MONARCH NECTAR PLANTS

Great Basin

Left to right: Monarch on showy milkweed, common sunflower, and monarch on salt heliotrope.

The Great Basin encompasses the vast majority of Nevada as well as half of Utah and small sections of the surrounding states of Oregon, Idaho, and California. It is a region of extremes, known for its basin and range topography and arid climate. The amazing diversity of habitats, from high alpine mountain ranges to dry desert valleys, supports an impressive array of plant and animal species, including the monarch butterfly, which can be found in protected canyons and riparian areas as well as along irrigation ditches and roadsides throughout the summer.

Each spring, monarchs leave hundreds of overwintering sites along the California coast and fan out across the western landscape to breed and lay eggs on milkweed, the monarch's host plant. Several generations are likely produced during this time. In the fall, western monarchs migrate back to overwintering sites in California and central Mexico, where they generally remain in reproductive diapause until the spring, when the cycle begins again.

Monarchs at overwintering sites in Mexico and California have declined dramatically since monitoring began in the late 1990s. Across their range in North America, monarchs are threatened by a variety of factors, including loss of milkweed from extensive herbicide use, habitat loss and degradation from other causes, natural disease and predation, climate change, and widespread insecticide use. Because of the monarch's migratory life cycle, it is important to protect and restore habitat across their entire range. Adult monarchs depend on diverse nectar sources for food during all stages of the year, from spring and summer breeding to fall migration and overwintering. Caterpillars, on the other hand, are completely dependent on their milkweed host plants. Inadequate milkweed or nectar food sources at any point may impact the number of monarchs that successfully arrive to overwintering sites in the fall.

Providing milkweeds and other nectar-rich flowers that bloom where and when monarchs need them is one of the most significant actions you can take to support monarch butterfly populations. This guide features native plants from the Great Basin that have documented monarch visitation, bloom during the times of year when monarchs are present in this region, are commercially available, and are known to be hardy. The list also includes moisture requirements, so that you can choose plants to create a drought-tolerant monarch garden, if needed. These species are well-suited for wildflower gardens, urban greenspaces, and farm field borders. Beyond supporting monarchs, many of these plants attract other nectar- and/or pollen-seeking butterflies, bees, moths, and hummingbirds, and some are host plants for other butterfly and moth caterpillars. For a list of native plants that host butterflies and moths specific to your zip code see www.nwf.org/nativeplantfinder.

The species in this guide will be adaptable to growing conditions across most of the Great Basin region. Please consult regional floras or the Biota of North America's North American Plant Atlas (http://bonap.net/napa) for details on species' distributions in your area.

MONARCH JOINT VENTURE
XERCES SOCIETY for Invertebrate Conservation
NATIONAL WILDLIFE FEDERATION GARDEN FOR WILDLIFE

Bloom		Common Name	Scientific Name	Flower Color	Max. Height	Water Needs	Notes
		Forbs			(Feet)	Low, Medium, or High	All species perennials unless otherwise noted. Monarchs are present April through November in the Great Basin.
Spring to Summer	1	Royal penstemon	*Penstemon speciosus*	Blue	2	L	Great for rock gardens. Attracts numerous pollinators.
	2	Sanddune wallflower	*Erysimum capitatum*	Red/orange/yellow	2	L	Biennial plant. Drought tolerant once established.
	3	Tall fringed bluebells	*Mertensia ciliata*	Blue	3	H	Prefers moist soils, including stream banks and wet meadows.
	4	Yellow spiderflower	*Cleome lutea*	Yellow	3	L	Annual plant. Prefers sandy or disturbed soils. Bees are attracted to its yellow flowers.
Spring to Fall	5	Salt heliotrope	*Heliotropium curassavicum*	White	1	M	Annual plant. Tolerates saline or alkaline soils.
	6	Showy milkweed	*Asclepias speciosa*	Pink/green/purple	3	M	Monarch caterpillar host plant.
Summer	7	Mountain monardella	*Monardella odoratissima*	White/blue/purple	1	M	Needs regular water and full sun for best flowering.
	8	Nettleleaf giant hyssop	*Agastache urticifolia*	Purple/red	2	M	Establishes better from transplant than seed. Tolerates clay soil and wet conditions.
	9	White panicle aster	*Symphyotrichum lanceolatum*	White/pink/purple	5	M	Tolerant of moist, disturbed areas.
Summer to Fall	10	Common sunflower	*Helianthus annuus*	Yellow	8	M	Annual. A favorite of many bee species. Easy to establish and tolerant of clay soils.
	11	Fireweed	*Chamerion angustifolium*	Pink	7	M	Can be aggressive in moist gardens.
	12	Nevada goldenrod	*Solidago spectabilis*	Yellow	6.5	M	Nectar plant for many butterfly species.
	13	Nuttall's sunflower	*Helianthus nuttallii* ssp. *nuttallii*	Yellow	10	M/H	A showy perennial sunflower that prefers moist soils.
	14	Rocky Mountain beeplant	*Cleome serrulata*	White/pink	4	M	Annual plant.
	15	Sulphur-flower buckwheat	*Eriogonum umbellatum*	White/yellow	3	L	Attracts many species of bees and butterflies. Propogate only by seed.
Fall	16	Canada goldenrod	*Solidago canadensis*	Yellow	5	M	Drought tolerant once established.
Winter to Fall	17	Desert globemallow	*Sphaeralcea ambigua*	Orange	3	L	Drought tolerant once established. Can be short-lived but usually self-seeds.
		Shrubs, Trees, and Vines					
Spring	18	Black chokecherry	*Prunus virginiana* var. *melanocarpa*	White	40	L/M	Flowers attract early butterflies. Birds will eat the fruits.
Spring to Summer	19	Purple sage	*Salvia dorrii*	Blue/purple	3	M	Excellent plant for dry desert gardens. Attracts birds, butterflies, and moths.
	20	Woods' rose	*Rosa woodsii* var. *ultramontana*	Pink	3	M	Fragrant flowers and large rosehips. Excellent bird plant.
Summer	21	Western white clematis	*Clematis ligusticifolia*	White	20	M	Semi-woody vine. Widely adaptable and tough species that can form a dense mass if not controlled.
Summer to Fall	22	Rubber rabbitbrush	*Ericameria nauseosa*	Yellow	5	L	Very drought tolerant.
	23	Yellow rabbitbrush	*Chrysothamnus viscidiflorus*	Orange/yellow	3	L	Nectar plant for many butterfly species.
Winter to Summer	24	Arroyo willow	*Salix lasiolepis*	Yellow/purple	16	M	Tolerates sand and seasonal flooding; good for erosion control. Important wildlife plant.

Planting for Success

Monarch nectar and host plants often do best in open, sunny sites. You can attract more monarchs to your area by planting flowers in single species clumps and choosing a variety of plants that have overlapping and sequential bloom periods. Monarchs can be present April through November in the Great Basin, although this can vary depending on your elevation.

Why Plant Native?

Although monarchs use a variety of nectar plant species, including exotic invasives such as saltcedar and purple loosestrife, we recommend planting native species. Native plants are often more beneficial to ecosystems, are adapted to local soils and climates, and help promote biological diversity. They can also be easier to maintain in the landscape, once established.

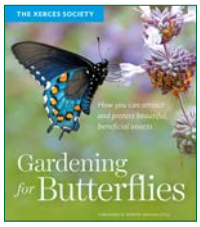
Tropical milkweed is a non-native plant that is widely available in nurseries. This milkweed can persist year-round in mild climates, allowing monarchs to breed throughout the winter rather than going into diapause. Tropical milkweed may foster higher loads of a monarch parasite called Oe (*Ophryocystis elektroscirrha*), which negatively impacts monarch health. Because of these implications, we recommend planting native species of milkweeds in areas where they historically occurred. You can read more about Oe in a fact sheet by the Monarch Joint Venture: http://monarchjointventure.org/images/uploads/documents/Oe_fact_sheet.pdf.

Protect Monarchs from Pesticides

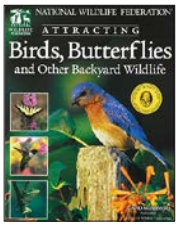
Both insecticides and herbicides can be harmful to monarchs. Herbicides can reduce floral resources and host plants. Although dependent on timing, rate, and method of application, most insecticides have the potential to poison or kill monarchs and other pollinators. Systemic insecticides, including neonicotinoids, have received significant attention for their potential role in pollinator declines (imidacloprid, dinotefuran, clothianidin, and thiamethoxam are examples of systemic insecticides now found in various farm and garden products). Because plants absorb systemic insecticides as they grow, the chemicals become distributed throughout all plant tissues, including the leaves and nectar. New research has demonstrated that some neonicotinoids are toxic to monarch caterpillars that are poisoned as they feed on leaf tissue of treated plants. You can help protect monarchs by avoiding the use of these and other insecticides. Before purchasing plants from nurseries and garden centers, be sure to ask whether they have been treated with systemic insecticides. To read more about threats to pollinators from pesticides, please visit: www.xerces.org/pesticides.

Additional Resources

Gardening for Butterflies



Attracting Birds, Butterflies, and Other Backyard Wildlife



Available through www.xerces.org/books and http://bit.ly/1Xhxfgu.

Conservation Status and Ecology of the Monarch Butterfly in the U.S. Report
www.xerces.org/us-monarch-consv-report

Guide to Milkweeds and Monarchs in the Western U.S.
www.xerces.org/western-us-monarch-guide

Guide to Great Basin Native Milkweeds
www.xerces.org/gb-mw-guide

Milkweed Seed Finder www.xerces.org/milkweed-seed-finder

Websites

The Xerces Society www.xerces.org/monarchs

Monarch Joint Venture www.monarchjointventure.org/resources

Natural Resources Conservation Service
www.nrcs.usda.gov/monarchs

National Wildlife Federation www.nwf.org/butterflies

Citizen Science Efforts in the Great Basin

Southwest Monarch Study www.swmonarchs.org

Xerces Society & USFWS Milkweed and Monarch Survey
www.xerces.org/milkweedsurvey

Journey North www.learner.org/jnorth/monarch

Monarch Larva Monitoring Project www.mlmp.org

Project Monarch Health www.monarchparasites.org

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