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Killer Bees: Origin of the Name and Other Humbugs

by Roger A. Morse



Beekeepers in Brazil use larger smokers than do American beekeepers.

Africanized Bees

It is important to emphasize that these bees are not a new race or strain of honey bee; they are nearly pure African. We know that honey bees are native to Europe, the Near East (much of Iran) and Africa. In this great land mass there are about 26 races, and as one might expect, there are great differences among them. These races

are all capable of interbreeding with each other and are, therefore, one species. In color, they range from light brown to black; in size, we find that most of the African races are about 10 percent smaller than those in Europe. Throughout history, certain races of honey bees, such as the Caucasian and Italian races, have been noted for their gentleness and others, such as those on the Island of Cyprus, for their ferocity.

The Africanized bees at the front of the invasion are more than 97 percent African with only a small number of European genes. Further supporting the fact that these bees are nearly all African, my students have observed that these bees have a special dance (how honey bees communi-

cate information) which signals a long distance move; this dance is unknown for European honey bees. The bees just behind the advancing front are apparently more European due to crossing with European stock throughout their travels and also because of the queening of colonies by beekeepers in some areas.

We call the bees in the Americas "Africanized" to differentiate them from their ancestors, the pure Africans. All but one of the

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t all started in 1956. With official approval and support of the local beekeeping community, Warwick Kerr, a Brazilian researcher, imported a number of queen honey bees from Africa. The purpose was to obtain bees better adapted to the tropical parts of Brazil where European honey bees, which are from a temperate area, are not well adapted. Some of the African stock escaped before the breeding project was completed, however, and these bees interbred with local bees. Though aggressive, these hybrid, Africanized honey bees are the basis for Brazil's successful beekeeping industry today.

In 1964, the military took control of Brazil's government. Warwick Kerr, it turns out, was critical of the new government. In an effort to silence the scientist who had imported the bees, the military gave widespread publicity to any stinging incidents, including those caused by wasps. All of these were blamed on Africanized bees. The first mention of the words "killer bees" in the U.S. press was in the September 24, 1965 issue of *Time* magazine that recapped a Brazilian military press release. The name stuck.

About 15 years later, on October 15, 1990, a swarm of naturally migrating Africanized honey bees was found in the southernmost part of Texas. This was probably not the first Africanized swarm to arrive in Texas from south of the border, but it was the first to be found. The arrival of these bees had been expected for a number of years.

> "Killer Bees" has become a household name. *Time* magazine used it in 1965 when reporting a stinging incident in Brazil. Since then Hollywood has produced four feature bee movies. Countless media stories have focused on the invasion of North America by killer bees and government agencies have allocated millions to stop the invasion. However, priorities are misplaced. Africanized honey bees are not a threat to either the U.S. pollination industry or to U.S. honey production.

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African queens that were imported by Kerr into Brazil came from South Africa, many from an apiary a few miles south of the capital city of Pretoria. It is interesting that we do not hear stories about the obnoxious behavior of these bees in Africa where they are widespread. In Brazil too, now that civilian rule has resumed, the press is less concerned with bee horror stories.

The History of African Beekeeping

The anthropological record indicates that the Egyptians were trading along the east coast of Africa as much as five thousand years ago. They were seeking slaves, gold, spices, aromatic resins, honey, beeswax, and a number of other commodities. More recently, the East African countries, in some years, put as much beeswax on the market as is produced in the United States, which is some indication of the magnitude of beekeeping there. East African honey is used to make a low alcohol beer that has apparently been the chief alcoholic beverage for many centuries if not millennia among the people in the area.

Beekeeping methods in Africa are simple. Round, elongated, empty hives made by hollowing logs or rolling bark into a cylinder, are hung from trees. These are quickly occupied by migrating swarms. Recent studies by Professor Thomas Seeley at Cornell have shown conclusively that when swarms of honey bees are given a choice they prefer nests that are well above the ground, visible but shaded, and have a volume of about 40 liters with a small entrance.

African beekeepers have known how to bait hives for maximum effectiveness probably as long as they have been keeping bees. However, the technical reasons behind selecting good sites may not have been so obvious. Nests five or more meters in the air are protected against fire and honey badgers that would attack and consume them. The nests must be easily found, but shaded to protect them against the heat of the sun in warm areas. Small nest volumes encourage reproduction, including swarming while small nest entrances make it easier for the bees to protect their nests. These facts are important to those who wish to capture swarms, even of European bees in the United States.

In South Africa there is now a well-developed beekeeping industry, using modern, movable frame hives like those developed in the United States in the mid-1850s. Beekeepers in South Africa often use bait hives to increase their colony numbers. However, unselected African bees abscond frequently, i.e., easily abandon a hive. Therefore, soon after swarms are captured, beekeepers generally requeen the swarms with queens that have been carefully bred for better traits such as disease resistance, gentleness and honey gathering ability.

The Introduction of African Bees into Brazil

Professor Warwick Kerr, a U.S. trained geneticist, was responsible for the introduction of African bees to Brazil, a move strongly supported by local beekeepers and the government. In the more southern, temperate parts of Brazil, beekeepers had used European honey bees for over a century. When these bees were carried into the tropical and subtropical areas of central and northern Brazil, however, they did not fare well—probably because of a combination of hot weather and predators—despite the abundance of nectar-producing plants in tropical Brazil.

Some of the African stock was accidentally released in Brazil before it had been fully evaluated and integrated into a planned breeding program. Nevertheless, the introduction of African bees in Brazil has been a great success; more honey is being produced in Brazil than at any time in its history. Most Brazilian beekeepers are not even familiar with the more gentle European honey bees. However, some beekeepers have selected less aggressive bees from



A student with a small swarm of African bees.

stock among the Africanized bees, and a small number of beekeepers import some European bees.

Apiaries in Brazil look much like those in North America though beekeepers in Brazil use larger smokers. Smoke apparently confuses the bee's sensory system and bees can neither detect they are being manipulated nor warn other bees of what is taking place. Properly used, smoke reduces the bees' aggressiveness. North American beekeepers know to smoke a colony's entrance, where the guard bees are located, before opening a colony for examination. But, in the case of European bees we are often careless. In the case with Africanized bees, smoke and the proper protocol is important to avoid a stinging attack.

Brazilian beekeepers use white, one-piece suits with zippers, not buttons, and good boots and veils. Most beekeepers in Brazil, like those in America, do not care to use cumbersome gloves while working colonies. However, thin rubber gloves such as those one may use while washing dishes provide good protection and do not hamper beekeeping work.

U.S. Attitudes

I am aware that African bees are more aggressive than their European cousins. However, I do not subscribe to the thought that their arrival signals a great disaster. In their northward march these bees have for the first time encountered in Texas a sophisticated, adaptable beekeeping industry. I feel confident we will be able to cope with the problems that may arise as these bees spread across the United States.

I have worked with African and Africanized honey bees in Africa, Brazil, and Mexico. These bees will spread across the southern United States at about the same rate as they have spread north from Brazil. No regulation, or abatement, or eradication program will delay their advance.

While many of our beekeepers will not be happy with the more aggressive Africanized bees, they are aware that they are good honey producers and that there is a well-developed beekeeping industry in parts of Africa and Brazil based on the use of these bees. Some of us who have worked with these bees in Africa and Brazil are also aware that they are good housekeepers and appar-

ently resistant to one of the honey bee diseases that has recently plagued our industry. This disease is caused by an Asian honey bee mite, *Varroa jacobsoni*, which has been accidentally introduced into many beekeeping areas around the world.

Our Experience in Mexico

Several of my students and I were part of a USDA effort to study Africanized honey bees in southern Mexico in 1987, a time when the Africanized bees were just arriving there. Mexican teams, with U.S. financial support, were trapping swarms in the area using bait hives in an effort to eradicate the bees. We, on the other hand, wanted to capture migrating swarms for study. To do so, we offered a reward for swarms hanging in trees or bushes close to the ground. We received a great number of calls and were very busy capturing resting swarms; it was evident that a great number of swarms were overflying the bait hives.

At the same time that some Mexican government employees were capturing and killing swarms, others were capturing them and using them to stock their own hives. One group of beekeepers had a demonstration apiary that was exclusively Africanized in the swarm capture area. Their purpose was to learn how to live with and maximize honey production from Africanized honey bees. One of my students and I visited this apiary and examined several hives. We found that the colonies were more populous than colonies of European honey bees in the vicinity and we could understand why some Mexicans were enthusiastic about these new bees. We also observed that the Africanized colonies were congested; congestion of the brood nest is the cause of colony division or swarming. These colonies were preparing to add more swarms to the area.

Predicting The Future

It is not difficult to predict what will happen as these bees spread across the southern United States—we have only to look at the beekeeping industry in South America, especially Brazil and Argentina. Both countries have well-developed beekeeping industries; Argentina is one of the world's major honey exporting countries and Africanization of colonies in the northern parts of that country have had no adverse effects on production.

The USDA's monthly report on honey, the *National Honey Market News*, dated November 6, 1990, stated "Brazilian honey production is estimated to increase in 1990...reflecting favorable weather and a higher number of producers. The sector...will likely continue to expand in the next few years due to the large unexplored potential of floral sources in Brazil." Much of this expansion is in northern Brazil where European bees have never been established in substantial numbers.

In the coming months, we can expect a rash of quarantines and noisy debate as beekeepers and governments (federal, state and local) decide what to do. The African bees will spread by themselves; there are no data to support the idea that we can exercise any control over their movement. Some will be spread by beekeepers as they move their colonies around the country for pollination and honey production.

One-third of the slightly over three million colonies of honey bees owned by commercial beekeepers in the United States are moved and rented to growers for the pollination of agricultural

crops each year. Many are used to pollinate two different crops, one after the other. The value of honey bees for pollination far exceeds their value as honey producers. For example, about 30,000 colonies are moved from Florida to Maine each year for blueberry pollination. Almond pollination in California demands the use of over 650,000 colonies from 14 states. Without adequate bees, the production of some seed, fruit, and nut crops would be diminished. In the final analysis, economics will dictate how well quarantines will be enforced.

As Africanized bees cross into the United States, they will encounter a sophisticated, well trained beekeeping community that can rapidly adapt to their ways. It is important to emphasize that honey bees are not domesticated animals; they are little different from their state before man began keeping them in hives for pleasure and profit. Successful beekeeping requires knowledge of bee behavior; we, not the bees, adapt.

Many U.S. beekeepers have already visited Brazil, Mexico, and several other countries where Africanized bees exist; they have worked with these bees and are no longer afraid. Many hobby and semi-commercial beekeepers may need the assistance of extension agents trained in beekeeping and there will doubtless be some unfortunate stinging incidents involving honey bees and wasps. However, we have always had this problem and I do not expect that the number of incidents will increase greatly as a result of "killer" bees.

Hopefully, we will be able instead to capitalize on some of the positive attributes African and Africanized honey bees have over their cousins. Their resistance to our most serious bee disease, caused by the varroa mite, has already been mentioned. We are aware that these bees develop in a slightly shorter period of time and that their queens lay more eggs; these two features should allow us to grow bees faster in the United States. We may be able to exploit the defensiveness of these bees and

find that they can better resist invasion by yellow jackets and wax moths. We are already aware that they are better honey producers in warm climates and we have no indication from the temperate areas of Argentina, where they are sometimes present, that they do less well in cooler climates. Some Brazilian beekeepers have selectively developed less aggressive strains from among the Africanized bees, something the U. S. beekeepers may have to do as well.

Beekeepers have a major problem in that the public often blames stinging incidents caused by wasps on honey bees; bees and wasp insects look alike to the untrained eye. Bad press on "killer" bees over the past three decades has unfortunately clouded the public mind. As a result, beekeepers are worried they will be hard pressed to find "homes" for their bees because of the fear and worries of neighboring communities. I am confident, however, that within a few years the term "killer bee" will disappear and we will learn to live with this much maligned creature that serves us so well. 

Bees Sting

Unfortunately, there have always been unpleasant stinging incidents wherever honey bees are kept, just as there are accidents wherever animals exist. U.S. bee journals often report instances where dogs, and even large animals, such as horses, have died as a result of being stung excessively. In the U.S., horses have occasionally wandered into apiaries only to be stung and respond by kicking at the first object they see. If that happens to be a bee hive, and the excited horse starts to run in a circle instead of a bee line away from the apiary, the results can be disastrous.

For More Information

An eight-page bulletin, *Bait Hives for Honey Bees*, by Thomas Seeley, Roger Morse, and Richard Nowogrodzki is available from the Distribution Center, 7 Research Park, Cornell University, Ithaca, NY 14850 for \$1.55 postpaid.