



# Wisconsin DNR Barrens Monitoring Form

Version 2.2

Site Name: \_\_\_\_\_ Management Unit Name/# \_\_\_\_\_ AA Name/# \_\_\_\_\_ Date \_\_\_\_\_

AA Description \_\_\_\_\_ AA acres \_\_\_\_\_

GPS coords start \_\_\_\_\_ GPS coords end \_\_\_\_\_ Surveyors \_\_\_\_\_

Instructions: For each metric, write the corresponding measurement for your assessment area in "Your Obs" column, then enter a letter rank for that metric in the "Letter Rank" column following the ranking guidance. Convert the letter rank into a numerical score using a grade-point-average style conversion (A=4, A-=3.5, B=3, C=2, C-=1.5, D=1), and enter this number in the "Score" column.

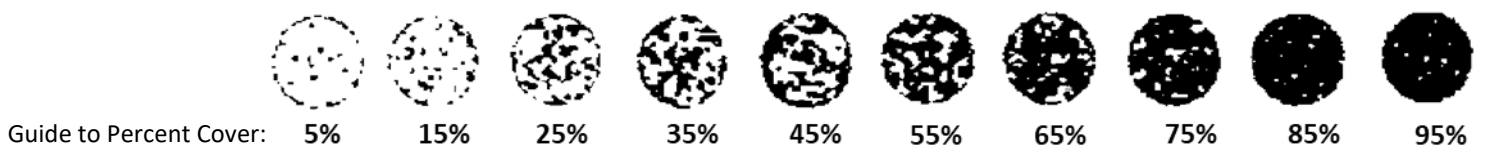
		Ranking Guidance for each metric				YOUR OBS	LETTER RANK	SCORE (1-4)	Weighted Avg for final score
METRIC		A (Excellent)	B (Good)	C (Fair)	D (Poor)				
Barrens Composition	Total % cover of native grasses and sedges, not including Pennsylvania sedge	30%+	15-29%	5-14%	0-4%				Multiply subtotal of Barrens comp by 0.6 ↓
	Number of native indicator species (see checklist with photographs)	15+	11-14	8-10	0-7				
	Total % cover of native disturbance indicators (e.g., Pennsylvania sedge, bracken fern, blackberry/dewberry, etc.)	0-20%	21-40%	41-60%	61%+				
<b>Subtotal of Barrens comp: Avg of scores above; if 2 of the 3 metrics are D, overall Barrens comp = D</b>						NA			
General composition	Total % cover of invasive species (as defined under Wisconsin NR 40)	<1%	1-3%	C: 4-10% C-:11-30%	31%+				Multiply subtotal of General comp by 0.15 ↓
	Relative % cover of all native plants (ratio of all natives to non-natives, including trees and shrubs)	A: >99% A- 95-99%	85-94%	60-84%	0-59%				
	Relative % cover of appropriate oak barrens trees (ratio of oak & regionally jack/red pine to other tree species)	96-100%	90-95%	80-89%	0-79%				
<b>Subtotal of General Comp: Avg of scores above; if 2 of the 3 metrics are D, overall General comp = D</b>						NA			
Structure	Total % cover of all medium-statured woody plants (2-6' tall; includes natives and non-natives)	0-15%	16-30%	31-50%	51%+				Multiply subtotal of Structure by 0.2 ↓
	Total % cover of saplings and tall shrubs (6-20' tall)	5-15%	<5 or 16-30%	31-50%	51%+				
	Total % cover of trees (>20' tall)	5-40%	<5 or 41-60%	61-75%	76%+				
<b>Subtotal of structure: Avg of scores above; if tree comp = D, overall Structure = D</b>						NA			
Spatial heterogeneity						Spatial hetero:			Multiply Het by 0.05 ↓
	<p>A: Complex natural mosaic that includes canopy and openings of varying shapes and sizes</p> <p>B: Somewhat heterogeneous, but canopy and/or openings clustered in portions of the unit</p> <p>C: Somewhat homogeneous with mostly small canopy gaps, as well as occasional larger openings</p> <p>D: Homogeneous canopy with only small canopy gaps or few large openings with hard edges</p>								

Sum of weighted scores: \_\_\_\_\_  
 Composite letter rank: \_\_\_\_\_

### Composite Letter Rank Guide

- A 3.8 - 4.0
- A- 3.5 - 3.79
- B 3.0 - 3.49
- B- 2.5 - 2.99
- C 2.0 - 2.49
- C- 1.5 - 1.99
- D <1.49

Notes and management comments (for specific metrics or for entire unit):

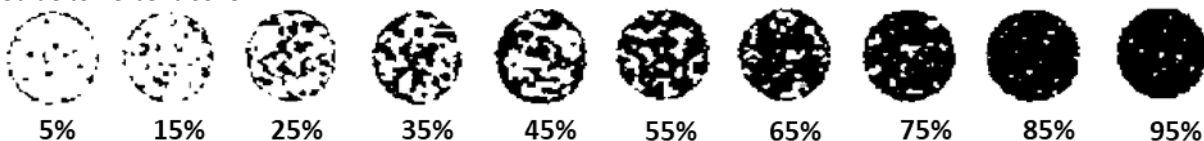




Optional Worksheet for Interim Observations: For each metric below, write the corresponding measurement for each interim stop. Estimate the approximate proportion of the AA covered by each interim observation. Calculate a weighted average based on the proportional area of the AA each interim stop covers (or, if equal proportions, a straight average) . Write the weighted average for the entire Assessment Area in the "Your Obs" column on the other side of the form. See the "Coarse-level monitoring protocol for assessing baseline condition and restoration progress in oak and pine barrens" for further guidance.

		INTERIM STOP										Weighted Avg	
		1	2	3	4	5	6	7	8	9	10		
Approximate proportion of AA													
METRIC													
Barrens Composition	Total % cover of native grasses and sedges, not including Pennsylvania sedge												
	Number of native indicator species <i>(see checklist with photographs)</i>	<i>No interim observations needed; enter single value for entire AA on other side of form.</i>											
	Total % cover of native disturbance indicators (e.g., Pennsylvania sedge, bracken fern, blackberry/dewberry, etc.)												
General composition	Total % cover of invasive species <i>(as defined under Wisconsin NR 40)</i>												
	Relative % cover of all native plants <i>(ratio of all natives to non-natives, including trees and shrubs)</i>												
	Relative % cover of appropriate oak barrens trees <i>(ratio of oak &amp; regionally jack/red pine to other tree species)</i>												
Structure	Total % cover of all medium-statured woody plants <i>(2-6' tall; includes natives and non-natives)</i>												
	Total % cover of saplings and tall shrubs <i>(6-20' tall)</i>												
	Total % cover of trees <i>(&gt;20' tall)</i>												
	Spatial heterogeneity	<i>No interim observations needed; enter single value for entire AA on other side of form.</i>											

Guide to Percent Cover:



Wisconsin Oak Barrens Native Indicator Species — Check all that are present on your site



bird's-foot violet  
(*Viola pedata*)



black-eyed Susan  
(*Rudbeckia hirta*)



butterfly milkweed  
(*Asclepias tuberosa*)



dotted horsemint  
(*Mondarda punctata*)



false toadflax  
(*Comandra umbellata*)



field sage-wort  
(*Artemisia campestris*)



white sage  
(*Artemisia ludoviciana*)



foxglove spp.  
(*Aureolaria* spp.)



goat's-rue  
(*Tephrosia virginiana*)



hairy hawkweed  
(*Hieracium longipilum*)



New Jersey tea  
(*Ceanothus herbaceus*)



Kalm's brome  
(*Bromus kalmii*)



lead-plant  
(*Amorpha canescens*)



slender beard-tongue  
(*Penstemon gracilis*)



plains prickly-pear  
(*Opuntia macrorhiza*)



prairie tickseed  
(*Coreopsis palmata*)



Puccoon spp.  
(*Lithospermum* spp.)



rock spike-moss  
(*Selaginella rupestris*)



rough blazing-star  
(*Liatris aspera*)



round-headed bush-clover  
(*Lespedeza capitata*)



sand violet  
(*Viola sagittata*)



short green milkweed  
(*Asclepias viridiflora*)



showy goldenrod  
(*Solidago speciosa*)



sky-blue aster  
(*Aster oolentangiensis*)



Spiderwort spp.  
(*Tradescantia* spp.)



stiff sunflower  
(*Helianthus pauciflorus*)



western sunflower  
(*Helianthus occidentalis*)



thimbleweed  
(*Anemone cylindrica*)



flax-leaved aster  
(*Ionactis linariifolia*)



wild lupine  
(*Lupinus perennis*)

## Photography Credits for Wisconsin Oak Barrens Native Indicator Species

Latin Name	Common Name	Photographer	Other Copyright Notes
<i>Viola pedata</i>	bird's-foot violet	Merel R. Black*	
<i>Rudbeckia hirta</i>	black-eyed Susan	Merel R. Black*	
<i>Asclepias tuberosa</i>	butterfly milkweed	Matthew L. Wagner*	
<i>Monarda punctata</i>	dotted horsemint	Janice Stiefel*	
<i>Comandra umbellata</i>	false toadflax	James R. Sime*	
<i>Artemisia campestris</i>	field sage-wort	Diane Cadrain: Stitching It All Together Blog	Blog: <a href="http://stitching-it-all-together.blogspot.com/2012/09/?_sm_au_=iTV5MrW51tjGDk1N">http://stitching-it-all-together.blogspot.com/2012/09/?_sm_au_=iTV5MrW51tjGDk1N</a> . No photo usage restrictions indicated.
<i>Ionactis linariifolia</i>	flax-leaved aster	merel r. black*	
<i>Aureolaria</i> spp.	foxglove spp.	Merel R. Black*	
<i>Tephrosia virginiana</i>	goat's-rue	Emily J. Lain*	
<i>Hieracium longipilum</i>	hairy hawkweed	Derek Anderson*	
<i>Ceanothus herbaceus</i>	inland New Jersey tea	Stephen L. Solheim*	
<i>Bromus kalmii</i>	Kalm's brome	Christopher Noll*	
<i>Amorpha canescens</i>	lead-plant	Derek Anderson*	
<i>Penstemon gracilis</i>	slender beard-tongue	Robert W. Freckmann	
<i>Opuntia macrorhiza</i>	plains prickly-pear	Paul Drobot*	
<i>Coreopsis palmata</i>	prairie tickseed	Robert Bierman*	
<i>Lithospermum</i> spp.	puccoon spp.	Corey Raimond (leaves)*; Merel R. Black (flowers)*	
<i>Selaginella rupestris</i>	rock spike-moss	Christopher Noll*	
<i>Liatris aspera</i>	rough blazing-star	Aaron Carlson*	
<i>Lespedeza capitata</i>	round-headed bush-clover	Emmet J. Judziewicz*	
<i>Viola sagittata</i>	sand violet	Merel R. Black*	
<i>Asclepias viridiflora</i>	short green milkweed	Aaron Carlson*	
<i>Solidago speciosa</i>	showy goldenrod	Paul Drobot*	
<i>Symphotrichum oolentangiense</i>	sky-blue aster	Merel R. Black*	
<i>Tradescantia</i> spp.	spiderwort spp.	Christopher Noll*	
<i>Helianthus pauciflorus</i>	stiff sunflower	Merel R. Black*	
<i>Anemone cylindrica</i>	thimbleweed	Aaron Carlson*	
<i>Helianthus occidentalis</i>	western sunflower	Aaron Carlson*	
<i>Artemisia ludoviciana</i>	white sage	Emmet J. Judziewicz*	
<i>Lupinus perennis</i>	wild lupine	Merel R. Black*	

\**Online Virtual Flora of Wisconsin. 2018. <http://wisflora.herbarium.wisc.edu>. Accessed on May 18.*

### References:

- Curtis, J. 1953. "The Vegetation of Wisconsin." (modal species for Oak Barrens)
- Bader, B.J. 2001. Developing a species list for oak savanna/oak woodland restoration at the University of Wisconsin-Madison Arboretum. *Ecological Restoration* 19(4): 242-250.
- Pruka, B. 1995. Lists indicate recoverable oak savannas and open oak woodlands in southern Wisconsin. *Restoration and Management Notes* 13(1): 124-126.
- Bray, J. Roger. 1960. The composition of savanna vegetation in Wisconsin. *Ecology* 41(4): 721-732.
- Wisconsin DNR NHI Program. 2017. Relative frequency and abundance of barrens species across 10 Oak Barrens Monitoring pilot sites (unpublished).