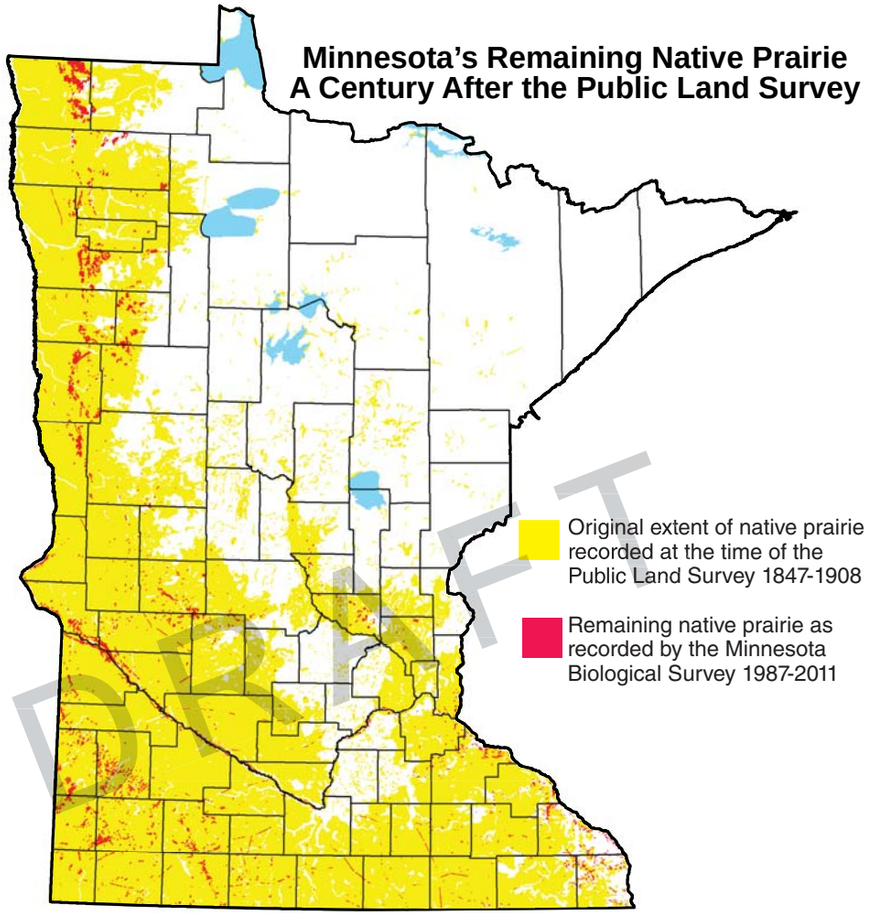

After more than a century of land clearing and development, just over 1% of Minnesota's native prairie (highlighted in red) remains.

Minnesota Biological Survey
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NATIVE PLANT COMMUNITIES of MINNESOTA

Pollinator RESOURCE VALUES

for Upland & Wetland Prairies

UPDATE MAY, 2014

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. 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:

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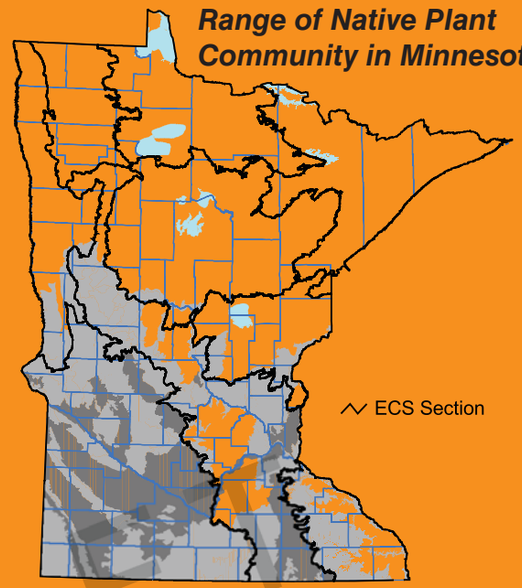
notes	*plant species data based on 51 vegetation plots*
Old stems for hollow stem nesting bees (?)	
Old stems for hollow stem nesting bees (?)	
Old stems for hollow stem nesting bees	
Uncommon north of Polk Co.	
Old stems for hollow stem nesting bees	
Old stems for hollow stem nesting bees	
Old stems for hollow stem nesting bees	
Old stems for hollow stem nesting bees	
Provides pollen; specialist bees harvest an oil	
Not north of Norman & Mahnomen 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	
●●●●●	>50%
●●●●	25-50%
●●●	10-25%
●●	5-10%
●	<5%

Range of Native Plant Community in Minnesota



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

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

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. 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, 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)
  - 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)

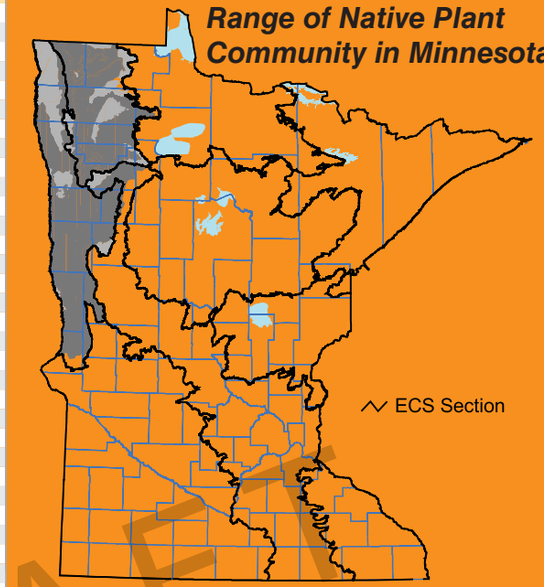
Forbs, Ferns & Fern Allies	species frequency in NPC (%)	species cover (when present)	animal pollination?	pollinator nest value	blooming period	notes
Purple prairie clover (*Dalea purpurea*)	78	●	✔		Mid	
Heath aster (*Aster ericoides*)	76	●	✔		Mid-Late	Old stems for hollow stem nesting bees
Harebell (*Campanula rotundifolia*)	74	●	✔		Mid	Provides pollen; specialist bees harvest an oil
Stiff sunflower (*Helianthus pauciflorus*)	69	●●	✔	✔	Mid-Late	Masses of tiny flowers
Dotted blazing star (*Liatris punctata*)	69	●	✔	✔ (?)	Late	
Gray goldenrod (*Solidago nemoralis*)	67	●	✔		Late	Old stems for hollow stem nesting bees (?)
Hoary puccoon (*Lithospermum canescens*)	67	●	✔		Early	Old stems for hollow stem nesting bees (?)
Prairie wild onion (*Allium stellatum*)	66	●	✔		Mid-Late	
Northern bedstraw (*Galium boreale*)	59	●●	✔ (?)		Early-mid	
Hairy golden aster (*Chrysopsis villosa*)	57	●	✔		Early-mid to Mid	
Stiff goldenrod (*Solidago rigida*)	55	●●	✔		Mid-Late	
Long-headed thimbleweed (*Anemone cylindrica*)	55	●	✔		Early-Mid	
Bastard toad-flax (*Comandra umbellata*)	55	●	✔		Early-Mid	
Missouri goldenrod (*Solidago missouriensis*)	53	●●	✔		Mid-Late	
Alumroot (*Heuchera richardsonii*)	53	●	✔		Early-Mid	Old stems for hollow stem nesting bees
Pasque-flower (*Anemone patens*)	52	●	✔		Early	Old stems for hollow stem nesting bees
Daisy fleabane (*Erigeron strigosus*)	50	●	✔		Mid	
Tall cinquefoil (*Potentilla arguta*)	50	●	✔		Mid	
White sage (*Artemisia ludoviciana*)	50	●	wind (?)			Old stems for hollow stem nesting bees
Prairie smoke (*Geum triflorum*)	50	●	✔		Early	
Yarrow (*Achillea millefolium*)	48	●	✔		Early-mid to Mid-Late	Old stems for hollow stem nesting bees
Silky aster (*Aster sericeus*)	47	●●	✔		Late	
Rough blazing star (*Liatris aspera*)	43	●	✔	✔ (?)	Late	Bumblebee flower
Prairie turnip (*Pediomelum esculentum*)	41	●	✔ (?)		Early-Mid	
White prairie clover (*Dalea candida*)	41	●	✔		Mid	
Field pussytoes (*Antennaria neglecta* or *A. neodioica*)	41	●	✔ (?)		Early	
Smooth blue aster (*Aster laevis*)	40	●	✔		Mid-Late	
Flodman's thistle (*Cirsium flodmanii*)	38	●	✔	✔	Mid	Principally flies; moths at night?
Grooved yellow flax (*Linum sulcatum*)	36	●	✔		Early-Mid to Mid	Old stems for hollow stem nesting bees
Tall wormwood or Tarragon (*Artemisia campestris* or *A. dracunculus*)	36	●	wind (?)			
Field chickweed (*Cerastium arvense*)	36	●	✔		Early-Mid	
Bearded birdfoot violet (*Viola pedatifida*)	34	●	✔		Early	
Virginia ground cherry (*Physalis virginiana*)	33	●	✔		Mid	Fern-ally, not a flowering plant
Toothed evening primrose (*Calylophus serrulatus*)	33	●	✔		Early-Mid	
Narrow-leaved purple coneflower (*Echinacea angustifolia*)	24	●	✔		Mid	Old stems for hollow stem nesting bees
Wild bergamot (*Monarda fistulosa*)	24	●	✔		Mid	Old stems for hollow stem nesting bees
Blanketflower (*Gaillardia aristata*)	24	●	✔		Early-Mid	
Slender beard tongue (*Penstemon gracilis*)	24	●	✔		Early-Mid	
Plantain-leaved pussytoes (*Antennaria plantaginifolia*)	22	●	✔ (?)		Early	
Whorled milkwort (*Polygala verticillata*)	22	●	✔		Early-Mid?	Uncommon north of Polk Co.
Prairie ragwort or Balsam ragwort (*Senecio plattensis* or *S. pauperculus*)	21	●	✔		Early	
White aster-like goldenrod (*Solidago ptarmicoides*)	21	●	✔		Mid-Late	
Ground plum (*Astragalus crassicarpus*)	21	●	✔		Early	
Pale-spiked lobelia (*Lobelia spicata*)	21	●	✔		Mid	
Prairie milk vetch (*Astragalus adsurgens*)	17	●	✔		Early-Mid	
Downy paintbrush (*Castilleja sessiliflora*)	17	●	✔		Early	
Western ragweed (*Ambrosia psilostachya*)	14	●●	wind			Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps?
Grasses & Sedges						
Little bluestem (*Schizachyrium scoparium*)	84	●●●	wind	✔		
Junegrass (*Koeleria pyramidata*)	81	●	wind	✔		
Porcupine grass (*Stipa spartea*)	79	●●●	wind	✔		Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps
Big bluestem (*Andropogon gerardii*)	76	●●●	wind			
Blue grama (*Bouteloua gracilis*)	59	●●●	wind			
Prairie dropseed (*Sporobolus heterolepis*)	57	●●●	wind	✔		
Plains muhly (*Muhlenbergia cuspidata*)	50	●●	wind	✔		
Slender wheatgrass (*Elymus trachycaulus*)	45	●	wind			
Wilcox's panic grass (*Panicum wilcoxianum*)	36	●	wind			
Sand reed-grass (*Calamovilfa longifolia*)	29	●●	wind			
Needle-and-thread grass (*Stipa comata*)	28	●●●	wind	✔		Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps
Indian grass (*Sorghastrum nutans*)	26	●●	wind			
Side-oats grama (*Bouteloua curtipendula*)	21	●●	wind			
Blunt sedge (*Carex obtusata*)	17	●●	wind			
Half-shrubs						
Leadplant (*Amorpha canescens*)	88	●●	✔		mid	
Sage wormwood (*Artemisia frigida*)	60	●●	wind (?)		mid	
Prairie rose (*Rosa arkansana*)	40	●●	✔		mid	
Shrubs						
Sand cherry (*Prunus pumila*)	38	●	✔		early	
Snowberry or Wolfberry (*Symphoricarpos occidentalis* or *S. albus*)	29	●	✔		mid	

plant species data based on 167 vegetation plots

species cover

●●●●●	>50%
●●●●	25-50%
●●●	10-25%
●●	5-10%
●	<5%

Range of Native Plant Community in Minnesota




Northern Wet Prairie, Kittson County MN

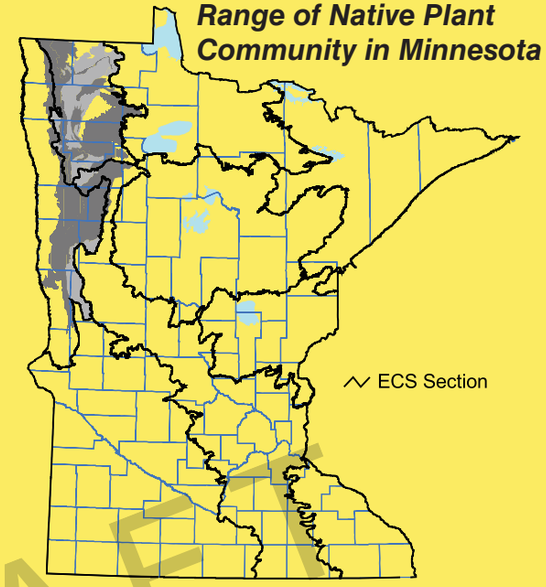
Northern Wet Prairie (WPn53)

Forbs, Ferns & Fern Allies	species frequency in NPC (%)	species cover (when present)	animal pollination?	pollinator nest value	blooming period	notes
Canada goldenrod (*Solidago canadensis*)	66	●●	✔		Mid-Late	
Sawtooth or giant sunflower (*Helianthus grosseserratus* or *H. giganteus*)	64	●●	✔	✔	Mid-Late	
Prairie loosestrife (*Lysimachia quadriflora*)	62	●●	✔		Mid	
Northern bedstraw (*Galium boreale*)	60	●●	✔ (?)		Early-mid	
Heath aster (*Aster ericoides*)	54	●	✔		Mid-Late	Old stems for hollow stem nesting bees
Tall meadow-rue (*Thalictrum dasycarpum*)	52	●	wind	✔ (?)		Old stems possibly used by stem nesting bees
Eastern panicled aster (*Aster lanceolatus*)	51	●	✔	✔ (?)	Late	
Common strawberry (*Fragaria virginiana*)	50	●●	✔		Early	
Golden alexanders (*Zizia aurea*)	50	●	✔		Early	Masses of tiny flowers
Spotted water hemlock (*Cicuta maculata*)	49	●	✔		Mid	Long blooming period
Golden or false golden ragwort (*Senecio aureus* or *S. pseudaureus*)	49	●	✔		Early	
Grass-leaved goldenrod (*Euthamia graminifolia*)	48	●	✔		Mid-Late	
Riddell's goldenrod (*Solidago riddellii*)	48	●	✔		Late	
Marsh vetchling (*Lathyrus palustris*)	47	●	✔		Early-Mid	
Clasping dogbane (*Apocynum sibiricum*)	46	●	✔	✔	Mid	
Maximilian's sunflower (*Helianthus maximiliani*)	42	●	✔	✔		Popular with flies; one of first flowers available
Heart-leaved alexanders (*Zizia aptera*)	40	●	✔		Early	
Black-eyed Susan (*Rudbeckia hirta*)	38	●	✔		Mid	
Northern plains blazing star (*Liatris ligulistylis*)	38	●	✔	✔	Late	
Stemless blue violets (*Viola sororia* or *V. nephrophylla*)	36	●	✔		Early	Early resource for bumblebees
Giant goldenrod (*Solidago gigantea*)	34	●	✔	✔	Late	Masses of very small heads
Virginia mountain mint (*Pycnanthemum virginianum*)	33	●●	✔		Mid-Late	
Swamp lousewort (*Pedicularis lanceolata*)	31	●	✔		Late	Old stems for hollow stem nesting bees (?)
Flat-topped aster (*Aster umbellatus*)	30	●	✔		Mid-Late	
Gray goldenrod (*Solidago nemoralis*)	29	●	✔		Late	
Stiff goldenrod (*Solidago rigida*)	27	●	✔		Mid-Late	
Purple prairie clover (*Dalea purpurea*)	26	●	✔		Mid	
White camass (*Zigadenus elegans*)	26	●	✔		Early-mid	
Autumn sneezeweed (*Helenium autumnale*)	25	●	✔	✔ (?)	Late	Old stems for hollow stem nesting bees
Seaside arrowgrass (*Triglochin maritima*)	25	●	✔ (?)			
Cut-leaved bugleweed (*Lycopus americanus*)	23	●	✔		Mid-Late	
Silverweed (*Potentilla anserina*)	23	●●	✔		Early-Mid to Mid-Late	
Smooth scouring rush (*Equisetum laevigatum*)	22	●	✔			
White aster-like goldenrod (*Solidago ptarmicoides*)	22	●	✔		Mid-Late	Bumblebee flower?
New England aster (*Aster novae-angliae*)	21	●	✔	✔	Late	Not in eastern MN, or north of Polk Co.
Swamp thistle (*Cirsium muticum*)	21	●	✔	✔	Mid	
Yellow stargrass (*Hypoxis hirsuta*)	20	●	✔		Early	
Kalm's lobelia (*Lobelia kalmii*)	20	●	✔		Mid	
Bastard toadflax (*Comandra umbellata*)	17	●	✔		Early-Mid	
Great blazing star (*Liatris pycnostachya*)	16	●	✔		Mid	
Alkali plantain (*Plantago eriopoda*)	10	●●●	?			
Grasses & Sedges						
Prairie cordgrass (*Spartina pectinata*)	84	●●●	wind			Important early resource for bumblebees
Big bluestem (*Andropogon gerardii*)	78	●●●	wind			
Mat muhly grass (*Muhlenbergia richardsonis*)	66	●●●	wind			
Tufted hair grass (*Deschampsia cespitosa*)	62	●●●	wind	✔ (?)		Sphinx moths; bumblebees (?)
Narrow reedgrass (Calamagrostis stricta)	50	●●	wind			
Baltic rush (*Juncus arcticus*)	48	●●	wind			
Buxbaum's sedge (*Carex buxbaumii*)	46	●●●	wind			Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps
Rigid sedge (*Carex tetanica*)	41	●	wind			Low stature, semi-bunch habit favorable for ground nesting bees
Prairie dropseed (*Sporobolus heterolepis*)	40	●●●	wind	✔		Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps
Slender wheatgrass (*Elymus trachycaulus*)	34	●	wind			
Clustered muhly grass (*Muhlenbergia glomerata*)	34	●	wind			
Flattened spikerush (*Eleocharis compressa*)	32	●●	wind			Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps
Sartwell's sedge (*Carex sartwellii*)	31	●●	wind			Tufted growth habit leaves exposed soil for ground-nesting bees and wasps
Switchgrass (*Panicum virgatum*)	25	●●●	wind			
Woolly sedge (*Carex pellita*)	24	●●	wind			
Indian grass (*Sorghastrum nutans*)	19	●●	wind			
Little bluestem (*Schizachyrium scoparium*)	15	●●	wind	✔		Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps
Very slender sedge (*Carex praegracilis*)	14	●●	wind			
Salt grass (*Distichlis spicata*)	8	●●●	wind			
Shrubs						
Slender willow (*Salix petiolaris*)	56	●●	✔ (& wind?)		Early	
Bebb's willow (*Salix bebbiana*)	47	●●	✔ (& wind?)		Early	
Bog birch (*Betula pumila*)	44	●●●	wind			
Shrubby cinquefoil (*Potentilla fruticosa*)	43	●●●	✔		Mid	
Pussy willow (*Salix discolor*)	43	●●	✔ (& wind?)		Early	
Red-osier dogwood (*Cornus sericea*)	20	●●	✔		Early-Mid	
Wood's rose (*Rosa woodsii*)	15	●	✔		Mid	

plant species data based on 58 vegetation plots

species cover
- ●●●●● >50%
- ●●●● 25-50%
- ●●● 10-25%
- ●● 5-10%
- ● <5%

Range of Native Plant Community in Minnesota




Northern Dry Prairie, Becker County MN

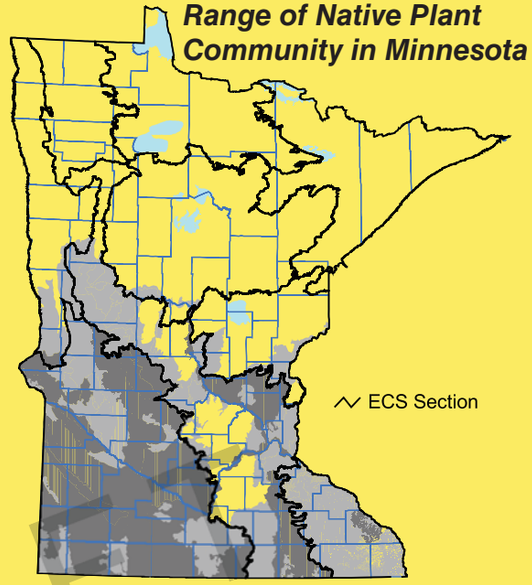
Northern Dry Savanna (UPn13)

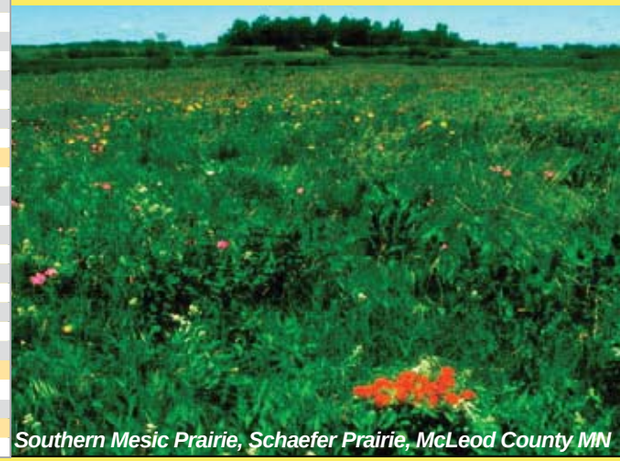
Forbs, Ferns & Fern Allies	species frequency in NPC (%)	species cover (when present)	animal pollination?	pollinator nest value	blooming period	notes
White sage (*Artemisia ludoviciana*)	93	●●	wind(?)			Masses of very small heads
Gray goldenrod (*Solidago nemoralis*)	93	●●	✔		Late	Old stems for hollow stem nesting bees
Yarrow (*Achillea millefolium*)	79	●	✔		Early-mid to Mid-Late	Not north of Norman & Mahnomen counties
Hoary puccoon (*Lithospermum canescens*)	71	●	✔		Early	
Smooth blue aster (*Aster laevis*)	71	●	✔		Mid-Late	
Rough blazing star (*Liatris aspera*)	71	●	✔	✔ (?)	Late	Old stems for hollow stem nesting bees
Missouri goldenrod (*Solidago missouriensis*)	64	●●	✔		Mid-Late	
Silky aster (*Aster sericeus*)	64	●●	✔		Late	
Field pussytoes (*Antennaria neglecta* or *A. neodioica*)	64	●	✔		Early	
Northern bedstraw (*Galium boreale*)	64	●	✔		Early-mid	
Bastard toad-flax (*Comandra umbellata*)	64	●	✔		Early-Mid	
Starry false Solomon's seal (*Smilacina stellata*)	64	●	✔		Early-Mid	
Tall cinquefoil (*Potentilla arguta*)	64	●	✔		Mid	
Tall wormwood or Tarragon (*Artemisia campestris* or *A. dracunculus*)	57	●	wind(?)			
Wild bergamot (*Monarda fistulosa*)	57	●	✔		Mid	
Harebell (*Campanula rotundifolia*)	57	●	✔		Mid	
Spreading dogbane (*Apocynum androsaemifolium*)	50	●●	✔		Early-Mid to Mid	
Veiny meadow-rue (*Thalictrum venulosum*)	50	●●	wind			
Stiff goldenrod (*Solidago rigida*)	50	●●	✔		Mid-Late	
Prairie wild onion (*Allium stellatum*)	50	●	✔		Mid-Late	
White prairie clover (*Dalea candida*)	50	●	✔		Mid	
Purple prairie clover (*Dalea purpurea*)	50	●	✔		Mid	
Field chickweed (*Cerastium arvense*)	50	●	✔		Early-Mid	
Plantain-leaved pussytoes (*Antennaria plantaginifolia*)	50	●	✔			
Stiff sunflower (*Helianthus pauciflorus*)	43	●●	✔	✔	Mid-Late	Old stems for hollow stem nesting bees
Oval-leaved milkweed (*Asclepias ovalifolia*)	43	●	✔	✔	Early-Mid	
American vetch (*Vicia americana*)	43	●	✔		Early-Mid to Mid-Late	
Alumroot (*Heuchera richardsonii*)	43	●	✔		Early-Mid	
Blue giant hyssop (*Agastache foeniculum*)	36	●●	✔		Mid	
Heath aster (*Aster ericoides*)	36	●	✔		Mid-Late	
Long-headed thimbleweed (*Anemone cylindrica*)	36	●	✔		Early-Mid	
Slender beard tongue (*Penstemon gracilis*)	36	●	✔		Early-Mid	
Daisy fleabane (*Erigeron strigosus*)	36	●	✔		Mid	
Pale vetchling (*Lathyrus ochroleucus*)	36	●	✔		Early-Mid	
Canada goldenrod (*Solidago canadensis*)	36	●	✔		Mid-Late	
Rock spikemoss (*Selaginella rupestris*)	29	●●				Old stems for hollow stem nesting bees?
Prairie smoke (*Geum triflorum*)	29	●	✔		Early	
Bearded birdfoot violet (*Viola palmata*)	29	●	✔		Early	
Hoary frostweed (*Helianthemum bicknellii*)	29	●	✔		Early-mid	
Erect, Smooth, or Illinois carrion-flower (*Smilax* spp)	29	●	✔		Early-Mid	
Grasses & Sedges						
Big bluestem (*Andropogon gerardii*)	93	●●●●	wind			South of line from Ottertail Co. to Chisago Co.
Porcupine grass (*Stipa spartea*)	93	●●●	wind	✔		Not in eastern MN, or north of Polk Co.
Junegrass (*Koeleria pyramidata*)	71	●	wind	✔		
Slender wheatgrass (*Elymus trachycaulus*)	50	●	wind			
Sand reed-grass (*Calamovilfa longifolia*)	43	●●	wind			
Little bluestem (*Schizachyrium scoparium*)	36	●●●	wind	✔		Uncommon north of Polk Co.
Nodding wild rye (*Elymus canadensis*)	36	●	wind			Principally flies; moths at night?
Blue grama (*Bouteloua gracilis*)	29	●●●	wind			
Sand dropseed (*Sporobolus cryptandrus*)	29	●	wind			
Blunt sedge (*Carex obtusata*)	29	●	wind			
Kalm's brome (*Bromus kalmii*)	29	●	wind			
Prairie dropseed (*Sporobolus heterolepis*)	29	●	wind	✔		Important early resource for bumblebees
Pennsylvania sedge (*Carex pensylvanica* var. *pensylvanica*)	21	●●	wind			
Schweinitz's nut-sedge (*Cyperus schweinitzii*)	21	●	wind			
Semi-shrubs						
Poison ivy (*Toxicodendron rydbergii*)	64	●●	✔	✔		Old stems for hollow stem nesting bees
Prairie rose (*Rosa arkansana*)	64	●	✔	✔		Bumblebee flower?
Leadplant (*Amorpha canescens*)	50	●●●	✔	✔		
Sage wormwood (*Artemisia frigida*)	21	●	wind (?)			Bumblebee flower
Shrubs						Old stems for hollow stem nesting bees
Snowberry and Wolfberry (*Symphoricarpos albus* or *S. occidentalis*)	64	●●	✔		Mid	
Saskatoon juneberry (*Amelanchier alnifolia*)	64	●	✔		Early	
American hazelnut (*Corylus americana*)	57	●●●	wind			
Chokecherry (*Prunus virginiana*)	57	●	✔		Early-Mid	
Sand cherry (*Prunus pumila*)	36	●	✔		Early	
Meadowsweet (*Spiraea alba*)	29	●	✔		Mid	
Prairie willow (*Salix humilis*)	21	●	✔ (& wind?)		Early	A butterfly flower; pollinated by large butterflies
Creeping juniper (*Juniperus horizontalis*)	14	●	wind			Old stems for hollow stem nesting bees
Trees						
Bur oak (*Quercus macrocarpa*)	100	●●●	wind			Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps
Quaking aspen (*Populus tremuloides*)	29	●	wind			Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps
						Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps

plant species data based on 102 vegetation plots

species cover	
●●●●●	>50%
●●●●	25-50%
●●●	10-25%
●●	5-10%
●	<5%

Range of Native Plant Community in Minnesota





Southern Mesic Prairie, Schaefer Prairie, McLeod County MN

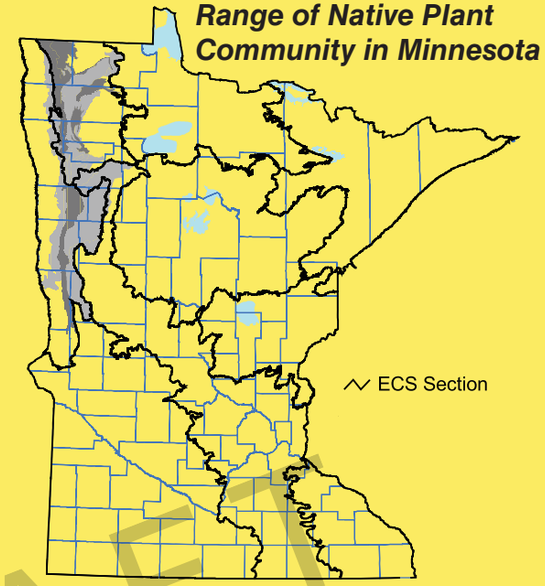
Southern Mesic Prairie (UPs23)

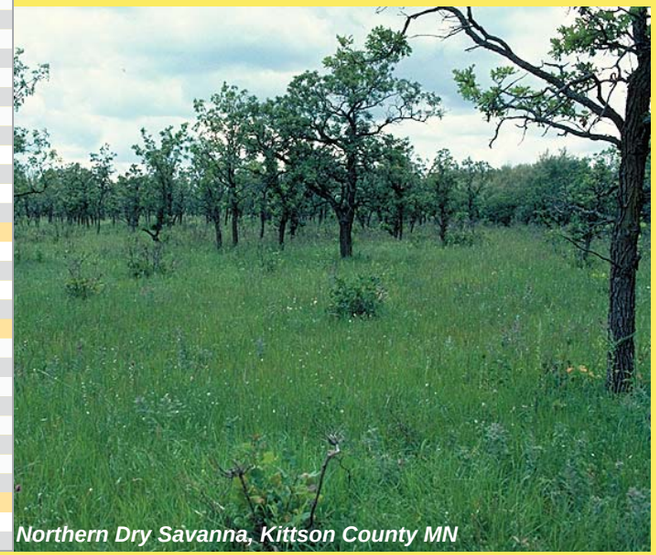
Forbs, Ferns & Fern Allies	species frequency in NPC (%)	species cover (when present)	animal pollination?	pollinator nest value	blooming period	notes
Heart-leaved alexanders (*Zizia aptera*)	78	●	✔		Early	
Heath aster (*Aster ericoides*)	77	●●	✔		Mid-Late	Masses of very small heads
Stiff goldenrod (*Solidago rigida*)	74	●	✔		Mid-Late	
Canada goldenrod (*Solidago canadensis*)	69	●●	✔		Mid-Late	
Purple prairie clover (*Dalea purpurea*)	68	●	✔		Mid	
Yarrow (*Achillea millefolium*)	65	●	✔		Early-mid to Mid-Late	Old stems for hollow stem nesting bees (?)
Rough blazing star (*Liatris aspera*)	59	●	✔	✔	Late	
Prairie phlox (*Phlox pilosa*)	55	●	✔		Early-Mid	
White prairie clover (*Dalea candida*)	55	●	✔		Mid	
Hoary puccoon (*Lithospermum canescens*)	53	●	✔		Early	Masses of tiny flowers
Stiff sunflower (*Helianthus pauciflorus*)	50	●	✔	✔	Mid-Late	
Prairie wild onion (*Allium stellatum*)	49	●	✔		Mid-Late	
Missouri goldenrod (*Solidago missouriensis*)	47	●●	✔		Mid	
Long-headed thimbleweed (*Anemone cylindrica*)	46	●	✔		Early-Mid	
Bearded birdfoot violet (*Viola palmata*)	45	●	✔		Early	
Flodman's thistle (*Cirsium flodmanii*)	45	●	✔	✔	Mid	
Tall meadow-rue (*Thalictrum dasycarpum*)	44	●	wind	✔ (?)		No nectar; pollen harvested?
Daisy fleabane (*Erigeron strigosus*)	44	●	✔		Mid	
Silverleaf scurfpea (*Pediomelum argophyllum*)	43	●	✔		Mid	
White sage (*Artemisia ludoviciana*)	43	●	wind?			
Northern bedstraw (*Galium boreale*)	39	●●	✔		Early-mid	
Smooth blue aster (*Aster laevis*)	37	●	✔		Mid-Late	
Gray-headed coneflower (*Ratibida pinnata*)	36	●●	✔	?	Mid	
Silky aster (*Aster sericeus*)	34	●	✔		Late	
Maximilian's sunflower (*Helianthus maximiliani*)	31	●●	✔	✔	Mid-Late	Old stems for hollow stem nesting bees
Gray goldenrod (*Solidago nemoralis*)	31	●●	✔		Late	Old stems for hollow stem nesting bees
Ox-eye (*Heliopsis helianthoides*)	31	●	✔	??	Mid	
Tall cinquefoil (*Potentilla arguta*)	31	●	✔		Mid	
Common milkweed (*Asclepias syriaca*)	31	●	✔		Mid	A superb bee flower
Bird's foot coreopsis (*Coreopsis palmata*)	30	●●	✔		Mid	
Narrow-leaved purple coneflower (*Echinacea angustifolia*)	30	●	✔		Mid	
Prairie turnip (*Pediomelum esculentum*)	30	●	✔		Early-Mid	
Alumroot (*Heuchera richardsonii*)	28	●	✔		Early-Mid	
Great blazing star (*Liatris pycnostachya*)	27	●●	✔		Mid	
White camass (*Zigadenus elegans*)	27	●	✔		Early-mid	
Common strawberry (*Fragaria virginiana*)	26	●	✔		Early	Fern-ally, not a flowering plant
Bastard toadflax (*Comandra umbellata*)	25	●	✔		Early-Mid	Early resource for bumblebees
Virginia mountain mint (*Pycnanthemum virginianum*)	25	●	✔		Mid-Late	
Pale-spiked lobelia (*Lobelia spicata*)	25	●	✔		Mid	Sand specialist
American vetch (*Vicia americana*)	23	●	✔		Early-Mid to Mid-Late	
Ground plum (*Astragalus crassicarpus*)	23	●	✔		Early	
Canada anemone (*Anemone canadensis*)	22	●	✔		Early-Mid	
Clasping dogbane (*Apocynum sibiricum*)	22	●	✔	✔	Mid	Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps
Virginia ground cherry (*Physalis virginiana*)	22	●	✔		Mid	Low stature, semi-bunch habit favorable for ground nesting bees
Toothed evening primrose (*Calylophus serrulatus*)	21	●	✔		Early-Mid	
Wood betony (*Pedicularis canadensis*)	20	●	✔		Early	
Northern plains blazing star (*Liatris ligulistylis*)	20	●	✔	✔	Late	Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps
Wild bergamot (*Monarda fistulosa*)	19	●	✔		Mid	
Skyblue aster (*Aster oolentangiensis*)	18	●●	✔		Late	
Canada tick trefoil (*Desmodium canadense*)	17	●	✔		Mid	Sand specialist
Smooth rattlesnakeroot (*Prenanthes racemosa*)	15	●	✔		Mid	
Wood lily (*Lilium philadelphicum*)	13	●	✔	✔ (?)	Mid	
Rattlesnake master (*Eryngium yuccifolium*)	12	●	✔	✔	Mid	Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps
Grasses & Sedges						
Big bluestem (*Andropogon gerardii*)	94	●●●●	wind			
Indian grass (*Sorghastrum nutans*)	80	●●●●	wind			
Little bluestem (*Schizachyrium scoparium*)	67	●●●	wind	✔		
Prairie dropseed (*Sporobolus heterolepis*)	66	●●●	wind	✔		
Porcupine grass (*Stipa spartea*)	58	●●●	wind	✔		
Side-oats grama (*Bouteloua curtipendula*)	46	●●●	wind			
Switchgrass (*Panicum virgatum*)	44	●●	wind			
Leiberg's panic grass (*Panicum leibergii*)	43	●●	wind			
Slender wheatgrass (*Elymus trachycaulus*)	32	●	wind			
Prairie cordgrass (*Spartina pectinata*)	30	●●	wind			
Half-shrubs						
Leadplant (*Amorpha canescens*)	74	●●	✔	✔		Important for early foragers
Prairie rose (*Rosa arkansana*)	70	●	✔	✔		
Shrubs						
Wolfberry (*Symphoricarpos occidentalis*)	17	●●	✔	✔		

plant species data based on 14 vegetation plots

species cover	
●●●●●	>50%
●●●●	25-50%
●●●	10-25%
●●	5-10%
●	<5%

Range of Native Plant Community in Minnesota




Northern Dry Savanna, Kittson County MN

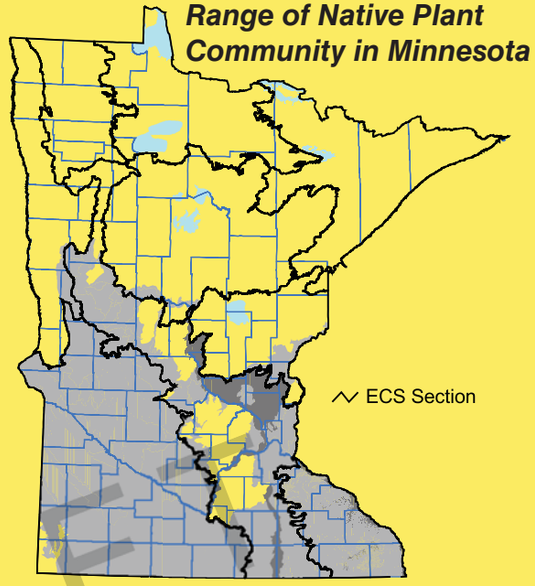
Northern Mesic Prairie (UPn23)

Forbs, Ferns & Fern Allies	species frequency in NPC (%)	species cover (when present)	animal pollination?	pollinator nest value	blooming period	notes
Northern bedstraw (*Galium boreale*)	88	●●	✔ (?)		Early-mid	
Purple prairie clover (*Dalea purpurea*)	88	●	✔		Mid	
Canada goldenrod (*Solidago canadensis*)	85	●●	✔		Mid-Late	
Heath aster (*Aster ericoides*)	84	●●	✔		Mid-Late	
Stiff goldenrod (*Solidago rigida*)	82	●	✔		Mid-Late	
Maximilian's sunflower (*Helianthus maximiliani*)	75	●	✔	✔		
Heart-leaved alexanders (*Zizia aptera*)	75	●	✔		Early	
Black-eyed Susan (*Rudbeckia hirta*)	74	●	✔		Mid	
Tall meadow-rue (*Thalictrum dasycarpum*)	71	●●	wind	✔ (?)		
Smooth blue aster (*Aster laevis*)	62	●	✔		Mid-Late	
Common strawberry (*Fragaria virginiana*)	57	●	✔		Early	
White camass (*Zigadenus elegans*)	56	●	✔		Early-mid	
Virginia mountain mint (*Pycnanthemum virginianum*)	55	●	✔		Mid-Late	
Gray goldenrod (*Solidago nemoralis*)	51	●	✔		Late	
Golden alexanders (*Zizia aurea*)	51	●	✔		Early	
Harebell (*Campanula rotundifolia*)	48	●	✔		Mid	
Bastard toadflax (*Comandra umbellata*)	47	●	✔		Early-Mid	Old stems for hollow stem nesting bees (?)
Wild bergamot (*Monarda fistulosa*)	44	●	✔		Mid	Fern-ally, not a flowering plant
Flodman's thistle (*Cirsium flodmanii*)	43	●	✔	✔	Mid	
Hoary puccoon (*Lithospermum canescens*)	41	●	✔		Early	South of line from Ottertail Co. to Chisago Co.
White aster-like goldenrod (*Solidago ptarmicoides*)	40	●	✔		Mid-Late	
Stiff sunflower (*Helianthus pauciflorus*)	35	●	✔	✔	Mid-Late	Long blooming period
Northern plains blazing star (*Liatris ligulistylis*)	35	●	✔	✔	Late	
Rough blazing star (*Liatris aspera*)	34	●	✔	✔	Late	
Clasping dogbane (*Apocynum sibiricum*)	34	●	✔	✔	Mid	
Giant or Sawtooth sunflower (*Helianthus giganteus* or *H. grosseserratus*)	33	●●	✔	✔	Mid-Late	
Pale-spiked lobelia (*Lobelia spicata*)	32	●	✔		Mid	
Glaucous false dandelion (*Agoseris glauca*)	32	●	✔		Early-mid	Important bumblebee flower; sand specialist
Wood lily (*Lilium philadelphicum*)	32	●	✔	✔ (?)	Mid	
Prairie loosestrife (*Lysimachia quadriflora*)	31	●	✔		Mid	
Yarrow (*Achillea millefolium*)	31	●	✔		Early-mid to Mid-Late	Old stems for hollow stem nesting bees
Prairie wild onion (*Allium stellatum*)	31	●	✔		Mid-Late	Sand specialist
Wild licorice (*Glycyrrhiza lepidota*)	30	●●	✔		Early-Mid	
Golden or false golden ragwort (*Senecio aureus or S. pseudaureus*)	29	●	✔		Early	Sand specialist
Silverleaf scurfpea (*Pediomelum argophyllum*)	29	●	✔		Mid	
Smooth rattlesnakeroot (*Prenanthes racemosa*)	29	●	✔		Mid	Low stature, semi-bunch habit favorable for ground nesting bees
Long-headed thimbleweed (*Anemone cylindrica*)	28	●	?		Early-Mid	Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps
Grass-leaved goldenrod (*Euthamia graminifolia*)	26	●	✔		Mid-Late	Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps
Wood betony (*Pedicularis canadensis*)	25	●	✔		Early	
Indian paintbrush (*Castilleja coccinea*)	25	●	✔		Early-Mid	Sand specialist
Prairie phlox (*Phlox pilosa*)	24	●	✔		Early-Mid	Sand specialist
White prairie clover (*Dalea candida*)	22	●	✔		Mid	
Marsh vetchling (*Lathyrus palustris*)	22	●	✔		Early-Mid	
White sage (*Artemisia ludoviciana*)	20	●	wind (?)			
Great blazing star (*Liatris pycnostachya*)	20	●●	✔		Mid	
Grasses & Sedges						
Big bluestem (*Andropogon gerardii*)	97	●●●●	wind			Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps
Prairie dropseed (*Sporobolus heterolepis*)	69	●●●	wind	✔		Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps
Indian grass (*Sorghastrum nutans*)	64	●●●	wind			
Little bluestem (*Schizachyrium scoparium*)	62	●●●	wind	✔		
Prairie cordgrass (*Spartina pectinata*)	54	●●	wind			
Slender wheatgrass (*Elymus trachycaulus*)	53	●	wind			Sand specialist; bunch grass habitat allows soil exposure for soil nesting bees and wasps
Mat muhly grass (*Muhlenbergia richardsonis*)	52	●●●	wind			
Junegrass (*Koeleria pyramidata*)	51	●	wind			
Kalm's brome (*Bromus kalmii*)	41	●	wind			
Switchgrass (*Panicum virgatum*)	36	●●	wind			
Clustered muhly grass (*Muhlenbergia glomerata*)	36	●	wind			
Porcupine grass (*Stipa spartea*)	35	●●	wind	✔		
Rigid sedge (*Carex tetanica*)	34	●	wind			
Tufted hair grass (*Deschampsia cespitosa*)	29	●●	wind	✔ (?)		
Narrow reed grass (*Calamagrostis stricta*)	25	●●	wind			
Leiberg's panic grass (*Panicum leibergii*)	24	●●	wind			
Half-shrubs						
Prairie rose (*Rosa arkansana*)	48	●	✔		Mid	
Fragrant false indigo (*Amorpha nana*)	26	●	✔		Mid	
Leadplant (*Amorpha canescens*)	23	●●	✔		Mid	
Shrubs						
Bebb's willow (*Salix bebbiana*)	26	●●	✔ (& wind?)		Early	
Shrubby cinquefoil (*Potentilla fruticosa*)	21	●●	✔		Mid	
Tree Seedlings or Saplings (<6ft)						
Quaking aspen (*Populus tremuloides*)	17	●●●	wind			

plant species data based on 30 vegetation plots

species cover	
●●●●●	>50%
●●●●	25-50%
●●●	10-25%
●●	5-10%
●	<5%

Range of Native Plant Community in Minnesota



Southern Dry Savanna, Big Stone County MN

Southern Dry Savanna *(UPs14)*

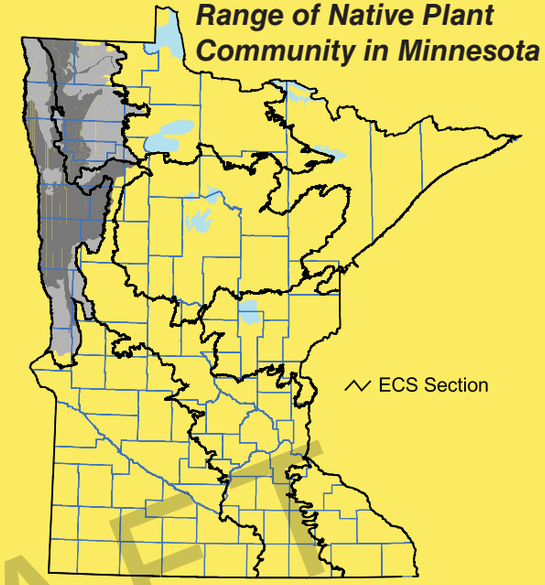
Forbs, Ferns & Fern Allies	species frequency in NPC (%)	species cover (when present)	animal pollination?	pollinator nest value	blooming period	notes
Western ragweed (*Ambrosia psilostachya*)	80	●●	wind			Masses of tiny flowers
Virginia ground cherry (*Physalis virginiana)*	73	●	✔		Mid	
Hairy puccoon (*Lithospermum caroliniense*)	70	●	✔		Early	
Gray goldenrod (*Solidago nemoralis*)	67	●	✔		Late	
Hoary frostweed (*Helianthemum bicknellii*)	67	●	✔		Early-mid	
Horseweed (*Conyza canadensis*)	60	●	✔ (?)			
White sage (*Artemisia ludoviciana*)	53	●	wind (?)			Old stems for hollow stem nesting bees
Bearded birdfoot violet (*Viola palmata*)	53	●	✔		Early	
Starry false Solomon's seal (*Smilacina stellata*)	47	●	✔		Early-Mid	
Purple prairie clover (*Dalea purpurea*)	47	●	✔		Mid	Old stems for hollow stem nesting bees (?)
Common milkweed (*Asclepias syriaca*)	40	●	✔		Mid	
Long-headed thimbleweed (*Anemone cylindrica*)	40	●	✔		Early-Mid	
Hoary puccoon (*Lithospermum canescens*)	40	●	✔		Early	Principally flies; moths at night?
Prairie pinweed (*Lechea stricta*)	33	●	?		?	
Round-headed bush clover (*Lespedeza capitata*)	33	●	✔		Mid-Late	
Skyblue aster (*Aster oolentangiensis*)	33	●	✔		Late	
Rough blazing star (*Liatris aspera*)	33	●	✔	✔ (?)	Late	
Rock spikemoss (*Selaginella rupestris*)	30	●				
Missouri goldenrod (*Solidago missouriensis*)	30	●	✔		Mid	Old stems for hollow stem nesting bees
Bird's foot coreopsis (*Coreopsis palmata*)	30	●	✔		Mid	
Harebell *(*Campanula rotundifolia)	30	●	✔		Mid	
Hairy golden aster (*Chrysopsis villosa*)	30	●	✔		Early-mid to Mid	Old stems for hollow stem nesting bees
Bastard toad-flax (*Comandra umbellata*)	30	●	✔		Early-Mid	Old stems for hollow stem nesting bees
Heath aster (*Aster ericoides*)	27	●	✔		Mid-Late	Old stems for hollow stem nesting bees
Showy goldenrod (*Solidago speciosa*)	27	●	✔		Late	
Flowering spurge (*Euphorbia corollata*)	23	●	✔		Mid-Late	Old stems for hollow stem nesting bees
Mock pennyroyal (*Hedeoma hispida*)	23	●	✔		Early to Mid-Late	
Large-flowered beard tongue (*Penstemon grandiflorus*)	23	●	✔		Early	
Erect, Smooth, or Illinois carrion-flower (*Smilax* spp.)*	23	●	✔		Early-Mid	A butterfly flower; pollinated by large butterflies
Tall cinquefoil (*Potentilla arguta*)	23	●	✔		Mid	Provides pollen; specialist bees harvest an oil
Stiff sunflower (*Helianthus pauciflorus*)	20	●●	✔	✔	Mid-Late	Masses of very small heads
Horsemint (*Monarda punctata*)	20	●●	✔		Mid-Late	
Tall wormwood or Tarragon (*Artemisia* spp.)*	20	●	wind (?)			
Silky prairie clover (*Dalea villo*sa)	17	●	✔		Mid	
Grasses & Sedges						
Junegrass (*Koeleria pyramidata*)	80	●	wind	✔		
Porcupine grass (*Stipa spartea*)	73	●●●	wind	✔		
Little bluestem (*Schizachyrium scoparium*)	70	●●●	wind	✔		
Big bluestem (*Andropogon gerardii*)	67	●●	wind			Bumblebee flower
Hay sedge (*Carex foenea*)	53	●●	wind			Hummingbird flower in forested part of MN, sphinx moth in prairie
Purple lovegrass (*Eragrostis spectabilis*)	53	●	wind			Not north of Norman & Mahnomen counties
Indian grass (*Sorghastrum nutans*)	40	●●●	wind			
Muhlenberg's sedge (*Carex muhlenbergia*)	37	●●	wind			
Pennsylvania sedge (*Carex pensylvanica*)	37	●●	wind			
Sand reed-grass (*Calamovilfa longifolia*)	37	●	wind			Uncommon north of Polk Co.
Switchgrass (*Panicum virgatum*)	37	●	wind			
Prairie dropseed (*Sporobolus heterolepis*)	37	●●	wind	✔		
Long-leaved panic grass (*Panicum perlongum*)	37	●	wind	✔		Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps
Scribner's panic grass (*Panicum oligosanthes*)	30	●●	wind			
Hairy grama (*Bouteloua hirsuta*)	30	●	wind			Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps
Side-oats grama (*Bouteloua curtipendula*)	23	●●●	wind			
Fall witch grass (*Leptoloma cognatum*)	23	●	wind			
Climbing plants						
Virginia creeper (*Parthenocissus vitacea* or *P. quinquefolia*)	47	●	✔		Early-Mid	Low stature, semi-bunch habit favorable for ground nesting bees
Low shrubs						
Leadplant (*Amorpha canescens*)	53	●	✔		Mid	
Prairie rose (*Rosa arkansana*)	43	●	✔		Mid	
Shrubs						Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps
Chokecherry (*Prunus virginiana*)	50	●	✔		Early-Mid	
American hazelnut (*Corylus americana*)	43	●	wind			Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps?
Smooth sumac (*Rhus glabra*)	40	●●	✔		Early-Mid	
Low juneberry or Saskatoon (*Amelanchier humilis* or *A. alnifolia*)	37	●	✔		Early	
Trees						
Bur oak (*Quercus macrocarpa*)	67	●●●	wind			
Northern pin oak (*Quercus elipsoidalis*)	37	●●●	wind			
Black oak (*Quercus velutina*)	23	●●●	wind			
Jack pine (*Pinus bansiana*)	17	●●●	wind			

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

plant species data based on 110 vegetation plots

species cover	
●●●●●	>50%
●●●●	25-50%
●●●	10-25%
●●	5-10%
●	<5%

Range of Native Plant Community in Minnesota




Northern Mesic Prairie, Kittson County MN

Southern Dry Prairie (UPs13)

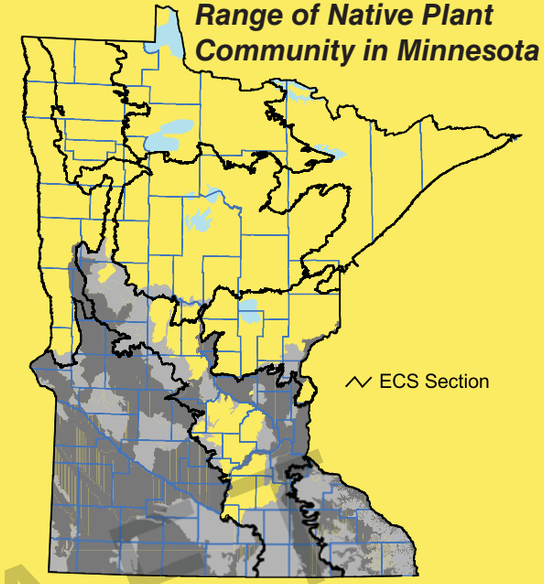
Forbs, Ferns & Fern Allies	species frequency in NPC (%)	species cover (when present)	animal pollination?	pollinator nest value	blooming period	notes
Purple prairie clover (*Dalea purpurea*)	72	●	✔		Mid	
Gray goldenrod (*Solidago nemoralis*)	61	●	✔		Late	
Silky aster (*Aster sericeus*)	61	●	✔		Late	
Heath aster (*Aster ericoides*)	60	●●	✔		Mid-Late	
Stiff goldenrod (*Solidago rigida*)	53	●	✔		Mid-Late	
Long-headed thimbleweed (*Anemone cylindrica*)	53	●	✔		Early-Mid	
Bearded birdfoot violet (*Viola pedatifida*)	47	●	✔		Early	
Rough blazing star (*Liatris aspera*)	45	●	✔	✔ (?)	Late	Old stems for hollow stem nesting bees (?)
Daisy fleabane (*Erigeron strigosus*)	43	●	✔		Mid	
Pasque-flower (*Anemone patens*)	42	●	✔		Early	Popular with flies; one of first flowers available
Stiff sunflower (*Helianthus pauciflorus*)	41	●●	✔	✔	Mid-Late	Old stems for hollow stem nesting bees
Narrow-leaved purple coneflower (*Echinacea angustifolia*)	40	●	✔		Mid	Not in eastern MN, or north of Polk Co.
Tall cinquefoil (*Potentilla arguta*)	40	●	✔		Mid	
Bastard toad-flax (*Comandra umbellata*)	37	●	✔		Early-Mid	
Prairie turnip (*Pediomelum esculentum*)	37	●	✔		Early-Mid	
Prairie wild onion (*Allium stellatum*)	36	●	✔		Mid-Late	
Dotted blazing star (*Liatris punctata*)	34	●	✔	✔ (?)	Late	Old stems possibly used by stem nesting bees
Hoary puccoon (*Lithospermum canescens*)	32	●	✔		Early	
Aromatic aster (*Aster oblongifolius*)	30	●	✔		Late	
Virginia ground cherry (*Physalis virginiana*)	30	●	✔		Mid	Bumblebee flower?
Flodman's thistle (*Cirsium flodmanii*)	29	●	✔	✔	Mid	Old stems for hollow stem nesting bees
Bird's foot coreopsis (*Coreopsis palmata*)	28	●●	✔		Mid	South of line from Ottertail Co. to Chisago Co.
Grooved yellow flax (*Linum sulcatum*)	28	●	✔		Early-Mid to Mid	
Western ragweed (*Ambrosia psilostachya*)	26	●●	wind			
Canada goldenrod (*Solidago canadensis*)	25	●	✔		Mid-Late	
Heart-leaved alexanders (*Zizia aptera*)	25	●	✔		Early	
Wild bergamot (*Monarda fistulosa*)	25	●	✔		Mid	
Harebell (*Campanula rotundifolia*)	25	●	✔		Mid	
Toothed evening primrose (*Calylophus serrulatus*)	25	●	✔		Early-Mid	
Missouri goldenrod (*Solidago missouriensis*)	24	●	✔		Mid-Late	
Skyblue aster (*Aster oolentangiensis*)	24	●	✔		Late	
Mock pennyroyal (*Hedeoma hispida*)	24	●	✔		Early to Mid-Late	
Prairie sagewort (*Artemisia frigida*)	23	●●	wind (?)			
Hoary vervain (*Verbena stricta*)	23	●	✔		Early-Mid to Mid-Late	
Flowering spurge (*Euphorbia corollata*)	22	●	✔		Mid-Late	
Whorled milkweed (*Asclepias verticillata*)	21	●	✔		Mid	
Field blue-eyed grass (*Sisyrinchium campestre*)	21	●	✔		Early-Mid	
Tall wormwood or Tarragon (*Artemisia* spp.)*	20	●	wind (?)			
Hairy golden aster (*Chrysopsis villosa*)	20	●	✔		Early-mid to Mid	Long blooming period
Prairie or Balsam ragwort (*Senecio plattensis* or *S. pauperculus*)	20	●	✔		Early	
False boneset (*Kuhnia eupatorioides*)	19	●	✔		Mid-Late	
False gromwell (*Onosmodium molle*)	19	●	✔		Early-Mid	Bumblebee flower
Green milkweed (*Asclepias viridiflora*)	19	●	✔		Mid	
Narrow-leaved puccoon (*Lithospermum incisum*)	17	●	✔		Early	
Plantain-leaved pussytoes (*Antennaria plantaginifolia*)	16	●	✔ (?)		Early	
Hairy puccoon (*Lithospermum caroliniense*)	13	●	✔		Early	Sand specialist
Western spiderwort (*Tradescantia occidentalis*)	7	●	✔		Early-Mid	Sand specialist
Silky prairie clover (*Dalea villosa*)	6	●●	✔		Mid	Sand specialist
Grasses & Sedges						
Little bluestem (*Schizachyrium scoparium*)	88	●●●	wind	✔		Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps
Side-oats grama (*Bouteloua curtipendula*)	79	●●●	wind			
Big bluestem (*Andropogon gerardii*)	73	●●●	wind			
Prairie dropseed (*Sporobolus heterolepis*)	58	●●●	wind	✔		Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps
Porcupine grass (*Stipa spartea*)	57	●●●	wind	✔		Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps
Plains muhly (*Muhlenbergia cuspidata*)	56	●●	wind	✔		Tufted growth habit leaves exposed soil for ground-nesting bees and wasps
Indian grass (*Sorghastrum nutans*)	45	●●●	wind			
Junegrass (*Koeleria pyramidata*)	43	●●	wind	✔		Low stature, semi-bunch habit favorable for ground nesting bees
Hairy grama (*Bouteloua hirsuta*)	30	●●	wind			
Scribner's panic grass (*Panicum oligosanthes*)	26	●	wind			
Wilcox's panic grass (*Panicum wilcoxianum*)	22	●	wind			
Blue grama (*Bouteloua gracilis*)	16	●●●	wind			
Sand reed-grass (*Calamovilfa longifolia*)	16	●●	wind			
Needle-and-thread grass (*Stipa comata*)	13	●●●	wind	✔		Bunchgrass habit allows bare soil exposure for soil nesting bees and wasps
Half-shrubs						
Leadplant (Amorpha canescens)	71	●●	✔		Mid	
Prairie rose (*Rosa arkansana*)	40	●	✔		Mid	
Shrubs						
Smooth sumac (*Rhus glabra*)	29	●●	✔		Early-Mid	

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

plant species data based on 219 vegetation plots

species cover	
●●●●●	>50%
●●●●	25-50%
●●●	10-25%
●●	5-10%
●	<5%

Range of Native Plant Community in Minnesota



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