



Tropical Milkweed Photo by Polly Krauter

Last summer, we bought three milkweed plants in four-inch pots from a local nursery. We planted them in the backyard, and were happy that they adapted easily and bloomed a bright red and orange in a week. It wasn't long before we started to see Monarch butterflies sucking nectar from the Milkweed flowers. It was surprising that the Monarchs could find the plants so quickly. In past years, we had other butterflies such as Swallowtails, Acmon Blues, Gray Hairstreaks, California Sisters, and Common Buckeyes visit our flower gardens, but never Monarchs. Within a few weeks of planting milkweed, the most wonderful thing happened. We noticed a beautiful caterpillar with bold bands of yellow, black, and white crawling on the milkweed plants. With that encouragement, we planted several more and attracted even more Monarchs to our yard.

Monarch butterflies cannot survive without Milkweed plants; female monarch butterflies only lay their eggs on milkweeds and the caterpillars need milkweed to grow and develop. Sadly, the monarch butterfly population in North America has plummeted by over 90% in just the last 20 years. Destruction of America's grassland ecosystems, commercial agricultural practices, and even conventional gardening have all contributed to the decline of this iconic species. A critical factor in monarch decline is the increasing scarcity of its only caterpillar host plant, milkweed. Without milkweed, monarchs can't successfully reproduce and the species declines.

Monarchs

The monarch butterfly may be the most familiar North American butterfly, with its wings an easily recognizable black, orange, and white pattern, and a large, 4" wingspan. It's also an important pollinator species.

Monarchs have a complex lifecycle. A female Monarch will find a milkweed plant and usually lay a single egg, often on the bottom of a leaf near the top of the plant. The eggs are only about the size of a pinhead or pencil tip, and are off-white or yellow. These eggs hatch about four days after they are laid. The larva or caterpillar stage is when the Monarchs do all their growing — they are eating machines. As the caterpillar grows and becomes too large for its skin, it molts, or sheds its skin five times. The entire larval stage of monarchs lasts from nine to fourteen days under normal summer temperatures. Just before they pupate, monarch larvae spin a silk mat from which they hang upside down. The wings and other adult organs develop from tiny clusters of cells already present in the larva, and by the time the larva pupates, the major changes to the adult form have already begun. This stage of development usually lasts eight to fifteen days.



Monarchs in the Garden Photo by Polly Krauter

Milkweed and Monarchs (Continued)

The primary job of the adult stage is to reproduce — to mate and lay the eggs that will become the next generation. Monarchs do not mate until three to eight days after emerging as butterflies. Females will begin laying eggs immediately after their first mating, and both sexes can mate several times during their lives. Female monarch butterflies lay an average of about 700 eggs over two to five weeks of egg laying. Monarchs in summer generations live from two to five weeks.

Then, the most amazing thing happens — they migrate. Monarchs migrate for two reasons — they cannot withstand freezing weather in the northern and central continental climates in the winter, and because the larval food plants do not grow in their overwintering sites, so the spring generation must fly back north to places where the plants are plentiful. Researchers are still investigating what directional aids monarchs use to find their overwintering location. Possibly it's a combination of aids such as the magnetic pull of the earth and the position of the sun, among others.

There are two major migratory routes, one on the eastern side of North America, and the other west of the Rocky Mountains. The Eastern monarch population overwinters in Mexico in the states of México and Michoacán. Along the Pacific coast, the Western North American monarch population overwinters near Santa Cruz and San Diego, California. Monarchs roost in eucalyptus, Monterey

pinus, and Monterey cypresses. Amazingly, Monarch butterflies use the very same trees every year when they migrate, even though they aren't the same butterflies that were there last year. It takes at least four generations of monarchs to complete each annual cycle.

Weather conditions are critical for monarchs. If conditions are too hot in the overwintering sites, the butterflies will use up their fat reserves and not survive until spring. Also, high temperatures can cause the butterflies to leave the overwintering areas too early, while it is still too cold in the north to stimulate the emergence of nectar plants. As temperatures rise and longer days arrive, the monarchs finish the development they halted prior to their migration. They become reproductive, breed and lay eggs for the new generation. This starts the journey northward. Unlike the generation before them, who made a one-generation journey south, successive generations make the journey north.

Milkweed

There are several native California Milkweed Species that grow in different environments, including Mexican Whorled Milkweed (*Asclepias fascicularis*, dry climates and plains); Showy Milkweed (*A. speciosa*, savannahs and prairies); Desert Milkweed (*A. erosa*, desert regions); California Milkweed (*A. californica*, grassy areas); Heartleaf Milkweed (*A. cordifolia*, rocky slopes); Woolly Milkweed (*A. vestita*, (dry deserts and plains) and Woolly Pod Milkweed (*A. eriocarpa*, clay soils and dry areas). Planted in the Sycamore Grove Park Native Plant Garden is a narrow leaf milkweed (*A. fascicularis*). The best milkweed to plant in your garden is a native California milkweed plant.

We planted *Asclepias linaria* (native) or pine needle milkweed. We also planted *A. curassavica*, a tropical milkweed. Tropical milkweed plants are readily available but are not indigenous and are associated with some problems for the monarchs. Tropical milkweed can continue to flower into fall and winter (without a hard frost) and, since the Monarchs need to find their overwinter trees, they should not feed on tropical milkweed in late fall and winter. Monarch



Monarch Caterpillar in the Garden
Photo by Polly Krauter

Milkweed and Monarchs (Continued)

expert Karen Oberhauser from the University of Minnesota stated that, "Potential negative effects (of planting tropical milkweed) include 1) continuous breeding on the same plants, which can lead to a build-up of *Ophryocystis elektroscirrha* (a parasite carried by monarchs) infection, and 2) availability of milkweed during a time that it is not naturally available, and so potential consequent impacts on monarch breeding during the Fall migration." A possible answer to this problem is to cut back the milkweeds, a few weeks apart, in the fall. They grow about three feet tall, and their seed pods resemble small cucumbers that burst open in late summer exposing their seeds. The seed are attached to white silky hairs, so a slight wind will distribute them. The plants like full sun, they are drought-resistant, and do not need fertilizers. They are both fragrant and a highly-sought nectar source for many butterflies and hummingbirds so they are still worth considering.

Milkweed is in the genus *Asclepias*, named after the Greek god of medicine Asklepios. Some, but not all milkweed, have a white milk-like sap, thus called Milkweed. Some Native American tribes used various parts of the butterfly weed (*A. tuberosa*) as food. In colonial America, dried leaves of butterfly weed and skunk cabbage were made into a tea to treat chest inflammations thus giving butterfly weed an alternative name, pleurisy root. Pleurisy root was listed as a treatment in the American Pharmacopoeia and the National Formulary until 1936. However, any species of *Asclepius* must be regarded as potentially toxic. The toxin is resinoid (a resin) and some species contain cardenolides. The leaves contain the toxin and caterpillars eat the leaves, but they do not die. The toxins make the caterpillars poisonous so predators leave monarchs alone. Of course, don't eat any part of the plant and, if you have animals that like to eat plants, this might not be the best plant for your garden.

We love having beautiful plants, caterpillars, and butterflies in our backyard. By planting milkweed in your own garden, you can help reverse the fortune of these beautiful insects. What I learned is that the



Monarch Laying Eggs on Native Milkweed
Photo by Amy Wolitzer

best bet is to plant native milkweed species, never to distribute any seeds not recommended by park rangers, and if tropical milkweed is planted, pull it out or cut it back in the fall. For more information on native milkweed plants visit the California Native Plant Society, California Native Plant Nurseries website (http://www.cal-scape.org/plant_nursery.php) and check the references listed below.

References:

https://www.fs.fed.us/wildflowers/pollinators/Monarch_Butterfly/migration/
<https://en.wikipedia.org/wiki/Asclepias>
<http://www.sfbaywildlife.info/species/butterflies.htm>
https://en.wikipedia.org/wiki/Monarch_butterfly
[University of Minnesota Monarch Lab](http://www.monarchlab.org/)



Trail building weekend in Sycamore Grove Park April 28-30! Details and Registration at <http://v-o-cal.org/>