Findings from the Field

Volume 6 Article 14

2023

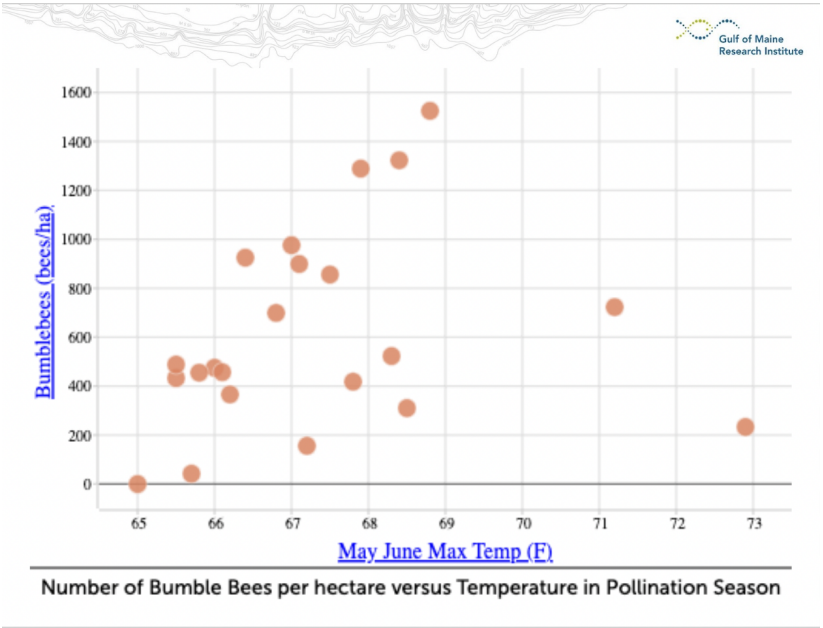
Is Climate change dramatically affecting the bumblebees' ability to pollinate?

Elsie B
Messalonskee Middle School, aripa@rsu18.org

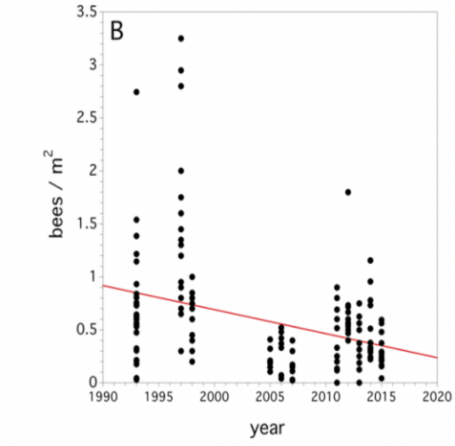
Is Climate change dramatically affecting the bumblebees' ability to pollinate?

By: Elsie

Is Climate change dramatically affecting the bumblebees' ability to pollinate? Depending on the type of bee they each prefer different kinds that prefer different kinds of weather. Bumblebees prefer colder weather, so this leads us to think that pollination rates could drop dramatically. We found a graph from the Gulf of Maine research Institute Data from Drummond, Francis "Lowbush Blueberry Data," Final Report on Arthropod Decline, Submitted January 7, 2022. It compares the Number of Bumblebees per hectare to the temperature in pollination season. The graph's max temperature Was 73℉ and there were only about 200 bumblebees per hectare that pollination season. This data is appropriate because we think it shows how much climate change could be affecting bumblebees each pollination season. In 2002 there were 0 hot days. The temperatures were between 43.5℉ - 65.5℉. This year there were 488 bumblebees which is the second highest number of bees.



Number of Bumble Bees per hectare versus Temperature in Pollination Season



Bumblebees go out to pollinate in cold weather, unlike Honeybees who pollinate in hot weather. Since Honey bees are hot weather bees it was a little harder for them in 1962 with 6 days that were too cold for them, and in 2021 there were 4 cold days. Bumblebees were the opposite with only 2 days that were too hot, and a drastic 5 days in 2021. But, the reason why Bumblebees

are so crucial is because they pollinate more flowers at a time than Honey bees. If you look back at the graph when the temperatures are lower than there are more bumblebees per hectare. Sciencedaily.com says that, “Rising temperatures could help some northern-latitude bees fly better, but more frequent extreme weather events could push them past their limits.” And if there are more bumblebees pollinating, then that means there are more fruits, and seeds. The reason that weather changes how much bees pollinate is because Sciencedaily also says that, “Like most flying insects, air temperature influences bees' body temperature, and body temperature influences flight activity”. While looking at a graph on “Evidence on Arthropodic decline in Maine” I noticed that at the start of the 1900’s the amount of bees was high but entering the 2000’s it decreased. In the last 20 years the temperature has been average, and above showing that May/June temperatures are increasing. Climate change is only getting worse meaning that it could be the reason why there aren’t as many bees now. Research shows that Honeybees will be benefiting from hot temperatures, and our native bees like bumblebees will not. Which could lead to a big decrease in fruits/seeds.

From the data I think that Climate change is affecting the bumblebees' ability to pollinate. At first I thought that different bees just preferred a certain temperature. But, then from research I discovered from ScienceDaily.com it says that it affects their ability to fly. This gives proof that bumblebees wouldn’t be able to pollinate. If temperatures continue to rise it will “push them past their limits” leaving them unable to fly and pollinate as many flowers as they could in colder temperatures. The Maine’s Climate Future 2020 report is looking at what climate change will look like in Maine. One example is Heat Index which means that the weather feels hotter than it really is. Events like these could result in days where some bumblebee did not pollinate at all. Also, we know that honey bees are getting a big benefit with temperatures rising. But, they are not native, and don’t carry as much pollen. So, does that mean that eventually our native bees will not be able to fly to pollinate, and we will have to rely on only honey bees to pollinate our food? I think the next step is to work on solutions for our native bees, so they can work through climate change.

Citations:

Climate at a Glance: County Time Series, published March 2022, retrieved on March 11, 2022 from https://www.ncdc.noaa.gov/cag/.

Drummond, Francis. *Lowbush Blueberry Data*. Final Report on Arthropod Decline, Submitted January 7, 2022.

Fernandez, I., S. Birkel, C. Schmitt, J. Simonson, B. Lyon, A. Pershing, E. Stancioff, G. Jacobson, and P. Mayewski. 2020. Maine's Climate Future 2020 Update. Orono, ME: University of Maine. climatechange.umaine.edu/climate-matters/maines-climate-future/

Imperial College London. (2021, August 18). Bee flight suffers under temperature extremes. *ScienceDaily*. Retrieved October 5, 2022 from www.sciencedaily.com/releases/2021/08/210818083941.htm