



# Monarch and Pollinator Habitat Kit

## Planting Guide

Thank you for your interest and work in conserving western monarchs and other pollinators. By planting this kit, you are an essential partner in western monarch conservation! This handout includes instructions for planting and follow-up care for successful habitat establishment.

### Background

Western monarchs, which generally breed west of the Rocky Mountains and overwinter along the California coast, have declined steadily over the last several decades, resulting in an estimated 99.4% population decline since the 1980s. The significant problems afflicting western monarchs include habitat loss, pesticide use, and climate change. In order to help address monarch declines and habitat loss, the Xerces Society partnered with Hedgerow Farms and Floral Native Nursery to create these kits and make them available to conservation partners.

### What's in This Kit?

These kits contain climate-smart native plants, including milkweed, the larval host plant for monarchs, and a variety of nectar plants documented to be attractive to monarchs. Plant species in these kits also support many other native pollinators. Nectar plants that bloom early in spring and late in fall may be especially important for supporting monarchs during their migration in California, so there is an emphasis on these species in the kits.

### Tips for Plant Establishment

The plants in your kit are ideally suited for your region of California, but they will need good care to get started.

- ⇒ **Weed management:** Before and after planting, manage weeds so they aren't crowding out the transplanted plugs. Providing a top layer of mulch may help protect against weed encroachment while potentially reducing irrigation requirements.
- ⇒ **Timing:** For best establishment success, plant milkweed transplants before they go dormant, giving time for the roots to become established underground. (We have had much less success establishing milkweed from plugs if they are planted after dormancy.) The other plants in

the kits should be planted shortly after they arrive, if possible, however they can be planted as late as early winter. If planting is delayed, transplants will be fine kept in containers if they are watered regularly. The rhizomes should also be planted shortly after they arrive, but if delays occur, you can store them in buckets of water or in a moist, sterile medium in the refrigerator until they are planted.

- ⇒ **Plug spacing:** We recommend planting plugs two to three feet apart. At this spacing, a single kit will cover approximately 6,400–9,600 square feet (0.15–0.23 acres). If planting in areas with minimal irrigation or moisture, consider clustering two plugs together, and spacing each cluster two feet apart. In this case, one kit will cover approximately 3,200 square feet (0.08 acres). You can find more information on the plants in your kit, including size at maturity, at [calscape.org](http://calscape.org).
- ⇒ **Rhizome spacing:** Showy milkweed rhizomes tend to establish more quickly than plugs. Rhizomes can be spaced three to four feet apart.
- ⇒ **Tree band spacing:** For shrub and hedgerow kits, we recommend spacing plants 6 feet apart, alternating larger and smaller plants.
- ⇒ **Plug and tree band irrigation:** Transplants will need supplemental irrigation in the first three years to get established. Irrigate transplants thoroughly immediately after planting, and keep the soil evenly moist prior to the start of winter rains. Resume irrigation in spring when soil moisture starts depleting, and continue irrigating until fall rains begin. During the first growing season, irrigate transplants once or twice per week based on the soil moisture present and the needs of the plant. Once plants are well established (usually after the first year), you can gradually decrease irrigation. Generally, by the third year after planting, most native plants will need only monthly irrigation or no irrigation at all. Riparian plants have similar irrigation requirements, but may need slightly more frequent irrigation and will be less tolerant of drying out. Drip irrigation is ideal for transplants.
- ⇒ **Rhizome irrigation:** Rhizomes should be watered thoroughly after planting but may need minimal irrigation after that. We have had success establishing rhizomes by

irrigating only twice per month, but they can also be watered as frequently as the other transplants.

- ↪ **Planting plugs and tree bands:** Dibble sticks are ideal for plug planting, as they are easy to use and designed to make a correctly sized hole. Use a spade or small shovel for tree bands (or for plugs if dibble sticks are not available). The hole should be slightly deeper and wider than the plant container. Gently remove the plant from the container using a small blade (a plastic knife works well for plugs), being careful to keep the root ball intact, and place it in the hole. Gently pack soil around the plug and pinch or compress field soil over the plug's root crown to minimize loss of soil moisture. It is important not to make the holes too deep; the base of the plant should be level to the surrounding soil.
- ↪ **Planting rhizomes:** Plant rhizomes horizontally at two to six inches below the surface of the soil. Shallowly planted rhizomes may emerge more quickly in the spring, but more deeply planted rhizomes may need less supplemental irrigation. After planting, cover rhizomes with soil and lightly pack.
- ↪ **Milkweed planting configuration:** Monarchs seem to prefer small- and medium-sized milkweed patches to large patches, possibly as an anti-predator behavior. We recommend planting milkweed in patches rather than uniformly distributing them. Vary the size and density of patches within the landscape to mimic natural populations. Over subsequent years, multiple stems may sprout, expanding outward many feet or more from the original plug.

## Xerces is Here to Help!

We are excited to partner with you on creating monarch and pollinator habitat. Please feel free to contact us if you have any questions or need additional guidance ([centralvalleypollinators@xerces.org](mailto:centralvalleypollinators@xerces.org)). You will find publications about monarchs, pollinators, and habitat restoration work on our website or by following the links provided.

## Additional Resources

### Monarchs and Milkweed

Xerces Society: *Western Monarch Call to Action*  
[xerces.org/save-western-monarchs/](https://xerces.org/save-western-monarchs/)

Xerces Society: *A Quick Guide to Monarch Habitat in California's Central Valley*

[xerces.org/publications/guidelines/quick-guide-to-monarch-habitat-on-farms-in-californias-central-valley](https://xerces.org/publications/guidelines/quick-guide-to-monarch-habitat-on-farms-in-californias-central-valley)

Xerces Society: *Managing for Monarchs in the West*

[xerces.org/publications/guidelines/managing-for-monarchs-in-west](https://xerces.org/publications/guidelines/managing-for-monarchs-in-west)

Xerces Society: *Native Milkweed in California: Planting and Establishment*

[xerces.org/publications/fact-sheets/native-milkweed-in-california-planting-and-establishment](https://xerces.org/publications/fact-sheets/native-milkweed-in-california-planting-and-establishment)

Xerces Society: Regional milkweed guides

[xerces.org/milkweed/milkweed-guides](https://xerces.org/milkweed/milkweed-guides)

### Pollinators

Xerces Society: Recommended pollinator plants for California

[xerces.org/publications/plant-lists/pollinator-plants-california](https://xerces.org/publications/plant-lists/pollinator-plants-california)

Xerces Society: California-based resources, including plant lists and milkweed guides

[xerces.org/pollinator-resource-center/california](https://xerces.org/pollinator-resource-center/california)

### Bee Better Certified

[beebettercertified.org/](https://beebettercertified.org/)

### Habitat Establishment and Management

Xerces Society: *Guidance to Protect Habitat from Pesticide Contamination*

[xerces.org/publications/fact-sheets/guidance-to-protect-habitat-from-pesticide-contamination](https://xerces.org/publications/fact-sheets/guidance-to-protect-habitat-from-pesticide-contamination)

Xerces Society: Pollinator habitat installation guides for hedgerows and wildflower meadows

[xerces.org/pollinator-conservation/habitat-installation-guides](https://xerces.org/pollinator-conservation/habitat-installation-guides)

### Community Science

Western Monarch Milkweed Mapper

[monarchmilkweedmapper.org](https://monarchmilkweedmapper.org)

Bumble Bee Watch

[bumblebeewatch.org](https://bumblebeewatch.org)

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## Partners

The Xerces Society for Invertebrate Conservation is a nonprofit focused on protecting the natural world through the conservation of invertebrates and their habitats. We take our name from the now-extinct Xerces blue (*Glaucopsyche xerces*), the first butterfly known to go extinct in North America as a result of human activities.

Hedgerow Farms is a native seed farm located in Winters, California, specializing in the production of high-quality seed of known genetic origin. The seed produced originates from wildland-collected stock seed from California native grasses, forbs, sedges, and rushes. Hedgerow Farms offers seeds in single species or custom seed mixes, plug transplants, and native grass straw. Their seeds and plants are used in wildlife habitat restoration projects, agricultural revegetation projects, erosion control, and urban and rural landscaping. Hedgerow Farms also provides free consultation services, including native seed mix design.

Floral Native Nursery is a specialized plant nursery in Northern California that specializes in growing and selling California Native Plants for contracts, wholesale, and retail. We propagate California native trees, shrubs, flowers and grasses from seeds and cuttings for gardens, commercial landscapes, and restoration.

Special thanks to The Starbucks Foundation, Justin's, and the Wildlife Conservation Society Climate Adaptation Fund for generous support of this work.