

Proposed (March 2006)  
Final African Honey Bee Action Plan  
Working Preliminary Draft

Prepared for:

The MARREC AHB working group

This document and the recommendations within is based on information from the working group reports of several other states, particularly Florida. Also numerous informal consultations were made with state and university officials, members of the Pennsylvania apiary advisory committee, and commercial beekeepers. This document is meant to be the starting point for discussions towards the development of concrete state and/or regional action plan.

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August 8, 2005

October 27, 2005

Final Draft approved March 8 MAAREC

# **TABLE OF CONTENTS**

<b>Foreword.....</b>	<b>3</b>
<b>Executive Summary.....</b>	<b>4</b>
<b>Introduction.....</b>	<b>5</b>
<b>Characteristics of AHB.....</b>	<b>5</b>
<b>Risks.....</b>	<b>7</b>
<b>Anticipated Impact.....</b>	<b>8</b>
<b>Response .....</b>	<b>9</b>
<b>Other Recommendations.....</b>	<b>13</b>
<b>Figure 1.....</b>	<b>15</b>

## **Foreword**

The Africanized honey bee (AHB) was introduced to Brazil in 1957 and accidentally escaped from confinement colonies. While maintaining its genetic identity, this race (sub species) of bee expanded its range in South and Central America. Due to defensive behaviors and difficulties managing AHB using with European honey bee beekeeping methods, the AHB population has disrupted agriculture, beekeeping, tourism, recreation and public life in general as it spread. Hundreds of people and animals lost their lives in stinging incidents and many more were injured. It has resulted in disruptions and modifications to beekeeping and planned pollination throughout its colonization range.

The Africanized honey bee was first reported in northern Mexico in 1987. As it made its way north through Mexico, numerous human fatalities, and thousands of non-fatal stinging incidents, plus countless animal fatalities and injuries were attributed to the AHB. The first U.S. report of the AHB was in October 1990 in Hidalgo, Texas. Since, AHB have migrated west through New Mexico, Arizona, California, Nevada and Utah. Recently (2005)

they have colonized Oklahoma, Louisiana, Arkansas, Alabama, and Florida. (see website <http://ars.usda.gov/AHBmap> for current distribution in the U.S.)

Total U.S. fatalities attributable to AHB are 14. The most recent was on July 28, 2004 in Big Springs, Texas. Hundreds of non-fatal stinging incidents have been reported (see website [www.stingshield.com/news.htm](http://www.stingshield.com/news.htm) for examples). All, or nearly all, the wild (feral or non-beekeeper managed colonies in the SW states (TX west to So. CA) are totally of African bee descent, making it difficult for beekeepers to maintain genetically pure gentle European honey bees.

Intelligent planning and preparation, particularly by TX, AZ, and CA authorities, has proven to be useful in alleviating public panic and hysteria associated with AHB. It is unclear whether Africanized honey bees will become established permanently in the Mid-Atlantic States. However, northern and north-central states rely on southern states, particularly Florida and Georgia as the source of package (replacement/expansion) colonies and queens each spring and commercial beekeepers routinely transport colonies to over-winter in southern states. These managed colonies are essential if the fruit and vegetable producer pollination needs are to be satisfied in the Mid-Atlantic and Northern states.

Florida and Alabama, unlike the states in the southwest, have not been subjected to the frontal wave of natural AHB migration. Their introductions of AHB, based on samples removed from trap lines set around major ocean ports in Florida and the Mobile Bay area of Alabama, has been via transport of goods. Global trade not only brings desired goods, but also hitchhiking pests and diseases. The ~500 AHB swarm traps set and monitored by the Florida Department of Agriculture and Consumer Services' Division of Plant Industry, Apiary Inspection Section surrounding deep water ports have captured many AHB swarms which hitchhiked from Central and South America. Unfortunately, some of these swarms have bypassed trap lines and feral populations of AHBs have begun to establish themselves. AHB populations are now established in the south-central part of the state.

The presence of AHB in Florida coincides with a dramatic increase in demand for honey bee colonies to pollinate almond orchards in California. This demand will continue to drive migration of colonies in and out of California – a state in which AHB is established - from MAAREC (Mid-Atlantic Apiculture Research and Extension Consortium) states. These events will compel MAAREC states, whose beekeepers rely on southern bee suppliers to replace colonies lost over the winter in order to meet their annual spring/summer pollination needs, to develop cohesive and comprehensive action plans which will address the various threats posed by AHB.

## Executive Summary

Agriculture in the Mid-Atlantic region is heavily dependent on honey bees to meet pollination needs. The Africanized honey bee (AHB) exhibits greater nest defensive behavior and is less adapted to commercial pollination and honey production than the European honey bee (EHB – commonly referred to as domestic honey bees). These traits, combined with its ability to disperse rapidly, make the AHB undesirable to agriculturalists and a potential threat to the public at large.

A plan of action is thus required. This plan needs to be tailored to meet the unique needs of MARREC states. Primary goals of such a plan are to:

- 1) Reduce the likelihood of AHB becoming established in member states;
- 2) Proactively train first responders in the appropriate emergency response to sting incidences; and
- 3) Actively and aggressively develop and implement a Public awareness campaign which will educate region beekeepers, the general public and specific targeted agencies and institutions that need to be aware of the risks presented by AHB so they can proactively plan to deal with a possible AHB introduction.

To develop this plan individual states, in full and open collaboration with the Mid Atlantic Research and Extension Consortium (MAAREC), and at the direction of each state's Apiary Advisory Board, should prioritize the development of a state and/or regional action plan. This plan should be developed to act as a guide for individual state plans. The states should formulate and articulate clear goals, set timelines for goal accomplishment, develop a budget and identify sources of funding to implement the goals outlined in this plan.

In concert with meeting the aforementioned primary goals of an AHB action plan the plan should address:

1. Issues of landowner liability;
2. Specific research initiatives to increase our knowledge of AHB biology and behavior in northern states, and behavior modification of people in AHB infested areas;
3. Identification of personnel in the appropriate federal, state and local agencies to serve as points of contact for AHB, as well as to establish a network of contacts within the industry and media outlets;
4. Establishing and maintaining a data base on AHB incidence within the MAAREC region and resources to rapidly identify possible AHB samples; and
5. Initiate a "Bee Help" network which will provide timely and accurate information on AHB through various media.

6. Encourage county and local governments to develop response plans.

## MAAREC AFRICANIZED HONEY BEE ACTION PLAN

### Introduction

The Africanized honey bee (*Apis mellifera scutellata*) (AHB), sometimes called the “killer bee,” has steadily migrated northward since its accidental release from a breeding program in Sao Paulo, Brazil in 1957. The northern edge of its range, as of the spring 2005 includes Madera County, California (home of Yosemite National Park), eastward through southern Nevada, Utah and the states of Arizona, New Mexico, all of Texas west of Houston, and Oklahoma. Recent findings in Arkansas, Louisiana, Alabama, and Florida suggest that this bee soon may be established throughout all the Southern States.

The eventual range of AHBs year round establishment has been the subject of much speculation. Most predictions (based largely on temperature models) suggest that this race of bee would not be able to survive along the east coast much further north than North Carolina. More recently, models based on human-aided distribution suggest AHB will eventually range throughout the US and into southern Canada. Regardless of the eventual range of AHB, their presence in the Mid-Atlantic region, even if for only part of the year, seems inevitable.

### Characteristics of AHBs

The European honey bee, (EHB) has been “managed” by commercial and hobby beekeepers worldwide for many centuries. The current bee is the result of adaptation to temperate climates, and has been intensely selected over thousands of generations by beekeepers for desirable traits such as gentleness, honey production, tendency not to swarm, winter hardiness and disease resistance.

The African honey bee, while still the same species as the European honey bee, is considered a separate race (sub-species by some) from EHB. It has distinctive behavioral characteristics for survival in the savannah habitat of western and south central Africa.

The AHB in North and South America, once thought to be a hybrid resulting from the cross mating of the African honey bee and managed European honey bee races is now considered largely a product of its African origin and not a hybrid. All AHBs in the Americas are thought to be descendents of 26 African bee swarms accidentally released in 1957

Maintaining its own identity, AHB genetic material spread rapidly from the point of introduction (see Figure 1), moving quickly southward and westward. Dense Amazonian jungle did not slow its northward spread and it crossed the isthmus into Central America in 1982, reaching the Mexico/US border in 1990. Studies of AHB populations in tropical/sub-tropical areas, where the AHB has been present for several years, suggest that most, if not all, the genetic, physiological, and behavioral characteristics of wild bees become

Africanized in a short time; the most infamous of these genetically linked behaviors is AHBs aggressive defense of its nest.

Several biological factors help explain why European, and European/African hybrid stock are eventually replaced by pure Africanized bees when the bees are not actively managed in tropical/sub-tropical areas, including differences in mating behavior, a shorter queen development rate in AHB, and the acceptance of drifting African drones by European hives. All of these traits favor the selection of AHB genes. The rate of AHB spread and displacement of European bees is also facilitated by the ability of small AHB swarms to “usurp” the queens in established EHB colonies, by AHBs tendency to swarm more often, and their ability to establish colonies in cavities too small for EHBs.

The apparent migration of hybridized genotype to near-pure African genotype under natural conditions in tropical and subtropical areas is unfortunate as hybridization often enhances the expression of undesirable AHB traits (see Table 1 for a comparison of traits).

**Table 1: Characteristics of the Africanized honey bee compared European**

	<b>AFRICAN HONEY BEE (AHB)</b>	<b>EUROPEAN HONEY BEE (EHB)</b>
<b>Defensiveness</b>	Typically 10 x more stings than EHB Quicker response time Persistent (following upto 1/4 mile) May not respond to smoke	Usually gentle Defensiveness is manageable with smoke
<b>Swarming</b>	16 times per year Longer swarming season	1 to 2 times per year Distinct swarming season
<b>Abandoning</b>	Common after disturbance and period of dearth/poor resources Up to 16 times a year	Unusual (and not conducive to survival)
<b>Robbing</b>	Can be excessive at times	Usually only occurs during dearth and is beekeeper caused
<b>Nest site</b>	Smaller cavity acceptable allowing for easier establishment in urban environment	Require relatively large nesting cavity (> 40 L)
<b>Wintering ability</b>	Poorly adapted to cold winters (but becomes adapted with time)	Highly adapted to cold winter
<b>Population density</b>	High colony density	Low colony density
<b>Colony takeover</b>	Queen usurpation common Drone parasitism of European colonies common	Exceedingly rare
<b>Calmness on the comb</b>	Bees extremely nervous running and festooning on frames making management difficult	Usually calm on the comb

## Risks

AHB poses a serious threat to the Mid-Atlantic States. The potential adverse impact begins with, but is not limited to, potential loss of bees for pollination of crops vital to our economy and food supply. The pollination demands of regional fruit and vegetable producers require large numbers of colonies to be moved annually from regions in which Africanized bees are, or likely will be, established. The contribution honey bees make to the five-state agricultural economy is estimated in excess of \$ 200 million. The vast majority of this value comes from the pollination services provided by the estimated 20,000 colonies moved into the 5-state region beginning with spring orchard bloom. These colonies return to southern states during the winter months to provide needed pollination in those states, to decrease over-winter colony losses, and to ensure colonies are sufficiently strong to meet northern fruit and vegetable producers' spring and summer pollination needs.

AHBs also pose a potentially serious public health and safety threat. AHBs could adversely impact tourism and recreation within the five-state region. Educational institutions, emergency services, parks and recreational agencies, and others, all require training and AHB control plans to negate or reduce AHB risk to the public. Experience in other states shows that advance preparation and planned public awareness programs result in better understanding and cooperation that results in reduced negative impacts. Appropriate response rather than panic reduces the possibility of injury or death. Much can be learned from the Venezuela and Mexican AHB experiences. Human deaths due to stinging attacks reached a high of 100 per year in 1978 (three years after AHB introduction) in Venezuela, a country of ten million people. A public awareness program including cartoon posters helped reduce human deaths to 20 per year. Mexico prepared an even more effective public awareness program in advance, including cartoon spots on TV. A country of 95 million, Mexico has recorded just over 200 human deaths during the first 18 years of the existence of AHB in Mexico. A total of 14 fatalities attributable to AHB have occurred in the United States since AHB colonization in 1990. (see Table 2). The reduced impact is thought, in part, to be from carefully planned educational efforts.

### **Table 2: AHB CHRONOLOGY IN NORTH AMERICA – Sting statistics**

First reported in Mexico.....	1985 (northern Mexico 1987)
Total Mexican fatalities, 1988 to 1995.....	175
First AHB discovery in US.....	October 1990 in Hidalgo, Texas
Texas casualties (1991 – 1993).....	12 confirmed AHB incidence
First US fatality.....	July 1993 in Harlingen, Texas
First AHB discovery in Arizona.....	June 1993 in Tucson
First Arizona casualty.....	Tucson 1993 (53 stinging incidents reported)
First Arizona fatality.....	October 1995 in Apache Junction
First AHB discovery in New Mexico.....	1993
First AHB discovery in California.....	October 1994 (Chuckawalla State Prison)
First California casualty.....	November 1995 in Palo Verde
First California fatality.....	September 1999 in Long Beach
First AHB Discovery in Nevada.....	May 1998 in Laughlin
Total US fatalities.....	Fourteen (latest: 7/28/04 Big Spring, Texas)

One last concern that needs to be addressed is liability and its impact on the judicial system and insurance industry. Beekeepers will need assurance that they will not face unmerited litigation from an alarmed or overly sensitized citizenry; without such assistance many will be unable to continue their businesses. Finding suitable, secure locations for bee colony apiary sites will be an escalating challenge for beekeepers, particularly sites that will be able to accommodate apiaries with larger numbers of colonies.

### **Anticipated Impact**

The bulk of pollination needs of Mid-Atlantic agricultural producers is provided by colonies from states other than where the crop is produced, whether over-wintered in Florida, Georgia, or elsewhere. Those beekeepers who take colonies south to over-winter will encounter areas in which the expansion and establishment of AHB populations is likely in the next several years. Further, it is from these states that the bulk of queens and packages originate to meet the demand created by winter losses to commercial and sideline beekeepers in the region. Since the introduction of two serious bee parasites, Honey bee tracheal mites and Varroa mites in the 1980's, these losses have at times been significant (>60%).

As the states from which the region's beekeepers receive bees become colonized by AHB, we can expect some AHBs to move into the five-state area, either in managed hives or as hitchhikers on cargo transportation (trains, trucks, ships etc.). With the arrival of AHB comes an increased risk of stinging incidents. Any encounter with nesting colonies, whether in an urban or rural environment, is potentially lethal, given the insects' propensity to attack *en mass* to defend their colony. AHB commonly pursue or attack persons up to a ¼ mile from their nest site when disturbed. Children, the elderly and individuals with limited mobility or slow reaction time, people with an allergic reaction to bee venom, and anyone unable to rapidly retreat from attacking bees are at increased risk.

News reports of stinging attacks will promote concern and, in some cases, panic and anxiety, causing citizens to demand responsible agencies and organizations take action to help insure their safety. If proactive measures are not taken to educate the public about the importance of EHBs as pollinators, how to deal with AHBs, and to establish procedures for rapid response to AHB incidences, the public may demand beekeeping be banned or limited in urban and suburban areas. This action would be counter-productive. Beekeepers maintaining colonies of gentle EHBs is the best way to prevent an area from becoming saturated with AHB. Managed colonies fill an ecological niche that would otherwise be occupied by less desirable colonies if made vacant.

AHB has the potential to have a negative financial impact on the recreational and tourism industries. Permanent or seasonal feral AHB colonies can become established along watershed areas, parks and historical sites. Tourists and resident-recreationalists engaging in camping, hunting, fishing and hiking activities are apt to encounter colonies in areas that may be a considerable distance from medical facilities. Golf courses, public parks and resorts, especially those having swimming pools or other permanent water sources, may pose a

particular concern to the urban dweller and vacationer. Regional theme parks and historical sites are also vulnerable due to the presence of abundance of nesting sites, water, floral and food resources. The public will want to know where the AHB will be and what is being done to protect them. With planning, it will be possible to address public concerns, reduce public health risks and decrease possible negative economic impact from AHBs.

Livestock is also at risk. Horses confined to small acreages in urban areas and in riding stables will be unable to escape from a mass attack. Additionally, people who ride horses will be in danger of being thrown and stung. There are over 15,000 horse farms or operations in the 5-state region. Other penned livestock and pets (mostly dogs, fowl and goats) have been killed by stinging attacks in other states.

It is expected that AHB will compete for nesting sites with burrowing and nesting wildlife. In addition, AHB defensive behavior will trigger attacks on other wildlife coming into proximity of nesting colonies. The initial introduction of AHB into California, for example, was discovered because a workman observed a fox being stung to death in a mass AHB attack.

AHB will likely have its most dramatic impact on the region's largest industry - agriculture. Changes in agricultural practices and land use have already had an impact on beekeeping. Beekeepers must place their bees on other people's property (public or private) in order to provide the bees with adequate forage. Property owners are becoming more reluctant to allow beekeepers to use their land for apiary locations due to a fear of liability should someone be stung. Insurance companies are coming to realize the potential costs of bee colony liability and a number have dropped their beekeepers' policies or are charging much higher premiums for liability coverage. These factors translate into increased costs of doing business in a profession that already is having financial problems.

While the impact of AHB in the Mid-Atlantic is not likely to be as severe as in southern states, their eventual arrival and presence in the region is inevitable. Maine's apiary inspection has documented their repeated importation of hybrids into that state over the last several years. These colonies originated in Texas and Florida and were temporarily imported to pollinate blueberries. AHB introduction may be the result of migratory beekeepers overwintering colonies in Florida counties where the presence of AHB has been confirmed. Plans must be developed locally, statewide, and regionally to deal with the concern and the realities of AHB.

Local agencies will have to take responsibility for addressing local bee problems such as swarms, bees in buildings, and stinging incidents. Emergency phone number networks will need to be developed and utilized when problems arise. Beekeepers who currently respond to "swarm calls" will not be willing to capture swarms (presently many do this as a free service or for a small fee) when it is possible that the swarm may be Africanized. This is especially true if the beekeepers will be held financially responsible if they incite a massive stinging incident in a populated area.

Another inter-agency effort needs to address the training of emergency and medical professionals. First responders must be informed and trained in sting victim extraction procedures. Emergency room doctors must be educated on short and long-term care of multiple sting victims.

Public reaction to AHB, especially during the first phase of introduction will likely be strong. Professional beekeepers have the technology and the knowledge to identify and remove colonies demonstrating any of the undesirable traits associated with AHBs. A well-informed public can also easily take precautions necessary to reduce the risks associated with AHB.

## **Response**

To reduce impact of AHB on our five-state economy, and the risk to visitors and residents, a reasoned and well-planned response plan is required. This plan should involve the following primary goals:

- 1) Reduce the likelihood of AHB establishment in the state;
- 2) Train first responders and emergency personnel in the appropriate emergency response to sting incidents;
- 3) Implement of a public awareness campaign to educate the general public and specific targeted agencies and institutions that need to be aware of the particular risks so they can better do their jobs.

### **1) Reduce the likelihood of AHB Introduction and establishment**

Bees are needed to meet the pollination needs of the region, banning interstate movement of bee colonies is neither desirable nor practical. Fortunately, there are steps beekeepers and regulators can take to prevent the movement of Africanized genes into northern bee stock.

- i. Develop and implement a EHB certification for queen producers and require all queens sold in AHB occupied areas to be so certified;
  - ii. Require that all migratory operations originating in areas deemed Africanized, regularly requeen all colonies with certified EHB stock;
  - iii. Develop a standardized protocol for field testing and sample collection and have in place a first response plan to implement;
  - iv. Implement field surveys to screen 10 % of all inter-state bees for defensive behavior; those which seem especially defensive should be tested for AHB using an agreed upon procedure;
  - v. Inspect all honey bee colonies in the state for disease on a regular basis (once every 2 years), taking special note of field symptoms of potential AHB colonies; and
  - vi. Provide education to all beekeepers regarding the presence or impending presence of AHB, the field symptoms of AHB, and appropriate best beekeeping practices.
- i. EHB certification

Model certification plans are available and plans for specific states should be developed. This certification procedure should be in harmony with as many states as possible, particularly those in the mid-Atlantic region and certification provided by other states should be honored. A system must be implemented to assist in the certification of stock in states that do not have certification programs and from which significant queens or package bees are imported into the region.

ii. Certify migratory operations

Laws of the various Mid-Atlantic States vary; there is no federal law regarding inspection of AHB, although it is listed as a reportable insect within APHIS. Present laws require beekeepers to request an import permit from the state of origin. This law requires that at least 10% of colonies be inspected for disease. New state regulations should be developed that require migratory operators to certify that they have re-queened all colonies in their operation in the last year and that they have restocked their operation with stock from a EHB certified producer. Those operators that breed and rear their own stock must have their parent stock so certified. Proof of queen purchase or a sworn affidavit of self-produced stock must accompany the request for import permit.

iii. Field testing and sampling protocol

A standardized and quick field test should be developed and tested that allows rapid survey to permit certification of migratory colonies. Ideally this test should use a standardized approach to screen defensiveness (without opening colonies), followed by more tests, preferably an easy additional in-field test (i.e. fresh weight) to screen possible suspect colonies before the need to take additional samples for (more time consuming and expensive) laboratory analysis.

iv. Regular in-state inspection and survey

Develop a standard AHB screening test for in-field use. Sample collection and processing techniques should be developed. All colonies found with AHB should be depopulated unless an area is deemed “an Africanized area”, in which case the colony should be re-queened with a certified EHB stock.

v. Beekeeper Education

Develop fact sheets and web-based information regarding Best Beekeeping management practices that specifically emphasis the following issues:

- a. the importance of re-queening;
- b. issues surrounding the collection of swarms and feral hives;
- c. good neighborly practices;
- d. identification of undesirable traits; and
- e. general public information.

## **2) Train first responders**

Training of emergency, medical and other responders will be necessary. These responders will need adequate training and instructions in medical aid, AHB behavior, and treatment and precautionary or abatement methods. Avenues for disseminating uniform medical treatment information to local health departments, hospitals and initial responders will be required. It is essential that uniform and consistent training or instructional material be provided to local fire, law enforcement, health departments, ambulance services, hotel or resort employees, and medical staff of amusement parks. First responders, especially fire departments, need to be trained in safe sting victim extraction methods. Further, training on safe removal of bees or swarms for Pest Control Operators (PCO's) will be needed. Uniformity is crucial in order to prevent inconsistent treatment or abatement methods, or inadequate medical procedures. Misinformation about AHB and its impact can be as dangerous as AHB itself. The state should oversee such training and help ensure its continuation. Given the turnover in employment, AHB reaction and response training should be part of new employee training in those industries where it is reasonably foreseeable that AHB contact may occur.

## **3) Public awareness campaign**

One of the major goals in preparation for AHB arrival is to reduce public risk through education. The general public will need information concerning

- i. possible presence or impending presence of AHB;
- ii. value of beekeepers to society and of bees to crop pollination;
- iii. general honey bee biology facts (such as what they look like especially as distinguished from yellow jackets, wasps, hornets, etc.);
- iv. precautions if swarms or nesting colonies are encountered;
- v. who to contact for proper bee removal and control;
- vi why it is desirable to contact persons trained and certified for AHB removal or control;
- vii what to do if a stinging incident occurs; and
- viii how to “bee aware” and avoid getting into a dangerous situation.

Aside from this general information, more specific and targeted information should be developed and disseminated to the following stakeholder groups:

- i. Agriculturalists, kennel operations, equine operations and their workers;
- ii. Outdoor facilities including theme parks, historical sites, parks and recreational areas;
- iii. Convention and visitor bureaus;
- iv. Municipal and county governments;
- v. Schools and daycare centers;
- vi. Wildlife officers; and
- vii. Pest control personnel.

In general:

Growers and other landowners will need information on AHB related liability and suggestions for pollination that suit AHB circumstances. Farm workers and other outdoor workers will need detailed information on working safely in areas with AHB

City and county governments and volunteer agencies are the likely employers responsible for public AHB control activities e.g., fire fighters, law enforcement officers, ambulance and other emergency medical service workers that might deliver first aid to persons stung by AHBs. It will be very important to provide these people with appropriate information and equipment in a pro-active manner.

If we do not take proactive measures to educate the public about AHB and to establish procedures for rapid response to AHB we anticipate increased pressure from the public to ban beekeeping in urban and suburban areas. This action would be counter-productive. Beekeepers maintaining managed colonies of domestic European bees are our best defense against an area becoming saturated with AHB. These managed bees are filling an ecological niche that would soon be occupied by less desirable colonies if it were vacated.

Theme parks, urban and recreational areas will need to develop control operations to suit their own needs. For instance, a local contact telephone number to report nuisance bees needs to be identified. Some areas would be subject to abatement activities. The transportation industries should be alerted to the possibility that they might be moving “hitchhiking” bees, and given information on how to prevent such movement.

AHB abatement and control plans will need to be developed and implemented on high-use public property such as parks, golf courses, school playgrounds, campsites, interstate and turnpike rest areas, theme parks, and tourist sites.

For all the foregoing reasons, public education and advanced training are imperative to ensure regional citizens successfully cope with AHB.

### **Other Recommendations:**

It is recommended that the Mid-Atlantic States, in full and open collaboration with the Mid Atlantic Apicultural Research and Extension Consortium (MARREC), and at the direction of the apiary advisory board, develop individual state action plans. A plan should articulate clear goals, set timelines for goal accomplishment, develop a budget for the implementation of this plan and identify sources of funding for the plans’ implementation.

In addition to addressing the needs outlined above (see Response), any AHB action plan should address:

1. Landowner liability issues and current liability laws.

Landowner liability should be carefully reviewed, examined and studied. AHB may be viewed as a natural, but inherently dangerous, condition by the courts. Issues of the liability of private homeowners, agricultural landowners and commercial or hobby beekeepers need to be critically examined. Where warranted, corrective or declarative legislation should be considered, especially to protect commercial beekeeping operations. Insurance impacts should also be researched, reviewed and addressed.

2. Additional research to increase our knowledge of AHB biology and behavior in northern states and behavior modification of people in AHB infested areas. following:

- a. Behavior Modification of AHB in Northern States

Many of the conclusions reached in this report are based on assumptions that AHB will respond as they have in native tropical climates. Review of existing data on AHB behavior in climatic conditions similar to the Mid-Atlantic region is needed. Such research might enable better implementation of agency action plans.

- b. Behavior Modification of People in AHB Infested Areas

Equally important, if not more so, is the actual impact of AHB on everyday life in Mid-Atlantic States. How have people learned to live with this pest? What impact, if any, has been felt on agriculture, beekeeping, park usage and schools? The effects on other American populations can be examined. By examining these issues agencies can better develop action plans which address the concerns caused by AHB without having to “re-invent the wheel.”

3. Identification of personnel in the appropriate federal, state and local agencies to serve as points of contact for AHB, as well as to establish a network of contacts within the industry and media outlets.

All agencies dealing with AHB should designate a contact person to act as clearing house for AHB information and act as the contact person to facilitate information regarding AHBs.

4. Establishing and maintaining a database on AHB, incidences within the MAAREC region and resources to rapidly identify possible AHB samples.

This database can be used to prevent the dissemination of misinformation, and may help streamline movement of bees. The database should include all MARREC member states, SE states (N. Carolina, Georgia, Florida) and Texas plus California. A uniform phone number and contact person should be identified and available.

5. Initiate a “Bee Help” network which will provide timely and accurate information on AHB through various media.

A multi-lingual (with TTY capacity for hearing impaired) hot line would be extremely useful for helping an anxious public cope with AHB once AHB initially enters the state.

6. Encourage county and local governments to develop response plans.

Set up model response plans that balance risk and cost constraints, and which protect the industry and public simultaneously.

These recommendations, initially developed by Dennis vanEngelsdorp, acting State Apiarist for the Commonwealth of Pennsylvania, are based on working group reports of several other states, particularly Florida. Also numerous informal consultations were made with many state and university officials, members of the Pennsylvania apiary advisory committee, and commercial beekeepers. They are meant to be the starting point for discussions and development of a state and/or regional action plans. Modifications for the Mid-Atlantic draft were made by Dr. Dewey M. Caron, University of Delaware. A draft was distributed to the MAAREC group for discussion following their October 2005 planning meeting and final copy approved for release following the MAAREC spring March 2006 task force meeting.

