

# Africanized Honey Bees in California

The result of attempts to hybridize European honey bees (EHBs) with an African race, Africanized honey bees (AHBs) have been expanding their territory since they escaped from Brazilian researchers and beekeepers in the late 1950's. Arriving in southern Texas in 1990, AHBs have moved north some, but west much more, during the past twenty years. They were discovered in southeastern California in 1994, just outside of Blythe, in Riverside County. Currently the area considered colonized lies south of a diagonal line that runs northeast to southwest, from northern Tulare County to the southwest corner of San Luis Obispo County.

Why is it important to know where AHBs are in an area? Are they really enough of a risk to generate concern? That depends upon your point of view. While it does appear that over the decades the Africanized honey bees in southern California have lost some of their overly-defensive behavior, they still are not predictable. At times a colony population is no more apt to become disturbed and defensive than our normally kept EHBs. At other times they respond quickly to minimal disturbance and defend a very large territory around the hive location. Such behavior is not restricted solely to AHBs, however colonies of EHBs demonstrating such intensive defensive behavior usually are "requeened" or killed by beekeepers.

Requeening is a process by which the original queen in the colony is located and removed. Then, a young queen, mated outside the range of AHB drones, is introduced into the colony. Over a period of four to six weeks, the original workers die of old age and are replaced by daughters of the new queen. Defensive behavior becomes less intense as population replacement progresses.

Individuals and organizations in southern California are advocating collecting honey bee swarms and extracting colonies from buildings, etc., hiving them, and keeping them in backyards. The probability of hiving an AHB colony is relatively high. The probability of

encountering unacceptable defensive behavior is quite high, especially for individuals who have never previously kept bees. If you wish to have a feral colony preserved, find someone who will manage the colony in a safer location. If you wish to start a colony in your backyard, purchase bees from an operation where it is certain that the queen mated outside the known areas of Africanization.

Massive stinging events involving AHB colonies have not been very numerous in the U.S. Some of the worst incidents have involved dogs that have remained near the nesting site once the stinging commenced and received in excess of 2,000 stings. In most human stinging incidents, sting numbers have approached the hundreds at worst, but usually were less than one hundred. Fortunately, there have been few human deaths in California caused by encounters with AHBs. However, swarms still can be disruptive at athletic events and cause substantial disturbances in parking lots, etc.

How many honey bee stings does it take to kill someone? We don't know for sure, because the experiment cannot be conducted. However, data from mammalian laboratory toxicity studies suggest that about half the individuals would die and half would live ( $LD_{50}$ ) if they were stung 8.6 times per pound of body weight.

There are four complicating factors relating to that estimate. 1. Individuals who are highly sensitive to honey bee venom proteins may succumb to anaphylactic shock (allergic response) from only one sting. 2. Elderly individuals with compromised cardio-pulmonary systems seem to be at risk for bee sting-induced heart attacks. 3. Beekeepers, who have been stung many times, develop very high titers of protective antibodies against venom proteins and can tolerate many more stings than non-beekeepers.

The fourth complication for anyone stung numerous times by honey bees, bumble bees or wasps, is the potential delayed problem of "organ failure." Bee and wasp venoms contain proteins that destroy cells and tissues in mammalian bodies. Normal disposal of

such debris is through the kidneys. If too much debris arrives in a short time, the kidneys can become clogged, resulting in kidney failure. Increasing the intake of fluids (including IV) can help with the flushing process, but sometimes dialysis is required. Patients who seem to recover quickly from multiple sting incidents should be monitored over the next week or two to be certain that a dangerous, secondary condition is not developing.

If the consequences of being stung can be so dire, should everyone just stay in the house and only venture outside in a "bee suit?" Fortunately, things are not nearly that bad. By paying attention to what is going on around you, you can avoid getting into a stinging situation. It is not hard to determine where honey bees live. On sunny or cloudy days, when the temperature is above 55°F, some bees usually fly to and from their nests. This "directed" flight is pretty easy to see, if you look for it. The bees may have moved into a shed, garage, abandoned car, cardboard box, water meter box, utility box, discarded tire, wall or roof of a house. To prevent that from happening near your home, remove or seal off potential nesting sites. If you see bees coming and going from a specific place, stay away from there until a knowledgeable person has checked for and mitigated the problem, if one exists.

If you are going to be working or relaxing in areas where quickly getting into a building or vehicle, if bees or wasps start to sting, will not be possible, take an Army surplus gnat/mosquito veil with you. At the first sign of being "buzzed," put on the veil. As long as you are not being stung in the face, you should not become disoriented. You will be able to see well enough to run from the area until you are no longer being chased. Jumping into water will not help - AHBs fly around and sting when you come up to breathe. The tactic of losing yourself in the brush, which works fairly well with EHBs, doesn't work nearly so well with AHBs. They come right into the brush following the scent (alarm pheromone) emanating from previous stings that are still in your skin.

Africanized honey bees are not something to be feared, but they are to be respected. By understanding how they behave, you can avoid close encounters with AHBs or respond appropriately if a problem develops.

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