Slug: Ask the Master Gardener
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As honey bee colonies disappear around the country, farmers and gardeners must depend more and more on other organisms to pollinate their crops.

There are 4,000 native bee species around the country, sometimes called solitary bees because they do not over-winter in colonies or communal hives. Native bees fill the pollination gap left by the ailing European honeybee. They are at work in every state in the U.S., except for a few southern states where temperatures are too high for their survival.

Native bees range in size from the tiny alkali bee to the monster bumble bee. Many of these bees are especially equipped to pollinate certain crops and do a better job than honeybees. For instance, the bumblebee has a long tongue, which she uses to reach inside the narrow tubes of the clover flower. As she moves over the flower extracting nectar, she spreads pollen with her hairy body, insuring a big harvest of clover seed for the farmer.

Bumble bees are the first bees you see at work in the spring. They begin their day early in the morning and often work into the late afternoon and sometimes after dark. They have the ability to withstand colder temperatures than honeybees because the hairs on their body trap air and insulate them from the cold.

In the spring, the first bumblebees to buzz around early blossoms are queen bees that survived the winter. They are usually larger than the workers and drones that appear later in the season. She is out getting her first food after a long winter's hibernation. She has spent the winter in a hole in the ground and must now search for a suitable nesting place to start her colony. She favors a deserted field mouse hole or a clump of tussock grass, or beneath an untidy hedge. A tidy gardener may destroy prime nesting spots for bumblebee nests.

Once the queen bumblebee has decided on the right place to nest, she builds a wax honey pot and fills it with regurgitated nectar. She then begins to collect pollen, which she kneads with nectar to form a ball, called "bee bread." This store of food will enable the queen to survive a day or two of bad weather without foraging.

As she eats the pollen, her ovaries are stimulated to produce eggs. She lays the first batch of fertile eggs on a ball of pollen and covers them over with wax that she exudes from between the segments of her abdomen. As the queen broods her eggs, she sips from the honey pot to sustain herself until the first batch of eggs hatch.

Much like a bird sits on a nest to keep her eggs at a constant temperature so does the bumblebee brood her eggs at about 30 degrees centigrade. She feeds the newly hatched larvae while they grow, pupate and emerge as adults. These first young adults are female workers. They begin foraging for food and tending the new larva that hatched while they pupated.

The queen is the only one who lays eggs at this stage. After several broods of workers have hatched, something changes and the next females that hatch are destined to become queens. They are fed more and for a longer period of time to insure their readiness to overwinter and start new colonies next year.

Males, called drones, begin to mature from later broods. They mate with the new queens. As the days grow shorter and winter approaches, the new queens set out to find a place to hibernate. The old queen and all the workers and drones die and the bumblebee colony is deserted. All is quiet until next spring, when the new queens emerge and start the process again.

Rarely do we think or even wonder about this amazing life drama going on all around us. We are happy to see the first big "bumbles" that appear in early spring. They are clumsy and loveable as they cram themselves between narrow flower petals to gather nectar and pollen. How could we guess the mission that drives them and the feats of engineering they accomplish?

CAPTION:
A bumblebee sets to work on a cluster of Catchfly blossoms. Note the spherical pollen sac visible on one of its hind legs. Photo by Jason Miller.

This column is written by Washington State University/Skagit County certified Master Gardeners. Questions may be submitted to WSU/Skagit County Extension, 306 S. First Street, Mount Vernon, WA 98273-3805.