Gracie [1]Summerfield

Buzziills: The challenges of protecting our main pollinators— bees

Protecting pollinators is a challenge in preserving our natural habitats. They play a large role in our ecosystem and economy; pollinators' ecological service is valued at $200 billion each year in America[1] . And yet, their numbers are declining due to loss of forage land, sickness, and especially pesticides. Of all the pollinators in the United States, our powerhouse pollinators, bees, are affected by the aforementioned dangers the most.

Bees perform an estimated one-sixth of all pollination worldwide[2] . Wild and domesticated bees pollinate and strengthen wild plants and cultivated crops. They help produce more than $15 billion worth of agricultural crops in the United States[3] . Bees also promote genetic diversity among the plants they pollinate.

Pollination is a vital process to many plants, wild and cultivated. Pollination is the process by which pollen is transplanted from the flower of one plant to the flower of another, thus fertilizing the second plant. Some pollination is done by wind and water, but "three-fourths

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[1] USDA NRCS Pollinators: how much do you know?

[2] Jessica Tucker (2019), Why bees are important to our planet

[3] Department of Agriculture and Rural Development; Michigan's Managed Pollinator Protection Plan

of the worlds flowering plants and about 35% of the worlds food crops depend on animal pollinators to reproduce" (USDA NRCS, Insects and Pollinators). The decline of pollinators means the decline in abundance in major crops. Right now, it is not a very noticeable difference, but if it is ignored and the decline of pollinators continues, the abundance and health of major crops may begin to decline as well.

One large challenge in protecting pollinators (bees specifically) is regulating the use of pesticides. Several pesticides harm beneficial insects, like pollinators, in addition to the harmful insects they are intended for. A relatively new set of pesticides called neurotoxic neonicotinoids are seed sprays. "The pesticides are commonly coated onto seeds . . . when the seed germinates, the pesticide is absorbed and spreads through the tissue. It eventually reaches pollen and nectar, which is how pollinators are exposed." (sciencemag.org). Neurotoxic neonicotinoids are banned in Europe due to growing evidence that the pesticides can harm both wild and domesticated bees[4] . Pesticide Sprays are not much better. They can move through the air and spread to native plants and flowers.

Another challenge in preserving bees is controlling parasites and pathogens. As of 2019, 23 different viruses that affect honeybees have been identified[5]. Honeybees, a species not native to the US, are particularly susceptible to bee diseases from American and European bees. Honeybees are also [having problems] with Varroa mites, which are parasitic blood sucking mites that weaken honeybees' bodies and immune systems. Varroa mites are alsonon native,

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[4] Erik Stokstad (2018), European Union expands ban of three neonicotinoid pesticides

[5] PennState center for pollinator research, Buzzkills: abiotic and biotic stressors of pollinators

originating in Asia. The honeybees are not very physiologically prepared to fend off Varroa mites, making the mites a large problem in US colonies.

Because of the numerous and relatively new threats to bees, there is a big effort to preserve them. Several large research studies have been conducted in recent years. The USDA NRCS has a conservation plan for honeybees, focusing on several upper-Midwest states. According to their website... "NRCS is working with agricultural producers to combat future declines by helping them to implement conservation practices that provide forage for honey bees while enhancing habitat for other pollinators and wildlife and improving the quality of water, air and soil." Michigan is one of the states concentrating on preserving its bees. Michigan State University is leading or is a part of three major bee protection programs: Michigans Managed Pollinator Protection Program, Great Lakes Pollinator Health Project, and Project Integrated Crop Pollination.

Some headway has been made in protecting bees, but there are still major challenges facing our pollinator species. The health and abundance of our natural habitats rely heavily on pollinators because bees promote genetic diversity in the plants they pollinate. Many seeds, nuts, berries, and fruit that serve as vital sources of food for wild animals are dependent upon bees for their pollination. Continuing to raise awareness around and identifying ways to protect our -pollinator species is a necessary step toward the continued preservation of our natural habitats.

Works Cited

Department of Agriculture and Rural Development, Michigan's Managed Pollinator Protection Plan