Monarch Population Decline Essay

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We’re here to talk about what we can do as students at St. Olaf College to prevent further decline in monarch butterfly populations.

Monarch butterflies have an intricate life cycle, and are extremely dependent on having the correct climate for each life cycle. They are renowned for their annual migration south and west in autumn and their return migration north when spring comes. The spring migration is particularly important because the milkweed found in these northern territories are where monarchs lay their eggs and it is the food caterpillars feed on when they emerge.

There is a lot of debate around the main cause of population decline. Several studies have been conducted and their results are not consistent. Today, I will be focusing on three studies. The first study was done using museum records found that genetically modified (GM) crops cannot be the only cause of decline as these crops were introduced in 1996, and the population decline started in the 1950s (Boyle 2019). Museum records are valuable for science because they include datasets collected in previous generations, however they often only focus on a specific region or species and therefore are not always the most useful. This article’s claim that GM crops cannot be the only cause of monarch decline is backed by their timeline, as well as their suggestion that the increased use of herbicides as well as changed agricultural practices could also be assisting in the population decline.

The second study found that the reason for the decline is indeed GM crops, as more herbicides are applied to fields with GM crops (Stenoien 2018). Herbicides kill off the essential milkweed that grows in those fields, and as monarch habitats become more fragmented by suburbs and highways, it is particularly important to protect their existing refuges. This study found that egg laying has been reduced 30-90% because of reductions in milkweed, as well as the low density of milkweed in agricultural fields. This article conflicts with the previous one in regards to GM crops, but the overall message of milkweed decline being a large part of monarch population decline is the same in both articles.

A third study has found that the absence of milkweed and changed agriculture are not causing the decline, but the change in migration cycles of the butterflies themselves could be the cause (Inamine 2016). This study used data collected by community scientists, and found that butterfly populations grew in their northern habitat. This leads to their conclusion that GM crops and herbicides are not the main causes of population decline because GM crop and herbicide use are more concentrated in the north. The conflict of this article with the previous two indicates that scientists have no clear answer for what is, or is not, causing the decline in monarch population.

Basically, science does not agree on what is causing the decline, only that something should be done to prevent further population loss. One great resource we have on campus is the Natural Lands, which already provides a habitat for endangered species such as the rusty patched bumble bee. What I propose we do is plant local milkweeds and nectar producing plants in the Natural Lands, and reach out to Carelton and local farmers and gardeners to see if they’d be willing to do the same. Nectar is what adult monarchs feed off of, so it would entice them to stop in our community. Another step that could be taken would be to provide education in events on campus and in Northfield, such as at the public library or the elementary schools.

It would be especially important to reach out to farmers and gardeners, as they already have the skills to plant and grow milkweed. While it is not clear if the cause of monarch decline is agricultural, farmers are vital to include in this discussion as so much of the land surrounding Northfield is used for agriculture. Discussing herbicide use and planting strategies with farmers would help both students and farmers gain a deeper understanding of how Northfield can provide a better habitat for this declining species.

It may seem like there is not a lot we can do as students to make a difference. But if we take action now, we will be able to see the results in Northfield with our own eyes in the coming years. Additionally we would foster relations between students and members of the local community, which could be essential if similar projects are formulated in the future.

Sources:

Boyle JH, Dalgleish HJ, Puzey JR. 2018. Monarch butterfly and milkweed declines substantially

predate the use of genetically modified crops. PNAS. 116(8): 3006-3011.

Stenoien C, Nail KR, Zalucki JM, Parry H, Oberhauser KS, Zalucki MP. 2018.Monarchs in decline: a collateral landscape-level effect of modern agriculture. Insect Science. 25: 528-541.

Inamine H, Ellner SP, Springer JP, Agrawal AA. 2016. Linking the continental migratory cycle of the monarch butterfly to understand its population decline. Oikos. 125:1081-1091.