



Small-Scale

Monarch Butterfly

Habitat Development in Kansas

The monarch butterfly (*Danaus plexippus*) is one of North America's most recognizable insects, not only for its showy appearance, but also for the dramatic migration that this species makes every year.

In recent decades, the population of monarchs migrating back to Mexico to overwinter has declined. What used to be tens of acres of monarchs overwintering in trees in Mexico has dwindled to only a few acres. A variety of issues have contributed to the butterfly's decline, but one is of particular importance. A lack of habitat suitable for providing important caterpillar food plants and nectar for migrating adults, which is making the journey north in the spring and the return trip south in the fall increasingly difficult.

A recent national plan highlights the importance of restoring habitat for monarch butterflies throughout the range of their annual migration. Only 10 states have been targeted as critical in supporting the

monarch migration. Kansas is one of them. These restoration efforts focus not only on increasing and enhancing important host plants in the environment, but also ensuring valuable nectar plants are present to sustain them during the entire journey north and south. Although large-scale habitat plans will be important to the overall success of the monarchs, smaller scale restoration efforts will be critical. The idea is to create an almost continuous corridor of the proper habitat for the monarch butterflies; however, roadside and grassland restoration efforts may not be possible in all areas of the monarch flyway, whether because of lack of interest or harsh climate conditions. This is precisely where small-scale efforts come into play, to help create that continuous corridor, particularly

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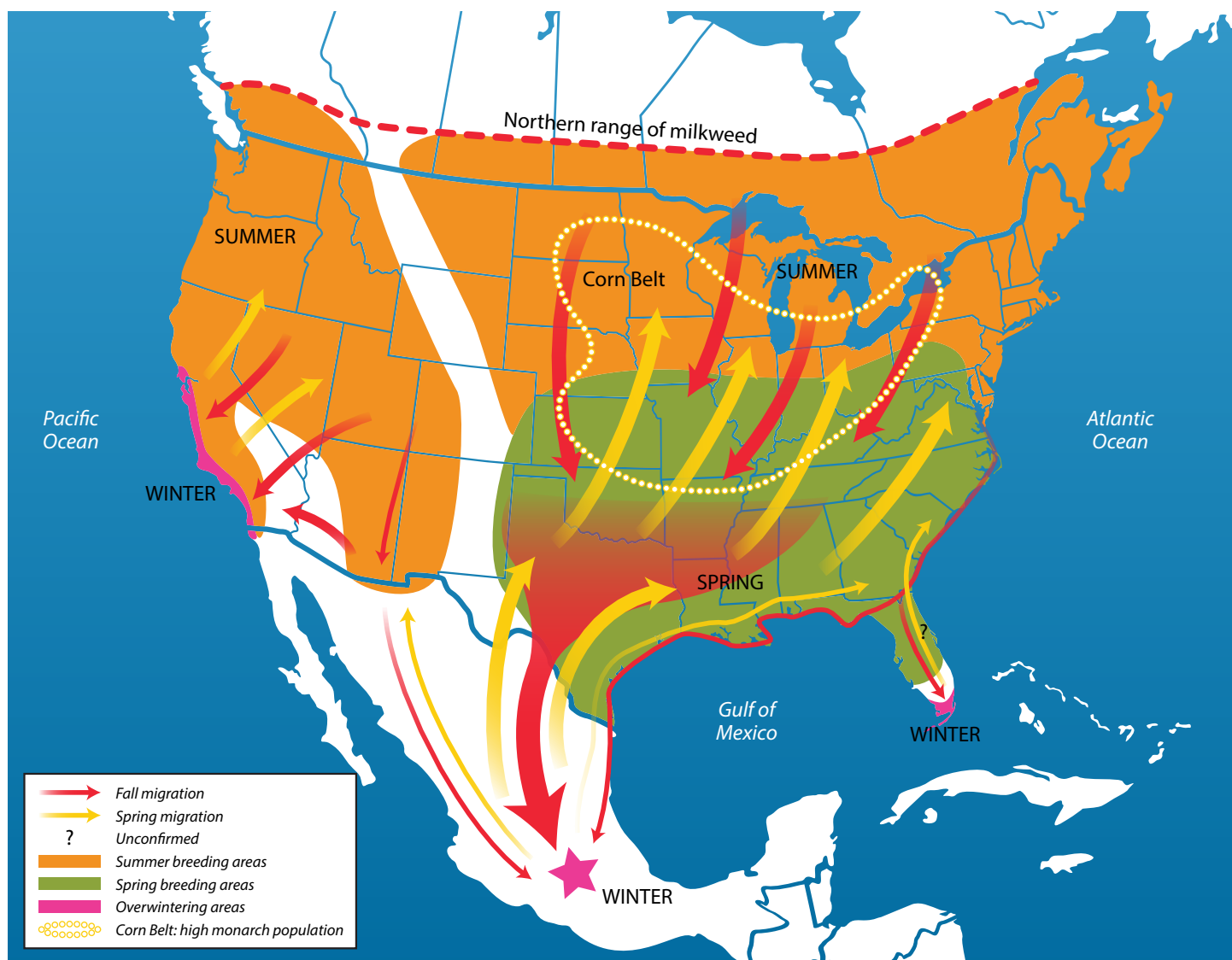
in Kansas where the monarchs transition from the Midwest into the High Plains. Land use and overall climate conditions have greatly reduced the amount of habitat suitable for monarchs as they move into and out of the High Plains. The following information includes recommendations for creating habitat suitable to the monarch butterflies as they make their way across the region. Plantings in small parks, city landscapes, and even your own backyard help not only the monarchs, but many native pollinators as well.

Beauty in numbers

The monarch migration is especially eye-catching in the fall when hundreds of thousands of butterflies begin making their way to overwintering grounds

in Mexico. Sightings of large numbers of passing monarchs or nighttime roosts are not uncommon along the migration route this time of year.

Monarch butterflies complete up to four generations to reach the northern limits of their range. The key component for this reproduction is the presence of milkweed plants. Adult butterflies will only lay eggs on milkweeds as this is the sole food source for developing caterpillars. A reduction in milkweed in the environment leads to an overall decrease in the number of adults making the trip south in the fall. The final generation of the year must complete the return trip in its entirety. To make it from the Canadian border all the way back into to Mexico, the adult butterflies require their own source of food, which comes in the form of nectar from a large variety of flowers. A de-



The monarch is the only butterfly known to migrate north and south every year. This map shows states considered critical in supporting the monarch migration. Adapted from *MonarchWatch.org*.

crease in the number of nectar sources along the route south results in fewer butterflies making it to the overwintering grounds. As the migration begins again the following spring, even fewer adults remain to start the journey north.

Establishing habitat

Taking into account both spring and fall migrations, monarchs spend approximately two months of the year reproducing and traveling in Kansas. The critical function of establishing monarch butterfly habitat in Kansas is to provide food plants for developing caterpillars and nectar plants for the adults. This can easily be accomplished with seeds or young transplants and an area suitable for planting.

Most milkweed plants and many nectar plants utilized by the monarch are typical to an open grassland or prairie system. Ideally, you should choose a location that provides 6 to 8 hours of sunlight a day. Beyond this small tip, the design and aesthetics of your monarch habitat are completely up to you. The most important details are the plants you include.

Milkweeds

Most importantly, the habitat should include milkweed plants. More than 20 species of milkweed can be found naturally in Kansas. While all of them can be used by monarchs for egg laying, some milkweed species are better suited to a small habitat project, and several species are easier to find and establish. Choosing regionally appropriate species of milkweed helps ensure success of the new monarch habitat. Species of milkweed that do well in western Kansas would not necessarily thrive in eastern Kansas and vice versa. The variety of Kansas native milkweed plants are highlighted on page 4.

Nectar plants

Keeping in mind the timing of the migration, it is important to include a variety of nectar sources to provide fuel for adults moving north in the spring or south in the fall. A garden in a state of continuous bloom throughout the seasons is not only aesthetically pleasing, but also serves an important function for monarchs and native pollinators. As with milkweed plants, choosing the right nectar plant species for your region of the state ensures passing monarchs have fuel for their trip without spending unnecessary resources

Native Nectar Sources Used by Monarch Butterflies in Kansas

| Name | Scientific name | Bloom season | Species in Kansas | Recommended for western Kansas | Recommended for eastern Kansas |
|----------------|--------------------------|--------------------|-------------------|--|--|
| Beebalm | <i>Monarda sp.</i> | Spring – Summer | 6 | <i>M. punctata</i> | <i>M. fistulosa</i> |
| Verbena | <i>Glandularia sp.</i> | Spring – Fall | 2 | <i>G. bipinnatifida</i> | <i>G. canadensis</i> |
| Echinacea | <i>Echinacea sp.</i> | Summer | 4 | <i>E. angustifolia</i> | <i>E. angustifolia</i> , <i>E. purpurea</i> |
| Prairie clover | <i>Dalea sp.</i> | Early summer | 10 | <i>D. purpurea</i> | <i>D. purpurea</i> , <i>D. candida</i> |
| Blazing star | <i>Liatris sp.</i> | Summer – Fall | 7 | <i>L. punctata</i> | <i>L. aspera</i> , <i>L. pycnostachya</i> |
| Goldenrod | <i>Solidago sp.</i> | Summer – Fall | 11 | <i>S. missouriensis</i> , <i>S. rigida</i> , <i>S. canadensis</i> | |
| Sunflower | <i>Helianthus sp.</i> | Summer – Fall | 9 | <i>H. petiolaris</i> , <i>H. maximiliani</i> | <i>H. tuberosus</i> , <i>H. petiolaris</i> |
| Ironweed | <i>Vernonia sp.</i> | Summer – Fall | 2 | <i>V. baldwinii</i> | |
| Sage | <i>Salvia sp.</i> | Late summer – Fall | 3 | <i>S. azurea</i> | |
| Aster | <i>Symphotrichum sp.</i> | Late summer – Fall | 15 | <i>S. fendleri</i> | <i>S. novae-angliae</i> , many others |

Native Kansas Milkweeds

| Common name | Scientific name | Comments | Recommended Kansas region |
|------------------------|----------------------------------|---|---------------------------|
| Antelope horn milkweed | <i>Asclepias asperula</i> | drought tolerant, one of the first to emerge in the spring | west |
| Broadleaf milkweed | <i>Asclepias latifolia</i> | rare statewide | west |
| Butterfly milkweed* | <i>Asclepias tuberosa</i> | highly attractive to many pollinators | throughout |
| Clasping milkweed | <i>Asclepias amplexicaulis</i> | rare statewide | east |
| Common milkweed | <i>Asclepias syriaca</i> | fast growing, colony forming | east |
| Dwarf milkweed | <i>Asclepias involucrata</i> | not seen in Kansas in 30 years | - |
| Engelmann's milkweed | <i>Asclepias engelmanniana</i> | drought tolerant | west |
| Four-leaf milkweed | <i>Asclepias quadrifolia</i> | state endangered | - |
| Green comet milkweed | <i>Asclepias viridiflora</i> | attractive, comet-like flowers | throughout |
| Green milkweed | <i>Asclepias viridis</i> | large flowers | east |
| Horsetail milkweed | <i>Asclepias subverticillata</i> | drought tolerant | west |
| Mead's milkweed | <i>Asclepias meadii</i> | federally protected | - |
| Narrowleaf milkweed | <i>Asclepias stenophylla</i> | slim, delicate plants | throughout |
| Plains milkweed | <i>Asclepias pumila</i> | small statured, big flowers | throughout |
| Purple milkweed | <i>Asclepias purpurascens</i> | rare statewide | east |
| Sand milkweed | <i>Asclepias arenaria</i> | rare statewide | west |
| Showy milkweed | <i>Asclepias speciosa</i> | drought tolerant, colony forming | west |
| Smooth milkweed | <i>Asclepias sullivantii</i> | showy pink flowers, colony forming | east |
| Swamp milkweed* | <i>Asclepias incarnata</i> | requires well-watered conditions, highly attractive to many pollinators | east |
| Tall green milkweed | <i>Asclepias hirtella</i> | rare statewide | east |
| Whorled milkweed | <i>Asclepias verticillata</i> | very fragrant flowers | east |
| Wooly milkweed | <i>Asclepias lanuginosa</i> | state endangered | - |

*Live plants commonly found commercially

Butterfly milkweed, *Asclepias tuberosa*, is one of the more eye-catching milkweeds.





A monarch caterpillar feeds on butterfly milkweed, *Asclepias tuberosa*.

and time making sure plants survive. Hundreds of nectar plant species can be found in Kansas, some much more attractive than others. Groups of plants that are particularly good for monarchs are highlighted on page 3, many of which can be obtained commercially or grown from seed.

How big? How many plants?

No effort is too small. Space can be a limiting factor in urban and suburban environments, but with careful planning and plant selection, it is impressive how much benefit can come from even a small planting. Even if milkweed cannot be a part of the habitat project, simply providing beneficial nectar sources goes a long way to help the monarchs.

Finding plants

Nurseries and garden stores carry a variety of Kansas native nectar plants and would be a good place to start when locating materials for a habitat project. Some milkweed species are readily available, too, with but-



A monarch chrysalis hidden in garden vegetation. Caterpillars often travel quite a distance from the milkweed plants to pupate on other surfaces and vegetation.



Blazing star, *Liatris pycnostachya*, is recommended for eastern Kansas.

terfly milkweed and swamp milkweed being the most common. Seasonal native plant sales are another place to find plants suitable for your region and project. Starting milkweed and nectar plants from seed adds to the variety of plants available for habitat projects. Online outlets, local garden clubs, and native plant enthusiasts are also excellent sources for seeds and native plant information.

Can you identify a monarch?

Monarch *Danaus plexippus*

Adult

When viewed from above, adult monarchs lack the extra white spots just interior to the forewing margin as seen in the queen butterfly at right. Monarchs also lack the diagonal black stripe on the hindwing as seen in the viceroy.



When viewed from below, adult monarchs also lack the extra white spots along the hind wing venation as seen in the queen butterfly. The diagonal black stripe on the hindwing is absent on the monarch but not on the viceroy.



Caterpillar

Monarch caterpillars have only two pairs of tendrils on their bodies while queen caterpillars have three pairs. Viceroy caterpillars mimic bird scat.



Chrysalis

Monarch and queen pupae are very similar, however, a monarch chrysalis has four gold dots along the side base of the pupae while queens have only two gold dots along the base when viewed from the side. A viceroy chrysalis resembles bird scat.



Don't let these monarch look-alikes fool you.

Queen
Danaus gilippus



Viceroy
Limnitis archippus



Online Resources for Kansas Native Plants

De Lange Seed, Inc., Girard, Kansas
620-724-6223 • www.delangeseed.com

Kansas Forest Service, Manhattan, Kansas
785-532-3300 • www.kansasforests.org

Kaw River Restoration Nurseries,
Baldwin City, Kansas
785-842-3300 • www.appliedeco.com

Sharp Bros. Seed Co., Healy, Kansas
800-462-8483 or 620-398-2231 • www.sharpseed.com

Sunflower Farms, Cherryvale, Kansas
620-336-2066

Vinland Valley Nursery, Baldwin City, Kansas
785-594-2966 • www.vinlandvalleynursery.com



Engelmann's milkweed, *Asclepias engelmanniana*, is recommended for western Kansas.



Various echinacea species provide nectar for butterflies and other pollinators.



Asters supply nectar into the fall.

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