



# The Bee & Butterfly Habitat Fund

## Minnesota Monarch Mixture

Fall 2022

Species	Scientific Name	PLS lbs per acre	Seeds per sq ft	% of Mixture	Bloom Period	Pollinator Value
Big Bluestem, Pawnee	<i>Andropogon gerardii</i>	0.400	1.32	3.63%	--	--
Canada Wildrye	<i>Elymus canadensis</i>	0.500	1.31	3.59%	--	--
Little Bluestem, VNS	<i>Schizachyrium scoparium</i>	0.300	1.66	4.55%	--	--
Plains Oval Sedge	<i>Carex brevior</i>	0.060	0.89	2.45%	--	--
Prairie Junegrass	<i>Koeleria pyramidata</i>	0.020	1.06	2.92%	--	--
Sideoats Grama, Butte	<i>Bouteloua curtipendula</i>	0.300	1.10	3.01%	--	--
Western Wheatgrass, Barton	<i>Elymus smithii</i>	0.300	0.78	2.15%	--	--
Anise Hyssop	<i>Agastache foeniculum</i>	0.025	0.83	2.27%	3	5
Aromatic Aster	<i>Aster oblongifolius</i>	0.010	1.18	3.25%	3	5
Blackeyed Susan	<i>Rudbeckia hirta</i>	0.030	1.09	2.98%	2	1
Blacksamson	<i>Echinacea angustifolia</i>	0.010	0.06	0.16%	2	5
Blanketflower	<i>Gaillardia aristata</i>	0.200	0.86	2.35%	1	4
Blue Vervain	<i>Verbena hastata</i>	0.030	1.04	2.84%	2	5
Blue-eyed Grass, Native Source	<i>Sisyrinchium campestre</i>	0.006	0.10	0.27%	1	5
Butterfly Milkweed	<i>Asclepias tuberosa</i>	0.010	0.02	0.04%	2	5
Canada Milkvetch	<i>Astragalus canadensis</i>	0.060	0.37	1.02%	2	4
Canada Tick-trefoil	<i>Desmodium canadense</i>	0.080	0.16	0.44%	2	5
Clasping Coneflower	<i>Rudbeckia amplexicaulis</i> or <i>Dracopis amplexicaulis</i>	0.030	1.10	3.02%	1	2
Common Evening Primrose	<i>Oenothera biennis</i>	0.030	0.95	2.60%	2	4
Common Milkweed	<i>Asclepias syriaca</i>	0.050	0.09	0.26%	2	5
Compass Plant	<i>Silphium laciniatum</i>	0.020	0.00	0.01%	2	5
Cup Plant	<i>Silphium perfoliatum</i>	0.040	0.06	0.16%	2	5
Deer Vetch	<i>Lotus unifoliolatus</i>	0.040	0.06	0.18%	3	4
Entire-leaved Rosinweed, Native Source	<i>Silphium integrifolium</i>	0.040	0.03	0.09%	2	5
False Boneset	<i>Brickellia eupatorioides</i>	0.030	0.36	0.99%	3	3
False or Oxeye Sunflower	<i>Heliopsis helianthoides</i>	0.200	0.48	1.31%	2	5
Foxglove Beardstongue	<i>Penstemon digitalis</i>	0.030	0.28	0.76%	1	5
Golden Alexander	<i>Zizia aurea</i>	0.090	0.36	1.00%	1	5
Gray Goldenrod	<i>Solidago nemoralis</i>	0.008	0.19	0.51%	3	4
Grayhead Coneflower	<i>Ratibida pinnata</i>	0.060	0.59	1.62%	2	4
Heath Aster	<i>Symphotrichum ericoides</i>	0.008	0.93	2.54%	3	5
Hoary Vervain	<i>Verbena stricta</i>	0.050	0.67	1.85%	2	5
Illinois Bundleflower	<i>Desmanthus illinoensis</i>	0.350	0.68	1.87%	2	5
Ironweed	<i>Vernonia fasciculata</i>	0.030	0.26	0.73%	2	5
Late or Giant Goldenrod, Native Source	<i>Solidago gigantea</i>	0.006	1.04	2.86%	3	5
Maximilian Sunflower	<i>Helianthus maximiliani</i>	0.080	0.36	0.99%	3	5
Missouri Goldenrod, Native Source	<i>Solidago missouriensis</i>	0.006	0.87	2.39%	2	5
New England Aster	<i>Symphotrichum novae-angliae</i>	0.020	0.48	1.33%	3	5
Plains Coreopsis	<i>Coreopsis tinctoria</i>	0.020	1.48	4.06%	2	2
Plains Sunflower	<i>Helianthus petiolaris</i>	0.040	0.10	0.29%	3	5
Prairie Cinquefoil	<i>Drymocallis arguta</i>	0.009	0.91	2.50%	2	3
Purple Coneflower	<i>Echinacea purpurea</i>	0.300	0.80	2.19%	2	5
Purple Prairieclover	<i>Dalea purpurea</i>	0.200	1.46	3.99%	2	5
Rough Gayfeather	<i>Liatris aspera</i>	0.015	0.09	0.26%	3	5
Rough Purple Gerardia, Native Source	<i>Agalinis aspera</i>	0.005	0.24	0.67%	2	4
Roundhead Lespedeza	<i>Lespedeza capitata</i>	0.050	0.20	0.55%	3	4
Sawtooth Sunflower	<i>Helianthus grosseserratus</i>	0.010	0.14	0.40%	3	5
Shell-leaf Penstemon	<i>Penstemon grandiflorus</i>	0.030	0.15	0.40%	1	5
Showy Goldenrod	<i>Solidago speciosa</i>	0.009	0.88	2.43%	3	5
Showy Partridgepea	<i>Chamaecrista fasciculata</i>	0.300	0.45	1.23%	2	5
Skyblue Aster	<i>Symphotrichum oolentangiense</i>	0.010	0.29	0.81%	3	5
Smooth Blue Aster	<i>Aster laevis</i>	0.025	0.58	1.60%	3	5
Stiff Goldenrod	<i>Solidago rigida</i>	0.030	0.46	1.27%	3	5
Stiff Sunflower	<i>Helianthus pauciflorus</i>	0.030	0.51	1.40%	2	4
Swamp Milkweed	<i>Asclepias incarnata</i>	0.028	0.10	0.27%	2	5
Tall Boneset	<i>Eupatorium altissimum</i>	0.020	0.37	1.01%	3	4
Thickspike Gayfeather	<i>Liatris pycnostachya</i>	0.030	0.08	0.23%	3	5
Upright Coneflower	<i>Ratibida columnifera</i>	0.050	0.85	2.32%	2	2
Western Yarrow	<i>Achillea millefolium</i>	0.018	1.18	3.23%	1	2
White Prairieclover	<i>Dalea pandium</i>	0.080	0.56	1.53%	2	5
Wild Bergamot	<i>Monarda fistulosa</i>	0.030	0.88	2.40%	2	5
Rice Hulls - Filler for low planting rate mixtures		3.000	0.00	0.00%	--	--
Grasses Total:		1.880	8.127	22.30%		
Wildflower/Forb/Legume Total:		3.018	28.317	77.70%		
Filler Total:		3.000	0.000	0.00%		
<b>Total Mixture:</b>		<b>7.898</b>	<b>36.444</b>	<b>100.00%</b>		

Species	Scientific Name	PLS lbs per acre	Seeds per sq ft	% of Mixture	Bloom Period	Pollinator Value
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Bloom Period	Wildflowers Used in Mixture	% PLS Seeding Rate of Mix
1 = April to May	7	11.03%
2 = June to July	28	42.92%
3 = August to October	19	23.74%
<b>Total :</b>	<b>54</b>	

4.44	Pollinator Value (0-5)
<i>The Pollinator value score is determined based on a combination of factors described below. A score greater than 4.0 indicates the mixture is designed for great pollinator value.</i>	

**The Pollinator Value Score is determined based on a combination of factors that include:**

- The pollen and/or nectar value of the plant species.
- The ability of the plant species to establish and persist in pollinator seeding mixtures.
- Bee Integrated Program research results of pollinator pollen analysis.
- Unique pollinator biological life histories of the plant species.
- The total bloom period length of the plant species.
- The occurrence in early bloom periods (Bloom Period 1) that are hard to challenging to provide resources for.
- The commercial availability of the species for use in seeding mixtures.
- Value of the plant species pollen and nectar to commercial beekeepers.
- USGS Pollinator Library tool: <https://www.npwrc.usgs.gov/pollinator/home>
- The Ecoregional Revegetation Application tool: <http://www.nativevegetation.org/era/>
- Botanical and beekeeping reference materials that list the pollinator value of species.
- Field observations of floral resource use by pollinator species.