

The Battle of the Bees

“What is a creature that roams Earth every day? I’ll give you another hint: its most common sightings are in the spring, and it makes a peculiar buzzing sound. Still don’t have it? I’ll also tell you that it produces a special, sticky substance that has been treasured since the dawn of time. Did you guess it?” Why, it’s a honey bee! Honey bees are one of Earth’s most vital insects, and they produce honey that’s been known to cure the smallest of medical problems like cuts and acne, to larger ones like burns. There are 2,000 species of honey bees that can be found all over the planet! However, there are many threats to the honey bee, like parasites and larger predators. It is rather amazing to think that something just as small as 15 millimeters must watch out for hundreds for predators, every day!

I’m sure that we have all gone on backyard adventures as kids and seen all sorts of insects hiding away in the dirt. I remember storing the coolest critters could find in insect terrariums. My favorite bugs, however, were beetles – they came in beautiful colors and shapes and sizes that were fascinating to six-year-old me. But little did I know that my interesting obsession was one of the biggest enemies of honey bees, specifically the small hive species. Small hive beetles (SHB) are one of the biggest threats to honey bee colonies today. They come in an oblong shape, and about 6 millimeters long, with several different color patterns. They can be tan, reddish-brown, dark brown or black. These pesky beetles are known to cause damage to the honeycombs, stored honey, and pollen. If a beetle infestation is large enough, it can cause the honey bees to have to abandon their hive. But honey bees don’t give up so quickly. They build their hives in high places that are hidden away in foliage, which makes it hard for SHB to find them. Furthermore, some bees implement a strategy called "thermoballing." The bees surround

the predator and vibrate their muscles, heating the pest to a deadly 45°C, which burns the critter to death.

Another threat which honey bees face is the American foulbrood. This is a fatal bacterial disease caused by the spore forming the bacterium *Paenibacillus larvae*. According to the organization Bee Aware, entire colonies die from the infections of bacterium. Though it's very tough to get rid of the disease when it's started spreading, hygienic worker bees can save the day. These bees sniff out dead or diseased larvae, uncap their cells, and dispose of the contents. Adult mites carrying the disease may survive this sanitation process, but their offspring are immediately killed. Another helpful trait honey bees possess is their strong immune system that has come from years of evolution and natural selection. Lastly, honey bees rely on a specialized gut microbiota that benefits growth and provides defense against pathogens. Most bee gut bacteria contain the enzyme targeted by glyphosate. This bacteria in the gut of the bee strengthens the bee's immune system and ability to fight the foulbrood disease.

I'm sure that if you've grown up with the beloved television show, *Winne the Pooh*, you would remember Pooh's obsession with honey. It seemed he had endless jars of it! Well, there's one animal that enjoys bees just as much as it enjoys the honey – skunks! Like bears, skunks search forests for a trace of a hive or honey. When they find a hive, they will scratch at it, agitating the bees inside. The bees then come out, allowing the skunk to eat them, and the honey they've produced. Honey bees are able to prevent skunks from getting to their hives by building them very high up in trees, so high they appear almost entirely out of sight. Even honey bees who build the hives just little higher out of a skunks' grasp are safe, because skunks don't want to stretch themselves out and expose their soft bellies to the threat of bee stings. Looks like its one more win for the bees this time!

Finally, there's one last predator which is by far the most dangerous one for honey bees. It uses a dangerous chemical substance to kill them, and viciously crushes them to their deaths. Even after doing this, it steals their honey from them for their food. On top of all this, this species smokes up their hives and slaughters colonies. And what's even worse? It starts to train its offspring to do the same. Can you guess the name of this species? This species is called the *Homo Sapiens*, more commonly known as humans. Every year humans spend millions on harmful pesticides to keep insects out but end up killing bees instead. They spray bees with bug spray instead of leaving them alone. Instead of teaching their children about the wonderful creatures that bees are, they show them that they are easy to kill and are "evil" because they sting in order to protect themselves. Honey bee colonies die by the millions every year and are trying to save themselves from this crazy species which are Earth's most dangerous predators. This species is so advanced the bees have no way to keep up with them. They need help! What can you do? Raise awareness! Use your social media to promote the struggle of the magnificent creature by using hashtags like #savethebees and more. Donate money to organizations like the Foundation for the Preservation of Honey bees or World Wildlife Funds to join the movement. There is so much that YOU can do if you try to make an impact.

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About the Author

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Aarsheya believes that everyone can make a difference, no matter how big or small.

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