

# Planting and Establishment



Whether to grow milkweed from seed (l), transplants, or rhizomes may depend on the species and the location. Milkweeds are a necessary plant to support monarch caterpillars (c), and provide a rich nectar source for adult monarchs (r) and many other flower-visiting insects. (Photos: L – John Anderson, Hedgerow Farms, Inc.; C, R – Xerces Society / Stephanie McKnight.)

## Native Milkweed Planting and Establishment in California

Monarch butterflies are an iconic species in California. The western monarch population, which generally breeds west of the Rocky Mountains and overwinters along the California coast, has declined 99.4% since the 1980s. In 2018, the western monarch population reached an all-time low, with only 28,429 butterflies counted.

Because monarch caterpillars can only grow to adulthood when feeding on milkweeds (*Asclepias* spp.), planting native milkweed is a critical component of supporting monarchs and helping their numbers recover. However, native milkweeds can be difficult to grow in the West. The Xerces Society has partnered with local native plant nurseries and USDA-Natural Resources Conservation Service Plant Materials Centers to find best practices for growing narrow-leaved and showy milkweed (*A. fascicularis* and *A. speciosa*), because these are the most widespread milkweeds in California and both species are commercially available. While these efforts are ongoing, this factsheet contains our best information to date on getting milkweeds to flourish.

### Western Monarch Call to Action

Faced with these alarming numbers, the Xerces Society worked with monarch scientists at institutions across the West to develop the **Western Monarch Call to Action**, a five-point rapid-response action plan to rescue the western population of the monarch butterfly. PLanting milkweeds is one of the essential steps we need to take. To read the call to action and find out more about what you can do to help monarchs in western states, visit [savewesternmonarchs.org](http://savewesternmonarchs.org).

### Where should you plant milkweed?

We recommend against planting milkweeds along the coast within 5 miles of monarch overwintering grounds, and in other areas (such as high elevation forests) where milkweed did not historically occur to avoid disrupting monarchs' natural behavior. If you live near overwintering sites, consider planting early spring, late-fall, and winter-blooming nectar plants instead of

milkweed, as nectar is critical for fueling monarchs during their migration and overwintering. For most other parts of California, planting milkweed is recommended as a key strategy for helping monarchs. Planting milkweeds may be especially beneficial in the Central Valley, where milkweeds were historically more abundant than they are now.

### What kind of milkweed should you plant?

We recommend planting native milkweeds only. California is home to 15 species of milkweed. Two of these species, showy milkweed (*Asclepias speciosa*) and narrow-leaved milkweed (*A. fascicularis*), are widely available from plant suppliers. Some other species, including woollypod milkweed (*A. eriocarpa*) and heartleaf milkweed (*A. cordifolia*), may sometimes be available commercially, but are less common. These latter two species break dormancy earlier in the spring than showy and narrow-leaved milkweeds, and may therefore be especially beneficial to monarchs leaving their overwintering grounds along the California coast. We strongly recommend against planting nonnative milkweeds, including tropical milkweed (*A. curassavica*); see box for more information.

### The Problem With Tropical Milkweed

Tropical milkweed (*Asclepias curassavica*) does not die back in winter, especially in warmer climates like southern California. This creates two problems. First, it allows pathogens such as the widespread protozoan parasite *Ophryocystis elektroscirrha* (OE) to build up to very high levels, which is then transmitted to butterflies visiting the plants. Research finds that OE rates are much higher in areas with tropical milkweed and can harm or even kill monarchs. Second, because the tropical milkweed doesn't die back, it can cause monarchs to break diapause, disrupting their migration. The Xerces Society recommends that you replace existing tropical milkweed with native milkweed and/or nectar plants, if feasible. At a minimum, cut it back in the fall (Oct/Nov) and repeatedly throughout the winter to mimic the phenology of native milkweed and break the buildup of OE.

### Establishing milkweed: the importance of site preparation and management

Site preparation and follow-up management to remove weeds and competing plants is key to getting milkweeds to establish, especially when planting from seed. Although milkweed can be quite vigorous once established, it can be slow to establish and easily outcompeted initially. Also, milkweed breaks dormancy late in the spring, so it can be vulnerable to encroachment from other earlier-germinating species. Site preparation methods include solarization, burning, grazing, frequent mowing, or herbicide use. After planting or seeding, mowing early in the spring before milkweed has germinated is one simple and effective technique for reducing weed competition.

The Xerces Society has researched organic site preparation techniques and published detailed information about site preparation. This is available at <https://xerces.org/guidelines-organic-site-preparation/>

### Establishing milkweed from seed

If irrigation is not available, planting from seed is generally the best option, but site preparation must be very thorough. Because of the tendency for showy and narrow-leaf milkweeds to be outcompeted, we recommend seeding milkweed alone or with other nonaggressive species, rather than in a seed mix with commonly grown nectar plants. Solarizing the soil or using an alternative site-preparation method for a minimum of one year prior to planting is highly recommended. Seed should be sown in the fall, once the rains start at a seeding rate of approximately 15 pure live seed/ft<sup>2</sup>. After spreading seeds onto a prepared seedbed, incorporate them into the soil immediately using a rake, harrow, ring-roller, or gentle over-head irrigation. Narrow-leaved milkweed in particular seems to do well from seed when planted in the fall.

### Establishing milkweed from transplants

In general, habitat established from transplants is more successful and easier to maintain than projects sown with seeds, and is the recommended method when irrigation is available. Milkweed transplants tend to do best when planted in the fall before the milkweed goes dormant (e.g., October). Thoroughly water both plugs and container plants immediately after planting and continue to provide irrigation as needed during the dry season for the first several years until the plants are established. Most milkweed species are fairly drought-tolerant, so even during the establishment phase, irrigating every 10–14 days is usually sufficient. For milkweeds, as with most native plants,

water requirements are minimal after they become established. Using a top-mulch around transplants will help conserve moisture and reduce weed competition.

### **Establishing milkweed from rhizomes**

Although not currently commercially available, rhizomes may be the most effective way to establish some species of milkweed, especially showy milkweed. Rhizomes can be harvested in the fall from existing stands as plants begin to go dormant. They can be planted immediately, or stored for up to a month in a cool, dry location before planting. Individual rhizomes can be cut into 2-inch-long pieces and planted at any depth from just below the surface to 8 inches down. Rhizomes that are deep-planted are slower to reach the surface, but potentially require less supplemental irrigation, as soil moisture is usually higher at depths of 6 to 8 inches. We find that showy milkweed establishes successfully and quickly from rhizomes when planted in the fall and given at least occasional irrigation (approximately 3 times per year) when planted just below the surface. The efficacy of using rhizomes for other milkweed species is not yet known, but narrow-leaved milkweed does not appear to do well from rhizomes.

### **Additional resources**

**Xerces' Milkweed Seed Finder** lists nurseries that sell native milkweed seeds and plugs:  
[xerces.org/milkweed-seed-finder](http://xerces.org/milkweed-seed-finder)

For more information on **native milkweeds of California**, including distribution maps:  
[xerces.org/wp-content/uploads/2011/03/xerces-nrcs-california-milkweed-guide.pdf](http://xerces.org/wp-content/uploads/2011/03/xerces-nrcs-california-milkweed-guide.pdf)

Find more information about milkweeds and submit your observations of milkweeds and monarchs in the western states, visit the **Western Monarch Milkweed Mapper**:  
[monarchmilkweedmapper.org](http://monarchmilkweedmapper.org)

For more in-depth information on **milkweeds, propagating seed, and using them in restoration projects**:  
[xerces.org/milkweeds-a-conservation-practitioners-guide](http://xerces.org/milkweeds-a-conservation-practitioners-guide)

For suggestions for **monarch nectar plants to include in your monarch habitat**, see Xerces' monarch plant lists  
*Inland California*: [xerces.org/monarch-nectar-plant-guide-inland-california](http://xerces.org/monarch-nectar-plant-guide-inland-california)  
*Coastal California*: [xerces.org/monarch-nectar-plant-guide-california-coast](http://xerces.org/monarch-nectar-plant-guide-california-coast)

For information on **site preparation**:  
[xerces.org/guidelines-organic-site-preparation](http://xerces.org/guidelines-organic-site-preparation)

For more information about the **biology and management of western monarchs**:  
[xerces.org/managing-monarchs-in-the-west](http://xerces.org/managing-monarchs-in-the-west)

### **Acknowledgments**

Written by Angela Laws and Jessa Kay Cruz of the Xerces Society. We are grateful for partnerships and discussions with the USDA-NRCS Plant Materials Centers in Lockeford, CA, and Aberdeen, ID, and Hedgerow Farms in Winters, CA, for helping us learn more about milkweed establishment.