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Helping Monarch Butterflies at St. Olaf College

I imagine that, like me, many of you have childhood memories of learning about metamorphosis with the iconic orange and black monarch butterflies. Monarchs are also an iconic species in the invertebrate world. Unfortunately, monarch populations have declined as much as 80% in the last 25 years. This sharp decline has alarmed scientists, but no consensus has been reached in the scientific community for its cause. Hypotheses that have been proposed include a lack of nectar sources, destruction of the sites where the monarchs overwinter, and the adaption of genetically modified crops. These theories have all been well researched and there is to coth support and contradict all of them. One common thread in two of the more recent scientific papers on the decline of monarchs is the absence of milkweed. Both of these papers conclude that a lack of milkweed in the path of migration is causing the decline in population.

One paper hypothesizes that because GMO crops are immune to pesticides, farmers are spraying the fields and this is killing the patches of milkweed that you would normally find growing in what they call the ‘matrix’ of the field. The paper claims that this pesticide use decreases the amount of milkweed by 95%. They also say that it is not only the quantity of milkweed that is affecting the monarchs but also the distribution. The milkweed that does survive is found in large patches in old fields that do not contain GMO crops and on the sides of roads. No longer are there small patches scattered around a large area. All the milkweed is now concentrated in large areas and this distribution pattern makes the milkweed less accessible. The other paper outright contradicts the first, claiming that it couldn’t be the use of GMOs causing the decline in

monarchs because the population started decreasing around 1950 and there wasn't widespread use of GMO crops for another 50 years. Nonetheless, they also correlate the drop in the monarch population to a drop in milkweed just before 1950. They claim that the decreasing milkweed population arose from a change in the landscape of agriculture in America. Small family farms were being consolidated into fewer farms with larger fields, meaning that there were fewer boundaries between fields where milkweed was allowed to grow.

No matter the cause for the original decrease in the monarch population, many experts agree that the decrease of both the coverage and dispersion of milkweed is now affecting the monarch butterflies. This problem is something that we can help with at St. Olaf, by planting small, spread out patches of milkweed in the natural lands and conserving the patches that already exist. It is important to play a role, no matter how small, in keeping this iconic invertebrate a part of the ecosystem, and consequently the school curriculum, for generations to come.

Further reading

Boyle, J. H., H. J. Dalgleish, J. R. Puzey. 2018. Monarch Butterfly and Milkweed Declines Substantially Predate the Use of Genetically Modified Crops. Department of Biology, College of William and Mary 3006–3011.

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R. Nail, J. M. Zalucki, H. Parry, K. S. Oberhauser, and M. P. Zalucki. 2018. Monarchs in decline: a collateral landscape-level effect of modern agriculture. Insect Sci 25:528-541.