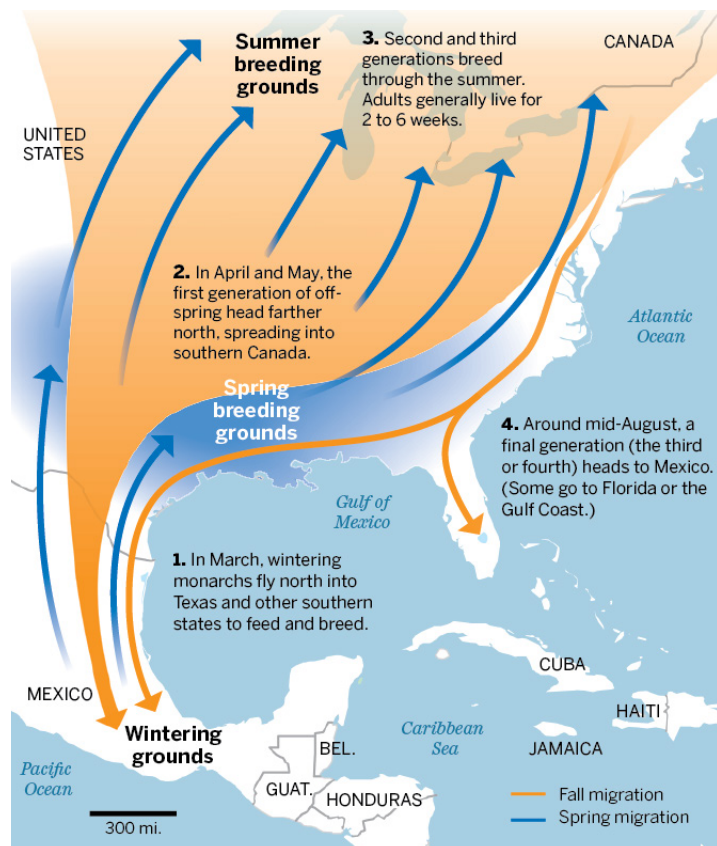


**Monarch butterflies are essential pollinators that contribute to the health of our environment and ecosystems.<sup>1</sup>** They are one of the most iconic invertebrate species in North America, but their populations have declined by more than 90 percent over the last 20 years.<sup>2</sup> This dramatic trend closely follows the introduction of Genetically Modified Organism (GMO) herbicide-tolerant “Roundup® Ready” corn and soy crops, which has led to a huge increase in the use of the potent weed-killer, glyphosate. The massive increase in glyphosate use has decimated the only food young monarchs eat — milkweed.

## Monarch migration and reproduction

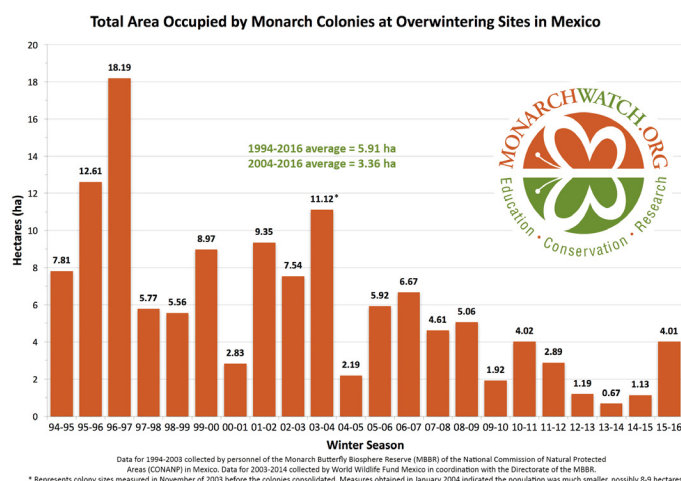
Monarch butterflies migrate from the northern United States and southern Canada to northern and central Mexico for the winter. Around February, monarchs begin their long journey back north. Monarchs travel 50-100 miles a day and take as long as two months to complete their journey.<sup>3</sup> The majority of monarch migration patterns take the butterflies through the Midwest and eastern regions of the United States.<sup>4</sup> Monarchs reproduce and lay their eggs on the underside of American milkweed during this northward travel.<sup>5</sup> Migration continues when the larvae have successfully fed and pupated, emerging from their chrysalises as butterflies (an iconic metamorphosis).



A. Cuadra/Science

## Monarchs in trouble

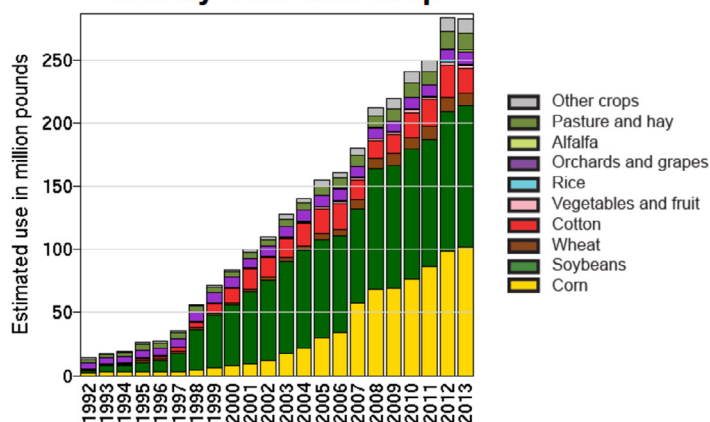
Monarch populations have declined by 90 percent over the last two decades.<sup>6</sup> Scientists estimate that monarchs have a 20% chance of “quasi-extinction” (meaning that the population has collapsed to the point of no return) within the next two decades and populations would need to increase five-fold in order to return to a stabilized population.<sup>7</sup> This dramatic decline has led to formal legal petitions and more than 500,000 Americans signing petitions to the Fish and Wildlife Service calling for the monarch butterfly to be listed as endangered under the Endangered Species Act.<sup>8</sup> Endangered Species Act protection would provide legally binding, science-based protection initiatives to directly combat threats to monarchs.



## Glyphosate proliferation

It is no coincidence that the loss of 90 percent of North America’s monarch butterflies coincides with the 1996 introduction of “Roundup Ready” corn and soybeans, which are engineered to be tolerant of weed-killer glyphosate, allowing farmers to spray frequently. Glyphosate use has increased dramatically in recent years from 17 million pounds in 1992 to 286 million pounds in 2012.<sup>9</sup> In the same period, the amount of U.S. crops genetically engineered to withstand massive applications of Monsanto’s patented Round-up herbicide grew to 92 percent of all corn and 94 percent of soybeans.<sup>10</sup> As a result, the use of Round-up skyrocketed and this, combined with farmers plowing up former habitat and planting fence row to fence row, has virtually wiped out the milkweed that once grew among our farm fields. Researchers estimate that milkweed in Midwest farm fields has plummeted by more than 58 percent over the last decade, while monarch egg production across the region sank by 81 percent.<sup>11</sup>

## Use by Year and Crop



*Glyphosate use increased from a total of 17M lbs in 1992, up to a maximum of 286M in 2012.*

In addition to its contribution to monarch decline, glyphosate is linked to adverse health impacts. In 2015, the World Health Organization's International Agency for Research on Cancer (IARC) declared glyphosate a probable carcinogen.<sup>12</sup> Since then, a number of countries have acted to limit glyphosate. France announced a partial ban,<sup>13</sup> and the Netherlands,<sup>14</sup> Brazil, Colombia<sup>15</sup> and Sri Lanka<sup>16</sup> are all taking steps to ban the chemical. Regulation in the U.S. has been weak and has allowed glyphosate to remain in use. The state of California listed glyphosate as a carcinogen last year,<sup>17</sup> and the FDA recently announced that it will start testing food for Roundup®.<sup>18</sup> Amid mounting fears about the disappearance of monarchs and health impacts, Monsanto, the manufacturer of glyphosate, has promoted its efforts to plant milkweed, but has simultaneously fought efforts to restrict use of the chemical, which generates roughly \$5 billion in sales annually for the company.<sup>19</sup>



## What we can do to save monarchs

To protect monarchs we must get off this dangerous pesticide "treadmill" which is harming monarchs, destroying our ecosystems and threatening our health, while transitioning to regenerative organic farming and land management. We can all take action in our own backyards and communities to protect monarchs. Here is what you can do help:

- 1. Plant regionally-appropriate milkweed in your own backyard.** Milkweed can be toxic to humans, and planting the wrong strain of milkweed can actually harm monarchs. Using a planting guide is important for finding a type of milkweed that works for both your available soil and your regional climate. By planting more milkweed, you can help slow, or even stop, the loss of monarch butterflies.

### Recommended regional planting guides:

Monarch Joint Venture: [monarchjointventure.org/images/uploads/documents/MilkweedFactSheetFINAL.pdf](http://monarchjointventure.org/images/uploads/documents/MilkweedFactSheetFINAL.pdf)

Xerces Society of Invertebrate:  
[www.xerces.org/milkweed/](http://www.xerces.org/milkweed/)

- 2. Pass a pollinator protection policy in your community.** Work with your community to pass a policy to restrict pollinator-toxic pesticides and increase pollinator habitat that is free of toxic pesticides. Find a sample resolution and learn all about how to pass a policy at [www.foe.org/beeaction](http://www.foe.org/beeaction).
- 3. Sign the petition urging the U.S. Fish and Wildlife Service to list monarchs as an endangered species under the Endangered Species Act.** Sign the petition at [www.foe.org/beeaction](http://www.foe.org/beeaction).
- 4. Urge your Member of Congress to support the Pollinator Recovery Act of 2016.** Call them today: 202-224-3121



1 <https://www.nps.gov/articles/monarch-butterfly.htm>

2 Main, Douglas. "Monarch Butterflies Have Declined 90%; Conservationists Seek Extra Protections." Tech & Science. Newsweek. 27 Aug. 2014. Web. <http://www.newsweek.com/monarch-butterflies-have-declined-90-conservationists-seek-extra-protection-267094>

3 [http://fs.fed.us/wildflowers/pollinators/Monarch\\_Butterfly/migration/index.shtml](http://fs.fed.us/wildflowers/pollinators/Monarch_Butterfly/migration/index.shtml)

4 [http://fs.fed.us/wildflowers/pollinators/Monarch\\_Butterfly/migration/index.shtml](http://fs.fed.us/wildflowers/pollinators/Monarch_Butterfly/migration/index.shtml)

5 <http://monarchlab.org/biology-and-research/biology-and-natural-history/breeding-life-cycle/annual-life-cycle/>

6 <http://www.sciencemag.org/news/2015/08/monarch-butterfly-studies-tell-perplexing-tale>

7 <http://www.nature.com/articles/srep23265>

8 <https://www.popularresistance.org/more-than-half-million-people-call-for-protection-of-monarch-butterfly/>

9 [http://webiva-downton.s3.amazonaws.com/877/bf/7/8352/FOE\\_BuzzKillReport\\_7\\_web.pdf](http://webiva-downton.s3.amazonaws.com/877/bf/7/8352/FOE_BuzzKillReport_7_web.pdf)

10 <http://www.ers.usda.gov/data-products/adoption-of-genetically-engineered-crops-in-the-us/recent-trends-in-ge-adoption.aspx#.UwUAPc6hYvI>

11 <http://www.public.iastate.edu/~jpleasan/GlyphosateuseandMonarchs>

12 <https://www.iarc.fr/en/media-centre/iarcnews/pdf/MonographVolume112.pdf>

13 <http://www.independent.co.uk/news/world/europe/roundup-weedkiller-banned-from-french-garden-centres-over-probable-link-to-cancer-10319877.html>

14 Walia, Arjun. "Why the Netherlands Just Banned Monsanto's Glyphosate-Based Herbicides." Collective Evolution. Collective Evolution. 30 May 2015. Web. <http://www.collective-evolution.com/2015/05/30/why-the-netherlands-just-banned-monsantos-glyphosate-based-herbicides/>

15 BBC. "Colombia to Ban Coca Spraying Herbicide Glyphosate." BBC. 10 May 2015. Web. <http://www.bbc.com/news/world-latin-america-32677411>

16 Heyes, J.D. "Sri Lanka's President Bans Glyphosate Nationwide to Protect the Health of the People." Global Research. GlobalResearch.ca. 9 June 2015. Web. <http://www.globalresearch.ca/sri-lankas-president-bans-glyphosate-nationwide-to-protect-the-health-of-the-people/5454581>

17 <http://oehha.ca.gov/proposition-65/cnrn/notice-intent-list-tetrachlorvinphos-parathion-malathion-glyphosate>

18 <http://www.newsweek.com/fda-will-begin-testing-food-glyphosate-most-heavily-used-farm-chemical-ever-428790>

19 Monsanto. "Global Portfolio, Leading Innovation and Financial Discipline Enabled Year of Solid Performance for Monsanto, Backing Confidence in Long-Term Growth Opportunity," Monsanto. Monsanto Company. 7 Oct. 2015. Web. <http://news.monsanto.com/press-release/corporate/global-portfolio-leading-innovation-and-financial-discipline-enabled-year-so>