The Bee & Butterfly Habitat Fund
A Unique Conservation Solution.

Seed A Legacy Program

Indiana Monarch Butterfly Mix

Spring 2020

Species	Scientific Name	Suggested Seeding Rates	PLS lbs per acre	PLS seeds per sq ft	% of Mixture PLS	COC	Bloom Period	Pollinator Value
Big Bluestem, VNS	*Andropogon gerardii*	--	0.200	0.66	1.88%	5	--	--
Canada Wildrye	*Elymus canadensis*	--	0.300	0.79	2.23%	5	--	--
Little Bluestem, VNS	*Schizachyrium scoparium*	--	0.300	1.66	4.71%	4	--	--
Plains Oval Sedge	*Carex brevior*	0.01 - 0.05	0.020	0.30	0.85%	3	--	--
Porcupine Grass, Native Source	*Hesperostipa spartea*	--	0.020	0.02	0.04%	6	--	--
Prairie Junegrass	*Koeleria pyramidata*	--	0.020	1.06	3.02%	6	--	--
Schweinitz's Flatsedge, native source	*Cyperus schweinitzii*	--	0.020	0.21	0.61%	4	--	--
Sideoats Grama, Native Source	*Bouteloua curtipendula*	--	0.300	1.10	3.11%	5	--	--
Anise Hyssop	*Agastache foeniculum*	0.003 - 0.015	0.020	0.66	1.88%	--	3	5
Aromatic Aster	*Aster oblongifolius*	0.001 - 0.01	0.008	0.95	2.69%	5	3	5
Ashy Sunflower, Native Source	*Helianthus mollis*	0.01 - 0.04	0.021	0.10	0.28%	--	3	5
Blackeyed Susan	*Rudbeckia hirta*	0.01 - 0.1	0.030	1.09	3.08%	3	2	1
Blanketflower - G. aristata	*Gaillardia aristata*	0.04 - 0.2	0.200	0.86	2.43%	5	1	4
Blue Vervain, Native Source	*Verbena hastata*	0.008 - 0.03	0.030	1.04	2.94%	4	2	5
Butterfly Milkweed	*Asclepias tuberosa*	0.01 - 0.04	0.020	0.03	0.09%	6	2	5
Canada Milkvetch	*Astragalus canadensis*	0.02 - 0.15	0.040	0.25	0.71%	5	2	4
Canada Tick-trefoil	*Desmodium canadense*	0.01 - 0.03	0.080	0.16	0.46%	5	2	5
Clasping Coneflower	*Rudbeckia amplexicaulis or Dracopis amplexicaulis*	0.01 - 0.05	0.040	1.47	4.17%		1	2
Common Evening Primrose, Native Source	*Oenothera biennis*	0.005 - 0.04	0.030	0.95	2.69%	1	2	4
Common Milkweed, Michigan Native	*Asclepias syriaca*	0.03 - 0.08	0.050	0.09	0.27%	1	2	5
Culver's Root	*Veronicastrum virginicum*	0.001 - 0.004	0.003	0.83	2.35%	9	3	4
Cup Plant, Native Source	*Silphium perfoliatum*	0.01 - 0.05	0.020	0.03	0.08%	4	2	5
Deer Vetch, Native Source	*Acmispon americanus or Lotus unifoliolatus*	0.01 - 0.04	0.020	0.03	0.09%	3	3	4
Dotted Mint	*Monarda punctata*	0.008 - 0.015	0.020	0.68	1.92%	--	2	4
False Boneset, Native Source	*Brickellia eupatorioides*	0.005 - 0.01	0.018	0.22	0.61%	3	3	3
False or Oxeye Sunflower	*Heliopsis helianthoides*	0.03 - 0.09	0.100	0.24	0.68%	4	2	5
Four-point Evening Primrose, Native Source	*Oenothera rhombipetala*	0.005 - 0.01	0.013	0.75	2.13%	2	2	4
Foxglove Beardstongue, Native Source	*Penstemon digitalis*	0.01 - 0.03	0.020	0.18	0.52%	6	1	5
Golden Alexander	*Zizia aurea*	0.02 - 0.04	0.090	0.36	1.03%	6	1	5
Grass-leafed Goldenrod, Native Source	*Euthamia graminifolia*	0.001 - 0.004	0.005	1.24	3.52%	--	3	4
Gray Goldenrod	*Solidago nemoralis*	0.001 - 0.005	0.006	0.14	0.39%	--	3	4
Grayhead Coneflower	*Ratibida pinnata*	0.01 - 0.1	0.045	0.44	1.25%	3	2	4
Heath Aster	*Symphyotrichum ericoides*	0.001 - 0.004	0.006	0.69	1.97%	3	3	5
Hoary Vervain, Native Source	*Verbena stricta*	0.01 - 0.06	0.025	0.34	0.96%	8	2	5
Illinois Bundleflower	*Desmanthus illinoensis*	0.05 - 0.25	0.300	0.59	1.66%	5	2	5
Ironweed, Native Source	*Vernonia fasciculata*	0.02 - 0.06	0.015	0.13	0.38%	4	2	5
Lanceleaf Coreopsis	*Coreopsis lanceolata*	0.05 - 0.1	0.180	0.91	2.59%	--	2	4
Late or Giant Goldenrod, Native Source	*Solidago gigantea*	0.001 - 0.005	0.006	1.04	2.96%	3	3	5
Maximillian Sunflower	*Helianthus maximiliani*	0.01 - 0.05	0.040	0.18	0.51%	4	3	5
Missouri Goldenrod, Native Source	*Solidago missouriensis*	0.001 - 0.007	0.006	0.87	2.47%	5	2	5
New England Aster	*Symphyotrichum novae-angliae*	0.005 - 0.01	0.012	0.29	0.83%	4	3	5
Pale Purple Coneflower	*Echinacea pallida*	0.01 - 0.04	0.030	0.07	0.21%	--	2	5
Plains Coreopsis	*Coreopsis tinctoria*	0.01 - 0.05	0.010	0.74	2.10%	1	2	2
Plains Sunflower, Native Source	*Helianthus petiolaris*	0.01 - 0.05	0.020	0.05	0.15%	2	3	5
Purple Coneflower	*Echinacea purpurea*	0.05 - 0.2	0.200	0.53	1.51%	--	2	5
Purple Prairieclover	*Dalea purpurea*	0.04 - 0.15	0.080	0.58	1.65%	6	2	5
Rough Gayfeather	*Liatris aspera*	0.01 - 0.03	0.016	0.10	0.29%	5	3	5
Rough Purple Gerardia, Native Source	*Agalinis aspera*	0.002 - 0.006	0.005	0.24	0.69%	10	2	4
Roundhead Lespedeza	*Lespedeza capitata*	0.02 - 0.05	0.020	0.08	0.23%	5	3	4
Sawtooth Sunflower	*Helianthus grosseserratus*	0.005 - 0.04	0.010	0.14	0.41%	4	3	5
Seed Box	*Ludwigia alternifolia*	0.001 - 0.006	0.003	1.43	4.07%	4	3	3
Shell-leaf Penstemon, Native Source	*Penstemon grandiflorus*	0.01 - 0.04	0.020	0.10	0.28%	5	1	5
Showy Partridgepea	*Chamaecrista fasciculata*	0.1 - 0.4	0.400	0.60	1.70%	1	2	5
Showy-wand Goldenrod	*Solidago speciosa*	0.001 - 0.008	0.008	0.79	2.23%	7	3	5
Skyblue Aster	*Symphyotrichum oolentangiense*	0.003 - 0.006	0.005	0.15	0.42%	7	3	5
Smooth Blue Aster	*Symphyotrichum laeve*	0.005 - 0.02	0.018	0.42	1.19%	5	3	5
Stiff Goldenrod, Native Source	*Solidago rigida*	0.01 - 0.02	0.020	0.31	0.88%	3	3	5
Stiff Sunflower, Native Source	*Helianthus pauciflorus*	0.01 - 0.04	0.020	0.34	0.97%	5	2	4
Swamp Milkweed, Native Source	*Asclepias incarnata*	0.01 - 0.03	0.010	0.04	0.10%	--	2	5
Tall Boneset, Native Source	*Eupatorium altissimum*	0.006 - 0.025	0.008	0.15	0.42%	3	3	4
Tall Cinquefoil, Native Source	*Drymocallis arguta*	0.003 - 0.008	0.006	0.51	1.44%	6	2	4
Tall Coreopsis	*Coreopsis tripteris*	0.004 - 0.01	0.020	0.76	2.15%	4	2	3
Thickspike Gayfeather	*Liatris pycnostachya*	0.01 - 0.05	0.010	0.03	0.08%	7	3	5

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Upright Coneflower	*Ratibida columnifera*	0.02 - 0.08	0.035	0.59	1.68%	3	2	2
Western Yarrow	*Achillea millefolium*	0.01 - 0.05	0.025	1.64	4.65%	2	1	2
White Vervain, Native Source	*Verbena urticifolia*	0.002 - 0.004	0.005	0.13	0.36%	3	2	4
Wild Bergamot	*Monarda fistulosa*	0.01 - 0.03	0.030	0.88	2.49%	3	2	5
Wild Quinine	*Parthenium integrifolium*	0.01 - 0.08	0.050	0.13	0.37%	9	2	2
Wild Senna	*Senna hebecarpa*	0.04 - 0.08	0.100	0.05	0.15%	--	2	2
Willow-leaf Sunflower, Native Source	*Helianthus salicifolius*	0.01 - 0.04	0.020	0.03	0.09%	--	3	5
Rice Hulls - Filler for low planting rate mixtures		--	3.000	0.00	0.00%	--	--	--
		Grasses Total:	1.180	5.791	16.45%			
		Wildflower/Forb/Legume Total:	2.723	29.411	83.55%			
		Filler Total:	3.000	0.000	0.00%			
		Total Mixture:	**6.903**	**35.203**	**100.00%**			

Bloom Period	Wildflowers Used in Mixture	% PLS Seeding Rate of Mix
1 = April to May	6	13.09%
2 = June to July	32	41.92%
3 = August to October	24	28.54%
Total :	62	

4.27 **Pollinator Value**

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

The pollen and/or nectar value of the plant species.
Bee Integrated Program research results of pollinator pollen analysis
Unique pollinator biological life histories of the plant species.
The ability of the plant species to establish and persist in pollinator seeding mixtures.
The total bloom period length of the plant species.
The occurence 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.nativerevegetation.org/era/***
Botanical and beekeeping reference materials that list the pollinator value of species.
Field observations of floral resource use by pollinator species.