

## Native Solitary Bees Final Word

As warmer temperatures finally arrive, our anticipation of outdoor adventures is building. We humans aren't the only living creatures excited and ready for what Spring and Summer hold! If we take a close look in to our yards, nearby fields, forests and even abandoned lots, the natural world is exploding with new life. Tucked amongst the leftover brown stalks of Fall and the sparkling new green shoots of Spring is a world abuzz with one of our most important friends in nature: bees. Ah, the wonder of bees! There are 4,000 species of bees Native to North America with approximately 438 species found in Pennsylvania.

Too many of us hear the word 'bees' and quickly begin to worry about being stung. But bees are much too busy collecting pollen for themselves and their young to fly around trying to purposefully sting us. Most of the bees native to Pennsylvania are 'solitary' bees that emerge in Spring when nighttime temperatures hover consistently around 50°. Their most important role is that of plant pollinator. While bees are not the only pollinators, they are integral to the ecosystem and have evolved specialized pollination techniques suited to flowering plants. For example, without solitary bees there would be no zucchini, pumpkins, azaleas, tomatoes, eggplants, watermelons or blueberries! The world as we know it would simply not exist without solitary bees to pollinate Earth's 250,000 species of flowering plants. To ensure that bees continue to thrive, it is essential that we do our best to understand and minimize our fear of these tiny natural heroes.

Solitary bees are not honey bees. They are non-social creatures that nest in holes rather than in a hive with a queen. Over 70% of them nest in the ground, but many also nest in hollow stems or dead wood. These bees range in size from the tiny sweat bee to the much larger carpenter bee and include mining bees, digger bees, mason bees, leaf cutter bees, and more. With an above ground lifespan of only 4-6 weeks, these hard workers spend their time collecting pollen and nectar to feed themselves and their offspring. Females lay their eggs in individual cells in tunnels that they build and seal off with mud. Each cell contains one egg and a loaf made of pollen and nectar that will sustain the baby bee larva over the next 10-11 months until it matures and emerges. Because they do not live in hives with a queen to protect, solitary bees are gentle bees with a weak stinger. They sting only when threatened by being stepped on, trapped in clothing or otherwise aggressively disturbed. It is in fact a highly enjoyable activity to quietly watch industrious little solitary bees gathering pollen from flower to flower.

When female solitary bees collect pollen to provide for their offspring, pollination occurs. All plants that flower – ground covers, fruit trees, flowers, shrubs, bushes, trees, herbs and vegetables – need to have pollen transferred from the male anther to the female stigma in order to produce blooms, fruit and seeds. This is where the astonishing pollinating prowess of these mighty native bees becomes so important. Native solitary bees are acclimated to regional weather so many fly not only when it is sunny, but can also fly in slightly rainy or windy conditions that are less than ideal. The blue orchard bee, for instance, can visit as many as 1,600 - 5,000 flowers per day, achieving a 90% pollination rate. Bees have a short distance flight range so they visit what blooms close to their homes. The promise of more flowers and higher garden yields is quite an incentive to encourage and support their presence in our own yards and gardens!

It is understandable that many of us may be nervous when we see and hear bees. They can dart about unpredictably which can be startling. Remember, though, that solitary bees are simply going about their own pollen collecting business and can be just as startled by your presence. While

we want to happily welcome all bees, it is important to be cautious around honey bee hives and wasp nests. These are very different from solitary bees and both tend to be more defensive of their territory. Taking a little bit of time to identify which bees are in your yard will benefit you in a multitude of ways.

There are many ways that we can care and provide for solitary bees in our yard thereby promoting healthier more productive plants and trees in our gardens. Try using native perennials, trees and shrubs. When using annuals use heirloom plants which produce more nectar and pollen than modern hybrids. Provide a bee-friendly habitat by using a variety of plants and planting flowers and herbs in clumps and drifts. This allows bees to gather large amounts of pollen easily. Our local Penn State Extension office is an excellent resource. The ~~ir~~ Master Gardeners can recommend native plants that will attract and sustain pollinators and thrive in the region and conditions in which they were meant to grow. Do your best not to use pesticides and herbicides. These will kill or impair bees. And as hard as it may be to do, try not to cut gardens all the way back in the Fall. Leaf litter instead of mulch, dead stalks and other nesting materials will shelter the bees through the winter. Lastly, consider increasing your flowers, shrubs and ground covers by decreasing the size of your lawn. Less watering and mowing, more beauty and variety and the gentle buzzing of solitary bees going about their important business will be your ample reward!

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