

DRAFT

*Pollinator*  
RESOURCE VALUES

for *Upland* & *Wetland* Prairies



This publication features information on the value to native pollinators of plant species found in upland and wetland native prairie plant communities in Minnesota. It is designed to aid management and restoration of prairies, highlighting the role of native prairie communities in supporting Minnesota's insect pollinators.

Almost 90% of the world's flowering plant species are pollinated by animals. Vertebrates such as birds and bats are important pollinators in many parts of the world, but almost all of Minnesota's animal pollinators—especially in the prairie regions—are insects. Minnesota is home to about 400 species of native bees, about 2,500 species of native butterflies and moths, and many other native insect pollinators such as wasps, flies, and beetles. These insects support our native plants and agricultural crops, but they are increasingly challenged by habitat loss, habitat degradation, pesticide use, and other issues.

Flowering plants and insect pollinators evolved together: wherever there are flowering plants there are insect pollinators. The native plant communities of Minnesota support diverse communities of native insect pollinators, with each plant community having its own suite of plant species and characteristic pollinators. In the highly altered landscape of present-day Minnesota the surviving native plant communities are critical reservoirs of native pollinator diversity (see remaining prairie map, on back cover). They are also the benchmark for native pollinator habitats.

The lists in this booklet are based on plant lists for prairie native plant community classes originally published in field guides describing the Minnesota Department of Natural Resources' (MNDNR) statewide native plant community classification. The plant lists were generated from data recorded in representative vegetation plots in native prairies across Minnesota, and supplemented here with information on the value of each plant for native insect pollinators. Each list includes:

- native plant community class code and name
- characteristic native plants, sorted by life-form
- frequency of each plant in the vegetation plots
- average percent cover (as a range) of each plant in the vegetation plots
- primary agent of pollination (animal, wind, or water)
- information on nest value of plant for pollinators
- blooming period (early, mid, or late growing season)
- supplemental notes on pollinator nest values, plant habitat and plant range

More information about the prairie communities and plant lists appears in descriptions and fact sheets in the MNDNR publications *Field Guide to the Native Plant Communities of Minnesota: The Prairie Parkland and Tallgrass Aspen Parklands Provinces* and *Field Guide to the Native Plant Communities of Minnesota: The Eastern Broadleaf Forest Province*. Fact sheets and other information about the MNDNR's native plant community classification are also available online at [mndnr.gov/npc/classification.html](http://mndnr.gov/npc/classification.html). Plant lists supplemented with pollinator values are being developed for 77 of the 104 native plant community classes described in the MNDNR's classification and will be available on the MNDNR website in summer 2014.

The Minnesota DNR has supported pollinators for many years through conservation and management of native plant communities such as the prairies featured in this booklet. Plant lists for prairies and other plant communities will continue to be updated as more survey and research data become available on the ecological value of native plant communities for pollinators. For additional information about the MNDNR's work with native insect pollinators, please contact:

Crystal Boyd, MBS Bee Specialist  
[crystal.boyd@state.mn.us](mailto:crystal.boyd@state.mn.us)  
651-259-5699

Robert Dana, MBS Butterfly & Moth Specialist  
[robert.dana@state.mn.us](mailto:robert.dana@state.mn.us)  
651-259-5086

## Things to Consider in Using this Booklet

- The plant lists in this booklet are intended to help land managers assess the value of a native prairie or a prairie restoration for pollinators. These lists complement other technical resources that provide guidance on the mechanics of managing prairies or creating restorations for conservation benefit. Conservation management of native prairie and designing prairie restorations involve many considerations. Users are encouraged to consult specialists in native prairie and pollinator ecology and conservation if questions arise.
- In using these plant lists to aid prairie and pollinator conservation, the first consideration is whether native prairie (or any other native plant community) is present at your site. The MNDNR maintains several sources of spatial data for native prairies and other native plant communities, available for download at [deli.dnr.state.mn.us](http://deli.dnr.state.mn.us). These include:
  - MN Biological Survey Native Plant Communities
  - MN Biological Survey Railroad Rights-of-Way Prairies
  - MNDNR Relevé (Vegetation Plot) Sites (forthcoming, summer 2014)If there are no documented prairies or other native plant communities at your site but native plants are present, field keys and other information in the MNDNR Field Guides to Native Plant Communities of Minnesota can help in identifying the plant community based on plant species and other site characteristics.
- For sites that support native prairie, an important consideration is the quality of the prairie. The MNDNR's native prairie ranking guidelines, available at [mndnr.gov/npc/classification.html](http://mndnr.gov/npc/classification.html), have detailed criteria for assessing native prairie quality.
- If your site supports good quality native prairie, it is likely providing the best available habitat for native prairie pollinators and should not be altered by introducing new plants for pollinators. Conservation activities such as prescribed fire, mechanical control of woody invaders, and prescribed grazing are the best tools for maintaining the quality and composition of the prairie and its value to pollinators.
- If your site has degraded native prairie it will usually improve with the same management activities used to maintain good quality prairie. If the prairie is missing many of the plants characteristic of the community even after several seasons of conservation management, it may be appropriate to re-introduce selected species, guided by the relevant prairie community list in this publication. For a given prairie community, not every species in these lists will be present at every site: the goal is to rehabilitate the prairie to reasonable species composition, including appropriate representation and cover of different life-form groups (grasses, forbs, shrubs, etc.) and a range of insect-pollinated species with blooming periods covering the full growing season from early to late.
- For sites where the native vegetation has been destroyed and native plants are no longer present, several sources of information can help in determining the most appropriate native plant community to guide habitat restoration, considering historic vegetation, parent material and soils, topographic position, slope and aspect, and plant community range:
  - maps of historic vegetation for Minnesota
  - Public Land Survey vegetation records
  - MNDNR native plant community records for similar sites nearby or in your ECS Subsection (a map of ECS Subsections is available at [mndnr.gov/ecs/index.html](http://mndnr.gov/ecs/index.html))
  - MNDNR Field Guides to Native Plant Communities of Minnesota
- If the most appropriate plant community to restore to your site is prairie, use the corresponding plant community list from this guide to select plants for the restoration. As with rehabilitation of degraded prairies, the goal is to develop a restoration with appropriate representation and cover of different life-form groups (grasses, forbs, shrubs, etc.) and a range of insect-pollinated plant species with blooming periods covering the full growing season from early to late.
- In all cases, land managers should strive to maintain diverse floral resources for pollinators throughout the growing season. Management activities like burning, mowing, and grazing should always leave a substantial part of every major habitat in a site untreated, and should be staged to allow for recolonization of treated units by insects from untreated units. Managers should also evaluate sites for appropriate nesting habitat and potential pesticide exposure.
- Guidelines for selecting sources of native plant species material for rehabilitation or restoration are available in MNDNR Operational Order 124 (Plant Material Standards for Native Plant Community Restoration).



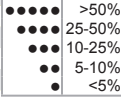
# Northern Dry Prairie (UPn12)

Forbs, Ferns & Fern Allies	species frequency in NPC (%)	species cover (when present)	animal pollination?	pollinator nest value	blooming period
Purple prairie clover ( <i>Dalea purpurea</i> )	78	●	✓		Mid
Heath aster ( <i>Aster ericoides</i> )	76	●	✓		Mid-Late
Harebell ( <i>Campanula rotundifolia</i> )	74	●	✓		Mid
Stiff sunflower ( <i>Helianthus pauciflorus</i> )	69	●●	✓	✓	Mid-Late
Dotted blazing star ( <i>Liatris punctata</i> )	69	●	✓	✓ (?)	Late
Gray goldenrod ( <i>Solidago nemoralis</i> )	67	●	✓		Late
Hoary puccoon ( <i>Lithospermum canescens</i> )	67	●	✓		Early
Prairie wild onion ( <i>Allium stellatum</i> )	66	●	✓		Mid-Late
Northern bedstraw ( <i>Galium boreale</i> )	59	●●	✓ (?)		Early-mid
Hairy golden aster ( <i>Chrysopsis villosa</i> )	57	●	✓		Early-mid to Mid
Stiff goldenrod ( <i>Solidago rigida</i> )	55	●●	✓		Mid-Late
Long-headed thimbleweed ( <i>Anemone cylindrica</i> )	55	●	✓		Early-Mid
Bastard toad-flax ( <i>Comandra umbellata</i> )	55	●	✓		Early-Mid
Missouri goldenrod ( <i>Solidago missouriensis</i> )	53	●●	✓		Mid-Late
Alumroot ( <i>Heuchera richardsonii</i> )	53	●	✓		Early-Mid
Pasque-flower ( <i>Anemone patens</i> )	52	●	✓		Early
Daisy fleabane ( <i>Erigeron strigosus</i> )	50	●	✓		Mid
Tall cinquefoil ( <i>Potentilla arguta</i> )	50	●	✓		Mid
White sage ( <i>Artemisia ludoviciana</i> )	50	●	wind (?)		
Prairie smoke ( <i>Geum triflorum</i> )	50	●	✓		Early
Yarrow ( <i>Achillea millefolium</i> )	48	●	✓		Early-mid to Mid-Late
Silky aster ( <i>Aster sericeus</i> )	47	●●	✓		Late
Rough blazing star ( <i>Liatris aspera</i> )	43	●	✓	✓ (?)	Late
Prairie turnip ( <i>Pediomelum esculentum</i> )	41	●	✓ (?)		Early-Mid
White prairie clover ( <i>Dalea candida</i> )	41	●	✓		Mid
Field pussytoes ( <i>Antennaria neglecta</i> or <i>A. neodioica</i> )	41	●	✓ (?)		Early
Smooth blue aster ( <i>Aster laevis</i> )	40	●	✓		Mid-Late
Flodman's thistle ( <i>Cirsium flodmanii</i> )	38	●	✓	✓	Mid
Grooved yellow flax ( <i>Linum sulcatum</i> )	36	●	✓		Early-Mid to Mid
Tall wormwood or Tarragon ( <i>Artemisia campestris</i> or <i>A. dracunculus</i> )	36	●	wind (?)		
Field chickweed ( <i>Cerastium arvense</i> )	36	●	✓		Early-Mid
Bearded birdfoot violet ( <i>Viola pedatifida</i> )	34	●	✓		Early
Virginia ground cherry ( <i>Physalis virginiana</i> )	33	●	✓		Mid
Toothed evening primrose ( <i>Calylophus serrulatus</i> )	33	●	✓		Early-Mid
Narrow-leaved purple coneflower ( <i>Echinacea angustifolia</i> )	24	●	✓		Mid
Wild bergamot ( <i>Monarda fistulosa</i> )	24	●	✓		Mid
Blanketflower ( <i>Gaillardia aristata</i> )	24	●	✓		Early-Mid
Slender beard tongue ( <i>Penstemon gracilis</i> )	24	●	✓		Early-Mid
Plantain-leaved pussytoes ( <i>Antennaria plantaginifolia</i> )	22	●	✓ (?)		Early
Whorled milkwort ( <i>Polygala verticillata</i> )	22	●	✓		Early-Mid?
Prairie ragwort or Balsam ragwort ( <i>Senecio plattensis</i> or <i>S. pauperculus</i> )	21	●	✓		Early
White aster-like goldenrod ( <i>Solidago ptarmicoides</i> )	21	●	✓		Mid-Late
Ground plum ( <i>Astragalus crassicaпус</i> )	21	●	✓		Early
Pale-spiked lobelia ( <i>Lobelia spicata</i> )	21	●	✓		Mid
Prairie milk vetch ( <i>Astragalus adsurgens</i> )	17	●	✓		Early-Mid
Downy paintbrush ( <i>Castilleja sessiliflora</i> )	17	●	✓		Early
Western ragweed ( <i>Ambrosia psilostachya</i> )	14	●●	wind		
<b>Grasses &amp; Sedges</b>					
Little bluestem ( <i>Schizachyrium scoparium</i> )	84	●●●	wind	✓	
Junegrass ( <i>Koeleria pyramidata</i> )	81	●	wind	✓	
Porcupine grass ( <i>Stipa spartea</i> )	79	●●●	wind	✓	
Big bluestem ( <i>Andropogon gerardii</i> )	76	●●●	wind		
Blue grama ( <i>Bouteloua gracilis</i> )	59	●●●	wind		
Prairie dropseed ( <i>Sporobolus heterolepis</i> )	57	●●●	wind	✓	
Plains muhly ( <i>Muhlenbergia cuspidata</i> )	50	●●	wind	✓	
Slender wheatgrass ( <i>Elymus trachycaulus</i> )	45	●	wind		
Wilcox's panic grass ( <i>Panicum wilcoxianum</i> )	36	●	wind		
Sand reed-grass ( <i>Calamovilfa longifolia</i> )	29	●●	wind		
Needle-and-thread grass ( <i>Stipa comata</i> )	28	●●●	wind	✓	
Indian grass ( <i>Sorghastrum nutans</i> )	26	●●	wind		
Side-oats grama ( <i>Bouteloua curtipendula</i> )	21	●●	wind		
Blunt sedge ( <i>Carex obtusata</i> )	17	●●	wind		
<b>Half-shrubs</b>					
Leadplant ( <i>Amorpha canescens</i> )	88	●●	✓		mid
Sage wormwood ( <i>Artemisia frigida</i> )	60	●●	wind (?)		mid
Prairie rose ( <i>Rosa arkansana</i> )	40	●●	✓		mid
<b>Shrubs</b>					
Sand cherry ( <i>Prunus pumila</i> )	38	●	✓		early
Snowberry or Wolfberry ( <i>Symphoricarpos occidentalis</i> or <i>S. albus</i> )	29	●	✓		mid

notes

plant species data based on 58 vegetation plots

species cover



Old stems for hollow stem nesting bees  
Old stems possibly used by stem nesting bees

Masses of tiny flowers  
Long blooming period

Popular with flies; one of first flowers available

Early resource for bumblebees  
Masses of very small heads

Old stems for hollow stem nesting bees (?)

Old stems for hollow stem nesting bees

Bumblebee flower?

Not in eastern MN, or north of Polk Co.

Important early resource for bumblebees

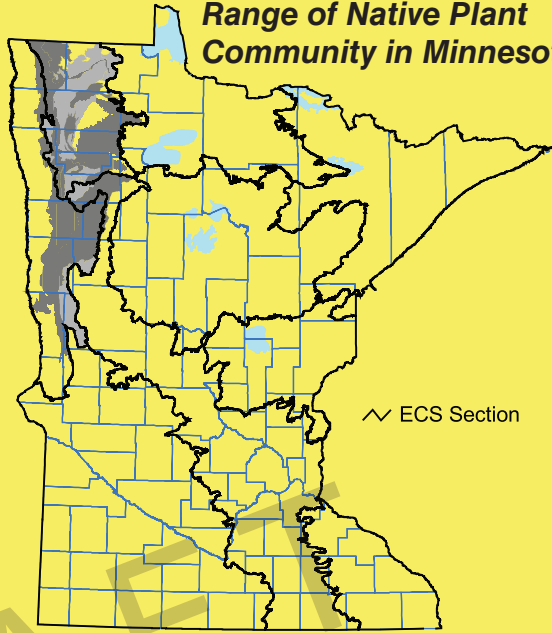
Sphinx moths; bumblebees (?)

Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps  
Low stature, semi-bunch habit favorable for ground nesting bees  
Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps

Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps  
Tufted growth habit leaves exposed soil for ground-nesting bees and wasps

Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps

## Range of Native Plant Community in Minnesota



~ ECS Section



Northern Dry Prairie, Becker County MN



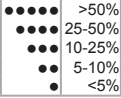
# Northern Dry Savanna (UPn13)

Forbs, Ferns & Fern Allies	species frequency in NPC (%)	species cover (when present)	animal pollination?	pollinator nest value	blooming period
White sage ( <i>Artemisia ludoviciana</i> )	93	●●	wind(?)		
Gray goldenrod ( <i>Solidago nemoralis</i> )	93	●●	✓		Late
Yarrow ( <i>Achillea millefolium</i> )	79	●	✓		Early-mid to Mid-Late
Hoary puccoon ( <i>Lithospermum canescens</i> )	71	●	✓		Early
Smooth blue aster ( <i>Aster laevis</i> )	71	●	✓		Mid-Late
Rough blazing star ( <i>Liatris aspera</i> )	71	●	✓	✓ (?)	Late
Missouri goldenrod ( <i>Solidago missouriensis</i> )	64	●●	✓		Mid-Late
Silky aster ( <i>Aster sericeus</i> )	64	●●	✓		Late
Field pussytoes ( <i>Antennaria neglecta</i> or <i>A. neodioica</i> )	64	●	✓		Early
Northern bedstraw ( <i>Galium boreale</i> )	64	●	✓		Early-mid
Bastard toad-flax ( <i>Comandra umbellata</i> )	64	●	✓		Early-Mid
Starry false Solomon's seal ( <i>Smilacina stellata</i> )	64	●	✓		Early-Mid
Tall cinquefoil ( <i>Potentilla arguta</i> )	64	●	✓		Mid
Tall wormwood or Tarragon ( <i>Artemisia campestris</i> or <i>A. dracunculus</i> )	57	●	wind(?)		
Wild bergamot ( <i>Monarda fistulosa</i> )	57	●	✓		Mid
Harebell ( <i>Campanula rotundifolia</i> )	57	●	✓		Mid
Spreading dogbane ( <i>Apocynum androsaemifolium</i> )	50	●●	✓		Early-Mid to Mid
Veiny meadow-rue ( <i>Thalictrum venulosum</i> )	50	●●	wind		
Stiff goldenrod ( <i>Solidago rigida</i> )	50	●●	✓		Mid-Late
Prairie wild onion ( <i>Allium stellatum</i> )	50	●	✓		Mid-Late
White prairie clover ( <i>Dalea candida</i> )	50	●	✓		Mid
Purple prairie clover ( <i>Dalea purpurea</i> )	50	●	✓		Mid
Field chickweed ( <i>Cerastium arvense</i> )	50	●	✓		Early-Mid
Plantain-leaved pussytoes ( <i>Antennaria plantaginifolia</i> )	50	●	✓		
Stiff sunflower ( <i>Helianthus pauciflorus</i> )	43	●●	✓	✓	Mid-Late
Oval-leaved milkweed ( <i>Asclepias ovalifolia</i> )	43	●	✓	✓	Early-Mid
American vetch ( <i>Vicia americana</i> )	43	●	✓		Early-Mid to Mid-Late
Alumroot ( <i>Heuchera richardsonii</i> )	43	●	✓		Early-Mid
Blue giant hyssop ( <i>Agastache foeniculum</i> )	36	●●	✓		Mid
Heath aster ( <i>Aster ericoides</i> )	36	●	✓		Mid-Late
Long-headed thimbleweed ( <i>Anemone cylindrica</i> )	36	●	✓		Early-Mid
Slender beard tongue ( <i>Penstemon gracilis</i> )	36	●	✓		Early-Mid
Daisy fleabane ( <i>Erigeron strigosus</i> )	36	●	✓		Mid
Pale vetchling ( <i>Lathyrus ochroleucus</i> )	36	●	✓		Early-Mid
Canada goldenrod ( <i>Solidago canadensis</i> )	36	●	✓		Mid-Late
Rock spikemoss ( <i>Selaginella rupestris</i> )	29	●●			
Prairie smoke ( <i>Geum triflorum</i> )	29	●	✓		Early
Bearded birdfoot violet ( <i>Viola palmata</i> )	29	●	✓		Early
Hoary frostweed ( <i>Helianthemum bicknellii</i> )	29	●	✓		Early-mid
Erect, Smooth, or Illinois carrion-flower ( <i>Smilax</i> spp)	29	●	✓		Early-Mid
<b>Grasses &amp; Sedges</b>					
Big bluestem ( <i>Andropogon gerardii</i> )	93	●●●●	wind		
Porcupine grass ( <i>Stipa spartea</i> )	93	●●●	wind	✓	
Junegrass ( <i>Koeleria pyramidata</i> )	71	●	wind	✓	
Slender wheatgrass ( <i>Elymus trachycaulus</i> )	50	●	wind		
Sand reed-grass ( <i>Calamovilfa longifolia</i> )	43	●●	wind		
Little bluestem ( <i>Schizachyrium scoparium</i> )	36	●●●	wind	✓	
Nodding wild rye ( <i>Elymus canadensis</i> )	36	●	wind		
Blue grama ( <i>Bouteloua gracilis</i> )	29	●●●	wind		
Sand dropseed ( <i>Sporobolus cryptandrus</i> )	29	●	wind		
Blunt sedge ( <i>Carex obtusata</i> )	29	●	wind		
Kalm's brome ( <i>Bromus kalmii</i> )	29	●	wind		
Prairie dropseed ( <i>Sporobolus heterolepis</i> )	29	●	wind	✓	
Pennsylvania sedge ( <i>Carex pennsylvanica</i> var. <i>pennsylvanica</i> )	21	●●	wind		
Schweinitz's nut-sedge ( <i>Cyperus schweinitzii</i> )	21	●	wind		
<b>Semi-shrubs</b>					
Poison ivy ( <i>Toxicodendron rydbergii</i> )	64	●●	✓	✓	
Prairie rose ( <i>Rosa arkansana</i> )	64	●	✓	✓	
Leadplant ( <i>Amorpha canescens</i> )	50	●●●	✓	✓	
Sage wormwood ( <i>Artemisia frigida</i> )	21	●	wind (?)		
<b>Shrubs</b>					
Snowberry and Wolfberry ( <i>Symphoricarpos albus</i> or <i>S. occidentalis</i> )	64	●●	✓		Mid
Saskatoon juneberry ( <i>Amelanchier alnifolia</i> )	64	●	✓		Early
American hazelnut ( <i>Corylus americana</i> )	57	●●●	wind		
Chokecherry ( <i>Prunus virginiana</i> )	57	●	✓		Early-Mid
Sand cherry ( <i>Prunus pumila</i> )	36	●	✓		Early
Meadowsweet ( <i>Spiraea alba</i> )	29	●	✓		Mid
Prairie willow ( <i>Salix humilis</i> )	21	●	✓ (& wind?)		Early
Creeping juniper ( <i>Juniperus horizontalis</i> )	14	●	wind		
<b>Trees</b>					
Bur oak ( <i>Quercus macrocarpa</i> )	100	●●●	wind		
Quaking aspen ( <i>Populus tremuloides</i> )	29	●	wind		

notes

plant species data based on 14 vegetation plots

species cover



Masses of very small heads

Old stems for hollow stem nesting bees (?)

Masses of tiny flowers

No nectar; pollen harvested?

Old stems for hollow stem nesting bees  
Old stems for hollow stem nesting bees

A superb bee flower

Fern-ally, not a flowering plant  
Early resource for bumblebees

Sand specialist

Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps  
Low stature, semi-bunch habit favorable for ground nesting bees

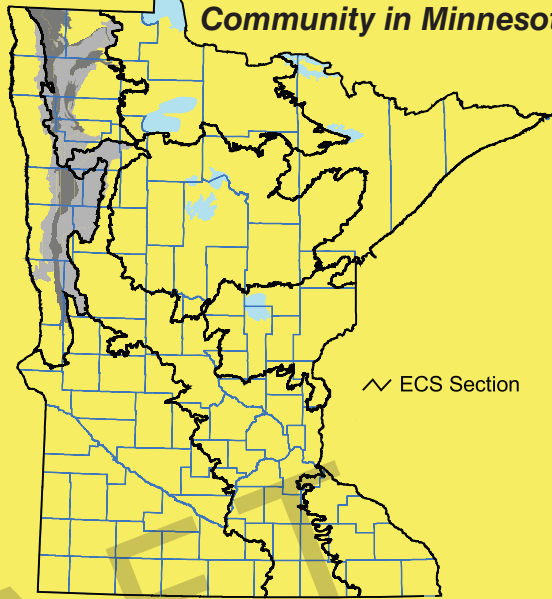
Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps

Sand specialist

Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps

Important for early foragers

## Range of Native Plant Community in Minnesota



~ ECS Section



Northern Dry Savanna, Kittson County MN



# Northern Mesic Prairie (UPn23)

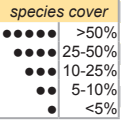
Forbs, Ferns & Fern Allies	species frequency in NPC (%)	species cover (when present)	animal pollination?	pollinator nest value	blooming period
Northern bedstraw ( <i>Galium boreale</i> )	88	●●	✓ (?)		Early-mid
Purple prairie clover ( <i>Dalea purpurea</i> )	88	●	✓		Mid
Canada goldenrod ( <i>Solidago canadensis</i> )	85	●●	✓		Mid-Late
Heath aster ( <i>Aster ericoides</i> )	84	●●	✓		Mid-Late
Stiff goldenrod ( <i>Solidago rigida</i> )	82	●	✓		Mid-Late
Maximilian's sunflower ( <i>Helianthus maximiliani</i> )	75	●	✓	✓	
Heart-leaved alexanders ( <i>Zizia aptera</i> )	75	●	✓		Early
Black-eyed Susan ( <i>Rudbeckia hirta</i> )	74	●	✓		Mid
Tall meadow-rue ( <i>Thalictrum dasycarpum</i> )	71	●●	wind	✓ (?)	
Smooth blue aster ( <i>Aster laevis</i> )	62	●	✓		Mid-Late
Common strawberry ( <i>Fragaria virginiana</i> )	57	●	✓		Early
White camass ( <i>Zigadenus elegans</i> )	56	●	✓		Early-mid
Virginia mountain mint ( <i>Pycnanthemum virginianum</i> )	55	●	✓		Mid-Late
Gray goldenrod ( <i>Solidago nemoralis</i> )	51	●	✓		Late
Golden alexanders ( <i>Zizia aurea</i> )	51	●	✓		Early
Harebell ( <i>Campanula rotundifolia</i> )	48	●	✓		Mid
Bastard toadflax ( <i>Comandra umbellata</i> )	47	●	✓		Early-Mid
Wild bergamot ( <i>Monarda fistulosa</i> )	44	●	✓		Mid
Fiodman's thistle ( <i>Cirsium fiodmanii</i> )	43	●	✓	✓	Mid
Hoary puccoon ( <i>Lithospermum canescens</i> )	41	●	✓		Early
White aster-like goldenrod ( <i>Solidago ptarmicoides</i> )	40	●	✓		Mid-Late
Stiff sunflower ( <i>Helianthus pauciflorus</i> )	35	●	✓	✓	Mid-Late
Northern plains blazing star ( <i>Liatris ligulistylis</i> )	35	●	✓	✓	Late
Rough blazing star ( <i>Liatris aspera</i> )	34	●	✓	✓	Late
Clasping dogbane ( <i>Apocynum sibiricum</i> )	34	●	✓	✓	Mid
Giant or Sawtooth sunflower ( <i>Helianthus giganteus</i> or <i>H. grosseserratus</i> )	33	●●	✓	✓	Mid-Late
Pale-spiked lobelia ( <i>Lobelia spicata</i> )	32	●	✓		Mid
Glaucous false dandelion ( <i>Agoseris glauca</i> )	32	●	✓		Early-mid
Wood lily ( <i>Lilium philadelphicum</i> )	32	●	✓	✓ (?)	Mid
Prairie loosestrife ( <i>Lysimachia quadriflora</i> )	31	●	✓		Mid
Yarrow ( <i>Achillea millefolium</i> )	31	●	✓		Early-mid to Mid-Late
Prairie wild onion ( <i>Allium stellatum</i> )	31	●	✓		Mid-Late
Wild licorice ( <i>Glycyrrhiza lepidota</i> )	30	●●	✓		Early-Mid
Golden or false golden ragwort ( <i>Senecio aureus</i> or <i>S. pseudoaureus</i> )	29	●	✓		Early
Silverleaf scurfpea ( <i>Pediomelum argophyllum</i> )	29	●	✓		Mid
Smooth rattlesnakeroot ( <i>Prenanthes racemosa</i> )	29	●	✓		Mid
Long-headed thimbleweed ( <i>Anemone cylindrica</i> )	28	●	?		Early-Mid
Grass-leaved goldenrod ( <i>Euthamia graminifolia</i> )	26	●	✓		Mid-Late
Wood betony ( <i>Pedicularis canadensis</i> )	25	●	✓		Early
Indian paintbrush ( <i>Castilleja coccinea</i> )	25	●	✓		Early-Mid
Prairie phlox ( <i>Phlox pilosa</i> )	24	●	✓		Early-Mid
White prairie clover ( <i>Dalea candida</i> )	22	●	✓		Mid
Marsh vetchling ( <i>Lathyrus palustris</i> )	22	●	✓		Early-Mid
White sage ( <i>Artemisia ludoviciana</i> )	20	●	wind (?)		
Great blazing star ( <i>Liatris pycnostachya</i> )	20	●●	✓		Mid
<b>Grasses &amp; Sedges</b>					
Big bluestem ( <i>Andropogon gerardii</i> )	97	●●●●	wind		
Prairie dropseed ( <i>Sporobolus heterolepis</i> )	69	●●●●	wind	✓	
Indian grass ( <i>Sorghastrum nutans</i> )	64	●●●●	wind		
Little bluestem ( <i>Schizachyrium scoparium</i> )	62	●●●●	wind	✓	
Prairie cordgrass ( <i>Spartina pectinata</i> )	54	●●	wind		
Slender wheatgrass ( <i>Elymus trachycaulus</i> )	53	●●	wind		
Mat muhly grass ( <i>Muhlenbergia richardsonis</i> )	52	●●	wind		
Junegrass ( <i>Koeleria pyramidata</i> )	51	●	wind		
Kalm's brome ( <i>Bromus kalmii</i> )	41	●	wind		
Switchgrass ( <i>Panicum virgatum</i> )	36	●●	wind		
Clustered muhly grass ( <i>Muhlenbergia glomerata</i> )	36	●●	wind		
Porcupine grass ( <i>Stipa spartea</i> )	35	●●	wind	✓	
Rigid sedge ( <i>Carex tetanica</i> )	34	●	wind		
Tufted hair grass ( <i>Deschampsia cespitosa</i> )	29	●●	wind	✓ (?)	
Narrow reed grass ( <i>Calamagrostis stricta</i> )	25	●●	wind		
Leiberg's panic grass ( <i>Panicum leibergii</i> )	24	●●	wind		
<b>Half-shrubs</b>					
Prairie rose ( <i>Rosa arkansana</i> )	48	●	✓		Mid
Fragrant false indigo ( <i>Amorpha nana</i> )	26	●	✓		Mid
Leadplant ( <i>Amorpha canescens</i> )	23	●●	✓		Mid
<b>Shrubs</b>					
Bebb's willow ( <i>Salix bebbiana</i> )	26	●●	✓ (& wind?)		Early
Shrubby cinquefoil ( <i>Potentilla fruticosa</i> )	21	●●	✓		Mid
<b>Tree Seedlings or Saplings (&lt;6ft)</b>					
Quaking aspen ( <i>Populus tremuloides</i> )	17	●●●	wind		



notes

plant species data based on 110 vegetation plots

Masses of tiny flowers



Old stems for hollow stem nesting bees

Old stems for hollow stem nesting bees (?)

Principally flies; moths at night?

Old stems for hollow stem nesting bees

Old stems for hollow stem nesting bees

Old stems for hollow stem nesting bees

Old stems for hollow stem nesting bees

Old stems for hollow stem nesting bees

A butterfly flower; pollinated by large butterflies  
Provides pollen; specialist bees harvest an oil  
Masses of very small heads

Bumblebee flower  
Hummingbird flower in forested part of MN, sphinx moth in prairie  
Not north of Norman & Mahnomon counties

Uncommon north of Polk Co.

Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps

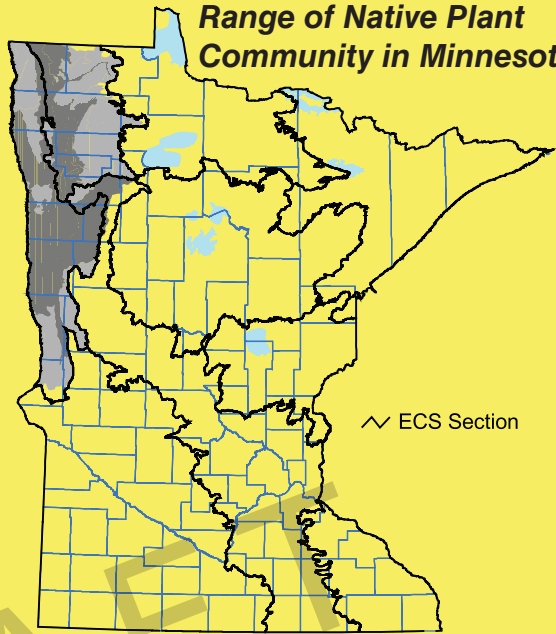
Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps

Low stature, semi-bunch habit favorable for ground nesting bees

Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps

Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps?

## Range of Native Plant Community in Minnesota



~ ECS Section



Northern Mesic Prairie, Kittson County MN



# Southern Dry Prairie (UPS13)

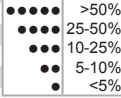
Forbs, Ferns & Fern Allies	species frequency in NPC (%)	species cover (when present)	animal pollination?	pollinator nest value	blooming period
Purple prairie clover ( <i>Dalea purpurea</i> )	72	●	✓		Mid
Gray goldenrod ( <i>Solidago nemoralis</i> )	61	●	✓		Late
Silky aster ( <i>Aster sericeus</i> )	61	●	✓		Late
Heath aster ( <i>Aster ericoides</i> )	60	●●	✓		Mid-Late
Stiff goldenrod ( <i>Solidago rigida</i> )	53	●	✓		Mid-Late
Long-headed thimbleweed ( <i>Anemone cylindrica</i> )	53	●	✓		Early-Mid
Bearded birdfoot violet ( <i>Viola pedatifida</i> )	47	●	✓		Early
Rough blazing star ( <i>Liatris aspera</i> )	45	●	✓	✓ (?)	Late
Daisy fleabane ( <i>Erigeron strigosus</i> )	43	●	✓		Mid
Pasque-flower ( <i>Anemone patens</i> )	42	●	✓		Early
Stiff sunflower ( <i>Helianthus pauciflorus</i> )	41	●●	✓	✓	Mid-Late
Narrow-leaved purple coneflower ( <i>Echinacea angustifolia</i> )	40	●	✓		Mid
Tall cinquefoil ( <i>Potentilla arguta</i> )	40	●	✓		Mid
Bastard toad-flax ( <i>Comandra umbellata</i> )	37	●	✓		Early-Mid
Prairie turnip ( <i>Pediemelum esculentum</i> )	37	●	✓		Early-Mid
Prairie wild onion ( <i>Allium stellatum</i> )	36	●	✓		Mid-Late
Dotted blazing star ( <i>Liatris punctata</i> )	34	●	✓	✓ (?)	Late
Hoary puccoon ( <i>Lithospermum canescens</i> )	32	●	✓		Early
Aromatic aster ( <i>Aster oblongifolius</i> )	30	●	✓		Late
Virginia ground cherry ( <i>Physalis virginiana</i> )	30	●	✓		Mid
Flodman's thistle ( <i>Cirsium flodmanii</i> )	29	●	✓	✓	Mid
Bird's foot coreopsis ( <i>Coreopsis palmata</i> )	28	●●	✓		Mid
Grooved yellow flax ( <i>Linum sulcatum</i> )	28	●	✓		Early-Mid to Mid
Western ragweed ( <i>Ambrosia psilostachya</i> )	26	●●	wind		
Canada goldenrod ( <i>Solidago canadensis</i> )	25	●	✓		Mid-Late
Heart-leaved alexanders ( <i>Zizia aptera</i> )	25	●	✓		Early
Wild bergamot ( <i>Monarda fistulosa</i> )	25	●	✓		Mid
Harebell ( <i>Campanula rotundifolia</i> )	25	●	✓		Mid
Toothed evening primrose ( <i>Calylophus serrulatus</i> )	25	●	✓		Early-Mid
Missouri goldenrod ( <i>Solidago missouriensis</i> )	24	●	✓		Mid-Late
Skyblue aster ( <i>Aster oolentangiensis</i> )	24	●	✓		Late
Mock pennyroyal ( <i>Hedeoma hispida</i> )	24	●	✓		Early to Mid-Late
Prairie sagewort ( <i>Artemisia frigida</i> )	23	●●	wind (?)		
Hoary vervain ( <i>Verbena stricta</i> )	23	●	✓		Early-Mid to Mid-Late
Flowering spurge ( <i>Euphorbia corollata</i> )	22	●	✓		Mid-Late
Whorled milkweed ( <i>Asclepias verticillata</i> )	21	●	✓		Mid
Field blue-eyed grass ( <i>Sisyrinchium campestre</i> )	21	●	✓		Early-Mid
Tall wormwood or Tarragon ( <i>Artemisia</i> spp.)*	20	●	wind (?)		
Hairy golden aster ( <i>Chrysopsis villosa</i> )	20	●	✓		Early-mid to Mid
Prairie or Balsam ragwort ( <i>Senecio plattensis</i> or <i>S. pauperculus</i> )	20	●	✓		Early
False boneset ( <i>Kuhnia eupatorioides</i> )	19	●	✓		Mid-Late
False gromwell ( <i>Onosmodium molle</i> )	19	●	✓		Early-Mid
Green milkweed ( <i>Asclepias viridiflora</i> )	19	●	✓		Mid
Narrow-leaved puccoon ( <i>Lithospermum incisum</i> )	17	●	✓		Early
Plantain-leaved pussytoes ( <i>Antennaria plantaginifolia</i> )	16	●	✓ (?)		Early
Hairy puccoon ( <i>Lithospermum carolinense</i> )	13	●	✓		Early
Western spiderwort ( <i>Tradescantia occidentalis</i> )	7	●	✓		Early-Mid
Silky prairie clover ( <i>Dalea villosa</i> )	6	●●	✓		Mid
<b>Grasses &amp; Sedges</b>					
Little bluestem ( <i>Schizachyrium scoparium</i> )	88	●●●	wind	✓	
Side-oats grama ( <i>Bouteloua curtipendula</i> )	79	●●●	wind		
Big bluestem ( <i>Andropogon gerardii</i> )	73	●●●	wind		
Prairie dropseed ( <i>Sporobolus heterolepis</i> )	58	●●●	wind	✓	
Porcupine grass ( <i>Stipa spartea</i> )	57	●●●	wind	✓	
Plains muhly ( <i>Muhlenbergia cuspidata</i> )	56	●●	wind	✓	
Indian grass ( <i>Sorghastrum nutans</i> )	45	●●●	wind		
Junegrass ( <i>Koeleria pyramidata</i> )	43	●●	wind	✓	
Hairy grama ( <i>Bouteloua hirsuta</i> )	30	●●	wind		
Scribner's panic grass ( <i>Panicum oligosanthes</i> )	26	●	wind		
Wilcox's panic grass ( <i>Panicum wilcoxianum</i> )	22	●	wind		
Blue grama ( <i>Bouteloua gracilis</i> )	16	●●●	wind		
Sand reed-grass ( <i>Calamovilfa longifolia</i> )	16	●●	wind		
Needle-and-thread grass ( <i>Stipa comata</i> )	13	●●●	wind	✓	
<b>Half-shrubs</b>					
Leadplant ( <i>Amorpha canescens</i> )	71	●●	✓		Mid
Prairie rose ( <i>Rosa arkansana</i> )	40	●	✓		Mid
<b>Shrubs</b>					
Smooth sumac ( <i>Rhus glabra</i> )	29	●●	✓		Early-Mid

\* Tall wormwood or Tarragon (*Artemisia dracunculus* or *A. campestris*)

notes

plant species data based on 219 vegetation plots

species cover



Old stems for hollow stem nesting bees (?)

Popular with flies; one of first flowers available  
Old stems for hollow stem nesting bees  
Not in eastern MN, or north of Polk Co.

Old stems possibly used by stem nesting bees

Bumblebee flower?  
Old stems for hollow stem nesting bees  
South of line from Ottertail Co. to Chisago Co.

Long blooming period

Bumblebee flower

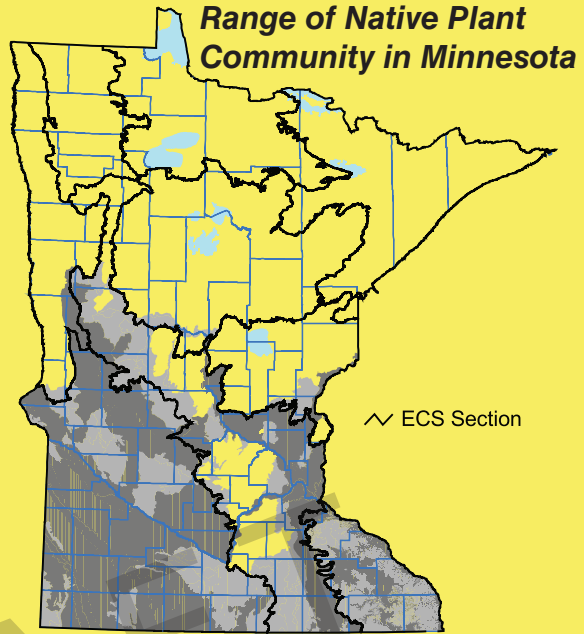
Sand specialist  
Sand specialist  
Sand specialist

Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps

Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps  
Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps  
Tufted growth habit leaves exposed soil for ground-nesting bees and wasps

Low stature, semi-bunch habit favorable for ground nesting bees

Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps



DRAFT

Southern Dry Prairie, Lac Qui Parle Wildlife Management Area, Chippewa County MN





# Southern Dry Savanna (UPS14)

Forbs, Ferns & Fern Allies	species frequency in NPC (%)	species cover (when present)	animal pollination?	pollinator nest value	blooming period
Western ragweed ( <i>Ambrosia psilostachya</i> )	80	••	wind		
Virginia ground cherry ( <i>Physalis virginiana</i> )	73	•	✓		Mid
Hairy puccoon ( <i>Lithospermum carolinense</i> )	70	•	✓		Early
Gray goldenrod ( <i>Solidago nemoralis</i> )	67	•	✓		Late
Hoary frostweed ( <i>Helianthemum bicknellii</i> )	67	•	✓		Early-mid
Horseweed ( <i>Coryza canadensis</i> )	60	•	✓ (?)		
White sage ( <i>Artemisia ludoviciana</i> )	53	•	wind (?)		
Bearded birdfoot violet ( <i>Viola palmata</i> )	53	•	✓		Early
Starry false Solomon's seal ( <i>Smilacina stellata</i> )	47	•	✓		Early-Mid
Purple prairie clover ( <i>Dalea purpurea</i> )	47	•	✓		Mid
Common milkweed ( <i>Asclepias syriaca</i> )	40	•	✓		Mid
Long-headed thimbleweed ( <i>Anemone cylindrica</i> )	40	•	✓		Early-Mid
Hoary puccoon ( <i>Lithospermum canescens</i> )	40	•	✓		Early
Prairie pinweed ( <i>Lechea stricta</i> )	33	•	?		?
Round-headed bush clover ( <i>Lespedeza capitata</i> )	33	•	✓		Mid-Late
Skyblue aster ( <i>Aster oolentangiensis</i> )	33	•	✓		Late
Rough blazing star ( <i>Liatris aspera</i> )	33	•	✓	✓ (?)	Late
Rock spikemoss ( <i>Selaginella rupestris</i> )	30	•	✓		
Missouri goldenrod ( <i>Solidago missouriensis</i> )	30	•	✓		Mid
Bird's foot coreopsis ( <i>Coreopsis palmata</i> )	30	•	✓		Mid
Harebell ( <i>Campanula rotundifolia</i> )	30	•	✓		Mid
Hairy golden aster ( <i>Chrysopsis villosa</i> )	30	•	✓		Early-mid to Mid
Bastard toad-flax ( <i>Comandra umbellata</i> )	30	•	✓		Early-Mid
Heath aster ( <i>Aster ericoides</i> )	27	•	✓		Mid-Late
Showy goldenrod ( <i>Solidago speciosa</i> )	27	•	✓		Late
Flowering spurge ( <i>Euphorbia corollata</i> )	23	•	✓		Mid-Late
Mock pennyroyal ( <i>Hedeoma hispida</i> )	23	•	✓		Early to Mid-Late
Large-flowered beard tongue ( <i>Penstemon grandiflorus</i> )	23	•	✓		Early
Erect, Smooth, or Illinois carrion-flower ( <i>Smilax</i> spp.)*	23	•	✓		Early-Mid
Tall cinquefoil ( <i>Potentilla arguta</i> )	23	•	✓		Mid
Stiff sunflower ( <i>Helianthus pauciflorus</i> )	20	••	✓	✓	Mid-Late
Horsemint ( <i>Monarda punctata</i> )	20	••	✓		Mid-Late
Tall wormwood or Tarragon ( <i>Artemisia</i> spp.)*	20	•	wind (?)		
Silky prairie clover ( <i>Dalea villosa</i> )	17	•	✓		Mid
<b>Grasses &amp; Sedges</b>					
Junegrass ( <i>Koeleria pyramidata</i> )	80	•	wind	✓	
Porcupine grass ( <i>Stipa spartea</i> )	73	•••	wind	✓	
Little bluestem ( <i>Schizachyrium scoparium</i> )	70	•••	wind	✓	
Big bluestem ( <i>Andropogon gerardii</i> )	67	••	wind		
Hay sedge ( <i>Carex foenea</i> )	53	••	wind		
Purple lovegrass ( <i>Eragrostis spectabilis</i> )	53	•	wind		
Indian grass ( <i>Sorghastrum nutans</i> )	40	•••	wind		
Muhlenberg's sedge ( <i>Carex muhlenbergia</i> )	37	••	wind		
Pennsylvania sedge ( <i>Carex pennsylvanica</i> )	37	••	wind		
Sand reed-grass ( <i>Calamovilfa longifolia</i> )	37	•	wind		
Switchgrass ( <i>Panicum virgatum</i> )	37	•	wind		
Prairie dropseed ( <i>Sporobolus heterolepis</i> )	37	••	wind	✓	
Long-leaved panic grass ( <i>Panicum perlongum</i> )	37	•	wind	✓	
Scribner's panic grass ( <i>Panicum oligoanthos</i> )	30	••	wind		
Hairy grama ( <i>Bouteloua hirsuta</i> )	30	•	wind		
Side-oats grama ( <i>Bouteloua curtipendula</i> )	23	•••	wind		
Fall witch grass ( <i>Leptoloma cognatum</i> )	23	•	wind		
<b>Climbing plants</b>					
Virginia creeper ( <i>Parthenocissus vitacea</i> or <i>P. quinquefolia</i> )	47	•	✓		Early-Mid
<b>Low shrubs</b>					
Leadplant ( <i>Amarpha canescens</i> )	53	•	✓		Mid
Prairie rose ( <i>Rosa arkansana</i> )	43	•	✓		Mid
<b>Shrubs</b>					
Chokecherry ( <i>Prunus virginiana</i> )	50	•	✓		Early-Mid
American hazelnut ( <i>Corylus americana</i> )	43	•	wind		
Smooth sumac ( <i>Rhus glabra</i> )	40	••	✓		Early-Mid
Low juneberry or Saskatoon ( <i>Amelanchier humilis</i> or <i>A. alnifolia</i> )	37	•	✓		Early
<b>Trees</b>					
Bur oak ( <i>Quercus macrocarpa</i> )	67	•••	wind		
Northern pin oak ( <i>Quercus elipsoidalis</i> )	37	•••	wind		
Black oak ( <i>Quercus velutina</i> )	23	•••	wind		
Jack pine ( <i>Pinus banksiana</i> )	17	•••	wind		

\* Tall wormwood or Tarragon (*Artemisia dracunculus* or *A. campestris*); Erect, Smooth, or Illinois carrion-flower (*Smilax ecirrata*, *S. herbacea*, or *S. illinoensis*)

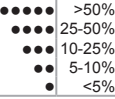
notes

plant species data based on 30 vegetation plots

Bumblebee flower?  
Sand specialist

Sand specialist

species cover



Old stems for hollow stem nesting bees (?)  
Fern-ally, not a flowering plant

South of line from Ottertail Co. to Chisago Co.

Long blooming period

Important bumblebee flower; sand specialist

Old stems for hollow stem nesting bees  
Sand specialist

Sand specialist

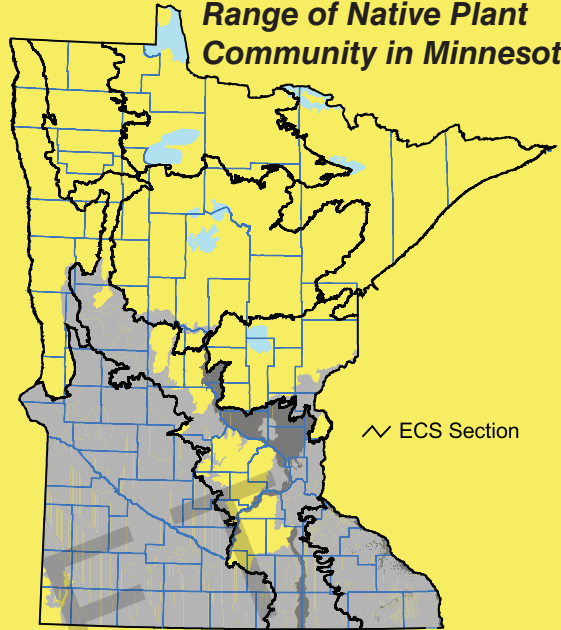
Low stature, semi-bunch habit favorable for ground nesting bees  
Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps  
Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps

Sand specialist  
Sand specialist

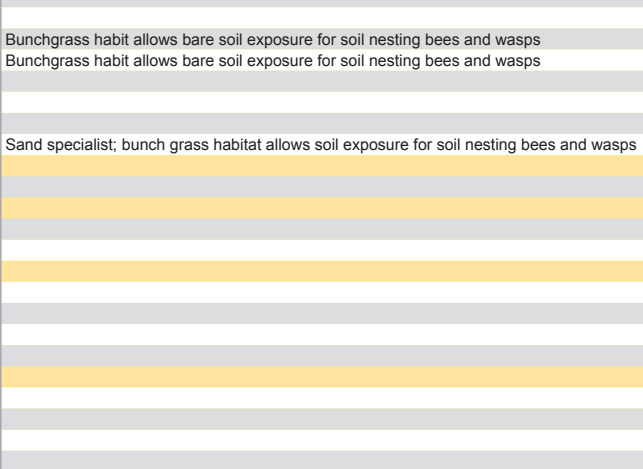
Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps  
Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps

Sand specialist; bunch grass habitat allows soil exposure for soil nesting bees and wasps

## Range of Native Plant Community in Minnesota



~ ECS Section



Southern Dry Savannah, Big Stone County MN



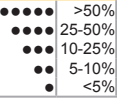
# Southern Mesic Prairie (UPS23)

Forbs, Ferns & Fern Allies	species frequency in NPC (%)	species cover (when present)	animal pollination?	pollinator nest value	blooming period
Heart-leaved alexanders ( <i>Zizia aptera</i> )	78	●	✓		Early
Heath aster ( <i>Aster ericoides</i> )	77	●●	✓		Mid-Late
Stiff goldenrod ( <i>Solidago rigida</i> )	74	●	✓		Mid-Late
Canada goldenrod ( <i>Solidago canadensis</i> )	69	●●	✓		Mid-Late
Purple prairie clover ( <i>Dalea purpurea</i> )	68	●	✓		Mid
Yarrow ( <i>Achillea millefolium</i> )	65	●	✓		Early-mid to Mid-Late
Rough blazing star ( <i>Liatris aspera</i> )	59	●	✓	✓	Late
Prairie phlox ( <i>Phlox pilosa</i> )	55	●	✓		Early-Mid
White prairie clover ( <i>Dalea candida</i> )	55	●	✓		Mid
Hoary puccoon ( <i>Lithospermum canescens</i> )	53	●	✓		Early
Stiff sunflower ( <i>Helianthus pauciflorus</i> )	50	●	✓	✓	Mid-Late
Prairie wild onion ( <i>Allium stellatum</i> )	49	●	✓		Mid-Late
Missouri goldenrod ( <i>Solidago missouriensis</i> )	47	●●	✓		Mid
Long-headed thimbleweed ( <i>Anemone cylindrica</i> )	46	●	✓		Early-Mid
Bearded birdfoot violet ( <i>Viola palmata</i> )	45	●	✓		Early
Flodman's thistle ( <i>Cirsium flodmanii</i> )	45	●	✓	✓	Mid
Tall meadow-rue ( <i>Thalictrum dasycarpum</i> )	44	●	wind	✓ (?)	
Daisy fleabane ( <i>Erigeron strigosus</i> )	44	●	✓		Mid
Silverleaf scurpea ( <i>Pediomelum argophyllum</i> )	43	●	✓		Mid
White sage ( <i>Artemisia ludoviciana</i> )	43	●	wind?		
Northern bedstraw ( <i>Galium boreale</i> )	39	●●	✓		Early-mid
Smooth blue aster ( <i>Aster laevis</i> )	37	●	✓		Mid-Late
Gray-headed coneflower ( <i>Ratibida pinnata</i> )	36	●●	✓	?	Mid
Silky aster ( <i>Aster sericeus</i> )	34	●	✓		Late
Maximilian's sunflower ( <i>Helianthus maximilianii</i> )	31	●●	✓	✓	Mid-Late
Gray goldenrod ( <i>Solidago nemoralis</i> )	31	●●	✓		Late
Ox-eye ( <i>Heliopsis helianthoides</i> )	31	●	✓	??	Mid
Tall cinquefoil ( <i>Potentilla arguta</i> )	31	●	✓		Mid
Common milkweed ( <i>Asclepias syriaca</i> )	31	●	✓		Mid
Bird's foot coreopsis ( <i>Coreopsis palmata</i> )	30	●●	✓		Mid
Narrow-leaved purple coneflower ( <i>Echinacea angustifolia</i> )	30	●	✓		Mid
Prairie turnip ( <i>Pediomelum esculentum</i> )	30	●	✓		Early-Mid
Alumroot ( <i>Heuchera richardsonii</i> )	28	●	✓		Early-Mid
Great blazing star ( <i>Liatris pycnostachya</i> )	27	●●	✓		Mid
White camass ( <i>Zigadenus elegans</i> )	27	●	✓		Early-mid
Common strawberry ( <i>Fragaria virginiana</i> )	26	●	✓		Early
Bastard toadflax ( <i>Comandra umbellata</i> )	25	●	✓		Early-Mid
Virginia mountain mint ( <i>Pycnanthemum virginianum</i> )	25	●	✓		Mid-Late
Pale-spiked lobelia ( <i>Lobelia spicata</i> )	25	●	✓		Mid
American vetch ( <i>Vicia americana</i> )	23	●	✓		Early-Mid to Mid-Late
Ground plum ( <i>Astragalus crassicaarpus</i> )	23	●	✓		Early
Canada anemone ( <i>Anemone canadensis</i> )	22	●	✓		Early-Mid
Clasping dogbane ( <i>Apocynum sibiricum</i> )	22	●	✓	✓	Mid
Virginia ground cherry ( <i>Physalis virginiana</i> )	22	●	✓		Mid
Toothed evening primrose ( <i>Calylophus serrulatus</i> )	21	●	✓		Early-Mid
Wood betony ( <i>Pedicularis canadensis</i> )	20	●	✓		Early
Northern plains blazing star ( <i>Liatris ligulistylis</i> )	20	●	✓	✓	Late
Wild bergamot ( <i>Monarda fistulosa</i> )	19	●	✓		Mid
Skyblue aster ( <i>Aster oolentangiensis</i> )	18	●●	✓		Late
Canada tick trefoil ( <i>Desmodium canadense</i> )	17	●	✓		Mid
Smooth rattlesnakeroot ( <i>Prenanthes racemosa</i> )	15	●	✓		Mid
Wood lily ( <i>Lilium philadelphicum</i> )	13	●	✓	✓ (?)	Mid
Rattlesnake master ( <i>Eryngium yuccifolium</i> )	12	●	✓	✓	Mid
<b>Grasses &amp; Sedges</b>					
Big bluestem ( <i>Andropogon gerardii</i> )	94	●●●●	wind		
Indian grass ( <i>Sorghastrum nutans</i> )	80	●●●●	wind		
Little bluestem ( <i>Schizachyrium scoparium</i> )	67	●●●	wind	✓	
Prairie dropseed ( <i>Sporobolus heterolepis</i> )	66	●●●	wind	✓	
Porcupine grass ( <i>Stipa spartea</i> )	58	●●●	wind	✓	
Side-oats grama ( <i>Bouteloua curtipendula</i> )	46	●●●	wind		
Switchgrass ( <i>Panicum virgatum</i> )	44	●●	wind		
Leiberg's panic grass ( <i>Panicum leibergii</i> )	43	●●	wind		
Slender wheatgrass ( <i>Elymus trachycaulus</i> )	32	●	wind		
Prairie cordgrass ( <i>Spartina pectinata</i> )	30	●●	wind		
<b>Half-shrubs</b>					
Leadplant ( <i>Amorpha canescens</i> )	74	●●	✓	✓	
Prairie rose ( <i>Rosa arkansana</i> )	70	●	✓	✓	
<b>Shrubs</b>					
Wolfberry ( <i>Symphoricarpos occidentalis</i> )	17	●●	✓	✓	

notes

plant species data based on 102 vegetation plots

species cover



Masses of very small heads  
 Old stems for hollow stem nesting bees  
 Not north of Norman & Mahnomen counties

Old stems for hollow stem nesting bees

Old stems for hollow stem nesting bees  
 Old stems for hollow stem nesting bees (?)

Masses of tiny flowers

Old stems for hollow stem nesting bees? South of line from Lincoln to Hennepin counties

Old stems for hollow stem nesting bees

Old stems for hollow stem nesting bees?

South of line from Ottertail Co. to Chisago Co.  
 Not in eastern MN, or north of Polk Co.

Uncommon north of Polk Co.  
 Principally flies; moths at night?

Important early resource for bumblebees

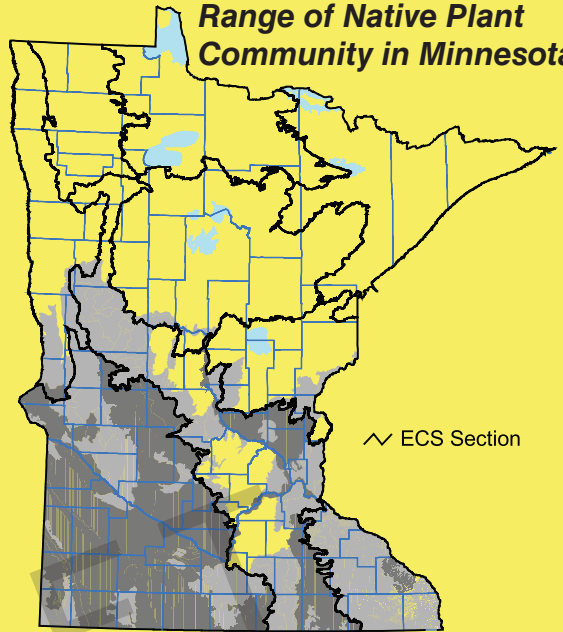
Old stems for hollow stem nesting bees  
 Bumblebee flower?

Bumblebee flower  
 Old stems for hollow stem nesting bees

A butterfly flower; pollinated by large butterflies  
 Old stems for hollow stem nesting bees

Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps  
 Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps  
 Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps

## Range of Native Plant Community in Minnesota



∨ ECS Section



Southern Mesic Prairie, Schaefer Prairie, McLeod County MN



# Northern Wet Prairie (WPN53)

Forbs, Ferns & Fern Allies	species frequency in NPC (%)	species cover (when present)	animal pollination?	pollinator nest value	blooming period
Canada goldenrod ( <i>Solidago canadensis</i> )	66	••	✓		Mid-Late
Sawtooth or giant sunflower ( <i>Helianthus grosseserratus</i> or <i>H. giganteus</i> )	64	••	✓	✓	Mid-Late
Prairie loosestrife ( <i>Lysimachia quadriflora</i> )	62	••	✓		Mid
Northern bedstraw ( <i>Galium boreale</i> )	60	••	✓ (?)		Early-mid
Heath aster ( <i>Aster ericoides</i> )	54	•	✓		Mid-Late
Tall meadow-rue ( <i>Thalictrum dasycarpum</i> )	52	•	wind	✓ (?)	
Eastern panicled aster ( <i>Aster lanceolatus</i> )	51	•	✓	✓ (?)	Late
Common strawberry ( <i>Fragaria virginiana</i> )	50	••	✓		Early
Golden alexanders ( <i>Zizia aurea</i> )	50	•	✓		Early
Spotted water hemlock ( <i>Cicuta maculata</i> )	49	•	✓		Mid
Golden or false golden ragwort ( <i>Senecio aureus</i> or <i>S. pseud aureus</i> )	49	•	✓		Early
Grass-leaved goldenrod ( <i>Euthamia graminifolia</i> )	48	•	✓		Mid-Late
Riddell's goldenrod ( <i>Solidago riddellii</i> )	48	•	✓		Late
Marsh vetchling ( <i>Lathyrus palustris</i> )	47	•	✓		Early-Mid
Clasping dogbane ( <i>Apocynum sibiricum</i> )	46	•	✓	✓	Mid
Maximilian's sunflower ( <i>Helianthus maximiliani</i> )	42	•	✓	✓	
Heart-leaved alexanders ( <i>Zizia aptera</i> )	40	•	✓		Early
Black-eyed Susan ( <i>Rudbeckia hirta</i> )	38	•	✓		Mid
Northern plains blazing star ( <i>Liatris ligulistylis</i> )	38	•	✓	✓	Late
Stemless blue violets ( <i>Viola sororia</i> or <i>V. nephrophylla</i> )	36	•	✓		Early
Giant goldenrod ( <i>Solidago gigantea</i> )	34	•	✓	✓	Late
Virginia mountain mint ( <i>Pycnanthemum virginianum</i> )	33	••	✓		Mid-Late
Swamp lousewort ( <i>Pedicularis lanceolata</i> )	31	•	✓		Late
Flat-topped aster ( <i>Aster umbellatus</i> )	30	•	✓		Mid-Late
Gray goldenrod ( <i>Solidago nemoralis</i> )	29	•	✓		Late
Stiff goldenrod ( <i>Solidago rigida</i> )	27	•	✓		Mid-Late
Purple prairie clover ( <i>Dalea purpurea</i> )	26	•	✓		Mid
White camass ( <i>Zigadenus elegans</i> )	26	•	✓		Early-mid
Autumn sneezeweed ( <i>Helenium autumnale</i> )	25	•	✓	✓ (?)	Late
Seaside arrowgrass ( <i>Triglochin maritima</i> )	25	•	✓ (?)		
Cut-leaved bugleweed ( <i>Lycopus americanus</i> )	23	•	✓		Mid-Late
Silverweed ( <i>Potentilla anserina</i> )	23	••	✓		Early-Mid to Mid-Late
Smooth scouring rush ( <i>Equisetum laevigatum</i> )	22	•	✓		
White aster-like goldenrod ( <i>Solidago ptarmicoides</i> )	22	•	✓		Mid-Late
New England aster ( <i>Aster novae-angliae</i> )	21	•	✓	✓	Late
Swamp thistle ( <i>Cirsium muticum</i> )	21	•	✓	✓	Mid
Yellow stargrass ( <i>Hypoxis hirsuta</i> )	20	•	✓		Early
Kalm's lobelia ( <i>Lobelia kalmii</i> )	20	•	✓		Mid
Bastard toadflax ( <i>Comandra umbellata</i> )	17	•	✓		Early-Mid
Great blazing star ( <i>Liatris pycnostachya</i> )	16	••	✓		Mid
Alkali plantain ( <i>Plantago eriopoda</i> )	10	•••	?		
<b>Grasses &amp; Sedges</b>					
Prairie cordgrass ( <i>Spartina pectinata</i> )	84	•••	wind		
Big bluestem ( <i>Andropogon gerardii</i> )	78	•••	wind		
Mat muhly grass ( <i>Muhlenbergia richardsonis</i> )	66	•••	wind		
Tufted hair grass ( <i>Deschampsia cespitosa</i> )	62	•••	wind	✓ (?)	
Narrow reedgrass ( <i>Calamagrostis stricta</i> )	50	••	wind		
Baltic rush ( <i>Juncus arcticus</i> )	48	••	wind		
Buxbaum's sedge ( <i>Carex buxbaumii</i> )	46	•••	wind		
Rigid sedge ( <i>Carex tetanica</i> )	41	••	wind		
Prairie dropseed ( <i>Sporobolus heterolepis</i> )	40	•••	wind	✓	
Slender wheatgrass ( <i>Elymus trachycaulus</i> )	34	•	wind		
Clustered muhly grass ( <i>Muhlenbergia glomerata</i> )	34	••	wind		
Flattened spikerush ( <i>Eleocharis compressa</i> )	32	••	wind		
Sartwell's sedge ( <i>Carex sartwellii</i> )	31	••	wind		
Switchgrass ( <i>Panicum virgatum</i> )	25	•••	wind		
Woolly sedge ( <i>Carex pellita</i> )	24	••	wind		
Indian grass ( <i>Sorghastrum nutans</i> )	19	••	wind		
Little bluestem ( <i>Schizachyrium scoparium</i> )	15	••	wind	✓	
Very slender sedge ( <i>Carex praegracilis</i> )	14	•••	wind		
Salt grass ( <i>Distichlis spicata</i> )	8	•••	wind		
<b>Shrubs</b>					
Slender willow ( <i>Salix petiolaris</i> )	56	••	✓ (& wind?)		Early
Bebb's willow ( <i>Salix bebbiana</i> )	47	••	✓ (& wind?)		Early
Bog birch ( <i>Betula pumila</i> )	44	•••	wind		
Shrubby cinquefoil ( <i>Potentilla fruticosa</i> )	43	•••	✓		Mid
Pussy willow ( <i>Salix discolor</i> )	43	••	✓ (& wind?)		Early
Red-osier dogwood ( <i>Cornus sericea</i> )	20	••	✓		Early-Mid
Wood's rose ( <i>Rosa woodsii</i> )	15	••	✓		Mid

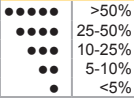


notes

plant species data based on 167 vegetation plots

Old stems for hollow stem nesting bees  
Provides pollen; specialist bees harvest an oil  
Masses of tiny flowers

species cover



Old stems for hollow stem nesting bees (?)  
Old stems for hollow stem nesting bees (?)

Old stems for hollow stem nesting bees  
Old stems for hollow stem nesting bees

Old stems for hollow stem nesting bees

Old stems for hollow stem nesting bees

Bumblebee flower

Principally flies; moths at night?  
Old stems for hollow stem nesting bees

Fern-ally, not a flowering plant

Old stems for hollow stem nesting bees  
Old stems for hollow stem nesting bees

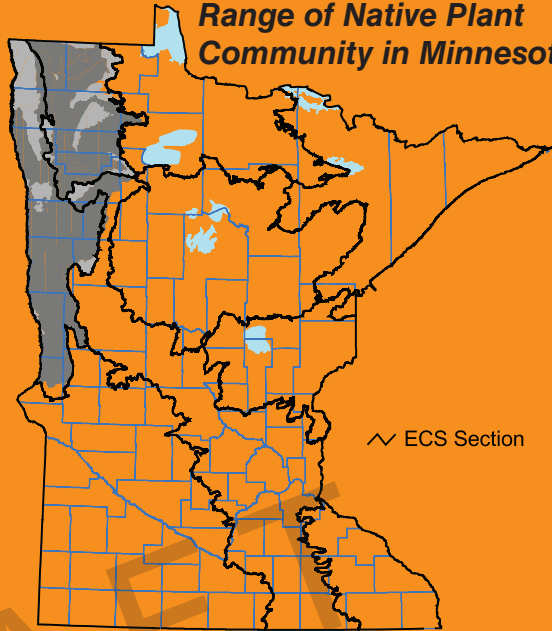
Uncommon north of Polk Co.

Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps?

Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps

Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps

## Range of Native Plant Community in Minnesota



~ ECS Section



Northern Wet Prairie, Kittson County MN



# Southern Wet Prairie (WPs54)

Forbs, Ferns & Fern Allies	species frequency in NPC (%)	species cover (when present)	animal pollination?	pollinator nest value	blooming period
Canada goldenrod ( <i>Solidago canadensis</i> )	78	●●●	✓		Mid-Late
Tall meadow-rue ( <i>Thalictrum dasycarpum</i> )	69	●	wind	✓ (?)	
Heath aster ( <i>Aster ericoides</i> )	67	●	✓		Mid-Late
Eastern panicled aster ( <i>Aster lanceolatus</i> )	61	●	✓	✓ (?)	Late
Clasping dogbane ( <i>Apocynum sibiricum</i> )	61	●	✓	✓	Mid
Virginia mountain mint ( <i>Pycnanthemum virginianum</i> )	57	●●	✓		Mid-Late
Common strawberry ( <i>Fragaria virginiana</i> )	55	●	✓		Early
Great blazing star ( <i>Liatris pycnostachya</i> )	53	●	✓		Mid
Sawtooth and Giant sunflower ( <i>Helianthus</i> spp.)*	51	●●●	✓	✓	Mid-Late
Golden alexanders ( <i>Zizia aurea</i> )	49	●	✓		Early
Giant goldenrod ( <i>Solidago gigantea</i> )	45	●●	✓	✓	Late
Golden or False golden ragwort ( <i>Senecio aureus</i> or <i>S. pseudoaureus</i> )	43	●●	✓		Early
Riddell's goldenrod ( <i>Solidago riddellii</i> )	41	●	✓		Late
Stemless blue violets ( <i>Viola sororia</i> and <i>V. nephrophylla</i> )	41	●	✓		Early
Northern plains blazing star ( <i>Liatris ligulistylis</i> )	41	●	✓	✓	Late
Heart-leaved alexanders ( <i>Zizia aptera</i> )	39	●	✓		Early
Autumn sneezeweed ( <i>Helenium autumnale</i> )	37	●	✓	✓ (?)	Late
Spotted water hemlock ( <i>Cicuta maculata</i> )	35	●	✓		Mid
Stiff goldenrod ( <i>Solidago rigida</i> )	35	●	✓		Mid-Late
Prairie loosestrife ( <i>Lysimachia quadriflora</i> )	33	●	✓		Mid
Prairie phlox ( <i>Phlox pilosa</i> )	33	●	✓		Early-Mid
Swamp milkweed ( <i>Asclepias incarnata</i> )	33	●	✓		Mid
White camass ( <i>Zigadenus elegans</i> )	33	●	✓		Early-mid
Northern bedstraw ( <i>Galium boreale</i> )	29	●	✓ (?)		Early-mid
Purple prairie clover ( <i>Dalea purpurea</i> )	29	●	✓		Mid
Yarrow ( <i>Achillea millefolium</i> )	29	●	✓		Early-mid to Mid-Late
Pale-spiked lobelia ( <i>Lobelia spicata</i> )	29	●	✓		Mid
Canada anemone ( <i>Anemone canadensis</i> )	27	●●	✓		Early-Mid
Gray-headed coneflower ( <i>Ratibida pinnata</i> )	27	●	✓	?	Mid
Marsh vetchling ( <i>Lathyrus palustris</i> )	27	●	✓		Early-Mid
Smooth scouring rush ( <i>Equisetum laevigatum</i> )	25	●			
Cut-leaved bugleweed ( <i>Lycopus americanus</i> )	25	●	✓		Mid-Late
Maximilian's sunflower ( <i>Helianthus maximiliani</i> )	24	●●	✓	✓	Mid-Late
Field horsetail ( <i>Equisetum arvense</i> )	24	●			
Grass-leaved goldenrod ( <i>Euthamia graminifolia</i> )	22	●●	✓		Mid-Late
New England aster ( <i>Aster novae-angliae</i> )	22	●	✓	✓	Late
Canada tick trefoil ( <i>Desmodium canadense</i> )	22	●	✓		Mid
Skyblue aster ( <i>Aster oolentangensis</i> )	22	●	✓		Late
Swamp thistle ( <i>Cirsium muticum</i> )	22	●	✓	✓	Mid
Bottle gentian ( <i>Gentiana andrewsii</i> )	20	●	✓		Mid-Late
Rough bugleweed ( <i>Lycopus asper</i> )	18	●	✓		Mid-Late
Veiny pea ( <i>Lathyrus venosus</i> )	18	●	✓		Early-Mid
Swamp lousewort ( <i>Pedicularis lanceolata</i> )	16	●●	✓		Late
Culver's root ( <i>Veronicastrum virginicum</i> )	14	●●	✓		Mid
Flat-topped aster ( <i>Aster umbellatus</i> )	14	●●	✓		Mid-Late
Great lobelia ( <i>Lobelia siphilitica</i> )	12	●	✓		Mid-Late
Yellow stargrass ( <i>Hypoxis hirsuta</i> )	12	●	✓		Early
Cup plant ( <i>Silphium perfoliatum</i> )	12	●	✓		Mid-Late
Wood lily ( <i>Lilium philadelphicum</i> )	12	●	✓	✓ (?)	Mid
<b>Grasses &amp; Sedges</b>					
Prairie cordgrass ( <i>Spartina pectinata</i> )	86	●●●	wind		
Big bluestem ( <i>Andropogon gerardii</i> )	80	●●●	wind		
Indian grass ( <i>Sorghastrum nutans</i> )	51	●●●	wind		
Switchgrass ( <i>Panicum virgatum</i> )	47	●●●	wind		
Woolly sedge ( <i>Carex pellita</i> )	41	●●●	wind		
Rigid sedge ( <i>Carex tetanica</i> )	39	●	wind		
Flattened spikerush ( <i>Eleocharis compressa</i> )	39	●	wind		
Mat muhly grass ( <i>Muhlenbergia richardsonis</i> )	33	●●●	wind		
Bluejoint ( <i>Calamagrostis canadensis</i> )	25	●●	wind		
Baltic rush ( <i>Juncus arcticus</i> )	25	●●	wind		
Tussock sedge ( <i>Carex stricta</i> )	24	●●●	wind		
Prairie dropseed ( <i>Sporobolus heterolepis</i> )	24	●●	wind	✓	
Narrow reedgrass ( <i>Calamagrostis stricta</i> )	24	●	wind		
Fowl manna grass ( <i>Glyceria striata</i> )	20	●●	wind		
<b>Half-shrubs</b>					
Prairie rose ( <i>Rosa arkansana</i> )	29	●●	✓		Mid
<b>Shrubs</b>					
Red-osier dogwood ( <i>Cornus sericea</i> )	18	●	✓		Early-Mid
Pussy willow ( <i>Salix discolor</i> )	16	●	✓ (& wind?)		Early

\*Sawtooth and Giant sunflower (*H. grosseserratus* and *H. giganteus*)

notes

plant species data based on 51 vegetation plots

Old stems for hollow stem nesting bees (?)

Old stems for hollow stem nesting bees (?)

Old stems for hollow stem nesting bees

Uncommon north of Polk Co.

Old stems for hollow stem nesting bees

Old stems for hollow stem nesting bees

Old stems for hollow stem nesting bees

Old stems for hollow stem nesting bees

Provides pollen; specialist bees harvest an oil

Not north of Norman & Mahnomon counties

Principally flies; moths at night?

Masses of tiny flowers

Masses of very small heads

Old stems for hollow stem nesting bees? South of line from Lincoln to Henn. Cos.

Fern ally, not a flowering plant

Old stems for hollow stem nesting bees

Fern ally, not a flowering plant

Old stems for hollow stem nesting bees

Old stems for hollow stem nesting bees

Bumblebee flower

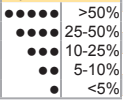
Bumblebee flower (?)

Bumblebee flower

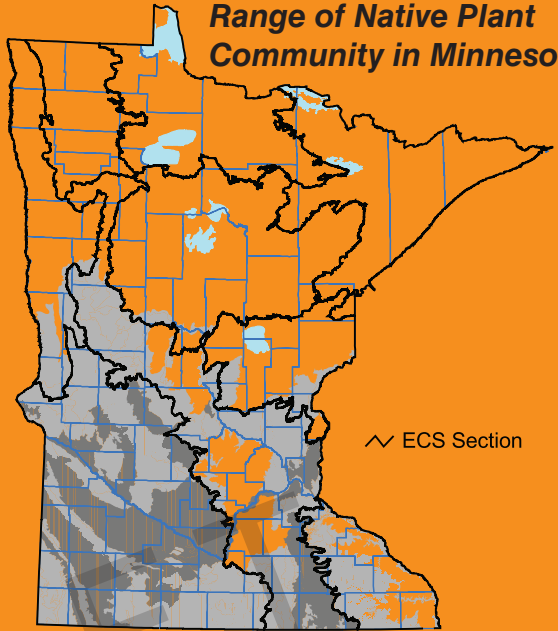
A butterfly flower; pollinated by large butterflies

Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps

species cover



# Range of Native Plant Community in Minnesota



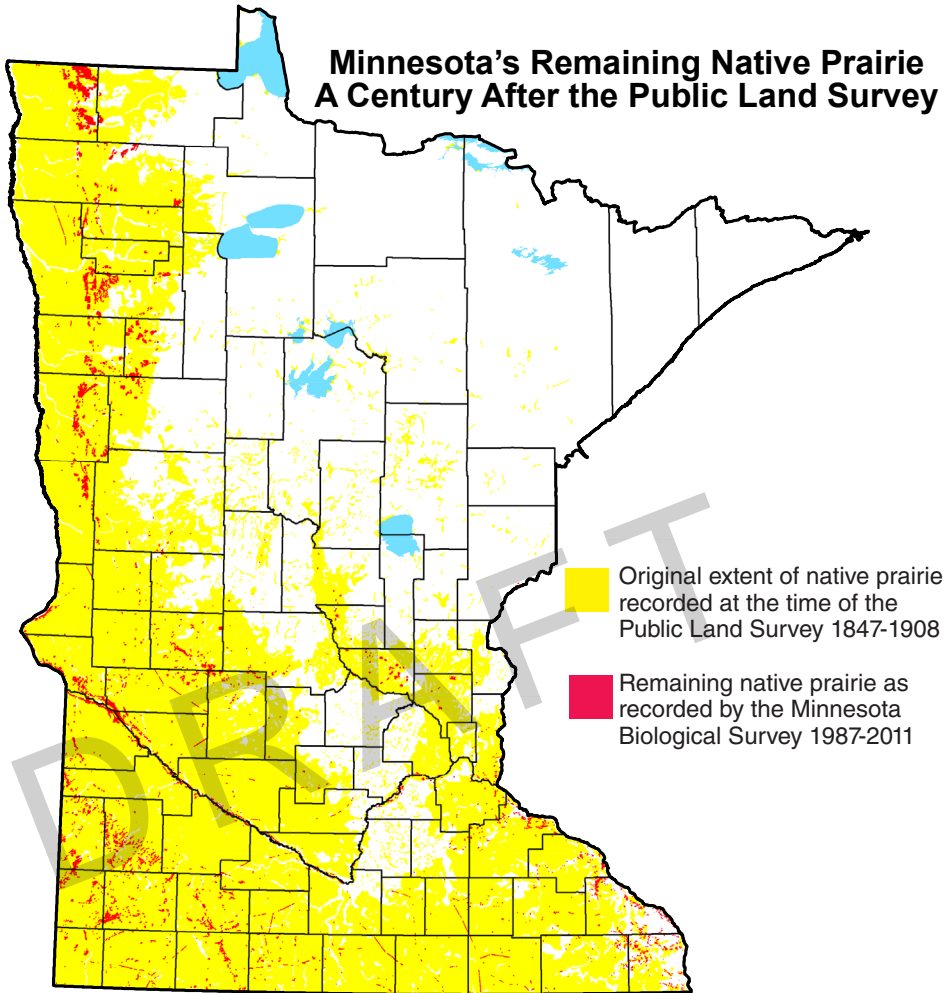
∨ ECS Section

DRAFT



Southern Wet Prairie, Jackson County MN

## Minnesota's Remaining Native Prairie A Century After the Public Land Survey



*After more than a century of land clearing and development, just over 1% of Minnesota's native prairie (highlighted in red) remains.*



Minnesota Biological Survey  
Minnesota Department of Natural Resources  
500 Lafayette Rd., Box 25  
St. Paul, MN 55155  
[www.mndnr.gov/mbs](http://www.mndnr.gov/mbs)



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