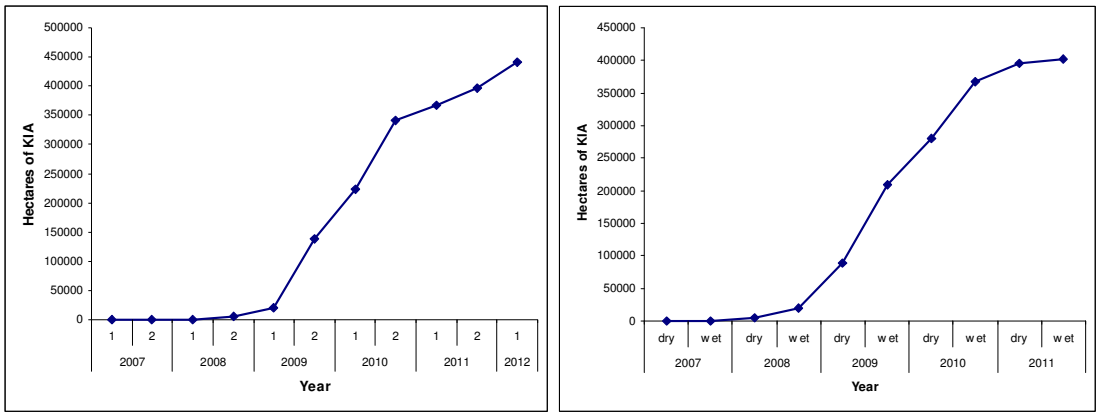


Figure 6 **Actual versus estimated spread of AHB in Queensland, Australia. Stippled lines indicate the actual spread of the known infested area until October 2012; solid circles indicate the estimated spread of 1.86km/month for each year between 2008 (12 months after incursion) and 2012 (60 months after incursion).**

Expansion of known infested area over time

The size of the known infested area remained relatively small (<21000 Ha) from 2007 until the first half of 2009, when it started to increase more quickly up to late 2010 (Figure 7a&b). From early 2011, the rate of increase of the known infested area slowed down but the known infested area continued to increase to 440194 Ha in June 2012 (Figure 7a&b).



a) **b)**

Figure 7 **Maximum area (hectares) covered by the AHB known infested area in 6-mothly steps between 2007 and 2012; (a) 1 – first half of the year (January to June); 2 – second half of the year (July to December); (b) dry season (May to October) and wet season (November to April).**

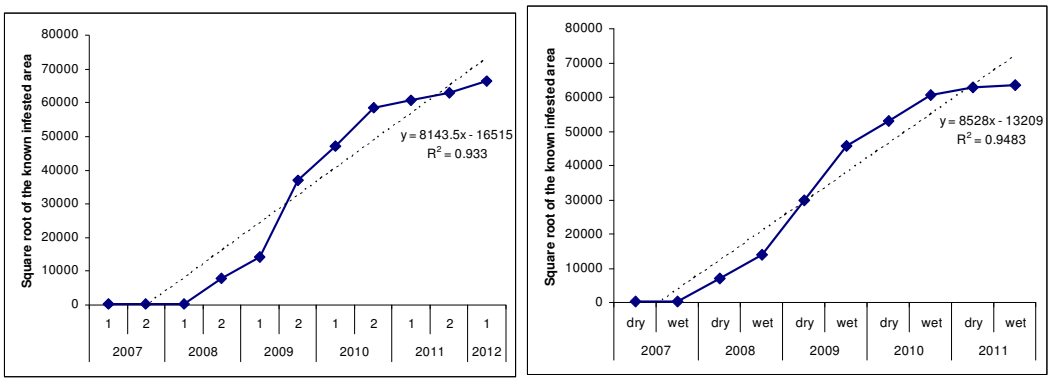
To determine a linear rate of spread from the size of the know infested area, the square root of the area was plotted for each 6-monthly time step (following the methods in Gilbert & Liebhold, 2010) for both Jan-Jun/Jul-Dec periods as well as the wet/dry periods, and a linear as well as logistic (s-shaped) regression was fitted to determine the slope (=rate of spread based on area increase).

When using calendar-year time periods the pattern was very similar to that using wet/dry seasons (Figure 7 & 8). The wet/dry seasons showed a slightly better fit in a linear regression (r^2=0.948 vs. r^2=0.933) as well as in a logistic regression (r^2=0.998 vs. r^2=0.993). The logistic curve showed a very close fit with the data, indicating an initial slow rate of spread (2007 and early 2008), followed by a fast rate of spread (mid-2008 to late 2010) with a decreasing rate of spread after late 2010 (Figure 7 & 8).

The three phases of increase in the known infested area showed distinctly different rates of increase (for calendar-year time periods): 686 Ha/month between 2007 and June 2009; 13395 Ha/month between January 2009 and December 2010; and 5450 Ha/month between July 2010 and June 2012. By far the steepest increase was found between early 2009 and late 2010 (Figure 7 & 8).

When plotting the square root of the area over time, a linear measure of spread can be determined. Using the wet/dry season data, the average spread rate (based on the linear regression) was 1.42km/month (slope *b*=8528, i.e. 8528m/6-months time-step; Figure 8).

The rates of spread in the three distinct phases were: early (April 2007 to September 2008) – 551m/month (slope *b*=3306.6, i.e. 3306.6m per 6 months); middle (October 2008 to September 2010) – 2220m/month (slope *b*=13320, i.e. 13320m per 6 months); and recent (October 2010 to March 2012) – 230m/month (slope *b*=1381, i.e. 1381m per 6 months).



a) **b)**

Figure 8 **Square root of the maximum area covered by the AHB known infested area in 6-mothly steps between 2007 and 2012; (a) 1 – first half of the year (January to June); 2 – second half of the year (July to December); (b) dry season (May to October) and wet season (November to April). The stippled line depicts a linear regression; the regression equation is given underneath the line.**

The largest increase in known infested area relative to its previous size (6 months prior) occurred during 2008, when the size of the known infested area increased by over 400 times (Figure 9). Subsequent increases were never any larger than 5 times its previous size (6 months prior).

The patterns of increase as shown by polygons drawn around the furthest detections (Figure 9) differ only slightly between January-July periods and wet/dry periods and mostly show large jumps to the west and south in 2009 and 2010, respectively.

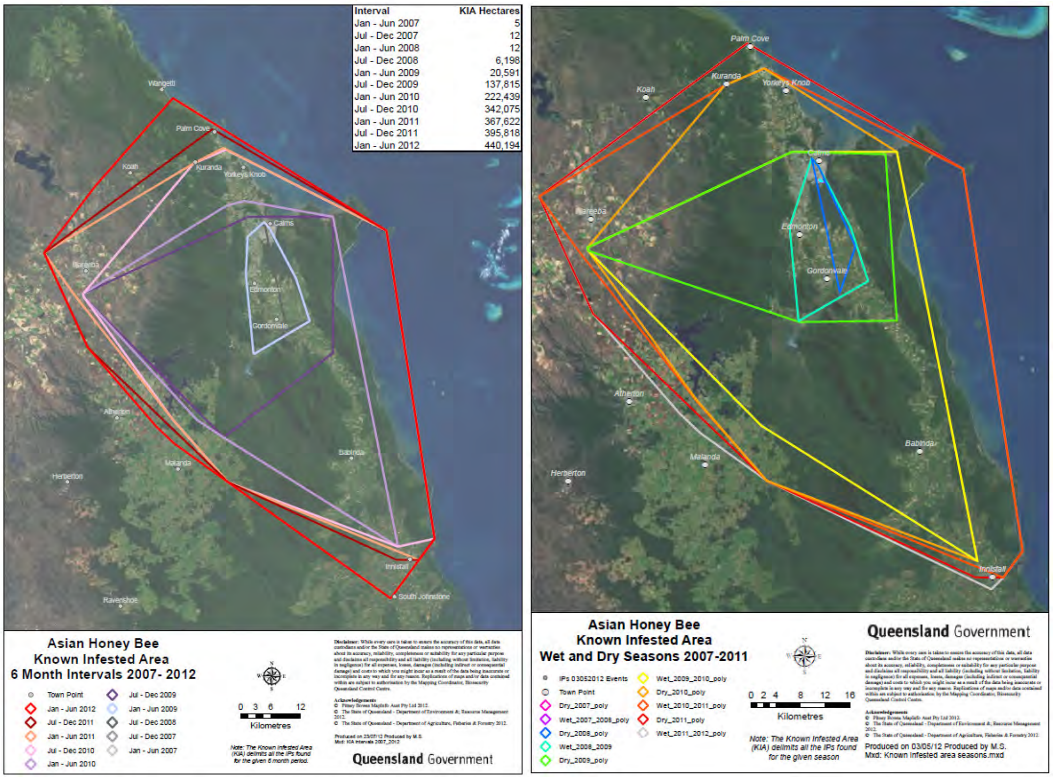


Figure 9 **Expansion of the AHB Known Infested Area (known infested area) between 2007 and 2012 in 6-monthly steps (a) and in 6-monthly steps that are in sync with the tropical wet and dry seasons (b)**

Distance of spread

Under the assumption that new nests and swarms likely originated from the nearest (undiscovered) existing nest, one can measure the distances between any two nearest nests to gain an estimate of how far a colony may travel during reproductive swarming. Similarly, if a new swarm is assumed to originate from the nearest (undiscovered) existing nest, then measuring distances between a new swarm and the nearest known nest may give an indication of swarming distances.

Given that locations of undiscovered nests are unknown, one could measure either the distance to the nearest nests found prior to detection of the swarm in question, or the distance to the nearest nest that was found after the swarm detection. The nest found prior to the swarm detection would have been destroyed upon positive identification of AHB, and so would be unlikely to have been the origin of the swarm in question. It is more likely that the swarm came from a nest that was undiscovered at the time of swarm capture, but that would have been found after the swarm was destroyed. Therefore, this latter distance was used for the analyses.

Estimate of swarming distances

Distances between detected swarms and nearest existing nests are highly left skewed (i.e. mostly, swarms are close to nests with very few instances where swarms where far away from its nearest nest; Figure 11). Therefore, median distances are more informative than average distances.

The median distance between detected swarms and nearest existing nests was 462.1m, with a minimum of zero meters (the swarm was found in the same place as the nest) and a maximum of 63.1km.

50% of swarms were found within 500m of an existing nest, 75% were found within 1000m of an existing nest, and 95% were found within 5000m of an existing nest. There were 12 instances (5% of all cases) where swarms were found further than 5000m from an existing nest.

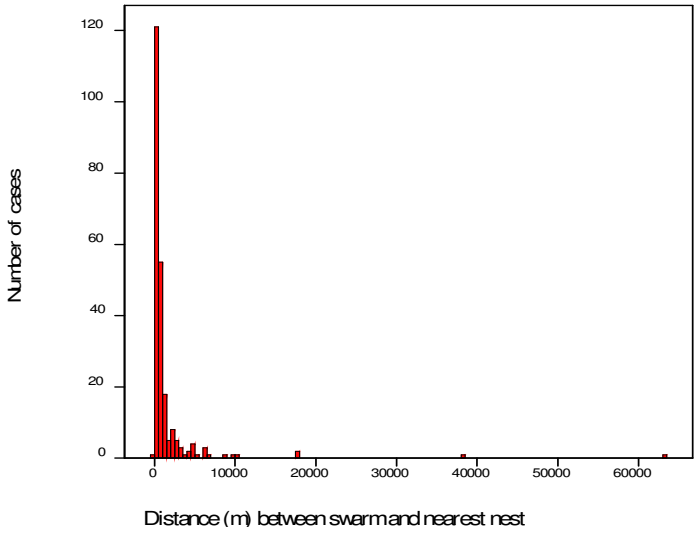


Figure 10 **Histogram of swarm-to-nearest-nest distances (m) showing highly left-skewed data. Median = 462.1m.**

Swarming capability

Assuming that a single colony can double by splitting (exponential growth), given a population size of 799, colonies had to double 9.62 times (i.e. $2^{9.64} \approx 799$). Thus, 9.64 splitting events must have occurred to reach a size of 799.

799 detections were made between May 4th 2007 and October 31st 2012, which equals 2007 days. Given 9.64 splitting events over 2007 days, colonies must have split every 208.2 days (i.e. every 6-7 months).

Discussion

The descriptive spatial analysis showed that the number of detections, the distance from Cairns Port and the overall area of the known infested area have increased substantially since 2007. Although the number of new detections was still rising at a steady rate of approximately 22 new nests per month, the data also showed a general decline in the rate of spread both for the distance from Cairns Port as well as for the total area of the known infested area since 2010. Whether this decline in the rate of spread is an indication of an actual decline in spread, or a result of decreasing surveillance over an ever-increasing area needs to be discussed (see below).

Nest and swarm numbers over time

Apart from the general increase in numbers of detections over time, great variation in the number of detections was apparent in the data (e.g. Figure 2). The variation in detections was in part linked to meteorological variables, specifically total rainfall, temperature and humidity. Particularly interesting was a very strong correlation between numbers of detections and rainfall and temperature in the month prior. Detections were also positively correlated with staff numbers, but, surprisingly, not with the number of public reports received.

The relationship between detections and meteorological variables could indicate that (1) bee numbers are influenced by weather (i.e. high temperature and rainfall results in reduced bee activity), or (2) bee numbers remain the same but field staff cannot find bees either due to changed timing of bee foraging during hot weather, and/or due to due to reduced visibility in the rain.

Some detections were made even during very wet months (Figure 2). It needs to be noted here that the variation in the data is large – months with little or no rain did not necessarily result in large numbers of detections. However, months with a lot of rain never yielded many detections (Figure 2).

However, the significant, negative correlation between monthly new detections and rainfall, humidity and temperature does indicate that detections are seasonal, with more nests and swarms detected in the ‘dry season’ (lower temperature, rainfall and humidity) than in the ‘wet season’ (Figure 2).

Average maximum daily temperatures in the month prior showed a very strong, negative relationship with the number of detections (swarms & nests, nests only and swarms only; Table 1). Temperature should not affect bee visibility so it may be argued that bee numbers are higher during colder months and lower during warmer months. Alternatively, bee numbers may remain the same, but bees may forage very early and very late in the day, which may result in lower detections by field staff due to their working hours.

A correlation between staff numbers and detections is not surprising and can be explained by the greater surveillance effort possible with greater staff numbers.

However, it is surprising that the number of public calls was not related to the number of detections. The efficacy of public reporting will be analysed in a separate report.

Distance from Cairns Port

The distance from Cairns Port increased over time, as expected. However, the distance from Cairns Port has remained relatively steady since April 2010 (Figure 3). This may be due to the fact that (1) the spread has slowed, or (2) that it has come across climatic or other boundaries (e.g. the western edge may be too dry), or (3) it is an artefact of reduced surveillance along the increasing edge of the known infested area.

The maximum possible rate of spread based on nest and swarm distances from Cairns Port was calculated to be 1.86km/month (Figure 5). This rate is slightly higher than Skelton et al. (2009)'s 1.67km/month.

Overlaying the estimated maximum rate of spread and the actual known infested area for each year after the initial detection shows a great discrepancy between the two (Figure 6). The known infested area did not spread nearly as far or as fast as predicted by the estimated rate of spread. The actual spread also does not appear to move in concentric circles, but rather it appears that the known infested area spread south and west more so than north (Figure 6). It also appears as though the westerly spread has slowed (Figure 6). This apparent slowing of the spread is also suggested by the expansion of the known infested area (see below).

Major increases in distance from Cairns Port ('jumps') do not seem to be restricted to the wet or dry season. Some jumps occurred during the dry seasons (July and September 2008; August 2009) whereas some jumps occurred during the late wet season (April 2009; April 2010; Figure 3).

Increases in staff levels were not associated with increases in distance from Cairns Port. In particular, a doubling of staff levels in July 2010 did not result in any increase of distance from Cairns Port (Figure 3).

It is interesting to note that increased staff levels increased the number of detections but not the distance at which these were found.

Expansion of known infested area

The area of the known infested area increased to 440194 Ha by June 2012, five years after the first detection. Interestingly, there were three distinct phases with different rates of increase (Figures 7 & 8). The average rate of spread from this area data was estimated to be 1.42km/month, which is slightly less than previous estimates. However, between 2008 and 2010, the known infested area increased substantially, with an estimated rate of spread, based on the square root of the known infested area, was 2.22km/month. More recently, however, the rate of spread

seemed to have slowed to 0.23km/month. This slowing of spread is also reflected in the distance from Cairns Port.

As mentioned previously, the question remains whether the rate of spread has indeed slowed, or whether this slowing spread is due to other factors, such as AHB reaching climatic or other boundaries, or whether it is an artefact of reduced surveillance along the increasing edge of the known infested area.

Despite reduced surveillance by AHB field staff, public reporting should not be affected by the increasing distance from Cairns. However, locations on the edge (especially the western and northern edge) are increasingly less populated, and so public reports may also be less frequent.

Distance of spread

Swarming distances were estimated from the distances of swarms and their nearest nests, as well as through calculating a swarming capability.

The median distance between any swarm and its nearest nest was 462m. Most swarms (75%) were found within 1000m of a nest, and the majority of swarms (95%) were found within 5000m of a nest. Five percent of swarms were found at distances substantially greater than 5000m, and these may be assumed to have been inadvertently transported by humans. Although dispersal/migration distances are unknown for AHB (*Apis cerana*), the presented data give some indication on possible dispersal distances (<5km).

In order to reach nearly 800 detections by October 2012, colonies had to split 9.62 times, which can be translated into a splitting event occurring every 6-7 months, or twice a year. This is similar to other estimates of how often AHB may swarm in the tropics (reviewed in Hepburn, 2011).

Conclusion

A descriptive spatial analysis based on historical data can be used to predict possible future spread and guide future surveillance and management decisions. It may also be used to determine gaps in knowledge and data, and as input for computer simulation modelling. Particularly interesting would be a validation of the current results, using data available in the future.

Although spread rates can and have been estimated from historical data, they may not be accurate due to the fact that the assumption of a steady, non-changing rate of spread is unlikely to be true. This can be seen in the current results. When estimating an average spread rate from 2007-2012 data and overlaying it with the current extent of the known infested area, it becomes clear that AHB did not in fact spread at that same rate. This may be due to the rate of spread slowing, or climatic or other barriers being encountered by the AHB population, or it could be an artefact of reduced surveillance in an ever-increasing area of infestation. Further research is

necessary to determine which of these processes (if any) may be resulting in a slower rate of spread than predicted.

Appendix 1

Statistical results for linear regression analyses of detections (nests and swarms, nests only, swarms only) between January 2010 and October 2012 versus five meteorological variables (for the same month of detections as well as for the month prior to the detections; total monthly rainfall, and averaged for each month: daily maximum temperature, 9am humidity, daily sunshine hours, daily evaporation), the number of public reports (suspect bees only and total calls received by the call centre), and staff numbers within the Asian honey bee Program). F-probabilities are given for all variables (bold = statistically significant; n.s. – not significantly different), r^2 values are given for statistically significant variables.

Detections	Time period	Variable	p	r^2
Nest & swarms	Same month	Rainfall	**0.009**	**0.171**
		Max temperature	**0.002**	**0.249**
		9am humidity	**0.012**	**0.157**
		Sunshine hours	n.s.	
		Evaporation	n.s.	
		Public reports (suspect bees)	n.s.	
		Public reports (total)	n.s.	
		Staff numbers	**0.010**	**0.164**
	Month prior	Rainfall	**0.001**	**0.263**
		Max temperature	**<0.001**	**0.366**
		9am humidity	n.s.	
		Sunshine hours	n.s.	
		Evaporation	n.s.	
Nests only	Same month	Rainfall	**0.017**	**0.14**
		Max temperature	**0.003**	**0.227**
		9am humidity	**0.014**	**0.148**
		Sunshine hours	n.s.	
		Evaporation	n.s.	
		Public reports (suspect bees)	n.s.	
		Public reports (total)	n.s.	
		Staff numbers	**<0.001**	**0.313**
	Month prior	Rainfall	**0.007**	**0.189**
		Max temperature	**<0.001**	**0.314**
		9am humidity	n.s.	
		Sunshine hours	n.s.	
		Evaporation	**0.033**	**0.114**
Swarms only	Same month	Rainfall	**0.050**	**0.088**
		Max temperature	n.s.	
		9am humidity	n.s.	
		Sunshine hours	n.s.	
		Evaporation	n.s.	
		Public reports (suspect bees)	n.s.	
		Public reports (total)	n.s.	
		Staff numbers	n.s.	
	Month prior	Rainfall	**0.005**	**0.207**
		Max temperature	**0.023**	**0.132**
		9am humidity	n.s.	
		Sunshine hours	n.s.	
		Evaporation	n.s.	

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AHB TMG Minutes

Meeting Twelve of the Asian Honey Bee Transition Management Group (AHB TMG)

Teleconference held on Tuesday 16th April, 2013

Attendees: Colin Grant DAFF Commonwealth (Chair), Ian Mortimer DAFF Commonwealth, Glynn Maynard DAFF Commonwealth, Rose Hockham DAFF Commonwealth, Mike Ashton DAFF Queensland, Russell Gilmour DAFF Queensland, Lindsay Bourke AHBIC, Trevor Weatherhead AHBIC, Greg Fraser PHA, Rod Turner PHA, Sam Malfroy PHA (Secretariat), Brad Siebert PHA and Jenna Taylor PHA.

Apologies: Vanessa Findlay DAFF Commonwealth, Louise Clark DAFF Commonwealth, Nin Hyne DAFF Commonwealth, Anna Koetz DAFF Queensland and Ian Zadow AHBIC.

Item 1 – Welcome

The Chair welcomed the Members of the Asian Honey Bee Transition Management Group (AHB TMG) to meeting twelve. The Chair noted to the AHB TMG that this was the first of the last three monthly meetings which are resuming for the program until it ends on 30th June 2013.

Item 2 – Discussion and acceptance of minutes from previous meeting

The minutes from meeting 11 were tabled. Mr Malfroy stated that comments were provided out of session by members of the AHB TMG, and that the minutes and reports attached had since been accepted and placed on the AHB website. All members agreed that they provided a true and accurate record of meeting 11.

Item 3 – Action items from previous meeting

The action items from meeting 11 were tabled and discussed.

The Chair stated that the minutes and reports from meeting 11 had since been placed on the website and this had completed those actions.

The Chair also stated that DAFF Queensland had continued to prepare their progress reports in alignment with the cessation strategy, and that DAFF Queensland would be providing an update to the AHB TMG on the Restricted Area (RA) and trade issues in a later agenda item in the teleconference.

Item 4 – Reporting from DAFF Queensland

Mr Gilmour provided an update of AHB activities in Queensland through the Progress Summary Report (April 2013). This report is attached as attachment A.

Of particular note was the request from the Cairns beekeeping club to the AHB T2M Program to fund a general bee pest and disease workshop in Cairns. Mr Gilmour stated that since this was a broader bee biosecurity issue that DAFF Queensland deemed it would not be appropriate to fund this out of AHB T2M program funds, however, he also stated that DAFF Queensland would be more than happy to participate in or contribute information and material relating to AHB to any planned workshop on broader bee pest and disease issues. Mr Turner asked AHBIC whether this workshop could be funded out of the remaining $22,000 from industry's commitment to the AHB T2M. Mr Weatherhead and Mr Bourke both stated this would be possible, however, they agreed to talk to the Cairns beekeeping club out of session and provide an update to the AHB TMG at the next meeting on how this money would be spent.

Mr Weatherhead asked Mr Gilmour whether positive *Nosema sp*. in AHB IP samples, as contained in the progress summary report, were identified as *Nosema apis* or *Nosema ceranae*.

Mr Gilmour stated he did not have this information on hand, but would distribute to AHBIC out of session.

Mr Turner asked Mr Gilmour whether DNA testing had been conducted on the AHB nests detected near the Cairns port through the joint NAQS and DAFF Queensland surveillance program to determine if they were the local AHB population, or possibly a new interception. Mr Gilmour stated this testing was usually conducted by DAFF Commonwealth. The Chair requested that PHA follow this up with DAFF Commonwealth out of session to determine the procedure being undertaken, and what results had been obtained.

Mr Gilmour tabled the 'Asian Honeybee Surveillance Report' and provided an update on what surveillance activities had been undertaken between January-March 2013. The Chair noted that it did not seem that the AHB was spreading considerably outside of its current range. This report is attached as Attachment B.

Item 5 – AHB SAG: proposal for next meeting

Mr Turner stated that no AHB Scientific Advisory Group (SAG) meetings had been held since the last AHB TMG meeting in February 2013 and that this was because no more scientific reports had been completed by DAFF Queensland in that time. Mr Turner proposed that the last SAG meeting be held in mid-May 2013 and that DAFF Queensland should attempt to get as many scientific reports completed by this time for the SAG to review, as well as for the SAG to provide comment on where future R&D should be focused once the AHB T2M is finalised. DAFF Queensland stated that they would endeavour to get as many scientific reports as possible available for review prior to the next SAG meeting.

Mr Weatherhead objected to this proposal and urged a SAG teleconference be called as soon as possible, and not to delay till May, as this was contained in the minutes of the last SAG meeting held in December 2012. Mr Turner acknowledged that it was previously agreed to hold a SAG meeting in March 2013, but considering no new remote nest treatment trials had been conducted, and no new information had been gathered by DAFF Queensland, it was decided to delay the SAG meeting. Mr Turner also stated that it was agreed by the SAG at the December 2012 meeting to delay the remote nest treatment trials until a more effective attractant and trap had been developed, which was an ongoing industry funded project.

Mr Weatherhead disagreed and stated that AHBIC was not happy with the progress made on this issue and that the honey bee industry's concerns had not been taken into account. The Chair objected to this statement, and stated that there was no desire to purposefully delay any development on these important scientific issues, and that a SAG meeting cannot be called if there is no new information to consider on behalf of the AHB TMG. The Chair requested that PHA organise the SAG meeting for mid-May 2013.

DAFF Queensland requested that PHA investigate the progress being made by the industry funded research projects and present this progress at the next SAG and TMG meeting in May.

The Chair stated that during this time, DAFF would write a thank you letter to all members of the SAG for their contribution to this important national program.

Item 6 – AHB T2M paper for publication

Mr Ashton discussed with the AHB TMG that DAFF Queensland's lead scientist for the AHB T2M program, Dr Anna Koetz, had requested that research produced as part of the program be compiled into journal articles to be submitted to relevant journals for publication. The Chair stated that he was strongly supportive of this proposal and that this would help build on the legacy of the AHB T2M. The Chair discussed with the TMG that the peer review process provides another filter for this research and allows this information to be publicly accessed in peer reviewed journals. Dr Maynard agreed, and stated that this research was unique amongst

the world and there would be a strong desire to get this information into the scientific community, as it was quite clear that there was a lack of this information when compiling the literature review. Mr Ashton stated that only scientific work that had been reported and agreed to by the TMG would be used in papers submitted for publication in relevant scientific journals.

Item 7 – The RA and trade issues

Mr Ashton stated that DAFF Queensland had proposed to repeal the Restricted Area (RA) for AHB around Cairns on 30th June 2013 to align with the cessation of the AHB T2M Program. However, this proposal by DAFF Queensland had raised concerns amongst the honey bee industry in regard to possible implications for the export of live bees to North America, specifically Canada. AHBIC informed the TMG that they had heard reports from officials in Canada that they would ban the import of live bees from Australia if the RA was removed. Mr Ashton stated that the current import requirements of Canada were that live bees be sourced from apiaries that are certified free from AHB and located a minimum of 100km away from a known detection/incursion of AHB in the last 2 years. Mr Ashton noted that the removal of the RA would not impact on Australia's ability to meet Canada's current import requirements for AHB but advice was needed from Canadian authorities whether and how these import requirements might change in response to the repeal of the RA around Cairns.

The Chair stated that discussions were recently held with the Canadian Food Inspection Agency (CFIA) at a recent bilateral meeting, and that DAFF Commonwealth were awaiting a formal response from CFIA once they consider the position and consult their scientific advisory committee.

AHBIC requested that any advice received from Canada be circulated by DAFF Commonwealth as soon as possible out of session due to the urgency of resolving this issue prior to 30 June 2013. AHBIC also requested that DAFF Commonwealth be proactive in their discussions with CFIA to ensure that the issues surrounding the live bee trade to North America are resolved. Mr Ashton stated that DAFF Queensland are committed to continue working with AHBIC and DAFF Commonwealth to resolve these issues, even if it meant keeping the RA in place until a clear position is resolved amongst all affected parties. The Chair requested that PHA and DAFF Commonwealth work together on this issue, and provide this information to AHBIC and DAFF Queensland out of session.

The Chair reiterated to the TMG that the concept of area freedom is an international standard and is very commonly argued amongst trading partners, and that further discussions will occur out of session between all parties and an update will be tabled at the TMG meeting scheduled for May 2013.

Item 8 – Next AHB TMG meeting

The Chair stated that the next AHB TMG was scheduled for the 21st of May 2013. Mr Weatherhead stated that both he and Mr Bourke would be unable to attend this date due to a clash with the 100th NSW Apiarist Association Conference. The Chair proposed that the next meeting be re-scheduled for the 28th of May 2013. All members of the AHB TMG agreed with this proposal.

Item 9 – Summary and Close of Meeting

The Chair thanked the TMG for their contribution to the AHB T2M and closed the meeting.

Department of Agriculture, Fisheries and Forestry

Asian honey bee Transition to Management Program

Progress Summary Report, April 2013

This publication has been compiled by Russell Gilmour of Biosecurity Queensland, Department of Agriculture Fisheries and Forestry.

Contents

This document is prepared for the Transition to Management Group meeting on 16 April 2012.

Other relevant documents provided separately include:

- Asian honey bee Surveillance Report, January – March 2013

Program Highlights

Detections

There have been 824 detections of Asian honey bee (AHB) nests and swarms since May 2007.

Note: The known infested area of Asian honey bee is restricted to an area around Cairns; north to Bonnie Doon (near Mossman), west of Atherton and Mareeba and south to South Johnstone. The program has ceased surveillance and responding to public reports in the Known Infested Area (KIA), unless the report is considered a new incursion, or where there is a risk of aided spread, or on the edge, or outside of the KIA. In these instances officers respond in accordance with "Responding to public notifications of Asian honey bee" policy. These detections are referred to as Detections of Interest and since the last TMG meeting they are:

Outside the KIA

Nil.

On the edge of the KIA

Nil.

Public reports

91 public reports of AHB have been received since 11 December 2012 bringing the total number of reports since 1 July 2012 to 449.

Industry engagement

- Continued to meet with industry at a local and state level.
- The Cairns Bee Keeping Club has approached the AHBT2M Program to fund a general bee pest and disease workshop in Cairns. As the program is specific to transitioning the management of AHB to industry and the community, it would be inappropriate to use program resources to deliver a workshop on broader bee pest and disease issues. Program resources are also fully committed to completing the schedule of work detailed in the agreed Cessation Strategy between now and the end of the program on 30 June 2013. The Program would however be in a position to participate and provide input on AHB and its management to any bee pest and disease workshop for industry.

Community engagement

- Filming commenced and completed for the Asian honey bee nest and swarm destruction techniques video.
- Procedures for the detection and destruction of AHB are being incorporated into a manual for use by relevant stakeholders following cessation of the AHBT2M Program. A group consisting of ADAFF, industry and apiary officer representatives has been formed to review and provide comment and input to the manual so that a comprehensive tool is developed that meets the needs of key stakeholder groups.

- Transport posters have been distributed in a staged approach around the Cairns region working out from the high risk port area to high risk transport hubs towards the edge of the known infested area. Apiary officer in Townsville assisting in delivery of transport posters in that region.
    - Cairns region 290 posters to 240 transport businesses.
    - Townsville region 30 posters to 26 transport businesses.
- Draft 'Apiarist Survey Report' regarding the impact of AHB on apiarists in the Cairns area. Currently out for internal review.
- AHB website identification page has been updated with new and improved pictures of AHB and other relevant bee species.

Science

- Efficacy trials have been completed.
- Continued report writing & editing
    - Efficacy Report
    - Behaviour and ecology Report
    - Bait station/attractant improvement Report
    - Apiarist survey Report
    - Spatial modelling Report.
- Collaborated with Dr. David Guez re using orchid as an AHB attractant.
- Collaborated with NAQS re data analysis of efficacy trials in high risk port areas.
- Three casual science staff employed to assist with remaining data entry, data analysis and report writing.
- All results received for samples sent away for parasitological tests were negative for *Varroa*, tracheal and *Tropilaelaps.* Some results received for *Nosema* disease testing were positive.

ADAFF

- Continued collaboration with NAQS science staff for the AG5 project goals, especially the High Risk Area around the Cairns seaport. The surveillance trial in the High Risk Area was altered and ADAFF commenced distributing 'bee on the lookout' public awareness flyers to businesses within the 800m AHB surveillance zone.

Current and future program activities

Community engagement

- Production of detection and destruction video to commence with scripting, cutting and editing, and audio recording being worked on. The video is scheduled to be published on the website late May - early June.

- Final draft of new website content developed and in review process in preparation of handover and maintenance by QDAFF Apiary officers post 30 June 2013.
- Completion of Apiarist survey report.
- Final draft of Asian honey bee manual content that incorporates detection and destruction procedures completed and sent for review by next meeting.

Operations

- Engaging with transport companies while delivering AHB poster.
- Surveillance for AHB around the edge of the KIA.

Science

- Analysis of data from various trials.
- Report writing is on track.
- Continue collaboration with external researchers.

Appendix 1 Cessation Strategy progress

The general community has an awareness of AHB and their role and responsibilities in its management

Stage 1

Key Performance Indicator	AHB T2M Project No.	Due Date	Status	Comments and activities since last report
Produce and distribute a 'Fact Sheet' about AHB and how the public should respond to AHB nests and swarms.	AG1 D. (i)	31.12.11	**COMPLETED**	• New AHB T2M brochure printed and in use. Brochure is available on the internet, used at community engagement and industry events and delivered as a letterbox drop to premises in high risk areas and on the edge of the KIA. It is also provided to people throughout Queensland.
Update the Biosecurity Queensland website with comprehensive details on Asian honey bees, including identification, how to manage them, produced and available.	AG1 A. (i), B. (i)	Ongoing to 30.06.13	**ON TRACK**	• Website has been routinely evaluated and updated ~ October 2011 ~ December 2012 (online reporting tool added to website) ~ April 2012 ~ June 2012 • Updates include embedding links to the Remote Nest Treatment video on YouTube, adding completed reports, updating the Known Infested Area (KIA) map and adding a new image gallery. • The website continues to be maintained and updated. • Discussions held with BQ Apiary Officers on transfer of responsibility for maintenance of the AHB website following cessation of the AHB T2M Program.
Community engaged through a variety of methods e.g. media releases, TV and radio interviews, attending community festivals and regional shows.	AG1 D. (i) – (vii)	Ongoing to 30.06.13	**ON TRACK**	• Awareness material developed and in use includes brochures, identification cards, variable message signs on roadsides and a poster for display at transport companies.
Stage 2				
Ensure the community and industry are informed and up-to-date regarding the status of the transition to management program and	AG1 D. (i) – (vii)	31.12.11 – 30.6.13	**ON TRACK**	• Cessation Strategy developed and approved by T2M Management Committee December 2012. • Implementation of Cessation Strategy commenced.

where they can access assistance.				
The Customer Service Centre processes are updated to provide a clear decision tree regarding AHB, new incursions, those inside and outside the KIA and reflect the current status of government intervention.	AG1 D. (i) – (vii)	31.12.11 – 30.6.13	**COMPLETED**	• Customer Service Centre procedures developed approved and implemented. • Apiary and Animal Biosecurity & Welfare staff informed and participating in reporting process including response to reports in preparation for cessation of AHB T2M Program.

Transport companies are alert to actions that will limit the spread of AHB

Stage 1

Key Performance Indicator	AHB T2M Project No.	Due Date	Status	Comments and activities since last report
Intensively engage with transport industries inside the KIA and surrounding edge. Consult and develop a method to incorporate the awareness of AHB into the transport industries to reduce the risk of aided spread of AHB through commercial transport pathways.	AG 6 D	30.06.12	**ON TRACK**	• Extension materials such as ID cards, brochures and posters supplied to transport companies. • Contact ongoing with the main shipping, rail and freight transport companies in Cairns.
Stage 2				
Produce and develop a poster with targeted messages for transport industries.	AG 6 D AG1 D. (v)	31.12.12	**COMPLETED**	• Transport poster printed and currently being distributed inside the KIA with plans for wider distribution.
Develop and deliver awareness campaigns for transport industries within a 200km radius from the edge of the KIA.	AG 6 D	31.3.12	**COMPLETED**	• Information and training package developed and provided to transport businesses throughout the KIA and beyond to Townsville.
Engage and increase awareness with transport companies and their industry groups Queensland wide.	AG 6 D	30.6.12	**ON TRACK**	• Transport poster printed, distribute inside the KIA completed and commenced for the edge of the KIA. Planning is underway for state-wide distribution.
Engage and increase awareness broadly within the Australian transport industry through the peak industry body and national publications.	AG 6 D	30.6.12	**ON TRACK**	• Collaboration and input into numerous external articles for national and international magazines regarding Asian honey bees.

Pest control operators know how to identify and safely respond to reports of AHB

Stage 1

Key Performance Indicator	AHB T2M Project No.	Due Date	Status	Comments and activities since last report
Consult, develop and make available a guideline for pest controllers on what tools are available and how to use them when responding to an AHB call for help.	AG 1 D (v)	31.12.12	COMPLETED	• Guideline for destruction of AHB nests and swarms published, provided to industry and available on internet. • Published on Biosecurity QLD website.
Build awareness of available identification tools on the Biosecurity Queensland website with comprehensive details on Asian honey bees, including identification and how to manage them.	AG1 B. (i) D. (vi)	Ongoing to 30..6.12	COMPLETED	• Biosecurity website has been promoted at over 30 community and industry events, social media and media interviews. • The website continues to be updated and promoted and will be available post 30 June 2013.
Provide hands-on training workshops to pest control operators that are within and on the edge of the KIA.	AG1 AG3 AG6	30.6.12	COMPLETED	• Hands on training has been provided to pest controllers in the KIA and as far south as Townsville.
Engage and increase awareness with pest management industry in north Queensland, including hands on training	AG3 AG6	30.6.12	ON TRACK	• Pest control industry representatives have been engaged. Pest controllers are destroying AHB nests and swarms where requested.
Stage 2				
Develop training videos showing methods of swarm and nest destruction that the industry can use to help train other members in their business.	AG2 B. (i)	31.12.12	ON TRACK	• Filming commenced in February and has been completed. • Editing, narration etc to commence. The video is scheduled to be published on the website late May - early June.
Engage and increase awareness with the pest controller industry Queensland wide.	AG6 D,	30.06.13	ON TRACK	• Pest control industry representatives have been engaged. Pest controllers are destroying AHB nests and swarms where requested
Engage and increase awareness broadly with the Australian transport industry through peak industry body and national publications.	AG6 D,	30.06.13	ON TRACK	• Collaboration and input into numerous external articles for national and international journals regarding Asian honey bees.

Indigenous rangers and government officers have knowledge, tools and training in AHB identification and management

Stage 1

Key Performance Indicator	AHB T2M Project No.	Due Date	Status	Comments and activities since last report
Provide hands on workshop training sessions to indigenous rangers, local government officers, other government agencies and Biosecurity Queensland staff in the management of AHB.	AG4 A. AG2	31.03.12	**COMPLETED**	• Hands on training has been provided to indigenous rangers, local government officers, other government agencies and biosecurity Queensland. • 'An evaluation of Asian honey bee workshops conducted in the Known Infested Area for Critical Stakeholders' report has been published.
Increase awareness and availability of produced materials that they can use to deal with AHB situations.	AG 4 B.	Ongoing	**ON TRACK**	• Awareness campaigns were conducted through workshops held with indigenous rangers and government officers. AHB knowledge, tools and training were delivered to these target audiences at workshops and are being used where necessary and appropriate. • AHB manual in development covering detection and destruction techniques. The manual will provide affected stakeholders with tools they can use to manage AHB following cessation of the T2M Program
Conduct presentations at local and regional pest management forums to engage with large numbers of local government and state government staff to increase awareness.	AG4	Ongoing	**ON TRACK**	• Awareness has been generated at quarterly FNQ Pest forums throughout Nth Queensland regions. • A presentation and nest and swarm removal demonstration was held as part of the Northern Exposure Pest Conference (Townsville).
Provide hands on AHB training to the north Queensland Apiary Officer in AHB surveillance and destruction.	AG1 AG2	31.12.12	**COMPLETED**	• Apiary Officer has visited Cairns and worked with program staff on 2 occasions. • Nth Queensland Apiary Officer has conducted intensive engagement 3klms around the Port of Townsville after the detection of AHB at the port in January 2013.
Involve and consult all Queensland apiary officers and provide them with the tools to	AG1 AG2	30.06.13	**ON TRACK**	• Monthly meetings are held with Apiary Officers. • Consultation and joint developments of processes to

implement their responsibilities under the Responding to public notifications of Asian honey bee policy.				ensure smooth handover of Web, CSC, AHB materials and knowledge is occurring.
Stage 2				
Information is made available to environmental and agricultural departments in other states and territories and the federal government regarding how to manage and control Asian honey bees.	AG5 B. (i)	31.03.12	**ON TRACK**	• AHB information generated to date has been provided to a range of environmental and government stakeholders via the internet and meetings. • The AHB response manual is being drafted and will be completed when research trials have been completed.
Integrate and document methods of validated detection and destruction techniques into an AHB manual to assist Biosecurity agencies with a toolkit to respond to and manage AHB incursions.	AG5 B. (i)	31.03.12	**ON TRACK**	• AHB manual in development covering detection and destruction techniques. The manual will provide affected stakeholders with tools they can use to manage AHB following cessation of the T2M Program. • Some training provided to ADAFF and Biosecurity QLD officers in North Queensland.

Scientific and environmental community increase their research interest in AHB and increase collaboration with Biosecurity Queensland

Stage 1

Key Performance Indicator	AHB T2M Project No.	Due Date	Status	Comments and activities since last report
Literature review finalised and published.	AG2A	31.7.12	**COMPLETED**	• TMG group signed off on 19 February 2013.
Undertake research as outlined in the AHB T2M Operations Plan. • Efficacy of detection and destruction methods, including edge and port surveillance • Effectiveness of bait stations • Analysis of all nest and honeycomb	AG2Bi-iii AG2C(v) AG5A AG5B(i-iii) QG2B QG2C QG2D QG2E	30.6.13	**ON TRACK**	• New target dates agreed to by SAG and TMG. • Efficacy trials completed & data analysis on track. • Bait station trials completed & data analysis on track • Nest and comb data collection completed, data analysis on track. • Other behavioural and ecological data analysis on track (incl. nest and swarm attributes, drone flight times, nest observations, floral preferences)
Collaborate with external research scientists on AHB research.	AG2	30.6.13	**ON TRACK**	• Regular collaboration with external researchers including Prof Ben Oldroyd, Dr. David Guez and Prof Caroline Gross.

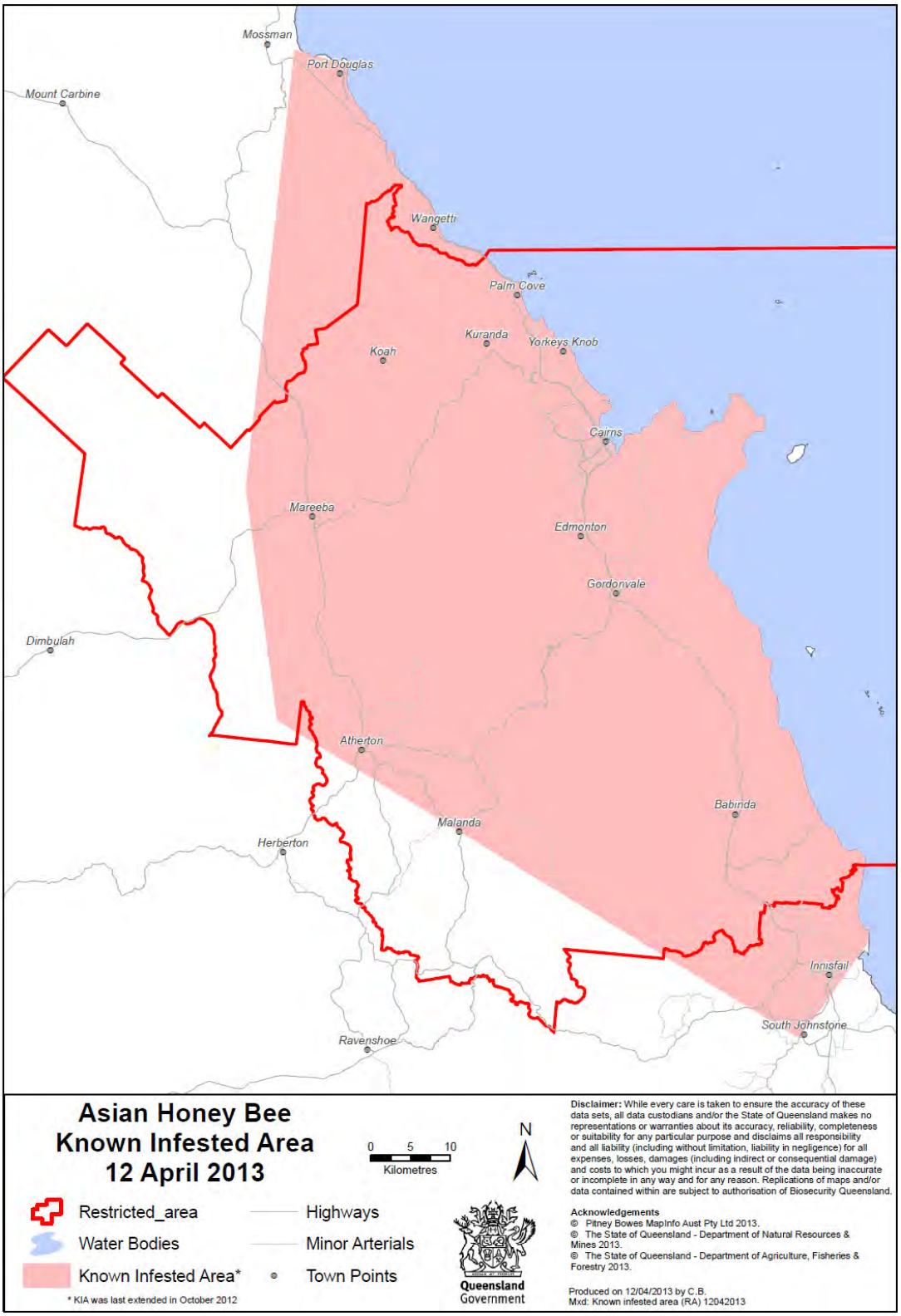
Stage 2				
Outcomes of the research are released.	AG2(i,iii)		**ON TRACK**	• Literature review released on PHA & BQ website • Research updates presented to NAQS & AQIS
Validate the most effective methods of detection and destruction techniques.	AG2Bi-iii AG5A AG5B(i) QG2B	30.6.13	**ON TRACK**	• Efficacy trials completed, data analysis and interpretation on track
Integrate and document methods of validated detection and destruction techniques into an AHB manual to assist Biosecurity agencies with a toolkit to respond to and manage AHB incursions.	AG2(i) AG5B(i)	31.03.13 31.3.12	**ON TRACK**	• Awaiting finalisation of some of the above research.
Guidelines and toolkit are made available for stakeholders.	AG4A.	31.03.12 Ongoing	**ON TRACK**	• Awaiting finalisation of some of the above research.
Research findings are presented at scientific conferences and other suitable forums, e.g. Apiary industry meetings.			**ON TRACK**	• Contact with industry occurs regularly. • Contact with stakeholders occurs regularly e.g. Cape York Pest Management Advisory Group.

Beekeepers understand and actively manage the risks and impacts of AHB

Stage 1				
Key Performance Indicator	**AHB T2M Project No.**	**Due Date**	**Status**	**Comments and activities since last report**
Consult with the beekeeping industry group and address issues that affect them and what tools they need to manage AHB.	AG3 A. (iii)	31.12.11	**ON TRACK**	• Local and state liaison committees established.
Provide hands-on training workshops to beekeepers that are within and on the edge of the KIA as well as to beekeepers that may be called to assist in the identification and sampling of AHB in other areas of Queensland.	AG3 D.	31.03.12	**COMPLETED**	• Training provided to members of the Cairns and Tableland Beekeepers Association and Townsville Beekeepers Association.
Provide beekeepers in north Queensland with information and tools needed to identify and	AG3 D.	31.03.12	**COMPLETED**	• Attend Tableland beekeepers association meeting monthly.

manage AHB.				• Information provided to Townsville beekeepers Association meeting. • Science update given to local beekeepers (Townsville & Cairns).
Stage 2				
Beekeepers from around Australia are advised and information is provided in how to undertake AHB surveillance through the beekeeper volunteer program.		30.6.13	**ON TRACK**	• Volunteer program is assisting in this. • PHA and QDAFF websites contributing to this. • Collaboration and input into numerous external articles for national and international magazines regarding Asian honey bees.
Compliance with movements controls required under legislation is achieved by issuing longer term movement licences.	AG6 A.	31.12.12	**COMPLETED**	• The process of applying for movement licenses has been enhanced to reduce the regularity of applying for a license.
In consultation with the honey bee industry, develop and coordinate an industry response list that Biosecurity Queensland staff can utilise for assistance with suspect AHB detections.	AG6 D.	30.06.13	**ON TRACK**	• An industry group exists and their assistance is limited due to legal liability issues. • Where necessary pest controllers will be used for destruction of suspect AHB.

Appendix 2 Current Known Infested Area[1]



[1] The last detection which increased the spread of AHB was 15 January 2013.

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Asian honeybee Surveillance Report

January - March 2013

This publication has been compiled by Corey Bell of the Asian honey bee Transition to Management program, Department of Agriculture, Fisheries and Forestry.

Contents

Current Situation

The Asian honey bee (AHB) Known Infested Area (KIA) covers nearly 500 000ha but is restricted to an area around Cairns; north to Bonnie Doon (near Mossman), west of Atherton and Mareeba and south to South Johnstone.

In the current phase of the Transition to Management program, the program has ceased surveillance and responding to public reports in the KIA unless the report is considered a new incursion, where there is a risk of aided spread, or where the report is on the edge or outside of the KIA. In these instances officers respond in accordance with the “Responding to public notifications of Asian honey bee” policy.

Since the first detection of Asian honey bee (AHB) in Cairns in May 2007, a total of 820 swarms or nests have been detected.

During this reporting period 18 AHB swarms and nests were detected – 15 nests and 3 swarm. Due to the lag between detections, laboratory confirmation of identification and the processing of paperwork increasing over the Christmas holiday period 4 of the detections reported on in this period were from December but were not included in the previous surveillance report.

Surveillance

Floral Surveillance

Floral surveillance in the KIA has ceased.

Rainbow bee eater surveillance

Rainbow bee eater pellets were collected from four sites within the KIA

- 2 sites in Myola were negative for AHB
- 1 site in Clifton Beach was negative for AHB
- 1 site in Mareeba was positive for AHB

Reports from the public

The public made a total of 128 reports during the period 16 of which were positive detections

- 28 public reports in January
- 49 public reports in February
- 51 public reports in March

Detections

A total of 18 nests or swarms were detected during the reporting period. These detections included 15 nests and 3 swarms. The public reported 16 of these nests or swarms, 1 nest was detected as part of the port surveillance trials with ADAFF and the other incidentally while conducting surveillance efficacy trials (see Appendix 1 for details of all detections for the period).

Extensions of the Known Infested Area (KIA)

There was no extension of the KIA during the reporting period.

Detections outside of the Restricted Area (RA)

There were no detections outside of the RA during the reporting period.

Port area detections

Table 1: Port area detections

Nest IP	Suburb	Swarm/ Nest	Final detection	Found by	Initial detection date	Killed
811	PORTSMITH 4870	Nest	Beelined after the initial detection by AQDAFF	Leeon, Lisa; Morris, Dianne	18/12/2012*	Y
815	PORTSMITH 4870	Nest	Public report	Defranciscis, Lewis; Giblin, Arthur	11/02/2013	Y
816	PORTSMITH 4870	Swarm	Public report	Defranciscis, Lewis; Docherty, Glen	28/02/2013	Y

** Due to the lag between detections, laboratory confirmation of identification and the processing of paperwork increasing over the Christmas holiday period 4 of the detections reported on in this period were from December but were not included in the previous surveillance report.*

Appendix 1- List of detections

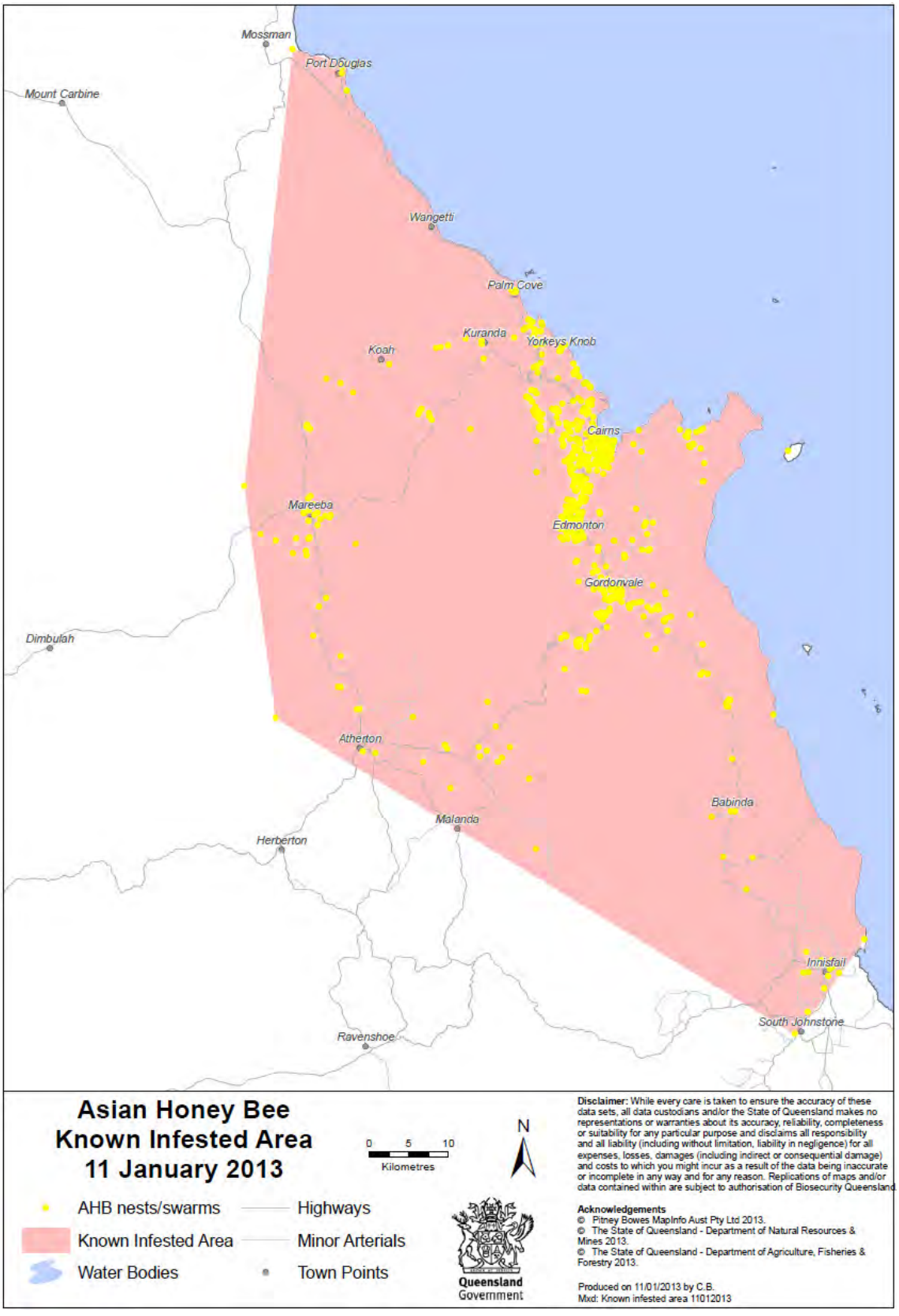
Table 2: All detections

Nest IP	Suburb	Swarm/Nest	Initial Detection Date	Initial Detection	Final Detection	Found By	Date Confirmed	Killed
808	KEWARRA BEACH 4879	Nest	28/11/2012	Public report	Public report	Leeon, Lisa; Morris, Dianne	07/12/2012*	Y
809	MAREEBA 4880	Nest	29/11/2012	Public report	Public report Bees found in a Banana Bag with Banana's in the packaging shed after been cut down	Leeon, Lisa; Morris, Dianne	07/12/2012*	Y
810	MAREEBA 4880	Nest	14/12/2012	Public report	Public report Used for Video	Wittmeier, Natalie	14/12/2012*	Y
811	PORTSMITH 4870	Nest	18/12/2012		FT Beelined Initial detection by ADAFF	Leeon, Lisa; Morris, Dianne	19/12/2012*	Y
812	EDGE HILL 4870	Nest	09/01/2013	Public report	Public report Nest transported in compost bin to WWTP for observation and trails	Defranciscis, Lewis; Leeon, Lisa	11/01/2013	Y
813	YORKEYS KNOB 4878	Nest	16/01/2013	Public report	Public report Not destroyed being used for a drone video	Morris, Dianne	25/01/2013	N
813	YORKEYS KNOB 4878	Nest	16/01/2013	Public report	Public report Nest used for filming of destruction and nest extraction	Morris, Dianne	25/01/2013	Y
814	LAKE BARRINE 4884	Nest	02/02/2013	Public report	Public report Found by QPWS Shane Vidler 40953768 ranger found comb and destroyed by ranger	Bell, Corey; Wittmeier, Natalie	08/02/2013	N
815	PORTSMITH 4870	Nest	11/02/2013	Public report	Public report	Defranciscis, Lewis; Giblin, Arthur	14/02/2013	Y
816	PORTSMITH 4870	Swarm	28/02/2013	Public report	Public report	Defranciscis, Lewis; Docherty, Glen	01/03/2013	Y
817	MANUNDA 4870	Nest	21/01/2013	Public report	Nest also used for filming of destruction and extraction	Defranciscis, Lewis	08/03/2013	Y
818	MANUNDA 4870	Nest	19/02/2013	Public report	Public report Nest retained for Ben Oldroyd and observation	Defranciscis, Lewis	08/03/2013	N
819	CAIRNS 4870	Nest	07/03/2013	Sweep	Other Found during Efficacy Trials	Defranciscis, Lewis	15/03/2013	N

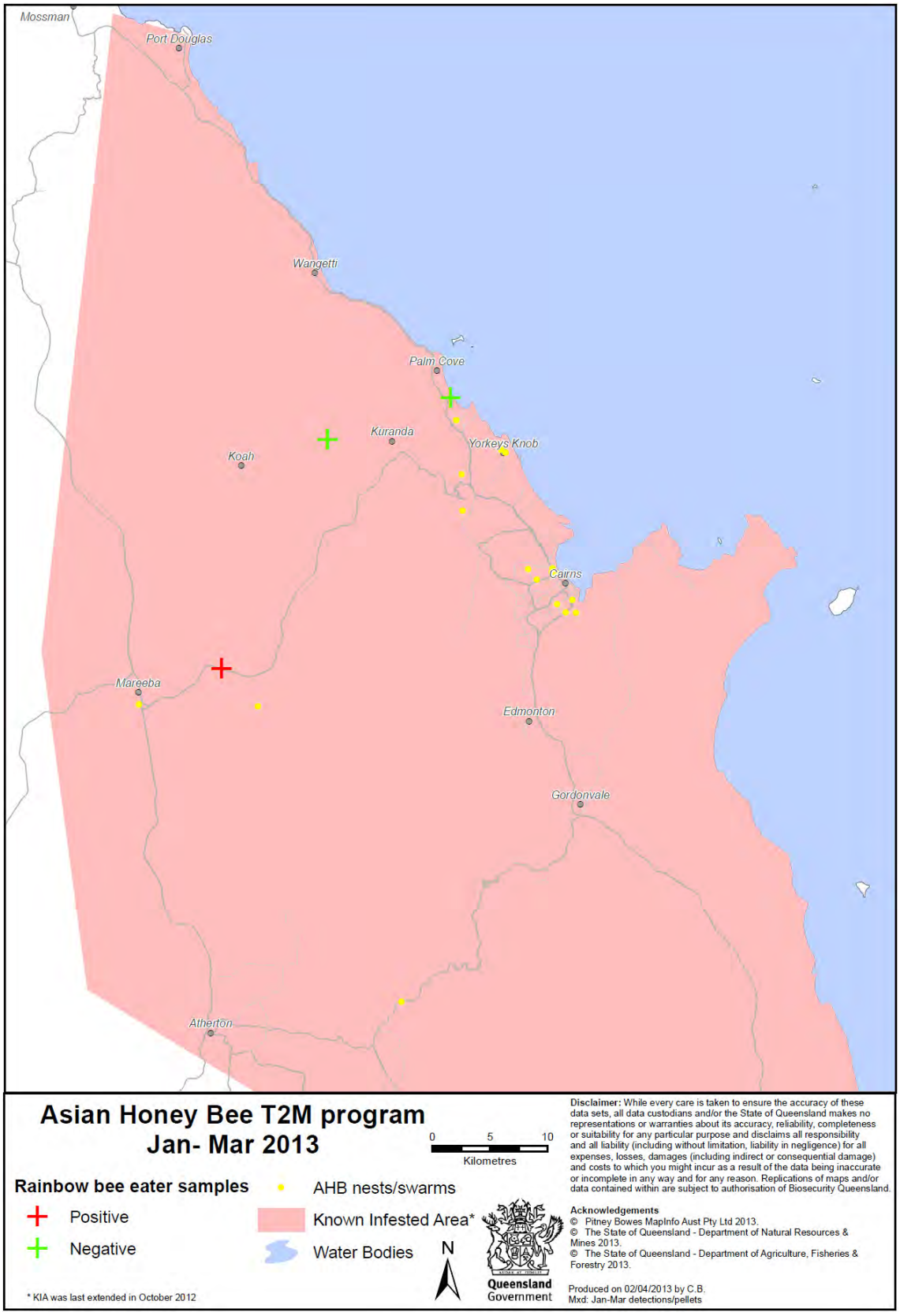
820	CAIRNS NORTH 4870	Nest	14/03/2013	Public report	Public report Nest ideal for CE filming - Abandoned home	Defranciscis, Lewis	15/03/2013	N
821	CAIRNS 4870	Nest	13/02/2013	Public report	Public report Nest was used for filming on last visit to collect sample nest had absconded 07/03/13	Defranciscis, Lewis	15/03/2013	N
822	YORKEYS KNOB 4878	Swarm	14/01/2013	Public report	Public report Swarm boxed and taken to Edmontone WWTP	Leeon, Lisa; Morris, Dianne	22/03/2013	Y
823	SMITHFIELD 4878	Nest	22/03/2013	Public report	Public report Pest controller killed the bees and owner informed that they had been there for 12months		22/03/2013	Y
824	CARAVONICA 4878	Swarm	26/03/2013	Public report	Public report Was inspected and kept for filming but destroyed by postman	Defranciscis, Lewis	28/03/2013	Y

** Due to the lag between detections, laboratory confirmation of identification and the processing of paperwork increasing over the Christmas holiday period 4 of the detections reported on in this period were from December but were not included in the previous surveillance report.*

Appendix 2- Map of KIA (and all detections)



Appendix 3 Map of detections (Jan-Mar 2013)



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Queensland Government

AHB TMG Minutes

Meeting Thirteen of the Asian Honey Bee Transition Management Group (AHB TMG)

Teleconference held on Tuesday 28th May, 2013

Attendees: Colin Grant DAFF Commonwealth (Chair), Tom Aldred DAFF Commonwealth, Nin Hyne DAFF Commonwealth, Luke Osborne DAFF Commonwealth, Mike Ashton DAFF Queensland, Russell Gilmour DAFF Queensland, Anna Koetz DAFF Queensland, Lindsay Bourke AHBIC, Trevor Weatherhead AHBIC, Ian Zadow AHBIC, , Rod Turner PHA, Sam Malfroy PHA (Secretariat) and Jenna Taylor PHA.

Apologies: Louise Clark DAFF Commonwealth, Rose Hockham DAFF Commonwealth, Greg Fraser PHA and Glynn Maynard DAFF Commonwealth.

Item 1 – Welcome

The Chair welcomed the Members of the Asian Honey Bee Transition Management Group (AHB TMG) to meeting thirteen.

The Chair introduced Tom Aldred to the TMG. The Chair explained that this would be the last meeting that he would be Chairing, as he had taken on a new position within DAFF, and stated that Tom Aldred would be Chairing the next meeting of the TMG in June.

Item 2 – Discussion and acceptance of minutes from previous meeting

The minutes from meeting 12 were tabled. Mr Malfroy stated that comments were provided out of session by members of the AHB TMG, and that the minutes and reports attached had since been accepted and placed on the AHB website. All members agreed that they provided a true and accurate record of meeting 12.

Item 3 – Action items from previous meeting

The action items from meeting 12 were tabled and discussed.

Mr Weatherhead discussed with the TMG that Dr Denis Anderson and Dr Ben Oldroyd had both been approached to hold a training workshop in Cairns over August (2013) for beekeepers in the region to learn more about the AHB. The Chair stated that this would be a valuable way to spend the remaining funds of the industry contribution.

Mr Malfroy added that he had held preliminary discussions with NAQS, who are conducting the Cairns port surveillance, and stated that they will be developing a methodology for detecting a new incursion of AHB, against a background AHB population, which could possibly be included in the National Bee Pest Surveillance Program once completed.

The Chair stated that the remaining Action Items would be dealt with in the remaining agenda items.

Item 4 – Industry Project Update

Mr Malfroy tabled the industry project update from RIRDC for the TMG's consideration and discussed the progress being made with the industry funded projects. This summary has been attached as Attachment A.

Item 5 – Reporting from DAFF Queensland

Mr Gilmour provided an update of AHB activities in Queensland through the Progress Summary Report (May 2013). This report is attached as attachment B. Of particular note was that the Known Infested Area (KIA) of AHB had not expanded since January 2013.

Mr Gilmour also tabled the Remote Nest Treatment Report (Final) and the North Queensland Apiarist Survey Report (Final). Both of these reports are attached as Attachment C and D.

Dr Koetz discussed with the TMG that the Remote Nest Treatment Report contained additional residue information which clearly demonstrated the Fipronil level of bees and combs when conducting a remote treatment trial, as well as the rate at which Fipronil is broken down over the following days after a remote nest treatment. Dr Koetz also stated that the Apiarist Survey Report demonstrated that the effects on beekeepers in North Queensland (NQ) from the AHB had been minimal, and that beekeepers in NQ were more worried about future incursions which could carry Varroa mite, instead of the current AHB population. The TMG considered these reports final and agreed that they could be placed on the AHB website.

The Chair stated that although the AHB T2M program would be finalised by 30th June 2013, other specific aspects of the program such as the industry funded research projects, and important industry issues such as trade would be ongoing. For this reason, the Chair suggested that an AHB Working Group which consists of similar members from DAFF, AHBIC, DAFF Queensland and PHA be established after 30th June 2013 and continue to meet every 2-3 months to discuss these issues in these forums. The TMG agreed that this would effectively wrap up the T2M pilot program, but would provide oversight of continuing work, in particular the industry funded research projects. Because of this, the Chair recommended that the finalisation of the Legacy Report which was tabled by DAFF Queensland for comment be delayed until this work is finalised, and instead all effort be put into completing the AHB T2M Final Report which outlined the progress made on the program and Queensland deliverables as part of the program.

Item 6 – AHB SAG: summary of Meeting Nine

Mr Turner stated that Meeting 9 of the AHB SAG was held on the 27th of May 2013. Mr Turner discussed with the TMG that the SAG considered a range of projects, including:

- DAFF Queensland DRAFT reports including:
  - Detection of Asian honey bees (*Apis cerana*) in Cairns, Australia
  - Destruction of Asian honey bees (*Apis cerana*) in Cairns, Australia
  - Ecology and behaviour of Asian honey bees (*Apis cerana*) in Cairns, Australia
  - Optimising AHB bait/feeding station design and attractants
- RIRDC industry project update
- Developing a *Future R&D Recommendations* report by the AHB SAG which outlined where industry R&D could be focused on into the future

Mr Turner stated that the SAG would provide comments out of session on these reports. However, Mr Turner informed the TMG that it may be required to hold a final AHB SAG meeting in late June, so that the AHB SAG could provide final comments on the scientific reports produced by DAFF Queensland before the TMG meeting which is scheduled for the 25th of June. The Chair agreed with this approach.

Please note: At this point, Dr Colin Grant left the meeting and Tom Aldred took over as Chair for the remainder of the meeting.

Item 7 – The RA and trade issues

The Chair informed the TMG that DAFF had received informal correspondence from the Canadian Food Inspection Agency (CFIA) stating that they would be conducting a pest risk assessment of importing package bees and queen bees from Australia. The Chair stated that although this is being undertaken, there would be no change to the current export status.

Mr Weatherhead expressed his disappointment that AHBIC were not informed sooner of this development as it was present in the minutes of the last meeting that they, along with DAFF

Queensland, were to be informed out of session as soon as any development took place. The Chair stated that there was no formal correspondence to pass on and that DAFF would be providing assistance to this risk assessment when requested by CFIA.

Mr Weatherhead discussed that the current trade season is nearly over and that all efforts must be put into keeping this trade open into the future. The Chair agreed and stated that DAFF would be working closely with CFIA into the future to understand their concerns, and what could constitute an effective management and surveillance program for the AHB population, which would allow trade to occur from other parts of Australia. Mr Weatherhead stated that it was critical that the Restricted Area (RA) be monitored and maintained to provide continuity of the current arrangements. Mr Ashton stated that DAFF Queensland would be prepared to keep the RA in place while negotiations with the CFIA are underway. However, Mr Ashton also stated that Queensland would prefer that other ways are explored to address any concerns of our international trading partners as retaining or introducing a new AHB 'control area' in Queensland was not seen as an effective, long term solution to the problem. The Chair thanked DAFF Queensland and stated that it was possible a more formal response from CFIA might be received in time for the TMG to consider for their meeting next month.

Item 8 – Next AHB TMG meeting

The Chair stated that the next AHB TMG was scheduled for the 25th of June. The Chair added that although this meeting would be the final TMG meeting as part of the AHB T2M program, more meetings would be scheduled in the future.

It was discussed that future meetings after the June meeting, would be held every 3 months (September and December 2013) to continue to discuss topical issues such as the RA and trade issues, as well as the progression of the industry funded research projects, to help keep communication channels open between governments and industry. The TMG agreed with this approach.

Item 9 – Summary and Close of Meeting

The Chair thanked the TMG for their contribution to the AHB T2M and closed the meeting.

Mr Bourke, on behalf of AHBIC, expressed his gratitude to Dr Colin Grant for his work on the AHB T2M for the last two years and wished him well in his new position. These sentiments were echoed by Mr Ashton on behalf of DAFF Queensland.

Progress Report on the Industry-funded, RIRDC-managed, Asian Honey Bee – Transition to Management projects as at 20 May 2013

Please Note:
Total funding for the below projects equals $377,000 of the $400,000 honey bee industry (AHBIC and FCAAA) contribution to the AHB T2M. AHBIC is currently seeking a RTO to prepare a quote for a training course for beekeepers in the Cairns region, to spend the remaining $23,000 in accordance with objectives of the AHB T2M.

Organisation – The University of Newcastle
Principal Researcher – David Guez
Project Title – Develop an attractant specific to *A. cerana* Java strain
Timeframe – (31/07/2012 – 1/12/2014)
Industry Funding – $131, 000
Project Summary – This project will determine whether or not it is possible to improve the spontaneous visit rate of feeding stations by giving them flower like characteristics and to use this new feeding system to attempt exclusion of *Apis mellifera* and native bees. The researchers will determine if the use of odorants from Lychee, Mad hatter and Coral Vine can improve spontaneous visitation and recruitment to the bait station. The researchers will also determine the attractiveness of Cymbidium species and to see whether the chemical composition of the semio-chemical produced exclusively attracts *Apis cerana*.

Research in Progress report (at 1 May 2013)
As indicated in my previous report, two master students (Nicholas Wall and Dylan Stolzenhein) have been recruited to perform experiment pertaining to the project. Despite administrative delays the students have been trained in Newcastle prior to going to Cairn permanently to perform the experiments.
Student training:
Since I will only be able to make relatively brief trip to Cairn the rational behind training the student in Newcastle is two- fold:

- Insure that the student can confidently and safely manipulate bees.
- Insure that the students have acquired basic skill necessary to the conduct of the experiments (e.g. experimental rigor, and consistency).

Skill training:
The students have been trained to perform both free flying experiment and Proboscis extension reflex. Although, it is anticipated that most if not all experiment performed in Cairn will be free flying experiment, training in PER experiment (Sugar threshold determination and Olfactory conditioning experiment) were also perform because the allowed me to evaluate their capacity to manipulate in such manner that their results were reproducible (independently to weather consideration).
I needed also the student to learn the importance of good experimental record, something that I believe can only be achieved by facing your own error and avoiding them in the future. I believe that was best achieved on experimental work that had no bearing on the studies that need to be performed for this grant. It also allowed me to provide for a progressive learning curve in the difficulty of the experiment to be performed.

Current short term Experimental plan:
The first experiment to be conducted in the next few weeks is to address the issue of sucrose concentration preference. In other words which sucrose concentration induce the best (in term of magnitude and rate) recruitment possible.
The second experiment will address colour and shape preference to enhance spontaneous feeder visitation. For this experiment bees will be trained to a scented feeder (sucrose concentration to be determined from previous experiment). Once bee number on the feeder have stabilized, the feeder

will be removed and replaced by a choice array of artificial flowers differing only by their respective colour (all containing the same sucrose solution and carrying the same scent than the original feeder). Spontaneous landing on the various colour will be recorded. Shape preference will be evaluated in the same manner.

The result of these two experiments will then be used to test the relative attractiveness of different chemical and flower scent extract by measuring the rate recruitment on scented feeders. In parallel trapping experiment will evaluate the spontaneous attractiveness of each scent or chemical.

Brief protocol for experiment 1

Experiment 1: Sucrose content preference (The methods is the same for evaluating fructose or Glucose content)

1. Prepare identification tag for each feeder indicating scent, sugar content, date, location and experimental repetition (to be placed on the top of the feeder for easy photo identification).
2. Test solution: 20%, 30%, 40%, 50% and 60% (weight/weight) sucrose solution.
3. Scent: Lemon, Almond, Rose, peppermint, vanilla (Test solution and scent association will be counterbalanced. See table 1)

Dilution (w/w)	Repetition 1	Repetition 2	Repetition 3	Repetition 4	Repetition 5
20%	Lemon	Vanilla	Peppermint	Rose	Almond
30%	Almond	Lemon	Vanilla	Peppermint	Rose
40%	Rose	Almond	Lemon	Vanilla	Peppermint
50%	Peppermint	Rose	Almond	Lemon	Vanilla
60%	Vanilla	Peppermint	Rose	Almond	Lemon

Table 1: scent counterbalancing

Note: Each repetition will be performed at different site or if not practical with at least a week interval between each repetition if a site need to be reused.

4. Collect forager bee from flower in tubes (5 bees per tubes).
5. Place bee on feeders and release the bees while they are feeding.
6. Record bee population on each feeder every (5 min) by taking a photo (manual count to be done from photos)

Note: It may be interesting to run the same experiment using fructose solution since fructose solution do not seems to induce recruitment in Apis mellifera (to be tested concurrently).

Organisation – The University of Sydney

Principal Researcher – Ben Oldroyd

Project Title – Inter-specific matings between *A. cerana* and *A. mellifera*?

Timeframe – 2 (29/05/2012-15/05/2014)

Industry Funding – $56, 230

Project Summary: This project will quantify the threats to the Australian honey bee industry associated with interspecific matings by the following experiments: 1) In Cairns, the researchers will perform reciprocal artificial inseminations of *A. cerana* and *A. mellifera*. The researchers will study the eggs of the queens to determine if there is embryogenesis. The researchers will allow some brood to emerge in an incubator to quantify the proportion of offspring that are haploid males, inviable hybrids and thelytokous females. The researchers will use microsatellites to confirm the maternity and (lack of) paternity in the offspring. 2) In the Solomon Islands where there are extremely dense populations of the Java strain of *A. cerana*, the researchers will determine the drone flight time of the males of both species to see if there is overlap. If logistically feasible, the researchers will determine the location of DCAs of *A. mellifera* and *A cerana*. Finally, the researchers will examine the offspring of *A. mellifera* queens that we allow to naturally mate with *A. cerana* males.

Research in Progress report (at 1 May 2013)
20% of a sample of Mellifera queens from China had Cerana semen in their spermatheca. We are waiting on a shipment of A. mellifera queens mated in Cairns, which should arrive next week.
We artificially inseminated 2 Mellifera queens with Cerana sperm in Cairns. We found no evidence of thelytokous reproduction. We DID induce thelytoky in a control queen inseminated with saline. Thus it may be manipulation of the genital tract, rather than heterospecific matings that induces thelytoky. The finding that thelytoky can be induced by inseminating with saline is exciting, with potential applications in breeding and importation.
20 Cerana queens from DAFF collections did not show any heterospecific semen. Thus we suspect that Cerana males can mate with Mellifera queens but not vice versa.
We determined that there is overlap between the drone flight times of Cerana and Mellifera in Cairns. Drone trapping attempts suggested that the congregation areas overlap (i.e. we saw but did not trap).
Bruce White has been unable to contact any beekeeper in the Solomons. I feel that it would be better to devote the funds to working on the Cairns population rather than an attempt to set up work in the Solomons from scratch. [RIRDC has approved this approach.]

Organisation – AgEconPlus Pty Ltd
Principal Researcher – Michael Clarke
Project Title – A strategy to address concerns of countries that import Australian honeybees
Timeframe – (1/6/2012 – 28/09/2012)
Industry Funding – $30, 000

Completed
Final report provided to the AHB T2M Management Group on 4 October 2012.

Organisation – CSIRO
Principal Researcher – John Roberts
Project Title – Establishing the disease status of *A. cerana* Java strain in the Cairns region
Timeframe – (1/06/2012-4/06/2013)
Industry Funding – $109, 212
Project Summary – The objectives for this study are to establish the disease status of the Asian honeybee and the European honeybee in the Cairns region. With this information the researchers will aim to identify the possible transferability of pathogens from the Asian honeybee to the European honeybee in the Cairns region. Identification of honeybee pathogens will involve a two-pronged approach. One approach (1) will engage metagenomic sequencing while the other approach (2) will use standard laboratory procedures as described by Anderson (1990, J. Apic. Res. Vol 29: 53-59) and Chen (2004, J. Inv. Path. Vol 87: 84-93). Metagenomic sequencing of DNA and RNA from pooled samples of *A. cerana and A. mellifera* will be performed at the Biomedical Research Facility based at the Australian National University. Genomic sequence data will be analysed and compared with public sequence databases to assemble partial genomes and identify known and unknown pathogens. The second approach will use bioassays involving the injection of honeybee extracts into pupae and adults of both *A. cerana* and *A. mellifera* to propagate viruses. PCR and serology techniques will be used to identify known viruses. Injected bees that show signs of disease, but are negative in PCR and serology tests, will be further tested to isolate novel pathogens.

Annual Progress Report (as at October 2012)
Bee samples were collected from the Cairns region between 16-7-12 and 27-7-12. Several hundred adult bees were collected from 7 Apis cerana and 14 Apis mellifera colonies, and larvae were

collected from 3 and 5 of these colonies, respectively. An additional 10 adult A. cerana samples (10-20 bees each) were provided by DEEDI. Brood comb was inspected from 4 A. cerana and 14 A. mellifera colonies and samples taken of suspected diseased brood. Chalkbrood and possibly American foulbrood and sacbrood disease were detected in A. cerana colonies, while chalkbrood and possibly European foulbrood and sacbrood disease were detected in A. mellifera colonies. Small hive beetle was also found in A. mellifera colonies and from one dead A. cerana colony provided by a local beekeeper. In addition, adult A. cerana have been tested microscopically for Nosema, tracheal mites and malpighamoeba, with low levels of Nosema found in 4 A. cerana colonies.

Bioassays to propagate viruses in pupae were conducted in Cairns using adult and larval extracts from 3 A. cerana and 5 A. mellifera colonies. All injected pupae and extracts have been tested against available antisera, which detected Kashmir Bee Virus in A. cerana and A. mellifera samples and Black Queen Cell Virus in A. mellifera samples. Positive samples have been confirmed by diagnostic PCR.
Extracts of viral RNA from adult A. cerana and A. mellifera are currently being prepared for deep sequencing using Illumina sequencing technology.

Collection of bee samples from the Cairns region is completed, although it was hoped that more A. cerana colonies with brood would be available. Access to live brood was essential for the bioassays to propagate viruses and for brood comb inspections. Despite attempts to have several suitable A. cerana colonies identified by DEEDI prior to arriving in Cairns, only one colony was available. The other 6 colonies collected were found through public reports during our trip and only 3 colonies were suitable for a bioassay. However, the distribution of these samples across the Cairns restricted area will be suitable to meet the project objectives.

Bioassays and testing against antisera has been completed for all A. cerana and A. mellifera samples. Only few positive samples to common viruses (Kashmir Bee Virus and Black Queen Cell Virus) have been detected with available antisera despite signs of viral infection in many injected pupae. More sensitive testing of these samples through virus purification and deep sequencing is expected to reveal the presence of any undetected viruses.

The planned research was presented at the Queensland Beekeeper's Association at Bribie Island, QLD in June 2012.

Organisation: CSIRO
Principal Researcher – Simon Barry
Project Title – Risk assessment of ports for bee pests and pest bees
Timeframe – (15/06/2012-1/10/2013)
Industry Funding – $50, 600
Project Summary – This project will estimate the relative likelihood of establishment of pest bees and/or bee pests at Australian ports based on the best available information. The researchers will do this by combining likelihood of entry with likelihood of establishment. To estimate likelihood of entry, the researchers will analyse shipping records and combine this with available interception data. The researchers will develop a species distribution model for A*. mellifera* and *A. cerana* to underpin estimates of likelihood of establishment across Australia's ports. This project directly links with other research conducted on this topic, including the recently completed ABARES report 'A benefit-cost framework for responding to an incursion of Varroa destructor'.

Research in Progress report (at 1 May 2013)

The project is in full swing now after key staff have delivered on other contractual commitments.

Accessing data on port layout:

The desktop nature of the study precludes site visits to no more than a few Australian ports of first call, we have subscribed to the IHS Maritime Sea-Web Ports Online module to facilitate access to the physical layout (berthing locations etc.) of all the ports or interest.

Building species distribution models:

From each state and territory we have contacted both an industry and government stakeholder to start an exchange of information on the distribution of feral bees in their state as means of calibrating better species distribution models for A. mellifera and A. cerana. We have also organised spatial GIS layers to underpin this modelling.

Assessing risk models:

We have had discussions with AQIS staff to gather information factors relating to commodities, countries and ports that influence the risk of pest bees or bee pests successfully mounting an incursion.

Analysing shipping data:

We have undertaken preliminary analysis of the arrival pressure of shipping containers by port. We note that industry belief regarding is highly context specific, and this may not be reflected in broadscale analysis of ship movements. For example, cargo from NZ is a particular concern for an introduction of Varroa on A. mellifera, yet small scale supply vessels operating out of Northern Australia are considered a major risk for introduction of A. cerana and Varroa.

Asian honey bee Transition to Management Program

Progress Summary Report, May 2013

This publication has been compiled by Russell Gilmour of Biosecurity Queensland, Department of Agriculture Fisheries and Forestry.

Contents

This document is prepared for the Transition to Management Group meeting on 28 May 2012.

Other relevant documents provided separately include:

- *DRAFT – Asian honey bee Transition to Management Program, July 2011 – July 2013, Final report*
- *North Queensland apiarist survey report*
- *Asian honey bee (Apis cerana) remote nest treatment* report

Program Highlights

Detections

There have been 828 detections of Asian honey bee (AHB) nests and swarms since May 2007.

Note: The known infested area of Asian honey bee is restricted to an area around Cairns; north to Bonnie Doon (near Mossman), west of Atherton and Mareeba and south to South Johnstone. The program has ceased surveillance and responding to public reports in the Known Infested Area (KIA), unless the report is considered a new incursion, or where there is a risk of aided spread, or on the edge, or outside of the KIA. In these instances officers respond in accordance with 'Responding to public notifications of Asian honey bee' policy. These detections are referred to as Detections of Interest and since the last TMG meeting they are:

Outside the KIA

Nil detections. The Queensland Bee Surveillance program covers key ports of Queensland. Public reports are responded to in accordance with the *Responding to public notifications of Asian honey bee* policy.

On the edge of the KIA

Nil detections. Surveillance has been conducted on the northern, southern and western edges of the KIA since the previous April 2013 report.

Public reports

41 public reports of AHB have been received since 16 April 2013 bringing the total number of reports since 1 July 2012 to 495.

Industry engagement

- Continued to meet and engage with industry at a local and state level.

Community engagement

- Asian honey bee destruction techniques video completed and approved for publishing on YouTube.
- Final draft of AHB Manual completed and sent to editor.
- AHB content provided to the Transport Workers Union (TWU) who will be running a general awareness campaign around the AHB transport industry poster through their website and journal.
- AHB article provided to Trevor Weatherhead, Executive Director Australian Honey Bee Industry Council, for distribution to various industry publications.
- *North Queensland Apiarist Survey Report* completed and submitted to SAG and TMG.
- Draft of new website modifications and content developed and in review process.

- Draft content prepared for Queensland Government Business Industry Portal (BIP) website, targeted at stakeholder focused information for pest control operators and industry.

- Final social media posts to be run through June finalised and approved.

Science

- Drafts of the following were prepared for SAG:
  - Asian honey bee (*Apis cerana*) detection and destruction efficacy reports
  - Behaviour and ecology report
  - Bait station/attractant improvement report
  - Asian honey bee (*Apis cerana*) spread modelling report.

- The following reports were completed for TMG:
  - Asian honey bee (*Apis cerana*) remote nest treatment – Final report
  - Far North and North Queensland Apiarist Survey Report.

- All results received for samples sent away for parasitological tests were negative for *Varroa*, *Tracheal* and *Tropilaelaps.* Some results received for *Nosema* disease testing were positive for *Nosema ceranae*, AHBIC have been advised of the results.

- Provided pollen samples to Professor Caroline Gross to aid in determining which plants AHB collect pollen from.

Current and future program activities

Community engagement

- The *Guidelines for industry destroying nests or swarms Asian honey bees* reviewed and re-published on the QDAFF website.

- Detection and destruction video is scheduled to be published on YouTube and linked to the QDAFF AHB website in early June.

- Final new website content loaded into RedDot in preparation for handover and maintenance by QDAFF Apiary Officers post 30 June 2013. Final content sent to BIP web team to be loaded.

- Asian honey bee manual that incorporates detection and destruction procedures and other considerations to be completed by 30 June 2013.

Operations

- A workshop is planned to hand over AHB operational activities to QDAFF Apiary Officers from 1 July 2013, e.g. responding to public reports and suspect new AHB incursions.

- Surveillance for AHB around the edge of the KIA.

Science

- Report writing is on track.

- Presentations to stakeholders at Far North Queensland Pest Advisory Forum, ‘Pest Fest, and AHB lecture night at Cairns Botanic Gardens.

- Continue collaboration with external researchers.

Appendix 1 **Cessation Strategy progress**

The general community has an awareness of AHB and their role and responsibilities in its management

Stage 1

Key Performance Indicator	AHB T2M Project No.	Due Date	Status	Comments and activities since last report
Produce and distribute a 'Fact Sheet' about AHB and how the public should respond to AHB nests and swarms.	AG1 D. (i)	31.12.11	**COMPLETED**	• New AHB T2M brochure printed and in use. Brochure is available on the internet, used at community engagement and industry events and delivered as a letterbox drop to premises in high risk areas and on the edge of the KIA. It is also provided to people throughout Queensland.
Update the Biosecurity Queensland website with comprehensive details on Asian honey bees, including identification, how to manage them, produced and available.	AG1 A. (i), B. (i)	Ongoing to 30.06.13	**ON TRACK**	• Website has been routinely evaluated and updated ~ October 2011 ~ December 2012 (online reporting tool added to website) ~ April 2012 ~ June 2012 • Updates include embedding links to the Remote Nest Treatment video on YouTube, adding completed reports, updating the Known Infested Area (KIA) map and adding a new image gallery. • The website continues to be maintained and updated. • BQ Apiary Officers to take on responsibility for maintenance of the AHB website following cessation of the AHB T2M Program.
Community engaged through a variety of methods e.g. media releases, TV and radio interviews, attending community festivals and regional shows.	AG1 D. (i) – (vii)	Ongoing to 30.06.13	**COMPLETED**	• Awareness material developed and in use includes brochures, identification cards, variable message signs on roadsides and a poster for display at transport companies.
Stage 2				
Ensure the community and industry are informed and up-to-date regarding the status of the transition to management program and	AG1 D. (i) – (vii)	31.12.11 – 30.6.13	**ON TRACK**	• Cessation Strategy developed and approved by T2M Management Committee December 2012. • Implementation of Cessation Strategy commenced. • Article provided to pest control industry for publication.

where they can access assistance.				Articles also planned for transport and bee keeping industries. • Presentations planned for Far North QLD Pest Forum and lecture to environmentalists.
The Customer Service Centre processes are updated to provide a clear decision tree regarding AHB, new incursions, those inside and outside the KIA and reflect the current status of government intervention.	AG1 D. (i) – (vii)	31.12.11 – 30.6.13	**COMPLETED**	• Customer Service Centre procedures developed approved and implemented. • Apiary and Animal Biosecurity & Welfare staff informed and participating in reporting process handover of AHB T2M response activities planned for first week in June..

Transport companies are alert to actions that will limit the spread of AHB

Stage 1

Key Performance Indicator	AHB T2M Project No.	Due Date	Status	Comments and activities since last report
Intensively engage with transport industries inside the KIA and surrounding edge. Consult and develop a method to incorporate the awareness of AHB into the transport industries to reduce the risk of aided spread of AHB through commercial transport pathways.	AG 6 D	30.06.12	**ON TRACK**	• Extension materials such as ID cards, brochures and posters supplied to transport companies. • Contact ongoing with the main shipping, rail and freight transport companies in Cairns. • Article for publication in Industry magazine planned for June 2013.
Stage 2				
Produce and develop a poster with targeted messages for transport industries.	AG 6 D AG1 D. (v)	31.12.12	**COMPLETED**	• Transport poster printed distributed inside the KIA with plans for wider distribution.
Develop and deliver awareness campaigns for transport industries within a 200km radius from the edge of the KIA.	AG 6 D	31.3.12	**COMPLETED**	• Information and training package developed and provided to transport businesses throughout the KIA and beyond to Townsville.
Engage and increase awareness with transport companies and their industry groups Queensland wide.	AG 6 D	30.6.12	**ON TRACK**	• Transport poster printed and distributed inside the KIA , the edge of the KIA and planned for state-wide distribution.
Engage and increase awareness broadly within	AG 6	30.6.12	**ON TRACK**	• Article planned for national publication in June 2013.

the Australian transport industry through the peak industry body and national publications.	D			

Pest control operators know how to identify and safely respond to reports of AHB

Stage 1

Key Performance Indicator	AHB T2M Project No.	Due Date	Status	Comments and activities since last report
Consult, develop and make available a guideline for pest controllers on what tools are available and how to use them when responding to an AHB call for help.	AG 1 D (v)	31.12.12	COMPLETED	• Guideline for destruction of AHB nests and swarms published, provided to industry and available on internet. • Published on Biosecurity QLD website.
Build awareness of available identification tools on the Biosecurity Queensland website with comprehensive details on Asian honey bees, including identification and how to manage them.	AG1 B. (i) D. (vi)	Ongoing to 30..6.12	COMPLETED	• Biosecurity website has been promoted at over 30 community and industry events, social media and media interviews. • The website continues to be updated and promoted and will be available post 30 June 2013.
Provide hands-on training workshops to pest control operators that are within and on the edge of the KIA.	AG1 AG3 AG6	30.6.12	COMPLETED	• Hands on training has been provided to pest controllers in the KIA and as far south as Townsville.
Engage and increase awareness with pest management industry in north Queensland, including hands on training	AG3 AG6	30.6.12	COMPLETED	• Pest control industry representatives have been engaged. Pest controllers are destroying AHB nests and swarms where requested. • Article provided to industry organizations for state and national publication.
Stage 2				
Develop training videos showing methods of swarm and nest destruction that the industry can use to help train other members in their business.	AG2 B. (i)	31.12.12	ON TRACK	• Filming commenced in February and has been completed. • Editing, narration etc in progress. The video is scheduled to be published on the website late May - early June.
Engage and increase awareness with the pest controller industry Queensland wide.	AG6 D,	30.06.13	ON TRACK	• Pest control industry representatives have been engaged. Pest controllers are destroying AHB nests and swarms where requested

Engage and increase awareness broadly with the Australian transport industry through peak industry body and national publications.	AG6 D,	30.06.13	**COMPLETED**	• Article provided to industry organizations for state and national publication.

Indigenous rangers and government officers have knowledge, tools and training in AHB identification and management

Stage 1

Key Performance Indicator	AHB T2M Project No.	Due Date	Status	Comments and activities since last report
Provide hands on workshop training sessions to indigenous rangers, local government officers, other government agencies and Biosecurity Queensland staff in the management of AHB.	AG4 A. AG2	31.03.12	**COMPLETED**	• Hands on training has been provided to indigenous rangers, local government officers, other government agencies and biosecurity Queensland. • 'An evaluation of Asian honey bee workshops conducted in the Known Infested Area for Critical Stakeholders' report has been published.
Increase awareness and availability of produced materials that they can use to deal with AHB situations.	AG 4 B.	Ongoing	**ON TRACK**	• Awareness campaigns were conducted through workshops held with indigenous rangers and government officers. AHB knowledge, tools and training were delivered to these target audiences at workshops and are being used where necessary and appropriate. • AHB manual covering detection and destruction techniques is in design stage prior to publicaiton. The manual will provide affected stakeholders with tools they can use to manage AHB following cessation of the T2M Program
Conduct presentations at local and regional pest management forums to engage with large numbers of local government and state government staff to increase awareness.	AG4	Ongoing	**ON TRACK**	• Awareness has been generated at quarterly FNQ Pest forums throughout Nth Queensland regions. • A presentation and nest and swarm removal demonstration was held as part of the Northern Exposure Pest Conference (Townsville). • Presented at Far North QLD Pest Forum 21 May 2013.
Provide hands on AHB training to the north	AG1	31.12.12	**COMPLETED**	• Apiary Officer has visited Cairns and worked with

Queensland Apiary Officer in AHB surveillance and destruction.	AG2			• program staff on 3 occasions. • Nth Queensland Apiary Officer has conducted intensive engagement 3klms around the Port of Townsville after the detection of AHB at the port in January 2013.
Involve and consult all Queensland apiary officers and provide them with the tools to implement their responsibilities under the Responding to public notifications of Asian honey bee policy.	AG1 AG2	30.06.13	**ON TRACK**	• Monthly meetings are held with Apiary Officers. • Consultation and joint developments of processes to ensure smooth handover of Web, CSC, AHB materials and knowledge is occurring. • Apiary officer handover workshop to be conducted 5 June 2013.
Stage 2				
Information is made available to environmental and agricultural departments in other states and territories and the federal government regarding how to manage and control Asian honey bees.	AG5 B. (i)	31.03.12	**ON TRACK**	• AHB information generated to date has been provided to a range of environmental and government stakeholders via the internet and meetings. • AHB manual is at design stage prior to publication.
Integrate and document methods of validated detection and destruction techniques into an AHB manual to assist Biosecurity agencies with a toolkit to respond to and manage AHB incursions.	AG5 B. (i)	31.03.12	**ON TRACK**	• AHB manual is at design stage prior to publication. The manual will provide affected stakeholders with tools they can use to manage AHB following cessation of the T2M Program. • Some training provided to ADAFF and Biosecurity QLD officers in North Queensland.

Scientific and environmental community increase their research interest in AHB and increase collaboration with Biosecurity Queensland

Stage 1

Key Performance Indicator	AHB T2M Project No.	Due Date	Status	Comments and activities since last report
Literature review finalised and published.	AG2A	31.7.12	**COMPLETED**	• TMG group signed off on 19 February 2013.
Undertake research as outlined in the AHB T2M Operations Plan. • Efficacy of detection and destruction methods, including edge and port	AG2Bi-iii AG2C(v) AG5A AG5B(i-iii)	30.6.13	**ON TRACK**	• New target dates agreed to by SAG and TMG. • Draft detection and destruction efficacy reports provided to SAG 21 may 2013. • Draft bait station and attractant report provided to

surveillance • Effectiveness of bait stations • Analysis of all nest and honeycomb	QG2B QG2C QG2D QG2E			SAG 21 May 2013 • Nest and comb data collection completed data analysis on track. • Ecology and behaviour report submitted to SAG 21 May 2013 (incl. nest and swarm attributes, drone flight times, nest observations, floral preferences)
Collaborate with external research scientists on AHB research.	AG2	30.6.13	**ON TRACK**	• Regular collaboration with external researchers including Prof Ben Oldroyd, Dr. David Guez and Prof Caroline Gross.
Stage 2				
Outcomes of the research are released.	AG2(i,iii)		**ON TRACK**	• Literature review released on PHA & BQ website • Research updates presented to NAQS & AQIS
Validate the most effective methods of detection and destruction techniques.	AG2Bi-iii AG5A AG5B(i) QG2B	30.6.13	**ON TRACK**	• Efficacy trials completed, draft reports provided to SAG 21 May 2013.
Integrate and document methods of validated detection and destruction techniques into an AHB manual to assist Biosecurity agencies with a toolkit to respond to and manage AHB incursions.	AG2(i) AG5B(i)	31.03.13 31.3.12	**ON TRACK**	• Manual text completed and manual is now in design stage before going to publication.
Guidelines and toolkit are made available for stakeholders.	AG4A.	31.03.12 Ongoing	**ON TRACK**	• Guidelines completed and manual at design stage.
Research findings are presented at scientific conferences and other suitable forums, e.g. Apiary industry meetings.			**ON TRACK**	• Contact with industry occurs regularly. • Contact with stakeholders occurs regularly e.g. Cape York Pest Management Advisory Group. • Lecture presentation at Cairns Botanic Gardens planned for June 2013.

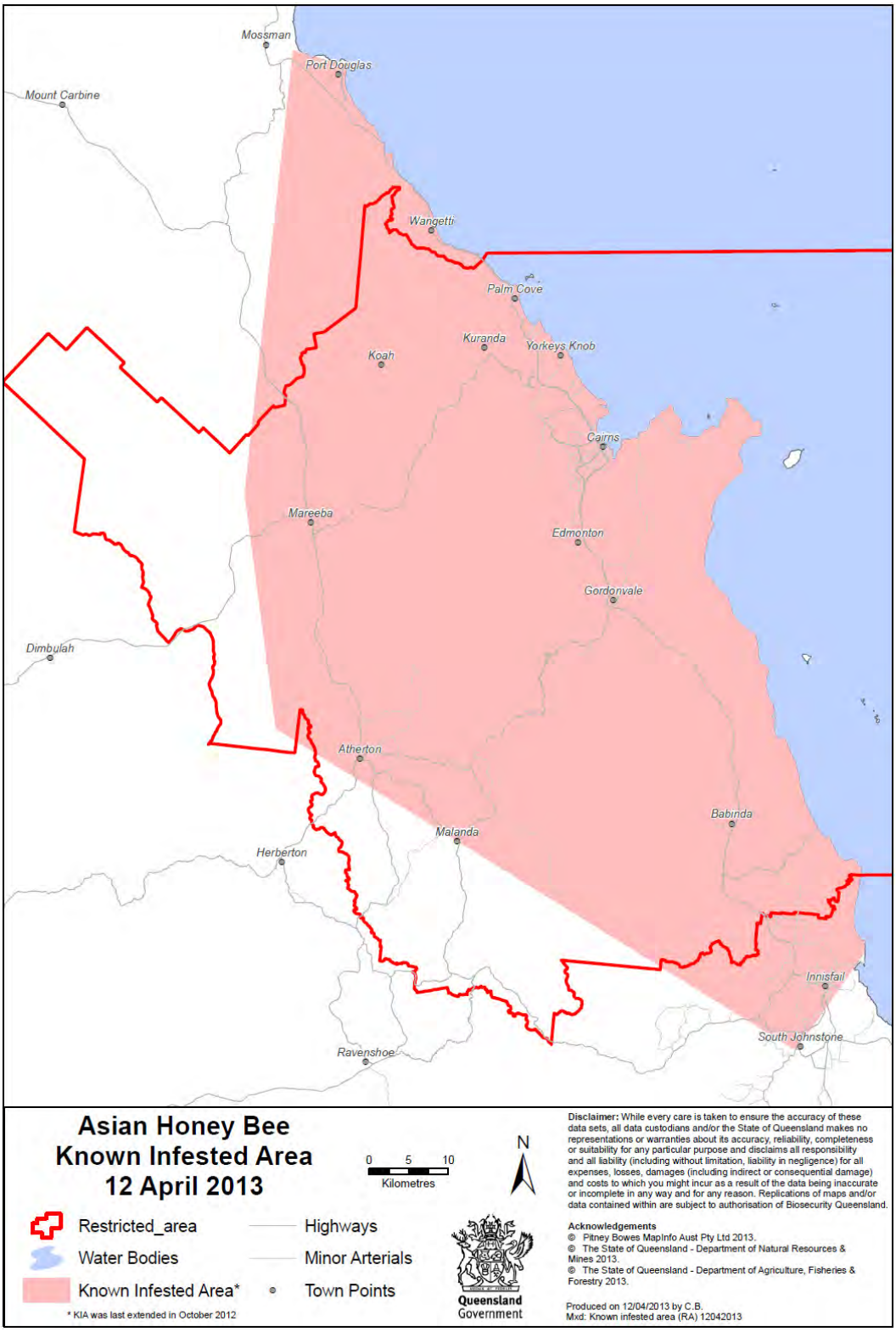
Beekeepers understand and actively manage the risks and impacts of AHB

Stage 1

Key Performance Indicator	AHB T2M Project No.	Due Date	Status	Comments and activities since last report
Consult with the beekeeping industry group	AG3	31.12.11	**ON TRACK**	• Local and state liaison committees established.

and address issues that affect them and what tools they need to manage AHB.	A. (iii)			
Provide hands-on training workshops to beekeepers that are within and on the edge of the KIA as well as to beekeepers that may be called to assist in the identification and sampling of AHB in other areas of Queensland.	AG3 D.	31.03.12	**COMPLETED**	• Training provided to members of the Cairns and Tableland Beekeepers Association and Townsville Beekeepers Association.
Provide beekeepers in north Queensland with information and tools needed to identify and manage AHB.	AG3 D.	31.03.12	**COMPLETED**	• Attend Tableland beekeepers association meeting monthly. • Information provided to Townsville beekeepers Association meeting. • Science update given to local beekeepers (Townsville & Cairns).
Stage 2				
Beekeepers from around Australia are advised and information is provided in how to undertake AHB surveillance through the beekeeper volunteer program.		30.6.13	**ON TRACK**	• Volunteer program is assisting in this. • PHA and QDAFF websites contributing to this. • Collaboration and input into numerous external articles for national and international magazines regarding Asian honey bees. • Provided AHBIC an article re AHB T2m program for distribution to bee keeping industry publications 23 May 2013.
Compliance with movements controls required under legislation is achieved by issuing longer term movement licences.	AG6 A.	31.12.12	**COMPLETED**	• The process of applying for movement licenses has been enhanced to reduce the regularity of applying for a license.
In consultation with the honey bee industry, develop and coordinate an industry response list that Biosecurity Queensland staff can utilise for assistance with suspect AHB detections.	AG6 D.	30.06.13	**ON TRACK**	• An industry group exists and their assistance is limited due to legal liability issues. • Where necessary pest controllers will be used for destruction of suspect AHB.

Appendix 2 **Current Known Infested Area**[1]



[1] The last detection which increased the spread of AHB was 15 January 2013.

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Asian honey bee (*Apis cerana*) remote nest treatment

Asian honey bee Transition to Management Program

This publication has been compiled by Dr. Anna Koetz and Shirin Hyatt of the Asian honey bee Transition to Management program, Department of Agriculture, Fisheries and Forestry.

Contents

Summary

A project under the Asian honey bee Transition to Management Plan was to investigate alternative control techniques and attractants and to finalise development of remote poisoning by validating techniques and refining protocols to reduce risk of non-target poisoning and minimising adverse effects on environment and native fauna. This project was to be delivered by 30 June 2012.

Biosecurity Queensland consulted the Scientific Advisory Group to develop a research proposal with operational protocols and it was agreed that the aim of the research was to:

i. determine the effectiveness of remotely killing individual, feral *Apis cerana* nests using fipronil,

ii. investigate the potential of this method as a useful management tool for *A. cerana*, and

iii. determine the potential effects of this treatment method on non-target species.

Between February and June 2012, 19 remote treatment trials with fipronil-laced sugar syrup were conducted on 15 *A. cerana* nests.

The treatments showed that fipronil was very effective at suppressing and killing individual *A. cerana* colonies if more than 20% of bees relative to nest entrance activity took fipronil back to the nest. The percentage of bees taking back fipronil relative to the nest entrance activity was the best predictor of treatment success.

However, the usefulness of remote treatment as a method to manage *A. cerana* in Australia is doubtful due to several reasons:

1. Not all targeted nests died as a result of remote treatment, even when more than 1000 bees took fipronil back to the nest.

2. Some colonies increased in activity as early as five days after treatment and needed a second treatment. However, treating a second time was not always possible due to difficulties in re-training bees back onto a feeding station.

3. There is a risk to non-target species from fipronil residue in dead and dying bees (bees contained up to 0.130 µg fipronil/bee) and in the comb (0.096 µg fipronil/g of comb). Particularly at risk are native invertebrates (e.g. *Tetragonula* sp.) and birds (e.g. Rainbow bee-eater), as well as feral and managed *Apis mellifera*.

4. A vast amount of time and effort is required to conduct trials in accordance with the required permit and WH&S regulations. In total, 1767.5 hours were spent on the treatments, which equal an average of 117.8 hours per trial, or 93 hours per treatment. The most time was spent bee-lining, training and maintaining bees on a feeding station, as well as monitoring nests after treatment.

5. Knowing the number of bees taking back fipronil is not sufficient to confidently predict success. It is necessary to know the nest entrance activity to determine a target number of bees, and to confidently predict success. To know the nest entrance activity, a nest needs to be found. And once a nest is found, then manually killing the nest is vastly more time and cost-effective than remote treatment.

6. Based on research to date, it is considered that sufficient data has been collected to evaluate the effectiveness and usefulness of remote treatments (i.e. agreed research

aims (i) and (ii)), but further research should be conducted on research aim (iii) by determining the effect that dead bees and comb containing fipronil has on non-target species, and ideally the toxicity of fipronil for *A. cerana* and any non-target species that may come into contact with fipronil.

Introduction

Honey bee colonies (both feral and managed) may need to be destroyed for various reasons. In particular, effectively destroying unwanted honey bee pests such as *Apis cerana* in Australia is highly desirable. Because feral colonies are generally difficult to find, baited sugar feeding stations are often used, where bees collect sugar syrup (laced with bait), which is then taken back to the nest, killing or suppressing the entire nest (Taylor, Goodwin et al., 2007). To achieve this, sufficient amounts of bait need to be taken back to the nest, which means that a delayed response to the bait is required so that foragers can make several trips between the feeding station and the nest. In addition, the bait station needs to attract sufficient numbers of bees (Taylor, Goodwin et al., 2007). Finally, the bait used needs to be safe for humans to use, and it needs to have low environmental impact, particularly on non-target species (Taylor, Goodwin et al., 2007).

A number of different bait chemicals have been trialled, with varying success, for their effectiveness in destroying or suppressing feral colonies, including, for example, Gramoxone, Avermectin and Ivermectin, Orthene 75S (acephate) and fipronil (reviewed in Taylor, Goodwin et al., 2007). Taylor et al (Taylor, Goodwin et al., 2007) trialled seven different chemicals in New Zealand and found that fipronil-containing insecticide was the most effective to destroy feral *Apis mellifera* colonies, i.e. of the seven chemicals, fipronil was the most toxic at low concentrations with a 3-hour response delay, while being relatively safe for humans.

Insecticides that contain fipronil as the key active constituent have also been trialled for controlling *A. mellifera* bees in Queensland, New South Wales and Western Australia (Keshlaf, Spooner-Hart et al.; Warhurst, 2001; Clark, T. et al., 2006) and for *A. cerana* in the Solomon Islands (Anderson, 2010). Two preliminary trials using fipronil on *A. cerana* were carried out in Cairns by Biosecurity Queensland in early 2011 (De Jong, 2011). These trials determined a high effectiveness of fipronil as a means of eliminating or suppressing bee colonies.

The goal of this study was to gain a better understanding of how varying forager levels of *A. cerana*, carrying fipronil back to the nest from a remote treatment station, would suppress or kill an *A. cerana* nest of a certain size.

The specific aims of our study were (1) to determine the effectiveness of remotely killing individual, feral *A. cerana* nests using an insecticide containing fipronil as the only active constituent, (2) to investigate the potential of this method as a useful management tool for *A. cerana*, and (3) to determine the potential effects of this treatment method on non-target species.

With this project due to be finalised by 30 June 2012, the purpose of this report is to update the Scientific Advisory Group (SAG) and Management Group with research details and results for the 15 trials (19 treatments) conducted by Biosecurity Queensland and to seek advice on any next steps.

Methods

Throughout the report, a “trial” is any treatment(s) conducted on a particular nest, i.e. we conducted 15 trials on 15 nests. “Treatment” is the actual treatment using a fipronil-baited feeding station. One nest (or trial) may involve several treatments. We conducted 19 treatments on 15 nests (=15 trials).

Prerequisites for treatments

Treatments commenced when:

i. a suitable *A. cerana* nest was located,

ii. regular movement of bees from the sugar feeding station to the nest was established,

iii. more than 20 bees were on the feeding station at any one time,

iv. the syrup station could be moved to a distance of approximately 80 metres from the nest,

v. the weather was fine, or there was a break in the weather,

vi. a licensed pest controller was available to perform the treatment, and

vii. the nest was able to be checked 24 hours, 48hr and 72 hrs after the treatment.

Feeding station

Bees were trained onto a feeding station containing sugar syrup (2kg of sugar to 1.5L of water plus one drop of lavender oil) by placing the feeding station near a floral source that bees were observed on. Once bees foraged on the feeding station, it was slowly (sometimes over several days or weeks) moved to approximately 80 meters from the nest. The final distance from the feeding station to the nest was measured and recorded. Weather observations including temperature, humidity, and cloud cover were also recorded each time observations of the nest or feeding station were made.

Nest Entrance & Foraging activity

Immediately prior to the remote nest treatment taking place, the level of nest entrance activity was counted at the nest targeted for treatment. This was conducted for a one-hour period (or for a shorter period that was then extrapolated to one hour), using a hand clicker, by clicking every time a bee flew into the nest. The foraging activity at the feeding station was also counted for 10 minutes immediately before the fipronil bait station replaced the feeding station. Counting was not carried out at 72 hours prior to the commencement of the treatment as requested by SAG due to the difficulty and unpredictability of training and maintaining bees on the sugar feeding station, the unpredictability of the weather, as well as staff shortages.

Fipronil treatment

When sufficient numbers of bees were feeding on the station (>20) and all other conditions were in place for a treatment to proceed (see ‘pre-requisites’ above), the regular feeding station dish containing sugar syrup was replaced with the bait station containing Regent 200SC (until 17/04/2012) or Termidor Residual Termiticide (from 17/04/2012) Insecticide and sugar syrup formulation (0.01g fipronil/L).

The baited feeding station was monitored until the target number of foragers feeding on the baited syrup was reached, or after one hour had elapsed (whichever occurred sooner). At this time the treatment was stopped by removing the baited station from the field and immediately replacing it with the original feeding station containing pure sugar syrup (no chemicals). If the targeted level of foraging activity was not achieved within the one-hour time limit, the experiment was stopped and the number of bees that had actually fed on the baited syrup was recorded. At five-minute intervals during the trial, behavioural observations were recorded, as was the number of bees feeding on the station. If non-target species were seen to be entering the station, they were actively discouraged from entering the station or destroyed, and a record of the occurrence made.

Once the baited station was replaced with the feeding station (no chemical), feeding station activity as well as nest entrance activity were monitored for up to 30 minutes, to assess the activity remaining at both.

Weather and time permitting, Biosecurity Queensland staff returned to the nest site every 24 hours after treatment to monitor the nest and feeding station foraging activity over a one-hour period by using the hand clicker. This was conducted for up to one week following a treatment, and every two to three days thereafter.

If nest entrance counts remained at zero for several days, the nest was checked using an endoscope, or, if too high, it was checked by a tree lopper contractor. Nests that were confirmed dead were extracted where possible. When the nest was considered dead (i.e. no bees were seen on the comb or nest activity remained at zero), the nest was extracted by Biosecurity Queensland staff or by a contractor. If the nest was not extractable the endoscope was used to capture photos/video of the dead nest components inside the nesting cavity. Nest entrances were plugged with paper towelling following successful destruction of the nest by remote treatment to reduce the possibility of residual effects of fipronil in the environment.

For extractable nests that were successfully destroyed, nest components were examined in the laboratory. Data recorded included a count of any dead bees found, number, size, area and weight of combs, the number of capped and uncapped worker, drone and queen cells present, and the number of cells containing nectar or pollen.

Second treatments

If the nest was not destroyed and showed signs of increasing nest entrance activity, a second treatment was conducted once nest entrance activity was at similar levels seen prior to the first treatment. The second treatment was done following the same procedures as for the first treatment, but with a higher target number of bees taking fipronil back to the nest if possible.

Target number of bees

One of the main objectives of this study was to determine the number of bees required to take fipronil back to the nest given a nest of a certain size. As the nest size could not be determined until after the nest was destroyed, and then only if a nest was extractable, an alternative, objective measure was needed to determine an *a priori* target number of bees.

Due to the difficulties of extracting most nests and lacking any other measure of nest size, the number of bees entering the nest was used as an alternative to actual nest size. A range of target numbers (expressed as percentage relative to nest entrance activity) were then used in order to determine the minimum number (percentage) of bees feeding on the bait station to effectively kill a nest of a certain size.

Data analysis

Nest size versus nest entrance activity

In order to determine how well nest entrance activity predicted nest size, nest entrance activity was plotted against different measures of nest size (including size, area and weight of the combs, and the number of cells of the combs). However, due to the low number of extractable nests (N = 7) no statistical analyses could be conducted.

Treatment success

The level of suppression of a treated nest was measured as the nest entrance activity after the treatment, relative to the nest entrance activity prior to the treatment, expressed as a percentage, i.e. the nest entrance activity prior to treatment was set at 100%. This allowed comparisons to be made between nests of differing size/activities.

To determine the best predictor of treatment success (treatment success being measured as the number of days until a nest was dead), treatment success was plotted against the following measures as possible predictors:

- The number of bees feeding on the baited station
- The percentage of bees feeding on the baited station relative to the nest entrance activity prior to the treatment
- The percentage of bees feeding on the baited station relative to the feeding station activity prior to the treatment

Nests that did not die after treatment needed to be included in the analysis, and so their time until “death” was set at 39 days – two days longer than the nest that took the longest to die.

A regression analysis is still to be performed to determine statistical significance and validate any trends.

Treatment effectiveness/efficacy

The number of total person-hours required to conduct the remote treatment trials was recorded for each treatment in order to determine the efficacy of remote treatment.

Effects on off-target species

All efforts were made to exclude off-target species from the bait station. However, any non-target species that came close to landing on the baited station, or that landed on the baited station had to be destroyed. Any species observed foraging on dead or dying bees, or robbing the weakened nest of nectar or pollen, were recorded.

In addition, *A. cerana* that had been feeding from the baited station were collected from several trials and sent to the Biosecurity Queensland Residues Testing Laboratory, Brisbane, to be tested for fipronil residues. Bees collected included those flying off the station, as well as those fitting/seizing on the ground. Residue testing was also carried out on bees collected from the nest entrance 48 hours following treatment. Comb from one treated nest was also sent to be tested for fipronil residue.

Where possible, non-target invertebrates were also collected for fipronil residue testing.

Results

Between February and June 2012, 19 treatments were conducted on 15 nests. Eight of these nests were located in an urban/residential area, four in sclerophyll woodland, two in rainforest and one in a rural/agricultural setting (Appendix 1). Seven nests were extractable, eight could not be extracted.

Seven nests (46.6%) were successfully destroyed after one treatment. Four nests (26.6%) were successfully destroyed after a second treatment. In total, 11 nests (73.2% of nests) were destroyed by remote treatment. Of the four remaining nests (26.6%), two were not destroyed after the first treatment but a second treatment was not possible as bees could not be re-trained back onto the feeding station. Another nest was not destroyed after the first treatment but a second treatment could not be done as by the time a second treatment could proceed, the target nest was occupied by *A. mellifera*. The fourth nest was treated and nest activity highly suppressed after 24 hours. However, *A. mellifera* were found robbing the nest and so the remaining colony (including any *A. mellifera*) was manually destroyed and the trial aborted.

Treatments were also attempted but could not proceed at two nests. One nest was prepared and ready for treatment but on the day of treatment it was found that the colony had absconded and the nest was overrun by green ants. Bees from the second nest could not be trained onto a feeding station despite weeks of field effort. These two nests are not included in the 15 treated nests or in any of the results.

At two nests, the feeding station could not be moved to a distance of 80m due to the fact that even after several attempts to move the station to the preferred distance over a number of days, the feeding bees would not cooperate. Instead, a distance of 15m and 25m was used.

Nest size

Seven of the 15 nests were extractable. The remaining eight nests could not be extracted as they were found within house wall cavities that could not be dismantled. Although the area and number of cells of the combs are yet to be determined, combs

have been weighed in order to categorise the nests into different sizes. Nests varied from 10g to 1803g and were categorised into three size classes (Table 1).

Nest entrance activity showed a slight increase with nest seize (weight; Figure 1). A statistical test still needs to be conducted to confirm the significance of this trend. However, nearly 30% of the variation in the data is explained by comb size, an indication that there is some merit to this relationship.

Table 1: Weight of combs, and activity at nest and feeding station (actual and percent) prior to treatment as well as time until nest died for seven remotely treated *A. cerana* nests that were extractable (sorted by weight).

IP	Weight of combs (g)	Activity at nest (1 hr)	Activity at station (10 mins)	No. of bees taking fipronil	% (rel. to nest activity)	% (rel. to station activity)	Time until nest dead (days)
566	10	606	60	42	7%	70.0%	6
606	95	1060	356	60	6%	16.9%	Did not die
591	176	3096	282	484	16%	171.6%	Did not die
558	392	5916	255	1022	17%	400.8%	5
609	511	1294	134	222	17%	165.7%	Did not die
609*	511	3576	864	1250	35%	144.7%	2
578	610	unknown	303	578	na	190.8%	Did not die
578*	610	3992	207	921	23%	444.9%	7
589	1803	unknown	377	1110	na	294.4%	Did not die

*A second treatment was conducted on these nests.

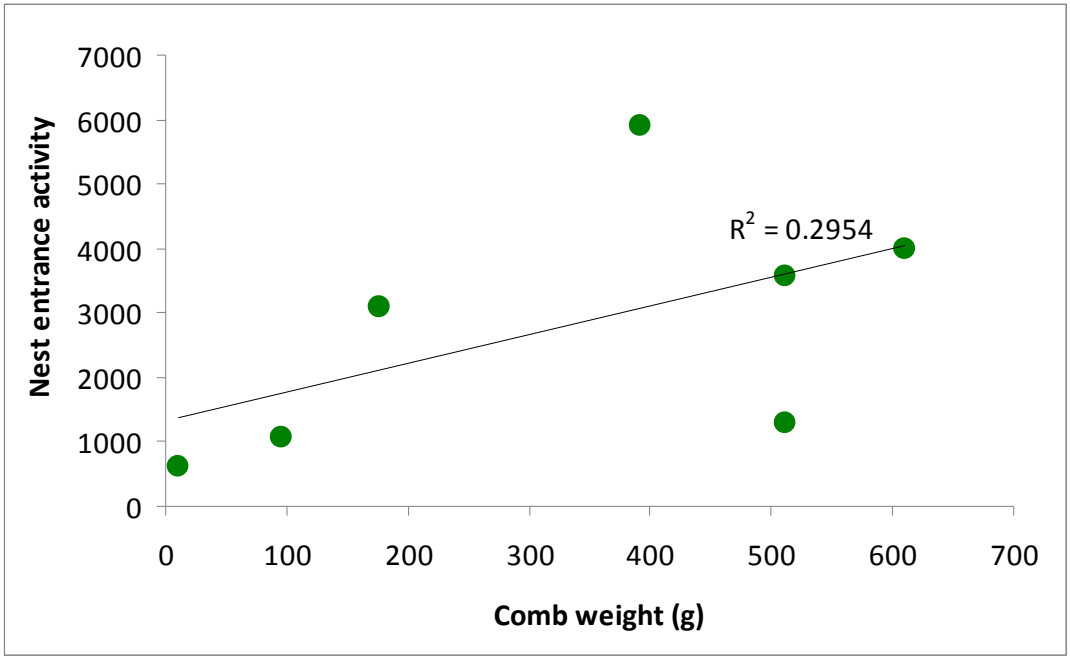

Figure 1: Nest entrance activity versus nest size (comb weight, g) for six remotely treated *A. cerana* nests. One nest was treated twice – it is represented twice in this graph. The second nest that was treated twice (see Table 1) had an unknown nest activity for its first treatment and is only represented once in this graph.

Nest & feeding station suppression

Shaky, fitting bees were observed on the bait station and the flight patterns of feeding bees exiting the bait station appeared disorientated and sluggish within 35 minutes of the treatment (N = 10). Dead and twitching bees were observed at the nest entrances for several days following treatment. On average, immediately after treatment, feeding station activity was reduced by 75% (N = 7) and nest entrance activity was reduced by 81% (N = 6).

In most of the 19 treatments, nest entrance activity was suppressed to at or below five percent (i.e. ≥95% reduction; N = 17) within 24 hours. One nest had a nest entrance activity of 19% (= 81% reduction) at 24 hours, and one nest had an increased nest activity 24 hours after treatment. On average, nest entrance activity 24 hours after treatment was 12.1% (Std. Dev. = 37.1%), i.e. a reduction of 87.9%.

Nest entrance activity generally stayed very low, particularly in those nests that eventually died (Figure 2). Nests that did not die after first treatment either showed no reduction in activity after treatment (IP609) or showed increasing activity from day four (IP557), day 12 (IP567) or day 13 (IP578).

When only considering successful treatments (i.e. nests that died after either the first or the second treatment; N = 12), average nest activity 24 hours after treatment was 1.3% (Std. Dev. = 1.8%), i.e. a reduction of 98.7%.

Nests that died after treatment did so, on average, within 8.1 days (min = 1 day, max = 37 days; N = 11).

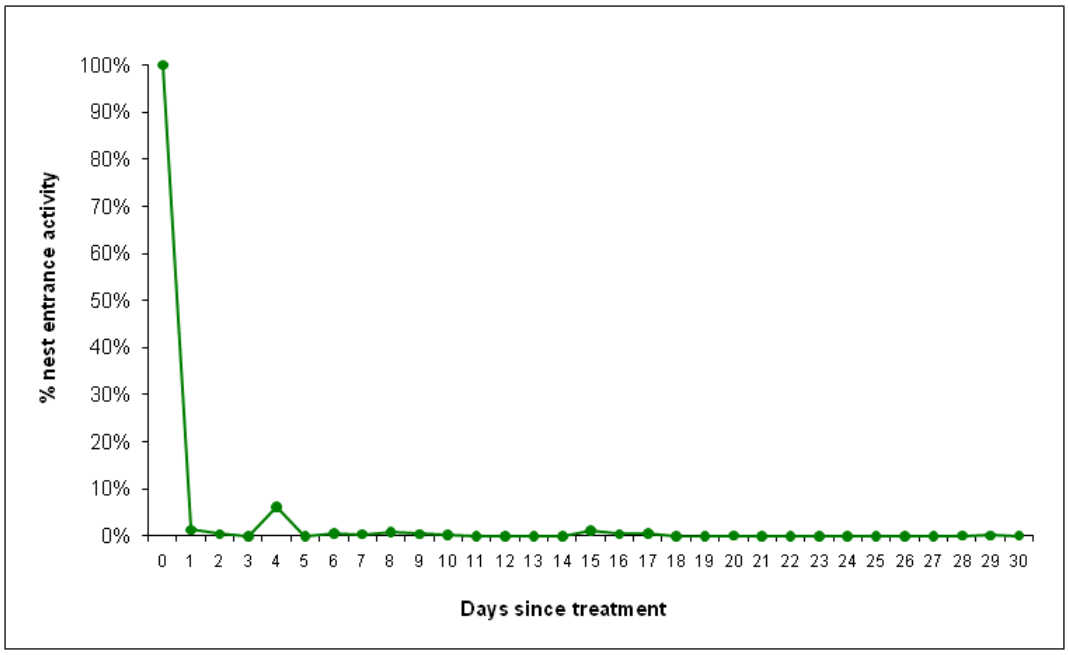

Figure 2: Average *Apis cerana* nest entrance activity of successfully treated nests (N = 11) in the 30 days following remote treatment using fipronil

Predicting treatment success

There was no relationship between the number of bees feeding on the baited station and the days until the nest was dead (Figure 3). In some trials, many bees took fipronil back to the nest but the nest did not die, in other trials very few bees took fipronil back to the nest and the nest did die (Figure 3).

There was also no relationship between the percentage of foraging bees relative to the feeding station activity prior to the trial and the days until the nest was dead (Figure 4). However, there seems to be a very weak trend – higher percentages of bees (>300%) foraging on the baited station result in shorter time until death. Nevertheless, variation is very high.

There seemed to be a weak relationship between the percentage of foraging bees relative to the nest entrance activity prior to the trial and the days until the nest was dead (Figure 5). Higher percentages of bees (>20%) relative to nest entrance activity foraging on the baited station resulted in shorter time until death. Although variation is still high at low percentages of bees (i.e. nests may or may not die when low percentages of bees take back fipronil), variation is much lower when high percentages of bees take back fipronil (i.e. nests die quickly when high percentages are involved; Figure 5).

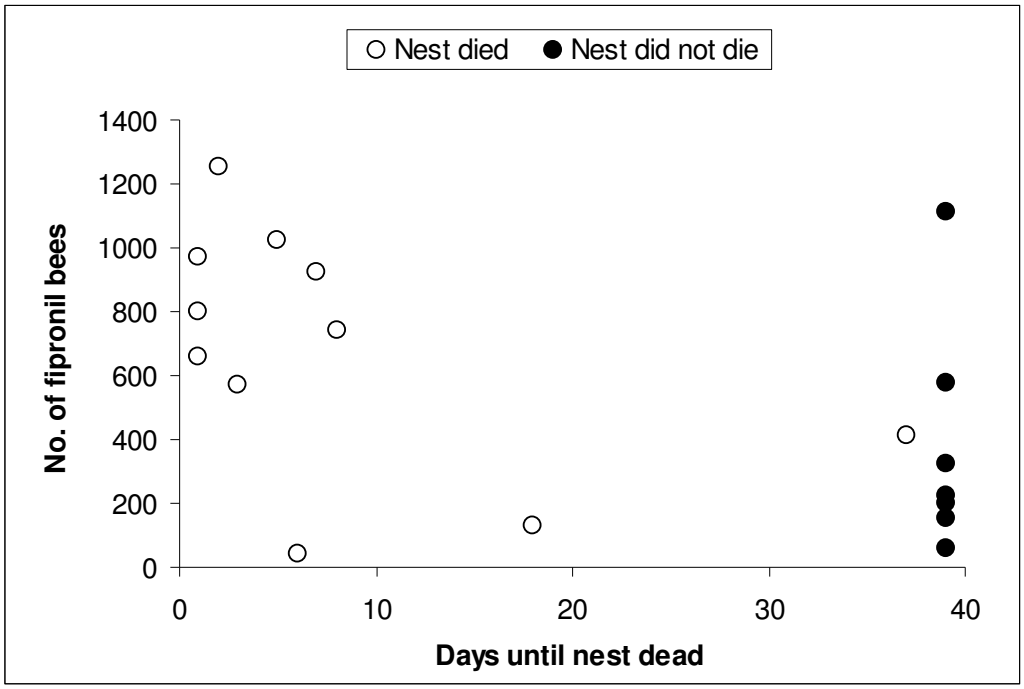

Figure 3: **Number of days until *A. cerana* nests died (or did not die) after a certain number of bees foraged on a fipronil-bated station. Nests that died are depicted as clear circles, whereas nests that did not die after treatment are depicted as black circles.**

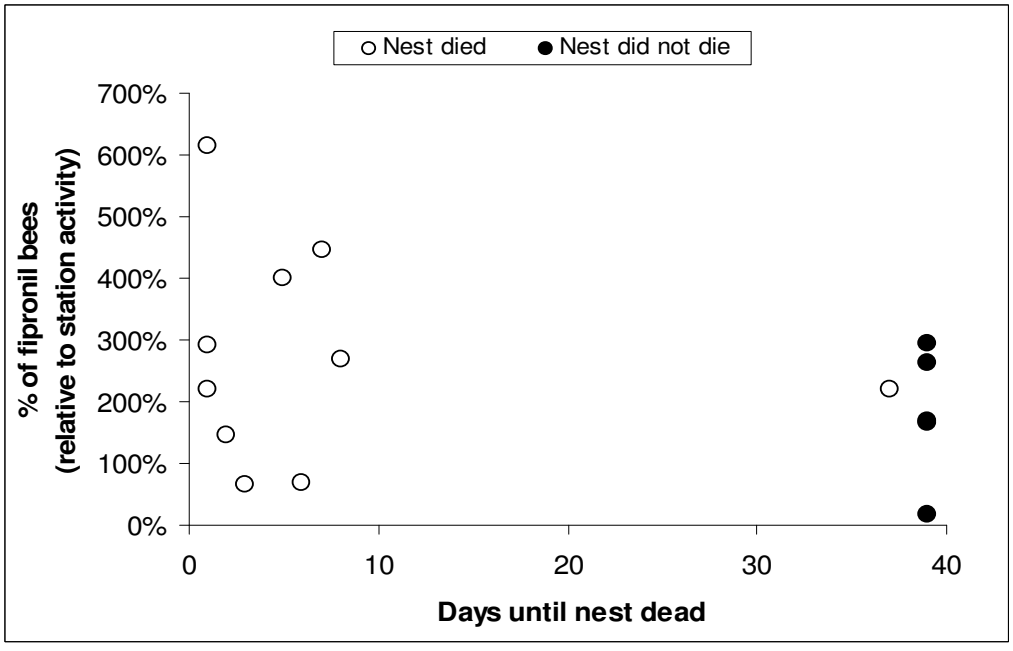

Figure 4: **Number of days until *A. cerana* nests were dead after a certain percentage of bees (relative to feeding station activity prior to treatment) forage on a fipronil-bated station. Nests that died are depicted as clear circles, whereas nests that did not die after treatment are depicted as black circles.**

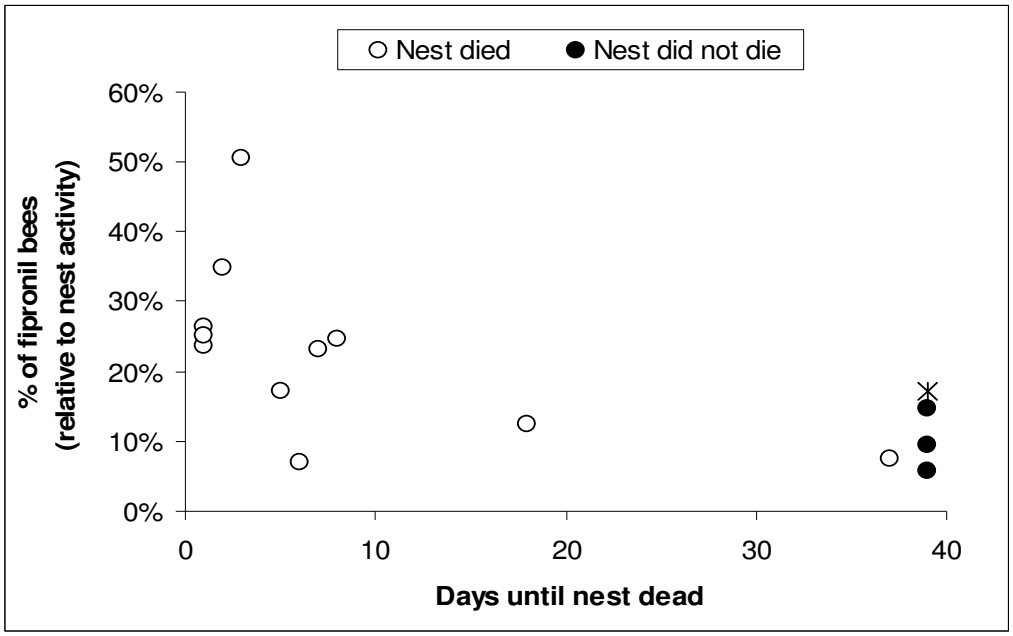

Figure 5: Number of days until *A. cerana* nests were dead after a certain percentage of bees (relative to nest entrance activity prior to treatment) forage on a fipronil-bated station. Nests that died are depicted as clear circles, whereas nests that did not die after treatment are depicted as black circles.

Treatment Efficacy

For all treatments combined, 1767.5 hours were required to conduct the 19 remote treatments on 15 nests, which equals an average of 117.8 hours per trial, or 93 hours per treatment (combined hours for a field team of two people, plus one scientist and one pest controller for the actual treatments).

The minimum amount of time needed was 33.5 hours (IP556) due to its proximity to the Biosecurity Queensland offices as well as the ability of field officers to conduct the treatment themselves. Once the safety measures were reviewed by Biosecurity Queensland WH&S officers, a trained pest controller was the only person allowed to conduct the treatment (i.e. handle the chemical). The maximum amount of time taken for a trial was 320 hours (IP578).

Hours include driving to and from the site, bee-lining nests, setting up feeding stations, training bees onto a station, maintaining bees on the station, nest and feeding activity counts prior to and following treatment, preparing for, conducting and cleaning up after the treatment, as well as a small amount of time for data entry and report writing. However, the estimate does not include any time spent by the scientist and senior scientist, operations coordinator, data entry clerk or program manager (including, for example, meetings, operations planning, revising and re-writing experimental procedures etc.).

Non-target species

Non-target species that were observed coming close to the bait station, or that did land on the bait station and had to be destroyed, included native bees (mostly *Tetragonula* sp. as well as bees of the family Halictidae), wasps, flies, and *A. mellifera*.

Non-target species that were observed to rob honey or pollen from the treated nest or to eat dead or dying bees include *A. mellifera*, green ants (*Oecophylla smaragdina*), sugar ants (*Camponotus sp.*), cockroaches (common house cockroach variety), lizards and cane toads (*Bufo marinus*).

Residue testing on dead and fitting bees and comb showed presence of fipronil and its metabolites, i.e. fipronil desulfinyl, fipronil sulphide, and fipronil sulfone. Highest levels of total fipronil (0.130 µg/bee) were found in dead or fitting bees immediately after the end of treatment, i.e. after one hour. Fipronil levels then decreased over time but were present at detectable levels for 48 hours (Table 2). Comb also showed relatively high levels of total fipronil after 24 hours.

A. mellifera were also collected for residue testing. However, the number collected was too low to be able to detect the presence or absence of fipronil. No other non-target species were collected or tested.

Figure 6: Levels of fipronil detected in bees and comb.Bees/comb samples for residue testing were collected from a range of trials.

Bees/comb tested	Sample	Total fipronil reported
After 2-3 feeds on bait station	Bees	0.020 µg/bee
Immediately after end of treatment (multiple feeds over 1 hr)	Bees	0.130 µg/bee
24 hours following treatment	Bees	0.038 µg/bee
Comb (24 hours following treatment)	Comb	0.096 µg/g
48 hours following treatment	Bees	0.004 µg/bee

Discussion

In this study, the effectiveness of remotely treating individual, feral *A. cerana* nests with fipronil was demonstrated, as an almost immediate and severe suppression of the bee colony was observed within 24 hours of treatment for most nests. Indeed, bees foraging on the baited station showed adverse effects within 30 minutes. Similar immediate responses were found previously (Keshlaf, Spooner-Hart et al.; Warhurst, 2001; Taylor, Goodwin et al., 2007; Anderson, 2010; De Jong, 2011).

The number of bees as well as the percentage of bees relative to the feeding station activity, prior to the treatment that took back fipronil, did not seem to be good a predictor of success (Figures 3 & 4). However, the percentage of bees taking back fipronil relative to the nest entrance activity prior to the treatment did seem to predict whether or not a nest would be dead within a few days (Figure 5). All nests that had more than 20% of bees taking back fipronil died within seven days (Figure 5). Nests that had a lower percentage of bees taking back fipronil mostly died much later or not at all (Figure 5).

Plotting the number of bees taking back fipronil against treatment success did not determine a minimum number needed in order to kill a nest (Figure 3). However, if we take the nest with the largest nest entrance activity that was successfully destroyed within one week (IP558 – 5918 bees/hour), the number of bees required in this instance was 1022. So if an inference of a minimum number of bees that needs to take back fipronil is to be made, one could say that at least 1000 bees are needed to take fipronil back to the nest. This is a rather large number that was only achieved in three of the 19 treatments – two of these were destroyed successfully within one week, one nest still did not die.

This result means that even a minimum number of 1000 bees taking back fipronil cannot guarantee success in remotely treating a feral *A. cerana* nest. Instead, to predict success with some confidence, it is necessary to find the nest and calculate a target number of bees relative to the nests' entrance activity. However, if the nest needs to be found, then it may as well be destroyed using, for example, an aerosol spray insecticide, which would kill the nest quickly and immediately, rather than conducting a very time consuming remote treatment.

Although the relative sizes of all individual nests could not be compared (as only seven of the nests were extractable), nest entrance activity of those that could be extracted did seem to increase with increasing nest size (measured as comb weight). Together with the finding that a target percentage relative to nest entrance activity did predict treatment success we can conclude that nest entrance activity can be used as an alternative for nest size for the purpose of remote treatments.

Off-target species

Off-target species may come into contact with fipronil through direct contact on the bait station as well as through robbing nest components (wax, honey, pollen) after a nest has been destroyed, or through eating dead and dying bees. All efforts were made to exclude off-target species from the bait station. However, off-target species that were observed close to or on the bait station, robbing honey or pollen or eating dead bees include native bees, *A. mellifera*, green ants, sugar ants, wasps, flies, cockroaches, lizards and cane toads. Other species that could potentially be affected but have not been directly observed include birds or mammals preying on flying or

dead bees (especially the Rainbow bee-eater, *Merops ornatus*) or robbing honey from dead nests.

Toxicity of fipronil to some organisms has been tested (reviewed in Gunasekara, Truong et al., 2007; DEWHA, 2010). Fipronil is highly toxic to *A. mellifera* at a LD_{50} of 0.004 µg/bee (Gunasekara, Truong et al., 2007). Although toxicity is unknown for *A. cerana* it can be assumed to be similar if not higher due to *A. cerana*'s smaller body size. In fact, fipronil was found to be seven times more toxic to the stingless bee *Scaptotrigona postica* in Brazil (LD50 = 0.00054 µg/bee; Jacob, Soares et al., 2013) compared to its toxicity to *A. mellifera*. Stingless native Australian bees such as *Tetragonula* and *Austroplebeia* species were commonly observed on and around bait stations during the trials and so unless they can be excluded from bait stations it is very likely that small native bees will be affected by off-target impacts of fipronil.

Suggestions have been made to increase the concentration of fipronil in the sugar syrup. However, these are unfounded, and increasing the fipronil concentration may even have adverse effects on the remote treatment. Bees were affected within 20-30 minutes from the start of the treatment – a higher concentration may shorten the time until bees are affected, meaning bees may not find their way back to the nest – crucial for successful remote treatments. Furthermore, bees were found to have fipronil levels thirty times higher than the LD_{50} for *A. mellifera*, and higher concentrations of fipronil would also result in even higher residues found in the bees and nest components, increasing the risk to non-target species.

Fipronil is also highly toxic to cockroaches, which have been observed at dead nests. A German cockroach only needs to consume the equivalent of one-tenth of a bee for a lethal dose (LD50: 0.0046-0.0054 µg/cockroach; Gunasekara, Truong et al., 2007). Many native cockroaches are smaller than German cockroaches, and so are likely to be affected by fipronil residue.

Lizards were also observed at dying and dead nests. Scientists studying the toxicity of fipronil in West Africa reported that fipronil were highly toxic to the Fringe-toed lizard *Acanthodactylus dumerili* (Peveling and Demba, 2003). An LD_{50} in the order of 30 µg fipronil/g bodyweight was calculated for this species. If the toxicity of fipronil to native lizards here in Australia is similar to Peveling and Demba (2003)'s findings, it would seem that the concentrations used in this experiment are unlikely to affect lizards of the same size or larger – more than 1000 fipronil-affected bees would need to be consumed. However, because fipronil toxicity for native lizards is unknown, precaution needs to be taken.

Birds such as Rainbow bee-eaters prey on bees and could potentially be affected by fipronil if they catch bees that have just taken fipronil. Similar to many other free-living bird species, the toxicity of fipronil to Rainbow bee-eaters is unknown. However, several studies have shown that accidental consumption of fipronil by some birds has the potential to adversely affect their reproduction, development and behaviour (Kitulagodage, Buttemer et al., 2011; Kitulagodage, Isanhart et al., 2011). Fipronil is deemed to be highly toxic to the Bobwhite quail (LD_{50}: 11.3 µg/g), Red-legged partridge (LD_{50}: 34 µg/g) and Pheasant (LD_{50}: 31 µg/g), while fipronil toxicity is somewhat lower in the House sparrow, Pigeon and Mallard duck (LD_{50}'s: >1000 µg/g) (DEWHA, 2010). Again, a precautionary approach should be applied by assuming that fipronil may be toxic to Rainbow bee-eaters until it is shown otherwise.

While it appears that fipronil breaks down rather quickly in bees (Table 2), the level of residue testing conducted throughout this experiment was limited. It is not known,

for example, how quickly fipronil will degrade in hive comb over time in various Australian environments. More research is essential to investigate the risk of fipronil residue to non-target species.

Treatment Efficacy & Difficulties

It was difficult for field staff to ensure that consistent environmental conditions were maintained between days for bee counts and treatments due to erratic weather conditions earlier in the year. It also proved difficult to ensure that bees were continuously foraging on the sugar feeding station so that a second treatment could be carried out on those nests that were not killed with one treatment. Bees seemed to 'go off' the syrup within 24 hours of treatment. During trials using fipronil on bees in New Zealand, Taylor et al. (2007) also found that any disturbance that caused a break in recruitment such as weather or lack of syrup required the bees to be retrained onto the bait stations. They also noted that when more attractive or plentiful nectar sources were available, foraging at the bait station may not be successful (Taylor, Goodwin et al., 2007).

Trials for this preliminary study in Cairns had to be extremely opportunistic due to the unpredictability of the weather and due to the variability in bee numbers feeding on sugar stations from day to day. Visiting each potential nest site frequently was vital so that assessments of when bait stations should be applied in the field could be made. The process proved to be highly labour intensive. The number of human visits (including the driving time between sites) required to keep the stations filled and bees interested as well as monitoring nest activity for hourly periods following treatment were very high. Some individual nests required >300 hours for a team of two field officers to maintain, treat and monitor.

Conclusion

This experiment showed that fipronil is very effective at suppressing and killing individual Asian honey bee colonies if more than 20% of bees relative to nest entrance activity take back fipronil to the nest. However, the usefulness of remote treatment as a method to manage *A. cerana* in Australia is doubtful due to several reasons: (1) not all targeted nests died as a result of remote treatment; some colonies increased in activity as soon as 5 to 12 days after treatment and needed a second treatment; however, treating a second time was not always possible due to difficulties in training bees back onto a feeding station; (2) there is a real risk to non-target species from fipronil residue in dead and dying bees as well as in the comb. Particularly at risk are native invertebrates and birds, as well as feral and managed *A. mellifera*; (3) the vast amount of effort required to conduct trials makes this method very time and resource consuming; and finally, (4) knowing the number of bees taking back fipronil is not sufficient to predict success; it is necessary to know the nest entrance activity to predict success, for which the nest needs to be found; if the nest is found, then manually killing the nest is vastly more time and cost-effective than remote treatment.

Based on this research, it was considered that sufficient data had been collected to evaluate the effectiveness and usefulness of remote treatments for the purpose of the T2M program. Further research should be conducted on residue testing as well as determining the effect that dead bees and comb containing fipronil has on non-target species.

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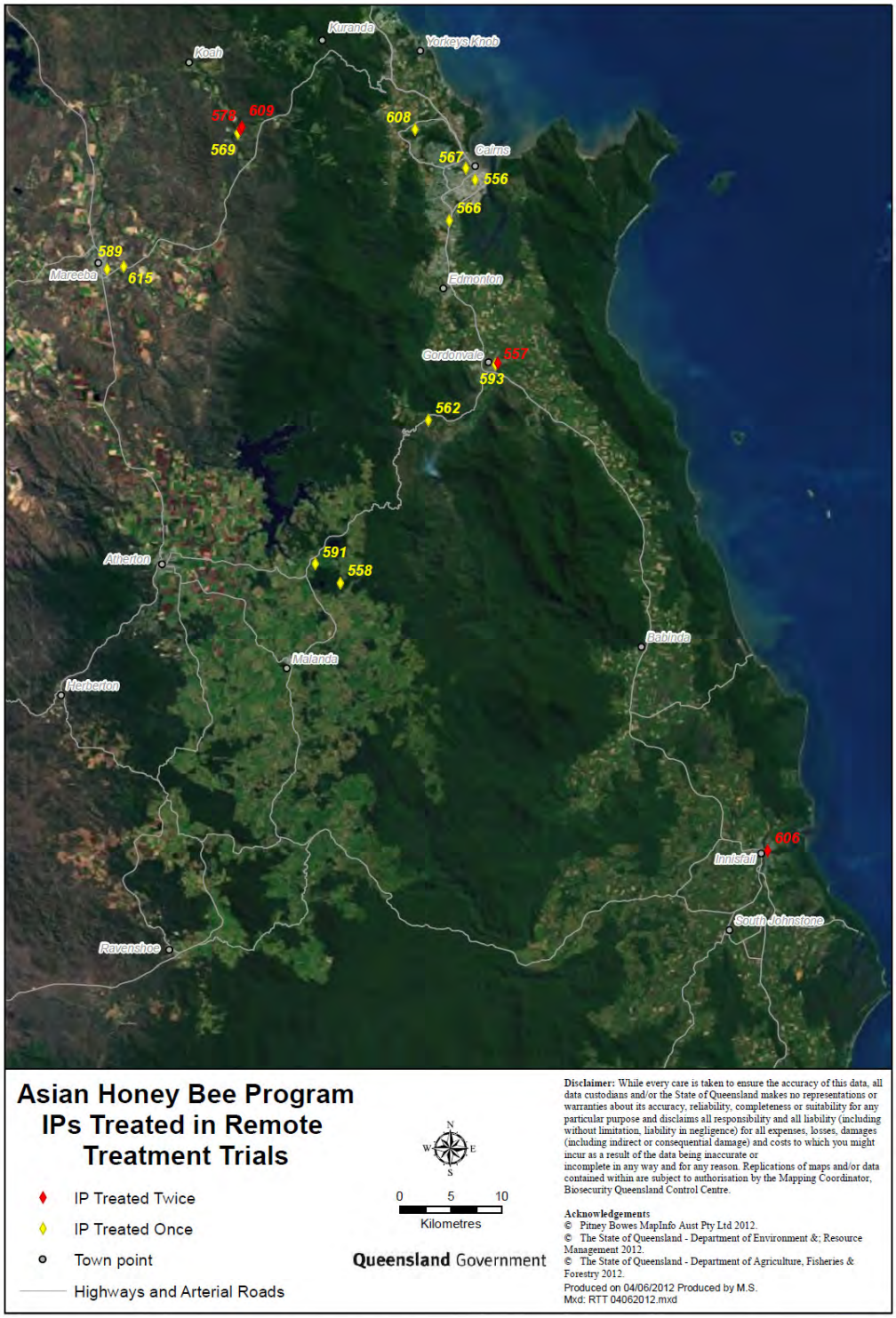
Appendix 1 Map showing locations of nests used for trials



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Department of Agriculture, Fisheries and Forestry

Asian honey bee Transition to Management Program

North Queensland apiarist survey report

This publication has been compiled by Brett Ross-Reid, Brenda Foley and Dr. Anna Koetz of Biosecurity Queensland, Department of Agriculture, Fisheries and Forestry.

Contents

Summary

Officers from the Asian honey bee Transition to Management (AHB T2M) Program have engaged the beekeeping industry through attendance at monthly local beekeeper club meetings, facilitating local industry liaison meetings, participation in teleconferences on both state and national levels, conducting AHB T2M workshops to distribute detection and destruction tools to beekeepers, and a joint and united approach during the far north Queensland show circuit in 2012.

An early survey of apiarists/beekeepers was attempted in January and February 2012. However, this survey suffered from poor question design and a lack of respondents. The extension of the AHB T2M Community Engagement team in 2012 enabled scientific research outcomes to be converted into tools for industry to use in the management of Asian honey bees (AHB). A new survey was developed and conducted during October and November 2012 to encourage beekeepers to provide feedback on whether the information and tools currently available were comprehensive and sufficient for their needs, or whether additional tools were needed to help them manage the impacts of AHB.

North Queensland beekeepers were given the opportunity to participate in the survey and suggest what they thought was important in the development of additional management tools. Comments received indicate the industry felt strongly that the development of a specific AHB trap is necessary to assist the industry to manage the pest bee. However, the majority of respondents gave no response when asked to suggest tools that could assist and support their industry in the management of AHB.

In general, it was found that beekeepers in north Queensland (Cairns and Townsville) are most concerned about a new incursion of AHB introducing Varroa mites or exotic bee diseases.

Introduction

Following the detection of the Asian honey bee (AHB; *Apis cerana* Java genotype) in Cairns, Queensland, in May 2007, the beekeeping industry raised concerns about the negative impact AHB may have on honey production. These concerns included possible competition for resources, robbing of European honey bee (EHB) hives and the introduction of unspecified bee pests and diseases.

An apiarist/beekeeper survey (herein referred to as 'survey') was conducted with north Queensland apiarists/beekeepers and responses were collected. The target audience ranged from beginner to professional beekeepers from within the Known Infested Area (KIA) (Appendix 1) and from Townsville, outside the KIA. The survey aimed to evaluate and assist the future delivery of several AHB T2M deliverables, particularly those that required stakeholder engagement and collaboration:

AG2Bi - Develop integrated control strategies for different industries to minimise impacts of AHB, including identifying any off-target impacts (especially the balance between AHB and commercial EHB in the same environment to minimise impact and honey production)

AG2Bii – Develop the timing of implementing these methods and strategies to maximise effectiveness of control methods

AG3Bi – Development of management strategies. Based on outcomes of project 2, develop and test management strategies targeted at limiting impact of AHB on honey production in areas where AHB are established

AG3D – Develop technology to assist industry to mitigate AHB impacts. Stakeholder and industry engagement to identify needs and priorities for technology development

AG3F – Develop approaches with the honey industry for adoption and implementation of management strategies

This survey was designed to determine what additional tools or information the honey bee industry requires to manage the impacts of AHB.

Survey methods

Development

The survey was designed to encourage succinct answers and was aimed at gathering information from beekeepers in the Cairns and Townsville regions (referred to as north Queensland) about their observed and perceived impacts of AHB. The survey clearly identified that it was developed by the Department of Agriculture Fisheries, and Forestry and was conducted as a paper-based questionnaire (refer Appendix 2).

Questions

The survey consisted of 16 questions, some of which were subdivided. Most questions were closed questions, where participants could only choose answers from the options available (e.g. “Yes/No” or “tick one box or multiple boxes”). Some closed (Yes/No) style questions also gave participants the option to specify “other” and provide relevant details. Closed questions were used to assist with analysis, so that each answer could be given a numerical value and be analysed or graphed. One question in the survey (Question 16) was an open style question, which gave participants the opportunity to respond with their own thoughts and opinions (refer Appendix 2).

Delivery

Cairns participants were given a number of opportunities to participate in the survey. The survey was made available at:

- a specially organised monthly meeting where AHB T2M officers presented Program outcomes, explained the purpose and importance of the survey, and distributed copies of the survey;
- monthly meetings following the specially organised meeting;
- the premises of the president of the Cairns Beekeeping Club.

Participants could either complete the survey *in situ* and place it in a labelled survey box, or they could take the survey away and return it to the president of the club or to the AHB T2M Program’s main office in Redden Street, Cairns. AHB T2M officers reminded club members about the return of survey forms on a number of occasions.

Townsville members were given the opportunity to complete the survey during a specially organised monthly meeting, held by the Townsville Beekeeping Club, at which AHB T2M Program officers attended and presented. At the end of the Townsville meeting, club members were asked if they could assist the AHB T2M Program by filling out the survey and placing it inside a labelled survey box.

Analysis

All closed style questions were analysed by calculating the percentage of respondents who answered ‘Yes’ or ‘No’ and results were displayed on a graph. The survey data was analysed as a whole for Questions 1 and 14 as well as comparisons made between Cairns and Townsville respondents. Questions 9, 10, and 11 were all analysed by counting the total number of responses against the number of participants surveyed. Question 16 of the survey was an open question and respondents’ suggestions were summarised in the survey results section of this report.

Survey results

Questions 1-3

86% of participants from both Cairns and Townsville correctly identified the picture of the Asian honey bee (Image A) when it was compared to the European honey bee. 14% of Cairns respondents incorrectly marked Image B as AHB, with 7% of incorrect answers from Townsville respondents. 7% of respondents from Townsville did not answer the question (Figure 1).

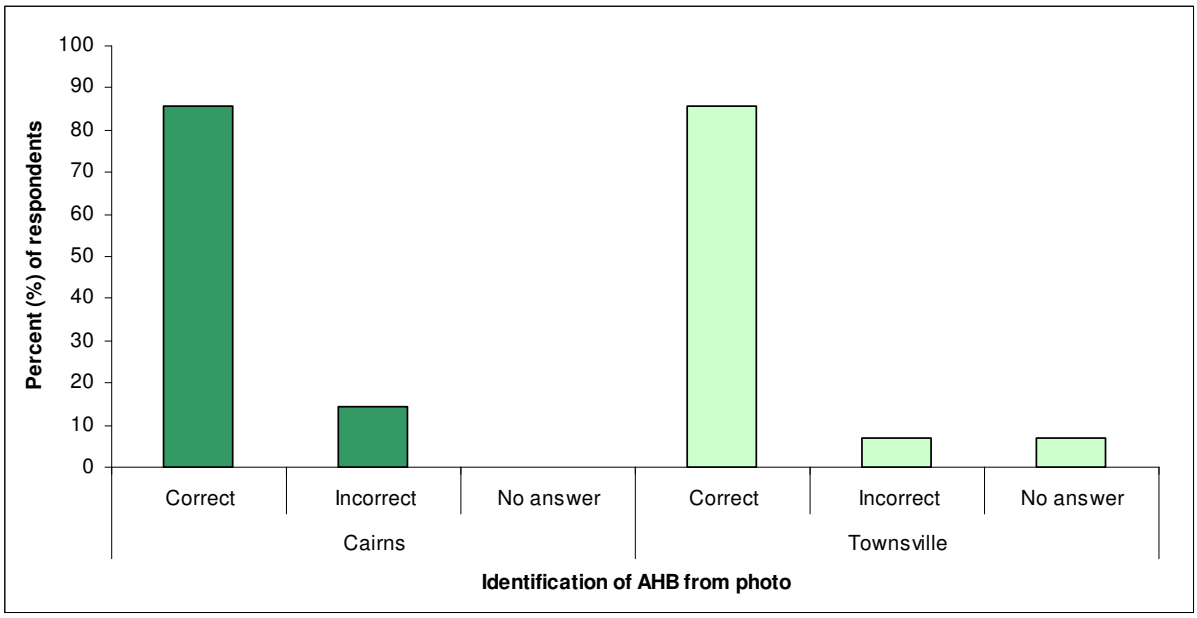


Figure 1: Comparison of correct identification of AHB from two photos showing AHB (photo A) and EHB (photo B). Percentage of respondents answering correctly, incorrectly and giving no answer shown for Cairns respondents (dark green) and Townsville respondents (light green).

Question 2 of the survey questioned participants' awareness that the current AHB Program is in a transition to management (T2M) phase. The results illustrate that both regions have knowledge of the Program's status. 86% of Cairns beekeepers answered 'yes' (indicating awareness of T2M) and the remainder of the respondents gave no response. Similarly, 93% of Townsville beekeepers answered 'yes' (indicating awareness of T2M) and 7% answering no. Overall 90% of respondents surveyed answered 'yes' (indicating awareness of T2M) with 5% answering 'no' or not responding (Figure 2).

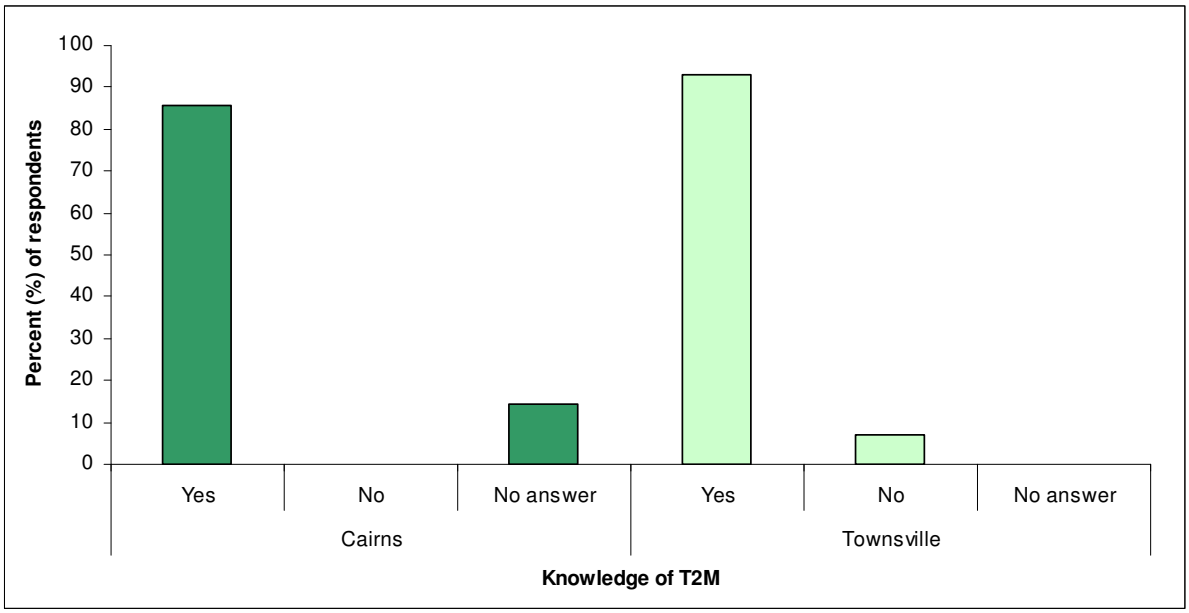


Figure 2: Knowledge of Program status – Percentage of respondents answering 'yes' (having knowledge of Program status), 'no' (not having knowledge of Program status) and giving no answer for Cairns respondents (dark green) and Townsville respondents (light green).

Question 3 of the survey asked participants if they had seen AHB in the 'wild' (i.e. in the environment). Results differed dramatically for this question as many beekeepers from Townsville have not travelled to and/or observed AHB in the KIA. 43% of Cairns respondents answered 'yes', compared to 7% from the Townsville respondents'. 57% of the Cairns respondents had not seen AHB in the environment, compared to 86% of the Townsville respondents. All respondents from Cairns answered Question 3, while 7% of the participants from Townsville gave no response (Figure 3).

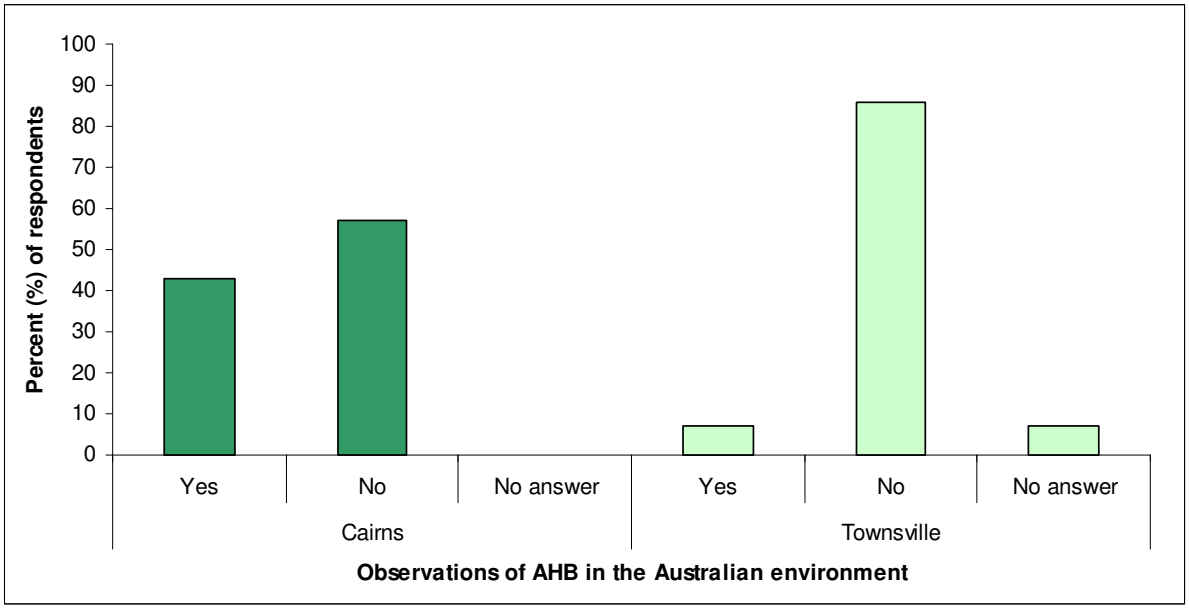


Figure 3: Observations of AHB in the Australian environment – Percentage of respondents answering 'yes' (having observed AHB in the environment), 'no' (not having observed AHB in the environment) and giving no answer for Cairns respondents (dark green) and Townsville respondents (light green).

Questions 4 - 7

Questions 4 to 7 relate to several different examples of AHB observations. In all of these questions, no Townsville respondents gave an answer of 'yes' for observing AHB around their hives, competing for food, or displaying aggressive behaviour between the two species. This is not surprising given AHB are yet to establish in the area.

As a result, the following graphs only display results from Cairns beekeepers' observations. Results from Question 4 showed that 14% of Cairns beekeepers had observed AHB in, on or around EHB hives. 43% of Cairns respondents answered 'no observations' and an equal percentage gave no response to this question (Figure 4). 64% of Townsville respondents answered 'no observations' of AHB near EHB hives, along with 36% giving no response.

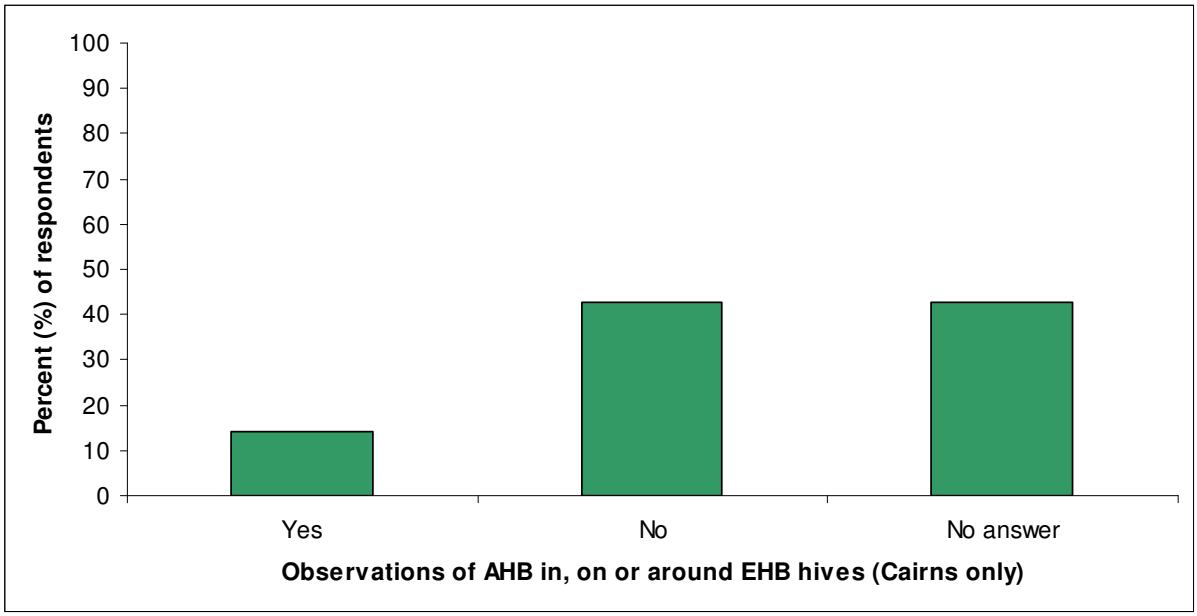


Figure 4: Hive observations from Cairns beekeepers – Percentage of respondents answering 'yes' (having observed AHB in, on or around EHB hives), 'no' (not having observed AHB in, on or around EHB hives) and giving no answer for Cairns respondents.

Question 5 of the survey asked whether competition for food had been observed between EHB and AHB. Results show that 29% of Cairns respondents had observed competition for a food source, whereas 29% had not observed competition for a food source. 43% of respondents from Cairns gave no response (Figure 5). 64% of Townsville respondents marked 'no observations' and the remaining 36% gave no response.

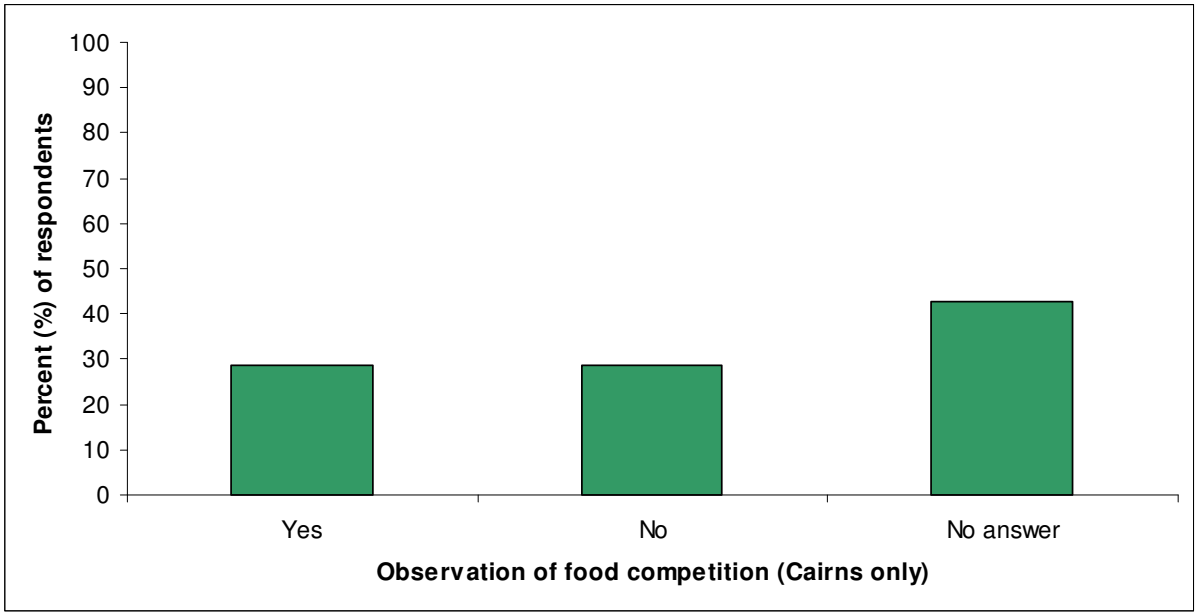


Figure 5: Food competition observations from Cairns Beekeepers between EHB and AHB – Percentage of respondents answering 'yes' (having observed food competition), 'no' (not having observed food competition) and giving no answer for Cairns respondents.

Questions 6 and 7 asked beekeepers if they had observed aggressive behaviour of AHB towards EHB (Question 6) and vice versa (Question 7). The results were the same for both questions. 14% of Cairns respondents observed aggressive behaviour in AHB towards EHB as well as in EHB towards AHB, whereas 43% had not observed any aggressive behaviour and the remaining 43% gave no response (Figure 6). 64% of the Townsville respondents marked 'no' and the remainder gave no response to Questions 6 and 7.

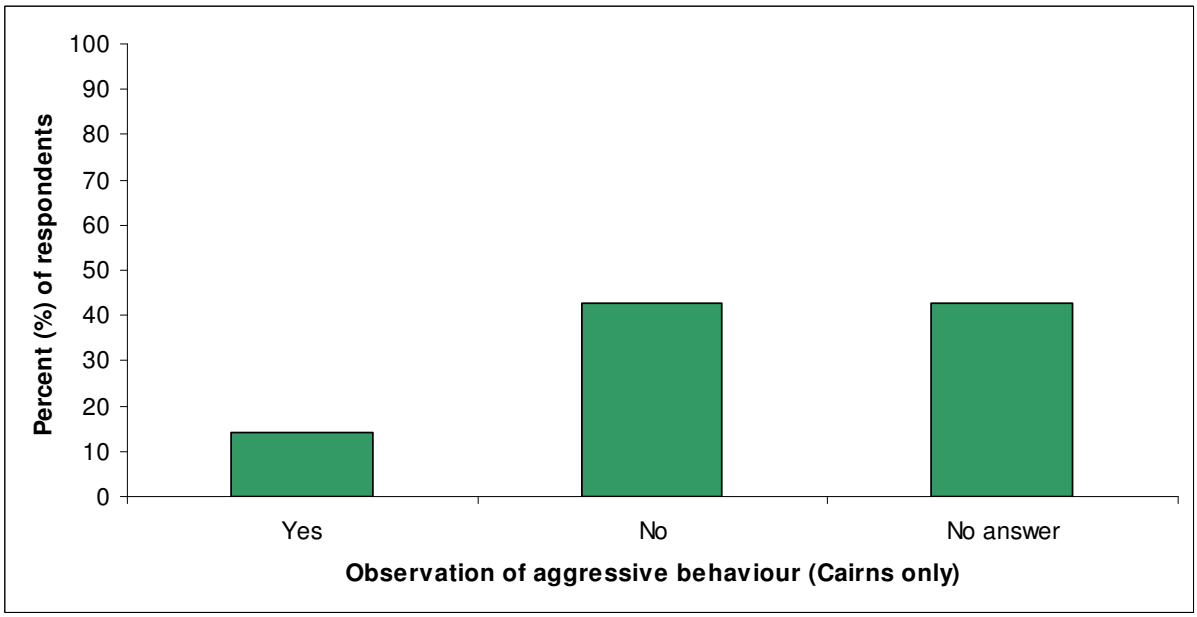


Figure 6: Observations of aggressive behaviour between AHB and EHB from Cairns Beekeepers – Percentage of respondents answering 'yes' (having observed aggressive behaviour), 'no' (not having observed aggressive behaviour) and giving no answer for Cairns respondents.

Questions 8 - 11

Question 8 asked beekeepers if they had observed AHB demonstrating any of the following behaviour: AHB robbing of EHB hives; AHB fighting EHB; AHB taking over EHB hives; and/or AHB entering or exiting EHB hives.

Most of the participants from both Cairns (86%) and Townsville (71%) gave no response to Question 8. However, 14% of Cairns respondents indicated that they had observed the above behaviours, and 29% of Townsville respondents answered 'no' (i.e. they had not observed any such behaviour).

Question 9 asked participants if they had seen any negative impacts of AHB on honey production or foraging behaviour of EHB. There were no observed impacts on honey production or foraging behaviour of EHB by any of the participants from the survey. Only four people out of 21 answered this question. However, these four respondents answered the question incorrectly by writing 'no' instead of ticking one or two of the two available boxes. Therefore, it can be concluded that none of the respondents had observed a negative impact on honey production or foraging behaviour of EHB.

Question 10 asked 'what impacts do you perceive the AHB will have?' Respondents indicated that they thought AHB could have an impact on the following: robbing EHB hives; fighting EHB; reduced honey production; taking over EHB hives; competition for native fauna and flora; and introducing new diseases. Of these options, introduction of new diseases was identified as the number one perceived impact to industry with 16 out of 21 respondents ticking this box.

Question 11 was similar to Question 10 in that respondents were given the opportunity to indicate what they believed to be the biggest perceived threat to the honey bee industry. Results indicated that respondents were more concerned about Varroa mites being introduced to Australia than they were about the current infestation of AHB in North Queensland (which have no Varroa mites). 18 of the 21 beekeepers from both Cairns and Townsville believe that new infestations of AHB carrying Varroa mites would be the honey industry's biggest threat. 15 beekeepers believed that EHB carrying Varroa mites into the country would be the biggest threat to their industry. Only three out 21 respondents believe that the current AHB incursion will be the biggest threat.

Questions 12a - d Tools for industry

12 out of 21 respondents answered 'yes' to Questions 12a and 12b, indicating that they felt they needed tools to manage the impacts of AHB. They indicated that the recently developed *Guideline for industry destroying swarms and nests of AHB* provides adequate information to manage some of these impacts. Only one person out of the 21 answered 'no' with the remainder of the respondents giving no response.

14 out of 21 respondents answered 'yes' to Question 12c, indicating that a video depicting AHB destruction techniques would be a helpful tool for industry. Only one person out of the 21 answered 'no' with the rest of the respondents giving no response. When respondents were asked to specify what additional tools they believe industry may require in relation to managing AHB, minimal responses were given. Three respondents answered "specific trap", "public need more awareness" and "recent information on spread impact".

Questions 13-14 How do beekeepers access information?

Questions 13 to 14 were included in the survey to establish by what means north Queensland beekeepers access information on the established population of AHB. These questions do not contribute to the AHB T2M deliverables stated in the introduction. However, the information collected was used to assist the Program with provision of further AHB information to regional beekeeper clubs in north Queensland. The results from Questions 14 show that overall, 57% of all respondents surveyed had sourced AHB information from the Biosecurity Queensland (BQ) website, with 33% sourcing information elsewhere and 10% giving no answer.

Questions 15a –g Awareness of the tools and information available

North Queensland beekeepers were asked to indicate their knowledge of AHB information and tools available to the industry, through the BQ website, by marking 'yes' to seven items (AHB factsheet, AHB destruction guideline for industry, KIA map, scientific reports, identification tools, images, online reporting tools). The results were then illustrated in two pie charts (Figure 7).

When asked if the Cairns respondents were aware that printable information such as the AHB factsheet, AHB destruction guideline for industry and the KIA map were available online, 57% answered 'yes' to the first two items and 71% answered 'yes' to the latter. However, Townsville respondents appeared to have greater awareness with 64% knowing of the factsheet and 71% answering 'yes' to the guideline and the map. Similarly, only 14% of the Cairns respondents compared to 50% of Townsville participants knew that they could report AHB sightings using an online reporting tool.

Regarding awareness that scientific reports completed by the Program were available online, Cairns respondents showed less knowledge than those in Townsville with 43% and 64%, respectively.

Again, Cairns respondents fell behind on the knowledge stakes regarding the improved online species identification tools and images of nests and swarms on the website with 28% and 29% answering 'yes', respectively. However, Townsville showed a far greater awareness in general with 64% answering yes to both questions (Figure 7).

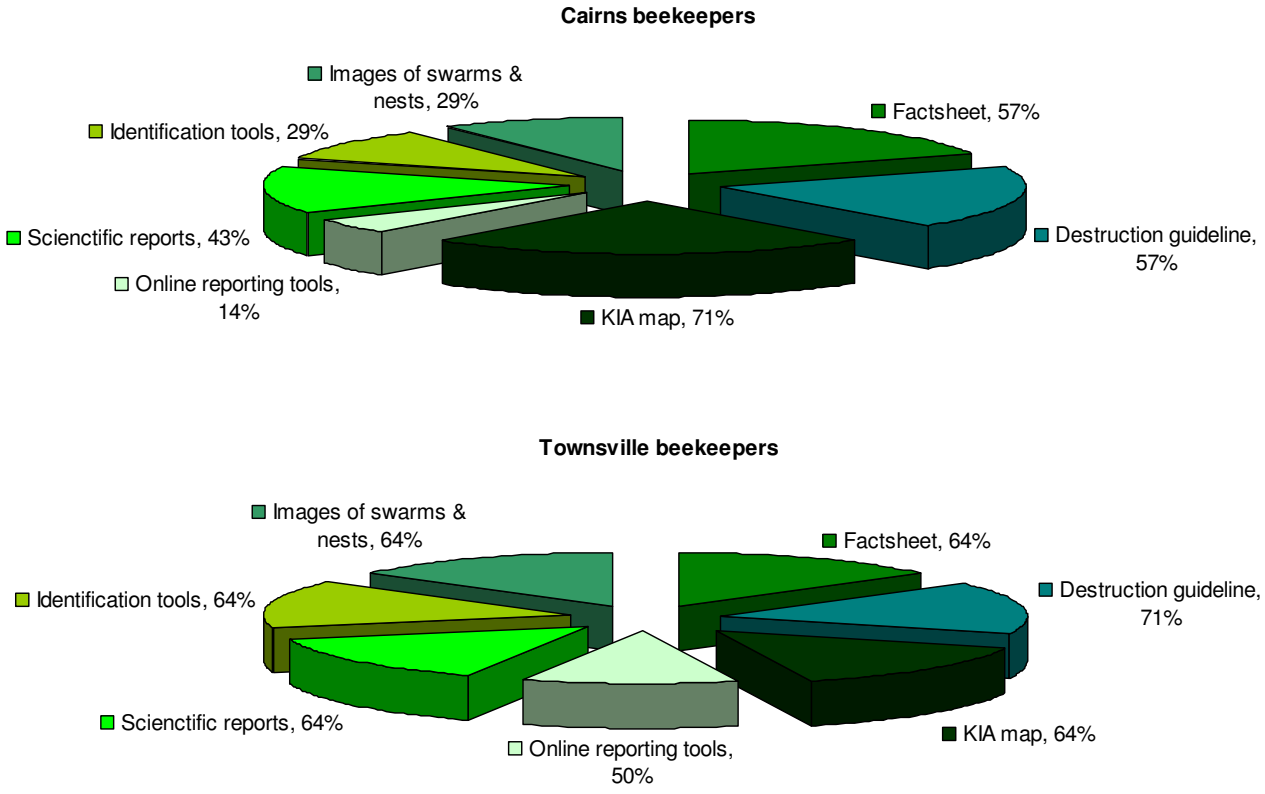


Figure 7: The percentage of participants that responded 'yes' to having knowledge of online information and tools, including AHB factsheets, AHB destruction guidelines for industry, KIA maps, scientific reports, identification tools, images, online reporting tools.

Questions 16 Industry suggestions

Question 16 asked participants for suggestions that could help with the current infestation. The majority of the Townsville participants (71%) answered this question, whereas only 28% of Cairns participants responded to this question. The following responses were provided:

"Interaction and cooperation with as many areas as possible"

"Keep it going"

"Destroy all AHB Hives"

"Be aware; keep watching - just the bleeding obvious"

"Wipe them out by whatever means"

"Haven't got a hive of EHB at the moment, just getting started"

"If you see a swarm of AHB, report to the president of Townsville beekeeper association"

“The same time spray with poison, kill them”

“Information given quickly to members”

“Education”

“Stay alert and keep records of sightings”

“Carry on, good work”

“Better public awareness”

Discussion

It is noteworthy that Cairns and Townsville beekeepers have reasonable identification skills regarding AHB and a good understanding that the current AHB Program is in a transitioning to management phase.

The new identification tools available on the BQ website (including comparative images of different bee species) will improve beekeepers', other stakeholders' and the community's ability to detect and report suspect AHB. Further, beekeepers from both regions have been made aware of the various tools that are available online to assist them in the detection and reporting of AHB should there be a new incursion or the pest bee spreads to their area.

Beekeepers from both regions appeared satisfied with the current management of the AHB infestation. Townsville, in general, appeared to have a greater understanding of the AHB T2M Program and what is available to their industry in regard to online tools for AHB management. This could be due to recent detections and publicity in the area and wanting to be proactive against any bee related threats to their region.

Cairns has a much greater understanding of AHB and the KIA, which is understandable considering it was Cairns where AHB were first detected and community engagement activities have been concentrated in this area since May 2007. Another key factor is the efforts of the AHB T2M Program though a range of activities including liaison with an AHB-specific industry committee, presence at regular monthly beekeeper club meetings, the legislative requirements regarding movement of bees, and beekeepers in the Cairns region being subjected to more intensive interactive displays at the 2012 far north Queensland show circuit.

Findings from the observational questions in the survey show that beekeepers still do have concerns regarding possible negative impacts from the pest bee but are generally more fearful of a new incursion bringing exotic mites and bee diseases into the country. A low number of respondents indicated that they had observed aggressive behaviour of AHB to EHB and vice versa. This may be explained by the fact that some beekeepers reported verbally (during monthly meetings) that they had observed AHB going into EHB hives, but EHB successfully defending their hive. This is consistent with research overseas that showed that fights between AHB and EHB were always won by the much larger and stronger of the two species: EHB (reviewed in Koetz, 2013).

It should also be noted that Cairns participants have been exposed to AHB for six years prior to the survey, but the bee is yet to establish in the Townsville region. Therefore, only Cairns beekeepers' responses regarding AHB behaviour are relevant here.

The majority of respondents who answered the questions regarding the need for tools to manage or minimise the impact of AHB found the newly developed *Guideline for industry destroying swarms and nests of AHB* to be adequate for their needs. Industry do encourage and support the idea of a video depicting AHB destruction techniques being developed and this is currently on track to be available on the BQ website this year (2013).

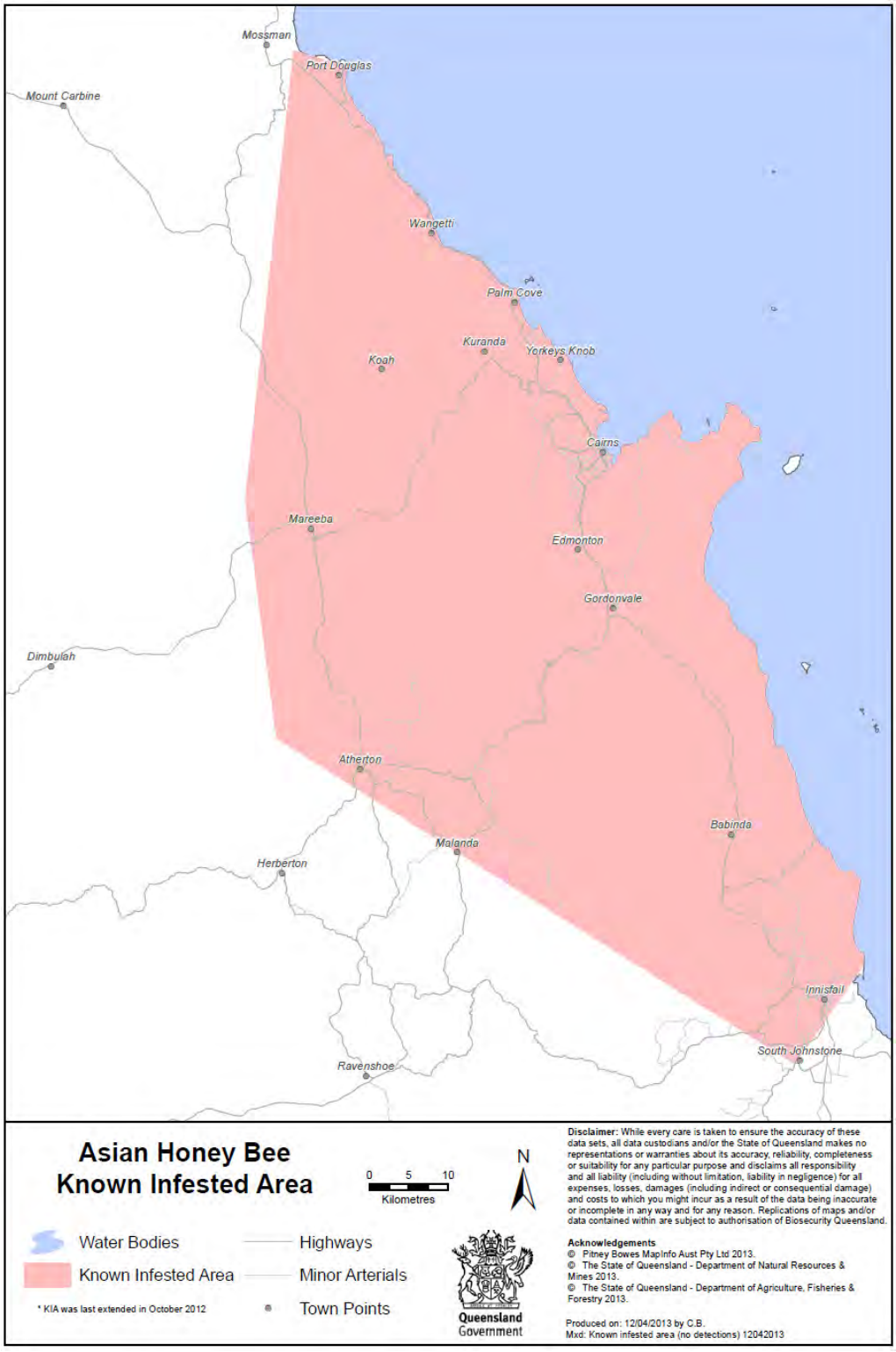
Beekeepers that responded to the survey did indicate their ongoing desire for development of an AHB specific trap to support their industry. However, the majority of respondents gave no response when asked to suggest additional tools that could assist and support their industry in the management of AHB.

As can be seen from the comments provided for Question 16, most respondents are happy with AHB T2M Program's efforts with comments including "Carry on the good work". No negative comments were recorded for this question.

Interestingly, Townsville beekeepers were more aware of where and what tools are available on the BQ website than those in the Cairns region. This may reflect their geographical proximity to the established population and their apprehensions regarding the pest bee and to what extent it might impact their industry. Their willingness to educate themselves may also be due to the low level of face-to-face contact the club has had with the AHB T2M Program. Finally, the style of the survey proved appropriate to the audience (closed or multiple choice questions) as most closed questions were rewarded with an answer, while very few participants took the opportunity to provide comments or more detail when given the opportunity.

In conclusion, the survey targeting north Queensland beekeepers and conducted by AHB T2M Program staff fulfilled its objective of gathering important information from beekeepers to assist with some of the deliverables of the AHB T2M Program. Ideally, the sample size of the survey would have been larger and more representative of the whole of the beekeeping community to give the findings of this report more substance. However, the information provided is an invaluable insight into what attitudes and knowledge beekeepers in both the Cairns and Townsville regions have regarding the AHB T2M Program.

Appendix 1 Asian honey bee Known Infested Area (KIA)



Appendix 2 Survey for apiarists/beekeepers

Department of Agriculture, Forestry and Fisheries

Apiarists/beekeeper Survey

Queensland Government

* Please circle your answer to the following questions

1. Which bee would you identify as the Asian honey bee?	A / B
2. Are you aware the AHB program is Transition to Management?	YES / NO
3. Have you seen AHB in Australia in the wild? (if no, go to Q10)	YES / NO
4. Have you seen AHB in/on/around your European hives?	YES / NO
5. Have you observed competition for nectar/pollen between European Honey bees (EHB) and AHB?	YES / NO
6. Have you observed aggressive behaviour from AHB to EHB?	YES / NO
7. Have you observed aggressive behaviour from EHB to AHB?	YES / NO

* Please tick one or multiple boxes for the following questions

8. Have you observed AHB;

Robbing EHB hives	☐	Taking over EHB hives	☐
Fighting EHB	☐	Entering or exiting EHB hives	☐

9. Have you seen any negative impact on;

Honey production	☐	Foraging behaviour of EHB	☐

Other (specify)_____

10. With the most recent information extended from the program, what impacts do you perceive the Asian honey bees will have;

Robbing EHB hives	☐	Taking over EHB hives	☐
Fighting EHB	☐	Bringing new diseases	☐
Reduced honey production	☐	Native fauna and flora	☐

Please turn over the page and continue

Thank you for filling out this survey.

For more information regarding Asian honey bees in Australia please visit www.biosecurity.qld.gov.au

Department of Agriculture, Forestry and Fisheries

Queensland Government

* Please tick one or multiple boxes for the following questions

11. What do you perceive as the biggest threat to your industry?

a) The current infestation of AHB	☐
b) A new infestation of AHB carrying varroa	☐
c) A new infestation of EHB carrying varroa	☐

Other (specify) _____

* Please circle your answer to the following questions

12. Do you think that;

a) You need tools to manage, control or minimise the impact of AHB on the commercial honey industry?	YES / NO
b) The "Guideline for industry destroying swarms and nest of AHB" provides adequate information to destroy colonies?	YES / NO
c) A video depicting destruction techniques be helpful?	YES / NO
d) Are there additional tools the industry requires (specify)	

_____

13. Do you attend local beekeeping meetings?	YES / NO
14. Do you access information about AHB from the Biosecurity Queensland website?	YES / NO

If no, where do you access information about AHB (specify)

_____

15. Did you know that the following tools are available on our website?

a) An Asian honey bee Fact Sheet	YES / NO
b) A Guideline for industry destroying swarms and nests of AHB	YES / NO
c) A 'Known Infested Area' map	YES / NO
d) Access to completed AHB scientific reports	YES / NO
e) Online identification tools	YES / NO
f) An online reporting tool to help track the spread of the bee	YES / NO
g) Images of Asian honey bees/swarms and nests.	YES / NO

16. What suggestions can you make to help with managing the current infestation?

_____

_____

References

Koetz A.H., 2013. The Asian honey bee (*Apis cerana*) and its strains - with special focus on *Apis cerana* Java genotype - Literature Review. Asian honey bee Transition to Management Program, Department of Agriculture, Fisheries and Forestry (DAFF), Cairns

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AHB TMG Minutes

Meeting Fourteen of the Asian Honey Bee Transition Management Group (AHB TMG)

Teleconference held on Tuesday 25th June, 2013

Attendees: Tom Aldred (Chair) DAFF Commonwealth, Luke Osborne DAFF Commonwealth, Glynn Maynard DAFF Commonwealth, Mike Ashton DAFF Queensland, Russell Gilmour DAFF Queensland, Anna Koetz DAFF Queensland, Brenda Foley DAFF Queensland, Melanie Commerford DAFF Queensland, Trevor Weatherhead AHBIC, Ian Zadow AHBIC, Greg Fraser PHA, Rod Turner PHA, Sam Malfroy PHA (Secretariat) and Jenna Taylor PHA.

Apologies: Nin Hyne DAFF Commonwealth, Rose Hockham DAFF Commonwealth and Lindsay Bourke AHBIC.

Item 1 – Welcome

The Chair welcomed the Members of the Asian Honey Bee Transition Management Group (AHB TMG) to meeting fourteen.

Item 2 – Discussion and acceptance of minutes from previous meeting

The minutes from meeting 13 were tabled. Mr Malfroy stated that comments were provided out of session by members of the AHB TMG, and that the minutes and reports attached had since been accepted and placed on the AHB website. All members agreed that they provided a true and accurate record of meeting 13.

Item 3 – Action items from previous meeting

The action items from meeting 13 were tabled and discussed. The Chair stated that all action items had been completed and would be discussed under the relevant items as listed in the agenda.

Item 4 – Industry Project Update

Mr Malfroy tabled CSIRO's final report into the pest and disease status of *Apis cerana* and *Apis mellifera* in the Cairns region. Mr Malfroy stated that this was an industry funded project and the results demonstrated that no new viruses and no parasitic mites were observed. Mr Malfroy stated that RIRDC wished to publish the report in the near future, and that any comments on the report should be forwarded to PHA and RIRDC by the 28th of June.

Mr Malfroy also tabled the preliminary proposal which was submitted by AHBIC to RIRDC to hold a 2-day AHB training workshop in August in the Cairns region. Mr Weatherhead stated that Dr Denis Anderson and Professor Ben Oldroyd would be conducting the training and that this would form part of an accredited and competency based training program. Mr Weatherhead added that he would also attend the workshop.

Item 5 – AHB SAG: summary of Meeting 10

Mr Turner discussed with the committee that an AHB SAG meeting was held on the morning of the 25th of June. The SAG discussed many of the final reports that were presented by DAFF Queensland and agreed that they met the requirements of the AHB T2M. Mr Turner added that the SAG had been given until the 26th of June to comment on the spread modelling report as this report was more recent than the others and the SAG had not had sufficient time to review and comment on this report prior to their 25th of June meeting.

Mr Turner stated that an R&D Future Recommendations report was also discussed and finalised. The purpose of this R&D statement was to capture the experience of the AHB SAG

and to pass it onto R&D funding agencies such as RIRDC to consider when funding industry R&D.

Item 6 – Reporting and clearance of final reports from DAFF Queensland

Mr Gilmour provided an update of AHB activities in Queensland through the Progress Summary Report (Attachment A), Surveillance Report (Attachment B) and the DAFF Queensland Final report (Attachment C).

Mr Turner added that all but one of the scientific reports completed by DAFF Queensland and submitted for the consideration of the AHB TMG had been approved by the AHB SAG at their earlier meeting.

The Chair requested that any comments on the reports should be forwarded to PHA and DAFF Queensland by COB on Wednesday 26th of June. If no comments were received, then these reports are deemed final and DAFF Queensland is able to invoice PHA for final payment as part of the AHB T2M.

Item 7 – Release of DAFF Queensland documents and reports

Mr Turner stated that all of the final reports produced as part of the AHB T2M would be placed on the Asian honey bee website and that PHA would maintain this website into the future. Mr Turner also stated that PHA had been commissioned by RIRDC to develop a honey bee and pollination website and some of this information would also be used for that website.

It was discussed that PHA could also re-develop and amend some of the reports into the future to meet the needs of particular programs, such as the National Bee Pest Surveillance Program.

Item 8 – Management of AHB in Qld after 30th June 2013

Mr Ashton informed the AHB TMG that members of staff currently working on AHB as part of the AHB T2M in DAFF Queensland would be leaving their roles by 30th June and that management of the AHB in Qld would pass to the Animal Biosecurity and Welfare program in DAFF Queensland. Mr Ashton stated that post 30th June 2013 responsibility for responding to reports of suspect AHB would rest with the apiary officers in DAFF Qld. Only reports of AHB in high risk areas such as around ports or transport hubs, or in new areas where the bee had not previously been detected, would be responded to. Reports of AHB in the known infested area (KIA) around Cairns would be the responsibility of the community to manage and, in the future, only reports that are deemed potential new incursions would be responded to in the KIA.

Item 9 – The RA and trade issues

The Chair informed the TMG that DAFF (Animal Biosecurity) had recently held a teleconference with the Canadian Food Inspection Agency (CFIA) on the 19th of June to discuss honey bee exports from Australia to Canada.

The Chair stated that CFIA were undertaking a review of their previous risk assessment of queen bees and packaged bees from Australia, with the completion due to be before next seasons trade which starts in January 2014. The Chair discussed that DAFF would be providing assistance to CFIA to complete this risk assessment over the next 6 months, and would be providing information on honey bee health in Australia and planned surveillance of pests of concern, amongst other issues.

Mr Ashton again reiterated that the Restricted Area in Qld would remain in place until the trade issues with Canada are resolved. Mr Weatherhead thanked Mr Ashton for that commitment, as

well as DAFF for progressing the issue. The Chair stated that DAFF would keep in regular contact with AHBIC and DAFF Queensland to resolve this issue over the coming months.

Item 10 – Future meetings of the AHB Working Group

The Chair stated that it was flagged at the last meeting of the AHB TMG that meetings in this format would continue into the future as a means to discuss topical issues such as the RA and trade issues, as well as the progression of the industry funded research projects, to help keep communication channels open between governments and industry. The Chair proposed that the next AHB meeting take place on the 26th of September 2013.

Mr Ashton confirmed that the Animal Biosecurity and Welfare program in DAFF Queensland would be taking over management of AHB into the future and that Mark Cozens would likely be the QLD representative at future meeting of the AHB TMG.

Item 11 – Summary and close of meeting and AHB T2M

The Chair thanked the AHB TMG for their contribution to the AHB T2M over the past two years and closed the meeting.

Asian honey bee Transition to Management Program

Progress Summary Report, June 2013

This publication has been compiled by Russell Gilmour of Biosecurity Queensland, Department of Agriculture, Fisheries and Forestry.

Contents

This document is prepared for the Transition to Management Group meeting on 25 June 2013.

Other relevant documents and tools provided separately include:

- *Asian honey bee Transition to Management Program, Final Report*
- Asian honey bee Surveillance Report, April – June 2013
- *Asian honey bee manual - Techniques for the identification, detection and destruction of Apis cerana*
- Updated *Asian honey bee fact sheet*
- Updated step-by-step guide *Guidelines for industry - Destroying swarms or nests of Asian honey bees*
- *Asian honey bee destruction video,* http://www.youtube.com/watch?v=afrOmz7qXCk
- Optimising Asian honey bee (*Apis cerana*) trap design and attractants. Asian honey bee Transition to Management Program
- Destruction efficacy of Asian honey bees (*Apis cerana*) in Cairns, Australia. Asian honey bee Transition to Management Program
- Detection efficacy of Asian honey bees (*Apis cerana*) in Cairns, Australia. Asian honey bee Transition to Management Program
- Ecology and behaviour of Asian honey bees (*Apis cerana* Java) in Cairns, Australia. Asian honey bee Transition to Management Program
- Asian honey bee (*Apis cerana*) remote nest treatment. Asian honey bee Transition to Management Program
- Asian honey bee spread modelling. Asian honey bee Transition to Management Program
- North Queensland apiarist survey report. Asian honey bee Transition to Management Program

Program highlights

Detections

There have been 833 detections of Asian honey bee (AHB) nests and swarms since May 2007. During the life of the Asian honey bee Transition to Management (AHB T2M) Program there have been 413 detections of AHB nests and swarms.

Note: The Asian honey bee Known Infested Area (KIA) currently surrounds Cairns; north to Bonnie Doon (near Mossman), west of Atherton and Mareeba and south to South Johnstone. The KIA is 522,122 hectares in size. The Program has ceased surveillance and responding to public reports in the KIA, unless the report is considered a new incursion, or where there is a risk of aided spread, or on the edge, or outside of the KIA. In these instances officers respond in accordance with the 'Responding to public notifications of Asian honey bee' policy. These detections are referred to as Detections of Interest and since the last TMG meeting they are:

Inside the KIA

Two swarms, detected within 800 m of the Cairns seaport, were destroyed.

Outside the KIA

Following a report from a beekeeper near Mutchilba regarding foraging AHB bee lining was commenced at 19 June 1015am to find and destroy the nest. At 1:00pm the nest of AHB (IP 832) was detected in a hollow of a fallen log about 0.5m above the ground and 270m away where bee lining commenced. The nest was destroyed but not extracted.

On 20 June a nest was detected and destroyed in the wall of an old dairy in Malanda following a report by a local beekeeper. This is the first nest of AHB detected in Malanda but is not a big increase in the KIA because the KIA intersects Malanda as it runs from Arriga to South Johnstone. The nest was destroyed but not extracted.

On the edge of the KIA

Nil detections.

Public reports

26 public reports of AHB have been received since 28 May 2013 bringing the total number of reports since 1 July 2012 to 521. Since May 2007 there have been 2,162 AHB reports.

Industry engagement

- The final state industry liaison meeting was conducted on 17 April 2013 with agreement that another meeting before the end of the Program was unnecessary. TMG meetings would fulfil any enquires.

- The Program's Senior Community Engagement Officer attended and presented a Program update at the final local Cairns and Tablelands Beekeeping Club meeting. The Club was thanked for their continued support during the AHB T2M Program and for all of their assistance during the show circuit and scientific trials. Additionally, all club members were invited to attend the public lecture given on 6 June 2013.

Community engagement

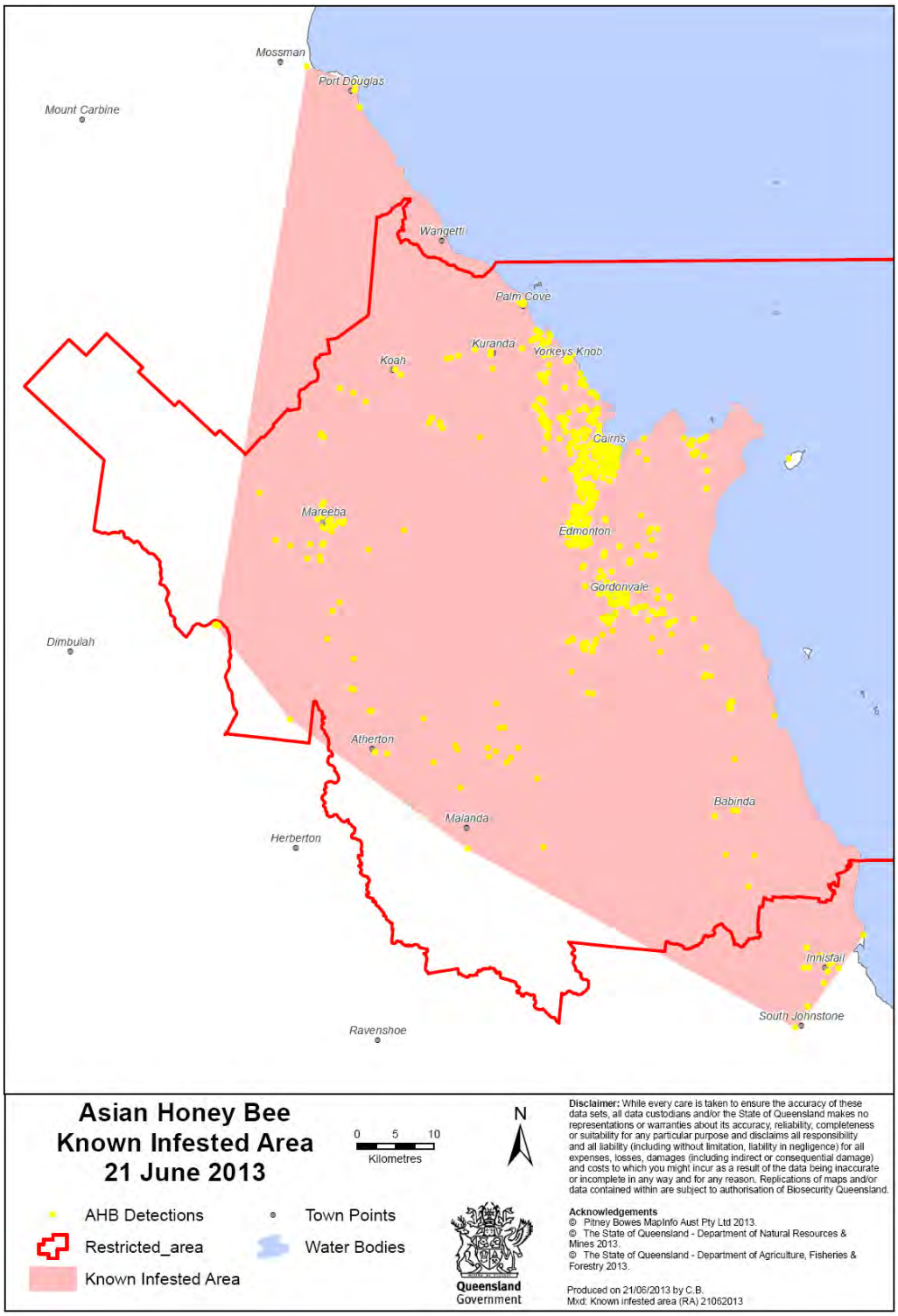
- The *Asian honey bee fact sheet* was redesigned and the information updated to be suitable post-AHB T2M.
- The step-by-step guide *Guidelines for industry— destroying swarms or nests of Asian honey bees* was redesigned and the information updated to reflect post T2M needs and what pest control operators will be required to do.
- The *Asian honey bee destruction techniques for industry use* video was completed and is now available on YouTube (http://youtu.be/afrOmz7qXCk).
- The *Asian honey bee manual – Techniques for the identification, detection and destruction of Apis cerana* was completed and is currently being printed. The web-ready version has been completed (attached) and will be uploaded to the Biosecurity Queensland website post 'departmental content freeze'.
- New website modifications and content were approved and finalised. These will also be uploaded to the Biosecurity Queensland website once the 'departmental content freeze' has been finalised. Web pages were reduced by 55%. Community focused content was redesigned to be more interactive. Industry related content was moved to a newly developed Queensland Government Business Industry Portal (BIP) website (see below).
- A new series of 'Mini Guides' were developed and approved to be included on the BIP website. These guides have been specifically designed for the pest control industry and will house links to the step-by-step guide and the destruction video while linking back to the departmental site for further information. This will be live in July 2013.
- Final social media posts were run in June highlighting;
  - A pest controller call-to-action
  - The launch of the Asian honey bee destruction video
  - An identification post, focusing on the difference between AHB and EHB.

Science

- The following reports were finalised and submitted to the TMG:
  - Asian honey bee (*Apis cerana*) spread modelling[1]
  - Detection efficacy of Asian honey bees (*Apis cerana*) in Cairns, Australia
  - Destruction efficacy of Asian honey bees (*Apis cerana*) in Cairns, Australia
  - Ecology and behaviour of Asian honey bees (*Apis cerana*) in Cairns, Australia
  - Optimising Asian honey bee (*Apis cerana*) trap design & attractants
- Our Senior Scientist delivered a public lecture on 6 June 2013 regarding What we know about Asian honey bees in Queensland'.

[1] This is a preliminary report only

Appendix 1: Current Known Infested Area[2]



[2] The last detection of AHB was made on 20 June 2013

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Asian honeybee Surveillance Report

April - June 2013

This publication has been compiled by Corey Bell of the Asian honey bee Transition to Management program, Department of Agriculture, Fisheries and Forestry.

Contents

Current Situation

The Asian honey bee Known Infested Area (KIA) covers over 500 000ha; restricted to an area around Cairns; north to Bonnie Doon (near Mossman), west of Atherton and Mareeba and south to South Johnstone.

In the current phase of the Transition to Management program operations have ceased within the Known Infested Area (KIA), unless;

- the report is considered a new incursion or
- there is a risk of aided spread or
- it is on the edge, or outside of the KIA

In these instances officers respond in accordance with “Responding to public notifications of Asian honey bee” policy.

The programs current emphasis is on transitioning the response of AHB to Apiary Officers in line with the Cessation Strategy.

Since the first detection of Asian honey bee (AHB) in Cairns in May 2007, a total of 833 swarms or nests have been detected.

During this reporting period 9 AHB swarms and nests were detected – 4 nests and 5 swarm. 2 nests were detected in June 2013 beyond the previous KIA that had not changed since October 2012.

Surveillance

Reports from the public

The public made a total of 94 reports during the period, 8 of which were confirmed to be positive detections.

- 35 public reports in April
- 35 public reports in May
- 24 public reports till 21 June

Edge surveillance

Surveillance beyond the KIA was undertaken between April and June 2013. This involved floral surveillance and collection of Rainbow Bee eater pellets in residential areas of selected towns between 2 and 50km from the KIA (refer to Table 1 for a summary and Appendix 2 for more detail).

No AHB were detected as was the case when the previous round of edge surveillance was undertaken in October-December 2012.

Rainbow bee eater pellets were collected from 2 sites beyond the KIA.

- Pellets collected from Wonga on 23 April were negative for AHB
- Pellets collected from Wonga on 7 May were negative for AHB

Area relative to KIA	Towns surveyed	Distance (km)	Time (hours)	EHB	AHB	Rainbow bee eater pellets (result)
Western edge	Mutchilba, Dimbulah, Ravenshoe, Herberton	24.29	10.83	201	0	No (NA)
Northern edge	Mossman, Cooya Beach, Wonga, Newell, Daintree Village	34.02	14.16	201	0	Yes (negative)
Southern edge	Kurrimine Beach, Wongaling Beach, Bingil Bay	30.7	10.83	81	0	No (NA)
	Total	**89.01**	**35.82**	**483**	**0**	

Table 1: Summary of edge surveillance conducted between April and June 2013

Detections

A total of 4 nests and 5 swarms were discovered. These detections included 2 nests and 2 swarms. The public reported 7 of these nests or swarms while 1 nest was beelined from foraging AHB beyond the previous KIA at Mutchilba and 1 swarm was detected by DAFF staff in the Redden St car park (see table 2 below for details of all detections for the period).

IP Number Address	Location	Swarm/Nest	Detection Date	Detection method	Found by	Date destroyed
IP825 433 Russell Road, Gordonvale	Inside Meter box	Nest	03/04/2013	Public report Client to call Ergon to destroy	Bell, Corey; Docherty, Glen	Not destroyed
IP826 Cnr Tingira and Aumuller, Portsmith	Around Beech Almond tree	Swarm	23/04/2013	Public report 5 bees given to Aqis - Looked for swarm around the almond beech tree but swarm had moved on	Docherty, Glen; Hancox, T	Not destroyed
IP827 21-23 Redden Street, Portsmith	On a melaluca tree trunk	Swarm	24/04/2013	Former AHB staff member noticed swarm in car park	Ghafari, Shirin	24/04/2013
IP828 41 Tingira Street, Portsmith	Inside door of old shipping container	Nest	09/05/2013	Public report Less than 800m of port so given to AQIS. Nest was not in container 1 week ago	Docherty, Glen	09/05/2013
IP829 Smithfield Shopping Cnt Smithfield	Swarm on pole of Trolley bay outside Woolworths	Swarm	3/06/2013	Public report. Killed because it was a public nuisance.	Docherty, Glen	3/06/2013
IP830 52 Comport Road Portsmith	4m high in roof of a carport	Swarm	14/06/2013	Public report. Killed because it was within 800m of Cairns sea port.	Bell, Corey	14/06/2013
IP831 4 Comport St Portsmith	On fence at ground level	Swarm	18/06/2013	Public report. Killed because it was within 800m of Cairns sea port	Bell, Corey	18/06/2013
IP832 Leadwood's Farm Demis Rd, Mutchilba	0.5m high in hollow of a fallen tree	Nest	19/06/2013	Beelined from foragers detected outside of the previous KIA.	Bell, Corey; Leeon, Lisa; Giblin, Arthur	19/06/2013
IP833 7 Wakeford Rd, Malanda	0.3m high in the wall of an old dairy	Nest	20/06/2013	Public report by a local beekeeper	Leeon, Lisa; Giblin, Arthur	20/06/2013

Table 2: List of AHB detections for the period

Detection at Mutchilba

Summary

- IP832 was detected by beelining on 19 June 2013
- It is the first detection beyond the western edge of the Restricted Area (RA) although only by 500m.
- Extension of the Known Infested Area (KIA) by 2 2612ha up to 513 298ha.
- Distance from the previously KIA is 7.6km.
- Distance from nearest IP is 13.4km (IP681 a nest detected and destroyed in July 2012).
- This detection is 8.7 km east of the town of Mutchilba where floral surveillance conducted in April 2013 did not detect AHB.

Public report of foragers

On 5 June a local beekeeper noticed unusual bees foraging on the ground in front of his EHB hives in use for pollinating Avocados at Demis Road, Mutchilba. The suspect bees were foraging on sugar syrup that had been spilt on the ground in front of the hives whilst preparing it to be fed to the EHB. The beekeeper estimated there were 50 of these suspect bees along with EHB feeding on the spilt syrup and he collected 7 samples and supplied them to the President of the Cairns Beekeepers Association.

The samples were then brought to the DAFF office for identification by the President of the Cairns Beekeepers Association who believed they were AHB and that they were robbing commercial EHB hives. They were confirmed by the entomologist to be AHB.

A Biosecurity Officer inspected the area where the AHB were collected with the beekeeper but the sugar syrup was empty and there was no foraging activity immediately around the hives. 3 of 15 hives were opened and no AHB were observed in them. The owner of the hives did not see the AHB robbing or entering the EHB hives and that all the AHB seen were foraging on the spilt syrup on the ground in front of the hives.

Surveillance was also conducted nearby on flowering Avocados and 2 AHB were observed and confidently identified in the field by the Biosecurity Officer. A sample could not be collected but GPS location and other details were recorded.

Detection of nest (IP832)

On 19 June at 10.15am an officer visited the property reported above and bee lining of AHB that were foraging at the base of commercial EHB hives commenced. A sugar station with a steady flow of AHB foragers was moved 5-20m at a time in the direction of the bees flight. At 1:00pm the nest of AHB (IP 832) was detected and then destroyed in a hollow of a fallen log about 0.5m above the ground and 270m away from where the bee lining commenced.

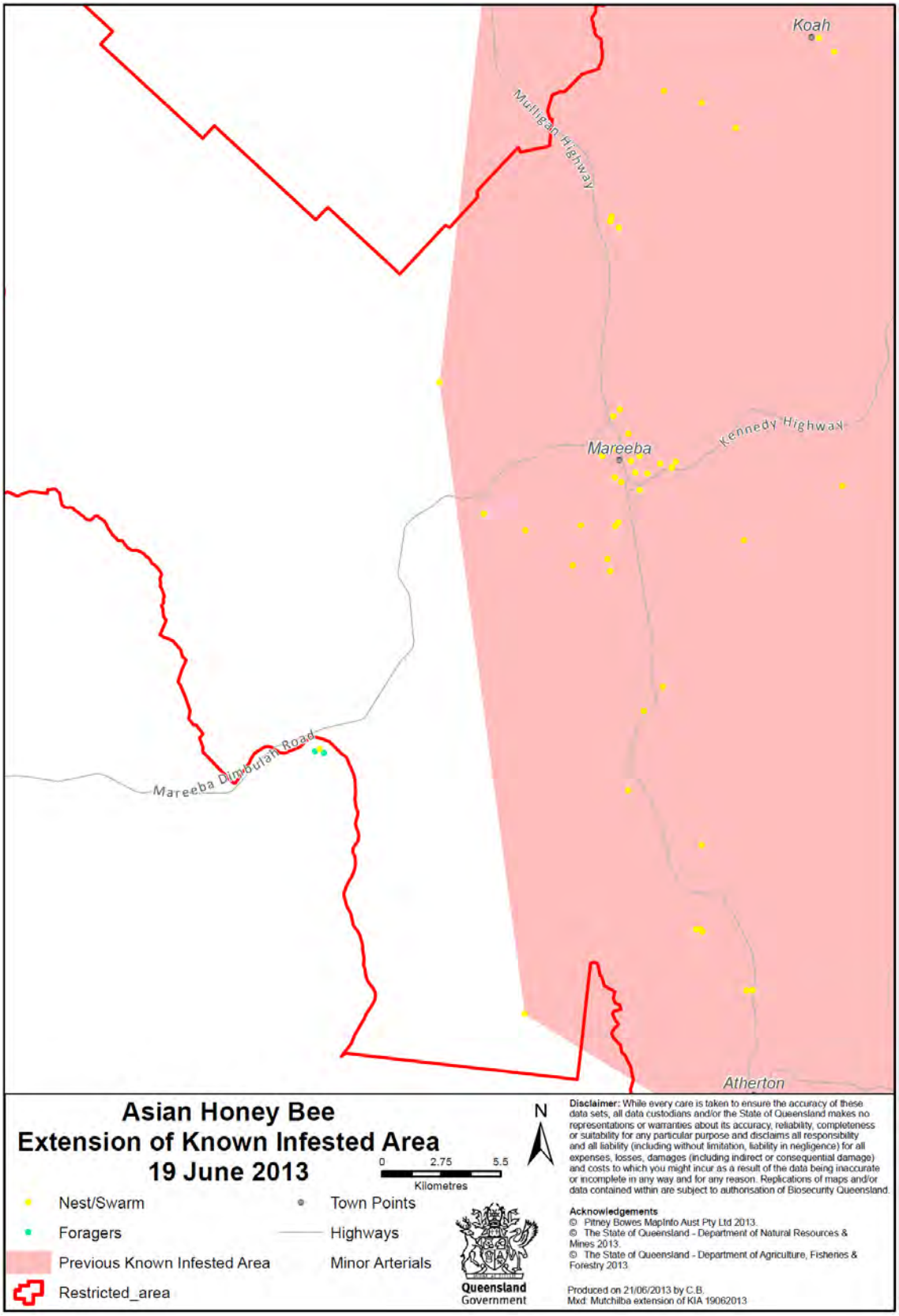


Figure 1: Mutchilba AHB in relation to the RA, previous KIA and other AHB detections.

Detection at Malanda

- IP833 was detected and destroyed in the wall of an old dairy in Malanda on 20 June following a public report by a local beekeeper.
- Outside the previous KIA by 2.25km and the first nest of AHB detected in Malanda. It is not, however, a big increase in the KIA because the previous KIA intersected Malanda as it runs between Arriga and South Johnstone.
- Extension of KIA by 8 824ha bringing the total KIA to 522 122ha.
- The detection is within the RA.
- Nearest previous detection, 8km away, was a nest (IP577) detected and destroyed in March 2012.

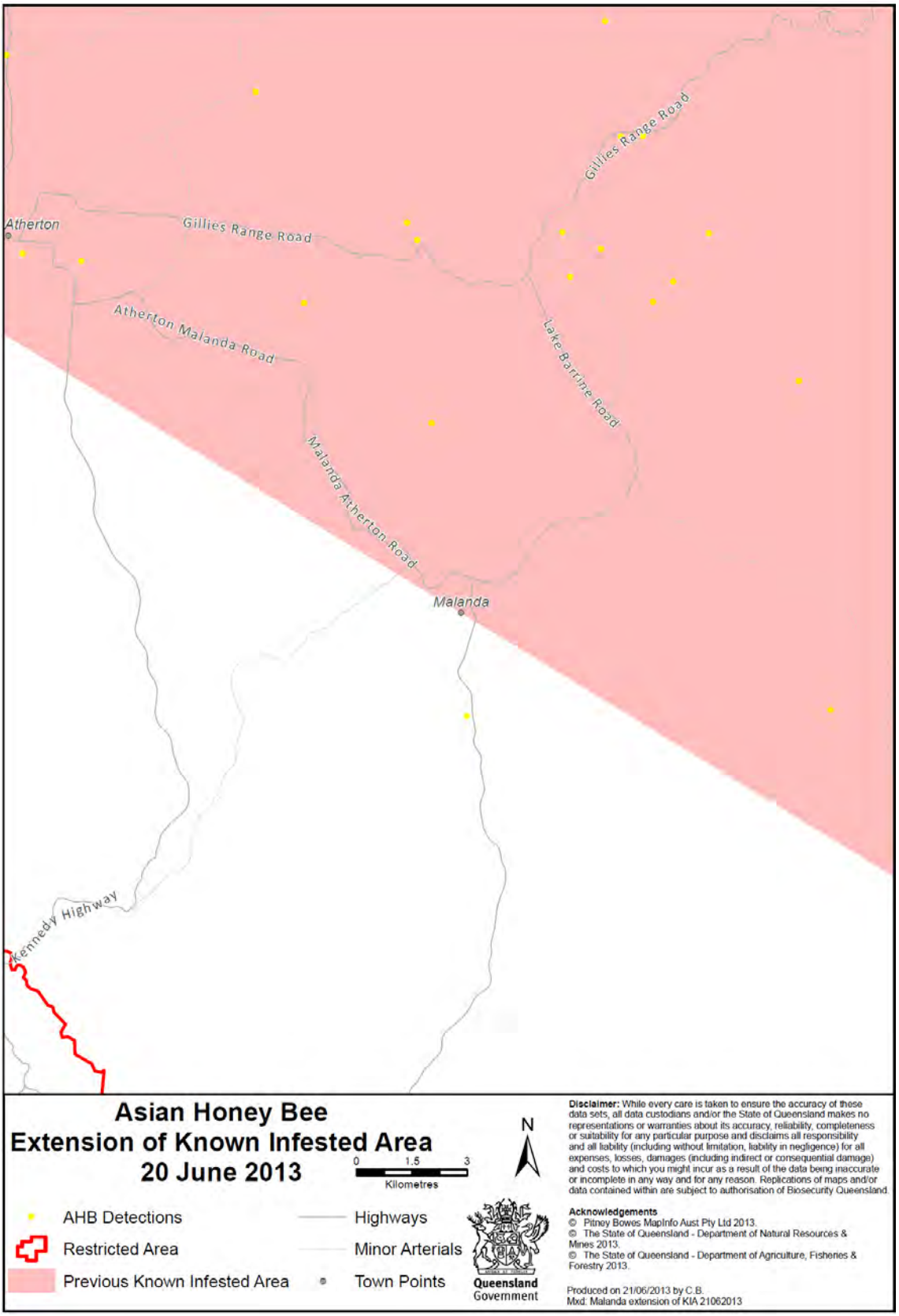
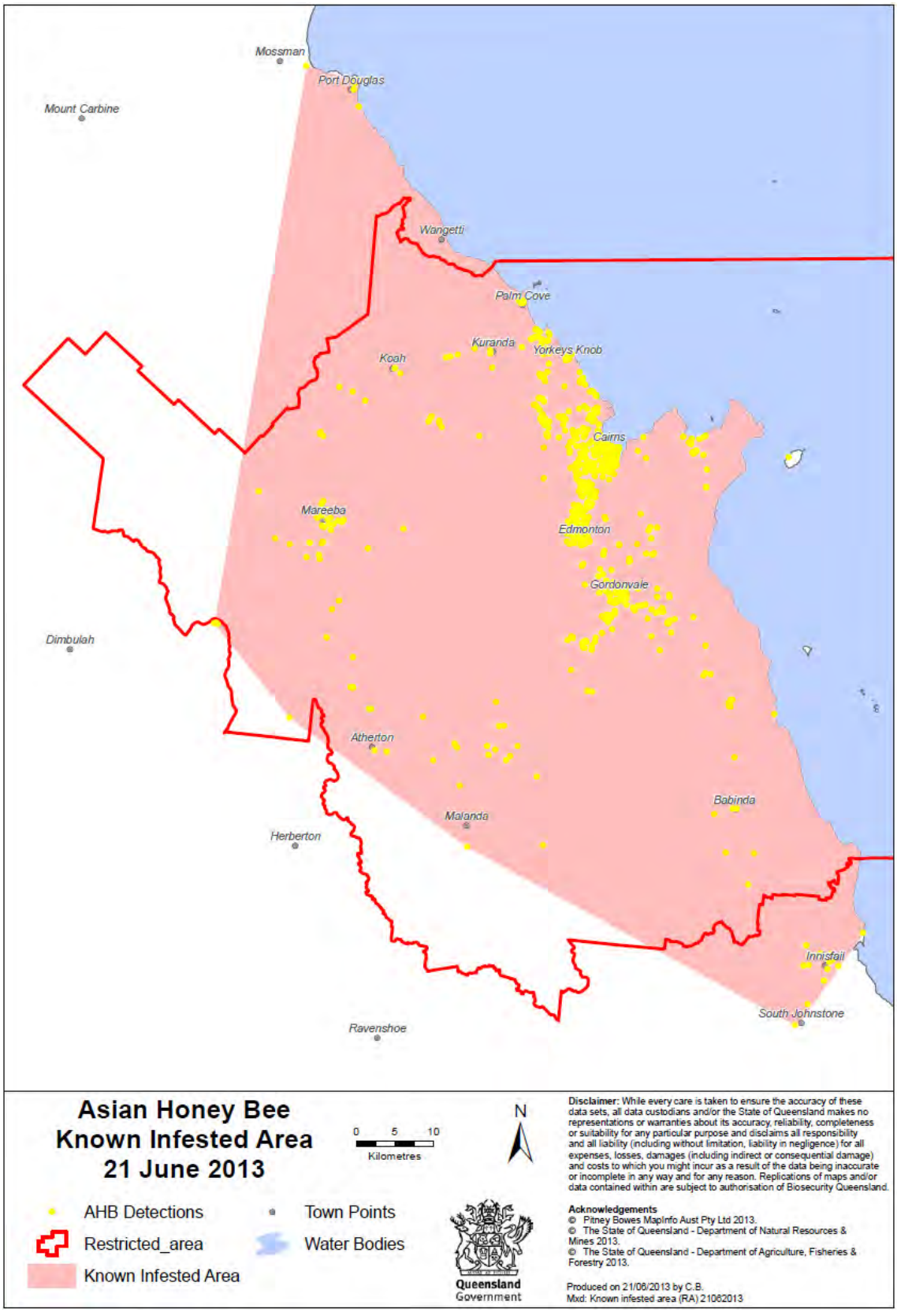


Figure 2: Malanda AHB detection in relation to previous KIA and other detections.

Appendix 1- Map of KIA (and all detections)



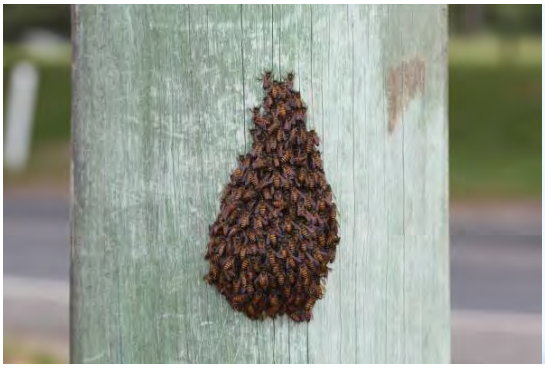
Appendix 2 - Edge surveillance summary table

Suburb	Date	time	hours	distance (km)	Weather	staff	no. of EHB	observed on	no. of AHB	flowering species observed	bee eater pellets	result
Bingil Bay	3/04/2013	0900-1100	2	4.17		Glen and Corey	22	Singapore daisy, Tridax, Calliandra	0	Singapore daisy, Mimosa, Acacia, bottle brush, Ixora, Duranta, foxtail palm, Lantana Snakeweed, Tridax, Morning star, Calliandra	No	N/A
Kurrimine Beach	3/04/2013	1215-1315	1	5.23	windy, overcast, surveillance stopped due to rain	Glen and Corey	0		0	Duranta, bottlebrush, cuphea, ixora, marigolds, snakeweed, blue top, pink coral vine	No	N/A
Kurrimine Beach	15/05/2013	0825-1000	1.58	3.73	partly cloudy	Glen and Corey	0		0	Tridax, mimosa, Singapore daisy, Callistemon, Duranta, Ixora, morning star, bottlebrush, blue top, flannel weed	No	N/A
Kurrimine Beach	5/04/2013	0900-0930	0.5	0.96	windy, overcast, surveillance stopped due to rain	Glen and Corey	0		0	tridax, mimosa, morning star, duranta, callistemon, purple top, flannel weed, Singapore daisy, ixora	No	N/A
Tully	17/06/2013	0800-1230	4	9.07	partly cloudy	Corey	59	Marigolds, Sensitive weed, Basil, Dahlia, Calliandra, Cuphea, Morning star	0	Coral vine, Purple top, Praxelis, Ixora, Singapore daisy, Cobblers peg, Tridax, Bottle brush, Melastoma, Snakeweed, Navua sedge	No	N/A
Wongaling Beach	15/05/2013	1030-1215	1.75	7.54	Sunny	Glen and Corey	27	Coral vine, Singapore Daisy, Cuphea, Morning star,	0	Cuphea, morning star, tridax, Singapore daisy, khaki weed, ixora, Duranta, snakeweed, calliandra, praxelis, palm flower, golden penda,	No	N/A
Mutchilba	9/04/2013		0.5	1.4	partly cloudy	Glen and Corey	11	Coral vine	0	Tridax, duranta, ixora, purple top, coral vine, bottle brush	No	N/A
Dimbulah	9/04/2013	0900-1145	2.75	6.97	overcast	Glen and Corey	25	Calliandra, Duranta, Purple top, tridax, Morning star, palm, Callistemon, Singapore Daisy, Purple top,	0	tridax, calliandra, duranta, lily pily, bottle brush, morning star, coral vine, foxtail palm, ixora, purple top, acacia, Singapore daisy, Callistemon, Singapore Daisy, Purple top,	No	N/A
Ravenshoe	17/05/2013	0900-1250	3.83	10.51	partly cloudy	Glen and Corey	127	Cuphea, Calliandra, Banksia, Paper daisy, Cobblers peg,	0	Cuphea, Calliandra, Banksia, Paper daisy, Cobblers peg, roses, Khaki weed, grevillia, Duranta, easter cassia, Tuckeroo, coral vine, lantana,	No	N/A
Herberton	4/06/2013	0855-1240	3.75	5.41	overcast	Glen and Loreley	38	Cuphea, palm flower, tridax	0	Calliandra, Tridax, Mimosa, Duranta, Cuphea, Palm Flower, Purple top, black eyed susan, Banksia, Acacia, Frangipani, Gravillia, Bougainvillia, Praxellis, Callistemon	No	N/A
Mossman	7/05/2013	1130-1330	2	3.99	overcast	Corey and Glen	4	Duranta	0	Mimosa, Singapore daisy, Tridax, purple top, clitoris weed, palm flower, coral berry, gloriosa superba, callistemon, Ixora, morning star, navua sedge, khaki weed, cordylines, purple top	No	N/A

Mossman	14/05/2013	0750-1030	2.67	9.49	sunny	Corey and Glen	70	mimosa, foxtail palm, morning star,	0	mimosa, foxtail palm, morning star, Ixora, Duranta, Callistemon, Tridax, Black eyed susan, Singapore Daisy, Clitoris weed, Cuphea, navua sedge, praxelis, purple top, Tacoma stans, khaki weed, Centro pubescens, roses	No	N/A
Cooya Beach	15/04/2013	0825-1130	3.08	6.14	fine and sunny	Corey and Tara	91	Navua sedge, flannel weed, Mimosa, Ixora, Tacoma stans, Tridax, Duranta	0	Foxtail palm, Tridax, Duranta, Mimosa, Ixora, Tacoma stans, Singapore daisy, Snakeweed, Callistemon	No	N/A
Wonga	23/04/2013	1010-1145 & 1308-1450	3.08	8.04	fine and sunny	Corey and Tara	33	Khaki weed, Tridax, Yellow bells	0	ixora, mock orange, tridax, mimosa, foxtail palm, morning star, duranta, Singapore daisy, Navua sedge, praxelis, Cuphea, yellow bells, khaki weed, acacia, melaleuca, snake weed, clistemon, tecoma stans, calliandra	Yes	Negative
Wonga	7/05/2013	N/A			N/A	Glen and Corey	N/A	N/A	N/A	N/A	Yes	Negative
Daintree Village	15/04/2013	1430-1515	0.75	1.59	overcast	Corey and Tara	0	N/A	0	Callistemon, Calliandra, Ixora, Cocos palm, Cuphea, Duranta, Tridax, Singapore daisy, Tacoma stans.	No	N/A
Daintree Village	7/05/2013	0830-0920	0.83	1.28	partly cloudy	Corey and Glen	0	N/A	0	Caliandra, Ixora, Palm flower, Callistemon, Tridax, Mimosa, Duranta, Cuphea, Singapore Daisy, Clitoris weed, Cordyline, Navua sedge, purple top, morning star, Tacoma stans		
Newell	23/04/2013	0800-0945	1.75	3.49	fine and sunny	Corey and Tara	3	Tacoma stans	0	Duranta, tridax, pubescens, Ixora, Mock orange, cuphea, morning star, Singapore daisy, mimosa, navua sedge, snakeweed, Tacoma stans, callistemon, foxtail palm		
TOTALS			**35.82**	**89.01**			**510**		**0**			

Asian honey bee Transition to Management Program

Final report – June 2011 to July 2013



This publication has been compiled by Dr. Anna Koetz, Brenda Foley, Melanie Commerford and Russell Gilmour of Biosecurity Queensland, Department of Agriculture Fisheries and Forestry.

Contents

Summary

The Asian honey bee[1] (AHB) Transition to Management (T2M) Program (herein referred to as 'the Program') was funded by the Australian and Queensland Governments and the Australian Honey Bee Industry Council (AHBIC) following a National Management Group decision that eradication of AHB in Australia was not technically feasible.

To assist the community and industry in transitioning to managing AHB, the Program has delivered the following key elements:

- Developed tools to raise public awareness and help industry, the community and other stakeholders identify and manage AHB including:
  - Enhanced Website capabilities with improved tools for the identification and online reporting of AHB, what to do if threatened and a portal for all AHB T2M outcomes.
  - Hands on technical workshops provided to critical stakeholders.
  - Asian honey bee fact sheet for the community.
  - Guidelines for industry— destroying swarms or nests of Asian honey bees.
  - Check your load transport poster – building awareness around minimising spread.
  - YouTube video - Destruction techniques for industry use.
  - Asian honey bee manual - a document describing techniques for the identification, detection and destruction of AHB.
- Developed and adapted tools and strategies to control AHB in a range of urban, business, rural and natural environments.
- Undertaken research focussed on developing and optimising methods to detect, identify and destroy AHB.
- Maintained measures aimed at reducing long distance spread of AHB.
- Informed the *Varroa* action plan through knowledge gained from the AHB incursion.

This report details the key objectives and achievements delivered during the life of the Program.

[1] *Apis cerana* Java genotype

Background

Asian honey bees (AHB) were first detected in Cairns, Queensland in May 2007. The Queensland Government immediately commenced an eradication program with the aim of delimiting and containing the incursion within a 50 km radius of Cairns whilst the pest was eradicated.

In April 2010, the National Management Group agreed to cost shared funding for the Asian honey bee eradication, backdating the funding to 1 July 2009, under the provisions of Australia's formal emergency pest response arrangements. The program was nationally funded between 1 July 2009 and 31 March 2011.

In January 2011, the National Management Group agreed that eradication was not technically feasible. However, it did agree to consider whether any further action was warranted on a national scale to mitigate the potential impact of the AHB.

In response to the National Management Group decision, a national Transition to Management Plan was developed to help industry and the community adapt to the pest. The Australian and Queensland Governments and the honey bee industry agreed to jointly fund the implementation of the plan.

In June 2011, a two-year Asian Honey Bee Transition to Management Program was established in Biosecurity Queensland to implement key components of the plan.

In November 2011, the Australian Government released the Plan for Transition to Management of the Asian honey bee[2] as a national pilot program. The plan identified a range of actions to transition from a state of eradication to a program of management, acknowledging that the AHB would continue to spread and become established in urban and rural areas of Australia where the environment favours its survival.

An Asian honey bee Transition Management Group (TMG) was established to oversee the Program, monitor its delivery and ensure that the Program outcomes were achieved. The TMG was chaired by the Australian Government and consisted of senior representatives from Australian Department of Agriculture, Fisheries and Forestry (ADAFF), Queensland Department of Agriculture, Fisheries and Forestry (QDAFF), and AHBIC. The TMG also included Plant Health Australia as an observer in recognition of its role as administrator of the Program.

An Asian honey bee Scientific Advisory Group (SAG) was also established to provide technical advice, feedback and consideration of specific projects and activities within the Program. The AHB SAG consisted of honey bee scientists and industry experts.

[2] The Plan for Transition to Management Program of the Asian honey bee can be downloaded from www.asianhoneybee.net.au

Objectives of the AHB T2M Program

The key objectives of the Program were to provide tools for a range of stakeholders to apply mitigating and control measures, as appropriate, to limit the pest's impact on human health, social amenity and honey production.

Stakeholders included the community, land owners, commercial and hobby apiarists, pest controllers, transport industries, indigenous rangers and environmental groups. Some of these were deemed to be critical stakeholders as they may be required to assist the community to manage the pest bee. These were identified as pest control operators, the transport industry, the beekeeping industry, indigenous rangers, and those who work in environmental management.

Through the Program, stakeholders were educated to better understand the likely spread of AHB, the potential impact of AHB on the community and environment, and what actions they could take to manage and minimise those impacts.

The objectives of the Program were achieved through the implementation of the following eight projects.

1. Limiting impact on urban communities (AG1)

Tools were identified, developed and made available to the community to help reduce the bee's impact on health and safety.

This was achieved by:

- Identifying critical stakeholders and, in consultation, developing tools relevant to their needs. Evaluating the effectiveness of these tools to ensure that they would be useful to industry and the community in the long term.
- Educating critical stakeholders about AHB identification and control options to reduce the impact of the bee on business, the community and local environment. Training workshops also emphasised that the Program was transitioning away from managing AHB.
- Revitalising existing information sources and increasing social media and other interactive communication.
- Ensuring critical stakeholders and the wider community had access to information about AHB and relevant control measures and other management tools through an updated website, an Asian honey bee factsheet, step-by-step guides for the detection, identification and destruction of AHB, and a video on YouTube showing different destruction techniques.

Website and Facebook site established (adapted from existing sites)

Biosecurity Queensland's website was periodically reviewed and underwent six updates during the Program to ensure stakeholder's needs were addressed and that it reflected the transitional phases of the Program and objectives of the cessation strategy.

The number of AHB-related web pages on the Biosecurity Queensland website increased from 11 in 2011-2012 to 25 in 2012-2013. For the 11 AHB web pages that existed for the entirety of the AHB T2M Program, the greatest increase was recorded for the number of viewers accessing information regarding AHB self-identification, reporting suspect bees and the impact of AHB. For these three information sources the page views increased by 1444%, 608% and 188% respectively, reflecting the extensive content and customer journey

improvements made. Substantial increases were also observed for all other core AHB pages, with an increase in the number of times they were viewed ranging from 68% to 128%.

Web page views were greater in 2012-2013 for all except two web pages, specifically the (i) Asian honey bee Transition to Management program and (ii) restricted area and movement restrictions pages. Views of these pages decreased by 42% and 5% respectively, highlighting the community's greater interest in user-friendly practical resources to help them identify and manage AHB.

Of the 14 AHB-related pages introduced in 2012-2013, the most accessed pages were (i) Asian honey bee nests and swarms (320 views), (ii) Asian honey bee image gallery (310 views), and (iii) History of Asian honey bees (174 views).

A regular social media reporting framework, including an event calendar, was developed and implemented in consultation with the QDAFF's social media unit. Regular reports were provided on social media activities including a number of posts from Biosecurity Queensland and the public. In total, 13 AHB-related posts were published on Facebook by Biosecurity Queensland in the 17 months between 22 November 2011 and 15 April 2013. Of these, eight (58%) related to reporting AHB sightings, three (25%) related to identification and surveillance for AHB, and two (17%) related to AHB transition to management strategies. The total number of Facebook users viewing AHB-related posts was greatest for posts addressing reporting AHB sightings, followed by identification and surveillance, and Transition to Management.

All posts made to Facebook during this time were replicated as Twitter messages. An additional two tweets related to reporting AHB sightings were made by Biosecurity Queensland between October 2012 and November 2012.

Information reviewed and updated as Program outcomes are delivered and information is tested

Informative training workshops were developed, following a consultation phase with critical stakeholders, to provide hands-on training in how to identify and perform destruction on AHB swarms and nests. These training sessions also helped to identify what other tools were needed for each stakeholder group for the ongoing management of AHB. Training workshops were offered to critical stakeholders in northern Queensland.

Evaluation of the workshops identified the following tools to be developed, which are now available for download from the Biosecurity Queensland website (www.biosecurity.qld.gov.au):

- Video footage of nest and swarm management – *Asian honey bee destruction techniques for industry use* (available on YouTube).
- A step-by-step guide on swarm and nest management - *Guideline for industry - destroying swarms and nest of Asian honey bees*.
- An information sheet for businesses to distribute to the community - *Asian honey bee* fact sheet.
- Improved online resources including a complete overhaul of website information to be more interactive with the stakeholder and improved identification material.
- Information for the transport industry that could be displayed in tearooms, depots, ports and possibly in vehicles and vessels to build awareness about the importance of not moving bees – *Check your load* poster.

Further information can be found in the report *An evaluation of Asian honey bee workshops conducted in the known infested area for critical stakeholders*.

Customer journeys developed for website

Customer journeys were developed and improved, e.g. during training workshops provided to critical stakeholders, with attendees providing feedback on the website, its usability and their journey to find information. This feedback was considered and incorporated when revitalising the web pages to make them more stakeholder-friendly, interactive, easy to access and provide clear pathways to find information.

Develop a comprehensive strategy to manage the cessation of government funding of transition by June 2013, underpinned by a significant engagement and communications plan

The *Asian honey bee Transition to Management Program Communication and Community Engagement Strategy* (November 2011) and *Asian honey bee Transition to Management Cessation Strategy* were developed to identify and set targets to be achieved through the transition phases from eradication to management.

2. Control measures for AHB (AG2)

Control measures to manage AHB in a range of urban, business and rural situations were investigated in project AG2. Key outcomes are summarised below.

Desktop review to better understand AHB and how others manage AHB

To better understand AHB, and how others manage AHB, a preliminary review of the literature was conducted. In addition, nest and swarm characteristics of 486 detections were analysed. Results were published in *Asian honey bee (Apis cerana javana) in Cairns, Far North Queensland foraging, nesting and swarming behaviour Report of field observations April 2007 – September 2011 in March 2012*.

This desktop review was followed by an extensive literature review as well as an analysis of 807 nests and swarms detected between 2007 and early 2013 (see below in AG2 and AG3).

Develop integrated control strategies for different industries to minimise impacts of AHB, including identifying any off-target impacts (especially the balance between AHB and commercial European honey bee in the same environment to minimise impact on honey production)

Efficacy of detection and destruction methods that had previously been used in the Program was determined (see below). The most appropriate detection and destruction methods for different situations were identified. The balance of AHB and EHB within the same environments was established in the above mentioned behaviour reports, and tipped in favour for EHB. Four times as many EHB than AHB were found with EHB successfully outcompeting AHB.

Validate the efficacy of detection and destruction methods and strategies as essential elements of deploying different control methods

Efficacy of detection and destruction methods that had previously been used in the Program was determined, and results reported in *Detection efficacy of Asian honey bee (Apis cerana) in Cairns, Australia* and *Destruction efficacy of Asian honey bee (Apis cerana) in Cairns, Australia*. The detection efficacy report identified strengths and weaknesses of individual techniques. For instance, Rainbow bee-eater pellet analysis was found to be excellent for determining the presence or absence of AHB in a general area, but it was found to be poor

for detecting AHB nests. The destruction efficacy report similarly identified strengths and weaknesses of different detection techniques. For instance, flying insect killer was good for killing some nests but poor at killing nests in wall cavities that were difficult to access. Permethrin dust was more effective in these instances.

Practical guides for the detection and destruction of AHB were also developed, i.e. *Guideline for industry - Destroying swarms and nest of Asian honey bees* and *Asian honey bee manual: Techniques for identification, detection and destruction*. These guides will assist biosecurity agencies, industry and other affected parties deploy effective detection and destruction techniques for AHB.

Determine the timing of implementing these methods and strategies to maximise the effectiveness of control methods

Scientific research was conducted throughout the Program and continued until the end of the Program. Determining the timing of implementation of the methods and strategies developed during the program will be highly dependent on the rate of spread of AHB to other parts of Australia and the location and frequency of any new incursions of AHB.

Understand AHB behaviour to better inform development of targeted control measures

An extensive literature review sourced and reviewed 448 scientific journal articles and published reports. It summarised the findings of research previously conducted on AHB. No research was published on Australian AHB, and the majority of Asian research focussed on temperate AHB.

The Asian honey bee (Apis cerana) and its strains – with special focus on Apis cerana Java genotype – Literature review highlighted that AHB differs from EHB in that it is generally smaller, lives in smaller colonies, nests in smaller cavities (often in non-natural structures), and has a smaller foraging range. AHB also display greater hygienic behaviour, making them more disease resistant and enabling them to coexist with *Varroa* mites. AHB is regarded as an excellent crop pollinator in Asia including playing an important role in the pollination of both wild and native flora. While AHB are successfully kept in hives for honey production, they produce distinctly less honey than EHB. Interestingly, the review indicates that as Asia shifts towards keeping EHB due to their capacity for greater honey production relative to AHB, dramatic declines (and sometimes local extinction) of AHB have occurred due to mating interference and competition for floral sources.

In addition, the *Ecology and behaviour of Asian honey bees (Apis cerana) in Cairns, Australia* report advanced the existing scientific knowledge of AHB nesting and swarming characteristics, floral visitation, foraging times, drone flight times and competition with EHB in the Cairns region. Two opportunities to develop novel measures to either control AHB or mitigate the potential adverse effects of exotic bee pests and diseases were identified: (1) the possibility to use mating interference between EHB and AHB to potentially suppress the expansion of AHB within Australia, and (2) the capacity to exploit selective breeding of EHB strains for increased resistance to *Nosema ceranae* fungus that is already present in Australia and for *Varroa jacobsoni* and *V. destructor* mites that may accompany future introductions of AHB.

Determine effectiveness of bait stations, their design and attractant effectiveness

Successful control of any introduced species requires methods that allow quick detection, followed by control/destruction. In terms of AHB, a successful attractant is needed in order to attract foragers, which can then be bee-lined to their nest. No such attractant was available.

A range of different attractants and trap designs were trialled, and results reported in the Program reports *Bee trap efficacy* and *Optimising AHB bait/feeding station design & attractants*. No trap designs were satisfactory although simple bottle traps did trap some AHB. No attractants were successful, or species-specific, except for the orchid *Cymbidium floribundum.* This orchid is native to Japan and has been used there to lure swarms into hive boxes. In the Cairns trial, the orchid flowers had an immediate attraction to AHB workers. Dr. David Guez has been engaged to further pursue this research in a project funded jointly by the Rural Industries Research and Development Corporation (RIRDC) and AHBIC.

Investigate alternative control techniques and attractants

See above, "*Determine effectiveness of bait stations, their design and attractant effectiveness*".

Finalise development of remote poisoning

Between February and June 2012, 19 remote treatment trials with fipronil-laced sugar syrup were conducted on 15 AHB nests. The treatments showed that fipronil was effective at suppressing and killing individual AHB colonies as long as more than 20% of bees (relative to nest entrance activity) took fipronil back to the nest. The percentage of bees taking back fipronil relative to the nest entrance activity was the best predictor of treatment success.

Remote nest treatment was found not to be an efficient and successful means to kill exotic bees for several reasons: (1) treated nests did not always die; (2) treatments required extensive person-hours to conduct (average of 93 hours per treatment); (3), unacceptable risk to non-target species, and (4) the necessity to locate the nest in order to determine treatment success.

Results were reported in *Asian honey bee (Apis cerana) remote nest treatment - Final report*.

Tomato dust – a potential control to be researched and validated

The SAG recommended[3] and the TMG approved that this research not be progressed.

Nectar analysis – analysis of nectar that AHB is foraging on to identify potential attractants for use in trap

The SAG recommended[4] and the TMG approved that this research not be progressed.

Research into pheromone use to attract and/or detect AHB in order to increase trap sensitivity

As part of determining the effectiveness of bait stations, their design and attractant effectiveness, several different pheromone lures were trialled. Two *A. cerana* Java genotype queen mandibular pheromone (QMP) lures (5-component[5] and 6-component[6]; synthesised by Michael Lacey, CSIRO) were trialled as well as synthesised 9-ODA (QMP component) sourced from Prof. Ben Oldroyd. The synthetic 5-QMP lure was more attractive to AHB than 6-QMP, and 9-ODA attracted some AHB drones.

3. Limiting impact on honey industry (AG 3)

Project AG3 key outcomes overlapped greatly with AG2 outcomes. AG2 investigated general control measures for AHB whereas AG3 investigated control measures with a focus on

[3] SAG meeting 3, 19 January 2012.
[4] SAG meeting 3, 19 January 2012.
[5] 5-component queen mandibular pheromone
[6] 5-component queen mandibular pheromone plus sting venom pheromone (Eicosanol)

limiting the impact of AHB on the honey industry. In effect, AG3 was an extension of AG2, and all outcomes from AG2 also apply to AG3.

It is important to note here that no negative impact of AHB on EHB or EHB honey production has been observed or reported throughout the Program. On the contrary, projects in AG2 have shown that EHB appear to negatively impact AHB. Therefore, general control strategies from AG2 were also deemed appropriate for the honey industry.

AHB behaviour research is critical to identify elements of differential control of AHB and European honey bees in the context of honey production. Developing an understanding of AHB behaviour will guide development of targeted control measures through:

Literature review and engagement with apiarists in the Cairns area who have had experience with both honey bees

Analysis to understand what is known and not known about AHB in relation to mating, behaviour, foraging habits, weather impacts, etc

Compare the behaviour between AHB and EHB to identify opportunities that support differential controls

These key outcomes overlapped greatly with each other as well as with AG2 key outcomes. They were addressed by conducting an extensive literature review (*The Asian honey bee [Apis cerana] and its strains – with special focus on Apis cerana Java genotype – Literature review*) as well as research into the ecology and behaviour of AHB (*Ecology and behaviour of Asian honey bees [Apis cerana] in Cairns, Australia*).

Experiments, observations and the literature review shed light on AHB mating biology. This research will continue past the end of the Program through Prof. Ben Oldroyd's research. AHB behaviour, foraging habits, floral preferences, climatic and temporal fluctuations, as well as a comparison of AHB/EHB behaviour were reported in *Ecology and behaviour of Asian honey bees (Apis cerana) in Cairns, Australia*. The most notable finding was that EHB appear to be outcompeting AHB on floral sources and that EHB is a superior robber and fighter when compared to AHB.

Engagement of apiarists in the Cairns region included attendance of AHB T2M team members at monthly Cairns and Tableland Beekeeping Club meetings, as well as some Townsville Beekeeping Club meetings. Cairns and Tableland Beekeeping Club members were involved in establishing a liaison committee at a local and state level. Information and training sessions were delivered to both the Cairns and Townsville Beekeeping Clubs in order to extend AHB identification, detection and destruction skills as well as for Program and Science updates. In addition, AHB knowledge and concerns were gauged through two surveys specifically aimed at Cairns and Townsville beekeepers. Results (presented in *North Queensland Apiarist Survey Report*) showed that local beekeepers were not concerned about the current AHB incursion, but were greatly worried about new incursions that may introduce new bee pests and diseases in the future.

Development of management strategies

Based on outcomes of Project 2, develop and test management strategies targeted at limiting impact of AHB on honey production in areas where AHB is established

This project overlapped greatly with the previous AG2 as well as AG3 outcomes. Due to the fact that no negative impact of AHB on EHB or EHB honey production has been observed or reported throughout the Program, no specific strategies were developed. Rather, general detection and destruction methods established in AG2 also apply to the honey industry.

Model the population dynamics and drivers of spread as they impact on the management of EHB hives

A stochastic, cellular automaton model was designed to simulate the spread and control of AHB in north Queensland. It incorporated short distance spread and long distance jumps, estimated habitat suitability for AHB, as well as a probability that AHB would be found and destroyed. When using input parameters for long distance dispersal of 60 km and control effectiveness of 95%, and starting the simulation in 2007, the predicted spread for 2012 somewhat matched the actual 2012 spread. Unfortunately, a 'glitch' in the model was apparent. Due to this 'glitch', any predictions made by the model need to be taken with utmost caution, and it is advised to disregard any output of the model until it is repaired.

A detailed spatial analysis of the spread of AHB between 2007 and 2012 was conducted, including stages of spread and spread rates. Interestingly, the rate of spread seemed to have slowed from 2010 onwards, which may be due to reduced surveillance efforts and/or AHB coming across climatic or other barriers to spread. Results can be found in *Asian honey bee Transition to Management Program, Spread of Apis cerana in Australia, 2007 – 2012.*

Develop technology to assist industry to mitigate AHB impacts

Stakeholder and industry engagement identified no further needs and priorities for technology development than those already identified.

Develop PCR testing to more quickly detect the presence of AHB in trap syrup etc as indicators of the need for management of European honey bee hives

Polymerase Chain Reaction (PCR) technology was employed to investigate whether DNA left behind in AHB trap syrup and Rainbow bee-eater pellets could be detected, which would negate the necessity to trap whole bees, as well as manually examine bee-eater pellets. Results can be found in *Detection of Apis cerana DNA from bee eater pellets and trap liquor* and *Detection of Apis cerana DNA from sugar syrup*.

Proof of concept was shown for both methods, which could lead to a molecular AHB surveillance program in far north Queensland if these methods are further developed and refined.

In addition, a different molecular genetic technique (microsatellites found in nuclear DNA) was tested in a preliminary study to determine whether AHB in Cairns descended from one or several incursions, and to pinpoint their country of origin. The preliminary study showed that AHB in Cairns are descendants from one single incursion, but the country of origin could not be ascertained given the small sample size. Results are reported in *May 2012: Short study of microsatellite alleles in Asian honey bees sourced from PNG/Solomon Islands and north Queensland: summary of data interpretation*. Following advice from the SAG[7] this work was not continued.

Develop approaches with the honey industry for adoption and implementation of management strategies

The Program liaised closely with the honey industry at a local, state and national level to ensure that research findings, management tools and other relevant information was extended. This was done through:

- a liaison committee at the local and state level
- Program team members participating in local beekeeping club meetings

[7] SAG meeting 6, 12 July 2012.

- information and training sessions delivered to Cairns and Townsville beekeeping clubs
- liaising with local beekeepers for research projects
- conducting a survey to gauge local apiarists' knowledge and concerns about AHB
- provision of an article for distribution to various industry publications
- delivering a public lecture on the science achievements of the Program ('*What we know about Asian honey bees in Queensland*', conducted in Cairns on 6 June 2013).

4. Limiting impact on natural environments (AG 4)

Engagement with indigenous communities and environment sectors

This project overlapped greatly with AG1. Indigenous communities and stakeholders from the environment sector were included in all Community Engagement activities listed in AG1.

Additional engagement included:

- Participation in forums such as the Cape York Peninsula Pest Advisory Committee, Far North Queensland Pest Advisory Forum, and Joint Operations Group (JOG) meetings with North Australian Quarantine Strategy (NAQS) staff.
- Presenting Program and science updates at scientific committee meetings held by the Wet Tropics Management Authority.
- Delivering a public lecture on the science achievements of the Program ('*What we know about Asian honey bees in Queensland*', conducted in Cairns on 6 June 2013).

Utilise tools and strategies developed for control measures (Project 2) and limiting impact on honey production (Project 3)

The detection and destruction methods that were evaluated in AG2 and AG3 are also applicable for AG4. These methods have been extended to traditional owners and environmental stakeholders through the above mentioned channels (listed in A1, AG3 and AG4).

5. Optimising early detection of new AHB incursions (AG 5)

The NAQS group, a part of ADAFF, played a key role in this part of the Program and provided significant resources to assist. The main focus of responding to new incursions is to find nests in order to destroy them and to check bees and comb for pests and diseases. Some detection methods were found to be better than others when needing to find nests (see AG2), and some are more appropriate to use in high-risk areas such as ports.

The SAG advised[8] that the establishment of bee free zones was not practical. Through discussions between NAQS and QDAFF it was decided that the term 'High Intensity Surveillance area' was more appropriate. NAQS conducted a separate detection efficacy trial in the High Intensity Surveillance area around the Cairns sea port.

The Program conducted a pathway analysis for long distance spread of AHB: *An analysis of movement controls and compliance for the Asian honey bee incursion in Cairns including a strategy to minimise the spread of Asian honey bee through pathways, 2012 – 2013.*

[8] SAG meeting 1 23 November 2011 and SAG meeting 6 12 July 2012

Conduct differential sensitivity testing to determine the comparative effectiveness of all available detection methods e.g. sentinel hive strategy vs. strategic sampling of surveillance traps

In the Cairns Port area, all detected nests and swarms are destroyed and then checked for exotic bee pests and diseases, as swarms and nests found in this area may be from a new incursion. NAQS conducted a surveillance trial restricted to the High Intensity Surveillance area. Any nests or swarms collected by the Program were provided to NAQS for this trial. Results showed that floral observations were not sufficient in finding enough nests for effective emergency pest and disease detection. Public reporting was also evaluated.

The Program's Science team also determined the comparative effectiveness of all available detection methods, but independently to NAQS and outside the High Intensity Surveillance area so as not to interfere with the NAQS trial. Results have been detailed in AG2 above and can also be found in the report *Detection efficacy of Asian honey bee (Apis cerana) in Cairns, Australia*.

Determine efficacy of surveillance strategies and techniques to determine likely detection rate in bee free zones and around ports in the context of established AHB populations

Efficacy of surveillance strategies were determined and reported in *Detection efficacy of Asian honey bee (Apis cerana) in Cairns, Australia*, which included a discussion on which methods were most appropriate in high risk areas (e.g. floral observation and public reporting) and which methods would not be suitable (e.g. Rainbow bee-eater surveillance).

NAQS investigated and reported on resource models for floral surveillance as well as public reporting as a detection method for AHB in a high-risk port area, using QDAFF staff and indigenous rangers. This included assessing the efficacy of joint operations between QDAFF and NAQS to convert, bee-line, find and collect AHB nests. Through this work, NAQS then developed a document to guide staff tasked with surveillance for new AHB incursions in an environment where AHB are already established.

Establish a strategy for laboratory analysis of AHB detections within bee free zones and around ports as an early detection strategy for any new incursions that could carry mites or viruses

All AHB detections were routinely tested for presence/absence of mites and bee diseases. No mites were detected during the term of the Program. The NAQS group investigated and established their own laboratory techniques to check nest material and swarms for parasitic mites.

Partner with the Northern Australian Quarantine Strategy (NAQS) program of DAFF to develop integrated operations focused on early detection of new AHB incursions and any quarantine pests that they may carry

Liaison between NAQS and QDAFF involved meetings throughout the Program. NAQS and QDAFF collaborated on surveillance options for the Cairns air and sea port areas. The Biosecurity Queensland policy *Responding to public notifications of Asian honey bee* was implemented and is working with good cooperation between ADAFF and QDAFF, e.g. Townsville detection January 2013.

In addition, it is envisaged that the *Asian honey bee manual: Techniques for identification, detection and destruction of Apis cerana* will be used by biosecurity agencies involved in either responding to a suspect new incursion of AHB or trying to prove an area is free of AHB.

6. Critical intervention to limit long distance spread (AG 6)

Measures to reduce the long distance spread of AHB have been maintained throughout the life of the Program. These measures will continue post 30 June 2013 through the Biosecurity Queensland apiary program. An analysis of the pathways and risk of potential spread of AHB was conducted with a view to minimising long distance spread through transport vectors (see AG5 above).

Maintain existing movement controls for an interim period and collect information on their efficacy, cost, compliance etc.

A Restricted Area for AHB remains in force around Cairns and movement licenses are required to move bees into the area or to move bees, bee products or beekeeping equipment within or out of the area. The Restricted Area will remain in place until issues associated with the export trade in live bees are resolved.

The process for applying for movement licences was enhanced to remove the requirement for apiarists to apply for multiple licences throughout the year. Apiarists can now be granted an annual licence to move bees, bee products and equipment within the Restricted Area.

Conduct pathway analysis to better understand likely pathways and potential for spread through pathways implicated in the long distance spread of AHB with a primary focus on effective strategies to minimise long distance spread through transport vectors

A pathway analysis was conducted. It identifies likely pathways and potential for long distance spread of AHB and may inform future development of biosecurity plans: *An analysis of movement control efficiency and compliance for the Asian honey bee incursion in Cairns including a strategy to minimise the spread of Asian honey bee through pathways, 2013 – 2013*.

Implement operations to minimise spread through those pathways, including developing bee free zones around transport hubs, ports, etc and review and revise their efficacy after one year

The SAG advised[9] that the establishment of bee free zones was not practical. Instead 'High Risk areas' were established. Consultation with transport industries identified: (1) the impracticality of putting restrictions on these transport modes, and (2) that the use of education, training and public awareness was the most practical way to minimise spread. An awareness campaign built around "Check your load" was implemented, including a poster distributed throughout north Queensland (including high risk transport hubs[10]), published articles, attendance at Transport Workers Union (TWU) meetings, and updated web information, to increase the awareness of transport bodies to not aid the spread of bees. To date, no instances of long-distance transportation of AHB out of the Restricted Area have been detected.

Work with transporter businesses in the development of monitoring systems, providing training in the recognition of AHB and what to do when AHB is suspected

As the transport industry was identified as a critical stakeholder, any extension identified in AG1 was also extended to this industry. The "*Check your load" poster*[11] mentioned above reinforced the message not to move bees.

[9] SAG meeting 1 23 November 2011 and SAG meeting 6 12 July 2012

[10] Posters were distributed to 240 transport businesses around Cairns and 26 transport business in the Townsville region.

Review the Varroa mite management plan and revise, as appropriate

Biosecurity Queensland reviewed the document '*A honey bee industry and pollination continuity strategy should Varroa become established in Australia – May 2011'*. Queensland has been strengthening its research work under the Program while also enhancing preparedness for pest bees and bee pests through a range of other activities that form the 'Queensland Bee Surveillance Program'. These activities are aligned with the recommended actions in the continuity strategy.

7. Protecting Queensland's social amenity and public assets (QG 1)

The Program has continued to protect Queensland's social amenity and public assets while educating and training the community and other key stakeholders to accept and learn to live with AHB. The Program has developed and implemented a strategy to cease government intervention (the *Cessation Strategy*), while at the same time preparing Biosecurity Queensland officers to respond to notifications of AHB or other pest bees and bee pests.

Contain AHB to the vicinity of known infested area

The AHB known infested area (KIA) has spread over time but spread has slowed considerably post 2010 and during the two years of the Program. Details of the spread of AHB since its arrival in Cairns in May 2007 can be found in *Asian honey bee Transition to Management Program, Spread of Apis cerana in Australia, 2007 – 2012.* Destruction of any nests or swarms reported within 10km either side of the edge of the KIA, or outside the KIA have been a priority during the Program to minimise the risk of further spread.

Suppress AHB infestations in strategic areas

Although suppression of AHB infestations in the KIA ceased in December 2012, it continued at high risk port areas and transport centres beyond this date. Suppression has continued on the edge of the KIA and will continue past the completion of this project in accordance with the '*Responding to public notifications of Asian honey bee*' policy as part of Biosecurity Queensland's ongoing bee-related activities.

Destroy AHB infestations around edges of infested area and in areas with high social amenity value

The Program responded to public reports of AHB on the edge of the KIA through until the end of the Program. Biosecurity Queensland will continue to respond to AHB reports in accordance with the Biosecurity Queensland '*Responding to public notifications of Asian honey* bee' policy.

Conduct surveillance to determine extent of infested area

Surveillance occurred throughout the life of the project and was documented in quarterly reports that are available on the Asian Honey Bee Transition to Management Program website (www.asianhoneybee.net.au). Surveillance for AHB and other bee pests and diseases will continue past the cessation of this Program as part of the Queensland Bee Surveillance Program.

There have been 831 detections of AHB nests and swarms since May 2007. The area of the KIA was 522,122 hectares as at 30 June 2013.

A map of the KIA as at 30 June 2013, including all known detections of AHB, is included at the end of this report.

8. Improving operational efficiency and effectiveness (QG 2)

Throughout the Program research results guided improvements to operational efficiency and effectiveness.

Quantify efficacy of current operational techniques

Efficacy of current operational techniques was analysed and reported in *Detection efficacy of Asian honey bee (Apis cerana) in Cairns, Australia* and *Destruction efficacy of Asian honey bee (Apis cerana) in Cairns, Australia* (see also AG2).

Review of efficacy of odour detection dog surveillance. With eradication no longer being the focus of the program, determine whether odour detection dog is a cost effective operational tool

Efficacy of odour detection dog surveillance was conducted and reported in *Asian honey bee Odour detection dog review* as well as in *Detection efficacy of Asian honey bee (Apis cerana) in Cairns, Australia*. Use of the detector dog had advantages and disadvantages. However, it was deemed ineffective as a long term surveillance tool for AHB as the majority of surveillance was in open urban or rural areas where human surveillance was more efficient and effective. Use of the detector dog ceased in 2011 but during its evaluation the dog successfully detected 47 AHB nests (42 trial nests and 7 new nests. Use of detector dogs for AHB and other exotic bee surveillance may be appropriate in some situations or environments. For example, areas that are difficult or dangerous for people to access or to sight nests and swarms (e.g. ports, ships, container storage areas and transport hubs) are well suited to use of the detector dogs. However, the cost of training and maintaining the dog is likely to outweigh the benefits of their use for bee surveillance.

Undertake spatial analysis of current AHB infestation to guide to future surveillance activities

Details of AHB spread are reported in *Asian honey bee Transition to Management Program, Spread of Apis cerana in Australia, 2007 – 2012.* As at October 2012, the AHB KIA covered 490 685 hectares. Average spread rates were found to be between 1.42 and 1.86 km/month depending on the method used. However, the actual spread of AHB did not match the spread estimates based on the average spread rates. This may be due to several factors: (1) the spread has indeed slowed, or (2) it has come across climatic or other boundaries (e.g. the western edge may be becoming too dry), or (3) it is an artefact of reduced surveillance along the increasing (and less populated) edge of the KIA.

Undertake spread analysis of current AHB infestation to guide future management strategies

Details of AHB spread are reported in *Asian honey bee Transition to Management Program, Spread of Apis cerana in Australia, 2007 – 2012.*

Undertake technical analysis of all nests and honeycomb to guide the spread and spatial analysis

A detailed analysis of all extractable nests and honeycomb was conducted, including information such as comb length, width and thickness; comb mass; comb area; number of cells containing honey and pollen; number of queen cells/cups, drone cells and worker cells; number of empty cells; diameter of queen cells/cups, drone cells and worker cells; and mass of all bees collected from a nest. Results clearly showed that AHB nests (and swarms) in Cairns were substantially smaller than AHB nests in tropical Asia. Details are reported in *Ecology and behaviour of Asian honey bees (Apis cerana) in Cairns, Australia*.

Post Transition to Management

The primary goal of the Program was to transition from a state of AHB eradication to long term community and industry management of the pest bee. The Program was conducted acknowledging that the bee will continue to spread and become established within urban and rural areas of Australia where the environment favours its survival.

As of July 2013, government management of the established population of AHB around Cairns has ceased following the achievement of key objectives under the AHB Transition to Management Plan. From 1 July 2013, the community and relevant industries are capable of playing their part in managing the impacts of AHB.

A number of research and development projects were commenced during the Program and a number of these will continue through 2013-14. Projects are underway on opportunities to further reduce the incidence and impact of bee pests and diseases and build capacity to apply research findings through extension and education. Organisations including the Rural Industries Research and Development Corporation, Commonwealth Scientific and Industrial Research Organisation and Horticulture Australia Limited are delivering this research.

Governments remain committed to managing the health status of EHB. The Australian Government will continue to respond to incursions of exotic bee pests through its surveillance activities at the border and under the Northern Australia Quarantine Strategy (NAQS).

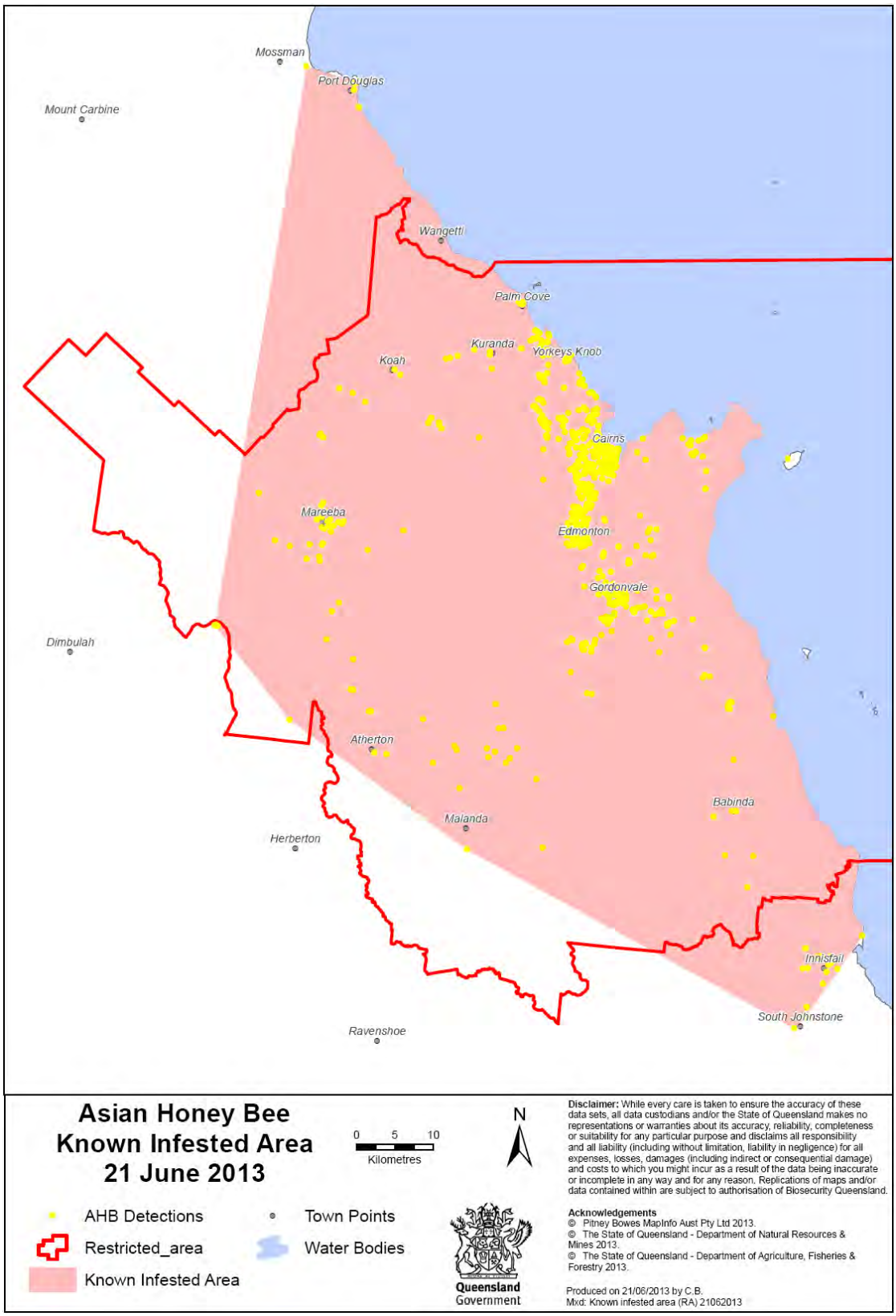
Surveillance is an ongoing priority and ADAFF, Horticulture Australia Limited and the AHBIC are contributing funding to the National Bee Pest Surveillance Program. This initiative builds on its predecessor, the National Sentinel Hive Program, and provides an early warning system to detect new incursions of exotic bees and bee pests such as *Varroa*, *Tropilaelaps* and tracheal mites. An expanded network of sentinel hives has been established at locations considered high risk throughout Australia. Hives are monitored at two month intervals with targeted surveillance at the three highest risk areas in each jurisdiction. This program will also implement new surveillance techniques and provide improved data management capability.

A focus for this national program is improved integration with the Queensland Government and Queensland Beekeepers' Association Queensland Bee Surveillance Program. This program includes early detection of new incursions of AHB and other bee pest and diseases through monitoring high risk areas such as ports and land areas at greater risk of receiving or transporting pest bees and bee pests. Laboratory diagnostic support for these programs is provided through Australian and Queensland government laboratories.

Plant Health Australia facilitates emergency preparedness activities including implementation of the *Honeybee industry and pollination continuity strategy should Varroa become established in Australia* and arrangements with industry and government members to support responses to new incursions under the *Emergency Plant Pest Response Deed*.

The Australian Government will continue to manage international market access negotiations with bee industry trading partners.

AHB Known Infested Area as at 21 June 2013



Reports and other key documents produced during the AHB T2M Program

The following reports, documents and communications material were created during the two years of the AHB T2M Program.

All reports and other key documents produced by the Program are available for download from the Asian Honey Bee Transition to Management Program website (www.asianhoneybee.net.au) maintained by Plant Health Australia or by contacting the Queensland Department of Agriculture, Fisheries and Forestry (details are included on the back page of this report).

Community Engagement

Asian honey bee Fact Sheet

Guidelines for industry - Destroying a swarms and nests of Asian honey bees

An evaluation of Asian honey bee workshops conducted in the KIA for Critical Stakeholders

Asian honey bee Transition to Management Program Communication and Community Engagement Strategy

Destruction techniques for Industry use – YouTube video

Asian honey bee manual: Techniques for identification, detection and destruction of Apis cerana

Ross-Reid, B, Foley, B, et al. (2013). North Queensland apiarist survey report. Asian honey bee Transition to Management Program, Department of Agriculture, Fisheries and Forestry (DAFF). Queensland.

Operations

Gilmour, R. Bell, C.; Docherty, G. (2012) Asian honey bee Odour Detection Dog Review. Department of Employment, Economic Development and Innovation. Cairns

An analysis of movement controls and compliance for the Asian honey bee incursion in Cairns including a strategy to minimise the spread of Asian honey bee through pathways, 2012 – 2013

Asian honey bee Surveillance Report: July–December 2011, January–March 2012, April–June 2012, July–September 2012, October–December 2012, January–March 2013, April–June 2013

Program management including policy

Asian honey bee Transition to Management Program, Biosecurity Queensland Work Plan to Deliver T2M Projects

Asian honey bee Transition to Management Program, Biosecurity Queensland Work Plan to Deliver T2M Projects, Progress Report at 31 January 2012

Monthly Asian honey bee Transition to Management Program, Progress Summary Report 2012-2013

Asian honey bee Transition to Management 2011 – 2012 Report

Asian honey bee Transition to Management – Cessation Strategy

Policy documents included:

- Responding to public notifications of Asian honey bee
- Responding to public notifications of bee pests and pest bees other than Asian honey bee

Science

Commerford, M. M. and A. H. Koetz (2013). Ecology and behaviour of Asian honey bees (*Apis cerana* Java) in Cairns, Australia. Asian honey bee Transition to Management Program, Department of Agriculture, Fisheries and Forestry (DAFF). Queensland.

Commerford, M. M., N. Wittmeier, et al. (2013). Optimising Asian honey bee (*Apis cerana*) trap design and attractants. Asian honey bee Transition to Management Program, Department of Agriculture, Fisheries and Forestry (DAFF). Queensland.

Hyatt, S. (2011). Asian honey bee (*Apis cerana javana*) in Cairns, Far North Queensland: Foraging, nesting and swarming behaviour - Report of field observations April 2007 - September 2011. Department of Employment, Economic Development and Innovation. Queensland.

Koetz, A. H. (2013). The Asian honey bee (*Apis cerana*) and its strains - with special focus on *Apis cerana* Java genotype - Literature Review. Asian honey bee Transition to Management Program, Department of Agriculture, Fisheries and Forestry (DAFF). Queensland.

Koetz, A. H. (2013). Detection efficacy of Asian honey bees (*Apis cerana*) in Cairns, Australia. Asian honey bee Transition to Management Program, Department of Agriculture, Fisheries and Forestry (DAFF). Queensland.

Koetz, A. H. (2013). Spread of *Apis cerana* in Australia, 2007 – 2012. Asian honey bee Transition to Management Program, Department of Agriculture, Fisheries and Forestry (DAFF). Queensland.

Koetz, A. H. and S. Hyatt (2013). Asian honey bee (*Apis cerana*) remote nest treatment. Asian honey bee Transition to Management Program, Department of Agriculture, Fisheries and Forestry (DAFF). Queensland.

Koetz, A. H. and J. C. Scanlan (2013). Asian honey bee spread modelling. Asian honey bee Transition to Management Program, Department of Agriculture, Fisheries and Forestry (DAFF). Queensland.

Wittmeier, N. (2013). AHB nest & swarm analysis: A guide for laboratory use. Asian honey bee Transition to Management Program, Department of Agriculture, Fisheries and Forestry (DAFF). Queensland.

Wittmeier, N., S. Hyatt, et al. (2013). Destruction efficacy of Asian honey bees (*Apis cerana*) in Cairns, Australia. Asian honey bee Transition to Management Program, Department of Agriculture, Fisheries and Forestry (DAFF). Queensland.

Detection of *Apis cerana* DNA from bee eater pellets and trap liquor

May 2012: Short study of microsatellite alleles in Asian honey bees sourced from PNG/Solomons and north Queensland: Summary of data interpretation

Detection of *Apis cerana* DNA from sugar syrup. Internal report to the Asian honey bee Transition to Management Program

Progress updates:

Asian honey bee Transition to Management Science projects – Progress update November 2012

Call: 13 25 23 or +61 7 3404 6999

Visit: www.daff.qld.gov.au

AHB TMG Minutes

Meeting Fifteen of the Asian Honey Bee Transition Management Group (AHB TMG)

Teleconference held on Thursday 26th September, 2013

Attendees: Tom Aldred (Chair) Department Of Agriculture, Penny Linnett Department Of Agriculture, Sarah Corcoran DAFF Queensland, Trevor Weatherhead AHBIC, Ian Zadow AHBIC, Dave Guez University of Newcastle, Rod Turner PHA, Brad Siebert PHA

Apologies: Sam Malfroy (Secretariat)

Item 1 – Welcome

The Chair welcomed the Members of the Asian Honey Bee Transition Management Group (AHB TMG) to meeting fifteen. The minutes of the last meeting were accepted by the group.

Item 2 – Industry project update

David Guez provided an update on the attractants project 'Develop an attractant specific to A. cerana Java strain' due to be completed by December 2014 (Summary report in appendix 1). Rod Turner noted that although linked to the T2M program this was a RIRDC/Industry funded project.

David stated that Gary Kong had contacted him to discuss another project on bee detection (sound detectors for A. cerana buzzing) and mounting traps on ships to see how these different projects could be aligned. Gary would now like David to build a prototype and test this technology in the field. Rod Turner noted that NAQS should be involved as they could use these traps/detectors on in-coming boats.
David noted that the detectors work fine but the issue is still attracting bees to the units without the use of honey.

Ben Oldroyd had provided a previous update on the inter-specific mating project 'Inter-specific matings between A. cerana and A. mellifera' due to be completed by May 2014 (Summary report in appendix 2).

Item 4 – DAFF QLD update

Sarah Corcoran provided an update on the internal changes within the department which now sees the Plant Bio Product Integrity Division overseeing all bee related work. This transition will occur over 12 months. DAFF QLD officer Robert Stevens based in Townsville has passed on that there is still activity regarding AHB notifications.

An update was provided on the AHB detections over the last 3 months:

- July – 27 public enquiries, 4 Restricted Area Permits issued, 1 response from ADAFF staff.
- Aug – 36 public enquiries, 1 Restricted Area Permit issued, 2 responses from ADAFF staff.
- Sep – 21 public enquires, 1 response from ADAFF staff.

Of all these detections one was in Mossman and one was in Cooya beach (both north of Port Douglas and outside of the current RA). The Restricted Area Permits that are issued are for hive movements and any other bee related items.

Item 5 – CFIA and trade issues

Penny Linnett provided an update on the Canadian Food Inspection Agency (CFIA) risk assessment of queen bees and packaged bees from Australia. This review is due to be completed before Christmas well before next seasons trade which starts in January 2014. Penny confirmed that the Department of Agriculture (DOA) had been providing ongoing

assistance to CFIA to complete this risk assessment including bee maps, where we import from under what conditions and that there is likely to be no trade disruptions but hinges of the risk assessment.
Penny Linnett also noted the Media interest regarding the work was underway to finalise requirements to allow imports of Queen Bees from Canada. The first consignment should arrive in a matter of weeks.

Item 3 – RIRDC update

The Chair mentioned the RIRDC project update circulated to the AHB TMG prior to the meeting and requested feedback or questions.

- The report of John Roberts' project 'Establishing the disease status of the Asian honeybee in the Cairns region' has been published https://rirdc.infoservices.com.au/items/13-082
- A training workshop for beekeepers, pursuant to the AHB T2M program, was undertaken in August (Trainers were: Trevor Weatherhead, Ben Oldroyd and Denis Anderson.).
- Simon Barry's 'Risk assessment of ports for bee pests and pest bees' is scheduled to be completed next month and will be considered by the Steering Committee of the National Bee Pest Surveillance Program scheduled for 24 October.
- RIRDC proposes to use industry's uncommitted AHB T2M funds ($2,789 out of $400,000) within RIRDC's Honeybee RD&E Program.

Item 6 –Final reporting to DOA and funding

The chair noted that DOA would be requesting a summary style final report which details the major milestones of the AHB T2M program.

Rod Turner confirmed that the final report would provide a summary based on the extensive work DAFF QLD had produced throughout the program. It would also detail the successes and challenges and major outcomes from the two year T2M program. Financial acquittal reports and other standard DOA reporting requirements will also be met.

Rod Turner also mentioned that PHA would continue to maintain and update the AHB T2M website.

Trevor Weatherhead noted that AHBIC approved RIRDC to use the uncommitted AHB T2M funds ($2,789) within RIRDC's Honeybee RD&E Program. The members of the Transition to Management Group who administer these funds also agreed to this funding transfer.

Item 7 – Future meetings of the AHB Working Group

The Chair stated that future meetings of the AHB TMG would help to keep communication channels open between governments and industry. The Chair proposed to keep the next meeting date open but would probably take place before the end of 2013 especially if there is a Canadian update.

Contact details were requested for a number of members so that communication could continue outside of the formal meetings.

DAFF Queensland	Sarah Corcoran	sarah.corcoran@daff.qld.gov.au	07 3087 8105
AHBIC	Trevor Weatherhead	ahbic@honeybee.org.au	07 5467 2265
	Ian Zadow	immjzad@bigpond.com	08 8757 2435
University of Newcastle	Dave Guez	David.Guez@newcastle.edu.au	0466 416 024

The Chair thanked the AHB TMG members and closed the meeting.

Appendix 1

Develop an attractant specific to A. cerana Java strain

(Project summary update)

David Guez is providing a written summary of the project and I will forward this through when available.

Appendix 2

Inter-specific matings between A. cerana and A. mellifera

(Project summary update)

- Ben Oldroyd

We sampled 12 Apis mellifera queens mated in Cairns and surrounding regions; five queens in May 2013 and seven in August 2013. We identified that fourA. mellifera queens had mated with Apis cerana drones, using a species-specific PCR test of DNA from sperm contained within the queen spermathecae. Three of the positive queens were sourced from one apiary in Gordonvale. The fourth queen was from Cairns city.
DNA sequence of the A. cerana PCR product from one of the queens showed 99% identity to the published A. cerana sequence. (one base pair difference was present). Though sperm from A. cerana was present in these four queens, a second PCR indicated it is approximately less than 1/10th of the total DNA from the spermathecae, suggesting these queens mainly mated with A. mellifera males.
We sampled approximately 50 eggs from three of the four queens that tested positive for A. cerana sperm. While some eggs were uninformative (too little DNA was present- ranged from 50-80% success per hive), no eggs were confirmed to be fertilised with A. cerana sperm. Initial PCRs from one hive had some faint cerana bands but these have not been confirmed and were probably false positives.
Tests of 22 A. cerana queens in Cairns revealed no A. mellifera semen in the spermatheca. Tests of 42 A. mellifera queens from China showed that 6 had mated with A. cerana.
Conclusion. Matings are occurring between A. cerana and A. mellifera in the Cairns area and in commercial apiaries in China. The frequency will increase as the density of A. cerana increases. Our own work and that from Japan suggests that eggs resulting from these matings are inviable. Therefore the quality of queens is impaired when they mate inter-specifically, the degree of the impact being proportional to the number of interspecific matings.