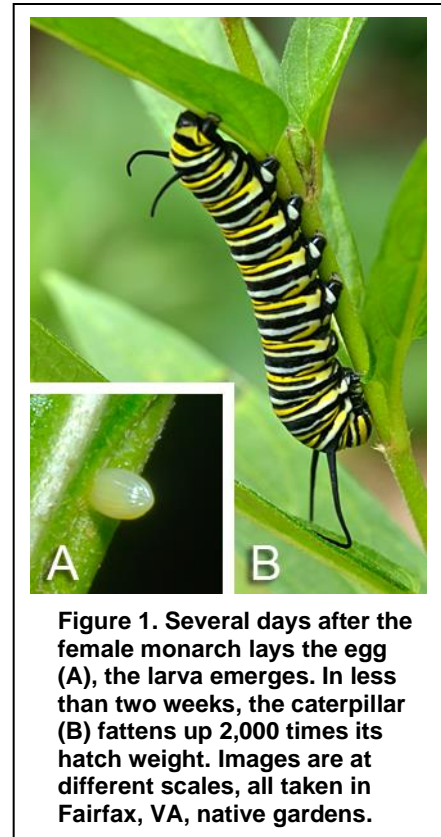


## Long Live the Monarch

By Greg Sykes ([greg@grsykes.com](mailto:greg@grsykes.com))

The recent, steep dive in monarch butterfly (*Danaus plexippus*) populations received quite a bit of attention. This article examines the big picture about this species' decline and how Northern Virginia residents can help the charismatic yet imperiled insect.

The monarch undergoes a complete metamorphosis: egg, larva (caterpillar), pupa (chrysalis), and adult (butterfly). Given the caterpillars' voracious appetite exclusively for milkweed (*Asclepias* sp.), the female butterfly lays a single egg (instead of an egg cluster) on the leaf before taking flight to lay again. Few herbivores tolerate the milkweed's bitter poisons, yet the monarch evolved a way around these chemical defenses. The caterpillar stores noxious milkweed chemicals into adulthood; the butterfly's vibrant orange and black wing coloration warns potential predators of a bad taste. Whereas people have seen monarchs across several continents and Pacific islands, some of these sightings were likely windswept individuals or deliberate introductions; Australia imported monarchs to control milkweed after American gold miners brought the seeds over in pillow stuffing. Most of the monarchs have multiple summertime generations living in the lower 48 states and southern Canada. The late summer brood migrates to winter destinations: the smaller western populations gather in California and the eastern monarchs congregate in Mexican forests. The migratory broods travel along land routes—the few entering Florida do not cross the Gulf of Mexico. They also survive several months longer than the ones spending their entire life at a single locality earlier in the year.



Monarchs flourished for many centuries. Their population withstood the natural tolls taken by isolated severe weather events, disease, and predation. Now, however, their numbers crashed to around 10 to 20 percent of the population's peak size two decades ago. Causes contributing to this decline include:

- **Milkweed eradication:** To expand croplands, many farmers, especially in the Midwest, cleared plots filled with common milkweed (*Asclepias syriaca*), the top host plant for monarch caterpillars.
- **Habitat loss:** In addition to larvae losing milkweed, migrating adults find fewer overwintering places due to illegal logging in Mexican forests.
- **Overabundant pesticide use:** From farmers spraying crops against pests to homeowners or their contractors chemically bombing their yards against mosquitoes and other insects, these toxins inevitably poison the environment and harm non-target organisms, such as monarchs.
- **Climate change:** A rapidly shifting climate affects plant germination, growth, bloom times, and even geographic range. Botanical changes impact the organisms dependent upon that flora.
- **The wrong plants:** In creating monarch-enticing gardens, well-intentioned folks in southern states use exotic plant species which live long after the native flora dies back for the year. These plants, especially the Mexican milkweed (*A. curassavica*, aka scarlet milkweed, a tropical, tender perennial), stall monarch migration and the now residential monarchs harbor a protozoan infection. The weakened insects are not culled by migratory stress and healthy ones fail to fly to disease-free areas.

While the Midwest holds most of North America's monarchs, Northern Virginia residents can take steps to both help the resident butterflies and provide safe passage for the ones passing through this area. First, consider eliminating outdoor pesticide treatment. Nectar-sipping insects cannot survive if their floral food source is poisoned.

Second, create a garden that satisfies all stages of the monarch’s lifecycle. The key ingredient: *local* milkweed species. Volunteers transformed an Invasive Management Area (IMA) site at Mason District Park from a non-native weedy patch into a milkweed-rich monarch waystation. While common milkweed tends to be a bit aggressive for residential properties less than an acre, other species perfectly fit into any sunny suburban garden; see Table 1 for suggestions.

**Table 1. These locally native *Asclepias* species are ideal in Northern Virginian suburban gardens. The top of the list contains species that are easier to grow and more commercially available than the ones at the end.**

Common Name	Scientific Name	Flower Color	Comments
Swamp Milkweed	<i>A. incarnate</i>	Pink, sometimes white	Prefers moist, rich soil but thrives in most garden settings.
Purple Milkweed	<i>A. purpurascens</i>	Purplish-maroon	Rare in Northern Virginia due to habitat loss, a healthy population grows in Huntley Meadows Park.
Butterfly-Weed	<i>A. tuberosa</i>	Brilliant orange	Dramatic garden addition needing well-drained soil. <u>This plant is not the non-native invasive butterfly bush (<i>Buddleja davidii</i>)!</u>
Whorled Milkweed	<i>A. verticillata</i>	White	Extremely thin leaves. Tolerates dry conditions but should be watered periodically during extended droughts.
White Milkweed	<i>A. variegata</i>	White	Semi-shade species growing on forest edges.
Red Milkweed	<i>A. rubra</i>	Deep pink	Deep pink flowers; needs constantly moist soil—not drought tolerant.



**Figure 2. A monarch butterfly pollinates swamp milkweed flowers. In the upper left are two swamp milkweed beetles mating.**

Since monarch larvae can strip a single plant bare, there should be at least 20 *Asclepias* specimens (the more, the merrier) in a cluster so the caterpillars can move to neighboring milkweeds. Count on other specialized insects, most notably the swamp milkweed beetle (*Labidomera clivicollis*), biting a large chunk out of the milkweed foliage. Try planting three or more different milkweed species. Avoid the Mexican or scarlet milkweed; in northern latitudes, it is one of the last milkweeds to die back in autumn. Not only do monarch adults sip nectar from milkweeds and other flowers, but different butterfly species will also drink from milkweed blossoms. Keep other native plants preferred by pollinators, too; here is a good plant list to get you started:

<https://www.fairfaxcounty.gov/parks/sites/parks/files/assets/documents/nature-history/greenspring/infosheets/butterfliesandmoths.pdf>.

## Further information:

Monarch Quick Fact Sheet

<http://www.defenders.org/monarch-butterfly/basic-facts>

Monarch Joint Venture

<http://www.monarchjointventure.org/>

Monarch Watch

<http://www.monarchwatch.org/biology/cycle1.htm>

FCPA-Where Have All the Monarchs Gone?

<http://www.fairfaxcounty.gov/parks/resource-management/monarch-butterflies.htm>

Satterfield, DA et al. 2014. Loss of migratory behaviour increases infection risk for a butterfly host.

<http://news.uga.edu/documents/Satterfield-20141734full.pdf>

Monarch Health website

<http://www.monarchparasites.org/>

Monarch butterflies navigate with compass but no map

<http://www.nature.com/news/monarch-butterflies-navigate-with-compass-but-no-map-1.12756>

When Monarchs Take Flight

<http://physiologizing.blogspot.com/2013/02/when-monarchs-take-flight.html>

Monarchs in Australia

<http://www.abc.net.au/news/2014-11-28/eight-helpful-introduced-species-south-australia/5925080>

Battle for Butterflies [http://www.nwf.org/News-and-](http://www.nwf.org/News-and-Magazines/National-Wildlife/Animals/Archives/2015/Battle-for-Butterflies.aspx)

[Magazines/National-Wildlife/Animals/Archives/2015/Battle-for-Butterflies.aspx](http://www.nwf.org/News-and-Magazines/National-Wildlife/Animals/Archives/2015/Battle-for-Butterflies.aspx)



**Figure 3. Lading eucalyptus branches, these West Coast monarchs over-winter in Pacific Grove, CA. Larger, eastern monarch populations congregate much the same way in Mexican forests.**

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