



# Africanized Honey Bees: Where Are They Now, and When Will They Arrive in North Carolina?

*Honey bees are an integral component of agriculture because they are used to pollinate numerous fruit and vegetable crops. In North Carolina alone, honey bees account for more than \$185 million per year in added crop yields.*

The apiculture industry, however, is not without challenges. Recently, the greatest challenge has been the introduction and spread of parasites, which have decimated the feral bee population and caused a dramatic decline in the number of managed beehives in the state. Now a second crisis looms—the potential spread of Africanized honey bees (AHB), often sensationalized as “killer bees,” from states and countries farther south, the results of which are difficult to predict. The following brief history of the AHB in the Americas describes its current distribution and evaluates the likelihood that AHB will become established in North Carolina.

## The AHB in the Americas

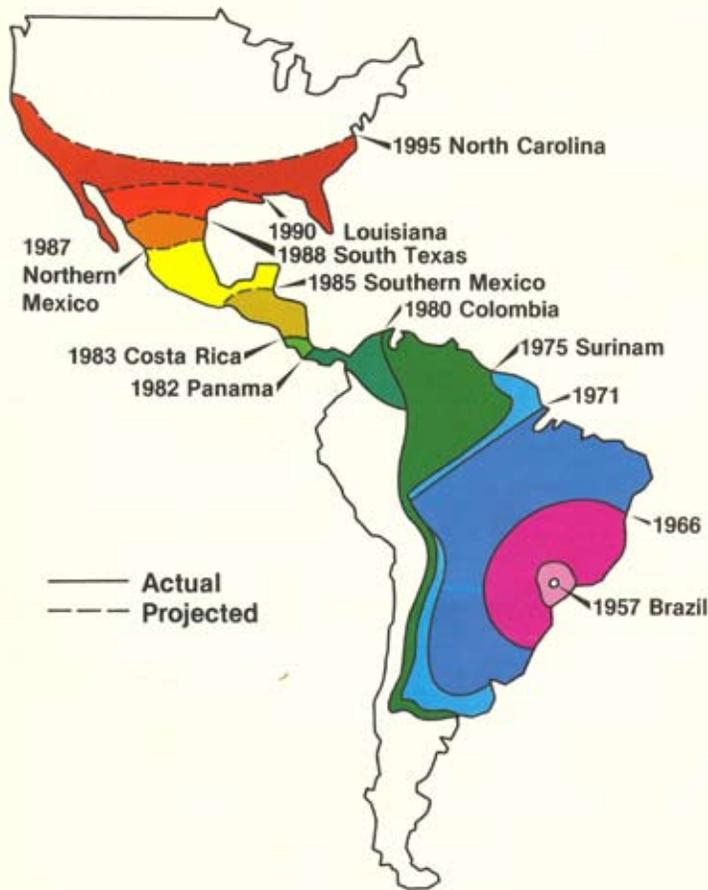
The history of the Africanized honey bee in the New World is well documented. Several mated queens were imported to Brazil from Africa in 1956 to breed a honey bee that would be well-suited to Brazil’s tropical climate. At that time, Brazilian honey production was very low because the European honey bee (EHB), on which crop pollination and honey production in the Americas were based, was better adapted to a more temperate environment. The goal was to produce hybrids that exhibited the foraging success of African bees while maintaining the gentleness of European bees. The inadvertent escape of the African queen bees established a feral population of “Africanized” hybrids. Unfortunately, these hybrids

retained most of the unfavorable traits of their African ancestors, chief among which was their unwelcome defensive (stinging) behavior.

The AHB spread remarkably swiftly (Figure 1), upward of hundreds of miles per year. As the population grew, the AHB expanded its range from São Paulo, Brazil, south into Argentina and north through Central America and Mexico. In its wake, the AHB severely affected the apicultural industries of Brazil, Venezuela, and Panama and forever changed beekeeping practices in Latin America. Moreover, the AHB gained its “killer bee” nickname because of its increased defensive behavior, and it became known as a serious public health threat in South and Central America.

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## Spread of the Africanized Honey Bee



Courtesy of USDA

Figure 1. The spread of AHB in the Americas from 1956 to 1983, and the (unrealized) prediction of its future spread

Although stinging incidents involving humans, livestock, and domestic animals have increased in Africanized areas, annual human deaths from bee stings remain lower than those associated with lightning strikes. Stinging incidents aside, the major significance of the AHB in the U.S. will be within the apicultural industry. Professional beekeeping in the U.S. maintains strong ties to the southern third of the country because of its mild winters and longer foraging seasons. Beekeepers who make their living

migrating from one crop area to another usually take their colonies to the southern states to overwinter, then pollinate various crops as they move north with the change of seasons. Queen and packaged-bee production, which supplies the rest of the country with adult bees and commercial stock in the early spring, is concentrated in the southern states and California. These industries will be severely impacted by the AHB if tight restrictions are placed on the movement and shipment of honey bees.

### Where are they now?

The Africanized honey bee was first detected in the U.S. in south Texas in 1990 (Figure 2). For three years, their distribution was confined to the southern part of that state. In 1993, however, the AHB was detected in Arizona, and by 1995, it was detected in New Mexico and southern California. The bees then spread north, and by 1998 they were detected in Nevada. In every state where they became established, the bees continued their migration northward over the next few years. By 2004, the bees had migrated through Texas and had reached the southernmost counties of Oklahoma.

For reasons that are as yet unclear, the eastward spread of the AHB stalled for many years in Texas. This unexpected hiatus was hypothesized to be a result of climate or other ecological factors. Nonetheless, by 2005 the AHB had expanded east from Houston, and most recently, it has become established in western Louisiana, southwestern Arkansas, and southern Florida. It remains unclear how the AHB entered Florida, given the lack of positive AHB findings along the Gulf Coast. Thus, it seems likely that the bees were introduced independently through commercial shipping ports and on cargo ships.

### Will the AHB ever become established in North Carolina?

North Carolina has, in fact, experienced two verified reports of the introduction of AHB. Swarms of AHB have been found and destroyed at the ports of Morehead City in 1989 and at Wilmington in 1991. Those swarms of AHB were

## Spread of Africanized honey bees by year, by county

Updated January 2007

First found in southern Texas in 1990, Africanized honey bees are now found in much of the South.

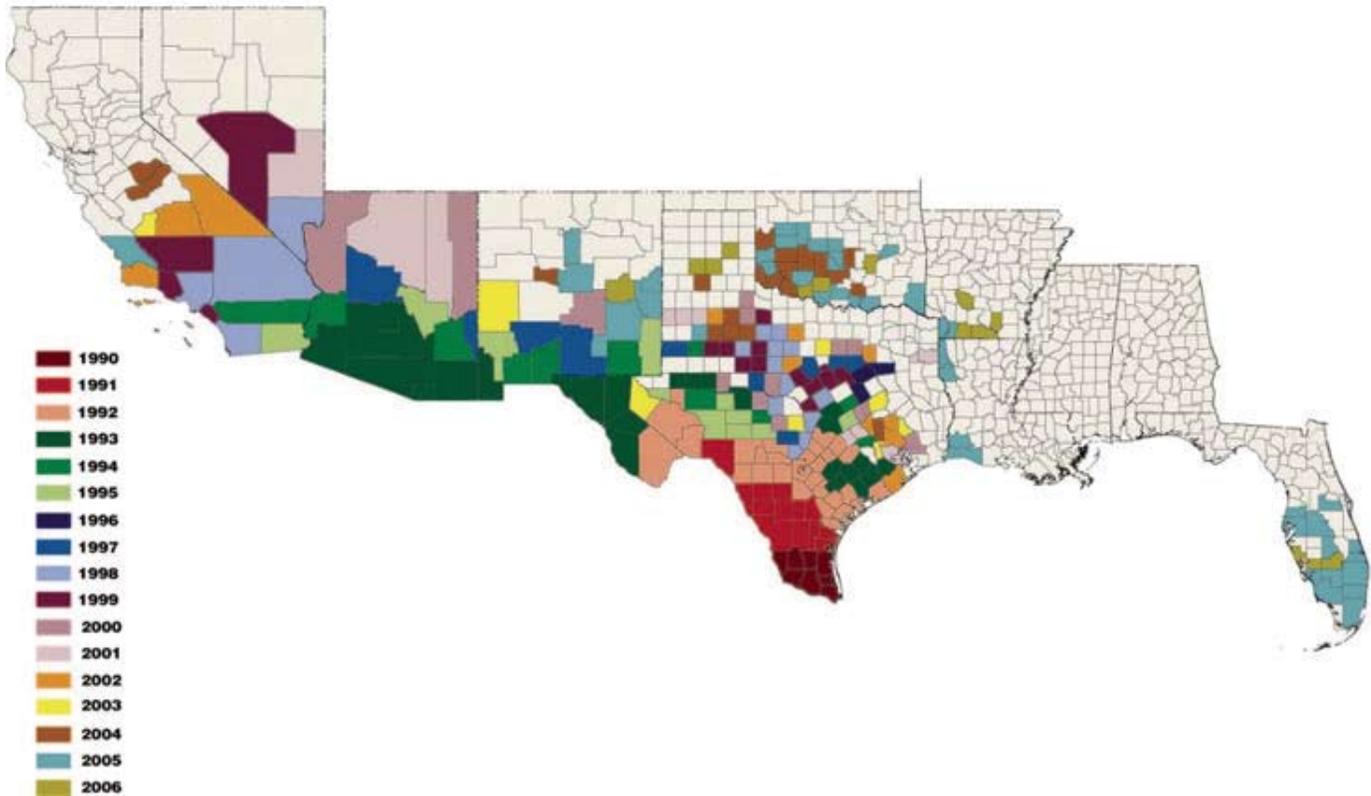


Figure 2. Current distribution of Africanized honey bees in the U.S.

Courtesy of USDA-ARS

“stowaways” on ships that entered the ports from Africanized areas, presumably South America. The bees were detected and destroyed by the joint efforts of the N.C. Department of Agriculture and Consumer Services (NCDA&CS) and customs agents working for the U.S. Department of Agriculture (USDA).

This inadvertent spread by human transport is one of two ways the AHB may enter a new area. The human-assisted mode can occur either by the movement of managed beehives (such as migratory beekeeping) or by the shipping of cargo from Africanized areas (such as the desert Southwest or South and Central America).

Given the annual south-north traffic of migratory beekeepers from Florida to Maine, it is probable that the AHB ultimately will be introduced along the entire Eastern Seaboard. The AHB also may migrate to new areas through the natural processes of “swarming” (reproduction through colony fission) and “absconding” (the complete abandonment of a hive).

The USDA, through its Animal and Plant Health Inspection Service (APHIS), has a standing policy to monitor the movement of Africanized bees into U.S. ports and to destroy them upon positive detection. In North Carolina, the NCDA&CS and North Carolina State University have worked with

APHIS inspectors in Wilmington and Morehead City to make sure they are prepared to deal with the arrival of bees at the ports. In addition, both of the port areas have been declared “bee-free” zones, and trap nests have been established to attract any bee swarms at the ports. Such bees will be destroyed and then examined to determine if they are AHB.

Early predictions of the final AHB range were based largely on temperature gradients in their native Africa and their expanded distribution into Argentina. Those models predicted the AHB would reach North Carolina by 1995 and largely halt its northward progression. Such predictions

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were not met, however, as the expansion of the population has been discontinuous and variable. Nevertheless, the climatic conditions in North Carolina, at least in the piedmont and coastal plain regions, are sufficiently favorable for the bees to live. What remains unclear is whether they will establish a permanent, feral (nonmanaged) population or whether they will be only “seasonal visitors.”

### Conclusion

Today, the key question in N.C. apiculture is no longer *whether* the Africanized honey bee will be introduced to North Carolina. They have been in the past, and they almost certainly will be in the future. The real question is whether they will become *permanently established* in the state. While it is difficult to make firm predictions about the final distribution of the AHB in North Carolina, it is

critical that all residents of the state become aware of this possibility before the bees arrive and that North Carolinans join the effort to exterminate them before they become established.

### CONTACT INFORMATION IN NORTH CAROLINA

More information on the AHB in N.C. may be found at: [www.NCAHB.com](http://www.NCAHB.com)

If you believe you have Africanized honey bees, contact:

*North Carolina Department of Agriculture and Consumer Services, Apiary Inspection*  
<http://www.agr.state.nc.us/plantind/plant/apiary/apiarymp.htm>

*North Carolina State University Apiculture Program*  
<http://entomology.ncsu.edu/apiculture>

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