



The Bee & Butterfly Habitat Fund

Michigan 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>	0.300	0.99	2.84%	--	--
Canada Wildrye	<i>Elymus canadensis</i>	0.500	1.31	3.74%	--	--
Little Bluestem, VNS	<i>Schizachyrium scoparium</i>	0.400	2.21	6.31%	--	--
Plains Oval Sedge	<i>Carex brevior</i>	0.050	0.74	2.13%	--	--
Prairie Junegrass	<i>Koeleria pyramidata</i>	0.030	1.59	4.55%	--	--
Sideoats Grama, Butte	<i>Bouteloua curtipendula</i>	0.500	1.83	5.22%	--	--
Ashy Sunflower	<i>Helianthus mollis</i>	0.035	0.16	0.46%	3	5
Blackeyed Susan	<i>Rudbeckia hirta</i>	0.030	1.09	3.10%	2	1
Blanketflower, (pulchella)	<i>Gaillardia pulchella</i>	0.250	1.07	3.05%	1	4
Blue Vervain	<i>Verbena hastata</i>	0.030	1.04	2.96%	2	5
Butterfly Milkweed	<i>Asclepias tuberosa</i>	0.020	0.03	0.09%	2	5
Canada Goldenrod	<i>Solidago canadensis</i>	0.005	0.81	2.32%	2	5
Canada Milkvetch	<i>Astragalus canadensis</i>	0.100	0.62	1.77%	2	4
Canada Tick-trefoil	<i>Desmodium canadense</i>	0.150	0.30	0.87%	2	5
Common Evening Primrose	<i>Oenothera biennis</i>	0.030	0.95	2.71%	2	4
Common Milkweed	<i>Asclepias syriaca</i>	0.055	0.10	0.30%	2	5
Cup Plant	<i>Silphium perfoliatum</i>	0.050	0.07	0.21%	2	5
Deer Vetch	<i>Lotus unifoliolatus</i>	0.020	0.03	0.09%	3	4
Dotted Mint	<i>Monarda punctata</i>	0.030	1.01	2.89%	2	4
False Boneset	<i>Brickellia eupatorioides</i>	0.025	0.30	0.86%	3	3
False or Oxeye Sunflower	<i>Heliopsis helianthoides</i>	0.250	0.60	1.70%	2	5
Foxglove Beardstongue	<i>Penstemon digitalis</i>	0.035	0.32	0.92%	1	5
Golden Alexander	<i>Zizia aurea</i>	0.100	0.40	1.15%	1	5
Gray Goldenrod	<i>Solidago nemoralis</i>	0.009	0.21	0.59%	3	4
Grayhead Coneflower	<i>Ratibida pinnata</i>	0.065	0.64	1.82%	2	4
Hairy Beardstongue	<i>Penstemon hirsutus</i>	0.004	0.36	1.04%	1	5
Heath Aster	<i>Symphotrichum ericoides</i>	0.009	1.04	2.98%	3	5
Hoary Vervain	<i>Verbena stricta</i>	0.050	0.67	1.92%	2	5
Jerusalem Artichoke	<i>Helianthus tuberosus</i>	0.025	0.07	0.20%	3	5
Lanceleaf Coreopsis	<i>Coreopsis lanceolata</i>	0.200	1.01	2.90%	2	4
Late or Giant Goldenrod, Native Source	<i>Solidago gigantea</i>	0.006	1.04	2.98%	3	5
Maximilian Sunflower	<i>Helianthus maximiliani</i>	0.080	0.36	1.03%	3	5
Missouri Goldenrod, Native Source	<i>Solidago missouriensis</i>	0.007	1.01	2.90%	2	5
New England Aster	<i>Symphotrichum novae-angliae</i>	0.025	0.61	1.73%	3	5
New Jersey Tea	<i>Ceanothus americanus</i>	0.020	0.05	0.15%	2	4
Plains Coreopsis	<i>Coreopsis tinctoria</i>	0.020	1.48	4.22%	2	2
Plains Sunflower	<i>Helianthus petiolaris</i>	0.060	0.16	0.45%	3	5
Purple Coneflower	<i>Echinacea purpurea</i>	0.300	0.80	2.27%	2	5
Purple Meadow Rue	<i>Thalictrum dasycarpum</i>	0.020	0.08	0.23%	1	3
Rough Gayfeather	<i>Liatris aspera</i>	0.020	0.13	0.36%	3	5
Roundhead Lespedeza	<i>Lespedeza capitata</i>	0.040	0.16	0.46%	3	4
Sawtooth Sunflower	<i>Helianthus grosseserratus</i>	0.010	0.14	0.41%	3	5
Showy Goldenrod	<i>Solidago speciosa</i>	0.010	0.98	2.81%	3	5
Showy Partridgepea	<i>Chamaecrista fasciculata</i>	0.500	0.75	2.13%	2	5
Skyblue Aster	<i>Symphotrichum oolentangiense</i>	0.015	0.44	1.26%	3	5
Smooth Blue Aster	<i>Aster laevis</i>	0.025	0.58	1.66%	3	5
Stiff Goldenrod	<i>Solidago rigida</i>	0.040	0.62	1.77%	3	5
Stiff Sunflower	<i>Helianthus pauciflorus</i>	0.035	0.59	1.70%	2	4
Sullivant's Milkweed	<i>Asclepias sullivantii</i>	0.008	0.01	0.04%	2	5
Swamp Milkweed	<i>Asclepias incarnata</i>	0.020	0.07	0.20%	2	5
Upright Coneflower	<i>Ratibida columnifera</i>	0.050	0.85	2.42%	2	2
Western Yarrow	<i>Achillea millefolium</i>	0.020	1.31	3.74%	1	2
Wild Bergamot	<i>Monarda fistulosa</i>	0.040	1.17	3.34%	2	5
Wild Senna	<i>Senna hebecarpa</i>	0.070	0.04	0.10%	2	2
Rice Hulls - Filler for low planting rate mixtures		3.000	0.00	0.00%	--	--
Grasses Total:		1.780	8.678	24.77%		
Wildflower/Forb/Legume Total:		3.018	26.352	75.23%		
Filler Total:		3.000	0.000	0.00%		
Total Mixture:		7.798	35.030	100.00%		

Bloom Period	Wildflowers Used in Mixture	% PLS Seeding Rate of Mix
1 = April to May	6	10.13%

4.35	Pollinator Value (0-5)
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Species	Scientific Name	PLS lbs per acre	Seeds per sq ft	% of Mixture	Bloom Period	Pollinator Value
2 = June to July	25	45.01%				<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>
3 = August to October	17	20.08%				
Total :	48					

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.