

## Ramblings From My Garden

“In the spirit of nature, everything is connected.” Chantal van Ham, 2018

The other evening, I was sitting in my front garden watching the world go by and enjoying a beverage. The bees were very busy at my feet, where a patch of chives in full bloom was growing. I wondered what the bees were gathering, as they buried themselves in the flowers. Nevertheless, they surely were acting as pollinators. That got me thinking about my teaching days. This would have been a very teachable moment with my alternative high school students. I knew exactly what I would have said to them.

There are a wide variety of flower colors and shapes of the forbs that inhabit our earth. A little botany review, for those that may have forgotten, tells us that forbs are flowering, non-grassy herbaceous plants that produce seeds and die back at the end of their growing season. I wondered if different pollinators were attracted to different qualities in a blossom. As it turns out, they are.

A pollinator, of course, is an animal that moves pollen from the male anther to the female stigma of a flower. They do this when they visit a flower looking for nectar, pollen, or oils, or simply by brushing against the flower. You and I, the neighborhood cottontail rabbit, or even your dog Spike can become pollinators. Depending on the source, between 200,000 and 350,000 species of animals act as pollinators of the world’s approximately 369,000 species of flowering plants. I find two things about that statement amazing. First, that we have that many species of animals in the world, and second, that we have that many species of flowering plants! What amazing diversity!



A Greater Fritillaria (*G. Speyeria*) butterfly on a thistle in the Medicine Bow, Wyoming USA National Forest.

Even so, the majority of pollinators are insects. I had never thought about it before, but pollinators are a keystone species group. A keystone species (or group) is a species on which other species in an ecosystem largely depend, such that if that species was removed, the ecosystem would change drastically. If we lost our pollinators, we would lose our plants, with resulting consequences.

Unfortunately, many pollinators, especially insects, are in grave danger. When we think about endangered insects, bees are probably the first to come to mind. In 2016, seven varieties of Hawaiian yellow-faced bees (sp. *Hylaeus*) were put on the endangered species list. In 2017 the Rusty Patched Bumblebee (*Bombus affinis*) made the list. The American Bumblebee (*Bombus pensylvanicus*) population has declined by 89% in the last few years and continues to decline. Various factors are contributing to these declines, including habitat loss, pesticides, climate change, and disease.



A bee exploring a *Papaver oreintale* poppy in the author's garden.

One can only imagine the consequences of the loss of our pollinators, and pollen-producing plants. Our flowering plants, along with the grasses and woody plants provide food,

habitat, clothing, shelter, and more, but most importantly, they are the reason every living thing exists. We are the only planet that is the perfect distance from the sun to maintain perfect temperatures for living beings to survive, and we are the only planet with an oxygen-filled atmosphere.

That atmosphere, from the very beginning, started with a very simple organism, cyanobacteria, or blue-green algae. The algae were capable of photosynthesis. Since then, from the simplest algae to the more complex, most evolved plants, photosynthesis, thanks to chloroplasts is responsible for the production of carbohydrates and oxygen.

All of that being said, pollinators, like any other animal have preferences for plants. Butterflies and hummingbirds are said to prefer tubular flowers. I have observed butterflies on all sorts of flowers, however. Moths and bats prefer the night blooming flowers. Bees seem to like flowers with a more open structure.



A beetle explores the tubular flowers on this locoweed (*Oxytropis*).

Ramblings was a good start to this article. It was supposed to be on the different reproductive structures of flowers, but somewhere it took a different turn. In the classroom I

always called that hopping down a bunny trail. Oh well. There is always another month to explore reproductive structures and pollen.

Quite a few years ago, one of the learning standards that students were supposed to achieve mastery of had to do with, ‘wonder and awe.’ I never could understand how one measures wonder and awe. At the same time, I cannot understand how, as humans, we are not appreciating, and wondering about this very complex, wonderful world around us. I am one of those people whose life could be summed up in two words – ‘I wonder...’

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