

African Honey Bee: What You Need to Know¹

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What is the difference between African and European honey bees?

All honey bees in the United States belong to the genus *Apis*. The most familiar honey bee to Americans is the western honey bee, *Apis mellifera*. There are numerous subspecies of *A. mellifera*, but the exact number of subspecies is highly debated. Generally there are around 25–30 recognized subspecies of western honey bee that are native to Europe, Western Asia, and Africa. The European honey bees in North America are a mixture of five European subspecies imported to the Americas over the past four centuries. The African honey bee, *A. m. scutellata*, was introduced into South America from the central and southern part of Africa in 1957. Since its introduction into South America, the African bee has migrated into the southwestern United States and Florida. *Apis mellifera scutellata* is the African bee subspecies referred to in this document.

Why do we use the term “Africanized?”

Hybridization is the mating of queens and drones from different subspecies. This can occur between any subspecies of honey bee because they are of the same species. As such, African and European honey bees hybridize in regions where both subspecies are present. The term “Africanized” generally is applied to any progeny resulting from matings between European and African bees. The acronym “AHB” is now a commonly used, practical identification term. While

populations of African bees (with little to no European hybridization) have established in the American tropics, much of the original African genetics have been diluted with European genetics in the United States. This hybridization mostly is due to the climate, the expansive beekeeping industry, and the vast populations of European honey bees present. African bee x European bee hybrids present an unpredictable combination of both European and African behavioral traits, and this unpredictability warrants the understanding of the true African bee and their behavior.

What is the history of the African honey bee?

African honey bees, *Apis mellifera scutellata* were imported to Brazil in 1957. The purpose was to introduce genetic material from the tropically adapted African bees into the resident European bees, thereby creating a bee better suited for a tropical environment. During that time, several African queen bees were released accidentally. Their descendants quickly established a large feral population, which had not existed in South America previously. The success of the African honey bee as compared to that of the European bee demonstrates superior adaptation to the tropical environment. Over the next four decades, the wild African honey bee population expanded into most of the tropical and subtropical parts of the Americas. African bees entered south Texas in the early 1990s and since have disbursed throughout several southwestern states. The first documentation of African bees in the state of Florida came

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in 2001 near the Port of Tampa. By 2003 African bees had established colonies in and around the Tampa area and since have spread throughout the state, hybridizing with local European honey bee populations.

What is the African bee's most noticeable characteristic?

The African honey bee defends its nest far more intensely than does the European honey bee. The African honey bee responds quickly to disturbances by people or animals, sometimes in excess of 50 feet from the nest. African honey bees can chase a human or animal up to a mile or more. Their defensive behavior is an evolutionary response to their many biological competitors, including honey badgers, bee eaters, and even humans, in their native range.

In contrast, the European honey bee population has been selected by beekeepers for manageable traits (gentleness, reduced swarming, high honey production). Consequently, the European bee is gentler and more predictable behaviorally than is the African honey bee, though colonies of European honey bees can be very defensive when unexpectedly disturbed.

What other traits can be seen in the African honey bee?

The survival strategy of the African honey bee is to invest resources into producing large numbers of progeny and generating many reproductive swarms. Thus, colonies that are lost frequently due to severe predation and harsh environmental conditions in Africa are replaced quickly. In response to these conditions, the African bee also will abscond (vacate the nest and move elsewhere) frequently. African bees also differ from European bees in their nesting behavior and will nest in small cavities, underground, man-made structures, or on exposed tree limbs (Figure 1), all of which are unusual nesting sites for European bees.

The physical differences between African and European bees cannot be seen by the unaided eye. African bee identification in Florida is done at the Florida Department of Agriculture and Consumers Services (FDACS) apiary lab by morphometric analysis using a microscope and computerized analysis tools. Citizens can contact apiary inspectors in their districts to arrange for sample collection (www.freshfromflorida.com, search apiary).

The European honey bee's survival strategy is different from that of the African bee. More energy goes into producing

and storing honey needed to successfully get through winter, when resources are absent. Such characteristics make the European bee well-suited to temperate environments.



Figure 1. Exposed African bee nest on a tree limb.

What has the African honey bee meant to the South and Central American general public?

Like beekeepers, the general public was unaware of the spread of the African honey bees after their release. As the wild population expanded in size and filled a large ecological vacuum, increased contact between the African bee and humans was inevitable. Generally, the public was unfamiliar with the behavior of African honey bees. Those with bee experience did not understand the behavioral differences and therefore treated the African honey bee as they had the resident European bee.

The African honey bee's tendency to colonize and nest in a wide variety of sites coupled with its erratic defensive behavior resulted in a substantial increase in the number of stinging incidents involving both humans and animals. These incidents often were sensationalized by the press. Once the invading wave passed, the general public and public agencies had to contend with the reality that a large number of defensive honey bees would be a permanent part of their environment.

How has the arrival of the African honey bee affected the US beekeeping industry?

Because the US beekeeping industry was informed and prepared for the arrival of the African honey bee, it has not suffered extensive damage. The introduction of African bees in Florida has caused some alteration in beekeeping practices. These alterations were encouraged through Best

Management Practices (BMPs) provided by the Apiary Section the Florida Department of Agriculture and Consumer Services Division of Plant Industry (www.freshfromflorida.com). The BMPs were provided to the beekeeping industry in an effort to minimize the impact of African bees to traditional beekeeping. Beekeeping practices, as outlined in the BMPs, include modifications such as re-queening more often, purchasing marked queens from a reputable European breeder, and observing colonies carefully for defensive behavior.

How much of the United States will the African honey bee occupy?

In the tropics, African honey bees moved about 300 kilometers (~186 miles) per year. Since their introduction into Texas in 1990, the bees' rate of spread in temperate areas of the United States has slowed considerably. As of July 2009, African bees have been confirmed in Texas, New Mexico, Arizona, California, Nevada, Utah, Louisiana, Oklahoma, Arkansas, and Florida (Figure 2). They appear limited, climatically, to the southern United States.

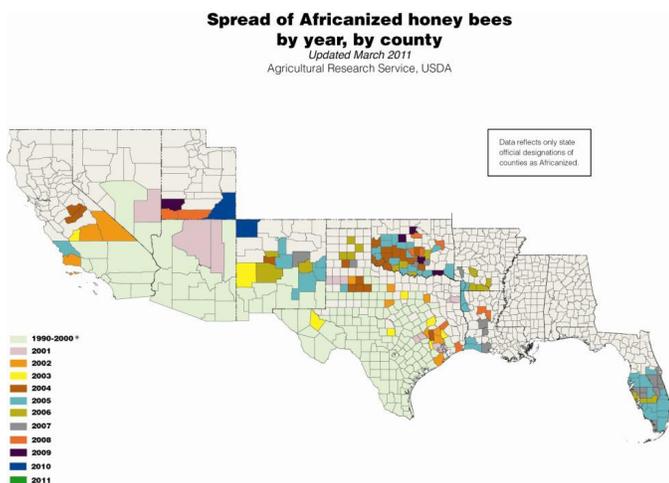


Figure 2. 2011 distribution of African honey bees in the U.S.
Credits: USDA/ARS

Where are African honey bees present in Florida?

It had been predicted that the population of African honey bees that expanded into the southern United States would move quickly across the Gulf Coast states and into Florida. However, for many years and unknown reasons the bees did not move beyond eastern Texas. Careful monitoring with bait hives was established in Florida, and bait hives are still in use at ports, along the interstate, and at various locations around the state where the bees are likely to spread. The bait hives are maintained and checked regularly by apiary inspectors of the Florida Department of Agriculture and

Consumer Services. Currently, AHBs are found in much of the southern half of Florida.

How has the African honey bee affected the Florida public?

Due to effective monitoring and detection methods and predictions that African bees would eventually reach Florida, state officials, researchers, and Extension personnel developed an education program to help the citizens of Florida understand and respond to the African bee introduction. Unlike South and Central America, Florida's preparedness helped minimize human contact with African bees. Although human stinging incidents do occur every year on account of African bees, animals are the most victimized mammals due to their inability to escape tethering, corrals, kennels, etc. while being attacked.

African bee training programs have been implemented around the state to provide training for first responders as well as pest control operators in order to safely handle an attack should one occur.

Additionally, the African Bee Extension and Education program (AFBEE) has been initiated in Florida and members provide African bee-related resources for beekeepers, homeowners, outdoor workers, schools, pest control operators, first responders, county agents, state parks, medical personnel, tourists, and veterinarians. For information on the AFBEE program, visit: <http://www.AFBEE.com>.

What action has been taken by the beekeeping industry and regulatory officials to deal with the African honey bee?

The Florida Department of Agriculture and Consumer Services – Division of Plant Industry has an Apiary Section with apiary inspectors disbursed throughout the state. The Apiary Section, in collaboration with the USDA, is responsible for monitoring the spread of African honey bees. Thanks to these monitoring programs, the public has a better understanding of the movement of the African bees in the United States.

It is a state recommendation that all feral honey bee colonies (not managed by beekeepers) nesting in close proximity to areas frequented by people or domestic animals be treated with extreme caution. Feral colonies of honey bees can be removed live by beekeepers registered

in the state of Florida or by a licensed, trained, and insured pest control operator (PCO). There is a state-maintained list of licensed pest control operators and registered beekeepers who can perform bee removal or eradication services in Florida. This list can be found on FDACS's website (www.freshfromflorida.com) and the AFBEE website (www.AFBEE.com).

What action should be taken by the general public?

Public education can be one of the best defenses against African bee hysteria. Additionally, understanding the behavioral differences between European and African bees is critical to understanding African bees and what one must do if an African bee nest is encountered. Workers, hikers, and campers in remote, rural, or wild areas particularly should be alert and may consider packing mosquito head nets or lightweight bee veils. Citizens also can take measures at home to bee-proof their properties, as detailed in the document "Bee-proofing for Florida Citizens" <http://edis.ifas.ufl.edu/in741>.

Many people decide not to do anything about a feral colony because the "bees seem calm." Just because a colony is calm now does not mean that it will always be. A bee colony becomes more defensive once its nest is established because the bees have something to protect. People living in areas with African bees should take extreme caution if they see a swarm or colony. The Florida Department of Agriculture and Consumer Services is *not* searching for feral colonies in an effort to destroy them all. However, they are recommending that honey bees found nesting in areas near people and domestic animals be removed by registered beekeepers who follow Florida's beekeeping BMPs or eradicated by licensed, insured, and trained pest control operators.

What can I do to protect my home and family from African honey bees?

You can start by bee proofing your home and yard:

- Remove potential nesting sites
- Inspect exterior walls and eaves
- Seal openings greater than 1/8-inch
- Install screens (1/8-inch hardware cloth) over vents, rain spouts, water meter/utility boxes, tree cavities, etc.

- During peak swarming season (spring through fall) inspect once or twice a week for any bee activity.

Educate your family to follow general precautions and have a bee safety plan:

- Listen for buzzing and look for bees entering or leaving an area, indicating a nest or swarm
- Carefully enter areas where bees might be nesting (garages, sheds, grills, old cars, etc.)
- Examine areas before using noisy power equipment (lawn mowers, blowers, chain saws, etc.)
- Examine areas before tying or penning pets and livestock
- Never disturb a swarm or colony of bees
- If you know you are allergic to bee stings, obtain a prescription from your doctor for an Epi-pen and carry it with you at all times.
- If you know you are allergic to bee stings, inform others when engaging in outdoor activities.

What should I do if I locate a swarm or colony of bees on my property?

Stay away from any honey bee colony you find nesting. Contact a trained and registered beekeeper or PCO to have the colony removed or eradicated.

If a swarm or colony is disturbed:

- Get away from bees as quickly as possible—*run!*
- Run in a straight line to shelter—don't attempt to dodge bees with evasive zig-zagging.
- Protect your face and airways as you run away.
- Take shelter in an enclosed area (shed, house, vehicle, etc.).
- Do *not* jump into water or hide in bushes.
- Do not swat at the bees; rapid movements will agitate them further.
- Call 911 if someone is being attacked.
- Perform care for the sting sites of the victim (see below).
- Refer to a trained and registered beekeeper or PCO for removal or eradication.

What action should I take if I'm stung by bees?

If stung:

- Remove stingers from skin as soon as possible. Stingers will continue to inject venom until they are removed or exhausted. Stingers can be plucked out or scraped out with a fingernail, the dull edge of a knife blade, or the edge of a credit card—the important thing is to remove as many as possible as quickly as possible.
- Wash sting sites with soap and water to prevent infection and apply ice to relieve pain and swelling.
- Call 911 and/or seek emergency medical attention immediately if an allergic reaction occurs such as difficulty in breathing or hives over large areas of the body. Remember that swelling around the stung area is normal and not an indication of systemic allergy.
- Seek medical attention if you are stung numerous times: after 5–10 stings/pound of body weight, there is risk of toxic envenomation (bee venom overdose).
- An over-the-counter antihistamine (oral or topical) can be administered to reduce the inflammation and discomfort caused by the stings.

Further Reading

<http://www.AFBEE.com> University of Florida's African Bee Extension and Education Program

<http://www.freshfromflorida.com> Florida Department of Agriculture and Consumer Services, Division of Plant Industry Apiary Section

<http://www.ars.usda.gov/IS/pr/2007/070209.htm> United States Department of Agriculture's African bee research and maps

<http://edis.ifas.ufl.edu/in790> The African Honey Bee

<http://edis.ifas.ufl.edu/in784> Differences between European and African honey bees

<http://edis.ifas.ufl.edu/in783> Living with African bees in Florida's outdoor workspaces

<http://edis.ifas.ufl.edu/in771> Choosing the right Pest Control Operator for honey bee removal: A consumer's guide

<http://edis.ifas.ufl.edu/in738> Frequently Asked Questions about the African honey bee in Florida

<http://edis.ifas.ufl.edu/in741> Bee-proofing for Florida citizens

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