

Pollinator Sun Low Meadow 38-131

Updated: 2022

Areas of residential properties with direct, unfiltered sunlight for 6 hours or more each day and dry or slightly mesic (in between dry and wet) soils. These soils should be well- to moderately well-drained, good infiltration, and not have standing water for greater than 24 hours. Due to a higher cost than some native seed mixes the mix is recommended for plantings up to three acres in size.



This mix was a collaboration with Ecologist Stephen Thomforde. Partners also include stakeholder collaboration among Non-profits, Seed vendors, SWCD, Tribal Governments, Consultants, County and Cities. (see stakeholder list on [website](#))

Common Name	Scientific Name	Rate (lb/ac)	% of Mix (by weight)	% by Seed	Seeds/ sq ft
side-oats grama	<i>Bouteloua curtipendula</i>	0.91	16.53%	3.54%	2.00
blue grama	<i>Bouteloua gracilis</i>	0.50	9.11%	13.02%	7.35
kalm's brome	<i>Bromus kalmii</i>	0.85	15.50%	4.43%	2.50
Bicknell's sedge	<i>Carex bicknellii</i>	0.16	2.92%	1.77%	1.00
nodding wild rye	<i>Elymus canadensis</i>	0.50	9.16%	1.70%	0.96
junegrass	<i>Koeleria macrantha</i>	0.19	3.47%	24.81%	14.00
little bluestem	<i>Schizachyrium scoparium</i>	0.50	9.09%	4.87%	2.75
prairie dropseed	<i>Sporobolus heterolepis</i>	0.34	6.20%	3.54%	2.00
	Grasses Subtotal	3.95	71.98%	57.69%	32.56
common yarrow	<i>Achillea millefolium</i>	0.01	0.11%	0.73%	0.41
Prairie Wild Onion	<i>Allium stellatum</i>	0.06	1.13%	0.44%	0.25
Canada anemone	<i>Anemone canadensis</i>	0.04	0.74%	0.21%	0.12
long-headed thimbleweed	<i>Anemone cylindrica</i>	0.02	0.38%	0.35%	0.20
whorled milkweed	<i>Asclepias verticillata</i>	0.02	0.45%	0.18%	0.10
white prairie clover	<i>Dalea candida</i>	0.31	5.69%	3.86%	2.18
purple prairie clover	<i>Dalea purpurea</i>	0.38	6.84%	3.67%	2.07
tall cinquefoil	<i>Drymocallis arguta</i>	0.06	1.14%	9.36%	5.28
wild bergamot	<i>Monarda fistulosa</i>	0.12	2.27%	5.69%	3.21

large-flowered beard tongue	<i>Penstemon grandiflorus</i>	0.10	1.77%	0.89%	0.50
black-eyed susan	<i>Rudbeckia hirta</i>	0.06	1.14%	3.74%	2.11
gray goldenrod	<i>Solidago nemoralis</i>	0.01	0.23%	2.45%	1.38
upland white aster	<i>Solidago ptarmicoides</i>	0.06	1.14%	2.60%	1.47
skyblue aster	<i>Symphyotrichum oolentangiense</i>	0.08	1.43%	4.08%	2.30
smooth aster	<i>Symphyotrichum laeve</i>	0.06	1.14%	2.23%	1.26
hoary vervain	<i>Verbena stricta</i>	0.06	1.13%	1.13%	0.64
heart-leaved alexanders	<i>Zizia aptera</i>	0.09	1.65%	0.71%	0.40
	Forbs Subtotal	1.54	28.38%	42.31%	23.88
	Total	5.49	100.36%	100.00%	56.44

Bareroot plants or plugs to supplement your planting

Scientific Name	Common Name	Bloom Time	Sun/Shade	Range	Notes
<i>Carex eburnea</i>	Ivory Sedge	e/m	Part Shade, Shade	NE,SW,SE,NE	
<i>Carex pensylvanica</i>	Pennsylvania sedge	e/m	Sun, Part Shade	NE,SW,SE,NE	
<i>Danthonia spicata</i>	poverty oats	m/l	Sun, Part Shade	NE, NW	
<i>Allium canadense</i>	Wild garlic	m	Sun	SE, SW, NE	
<i>Allium stellatum</i>	Prairie onion	m	Sun	NE,SW,SE,NE	
<i>Anemone canadensis</i>	Canada anemone	e	Sun, Part Shade	NE,SW,SE,NE	Aggressive spreader; good ground cover
<i>Anemone cylindrica</i>	Thimbleweed	m	Sun, Part Shade	NE,SW,SE,NE	
<i>Anemone patens</i>	pasqueflower	e	Sun, Part Shade	NW,SW,SE	
<i>Anemone virginiana</i>	Thimbleweed	m	Part Shade	NW,SW,SE,NE	

<i>Antennaria neglecta</i>	pussytoes	e/m	Sun, Part Shade	NW,SW,SE,NE	
<i>Aquilegia canadensis</i>	Wild columbine	e/m	Part Shade, Shade	NW,SW,SE,NE	
<i>Asclepias tuberosa</i>	butterfly milkweed	m/l	Sun	SE, NE	
<i>Campanula rotundiflora</i>	Harebell	m/l	Sun, Part Shade	NW,SE, NE,	
<i>Castilleja coccinea</i>	Indian paintbrush	e/m	Part Shade	NW,SE,NE	
<i>Castilleja sessiliflora</i>	Downy painted cup	e/m	Sun	NW,SW,SE	
<i>Chamaecrista fasciculata</i>	Partridge pea	m/l	Sun, Part Sun	SW, SE	
<i>Claytonia virginica</i>	spring beauty	e/m	Part Shade	NE	
<i>Dicentra cucullaria</i>	Dutchmen's breeches	e/m	Part Shade, Shade	SE, SW, NE	
<i>Enemion biternatum</i>	False rue anemone	e/m	Part Shade, Shade	SE	
<i>Erigeron pulchellus</i>	Robin's plantain	e/m	Part Shade, Shade	SE,NE	
<i>Fragaria virginiana</i>	Wild strawberry	e/m	Sun, Part Shade	NW,SW,SE,NE	
<i>Festuca subverticillata</i>	0				
<i>Galium boreale</i>	Northern bedstraw	m/l	Sun, Part Shade	NW,SW,SE,NE	
<i>Gentiana puberulenta</i>	Downy gentian	l	Sun	NW, SW, SE	
<i>Geranium maculatum</i>	wild geranium	e/m	Sun, Part Shade, Shade	NW,SW,SE,NE	
<i>Geum triflorum</i>	Prairie smoke	e/m	Sun	NW,SW,SE, NE	
<i>Heuchera richardsonii</i>	Alumroot	e/m	Sun, Part Shade	NW,SW,SE,NE	
<i>Liatris aspera</i>	Rough blazingstar	m/l	Sun, Part Shade	NW,SW,SE,NE	
<i>Liatris ligulistylis</i>	Meadow blazingstar	m/l	Sun	NW,SW,SE,NE	
<i>Lithospermum canescens</i>	Hoary puccoon	e/m	Sun, Part Shade	NW,SW,SE,NE	

<i>Mertensia virginica</i>	Virginia Blue Bells	e/m	Part Shade, Shade	SE	
<i>Monarda punctata</i>	Spotted bee balm	m/l	Sun	SE	
<i>Pedimelum esculentum</i>	Prairie turnip	e/m	Sun	NW,SW, SE	
<i>Pycnanthemum virginianum</i>	Virginia mountain mint	m/l	Sun, Part Shade	NW,SW,SE,NE	
<i>Rosa arkansana</i>	Prairie rose	m	Sun, Part Shade	NW,SW,SE,NE	
<i>Sanguinaria canadensis</i>	Bloodroot	e	Part Shade, Shade	NW,SW,SE,NE	
<i>Sisyrinchium campestre</i>	Blue-eyed grass	e/m	Sun	NW,SW,SE,NE	
<i>Symphotrichum oblongifolium</i>	Smooth Blue Aster	l	Sun	NW,SW, SE	
<i>Symphotrichum novae-angliae</i>	New England aster	l	Sun, Part Shade	NW,SW,SE,NE	optional
<i>Symphotrichum sericeum</i>	Silky aster	m/l	Sun, Part Shade	NW, SW, SE	
<i>Thalictrum dasycarpum</i>	Purple meadow rue	m	Sun, Part Shade	NW,SW,SE,NE	
<i>Thalictrum thalictroides</i>	Rue anemone	e/m	Part Shade, Shade	SE	
<i>Tradescantia bracteata</i>	Prairie Spiderwort	m	Sun, Part Shade	NW,SW,SE	
<i>Tradescantia occidentalis</i>	Western Spiderwort	m/l	Sun, Part Shade	NW, SE	
<i>Viola palmata var. pedatifida</i>	Prairie violet	e/m	Sun, Part Shade	NW,SW,SE	
<i>Viola pedata</i>	Birdfoot violet	e/m	Sun, Part Shade	SE	
<i>Viola spp.</i>	Violets	e/m	Part Shade	NW,SW,SE,NE	

*Plants look best grouped in 3's and 5's if you want a more manicured look.

early

Mid

Late

Pollinator Sun Low Meadow 38-131 Seed Mix Guidance

Seed mix name: Pollinator Sun Low Meadow
Seed Mix 38-131

Geographic area: Minnesota, Statewide

Year of development: 2022

Year/s of update: 2022

Status (Standard or Pilot mix): Pilot

Primary and Secondary Functions:

Primary – Pollinator habitat

Secondary – Carbon sequestration, emission reductions, songbird and wildlife habitat, clean water (water filtration, recharging groundwater, reduced nutrient and sediment erosion), improved soil health

Similar State Mixes: Pollinator Shade Low Meadow

Suitable Site Conditions: Areas of residential properties with direct, unfiltered sunlight for 6 hours or more each day and dry or slightly mesic (in between dry and wet) soils. These soils should be well- to moderately well-drained, good infiltration, and not have standing water for greater than 24 hours. Due to a higher cost than some native seed mixes the mix is recommended for plantings up to three acres in size.

Site Planning: For residential plantings it is recommended to check city ordinances for any restrictions for vegetation height. It is also good to consider the residential context for the planting when considering its location and size and to incorporate “cues for care” into the landscape such as fences, walkways, edging, walls, signs and other features that create a sense of order and explanation for the project location.

How to Modify for Site Conditions and Goals: This mix includes a list of supplemental plants that can be added as plugs (seedlings germinated and grown in trays similar to garden 6-packs, but with a more developed root system), bareroot, or larger container individuals to increase [diversity](#) (selecting a wide variety of plants from different families and functional groups or guilds) or fit microclimates such as areas with additional shade or moisture. These species are recommended for this type of installation as they tend to have lower success from seed.

Installation Methods: Two methods of installation can be conducted, either preparing and seeding into a prepared seedbed or seeding into existing poor-quality turf with exposed bare soil. It should be noted that seeding into existing sod will result in some Kentucky bluegrass and other turf grasses persisting and is not successful when there is a dense sod established.

Prepared Seedbed – There are different methods for removing existing sod prior to seeding including the use of a sod cutter or sod kicker for removal or using clear plastic or cardboard to suppress vegetation for a season. See the Xerces Society guide to [organic site preparation methods](#) for more information. - Planting dates will vary depending on the weather in a particular year and where the planting site is located (e.g., northern Minnesota versus southern Minnesota). Consult with native seed suppliers or restoration specialists to determine the best planting dates for that year. Seeding should be conducted in late fall (when soil temperatures are consistently below 50 degrees F, generally after



October 15th, until soils are frozen) but can also be conducted in the spring or early summer. This may result in delayed establishment of some forbs that need a winter freeze-thaw cycle to break their seed coat. Once existing vegetation is controlled, the soil surface should be lightly loosened, no deeper than 1/8" to ¼", either using cover crops or mechanical methods such as a rake or drag implement prior to seeding. If you are planning to seed directly into the temporary covers, make sure to start with a cut rate (half amount) (20lbs/ac or less of oats) so there is enough exposed soil for good seed to soil contact when broadcasting native seeds. If there is not enough soil exposure, an additional herbicide application or haying of the covers may be needed prior to seeding to maximize success. Seed should be broadcast on top of the soil vs. being installed with a drill and can be lightly raked in. Rain or snowfall will then help create seed to soil contact. A light layer of prairie straw or weed free straw can help with moisture retention and germination.

Poor Quality Turf – When seeding into poor quality turf the lawn should be mowed as low as possible prior to seeding. The soil surface should also be harrowed or raked to loosen the upper surface. Make sure some of the soil surface is exposed so the seeds can get good seed to soil contact. Seeding should be conducted in the same manner as for a prepared seedbed.

Management Methods – The ideal management for this seed mix is to conduct periodic mowing and removal of clippings to replicate historic grazing patterns and to help remove excess nitrogen, which can favor undesirable weeds. Mowing frequency will depend on the preferred aesthetic, species selected, location, and project placement. "Spot mowing" is recommended to allow for flowers to bloom and replicate grazing patterns. Mowing should not be conducted before Mother's Day as there are many pollinators that nest in standing stems of flowers or grasses and emerge throughout the growing season in response to warming air temperatures and photoperiod cycles (day and night lengths). Mowers should be raised as high as they go, ideally 4 – 6 inches, though weed whips, sickles or scythes can also be used. The management of individual plantings should be tailored to the neighborhood context and homeowner's judgement. Mowing is a good way to control some species such as thistles, but other methods are needed to control species such as Poison Hemlock, Common Tansy, Leafy Spurge, Spotted Knapweed, Wild Carrot and Wild Parsnip. If there are large areas of these species, it would be helpful to minimize the disturbance of site preparation. There are helpful guidelines in the manual [Restoration-Guide-Invasive-Perennial-to-Conservation-Prairie.pdf \(nature.org\)](#).

Educational Signs – Including signs in front of plantings is encouraged to communicate the intent of the planting and encourage other homeowners to take on similar projects. Some example signs can be found [here](#).

What to Expect in Year 1: During year one of growth many native grasses and flowers will remain about one to three inches tall while others can grow to maturity depending on the site conditions. The mowing/clipping will play an important role for managing weeds and preventing tree seedlings from taking over. It will also help the native plant seedlings to receive sufficient water and sunlight. Mowing may need to be more frequent to keep weeds below eight inches tall. The planting may have a slightly weedy appearance this first year.

(IMAGE)

What to Expect in Year 2: During year two the native grasses and flowers may reach their mature height and some of them may flower. Spot mowing will still play a key role in managing weeds and allowing seedlings to grow. Hand-pulling of select weeds and tree seedlings is also beneficial.

(IMAGE)

What to Expect in Year 3 and Beyond: By the end of year three, most of the native plants will be nearing maturity and should flower. There may be some species that are slow to establish and may not show up for several years. Hand-pulling tree seedlings is also beneficial throughout the life of the planting to maintain a meadow appearance.

Problems Solving

Poor Establishment After Year 1 – It is often difficult to determine if a seeding is successful during the first year as establishment may vary depending on weather conditions, site conditions like soils and slope, climate patterns, and individual species development (some species are slower to develop than others). It is typically best to wait until the second year to conduct any corrective actions.

Poor Establishment After Year 2 – If native plant seedlings are not establishing about every two feet it may be necessary to inter-seed some species into the planting. If this is a concern it is recommended to have a professional inspect the site and recommend what species could be supplemented. Inter-seeding should be conducted in spring or late fall and can be conducted by lightly loosening the soil surface with a rake followed by broadcast seeding. Make sure some of the soil surface is exposed so the seeds can get good seed to soil contact. Some light packing with a garden roller or other methods may be beneficial.

High Annual and Biennial Weed Competition – Typically, annual and biennial weed competition is not a big problem in plantings as they are short-lived. Mowing to control these species should be conducted before seed is set so they do not add additional seed into the planting. Even if mowing cannot be achieved, these species typically drop out of the planting or lessen in density as the planting advances in age and some like foxtail are also providing excellent food for wildlife.

High Perennial Weed Competition – Dense establishment of perennial species can be a problem as it can prevent the establishment of forbs. It is recommended to clip back undesirable perennial species low to the ground and smother them if possible. They can also be dug out, but this may cause disturbance to native plant seedlings nearby, requiring some reseeding.

Low Forb Diversity After Year 3 – If grasses and sedges are establishing successfully, but there is a lack of forbs it is recommended to conduct inter-seeding of additional forbs in late fall. Plugs or bare-root flowers can also be planted in early to mid-spring or late fall when there is good soil moisture.

Animal Grazing- In small projects and often in residential areas, browsing by deer and/or rabbits can impact native plant establishment. Some grazing can be prevented by using natural grazing deterrents that are applied to plants and/or the ground surrounding plants. These natural deterrents emit an odor or make plants unpleasant for these herbivores. Wire cages or fencing can also be placed to prevent grazing while plants establish. Once the planting is established it is better able to withstand grazing pressure.