

MONARCH BUTTERFLY HABITAT DEVELOPMENT PROJECT

2018 Plant List Guidance for Iowa

Step 1. Select priority milkweed species.

Priority milkweed seeds must comprise at least 1.5% of the entire seed mix. Consider using multiple milkweed species (i.e., ≥ 3), one of which being rhizomatous (e.g., *Asclepias syriaca*).

Step 2. Determine the grass : forb ratio of the seed mix.

Graminoids (grasses, sedges and rushes) must be included in the seed mix. The grass component must conform with the selected Iowa NRCS conservation practice standard. Avoid grass cultivars or varieties bred for biomass or forage production. Generally, lower grass proportions (e.g., 25%) ensure lasting forb presence and abundance. Limit competitive advantage of warm season grasses by lowering rates. In Iowa for example, limit big bluestem and switch grasses to no more than 0.5-1 PLS/ft², and 0.5-1.3 PLS/ft² of Indian grass. Moreover, success will depend on adequate consideration of cool season grasses and sedges that will balance the grass component, and reduce undesirable competition. Once the grass and milkweed proportions have been determined, the forb component may be calculated. (e.g., 1.5% milkweed plus 50% grasses, translates to a non-milkweed, forb component of 48.5%).

Step 3. Select high-value forbs (at least 60% of the forb component).

Select only high-value herbaceous species from the Monarch Butterfly Habitat Development Project plant list adapted for Iowa (below). High species-rich mixtures are preferred (i.e., >9 species). Moreover, the seed mix must ensure a high abundance and persistence of at least three flowering species throughout all phases of the growing season (i.e., spring, summer and fall). In this step, deduct the fraction of priority milkweed species calculated in Step 1 from the fraction of high-value forb species required in this step (e.g., 60% - 1.5% = 58.5% of high-value, non-milkweed, high-value forbs required).

Step 4. Select remaining forb species (up to 40% of the forb component).

These species may come from the [Iowa NRCS Native Seeding Calculator](#). *Please note: the high-value trees and shrubs on the attached list may complement the planting plan not the seed mix. In all cases, the planting plan must not jeopardize the milkweed or high-value forb cover.*

Example (40 PLS/ft²; 1:1 grass-to-forb ratio).

- Step 1.** Priority milkweed species: 1.5% (entire seed mix)
- Step 2.** Grass-to-Forb ratio is 1:1 (i.e., 50% grass, 1.5% milkweed and 48.5% forbs).
- Step 3.** High-value herbaceous forbs: 60% (i.e., 27.5% of total forb component, less the milkweed fraction calculated in Step 1).
- Step 4.** Other forbs: 40% (i.e., remaining 21% of total forb component).

SUMMARY:

Priority milkweeds (1.5% min.)	0.6 PLS/ft ²
Grasses (e.g., 50%)	20.0 PLS/ft ²
High-value herbaceous forbs (27.5% min.)	11.0 PLS/ft ²
Other herbaceous forbs (21% max.)	8.4 PLS/ft ²
High-value shrubs and trees (optional)	N/A, seedlings

Plant Recommendations for Monarch Butterflies

Midwest Monarch Region - Iowa			Bloom (x) Monarch Presence (orange)								
Species name	Common name	Growth Habit	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
THESE PRIORITY MILKWEED SPECIES MUST COMPRISE AT LEAST 1.5% OF ALL SEEDS IN THE CONSERVATION PLAN'S SEED MIX.											
<i>Asclepias incarnata</i>	Swamp milkweed	forb/herb				x	x	x	x	x	
<i>Asclepias sullivantii</i>	Prairie milkweed	forb/herb				x	x	x			
<i>Asclepias syriaca</i>	Common milkweed	forb/herb				x	x	x			
<i>Asclepias tuberosa</i>	Butterfly milkweed	forb/herb			x	x	x	x	x		
<i>Asclepias verticillata</i>	Whorled milkweed	forb/herb			x	x	x	x	x		
THESE HIGH-VALUE FORB SPECIES MUST COMPRISE AT LEAST 60% OF THE HERBACEOUS FORB SEEDS IN THE CONSERVATION PLAN'S SEED MIX (above priority milkweed species may be included here).											
<i>Echinacea purpurea</i>	Eastern purple coneflower	forb/herb		x	x	x	x	x	x		
<i>Eupatorium altissimum</i>	Tall thoroughwort	forb/herb					x	x	x		
<i>Helianthus grosseserratus</i>	Sawtooth sunflower	forb/herb						x	x	x	x
<i>Liatris aspera</i>	Tall blazing star	forb/herb						x	x		
<i>Liatris cylindracea</i>	Ontario blazing star	forb/herb						x			
<i>Liatris ligulistylis</i>	Rocky Mountain blazing	forb/herb						x	x		
<i>Monarda fistulosa</i>	Wild bergamot	forb/herb,			x	x	x	x	x		
<i>Oligoneuron rigidum</i>	Stiff goldenrod	forb/herb					x	x	x	x	
<i>Solidago speciosa</i>	Showy goldenrod	forb/herb						x	x		
<i>Symphotrichum novae-angliae</i>	New England aster	forb/herb						x	x	x	
<i>Bidens aristosa</i>	Bearded beggarticks	forb/herb					x	x			
<i>Agastache nepetoides</i>	Yellow giant hyssop	forb/herb,					x	x	x		
<i>Amorpha canescens</i>	Leadplant	shrub, subshrub				x	x				
<i>Apocynum cannabinum</i>	Indianhemp	forb/herb			x	x	x	x			
<i>Asclepias purpurascens</i>	Purple milkweed	forb/herb			x	x	x				
<i>Blephilia ciliata</i>	Downy pagoda-plant	forb/herb			x	x	x	x			
<i>Blephilia hirsuta</i>	Hairy pagoda-plant	forb/herb			x	x	x	x	x		
<i>Boltonia asteroides</i>	White doll's daisy	forb/herb					x	x	x	x	
<i>Cirsium muticum</i>	Swamp thistle	forb/herb					x	x	x		
<i>Coreopsis palmata</i>	Stiff tickseed	forb/herb					x	x			
<i>Coreopsis tripteris</i>	Tall tickseed	forb/herb					x	x	x		
<i>Dalea candida</i>	White prairie clover	forb/herb,			x	x	x				
<i>Dicentra cucullaria</i>	Dutchman's breeches	forb/herb		x	x						
<i>Doellingeria umbellata</i>	Parasol whitetop	forb/herb					x	x	x	x	
<i>Echinacea angustifolia</i>	Blacksamson echinacea	forb/herb			x	x	x				
<i>Echinacea pallida</i>	Pale purple coneflower	forb/herb			x	x	x				
<i>Eryngium yuccifolium</i>	Rattlesnake master	forb/herb			x	x	x	x			
<i>Eupatorium perfoliatum</i>	Common boneset	forb/herb				x	x	x	x	x	
<i>Eutrochium purpureum</i>	Sweetscented joe pye	forb/herb					x	x	x		
<i>Helianthus giganteus</i>	Giant sunflower	forb/herb					x	x	x		
<i>Helianthus maximiliani</i>	Maximilian sunflower	forb/herb						x	x	x	x
<i>Helianthus strumosus</i>	Paleleaf woodland sunflower	forb/herb					x	x	x		
<i>Heliopsis helianthoides</i>	Smooth oxeye	forb/herb				x	x	x	x		
<i>Krigia biflora</i>	Twoflower dwarfdandelion	forb/herb			x	x	x	x			
<i>Liatris punctata</i>	Dotted blazing star	forb/herb						x	x	x	
<i>Liatris pycnostachya</i>	Prairie blazing star	forb/herb						x	x	x	x
<i>Lithospermum canescens</i>	Hoary puccoon	forb/herb		x	x	x					
<i>Lobelia siphilitica</i>	Great blue lobelia	forb/herb					x	x	x	x	
<i>Mertensia virginica</i>	Virginia bluebells	forb/herb	x	x	x	x					
<i>Monarda punctata</i>	Spotted beebalm	forb/herb,		x	x	x	x	x			
<i>Oligoneuron rigidum</i>	Stiff goldenrod	forb/herb						x	x	x	
<i>Onosmodium bejariense</i>	Soft-hair marbleseed	forb/herb				x	x				
<i>Phlox divaricata</i>	Wild blue phlox	forb/herb	x	x	x						
<i>Physostegia virginiana</i>	Obedient plant	forb/herb						x	x	x	x
<i>Rudbeckia hirta</i>	Blackeyed Susan	forb/herb				x	x	x	x	x	
<i>Silphium integrifolium</i>	Wholeleaf rosinweed	forb/herb					x	x	x		
<i>Silphium laciniatum</i>	Compassplant	forb/herb					x	x	x		
<i>Silphium perfoliatum</i>	Cup plant	forb/herb					x	x	x		
<i>Sium suave</i>	Hemlock waterparsnip	forb/herb					x	x	x		
<i>Solidago canadensis</i>	Canada goldenrod	forb/herb							x	x	x
<i>Solidago nemoralis</i>	Gray goldenrod	forb/herb				x	x	x	x	x	
<i>Symphotrichum cordifolium</i>	Common blue wood aster	forb/herb				x	x	x			
<i>Symphotrichum laeve</i>	Smooth blue aster	forb/herb						x	x	x	
<i>Symphotrichum oolentangiense</i>	Skyblue aster	forb/herb, subshrub						x	x	x	
<i>Symphotrichum pilosum</i>	Hairy white oldfield aster	forb/herb							x	x	
<i>Verbena stricta</i>	Hoary verbena	forb/herb					x	x	x		
<i>Vernonia fasciculata</i>	Prairie ironweed	forb/herb					x	x	x		
<i>Veronicastrum virginicum</i>	Culver's root	forb/herb					x	x	x		
THE HIGH-VALUETREES AND SHRUBS ON THIS LIST MAY COMPLEMENT THE REMAINING (UP TO 40% OF FORB SEEDS) FORB COMPONENT OF THE CONSERVATION PLAN'S SEED MIX.											
<i>Cephalanthus occidentalis</i>	Common buttonbush	shrub, tree				x	x	x	x		
<i>Cornus amomum</i>	Silky dogwood	shrub	x	x	x						
<i>Cornus racemosa</i>	Gray dogwood	shrub			x	x					
<i>Physocarpus opulifolius</i>	Common Ninebark	shrub			x	x					
<i>Prunus americana</i>	American plum	shrub, tree		x	x						
<i>Prunus serotina</i>	Black cherry	shrub, tree	x	x	x	x					
<i>Salix interior</i>	Sandbar willow	shrub, tree	x	x	x						
<i>Staphylea trifolia</i>	American bladdernut	shrub, tree		x	x						
<i>Viburnum lentago</i>	Nannyberry	shrub, tree			x	x					