MONARCH NECTAR PLANTS

Northern Plains

Left to right: Monarch on New England aster, Maximilian sunflower, and wild bergamot.

The Northern Plains region—which includes North Dakota, South Dakota, Nebraska, eastern Montana, and parts of Wyoming, Minnesota, Iowa, and northeast Colorado—is dominated by vast grasslands interspersed with forested mountains and riparian woodlands. A range of climates, elevations, and soil types has led to incredibly diverse plant communities, which in turn support a wide array of wildlife, including hundreds of species of bees, flies, moths, and butterflies. Monarch butterflies depend on the floral resources in these prairies to breed and store energy for their annual fall migration.

Each spring, monarchs leave overwintering sites in coastal California and the mountains of central Mexico and fan out across North America to breed and lay eggs on milkweed, the monarch's host plant. Several generations are produced over the course of the spring and summer. In late summer and early fall, adults from the northern U.S. and southern Canada migrate back to the overwintering sites, 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. Loss of milkweed from extensive herbicide use has been a major contributing factor, and habitat loss and degradation from other causes, natural disease and predation, climate change, and widespread insecticide use are probably also contributing to monarch declines. 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. Inadequate milkweed and nectar plant food sources at any point may impact the number of monarchs that successfully arrive at overwintering sites in the fall.

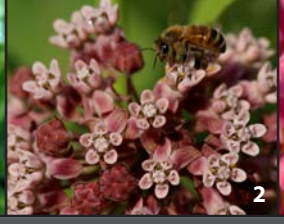
Providing milkweeds and other nectar-rich flowers that bloom where and when monarchs need them is one of the most significant actions you can take to support monarch butterfly populations. This guide features Northern Plains native plants that have documented monarch visitation, bloom during the times of year when monarchs are present, are commercially available, and are known to be hardy. 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 are adaptable to growing conditions found across the state. Please consult regional floras, the Biota of North America's North American Plant Atlas (http://bonap.net/napa), or the USDA's PLANTS database (http://plants.usda.gov) for details on species' distributions in your area.

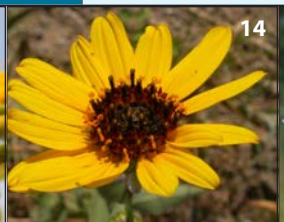
MONARCH JOINT VENTURE

XERCES SOCIETY for Invertebrate Conservation

NATIONAL WILDLIFE FEDERATION GARDEN FOR WILDLIFE



Bloom		Common Name	Scientific Name	Flower Color	Max. Height	Water Needs
		Forbs			(Feet)	Low, Medium, or High
Summer	1	Butterfly milkweed	*Asclepias tuberosa*	Orange	2	L
	2	Common milkweed	*Asclepias syriaca*	Pink	5	L/M/H
	3	Swamp milkweed	*Asclepias incarnata*	Pink	4	M/H
	4	White prairie clover	*Dalea candida*	White	2	M
Summer to Fall	5	Canada goldenrod	*Solidago canadensis*	Yellow	4	M
	6	Common sunflower	*Helianthus annuus*	Yellow	8	M
	7	Grass-leaved goldenrod	*Euthamia graminifolia*	Yellow	6	M/H
	8	Hoary vervain	*Verbena stricta*	Purple	4	L/M
	9	Meadow blazing star	*Liatris ligulistylis*	Purple	5	M
	10	Prairie ironweed	*Vernonia fasciculata*	Purple	6	M/H
	11	Smooth oxeye	*Heliopsis helianthoides*	Yellow	5	L/M
	12	Spotted joe pye weed	*Eutrochium maculatum*	Pink	6	H
	13	Stiff goldenrod	*Oligoneuron rigidum*	Yellow	5	L/M
	14	Stiff sunflower	*Helianthus pauciflorus*	Yellow	6	L/M
	15	Tall thistle	*Cirsium altissimum*	Pink	10	L
	16	White snakeroot	*Ageratina altissima*	White	3	L
	17	Wholeleaf rosinweed	*Silphium integrifolium*	Yellow	6	L
	18	Whorled milkweed	*Asclepias verticillata*	White	3	L
	19	Wild bergamot	*Monarda fistulosa*	Purple	5	L/M
Fall	20	Heath aster	*Symphyotrichum ericoides*	White	3	L
	21	Maximilian sunflower	*Helianthus maximiliani*	Yellow	8	L
	22	New England aster	*Symphyotrichum novae-angliae*	Pink/purple	6	M
	23	Smooth blue aster	*Symphyotrichum laeve*	Blue/purple	4	M
		Shrubs				
Summer to Fall	24	Leadplant	*Amorpha canescens*	Blue/purple	3	L



Notes

All species perennials, unless otherwise noted. Monarchs are present May through September in the Northern Plains.

Host plant for monarch caterpillars and excellent nectar plant for adults. Very showy flowers. Prefers dry soils and full sun.

Host plant for monarch caterpillars and excellent nectar plant for adults. Fragrant flowers. Thrives in a wide range of soils.

Excellent monarch caterpillar host plant and nectar plant. A great option for shorelines, rain gardens, and riparian buffers.

A small-statured nitrogen fixing legume. Very attractive to butterflies and bees. Drought tolerant.

Attracts many species of insects. Rhizomatous and aggressive; can crowd out other plants.

Annual. A favorite of many native bees, including bumble bees and longhorn bees. Easy to establish and tolerant of clay soils.

Attracts many species of bees, wasps, flies, butterflies, moths, and beetles. Rhizomatous and very vigorous.

Important nectar source for butterflies. Host plant for common buckeye butterfly. Long bloom period from July to Sept.

The ultimate monarch magnet, even compared to other *Liatris*. Medium soils.

A showy plant great for backdrops in landscaping. Brilliant purple flowers. Can be aggressive in small areas.

Also known as early sunflower, this plant has a long bloom period from July to October. Tolerates clay and moist soils.

Prefers moist soils. Attracts numerous butterflies and bees, including the very rare rusty patched bumble bee.

This plant offers abundant and accessible pollen and nectar—a utopia for insects! Flat-top flower is unusual for a goldenrod.

A lovely plant, attractive to a wide variety of solitary bees. Can crowd out other plants in small areas.

Not to be confused with exotic thistles, this non-aggressive native thistle is an absolute monarch magnet. Bienniel.

Prefers moist soils but tolerates dry. Very shade tolerant. Attracts a variety of butterflies.

Great for landscaping—shorter and sturdier than other *Silphium* species. Attracts solitary bees and other pollinators.

Monarch caterpillar host plant and exceptional nectar plant. This small milkweed plant is great for landscaping. Dry soils.

A superb bumble bee plant, also known as bee balm. Also attracts hawk moths and hummingbirds. Aromatic foliage.

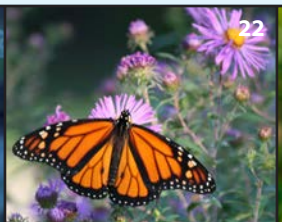
Very abundant small flowers attract pre-hibernation bumble bee queens and other insects. Blooms late into fall. Very easy to grow.

Very showy and vigorous plant. Caterpillar host plant for the silvery checkerspot and bordered patch butterflies.

One of the latest fall-blooming plants. Butterfly magnet and important food resource for pre-hibernation bumble bee queens.

A lovely plant, more delicate in stature than many asters. Larval host plant of the pearl crescent butterfly.

Readily visited by bees and other beneficial insects. The orange pollen is very apparent on the legs of foraging bees.



Planting for Success

Monarch nectar 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 are present May through September in the Northern Plains. Providing nectar plants that bloom from spring through early fall will be important for breeding and migrating monarchs in the region.

Why Plant Native?

Although monarchs use a variety of nectar plant species, including exotic invasives such as dame's rocket and multiflora rose, 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.

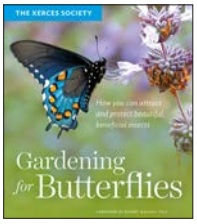
Tropical milkweed is a non-native plant that is widely available in nurseries. This milkweed can persist year-round in mild climates, allowing monarchs to breed throughout the winter rather than going into diapause. Tropical milkweed may foster higher loads of a monarch parasite called Oe (*Ophryocystis 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

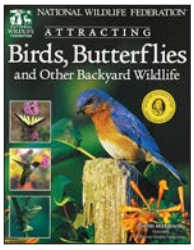
Both insecticides and herbicides can be harmful to monarchs. Herbicides can reduce floral resources and host plants. Although dependent on timing, rate, and method of application, most insecticides have the potential to poison or kill monarchs and other pollinators. Systemic insecticides, including neonicotinoids, 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

Publications & Resources



Gardening for Butterflies
The Xerces Society's newest book introduces you to a variety of butterflies who need our help, and provides suggestions for native plants to attract them, habitat designs to help them thrive, and garden practices to accommodate all stages of their life. Available through www.xerces.org/books.



Attracting Birds, Butterflies, and Other Backyard Wildlife
This award-winning book by the National Wildlife Federation's naturalist David Mizejewski is full of information on gardening for birds, pollinators and other wildlife, including illustrated how-to projects, recommended plant lists, and gorgeous color photos. You'll learn everything you need to know to create a Certified Wildlife Habitat. Available through http://bit.ly/1Xhxfgu.

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

Pollinator Plants of the central U.S.: Native Milkweeds http://bit.ly/1z7CX4U

Northern Great Plains Monarchs and Milkweeds http://bit.ly/2bAachw

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 Northern Plains

Journey North www.learner.org/jnorth/monarch

Monarch Larva Monitoring Project www.mlmp.org

Project Monarch Health www.monarchparasites.org

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