# Africanized Honey Bee

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We now have four major research programs underway: (1) development of genetic markers to help detect Africanized bees; (2) genetic characterization of California honey bees; (3) selection of high quality bee stock for breeding; (4) assessing the impact of Africanized bees on a queen rearing business in Mexico.

1. **Development of Genetic Markers to Help Detect Africanized Bees.**
So far we have established of a "library" of honey bee DNA that might provide some useful markers. It contains over 500 separate sections of honey bee DNA that have been inserted into bacteria for cloning. We are currently testing these markers to see if they are suitable for use in identification. We hope that some of them will allow us to rapidly detect evidence of Africanization in commercial and feral honey bees.

2. **Genetically Characterizing California Honey Bees.**
So far this year we have collected samples from over 100 wild honey bee colonies that await genetic and morphological characterization. We will certainly collect more next year . Our current samples range from San Diego to Eureka. These collections will become our baseline data for California bees prior to Africanization so that we can monitor its spread and extent. Hopefully, we will be able to identify areas of California that remain free from Africanization that are suitable for our queen rearing industry.

3. **Selecting High Quality Bee Stock for Breeding.**
This spring we sampled the pollen reserves of more than 300 commercial bee colonies. From these colonies high pollinating bees have been selected and bred (using instrumental insemination) for two generations. After the first generation we observed a significant increase in the amount of pollen stored and in the proportion of the foragers in the hive that collected pollen. We have now confirmed that pollen and nectar collecting are traits that covary genetically. If you selectively increase one trait, like pollen collecting, then you decrease the other. This places a serious constraint on what we can expect from selective breeding. In 1991, we will take these presumably high pollinating bees and breed them for two additional generations and begin releasing the stocks for field testing to see if they are superior pollinators.

We have already coordinated a field test of 1000 hives in southern California.

4. **Research Program in Mexico.**

The aim of our research program in Mexico is to learn more about Africanized bees before they arrive in California. One specific aim is to learn what proportion of Africanized genes can be present in European bees and still be manageable. This is important because it will give us an idea about how much isolation and control we will need in areas where we mate queens. We have established of a research site in Ixtapan, Mexico (near Mexico city). This area that is presently in the early stages of becoming Africanized a lower elevations. We have conducted an initial sample of bees from colonies from this area to establish baseline morphometric relationships and gene frequencies.