



The Bee & Butterfly Habitat Fund

Missouri 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>	0.200	0.66	1.87%	--	--
Canada Wildrye	<i>Elymus canadensis</i>	0.300	0.79	2.22%	--	--
Little Bluestem, VNS	<i>Schizachyrium scoparium</i>	0.250	1.38	3.90%	--	--
Plains Oval Sedge, Native Source	<i>Carex brevior</i>	0.020	0.30	0.84%	--	--
Prairie Junegrass	<i>Koeleria pyramidata</i>	0.050	2.66	7.51%	--	--
Rough Dropseed	<i>Sporobolus clandestinus</i>	0.100	1.10	3.11%	--	--
Sideoats Grama, Butte	<i>Bouteloua curtipendula</i>	0.300	1.10	3.10%	--	--
Western Wheatgrass, Barton	<i>Elymus smithii</i>	0.400	1.05	2.95%	--	--
Alumroot	<i>Heuchera richardsonii</i>	0.003	0.76	2.14%	1	2
Annual or Common Sunflower, Native Source	<i>Helianthus annuus</i>	0.150	0.16	0.46%	3	5
Ashy Sunflower, Native Source	<i>Helianthus mollis</i>	0.021	0.10	0.27%	3	5
Blackeyed Susan	<i>Rudbeckia hirta</i>	0.030	1.09	3.07%	2	1
Blue Vervain, Native Source	<i>Verbena hastata</i>	0.028	0.97	2.73%	2	5
Brown-eyed Susan	<i>Rudbeckia triloba</i>	0.100	1.25	3.53%	2	1
Canada Goldenrod, Native Source	<i>Solidago canadensis</i>	0.004	0.65	1.84%	2	5
Canada Milkvetch	<i>Astragalus canadensis</i>	0.065	0.40	1.14%	2	4
Canada Tick-trefoil	<i>Desmodium canadense</i>	0.040	0.08	0.23%	2	5
Common Evening Primrose	<i>Oenothera biennis</i>	0.033	1.04	2.94%	2	4
Common Milkweed, Native Source	<i>Asclepias syriaca</i>	0.060	0.11	0.32%	2	5
Compass Plant	<i>Silphium laciniatum</i>	0.020	0.00	0.01%	2	5
Culver's Root	<i>Veronicastrum virginicum</i>	0.004	1.10	3.11%	3	4
Cup Plant, Native Source	<i>Silphium perfoliatum</i>	0.040	0.06	0.17%	2	5
Entire-leaved Rosinweed, Native Source	<i>Silphium integrifolium</i>	0.020	0.02	0.04%	2	5
False Boneset	<i>Brickellia eupatorioides</i>	0.008	0.10	0.27%	3	3
False or Oxeye Sunflower	<i>Heliopsis helianthoides</i>	0.120	0.29	0.81%	2	5
Foxglove Beardstongue, Native Source	<i>Penstemon digitalis</i>	0.025	0.23	0.65%	1	5
Golden Alexander	<i>Zizia aurea</i>	0.085	0.34	0.97%	1	5
Gray Goldenrod	<i>Solidago nemoralis</i>	0.006	0.14	0.39%	3	4
Grayhead Coneflower	<i>Ratibida pinnata</i>	0.045	0.44	1.25%	2	4
Heath Aster	<i>Symphotrichum ericoides</i>	0.005	0.58	1.64%	3	5
Hoary Vervain, Native Source	<i>Verbena stricta</i>	0.035	0.47	1.33%	2	5
Illinois Bundleflower	<i>Desmanthus illinoensis</i>	0.400	0.78	2.20%	2	5
Ironweed	<i>Vernonia fasciculata</i>	0.025	0.22	0.62%	2	5
Lanceleaf Coreopsis	<i>Coreopsis lanceolata</i>	0.200	1.01	2.87%	2	4
Late or Giant Goldenrod, Native Source	<i>Solidago gigantea</i>	0.006	1.04	2.94%	3	5
Lemon Mint or Lemon Bee Balm	<i>Monarda citriodora</i>	0.030	0.99	2.80%	2	3
Maximilian Sunflower	<i>Helianthus maximiliani</i>	0.050	0.23	0.64%	3	5
Missouri Goldenrod, Native Source	<i>Solidago missouriensis</i>	0.005	0.72	2.05%	2	5
New England Aster	<i>Symphotrichum novae-angliae</i>	0.010	0.24	0.68%	3	5
Plains Coreopsis	<i>Coreopsis tinctoria</i>	0.014	1.04	2.93%	2	2
Plains Sunflower, Native Source	<i>Helianthus petiolaris</i>	0.030	0.08	0.22%	3	5
Prairie Aster	<i>Symphotrichum falcatum</i>	0.030	0.28	0.79%	3	5
Purple Coneflower	<i>Echinacea purpurea</i>	0.200	0.53	1.50%	2	5
Purple Prairieclover	<i>Dalea purpurea</i>	0.100	0.73	2.06%	2	5
Rattlesnake Master	<i>Eryngium yuccifolium</i>	0.050	0.20	0.58%	3	4
Rough Gayfeather, Native Source	<i>Liatris aspera</i>	0.010	0.06	0.18%	3	5
Roundhead Lespedeza, Native Source	<i>Lespedeza capitata</i>	0.032	0.13	0.36%	3	4
Sand Milkweed, Native Source	<i>Asclepias arenaria</i>	0.010	0.01	0.03%	2	5
Sawtooth Sunflower, Native Source	<i>Helianthus grosseserratus</i>	0.010	0.14	0.41%	3	5
Sensitive Briar, Native Source	<i>Mimosa nuttallii</i>	0.015	0.02	0.04%	2	3
Shell-leaf Penstemon, Native Source	<i>Penstemon grandiflorus</i>	0.020	0.10	0.28%	1	5
Showy Goldenrod	<i>Solidago speciosa</i>	0.008	0.79	2.22%	3	5
Showy Partridgepea	<i>Chamaecrista fasciculata</i>	0.350	0.52	1.48%	2	5
Smooth Blue Aster	<i>Aster laevis</i>	0.020	0.47	1.32%	3	5
Stiff Goldenrod, Native Source	<i>Solidago rigida</i>	0.020	0.31	0.87%	3	5
Stiff Sunflower, Native Source	<i>Helianthus pauciflorus</i>	0.020	0.34	0.96%	2	4
Sullivant's Milkweed, Native Source	<i>Asclepias sullivantii</i>	0.010	0.02	0.05%	2	5
Sweet Blackeyed Susan	<i>Rudbeckia subtomentosa</i>	0.025	0.42	1.19%	2	2
Tall Boneset, Native Source	<i>Eupatorium altissimum</i>	0.010	0.18	0.52%	3	4
Tall Coreopsis	<i>Coreopsis tripteris</i>	0.015	0.57	1.60%	2	3
Tube Penstemon, Native Source	<i>Penstemon tubaeformis</i>	0.020	0.59	1.66%	2	5
Western Yarrow	<i>Achillea millefolium</i>	0.025	1.64	4.62%	1	2
White Prairieclover	<i>Dalea pandidum</i>	0.050	0.35	0.99%	2	5
Wild Bergamot	<i>Monarda fistulosa</i>	0.040	1.17	3.30%	2	5
Wild Quinine	<i>Parthenium integrifolium</i>	0.020	0.05	0.15%	2	2
Willow-leaf Sunflower, Native Source	<i>Helianthus salicifolius</i>	0.020	0.03	0.09%	3	5
Rice Hulls - Filler for low planting rate mixtures		3.000	0.00	0.00%	--	--
Grasses Total:		1.620	9.027	25.50%		

Species	Scientific Name	PLS lbs per acre	Seeds per sq ft	% of Mixture	Bloom Period	Pollinator Value
Wildflower/Forb/Legume Total:		2.847	26.374	74.50%		
Filler Total:		3.000	0.000	0.00%		
Total Mixture:		7.467	35.401	100.00%		

Bloom Period	Wildflowers Used in Mixture	% PLS Seeding Rate of Mix
1 = April to May	5	8.66%
2 = June to July	33	47.87%
3 = August to October	20	17.97%
Total :	58	

4.29	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.nativerivegetation.org/era/>
Botanical and beekeeping reference materials that list the pollinator value of species.
Field observations of floral resource use by pollinator species.