

Place-Based Education at Our Table Cooperative Farm
Solitary Bees: Many characteristics of organisms are inherited from their parents

Life Science LS3 Heredity: Inheritance and Variation of Traits

Variation of Traits: Different organisms vary in how they look and function because they have different inherited information. (LS3 – B) <https://ngss.nsta.org/DisciplinaryCoreIdeas.aspx?id=23&detailid=56>

Bees are insects and they all share some traits. Do you remember the 1, 2, 3's of bees? Let's review the primary traits of an insect. They have three body parts – a head, thorax and abdomen. They also have one (1) pair of antennae, two (2) pairs of wings and three (3) pairs of legs!

We learned about European Honey Bees in another unit. They are the social bees who live in a huge colony, have a Queen, make their home of wax, make delicious honey, and protect themselves with a wicked sting!

There is another huge group of insects called Solitary Bees. These solitary bees include bumble bees, mason bees, sweat bees, leafcutter bees, and long-horned bees. Worldwide, there are approximately 20,000 species of bees! About 3,600 bee species are **native** to the United States and Canada. More than 90% of these bees lead solitary lives. This means the female builds her own nest (home) all by herself. She gathers the food, lays the eggs, and fills the nest.

Most solitary bee species are not aggressive and many are stingless! These native bees are also important pollinators. Their **hairs** are one of their most important traits, as they pick up and transfer pollen. They do not have a pollen basket, as the European Honey Bee does. When they visit a flower, they lose much more pollen than social bees do. This makes them superior pollinators! We could call them Messy Bees!

It is estimated that solitary bees pollinate over 85% of the world's flowering plants. This includes more than two-thirds of the world's food crops. More than just being important for crops, pollinators are keystone species in most ecosystems. The fruits and seeds produced by insect pollination are a major player in the food chain! Birds, small mammals, and humans all benefit from their busy work.

Solitary bees all eat pollen and nectar. They also build their home, or nest, in a similar way. The female looks for a suitable location. They prefer spaces between rocks, hollow plant stems, or holes left by wood boring insects. These spaces are usually the shape of a pencil. Some also use holes in the ground! She will gather pollen or pollen and nectar into the hole, lay an egg on it, and then seal the space with a "door". This is called a cell. She continues the process until the entire hole is filled with cells. We have some hints as to which type of bee she is by the door she uses to close her nest.

Take a walk outside and search for evidence of solitary bees. Can you find their home? Can you tell which type of bee they are? Look for different solitary bees on your adventure. Which colors did you find? What patterns? Do all bumble bees look the same? What is the largest solitary bee you found? What is the smallest solitary bee you found?

Spend some time investigating your favorite solitary bee. Where do they prefer to build their nest? How big is this bee? What colors identify her? Can you see all the hairs on her body?

There is much more to learn about these super-pollinators! Watch one of the videos or read a book about these special solitary bees.