There has been a noticeable decline in the monarch butterfly population in North America in the last few decades. While scientists do not have a definitive answer as to what is causing this, some studies have pointed at the reduction of available milkweed as being one of the causes of the decline. In monarch population areas, efforts should be aimed at reducing the use of herbicide and planting more milkweed in order to support the monarch populations.

Monarchs not only feed on milkweed, but use it for reproduction. A major problem with having reduced milkweed is that it leads to reduced egg laying by the monarchs. This is because monarchs rely on low density forest areas for egg laying. If they do not have access to these low density forest areas with high milkweed availability, we will continue to see a decline in the population. One study has found that egg laying has been reduced by 30-90% due to this decreased milkweed availability. Subsequently, we should expect the numbers of monarchs to decline if they cannot find suitable areas to lay their eggs. Another study found that monarch population decline only happens over the fall/overwintering period in Mexico. This study, however, used data by citizen science dataset to produce models of population changes, therefore the validity of the data is questionable. Additionally, locations where milkweed has declined has also seen a decline of egg-laying, thereby supporting the hypothesis that there is a relationship between available milkweed and egg-laying.

Another factor that is decreasing the availability of milkweed is the use of herbicides. Herbicides are used to kill common weeds, including milkweed. Herbicide use in agriculture has increased in the last few decades. This rise in herbicide use correlates with declining monarch populations. Some research has suggested that the number of butterflies in the northern regions grew during the breeding season, even with an increased use of herbicide resistant crops. However, this data does not describe in detail the range of herbicide use over the area or the distribution of monarch populations. It is possible that monarchs have left areas with high herbicide use in favor of areas with little to no herbicide use and these areas are the locations where the monarch populations have really increased. By grouping the monarch distribution by large areas such as northern and southern regions, researchers are missing possible key details about monarch distribution in terms of herbicide use.

Monarchs rely heavily on milkweed, and by killing off milkweed with herbicides, the monarch population is suffering. In order to increase the population, a focus must also be placed on preserving and increasing milkweed availability. This can be done by connecting isolated patches of milkweed so that migrating butterflies always have a close source of milkweed, and by increasing regulations on herbicide use. By increasing the availability of milkweed, we should expect to see a positive change in monarch population numbers.

Additional reading:

Boyle, J., Dalgleish, H. and Puzey, J. (2019). Monarch butterfly and milkweed declines substantially predate the use of genetically modified crops. *Proceedings of the National Academy of Sciences*, 116(8), pp.3006-3011.

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