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Differences Between European and African Honey Bees[1]

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African honey bees (AHB –Box 1) and European honey bees (EHB) are the same species (*Apis mellifera*), but the two are classified as different sub-species. European honey bees (the honey bee most familiar to Americans) were first introduced to the Americas in the early 1600's by European explorers. For centuries, European honey bees have been selected by beekeepers for their robust honey production and storage behavior, their reduced regular swarming (colony splitting) tendencies, and their gentleness. The African honey bee (*Apis mellifera scutellata*) was brought to Brazil in the 1950s in an effort to increase honey production. However, 26 queens were accidentally released and thrived in Brazil's native environment, crossbreeding with European Honey Bees to produce the Africanized Honey Bee. Since then, Africanized bees have spread throughout South America, Central America, and into the southwestern United States and Florida. The Africanized honey bee is considerably more defensive than its European cousin. Consequently, it is important to understand key differences between the defensive Africanized bee and the docile European honey bee.

Visual Appearance

Africanized honey bees are slightly (approximately 10%) smaller than European honey bees. However, this size difference is very subtle, and it is nearly impossible to differentiate between the two without specific measurements and/or laboratory testing. The Florida Department of Agriculture and Consumer Services uses a morphometric test called FABIS (Fast African Bee Identification System) to identify colonies that have been eradicated from throughout the southeastern United States. If a bee's identity remains questionable after FABIS testing, FDACS will use a more comprehensive morphometric test, USDA-ID (Universal System for the Detection of African honey bees), to confirm the colony's identity.

Box 1. What's in a name?

In popular literature, "African," "Africanized," and "killer" bees are terms that have been used to describe the same honey bee. However, "African bee" or "African honey bee" most correctly refers to *Apis mellifera scutellata* when it is found outside of its native range. *A.m. scutellata* is a subspecies or race of honey bee native to sub-Saharan Africa, where it is referred to as "Savannah honey bee" given that there are many subspecies of African honey bee, making the term "African honey bee" too ambiguous there. The term "Africanized honey bee" refers to hybrids between *A.m. scutella* and one or more of the European subspecies of honey bees kept in the Americas. There is remarkably little introgression of European genes into the introduced *A.m. scutellata* population throughout South America, Central America, and Mexico. Thus, it is more precise to refer to the population of African honey bees present in the Americas as "African-derived honey bees." However, for the sake of simplicity/consistency, we will refer to African-derived honey bees outside of their native range as "African honey bees" or "AHBs".

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Hive Defense and Stinging

Unlike wasps and hornets, honey bees can only sting once, and will die shortly afterward. Stinging is often a last resort in hive defense.

The venom of the Africanized honey bee is no more potent than that of the European honey bee. For a fatality to occur from venom toxicity, it normally would take about 10 stings per pound of body weight, from either an Africanized or European honey bee. The main difference between the European and Africanized honey bee is its defense response; an Africanized honey bee colony, if disturbed, will send more guard bees to sting, and will pursue for a longer distance and stay agitated for a longer period of time, than a European honey bee.

Table 1.

European Honey Bee	Africanized Honey Bee
May send out 10–20 guard bees in response to disturbances up to 20 feet away (Figure 1).	May send out several hundred guard bees in response to disturbances up to 120 feet away (Figure 2).
Once agitated, will usually become calm within 1–2 hours.	Once agitated, may remain defensive for days.
Disturbed colony may result in 10–20 stings.	A disturbed colony may result in 100–1000 stings.

Figure 1. European honey bees typically only send out 10–20 guard bees when disturbed.
Credits: Ian McGuire, UF/IFAS

Swarming and Absconding

Swarming is a natural occurrence when the colony gets too large and resources are abundant. The colony rears a new queen and the hive splits roughly in half, creating two separate colonies. Absconding occurs when resources are scarce or there is a threat to the hive. The entire colony will abandon the hive for a new location. For more information about swarming, see *Swarm Control for Managed Beehives* (http://edis.ifas.ufl.edu/in970).

Figure 2. An Africanized bee colony will send out hundreds of guard bees when disturbed.
Credits: Ian McGuire, UF/IFAS

Table 2.

European Honey Bee	African Honey Bee
Swarm 1 or 2 times per year.	Can swarm 10 or more times a year.
Swarms are larger and need larger volume to nest.	Swarms contain fewer individuals, and therefore a much smaller cavity is needed (Figure 3).
Rarely abscond (completely abandon nest) from nesting location.	Abscond often and relocate to more suitable nesting locations.

Figure 3. A swarm of African honey bees.
Credits: W. H. Kern, Jr., UF/IFAS

Selection of Nesting Site

Because Africanized honey bees swarm more often, fewer individuals are involved in each swarm, meaning they do not require a large cavity to build a nest and are often discovered in water meter boxes (Figure 4) and other man-made cavities. Having evolved in regions with constant resource availability, along with small nests and frequent swarming, AHBs do not have the same drive to store large reserves of honey like EHBs. European honey bees need a larger volume nesting site and tend to nest in hollowed tree cavities (Figure 5).

Figure 4. A water meter box where a previous African honey bee colony had been nesting.
Credits: UF/IFAS Honey Bee Research and Extension Laboratory

Figure 5. A large hollow tree cavity suitable for a European honey bee nest.
Credits: UF/IFAS Honey Bee Research and Extension Laboratory

Figure 6. Exposed two-month-old African honey bee colony on tree branches.
Credits: W. H. Kern, Jr., UF/IFAS

Table 3.

European Honey Bee	African Honey Bee
Nest in large cavities, around 10 gallons in size.	Nest in smaller cavities, 1 to 5 gallons in size.
Typically nest in dry, above ground cavities.	Will nest in underground cavities with a high moisture content.
Nest in protected locations, rarely exposing the nest (Figure 5).	Will nest in exposed locations, (e.g. hanging from a tree branch) (Figure 6).
Due to larger colony size, nests are often easier to detect.	Due to smaller colony size, nests often go undetected until disturbed.

Box 2. Honey bees nesting on your property?

The state of Florida recommends that nuisance honey bees (http://edis.ifas.ufl.edu/in1005 and https://edis.ifas.ufl.edu/in790) found nesting outside of hives managed by a beekeeper (like those nesting in tree cavities, walls, water meter boxes, etc.) be either (1) removed from the nest site by a registered beekeeper (http://www.freshfromflorida.com/Divisions-Offices/Plant-Industry/Business-Services/Registrations-and-Certifications/Beekeeper-Registration) or trained Pest Control Operator (PCO) or (2) eradicated by a PCO. Consult the publication *Choosing the Right Pest Control Operator for Honey Bee Removal: A Consumer Guide* (http://edis.ifas.ufl.edu/in771) for advice on hiring a PCO. It is the responsibility of the property owner to deal with an unwanted swarm (https://edis.ifas.ufl.edu/in970) or colony of honey bees. To find a registered beekeeper or PCO who offers removal or eradication services, visit: http://www.freshfromflorida.com/Business-Services/Bees-Apiary/Florida-Bee-Protection/Bee-Removal-or-Eradication-in-Florida. For more information on African honey bees, see http://www.freshfromflorida.com/Divisions-Offices/Plant-Industry/Pests-Diseases/African-Honey-Bee or http://edis.ifas.ufl.edu/topic_africanized_honey_bee. (Modified from FDACS: http://www.freshfromflorida.com/Divisions-Offices/Agricultural-Environmental-Services/Consumer-Resources/Florida-Bee-Protection/Bee-Removal-or-Eradication-List).

Resources

- UF/IFAS EDIS Documents, Subtopic *Africanized Honey Bees*

http://edis.ifas.ufl.edu/topic_africanized_honey_bee

This site has extension documents with detailed information on AHB biology and distribution and on keeping your family and community safe from AHBs.

- *AFBEE Program*

http://entnemdept.ifas.ufl.edu/afbee/

The African Honey Bee Extension and Education Program was established by the Florida Department of Agriculture and Consumer Services and the University of Florida, and serves to educate all Floridians about the presence of African bees in Florida.

- *Florida Department of Agriculture and Consumer Services, Division of Plant Industry, Bureau of Plant and Apiary Inspection, African Honey Bee Page* http://www.freshfromflorida.com/Divisions-Offices/Plant-Industry/Pests-Diseases/Africanized-Honey-Bee

FDACS website provides links to videos, fact sheets, press releases, and more. It also includes a list of trained professionals available for bee removalor eradication.