

62 Lists Indicate Recoverable Oak Savannas and Open Oak Woodlands in Southern Wisconsin

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Several Wisconsin botanists have developed a list of indicator species to help restorationists identify savanna (10-50 percent canopy) and open oak woodland (50-80 percent canopy) remnants. I and my colleagues—Brian Bader, Ted Cochrane, Eric Epstein, Rich Henderson, Randy Hoffman, and Mark Leach—believe that the presence of these light-dependent understory species indicates a recent closure of the canopy. Wooded sites containing sufficient populations of these species, therefore, have the highest potential for recovery if properly managed through the use of prescribed burns, mechanical canopy thinning, and other techniques.

This list, although preliminary, should be useful to restorationists in southern Wisconsin, and in the neighboring regions of southeastern Minnesota, northeastern Iowa and northern Illinois. I anticipate that we will refine it to provide separate indicator species lists for oak openings, oak barrens, and open oak woodlands. For now, it should serve field investigators who are attempting to identify and assess remnant sites for their restoration potential.

This list consists of four categories of identification.

Category 1 species are the best indicators of former savannas and open woodlands because they tend to be limited to partial canopy conditions. In more densely-wooded sites, these species are usually in a state of declining vigor due to the ever-increasing canopy closure. They typically persist in densely-wooded sites only near canopy openings such as woodlot edges, roadsides, or brushed utility corridors.

Category 2 species are moderate indicators of former savannas and/or open woodlands. Commonly found under partial canopies, they are also important parts of either prairies or forests, being more common in those communities than category 1 species.

Category 3 species are marginal indicators of former savannas and/or woodlands. They tend to have broad habitat amplitudes that allow them to grow in several upland plant communities.

Category 4 species are tentatively proposed as indicators of former savannas and/or open woodlands. Due to our lack of sufficient experience with these species, we chose to list them in a separate category. Further field investigations should help place these species in one of the other categories.

Table 1. Four categories of savanna indicator species.

Category 1 species—best indicators			
<i>Agastache nepetoides</i>	Yellow giant hyssop	<i>Hieracium canadense</i>	Canada hawkweed
<i>Agastache scrophulariaeaeifolia</i>	Purple giant hyssop	<i>Hypoxis hirsuta</i>	Yellow star-grass
<i>Anemone virginiana</i>	Tall anemone	<i>Krigia biflora</i>	False dandelion
<i>Asclepias purpurascens</i>	Purple milkweed	<i>Lilium philadelphicum</i>	Prairie lily
<i>Aster linariifolius</i>	Flax-leaved aster	<i>Lupinus perennis</i>	Wild lupine
<i>Astragalus canadensis</i>	Canadian milkvetch	<i>Lysimachia lanceolata</i>	Lance-leaved loosestrife
<i>Aureolaria grandiflora</i>	Yellow false foxglove	<i>Lysimachia quadrifolia</i>	Whorled loosestrife
<i>Aureolaria pedicularia</i>	Clammy false foxglove	<i>Oenothera perennis</i>	Small sundrops
<i>Baptisia leucantha</i>	White wild indigo	<i>Oxalis violacea</i>	Violet wood-sorrel
<i>Baptisia leucophacea</i>	Cream wild indigo	<i>Pedicularis canadensis</i>	Wood betony
<i>Besseyia bullii</i>	Kitten tails	<i>Penstemon gracilis</i>	Slender beard-tongue
<i>Blephilia ciliata</i>	Ohio horse-mint	<i>Phlox pilosa</i>	Prairie phlox
<i>Bromus kalmii</i>	Prairie brome	<i>Polemonium reptans</i>	Jacob's ladder
<i>Cacalia atriplicifolia</i>	Pale Indian plantain	<i>Polygala senega</i>	Seneca snakeroot
<i>Cacalia muhlenbergii</i>	Great Indian plantain	<i>Polytaenia nutallii</i>	Prairie Parsley
<i>Camassia scilloides</i>	Wild hyacinth	<i>Prenanthes alba</i>	Lion's foot
<i>Castilleja coccinea</i>	Indian paintbrush	<i>Ranunculus fascicularis</i>	Early buttercup
<i>Ceanothus americana</i>	New Jersey tea	<i>Ranunculus rhomboideus</i>	Prairie buttercup
<i>Ceanothus ovatus</i>	Prairie redroot	<i>Silene stellata</i>	Starry campion
<i>Cirsium altissimum</i>	Woodland thistle	<i>Solidago hispida</i>	Hairy goldenrod
<i>Convolvulus spithameus</i>	Low bindweed	<i>Taenidia integerrima</i>	Yellow pimpernel
<i>Cypripedium pubescens</i>	Large yellow lady-slipper	<i>Tephrosia virginiana</i>	Goat's rue
<i>Desmodium canadense</i>	Showy tick-trefoil	<i>Thaspium trifoliatum</i>	Meadow parsnip
<i>Dodecatheon meadia</i>	Shooting star	<i>Tomanthera auriculata</i>	Eared false foxglove
<i>Elymus villosus</i>	Silky wild rye	<i>Triosteum aurantiacum</i>	Late horse gentian
<i>Elymus virginicus</i>	Virginia wild rye	<i>Triosteum perfoliatum</i>	Early horse gentian
<i>Erigeron pulchellus</i>	Robin's plantain	<i>Veronicastrum virginicum</i>	Culver's root
<i>Eupatorium sessilifolium</i>	Woodland boneset	<i>Zigadenus elegans</i>	White camas
<i>Gentiana alba</i>	Cream gentian	<i>Zizia aurea</i>	Golden Alexander
<i>Heuchera americana</i>	Prairie alum-root		

(continued)

Category 2 species—moderate indicators

<i>Allium cernum</i>	Nodding wild onion	<i>Gentiana puberulenta</i>	Downy gentian
<i>Amorpha canescens</i>	Lead-plant	<i>Gentiana quinquefolia</i>	Stiff gentian
<i>Andropogon gerardi</i>	Big bluestem	<i>Geum triflorum</i>	Prairie smoke
<i>Andropogon scoparius</i>	Little bluestem	<i>Helianthemum bicknellii</i>	Rockrose
<i>Anemone cylindrica</i>	Thimbleweed	<i>Helianthemum canadense</i>	Common rockrose
<i>Anemone patens</i>	Pasque flower	<i>Helianthus laetiflorus</i>	Prairie sunflower
<i>Anemone quinquefolia</i>	Wood anemone	<i>Helianthus occidentalis</i>	Western sunflower
<i>Anemonella thalictroides</i>	Rue anemone	<i>Heliopsis helianthoides</i>	False sunflower
<i>Arenaria lateriflora</i>	Wood sandwort	<i>Hieracium scabrum</i>	Rough hawkweed
<i>Asclepias amplexicaulis</i>	Sand milkweed	<i>Hystrix patula</i>	Bottlebrush grass
<i>Asclepias exaltata</i>	Poke milkweed	<i>Lathyrus venosus</i>	Woodland pea
<i>Asclepias tuberosa</i>	Butterfly weed	<i>Leersia virginica</i>	White grass
<i>Asclepias viridiflora</i>	Short green milkweed	<i>Liatris cylindracea</i>	Cylindrical blazing star
<i>Aster azureus</i>	Sky-blue aster	<i>Liatris ligulistylis</i>	Showy blazing star
<i>Aster laevis</i>	Smooth blue aster	<i>Lithospermum canescens</i>	Hoary puccoon
<i>Aster sericeus</i>	Silky aster	<i>Lithospermum carolinense</i>	Hairy puccoon
<i>Aster shortii</i>	Short's aster	<i>Lithospermum incisum</i>	Fringed puccoon
<i>Bouteloua curtipendula</i>	Side oats grama	<i>Lobelia spicata</i>	Pale spiked lobelia
<i>Bouteloua hirsuta</i>	Hairy gramma grass	<i>Luzula multiflora</i>	Common wood-rush
<i>Bromus ciliatus</i>	Fringed brome	<i>Orobanche uniflora</i>	One-flowered broom-rape
<i>Cacalia suaveolens</i>	Sweet Indian plantain	<i>Panicum latifolium</i>	Broad-leaved panic-grass
<i>Callirhoe triangulata</i>	Clustered poppy mallow	<i>Panicum linearifolium</i>	Slender-leaved panic-grass
<i>Carex brevior</i>	a sedge	<i>Penstemon pallidus</i>	Pale beard-tongue
<i>Cassia fasciculata</i>	Partridge pea	<i>Petalostemum candidum</i>	White prairie clover
<i>Comandra umbellata</i>	False toadflax	<i>Potentilla arguta</i>	Prairie cinquefoil
<i>Coreopsis palmata</i>	Prairie tickseed	<i>Pycnanthemum virginianum</i>	Common mountain mint
<i>Desmodium cuspidatum</i>	Bracted tick-trefoil	<i>Solidago nemoralis</i>	Old-field goldenrod
<i>Eupatorium purpureum</i>	Purple joe-pye weed	<i>Solidago speciosa</i>	Showy goldenrod
<i>Euphorbia corollata</i>	Flowering spurge	<i>Sorghastrum nutans</i>	Indian grass
<i>Galium boreale</i>	Northern bedstraw	<i>Sporobolus heterolepis</i>	Prairie dropseed
<i>Galium circaeazans</i>	Wild licorice	<i>Viola pedatifida</i>	Prairie violet

Category 3 species—associate spp./weak indicators

<i>Actaea pachypoda</i>	White baneberry	<i>Lysimachia quadriflora</i>	Narrow-leaved loosestrife
<i>Agrimonia gryposepala</i>	Tall agrimony	<i>Oryzopsis racemosa</i>	Black-seeded ricegrass
<i>Agropyron trachycaulum</i>	Slender wheatgrass	<i>Panicum oligosanthes</i> var. <i>scribnerianum</i>	Few-flowered panic-grass
<i>Amphicarpa bracteata</i>	Hog peanut	<i>Panicum lanuginosum</i> var. <i>implicatum</i>	Hairy panic-grass
<i>Apocynum androsaemifolium</i>	Spreading dogbane	<i>Panicum leibergii</i>	Prairie panic-grass
<i>Apocynum cannabinum</i>	Indian hemp	<i>Petalostemum purpureum</i>	Purple prairie clover
<i>Brachyelytrum erectum</i>	Long-awned wood grass	<i>Polygala sanguinea</i>	Field milkwort
<i>Galium concinnum</i>	Shining bedstraw	<i>Ratibida pinnata</i>	Yellow coneflower
<i>Helianthus hirsutus</i>	Oblong sunflower	<i>Rudbeckia hirta</i>	Black-eyed Susan
<i>Helianthus strumosus</i>	Pale-leaved sunflower	<i>Sisyrinchium campestre</i>	Prairie blue-eyed grass
<i>Hieracium longipilum</i>	Hairy hawkweed	<i>Smilacina stellata</i>	Starry false Solomon's seal
<i>Koeleria cristata</i>	June grass	<i>Solidago juncea</i>	Early goldenrod
<i>Kuhnia eupatorioides</i>	False boneset	<i>Solidago rigida</i>	Stiff goldenrod
<i>Lathyrus ochroleucus</i>	Pale pea	<i>Solidago ulmifolia</i>	Elm-leaved goldenrod
<i>Lechea intermedia</i>	Intermediate pinweed	<i>Tradescatia ohioensis</i>	Common spiderwort
<i>Lechea tenuifolia</i>	Slender-leaved pinweed	<i>Uvularia grandiflora</i>	Bellwort
<i>Liatris aspera</i>	Rough blazing star	<i>Viola pedata</i>	Bird's foot violet
<i>Liatris pycnostachya</i>	Prairie blazing star		

Category 4 species—proposed indicators

<i>Agrostis perennans</i>	Autumn bentgrass	<i>Lespedeza violacea</i>	Violet bush clover
<i>Asplenium platyneuron</i>	Ebony spleenwort	<i>Lespedeza virginica</i>	Slender bush clover
<i>Bromus purgans</i>	Woodland brome	<i>Polygala verticillata</i>	Whorled milkwort
<i>Carex rugosperma</i>	a sedge	<i>Silene antirrhina</i>	Sleepy catchfly
<i>Corallorhiza odontorhiza</i>	Late coral-root	<i>Symphoricarpos occidentalis</i>	Wolfberry
<i>Desmodium canescens</i>	a tick-trefoil	<i>Trillium recurvatum</i>	Red trillium
<i>Helianthus decapetalus</i>	Pale sunflower	<i>Vicia americana</i>	American vetch
<i>Lactuca floridana</i>	Woodland blue lettuce	<i>Vicia caroliniana</i>	Wood vetch
<i>Lactuca ludoviciana</i>	Western prairie lettuce		