



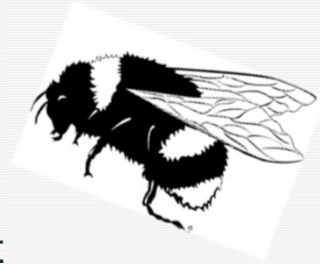
Simple Steps & Benefits of Including Pollinator Habitat on Your Land

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Wildlife Diversity Program





Flight Path



- Why pollinators are important
- How to offer habitat. Steps.
- Benefits of pollinator habitat
- Maintaining what you create
- Resources available

Importance of Pollinators

- ▶ Butterflies, moths, bees, and other pollinators are beneficial insects that provide the ecological service of pollination.
 - ~85% of the world's flowering plants depend on animals, mostly insects, for pollination
 - ~87% of the world's 124 most common cultivated crops (i.e., 70%) are reliant on animal pollinators
 - U.S. has ~100 crops that rely on animal pollination
- Many of the plants that pollinators enjoy also benefit livestock grazing
 - Insect-pollinated forage plants such as alfalfa and clover provide livestock feed
- Contribute to the food web
- Fun to observe in action!



Everybody should have the opportunity to chase a butterfly in their lifetime!

Why they Need YOU!

- Grasslands are one of the most threatened ecosystems in the world.
- In the Great Plains...
 - 50% of shortgrass prairie,
 - 75% of the mixed-grass, and
 - 99% of tallgrass prairie lost.
- Private lands can become part of the solution
 - Lands that are marginal for production can be hi-value for pollinators
 - Precluding the need to list species as E or T can save money and reduce regulations

Basics of Habitat



FOOD



WATER



SHELTER



SPACE

Look at what you have already and think about your goals



How much of an area do you want to improve?

Go big or go home?



Do you have invasive plants you want to reduce or remove?



What is the soil and precipitation like at your site?



Are you patient?

Site assessment and some learning from trail and error. It's okay to start small. For example, we know that monarch butterflies regularly find and use milkweed growing in relatively small flower gardens in the city.

▼ Site Preparation

- Important step not to overlook
- May have to spray, cut, burn, or otherwise deal with weedy, non-native plants first
 - If you use herbicides, may have to wait several months before planting the area
 - Sites currently covered in grass and vegetation can be the most challenging to work with
- In restorations, consider a cover crop first to prep the soil

Depends on herbicide selected. Some may only require you to wait a couple months, others it's recommended you wait more than a year because of residual effects of the herbicide. But, check what you have before deciding to broadcast spray. There may be some great plants already growing that you want to maintain. Cover cropping suppresses unwanted weeds but is a longer timeline. Buckwheat is appealing to pollinators, and I hear is also palatable to cattle.

Time to Plant!

So many possibilities

- Choose native grassland plants that offer
 - Floral resources for nectaring spring through fall
 - Nesting material
 - Structure for cover
- Broadcast seeding or no-till drill
- Fall, winter, or spring can work
- Many of these plant species are also good for livestock forage!

▼ Mixes

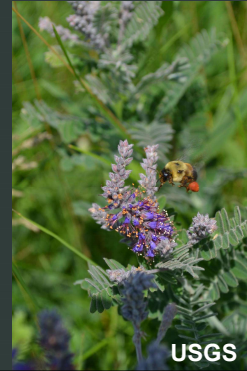
- Greater diversity of species = more pollinators
- Minimum of 9 plant species but 20+ much better
- More forbs than grass in areas targeted for pollinators
- For larger spaces or fields, use a diverse seed mix at 100–150 seeds per ft.²
- Consider supplementing seed mix with green plants
 - Some seeds may be eaten, washed away, or just won't germinate

Grass can sometimes overtake areas that do not already have a good mixture of forbs present, so in areas being enhanced or restored, choose a mixture preferably more than half forbs



Host Plants

- Violets for Regal Fritillaries
 - Resilient once established in sun or shade
 - Rotate hayed areas within a larger tract to provide refuge
 - Avoid burning in May when larva procure violets
- Big and Little Bluestems for Iowa Skippers
- Leadplant for Underwing Moths
 - Hi protein for grazers
- Milkweeds for Monarchs
 - Any species of milkweed will do



Have some in areas for pollinators; I put together a list of host plants for Nebraska's at-risk pollinators that's available online. I'll share the link at the end of my presentation.

More than a dozen species of milkweed to choose from...

Butterflyweed



www.plantsforpollinators.com

Swamp milkweed



wildseedproject.net

Whorled milkweed



www.flickr.com/photos/wackybadger

▸ Daisy fleabanes (*Erigeron* sp.)



Late spring blossoms, prefers full sun and can grow in dry conditions

▸ Prairie clovers (*Dalea* spp.)



arapahoe.extension.colostate.edu



www.rawpixel.com

Long blooming period. Some species have white, pink, or purple blooms. Popular with the bumble bees like the American Bumble Bee.

▸ Hoary vervain (*Verbena stricta*)



www.stockseed.com



© RestoringTheLandscape.com



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You'll also hear people call this plant hoary verbena. It grows in full sun and also has a long blooming period. Keep some around for pollinators.

▸ Ironweed



www.flickr.com/photos/tedsla



www.blazingstargardens.com

Tend to bloom later in summer in full to partial sun. The larvae of at-risk underwing moth species like the Married and Whitney underwings will feed on leadplant. It also supports fall migration of the monarch. Milkweeds don't get them to MX!

▸ Thistles...yes, some are good.

- NE has 5 native thistles that are NOT noxious weeds
- NEweed.org
 - Thistles of Nebraska



Tall thistle

Thistles produce copious amounts of nectar. Can identify natives by using the flow chart/key at NEweed.org. Be careful when you spray the non-native thistles that there aren't actively foraging fritillaries on them.

▸ Prairie Junegrass
(*Koeleria macrantha*)

- A cool season grass that offers nesting material/structure for native bees
- Good cattle forage



Nebraska Pollinator Plan

CONSERVATION STRATEGY FOR MONARCHS (*DANAUS PLEXIPPUS*) AND AT-RISK POLLINATORS IN NEBRASKA



"The largest habitat recovery initiative in American history is needed to plant new and enhance existing populations of milkweeds and other native wildflowers for the recovery of monarch butterflies"
(Nabhan et al. 2015)

Table of Contents

Purpose.....	4
PART I: Need for Pollinator Conservation.....	4
PART II: Conservation Goals for Monarchs and Other Pollinators.....	4
PART III: Background and Life History Notes.....	9
Importance of Animal-assisted Pollination to Agriculture and Business.....	9
Life Cycle of the Monarch.....	10
Migration of Monarch Butterflies.....	11
Habitat Requirements of Monarchs.....	11
Threats to Monarchs.....	12
At-risk Pollinators in Nebraska.....	17
PART IV: Habitat Conservation.....	28
Conservation Actions and Management Recommendations.....	28
Actions and Opportunities on State-owned Properties.....	29
Actions and Opportunities on Other Public Lands.....	29
Actions and Opportunities on Privately-owned Lands.....	30
PART V: Education and Outreach in Support of Pollinator Conservation.....	32
PART VI: Adaptation of Policy to Positively Impact Pollinators.....	33
PART VII: Research and Monitoring to Inform Decision-Making.....	34
PART VIII: Impacts of Changing Climate on Pollinators.....	35
PART IX: Native Plants to Attract Pollinators.....	36
PART X: Agency Responsibilities.....	37
PART XI: Partnerships for Large-Scale Pollinator Conservation.....	38

The purpose of the plan is to collaborate with stakeholders to support populations of monarchs and other at-risk pollinators, as well as their ecological services, in Nebraska.

**SUPPLEMENTARY APPENDIX 1: List of Plants Native to
Nebraska for Pollinators**

Herbs/forbs:

Arum Family

Common name	Scientific name	Sun exposure ^a	Soil moisture ^b	Soil description	Height (ft)	Bloom period	Notes
Jack in the pulpit	<i>Arisaema triphyllum</i>	S-P	A-W	sand, loam, clay	1-2	Mar-Jun	Pulpit-like flower provides red berries in late summer; woodland plant
bearded beggarticks	<i>Bidens aristosa</i>	P-F	A-W	various soils except very sandy	1-4	Jul-Sept	Flowers yellow; 2-pronged bur

outdoornebraska.gov/MonarchConservationPlan/

I included an appendix in the pollinator plan to make suggestions for native plants to attract pollinators. Plants are listed by Family and Scientific name under growth habit such as forbs, graminoids, shrubs, or trees. I also included each plant's sun, soil, and moisture preferences, growth height, blooming period, and descriptive comments. Plants that are Tier 1 are indicated with a superscript. Larval host plants for at-risk pollinators are given in a separate table in the pollinator plan. The appendix is 88 pages long and includes over 225 plants but is still only a sample of native plants appropriate for pollinators!

Benefits of Pollinator Habitat

Yummy fruits, vegetables, and nuts

Soil stabilization and reduced erosion

Built-in drought management

Forage for livestock

Improved biodiversity through grazing

Carbon sequestration to help the environment

Halt further grassland loss

Visually pleasing

1,000 different kinds of plants that humans use for items such as food, spices, medicines, and fabrics

\$20 billion in added crop value! Whoa!

You can be the Jones everyone looks up to!

I can barely fit all the benefits on 1 slide! Long roots of grassland plants reduce soil erosion; those long roots allow native prairie plants to generally be better adapted to low and variable precipitation. Dry years are going to be challenging, but if you have a lot of vegetation that can tolerate drier conditions, that can help you come up with your drought plan. Visually pleasing to see the native forbs once they are established and to see the pollinators they attract.

▼ Maintaining Your Investment

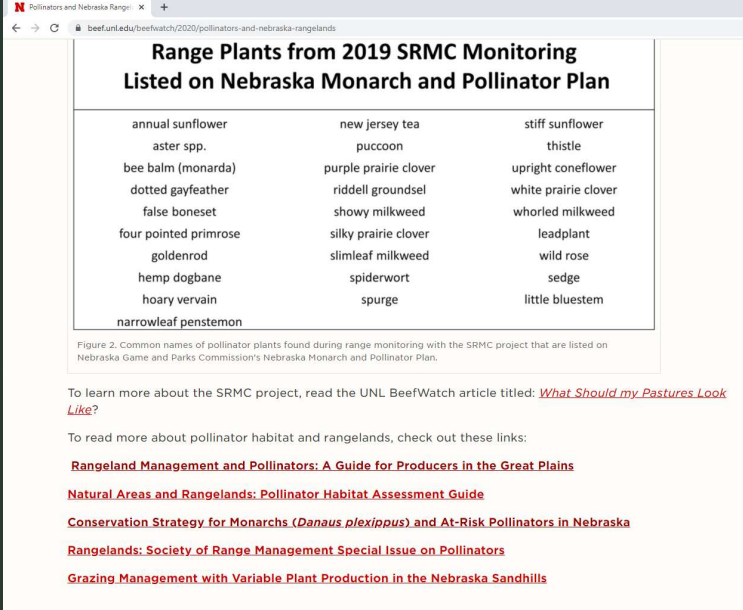
- Regular maintenance is HIGHLY recommended
 - Prescribed fire
 - Strategic grazing (ex. short duration, high intensity in spring or fall)
 - Opportunity for grazing practices to improve biodiversity
 - Mowing/haying (aim to avoid peak times for monarch larvae)
 - Targeted herbicide spraying if necessary
- Minimize drift of pesticides adjacent/near crops

Monarch caterpillars are most active in the summer, so mowing in late spring and again in fall is better.

Resources

beef.unl.edu

Search word:
"pollinator"



Range Plants from 2019 SRMC Monitoring Listed on Nebraska Monarch and Pollinator Plan

annual sunflower	new jersey tea	stiff sunflower
aster spp.	puccoon	thistle
bee balm (monarda)	purple prairie clover	upright coneflower
dotted gayfeather	riddell groundsel	white prairie clover
false boneset	showy milkweed	whorled milkweed
four pointed primrose	silky prairie clover	leadplant
goldenrod	slimleaf milkweed	wild rose
hemp dogbane	spiderwort	sedge
hoary vervain	spurge	little bluestem
narrowleaf penstemon		

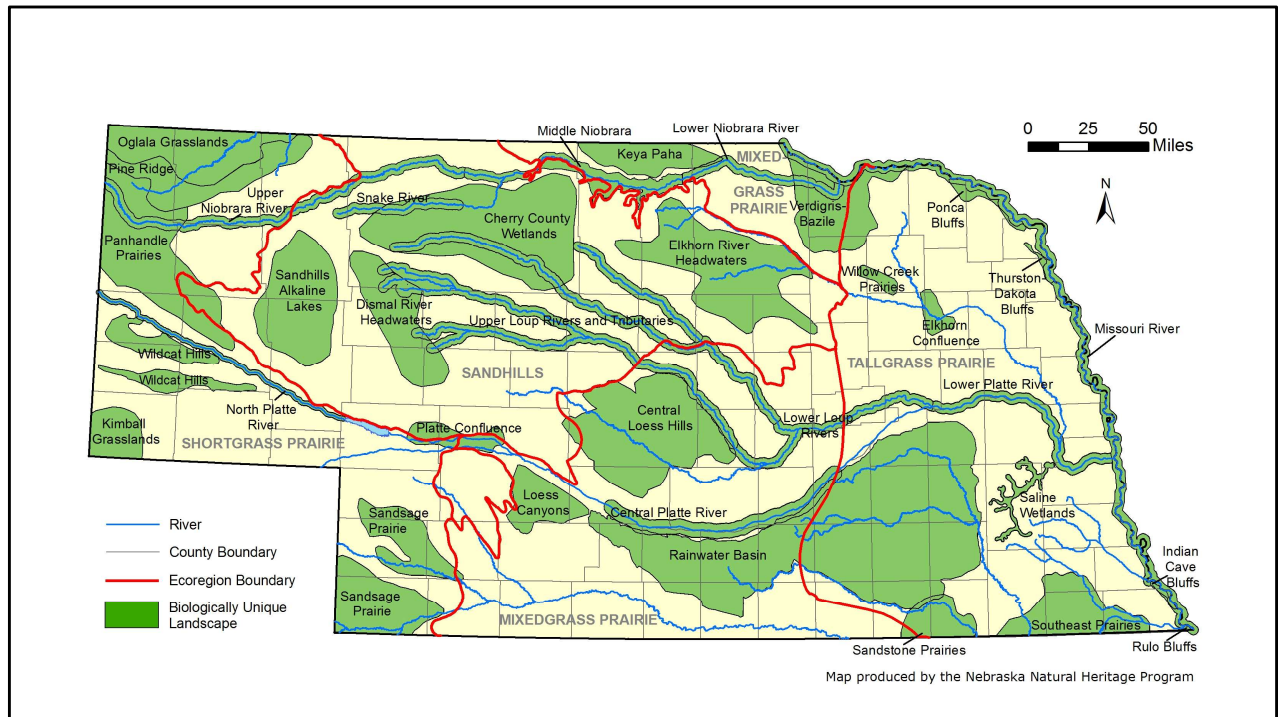
Figure 2. Common names of pollinator plants found during range monitoring with the SRMC project that are listed on Nebraska Game and Parks Commission's Nebraska Monarch and Pollinator Plan.

To learn more about the SRMC project, read the UNL BeefWatch article titled: [What Should my Pastures Look Like?](#)

To read more about pollinator habitat and rangelands, check out these links:

- [Rangeland Management and Pollinators: A Guide for Producers in the Great Plains](#)
- [Natural Areas and Rangelands: Pollinator Habitat Assessment Guide](#)
- [Conservation Strategy for Monarchs \(*Danaus plexippus*\) and At-Risk Pollinators in Nebraska](#)
- [Rangelands: Society of Range Management Special Issue on Pollinators](#)
- [Grazing Management with Variable Plant Production in the Nebraska Sandhills](#)

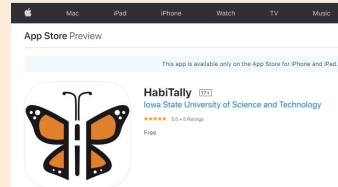
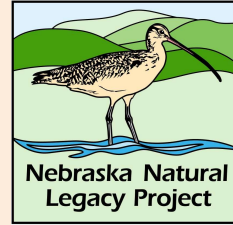
Sandhills Rangeland Monitoring Cooperative - SRMC



The Nebraska Natural Legacy Project may be able to provide up to 75% cost-share for habitat enhancements in any of these BULs..

Lots of Pollinator Resources

- Read, investigate, & learn
- Go to workshops and seminars
- Ask for support
- Consider contributing data
 - HabiTally

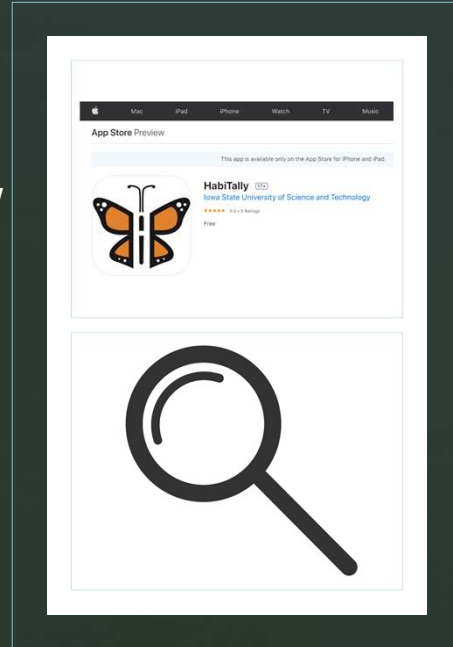


Natural Resources Conservation Service

In recent years, more and more pollinator resources and programs have been developed. Lots to digest.

Links:

- <http://OutdoorNebraska.gov/MonarchConservationPlan/>
- <https://apps.apple.com>
 - Search “HabiTally”



Make your milkweed count for Nebraska. We want to beat our neighboring states!

Nebraska Monarch Pollinator Initiative

and



- Contacts**
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THANK YOU!

Two of my staff people who would be happy to talk with you about your pollinator projects and help direct you toward resources.