

## Supplementary Materials

**Supplemental Table S1.** Species list and seeding rate of native seeds used in the seed-mix applied in the spray-and-seed treatment.

<b>Plant Scientific Name</b>	<b>Plant Common Name</b>	<b>Seeding Rate (lbs PLS/acre)</b>
<i>Amorpha canescens</i>	Lead plant	0.002
<i>Andropogon gerardii</i>	Big bluestem	0.120
<i>Asclepias incarnata</i>	Swamp milkweed	0.050
<i>Asclepias tuberosa</i>	Butterfly milkweed	0.001
<i>Baptisia alba</i>	White indigo	0.020
<i>Bouteloua curtipendula</i>	Sideoats grama	1.290
<i>Coreopsis palmata</i>	Prairie Coreopsis	0.050
<i>Coreopsis tripteris</i>	Tall coreopsis	0.030
<i>Dalea purpurea</i>	Purple prairie clover	0.010
<i>Desmanthus illinoensis</i>	Illinois bundleflower	0.060
<i>Desmodium canadense</i>	Showy tick trefoil	0.040
<i>Echniacea pallida</i>	Pale purple coneflower	0.030
<i>Elymus virginicus</i>	Virginia wildrye	0.010
<i>Eryngium yuccifolium</i>	Rattlesnake master	0.140
<i>Eupatorium altissimum</i>	Tall boneset	0.009
<i>Heliopsis helianthoides</i>	Oxeye sunflower	0.030
<i>Heuchera richardsonii</i>	Prairie Alumroot	0.001
<i>Hypericum pyramidatum</i>	Great St. John's wort	0.050
<i>Koeleria macrantha</i>	June grass	0.090
<i>Lespedeza capitata</i>	Roundheaded bushclover	0.110
<i>Liatris cylindracea</i>	Cylindrical blazing star	0.020
<i>Liatris pycnostachya</i>	Prairie blazing star	0.070
<i>Lobelia cardinalis</i>	Cardinal flower	0.010
<i>Lobelia siphilitica</i>	Great blue lobelia	0.001
<i>Monarda fistulosa</i>	Wild Bergamot	0.110
<i>Oenothera biennis</i>	Primrose	0.040
<i>Panicum virgatum</i>	Switchgrass	0.003
<i>Parthenium integrifolium</i>	Quinine	0.010
<i>Potentilla arguta</i>	Prairie Cinquefoil	0.100
<i>Pycnanthemum virginianum</i>	Mountain mint	0.120
<i>Ratibida pinnata</i>	Gray headed coneflower	0.230
<i>Rudbeckia hirta</i>	Black eyed susan	0.030
<i>Rudbeckia subtomentosa</i>	Sweet black-eyed susan	0.030
<i>Ruellia humilis</i>	Wild petunia	0.030
<i>Schizachyrium scoparium</i>	Little bluestem	1.720

<i>Silphium integrifolium</i>	Rosinweed	0.010
<i>Silphium lacinatedum</i>	Compass plant	0.010
<i>Silphium perfoliatum</i>	Cup plant	0.020
<i>Sisyrinchium campestre</i>	Prairie Blue-eyed grass	0.001
<i>Solidago rigida</i>	Stiff goldenrod	0.080
<i>Sorghastrum nutans</i>	Indiangrass	0.130
<i>Spartina pectinata</i>	Prairie cord grass	0.001
<i>Sporobolus heterolepis</i>	Prairie dropseed	0.001
<i>Stipa spartea</i>	Porcupine grass	0.002
<i>Symphyotrichum oolentangiense</i>	Azure Aster	0.001
<i>Symphyotrichum sericeum</i>	Silky aster	0.006
<i>Teucrium canadense</i>	Germander	0.004
<i>Tradescantia ohiensis</i>	Ohio spiderwort	0.080
<i>Tripsacum dactyloides</i>	Gama grass	0.020
<i>Vernonia fasciculata</i>	Ironweed	0.220
<i>Veronicastrum virginicum</i>	Culvers root	0.006
<i>Zizia aurea</i>	Golden alexander	0.020

PLS stands for “pure live seed.”

**Supplemental Table S2.** Identity, native status, and total abundance of flowering plant species observed across all study years

Plant Common Name	Plant Scientific Name	Lower 48 Status	Total Abundance
yarrow	<i>Achillea millefolium</i>	N	426
swamp agrimony	<i>Agrimonia parviflora</i>	N	1
canada anemone	<i>Anemone canadensis</i>	N	11
antelope horns	<i>Asclepias asperula</i>	N	2
tall green milkweed	<i>Asclepias hirtella</i>	N	3
common milkweed	<i>Asclepias syriaca</i>	N	4
butterfly milkweed	<i>Asclepias tuberosa</i>	N	30
whorled milkweed	<i>Asclepias verticillata</i>	N	7
white wild indigo	<i>Baptisia alba</i>	N	66
rapeseed	<i>Brassica napus</i>	E	1
musk thistle	<i>Carduus nutans</i>	E	1
partridge pea	<i>Chamaecrista fasciculata</i>	N	53
chicory	<i>Cichorium intybus</i>	E	334
morning glory	<i>Convolvulus arvensis</i>	E	2
queen anne's lace	<i>Daucus carota</i>	E	4055
showy tick trefoil	<i>Desmodium canadense</i>	N	15
deptford pink	<i>Dianthus armeria</i>	E	1725
prairie cinquefoil	<i>Drymocallis arguta</i>	N	10
daisy fleabane	<i>Erigeron annuus</i>	N	5653
flowering spurge	<i>Euphorbia corollata</i>	N	1

sawtooth sunflower	<i>Helianthus grosseserratus</i>	N	1
hawkweed	<i>Hieracium lachenalii</i>	E	1
st. john's wort	<i>Hypericum perforatum</i>	E	32
spotted st. john's wort	<i>Hypericum punctatum</i>	N	23
fieldcress	<i>Lepidium campestre</i>	E	12
oxeye daisy	<i>Leucanthemum vulgare</i>	E	2432
grooved yellow flax	<i>Linum sulcatum</i>	N	7
pale spike lobelia	<i>Lobelia spicata</i>	N	171
birdsfoot trefoil	<i>Lotus corniculatus</i>	E	24795
black medick	<i>Medicago lupulina</i>	E	1227
white sweet clover	<i>Melilotus albus</i>	E	65
yellow sweet clover	<i>Melilotus officinalis</i>	E	164
wild bergamot	<i>Monarda fistulosa</i>	N	1422
catnip	<i>Nepetia cataria</i>	E	4
yellow oxalis	<i>Oxalis stricta</i>	N	240
wild parsnip	<i>Pastinaca sativa</i>	E	7
ground cherry	<i>Physalis virginiana</i>	N	2
ribwort plantain	<i>Plantago lanceolata</i>	E	3517
broadleaf plantain	<i>Plantago major</i>	E	413
field milkwort	<i>Polygala sanguinea</i>	N	16
sulfur cinquefoil	<i>Potentilla recta</i>	E	58
common cinquefoil	<i>Potentilla simplex</i>	N	50
self-heal	<i>Prunella vulgaris</i>	N	334
hairy mountain mint	<i>Pycnanthemum pilosum</i>	N	34
slender mountain mint	<i>Pycnanthemum tenuifolium</i>	N	5628
grey-headed coneflower	<i>Ratibida pinnata</i>	N	185
prairie rose	<i>Rosa arkansana</i>	N	1
multiflora rose	<i>Rosa multiflora</i>	E	81
black-eyed susan	<i>Rudbeckia hirta</i>	N	494
prairie petunia	<i>Ruellia humilis</i>	N	659
blue-eyed grass	<i>Sisyrinchium angustifolium</i>	N	12
horsenettle	<i>Solanum carolinense</i>	N	250
chickweed	<i>Stellaria media</i>	E	21
dandelion	<i>Taraxacum officinale</i>	N	5
germander	<i>Teucrium canadense</i>	N	262
alsike clover	<i>Trifolium hybridum</i>	E	1780
red clover	<i>Trifolium pratense</i>	E	5140
white clover	<i>Trifolium repens</i>	E	17095
moth mullein	<i>Verbascum blattaria</i>	N	6
common mullein	<i>Verbascum thapsus</i>	E	1
swamp vervain	<i>Verbena hastata</i>	N	142
hoary vervain	<i>Verbena stricta</i>	N	672
white vervain	<i>Verbena urticifolia</i>	N	28
ironweed	<i>Vernonia fasciculata</i>	N	1275
corn speedwell	<i>Veronica arvensis</i>	E	2

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“Lower 48 Status” refers to whether the plant is deemed native (N) or exotic (E; i.e., non-native) in the contiguous United States (i.e., USA excluding HI and AK) as determined by the US Department of Agriculture’s Natural Resources Conservation Service.

**Supplemental Table S3.** Identity and abundance in each year of butterfly species observed in this study.

<b>Butterfly Common Name</b>	<b>Butterfly Scientific Name</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>
delaware skipper	<i>Anatrytone logan</i>	0	0	1	1	1
least skipper	<i>Ancyloxypha numitor</i>	0	0	1	1	0
meadow fritillary	<i>Boloria bellona</i>	8	3	41	29	37
summer azure	<i>Celastrina neglecta</i>	1	0	1	0	0
common wood nymph	<i>Cercyonis pegala</i>	22	8	13	13	5
gorgone checkerspot	<i>Chlosyne gorgone</i>	0	0	1	0	0
silvery checkerspot	<i>Chlosyne nycteis</i>	1	0	2	2	10
orange sulphur	<i>Colias eurytheme</i>	89	73	238	129	74
clouded sulphur	<i>Colias philodice</i>	157	172	105	49	40
eastern tailed blue	<i>Cupido comyntas</i>	251	13	115	105	41
monarch	<i>Danaus plexippus</i>	16	14	1	13	22
silver-spotted skipper	<i>Epargyreus clarus</i>	1	1	7	1	14
indigo duskywing	<i>Erynnis baptisiae</i>	0	0	2	0	1
dun skipper	<i>Euphyes vestris</i>	0	0	1	0	0
variegated fritillary	<i>Euptoeita claudia</i>	0	0	0	0	2
common buckeye	<i>Junonia coenia</i>	0	3	23	38	2
viceroy	<i>Limenitis archippus</i>	0	2	2	1	0
red-spotted purple	<i>Limenitis arthemis</i>	0	0	1	0	0
gray copper	<i>Lycaena dione</i>	2	0	0	0	2
bronze copper	<i>Lycaena hyllus</i>	0	1	3	0	0
little wood satyr	<i>Megisto cymela</i>	3	0	0	0	0
giant swallowtail	<i>Papilio cressphontes</i>	0	1	5	1	3
eastern tiger swallowtail	<i>Papilio glaucus</i>	8	0	1	2	3
black swallowtail	<i>Papilio polyxenes</i>	1	5	10	2	7
pearl crescent	<i>Phyciodes tharos</i>	16	20	39	98	34
cabbage white	<i>Pieris rapae</i>	12	167	116	62	25
peck's skipper	<i>Polites peckius</i>	0	0	4	6	2
tawny-edged skipper	<i>Polites themistocles</i>	5	0	6	10	6
eastern comma	<i>Polygonia comma</i>	0	1	0	1	0
question mark	<i>Polygonia interrogationis</i>	0	1	1	0	0
little yellow	<i>Pyrisitia lisa</i>	5	0	0	0	8
coral hairstreak	<i>Satyrium titus</i>	0	1	0	0	0
great spangled fritillary	<i>Speyeria cybele</i>	9	23	4	10	22
regal fritillary	<i>Speyeria idalia</i>	7	10	2	1	10
southern cloudywing	<i>Thorybes bathyllus</i>	0	0	0	0	2
european skipper	<i>Thymelicus lineola</i>	0	1	0	0	0
red admiral	<i>Vanessa atalanta</i>	1	6	1	1	0
painted lady	<i>Vanessa cardui</i>	0	4	0	2	0
american lady	<i>Vanessa virginiensis</i>	9	1	1	1	1

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The numbers in each year column are the abundance of that butterfly species across all sites/patches in that year.