

## **Extreme Heat Conditions – A Buzzkill For Bees Threatening Their Fertility**

Over an extended period, humans and animals adapt themselves to their local climates. When hotter and colder temperatures go above or underneath those standards quickly, logical proof shows that individuals become powerless against the health-related impacts of those limits. Studies propose that environmental change will increase the severity and frequency of extreme temperature conditions, prompting an expansion in temperature-related disease.

Deforestation, urban development, industrialization, etc., are some factors that have led to climatic change, especially extremes like heat waves. Extreme heat is a serious health hazard. It has terrible well-being consequences for the human body. The body responds to heat pressure by redistributing blood flow to the skin and producing sweat, cooling the body. These blood flow changes increment the demand on the heart, making it work harder. Extra sweat production can also prompt dehydration, reducing blood volume, which strains the heart further and causes damage to other body organs such as the kidney.

However, we humans aren't the only beings stressed by extreme summer heat waves. Bees feel it too! These significant pollinators are impacted by environmental change in a variety of ways. In recent years beekeepers have reported an unusual rate of deaths of queen bees, worker bees and small colonies. Excessive heat waves have also led drones to ejaculate spontaneously when they die from stress. It was also observed that dozens of drones were lying dead on the lids of the hives with their male bits poking out.

### **Impact of Extreme Heat Waves on Honey Bees -**

Canadian researchers experimented in a lab to research how extreme heat waves affect honeybees. When honey bees were kept in a lab having 42 C, 50% of the male honey bees died within 6 hours. Another similar research has proved that up to 77 percent of drones die from exposure to 42 C for just four hours.

This intends that new queen bees — the reproductive females- will have fewer chances to mate after a heatwave. Colonies headed by inadequately mated queen bees are bound to fall, which could present problems for farmers who depend on bees to fertilize their crops.

### **Effect of Heat on Bees' Fertility –**

Worryingly, male fertility probably declines a long time before they die. To make it simple to understand, after only two hours at 42 C, around 33% of sperm cells inside drone ejaculates die. This actually means that his fertility is reasonably

impaired if a male honey bee survives a heat event. The dead male bees show that the temperatures obviously reached the fertility-damaging range.

Queen bees mate and keep sperm in a specific storage organ over their lifetime, commonly one to three years. But even stored sperm cells are undependable from hot temperatures. Queen bees presented to temperatures over 38 C for two hours or more normally survived; however, the reasonability of the stored sperm drops to what beekeepers consider to be "poor quality."

Though large colonies fared well during the heat dome last year in terms of survival, their fertility has been harmed. These extreme heatwaves are clearly not the only challenge the honey bees face. Habitat loss, use of pesticides, and pathogens are other factors related to the loss of bees.

**According to Mr. Basem Barry, founder & CEO of [Geohoney](#),** bees are significant players in biological systems all over the planet. With numerous terrestrial species already declining, research on what climatic change will impact their fertility is essential. We focus on bees since we depend on them to pollinate crops and maintain the balance of the ecosystem. We realize that the extreme heat conditions during the recent years have significantly impacted the fertility of bees, which should raise alarm bells to follow various approaches that can help in saving their life & our planet as well.