



THE BUZZ ABOUT NATIVE BEES

A bumble bee gathers pollen from a sunflower.

When you think of bees, you probably picture honey bees—the kind that live in a hive, make honey, and, when their hive is threatened, sting! But most of our bees in North America aren't honey bees. In fact, honey bees didn't even live here until settlers brought them from Europe. That doesn't mean that North America is naturally bee-free. Scientists estimate that there are more than 4,000 species of native bees here—bees that evolved in North America along with the other animals and the plants that share their ecosystems.

Bees are a very important part of the natural world. By carrying pollen from flower to flower, they make it possible for plants to produce seeds and fruits. Seeds and fruits grow into new plants. Flowers' eye-catching shapes and colors, attractive fragrances, and sweet nectar have evolved to lure pollinators like bees to do the job of spreading pollen. Plants, in turn, provide bees with food and nesting material. Native bees pollinate

the native plants that feed the native birds and other animals: Healthy ecosystems are based on this interdependence.

People need plants, too, which means we also need bees. On average, one out of every four mouthfuls you eat and drink comes from bee-pollinated plants. Cucumbers, strawberry jam, watermelons, and apples, are just a few examples. Cotton and other clothing fibers come from plants, too.

The next time you see a bee buzzing around a flower, take a closer look. Chances are, it's one of our native bees busy doing its job of pollinating plants. That means there will be plenty of flowers, plants, trees, fruits, and seeds that feed people as well as birds and other animals, directly or indirectly. There will also be more native bees to keep our planet and all its creatures thriving.

To find out more about the amazing native bees of North America and what we all can do to keep them buzzing, just turn the page.



**BEE-lieve It
or Not!**



Bees, which are vegetarians, evolved from wasps, which are carnivores. Bees began to appear about 120 million years ago, when the first flowering plants evolved on Earth.



Bees have five eyes. Two compound eyes see in color and perceive motion. Three "simple eyes" called ocelli detect light.



Native solitary bees are not likely to sting, while honey bees sting to protect their hives. A honey bee can only sting once because its barbed stinger sticks in the flesh and the bee can't pull it out.



Springtime for the Digger Bee

It's a sunny spring morning in southern Arizona's Sonoran Desert. What's that soft humming noise from all around? Bees! Winter rains have brought a splash of flowers to the normally barren desert, and suddenly it is alive with color and the sound of bees. Most are native bees that hatched from eggs laid in "brood chambers"—nests built by female bees underground, in plant stems, or in wood.

Take a closer look at a female digger bee. This fuzzy gray bee hatched as a worm-like larva from an egg in an underground chamber. Still underground, she ate food left there by her mother. She went through another stage of development called a pupa before growing into an adult bee. The warmer spring temperatures were her cue to start digging upward. When she emerged, she mated with a male digger bee. He flew off to find other mates. She set out to find food.

Now she flies to the ground, where she uses her hind legs and jaws to dig a tunnel several inches deep. At the end she makes a space about an inch long. This is the first of many brood chambers for her eggs. Next, she flies out and sips nectar from paloverde flowers. She also actively collects pollen, which clings to her fuzzy body. Back underground, she fills a brood chamber with a sticky mixture of nectar and pollen, lays a single egg atop the food, and seals it. A worm-like larva will hatch from the egg. It will eat the food left by its mother, and grow into an adult that will dig its way out of the ground the following spring—11 months or so after its mother laid the egg.

Honey Bees in Trouble

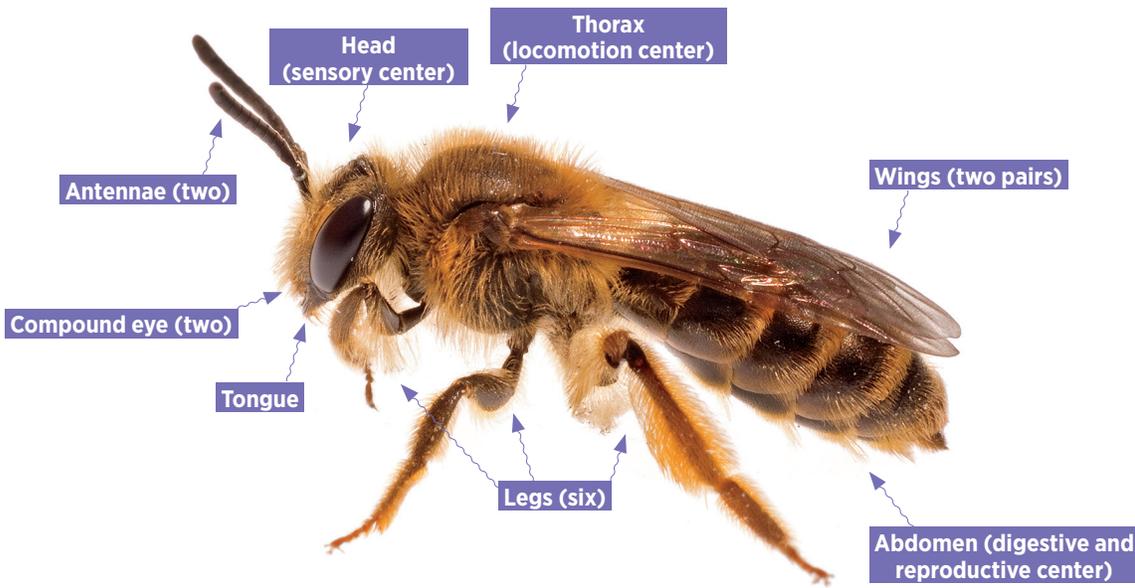
Honey bees were brought to North America hundreds of years ago by settlers from Europe. They are not native bees. Still, these bees have been pollinating farmers' crops and giving Americans delicious honey for centuries. Honey bees are needed to pollinate many of the plants grown in huge quantities for food in the United States. Some crops, including almonds, cherries, and blueberries, depend almost entirely on honey bees. Professional beekeepers raise and care for colonies of honey bees and provide them to farmers when they are needed.

Beginning in the mid-2000s, something started to go wrong. Beekeepers discovered that the bees in their beehives were disappearing or dying, and it was happening in many parts of the world.

It's always worrisome when any kind of animal begins to die in large numbers. But because so many farmers depend on honey bees to pollinate their crops, this die-off can cause very big problems. Scientists, farmers, and other concerned people are taking steps to solve these problems so that honey bees can continue to do their very important job.

Beekeepers like this one provide artificial hives for colonies of honey bees.





The Bee's Body Bees are flying insects. Like all insects, their bodies are divided into three major sections: head, thorax, and abdomen. Take a close look.

Meet Some Native Bees

There are many different kinds of native North American bees. Here are some examples with some amazing characteristics.



A female **alkali bee** can pollinate 2,000 flowers in one day!



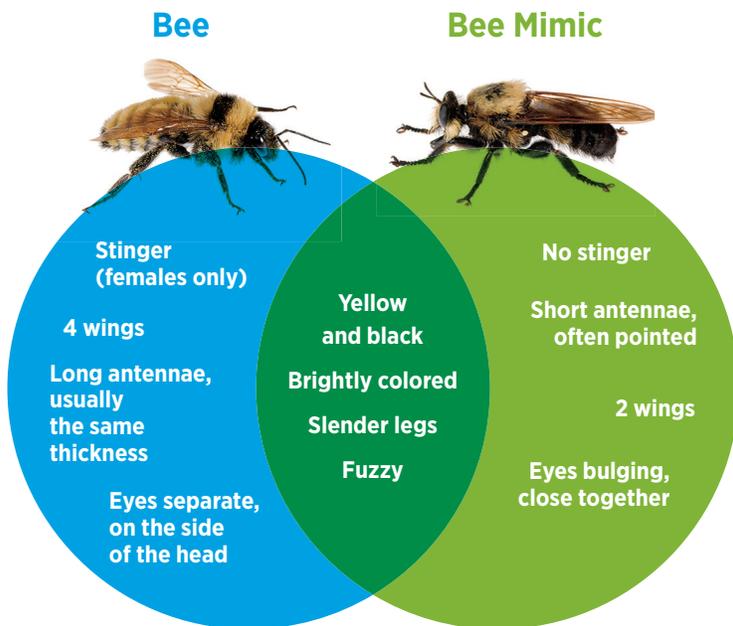
The thick fur of the **bumble bee** helps keep it warm, so it can be out pollinating when it's too cold for other bees!



Female **leafcutter bees** use leaf cuttings to "wall-paper" their brood chambers.



Carpenter bees chew nest chambers in dead wood, helping decompose wood and enrich the soil.



A Native Bee or Not a Bee at All?

A lot of people think any yellow, buzzing, flying insect is a bee. But that flying insect you see may not be a bee! Some flying insects are bee mimics—they look a lot like bees. One example of a bee mimic is a kind of fly called a bee killer. This fly actually eats bees! The Venn diagram shows how a bee and a bee killer are similar and how they're different. Characteristics of a bee are on the left. Characteristics of a bee killer are on the right. The characteristics they have in common are shown in the middle, where the two circles overlap.

Native and Solitary

Most of our native North American bee species are solitary—they don't live in groups the way honey bees do. (Native bee species that aren't solitary are the bumble bees.) Solitary bees make egg chambers underground or in plant stems or wood, and lay one egg per chamber. Solitary bees don't make honey—which is a honey bee colony's food supply. Since solitary native bees don't have a food supply to protect, most aren't likely to attack intruders and sting the way honey bees do.



One way people can help native bees is to make nesting places for them.

**BEE Safe:
How to Avoid
a Sting**

Not all bees sting, but some do, including bumble bees and honey bees. So...



- Stay away from swarms and hives. Stinging bees are most aggressive near their nests.



- When bee-watching, be calm and respectful. Give these insects their space!



- If bees attack, run away. Get inside the nearest car, house, or building.

How to BEE Friendly



Rusty patched bumble bee

Twenty years ago, the rusty patched bumble bee was a common sight in the eastern United States. Early in 2017, the United States Fish and Wildlife Service (USFWS) placed it on the Endangered Species List. It's the first time USFWS has listed a bumble bee as endangered. Native bee populations are declining across North America. There are several reasons for the decline, including the loss of habitat, use of pesticides, climate change, and diseases and parasites. The good news is that there are things we all can do to help bees and other native wildlife.



BEE a Native Gardener

Planting native plants is a simple way to improve habitat for native bees. Even a small garden helps bees. Choose plants that provide nectar and pollen, flower at different times, and are native to your area. (Avoid buying "wildflower" seed mixes because most contain nonnative species.) You can find a list of native plants for your area by entering your zip code here: audubon.org/native-plants. Look for plants with colorful flowers that will attract bees.

Plants can help bees even after they have finished blooming and have dried up. Dry woody stems, especially those broken by winter wind, make perfect bee homes.



BEE Organic

Pesticides kill bees. When you buy organic food and clothing and use bee-friendly alternatives to pesticides at home, you support healthy bee populations and a healthier environment for all of us.

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