Joshua Tree National Park

Honeybee Response Plan

February 2014

Purpose
The purpose of this plan is to outline and implement a strategy for addressing safety concerns associated with Africanized Honeybees (AHBs) at Joshua Tree National Park. The ultimate goal of the plan is to prevent and protect Park visitors and employees from AHB attacks, when possible, and to define and delegate actions and responsibilities for the implementation of the plan.

Introduction & Background
AHBs have a tendency to display aggressive behavior that has earned them the somewhat dramatic title "killer bees." AHBs are a hybrid between non-native domesticated strains of the European Honey Bee (EHB) and an African strain accidentally released in Brazil in 1957, which has slowly migrated north. AHBs are very difficult to distinguish from their more docile European counterparts without genetic analysis or a series of careful measurements under magnification. AHBs were first detected in California in 1995, and first seen in San Bernardino County in 1997 (USDA 2009). Feral honey bee populations are becoming increasingly Africanized by hybridizing with the EHBs (UCR 2009).

AHBs colonies reproduce, divide and swarm more prolifically than EHBs, however AHB swarms and foraging bees are rarely dangerous. Swarming is a natural process of honeybee reproduction when the queen leaves the colony with a large group of worker bees, leaving a new queen behind with the remainder. Because the swarm doesn't belong to a hive yet, they are not defensive and generally are not a threat to humans.

AHBs are also less selective in their nest locations, which may include hollows in trees and cacti, rock crevices, buildings (both abandoned and occupied), discarded tires, or even exposed areas like tree limbs and flower pots. In high quality Mojave Desert habitats, there may be up to 20 to 40 EHB colonies per square mile and AHBs may have an even greater density. They forage generally between 50 to 130 meters from their colonies and normally need to be within 1 to 3 miles from a water source.

AHB attacks are generally related to defense of an established colony/hive. AHBs attack swiftly and intensely, are more likely to sustain a prolonged attack and sometimes follow a victim up to a mile away from their hive. Also, stinging or injured bees release pheromone which further stimulates other bees to attack. AHB stings are not different than EHBs in the potency of their venom. A colony's aggressiveness will range from relatively docile to highly defensive, depending on the genetic makeup of the colony's queen. A colony's defensiveness can change as its queen is periodically replaced, sometimes within the course of a few months (UCR 2009). Such a dynamic has been documented in JOTR where a hive was located in the foundation of the Cottonwood visitor center and for a couple of years the bees were docile and posed little threat to people. Then in late spring of 2011, the hive became highly defensive and began to sting people in the parking lot and entrance to the visitor center.

Because AHBs are less selective in the locations of their hives, and due to their reliance on nearby water, all Park visitors and staff, especially those near facilities and nearby residential development (i.e., visitor centers, offices, and Park residences), are at risk of encountering

AHBs. Activities which produce vibrations near a colony (from hiking to operating power tools or mechanized equipment) can cause AHBs to act defensively. The persistence and tenacity of their attacks, as well as their relatively recent arrival to the Park, make it critical that Park visitors and all employees are educated and aware of the potential threat. Park staff must be prepared to respond to AHB attacks and reports of bee colonies or activity.

In Joshua Tree National Park, there have been problems with aggressive honeybees (HB), but not a single report of an HB attack. HBs have been a nuisance to visitors in several locations such as Jumbo Rocks Campground, Ryan Campground, Pinto Wye maintenance facility and Cottonwood Visitor Center (stinging visitors at the trail head). In some cases, found hives were located in extremely rocky areas where removal was impossible.

Bee observations/reports have been entered into a database managed by the wildlife branch. The vast majority of reports occur in the hot summer months of June through September. This is due to the increased water requirement of bees for hydration and for cooling of hives through evaporation. For this, HBs seek out people for their perspiration and drinking water they may be carrying. This behavior, while not really aggressive, is perceived by some people as dangerous HB aggression. Educating staff and visitors about the water need of HBs in summer may alleviate some of the perceived danger. Summer rains and the return of cooler temperatures in early fall decreases this kind of HB activity with people.

More recently, at Key's View overlook, HBs have been collecting pooled moisture from vehicle air conditioning condensation and acting aggressively toward visitors. In fact, one vehicle had to be towed from Key's View in the summer of 2011 as a swarm of bees invaded a parked car.

Because we cannot logistically discern between EHBs and AHBs, the remainder of this document will only refer to honeybees (HBs) in general.

Honeybee Attack

<u>For all HB emergencies, call 911.</u>

For information after an incident (to follow up with any agencies that responded):
San Bernardino Dispatch (non-emergency): (909) 383-5652

After 911, contact of Park personnel will be made in the following order for HB attack:

1. **Any on-duty Protection Ranger – Use Park radio for any available ranger. Responding Protection ranger will contact Chief of Protection.**
2. **Park safety officer – (760) 367-5691**
3. **Park superintendent – (760) 367-5501**

An attack by an aggressive colony is considered unacceptable and the colony, in most cases, will need to be removed. Persistent stinging (i.e., consistent or increasing reports of stinging every day/week) from a colony in or around developed areas may be sufficient reason for removal. Occasional stinging incidents, especially if no bee colony is found nearby, is not a reason for

control and considered to be typical for outdoor activity. Monitoring and documentation of HB activity (observations and attacks) are essential to the success of this program.

When responding to an attack, the degree and type of response will be situational and based upon the individual victim's medical condition, the severity of the attack, and the location at which the attack has occurred.

In facility areas, emergency response will be required when the victim of a bee attack is exhibiting any adverse medical response (i.e., anaphylaxis), or has suffered multiple dozen HB stings. Local ambulance transport will be called to assist Rangers in the treatment of any victim, and to provide transport to medical facilities. If extrication from an area is required, this will be done only by individuals who have been trained in the use of protective equipment, and who will utilize this equipment during the extrication process.

In natural areas, treatment of individuals affected (bee attack or adverse reaction to a bee sting) will utilize emergency back-country evacuation procedures to remove the victim, and to provide treatment and transport in the quickest available form.

Occasionally, a person is stung many times before being able to flee from the nesting site. Depending on the number of stings, the person may just hurt a lot, feel a little sick, or feel very sick. Humans can be killed if stung enough times in a single incident. With honey bees the toxic dose of the venom is estimated to be 8.6 stings per pound of body weight. Obviously, children are at a greater risk than are adults. In fact, an otherwise healthy adult, without an allergy to bee stings, would have to be stung over 1,000 times to be in risk of death. Most deaths caused by multiple stings have occurred in men in their 70s or 80s who were known to have poor cardiopulmonary function.

A second potentially life-threatening result of multiple HB stings occurs days after the incident. Proteins in the venom act as enzymes: one dissolves the cement that holds body cells together, while another perforates the walls of cells. This damage liberates tiny tissue debris that would normally be eliminated through the kidneys. If too much debris accumulates too quickly, the kidneys become clogged and the patient is in danger of dying from kidney failure. It is important for persons who have received many stings at one time to discuss this secondary effect with their doctors. Patients should be monitored for a week or two following an incident involving multiple stings to be certain that no secondary health problems arise.

A small percentage of the population (one or two people out of 1,000) is highly allergic to wasp or bee stings. If you suspect that you or a family member might be highly allergic or is developing an abnormal allergic response, it is suggested that you go to a physician or allergist for testing. Allergic reactions to bee and wasp stings can develop anywhere on the body and may include non-life-threatening reactions, such as: hives, swelling, nausea, vomiting, abdominal cramps, and headaches. Life-threatening reactions, such as shock, dizziness, unconsciousness, difficulty in breathing, and laryngeal blockage resulting from swelling in the throat, require immediate medical care. Symptoms can begin immediately following the sting or up to 30 minutes later and might last for hours.

In severely allergic persons, venom components circulating in the body combine with antibodies that are associated with mast cells resting on vital organs. The mast cells release histamine and other biologically active substances. This results in a leakage of fluid out of the blood and into the body tissues. Blood pressure drops dangerously low and fluid builds up in the lungs. If this response is not reversed within a short time, the patient could die of anaphylactic shock.

Anaphylaxis, if treated in time, usually can be reversed by the effects of epinephrine (adrenaline) injected into the body. Individuals who are aware that they are allergic to stings should carry epinephrine in either a normal syringe (sting kit) or an auto-injector (Epi-Pen®) whenever there is a possibility of encountering stinging insects. Epinephrine is obtainable only by prescription from a physician. Antihistamines potentially have value in combating non-life threatening allergic reactions but should also be used according to a physician's instructions.

Park basic First Aiders, First Responders and EMTs will be familiar with bee sting response, and be able to provide treatment for shock as well as basic life support functions. EMTs will be certified in the use and administration of Epinephrine to assist severely allergic victims exhibiting signs of anaphylaxis from bee stings.

The Response Plan

Action is necessary if there is a threat to human life, property, or Park resources. The location of a colony and its threat to safety are the deciding factors whether to remove a colony. Colonies that may occasionally interact with people will be assessed to determine their threat and appropriate action taken. The following will be considered:

- Defensiveness of the colony;
- Proximity to facilities, developments and human activities;
- Damage, injury or destruction of cultural and natural resources

A combination of prevention and removal is needed to effectively manage HB problems. Preventative actions and mechanical removal are basic elements of the program and will precede any chemical removal. The Integrated Pest Management (IPM) method that involves monitoring HB activity, finding and assessing reported HB colonies, and applying the minimum control method necessary will be followed.

Actions taken will depend on where in the Park HBs are encountered. The greater the concentration of visitors and staff in an area, the greater the potential threat and the more immediate the response. For this plan, the Park is divided into 2 zones:

Facilities

Includes offices, residences, visitor centers, comfort stations, campgrounds, historic structures, parking areas and pull-outs, picnic areas, trailheads, heavily used trails (Barker Dam loop, Cottonwood springs, Ryan Mountain, etc.), and a 50 meter zone around these areas.

Natural Areas
Areas less frequented by visitors and staff, but may still pose a safety risk. These areas include back country trails and wilderness areas.

Responses to HB issues in the park will use the SPE (Severity, Probability and Exposure) risk assessment model as described in the NPS Operational Leadership program. This model attempts to qualify risk calculated from a set of component scores. These components are Severity, Probability and Exposure (Figure 1).

Severity		**Probability**		**Exposure**	
1	None or slight	1	Unlikely	1	None or below average
2	Minimal	2	Seldom	2	Average
3	Significant	3	Occasional	3	Above average
4	Major	4	Likely	4	Great
5	Catastrophic	5	Frequent		

Figure 1. SPE values used for risk assessment

These component scores are calculated and then multiplied together (Severity × Probability × Exposure) to produce a risk level and suggested action (Figure 2). Severity is an event's potential consequences measured in terms of degree of damage, injury, or impact on a mission. Probability is the likelihood that the potential consequences will occur. Exposure is the amount of time, number of occurrences, number of people, and/or amount of equipment involved in an event, expressed in time, proximity, volume, or repetition.

Values	**Risk Level**	**Action**
80-100	Very High	Discontinue, Stop
60-79	High	Immediate Correction
40-59	Substantial	Correction Required
20-39	Possible	Attention Needed
1-19	Slight	Possibly Acceptable

Figure 2. SPE risk levels and suggested actions.

According to the SPE risk assessment model, overall risk associated with honeybees is generally low park-wide (Figure 3, 1-19 = slight risk). The spikes in late spring and early fall are times of warmer temperatures and higher visitor numbers, when visitor-bee interaction probability is much higher.

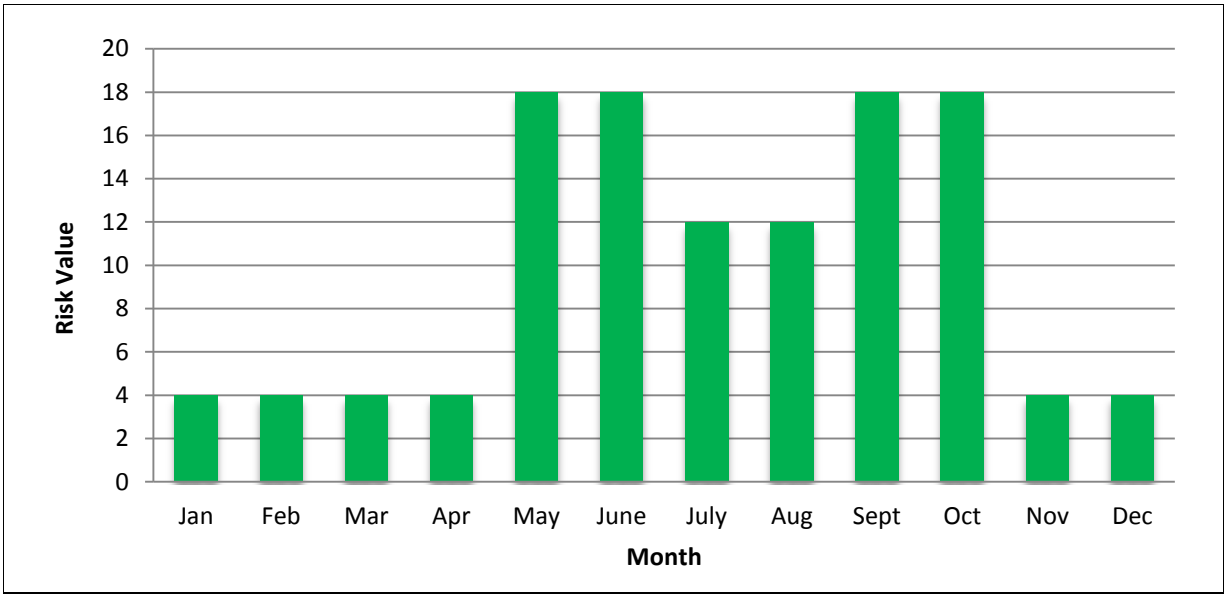

Figure 3. SPE model for HB risk in JOTR by month.

There are instances where using the SPE model on a case-by-case basis may reveal a much higher risk – such as the recent instance of aggressive bees at Key's View overlook. The three categories SPE would all rank very high in this situation. The aggressive nature exhibited by the bees in summer 2011, largely due to the HB dependence on water from vehicle air conditioning condensation, made the **probability** of a visitor-bee encounter relatively high. Because of this colony's nature to defend the hive aggressively, the **severity** would also rank high. Additionally, due to the popularity of Key's View overlook in the summer with visitors, coupled with the large number of bees, would cause the **exposure** category also to rank high.

Assigning values in the Key's View overlook scenario would look like this: Probability 5 (very likely) x Exposure 4 (great) x Severity 3 (significant) = 60 (high). This is a "red" situation and corrective actions would be employed, such as closing the area down, posting warning signs or locating and removing the problem colony (Figure 2).

Program Responsibilities

Superintendent: Responsible for overall program management and oversight; will approve all HB related closures and emergency HB removals deemed necessary.

Chief of Protection: Responsible for visitor protection issues concerning HB attacks; coordinates internal closure documents for superintendent approval; directs development and implementation of emergency and non-emergency response and reporting procedures; ensures Ranger staff is trained to address all attack situations, and keeps qualified staff current on the protocols with the administration of Epinephrine to victims of anaphylaxis.

Chief of Resources: Will oversee the management of the response plan to ensure the protection of natural and cultural resources affected by these actions; make suggestions for improvement to the plan where necessary.

Wildlife Branch: Develop and maintain a recording system for HB activity reports; respond and assess reports of HBs in Park; be comfortable working with HBs; have well maintained protective clothing and equipment readily available; instruct park staff in proper honeybee incident reporting procedures (via new hire trainings); work with Safety Committee on HB issues; contact professional bee handlers for colony removal; implement the IPM recommended tiered system of chemical response to problem colonies.

Campground Supervisor: Makes recommendations to the closure and reopening of campgrounds from the level of HB activity in the campgrounds as observed from staff operating in those areas; uses the SPE risk assessment tool to guide the closure and reopening.

Chief of Interpretation: Responsible for visitor education aspects of this plan; develops safety messages (both cautionary and warning) to be distributed to visitor locations park-wide, PSAs (as required), as well as internet-based social-networking sites via postings (i.e., Facebook and Twitter) to ensure that the public and staff are fully aware of the threat posed by HBs.

Buildings & Utilities Supervisor: Responsible for maintenance issues involved with HBs related to structures and developed areas; directs improvements to buildings to reduce potential bee colonization, and provides warning signs and barriers.

Safety Committee: Ensure cooperation among divisions; inspects buildings for possible HB colonization during safety inspections; coordinates HB safety training events, as needed.

Safety Officer: Will present new hires with safety JHA(s) relating to the safety concerns that HBs present.

IPM Coordinator: Responsible for coordination of the approval process of chemicals through the IPM Pesticide Use Proposal System (PUPS).

Trails Supervisor: Responsible for the creation of more permanent signage that may be required at certain HB perennial problem locations.

Entire Staff: Responsible for reporting HB activity to the Wildlife Branch (phone call, email and wildlife observation cards are encouraged).

Prevention of Honeybee Incidents

Education and training of Park staff is essential for reducing the threat of injury from HB attack. Locally produced information on HBs will be made available to Park staff for training purposes. Informational emails will be circulated to park staff and training will be provided to seasonal employees during orientation.

Visitors must also be educated to the potential hazards of HBs. The Interpretation Division will produce site bulletins, public service announcements, updating the Park's website, and social media accounts on HBs. Visitors will also be warned away from known colonies in natural areas with signage; these signs will be produced by the Maintenance Division (formal long term metal

signs for perennial problem areas) or be made locally (temporary, laminated bulletins). These precautionary bulletins should include information on bees, as well as measures to be taken such as keeping a clean campsite and putting all food and liquid in bee-proof containers.

The Park will continue to ensure facilities are safe for employees and visitors. The Maintenance Division will continue to bee-proof facilities as colonies are removed. Also, Park safety inspectors will identify sites that attract HBs to colonize and these hazards will be noted during annual safety inspection and corrected. "Bee proofing" buildings should be the first step taken to minimize the potential for bee hives. If bees cannot locate a hole leading to a suitable cavity, they will not be able to access the location to make a hive. The building itself and adjacent areas should be scrutinized for potential cavities. Any potential entrances found should be caulked up or screened off (1/8" hardware cloth). Also, other potential nesting sites, such as anything with a fairly small hole leading to a cavity: examples include upside down flower pots, old water heaters, electrical boxes, barbeques, etc. should also be removed, filled or screened off. If a cavity is removed, made wide open, or inaccessible, it will no longer attract nesting bees.

Removal of subsidies in facility areas may also deter HBs from returning to those sites. In addition to screening off openings to cavities, dumpsters may need to be removed until bee activity subsides; leaky water faucets and fountains should be repaired or replaced; visitors and staff may be instructed to keep food and water in bee-proof containers.

Constant or consistent access to water sources, such as pooling water from a leaky faucet, will increase the likelihood that a colony will establish in the area. Irrigation strategies in managed landscapes should also be scrutinized to deter HB attraction. As desert plants seem to prefer periods of drying before the watering, the periodic full soaking of plants in a managed landscape is preferred over daily, or even weekly, watering.

Because of the natural setting of campgrounds, hives present in these areas may necessitate closure of campgrounds during the high bee activity periods or until the colony has been removed, if possible. Removal has been attempted and failed in some locations in park due to the inaccessibility of the hive and/or difficulty finding the problem hive (i.e. hidden deep within the rocks at Jumbo Rocks campground).

Honeybee Monitoring, Reporting and Assessments

Reports of bee activity will be compiled by wildlife staff to monitor and assess bee activity in the Park. These records (primarily from wildlife observation cards and email) will be reported by all staff members as reports are received from Park visitors. The Park's Natural History Observation card should be used to report all honeybee observations and incidents. The Wildlife Branch will collect the honeybee observation records to identify problem areas where HB incidents occur.

Information taken from reporting parties should include the specific location of bees, activity observed, and if a hive was found. The assessment made by wildlife staff will include inspecting the reported area, determining the accuracy of the report (wasps, flies, and native bees have been reported in the past), locating an established colony, and determining that the colony is a threat to visitor safety and make recommendations relating to the actions that should be taken.

Recommendations for action will also incorporate the SPE risk assessment model as described in operational risk management. For facility areas, reports of bee activity will be investigated immediately. Reports of bee activity in natural areas will be investigated as needed by wildlife staff.

Area Closures for Honeybee problems

Emergency closures are implemented when there are situations where human safety is of imminent concern. This type of closure is usually accomplished by responding protection rangers whom will seek Superintendent approval after the action is completed.

Temporary closures for visitor safety will be accomplished through the Chief of Protection with the approval from the Superintendent. These closures have been implemented in the past at places like Jumbo Rocks campground during the times that HBs become a serious nuisance to campers. When the Superintendent has approved a closure from recommendation by the campground supervisor, campground staff will monitor HB activity to determine the level of safety and make recommendations when to re-open the area to visitors. Recommendations for these actions will also incorporate the SPE risk assessment model as described in operational risk management.

Problem Honeybee Colony Removal

Since established HB colonies present the primary threat to visitor and staff safety, colonies in proximity to facility areas will be targeted for removal. Native bees and similar arthropods, because of their importance in the desert ecosystem, will not be targeted for removal. Similarly, actions taken against HB colonies should not inadvertently affect native insect populations or native flora and fauna, where possible.

It will not always be necessary to remove HB colonies. Wildlife staff will assess the colony and determine the threat of injury to staff and visitors. It will then be decided whether to leave the colony alone, post warnings, remove the colony, or any other appropriate action. The SPE risk assessment tool will be used to guide the recommended actions. A colony may be removed if, for example, it poses immediate danger to people (near a campground or busy trail) or damages important cultural resources (in a remote, culturally significant structure). Wildlife staff may remove back-country colonies, or choose to have a professional service remove the colony.

All staff members should be prepared to evacuate and secure an area to prevent visitor and staff injury until a problem HB colony can be removed. They should work with the Maintenance Division to ensure facilities are sealed, where applicable, following the removal of a colony. Follow up visits may also be required to ensure colonies are completely removed, or to assess if a colony has become more defensive.

By far, the safest method of removal is to allow professional bee handlers remove HB colonies. However, when wildlife staff is able to safely remove colonies, they will choose the most appropriate method to remove the colony as circumstances dictate. For safety purposes, any action taken by the Wildlife Branch will calculate risk using the GAR (Green, Amber, Red) risk assessment model.

Prescribed treatments should be carried out during cold periods (mornings, evenings, or cool seasons) when HBs have the most difficulty flying or are inactive. Colonies are generally smaller in winter and treatment at this time further reduces the risk of multiple stings. Public closure of areas may be required unless treatment is applied during off-visitation hours.

Physical control: Many times simple changes in the physical environment where HBs are located will encourage the abandonment of the hive. This has been accomplished in the past where a hive was located under a plywood cover to a water valve. Wildlife staff removed the cover so that the bees were no longer protected and were exposed to the elements. The hive soon abandoned the location that happened to be very near the Lost Horse ranger station. These methods and types of corrective actions will be favored over removal of the hive or chemical treatments.

Physical removal: In some cases, it will be possible for a professional bee removal specialist to remove the bees alive from an area in the park.

Chemical control: All chemicals used to control HBs will need to be approved for use through the NPS IPM PUPS system entered by the Park IPM coordinator. A tiered system of chemical strength/toxicity will be employed to ensure that the least toxic chemicals, required for HB removal, are utilized. The Park currently is approved for use of EcoEXEMPT® products in the IPM system for the control of HBs. These are "light duty" chemical insecticides that use botanical oils to deter insects and are relatively safe to handle. Soapy water breaks down the waxy coating of the bee's outer cuticle, and a backpack pump of soapy water (1 part dish soap to about 20 parts water) may be useful in some situations. Chemicals used by approved exterminators (resmethrins and pyrethrins) also will need to be approved for use through the IPM system. Many insecticides are registered for bees, but may not be allowed for use in the location where the bees are found, or by the NPS. Please check with the Park IPM coordinator (Josh Hoines; (760) 367-5564) or the Wildlife Branch if you have questions about insecticides for HBs. Only in emergency situations will the use of chemical insecticide, not approved through IPM PUPS, be considered for use and will only be used as a last resort situation.

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Appendix

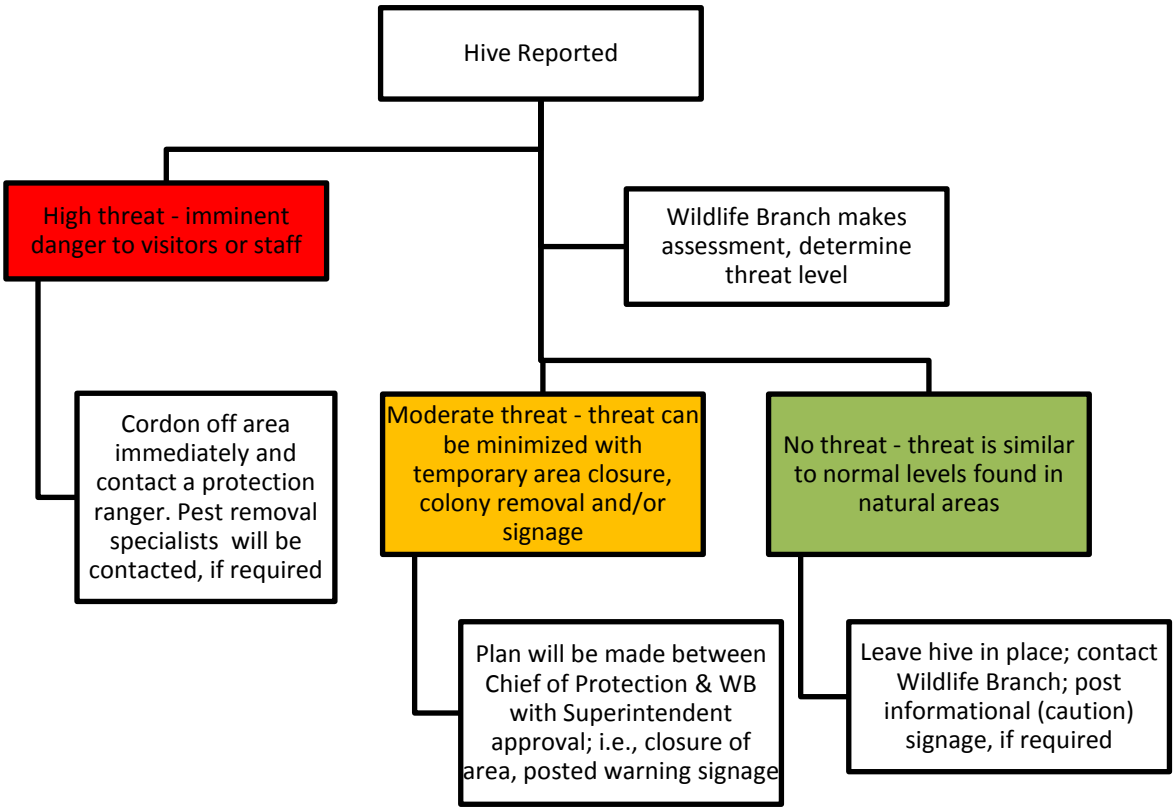
<u>For all Honey Bee Emergencies, call 911.</u>

For information after an incident (to follow up with any agencies that responded):
San Bernardino Dispatch (non-emergency): (909) 383-5652

After 911, contact of Park personnel will be made in the following order for HB attack:

1. **Any on-duty Protection Ranger – Use Park radio for any available ranger**
2. **Park superintendent – Mark Butler (760) 367-5501**
3. **Park safety officer – Mylee Williams (760) 367-5691**

HB Response Flow Chart (Non-emergency)



Bee Safety

National Park Service
U.S. Department of the Interior

Joshua Tree National Park

Be Aware of Thirsty Bees

Just like us, honeybees need water to stay hydrated and cool themselves off during hot weather. They are attacted to any water source – including human perspiration.

Before the heat of summer, blooming mistletoe provides food and moisture for bees. NPS Photos.

Precautions to take:

- Keep your car windows rolled up.
- Use caution around vehicles – bees are attacted to the moisture from car A/Cs (Tip: turn off your A/C 15 minutes prior to stopping to allow the unit to dry).
- Keep food and drinks inside your vehicle.
- Don't swat at bees – they may become agitated and sting you.
- Listen for buzzing and stay away from hives and swarms.

If you are stung:

- Seek shelter in a closed vehicle or leave the area.
- Remove the stinger by scraping it out with a fingernail, knife, or credit card – do not pull it out with your fingertips.
- Apply ice to relieve pain and swelling.
- Seek medical attention if breathing is difficult or you are highly allergic to bee stings.
- Call 911 or park dispatch at 909-383-5651 for medical assistance.

Joshua Tree

National Park Service
U.S. Department of the Interior

Joshua Tree National Park

Warning!
Aggressive Bees Ahead

Honeybees in this area may swarm and behave aggressively toward people. There is a high probability that you will be stung, if you choose to visit this location.

During hot weather, bees need water to cool themselves and their hives. They are attracted to any moisture source, including human perspiration. If you are allergic to bee stings, consider visiting another site in the park.

If you decide to visit here, take precautions:

- Keep your car windows rolled up.
- Use caution when exiting or walking near your vehicle as moisture from car air conditioners attracts bees.
- Keep water, drinks, and food inside your vehicle.
- If bees threaten you, seek shelter in a closed vehicle or leave the area.
- Don't swat at bees; they may become agitated and aggressive.
- Listen for buzzing and stay away from bee hives. Bees attack when their hives are disturbed.

Bee hive located inside a boulder.

Honeybees swarming in a Joshua tree.

Honey Bee FAQs

What's the difference between Africanized honey bees (AHBs) and regular bees?
The "regular" honey bees that beekeepers manage (European honey bees) are a little larger than the AHB. The most notable differences are the AHB's propensity to nest basically anywhere—including close proximity to humans—and the AHBs' increased defensiveness. All honey bees are defensive; that means if a colony is disturbed, bees will come out of the hive to defend against the possible intruder. European honey bees will send out 5-10 bees to defend an area about 20 feet around the colony, but if an AHB colony is disturbed, it may send out several hundred bees to defend an area up to 40 yards around the colony.

Is it possible to tell an African honey bee from a regular or European honey bee by looking at it?
No. The size difference is very subtle. The only way to be sure is via laboratory testing using specific measurements under a microscope.

Do Africanized bees hunt people down and kill them?
No, the only thing they hunt for is pollen and nectar from flowers. However, if an AHB colony is disturbed, the bees will defend their nest.

Do Africanized honey bees produce honey?
Yes. AHBs are honey bees and do produce honey. However, they are not easily managed because of their highly defensive characteristics.

How many times can the Africanized honey bee sting?
All female worker honey bees can only sting once. A portion of the abdomen remains with the stinger when she flies away, and she dies soon afterward. The male honey bees (drones) cannot sting.

What exactly is a swarm of bees? Is it dangerous when bees do this?
Swarming is bee reproduction at the colony level. When a colony swarms, the queen leaves the colony along with about 60% of the bees while the remaining colony members produce a new queen. The cluster of bees (or swarm) that left the colony begins a search for new nesting sites. Most people use the term "swarming" to refer to dangerous bee activity or just bees flying around; however, this is a misnomer. A swarm is a condensed body of bees (like a clump or a ball) concentrated in a specific area (like a tree). Swarming is actually the cluster moving from its previous colony to a holding area until the bees find a home. Bees in swarms are generally docile and not defensive as they do not yet have a nest to protect.

What should I do if I see a swarm of bees?
Stay away from the bees! Even though a swarm is usually docile, honeycomb construction may be beginning (thus a colony is being established and defensive behavior will be exhibited).

If I swat at a bee, will it go away?
Swatting is not a good idea because it will agitate the bee and cause it to sting more readily. Also, if the bee's body is crushed by swatting, it produces an odor (or pheromone) that incites other bees to investigate and possibly attack the culprit.

Are the honey bees really disappearing?
Yes! It is widely reported that beekeepers around the world are experiencing a loss in their bee colonies. Colony Collapse Disorder (CCD) is characterized by the disappearance of adult honey bees. However, there are a number of reasons why the honey bees have been declining. The Varroa mite and viruses it

carries, bad weather, the use of chemical pesticides are just a few reasons. Scientists are still trying to find an answer.

How many honey bees are there in a colony?
At the height of the season an average sized colony can contain 50, 000 bees.

How far does a honey bee fly to get food?
Honey bee foragers commonly fly up to four miles to collect nectar and pollen from flowers, and can potentially cover 50,000 acres. It is estimated that it takes 10 million foraging trips to make the equivalent of one jar of honey (1lb or 454 g).

Avoiding Trouble

While it is true that Africanized honey bees are highly defensive insects, the threat they pose to human populations has been wildly exaggerated. Approximately 40 people die in this country each year as a result of stinging insects. To avoid trouble with bees and wasps, here are some safety suggestions:

- Avoid swarms or wild colonies that have established. Swarming is a normal part of the bee reproductive cycle and most bees are not dangerous when they swarm, however Africanized honey bees are very protective of their colonies, even while swarming.
- Do not throw rocks or other objects at a hive.
- Watch for bees when operating gas-powered mowers, blowers, or other yard maintenance machinery. Africanized honey bees are easily disturbed by the vibration and exhaust.
- Avoid dark clothing or strong perfume/cologne/aftershave when working in the field.

Emergency Measures

If you encounter Africanized honey bees:

- Run away as quickly as possible. Protect your head, especially your eyes and mouth.
- Get inside a secure, enclosed structure, such as a car or building, before attempting to remove any stingers. A chemical called an "alarm pheromone" is released when bees sting. It draws more bees to the victim.
- Do not attempt to fool the bees by hiding or "playing dead" if you are stung. The bees will continue to sting you.
- Do not jump into water, such as a swimming pool. Africanized bees will wait for a victim to surface.
- If you are with someone who cannot run away from the bees, cover them with a blanket, tarp, or other material. This will not prevent bees already on the victim from stinging, but it could prevent additional injury. Do not stay with the victim -- the bees will turn their attention to you. Run for help.

Reporting

Report all encounters with HBs to the wildlife branch either by email (Michael_Vamstad@nps.gov), wildlife observation card or phone 760-367-5562.