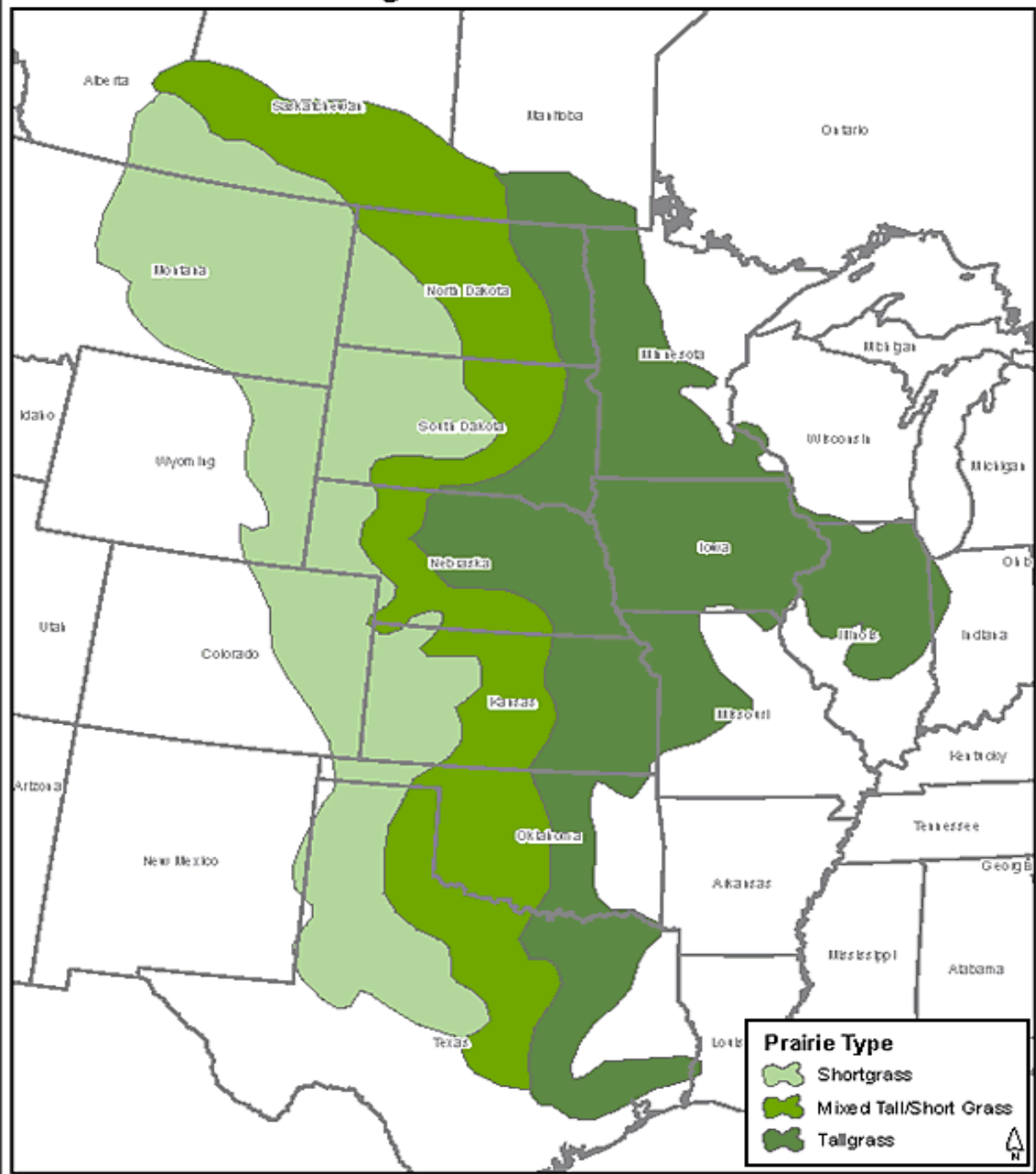# Rx Fire – Setting goals, hitting targets, monitoring for success
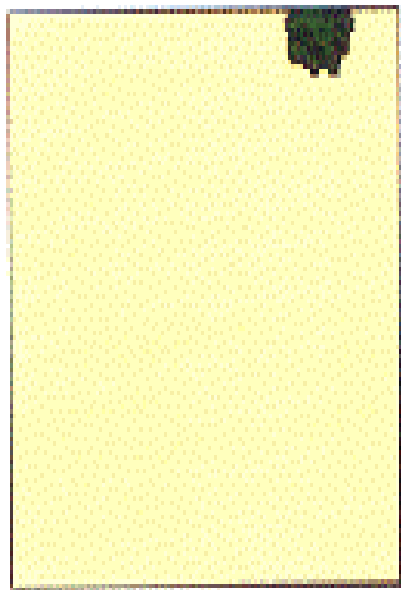
SHAW NATURE RESERVE

MISSOURI BOTANICAL GARDEN

Original Prairie Extent
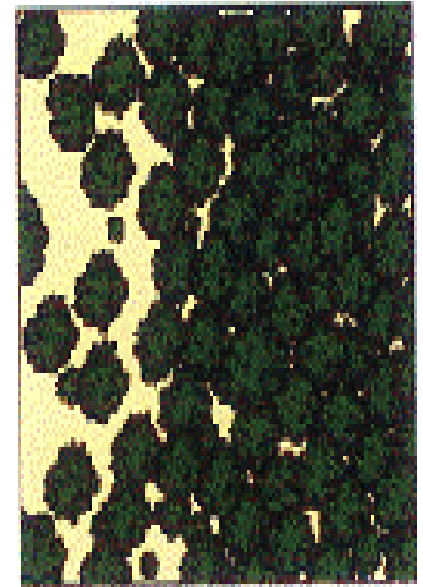

Prairie Type

- Shortgrass
- Mixed Tall/Short Grass
- Tallgrass

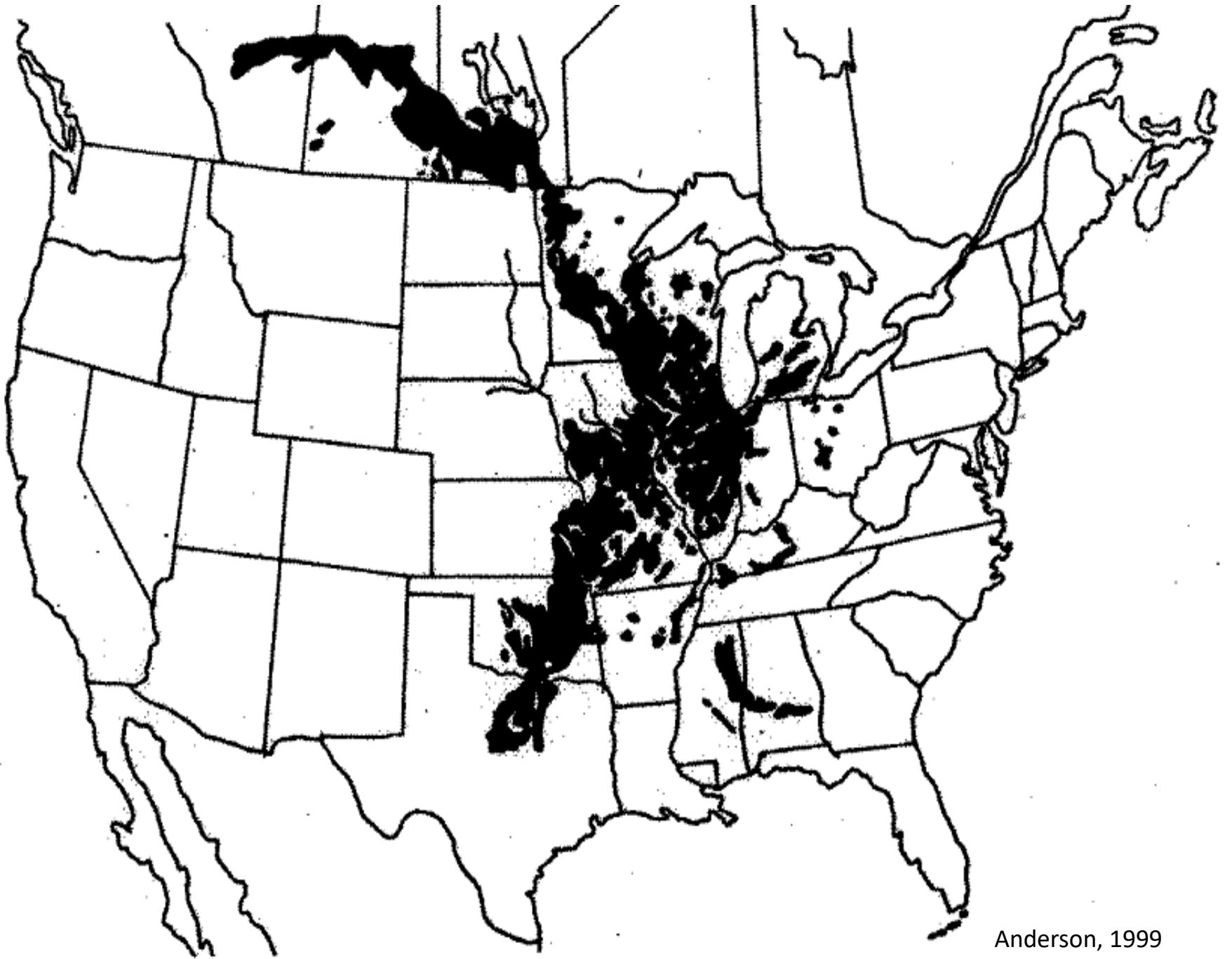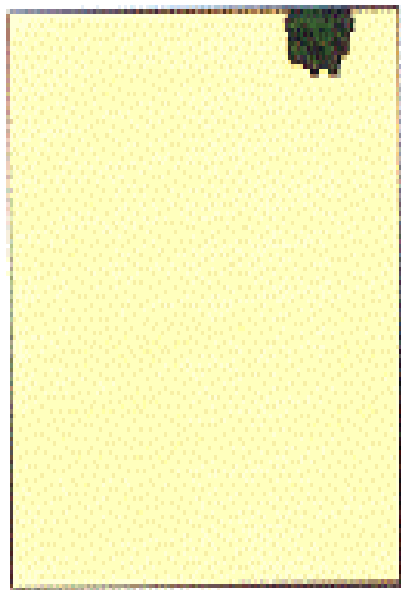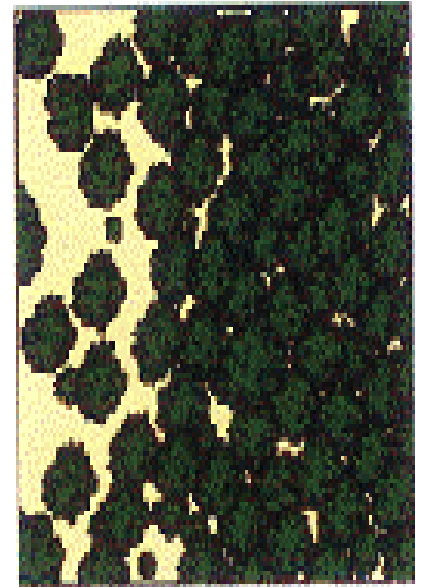| prairie	savanna	woodland	forest
<0.5 trees/ha	0.5 - 4.7 trees/ha	4.8 - 9.9 trees/ha	> 9.9 trees/ha

Anderson, 1999

prairie
<0.5 trees/ha

savanna
0.5 - 4.7 trees/ha

woodland
4.8 - 9.9 trees/ha

forest
> 9.9 trees/ha

Danny Brown

11.17.2023

12.13.2023

We tend to burn more in the spring than fall by default not by design

Why do we burn (or not burn)?

Why do we burn (or not burn)?

- More floral resources for pollinators
  - More *Echinacea* & *Liatris*
- More seed for collection efforts
- Makes invasive species control easier
- Cost share contract obligated
- Have plans for overseeding
- Removal of duff-layer build up
- Enhance forage for grazing
- "Unit hasn't burned in years and is due"
  - What's the desired fire return interval?
- "Push back on woodies"
  - Top killing honeysuckle vs. setting back sumac? Monitoring?

Why do we burn (or not burn)?

- Too late in the season, herps are up
  - How much mortality is acceptable?
- Too late in the season, vegetation is up
  - When is late too late?
  - A couple spring beauties? Wood betony leaves up?
- Already burned threshold percentage of given habitat type
  - 50% of remnant communities? How much refugia?
- Conditions are too intense (drought/Rh) or too modest
  - How much black/fuel consumption does your plan call for?
  - Higher quality areas usually carry fire when lower quality areas won't so we burn on more aggressive days

Ornate Box Turtles in Northern Illinois

Edmonds, D. A., E. M. Bach, A. L. Colton, I. S. Jaquet, E. J. Kessler, and M. J. Dreslik.2024. **Avoiding mortality: timing prescribed burns in ornate box turtle habitat**. Journal of Wildlife Management

Author recommended thresholds in bolded bottom row.

Fall			Spring		
Date	**Air Temp**	**Probability turtles aboveground**	**Date**	**Air Temp**	**Probability turtles aboveground**
1 October	16° C (60° F)	10%	1 March	15° C (59°F)	10%
1 November	16° C (60° F)	6%	1 April	15° C (59°F)	20%
1 November	**15° C (59°F)**	**<5%**	**1 April**	**10° C (50°F)**	**<5%**

Let's talk about (shudder) monitoring
Chris Helzer – Prairie Ecologist Blog

- Don't beat yourself up for not counting every flower, bird, or bee in your prairie each year, but don't throw up your hands and give up either. **Your top priority should be to have clear management objectives.**

- Once you have those, make a list of ways you could measure success and see what seems feasible. It's important to track your results in some way, but it doesn't have to be overly time consuming to be helpful.

- Do what you can, learn from what others are doing, and keep looking for ways to improve your management.

Why don't we monitor more?

- Time consuming
  - Many folks are challenged to just get the work done let alone the monitoring
- Expensive…do not have institutional/agency support
- No local researcher/university interest
- Do not have subject matter expertise
  - I would love to know how every taxonomic group is doing
- Not sure what to monitor for…highest priority
  - Do not know where to start

Monitoring Options

- FQA – C-values and plot level sampling
  - The rapid FQA incorporates a simplified sampling approach that relies on a limited plant species checklist and meander-type sampling that can be done rapidly, coupled with assessment criteria to translate data into meaningful results.
- Community health index models
  - MDC - conduct a timed meander across a representative swath of the unit.
  - Aim to spend under 1 minute and 30 seconds per half hectare (1.2 acres).
- Qualitative Rapid Assessment
  - Cook County IL – meant to be fast, repeatable and done annually
- Rare plants with small populations
  - Simply doing stems counts once a year
- Presence/absence…keep records, take notes!

Many of us strive to create a shifting mosaic of habitat types across our prairies to accommodate as much diversity as possible.

2019

Mostly short grass with a few patchy areas of medium height. Many forbs ungrazed, providing some flowers and cover.	Lots of wildflowers throughout. Grass is thin and 8-10 inches tall from last year's grazing. Very little thatch or standing dead vegetation.
Tall and dense vegetation. Deep litter and lots of standing dead material.	Medium to tall grass but with scattered grazing lawns. Strong abundance of flowers. Stiff sunflower had an especially good year here.

2020

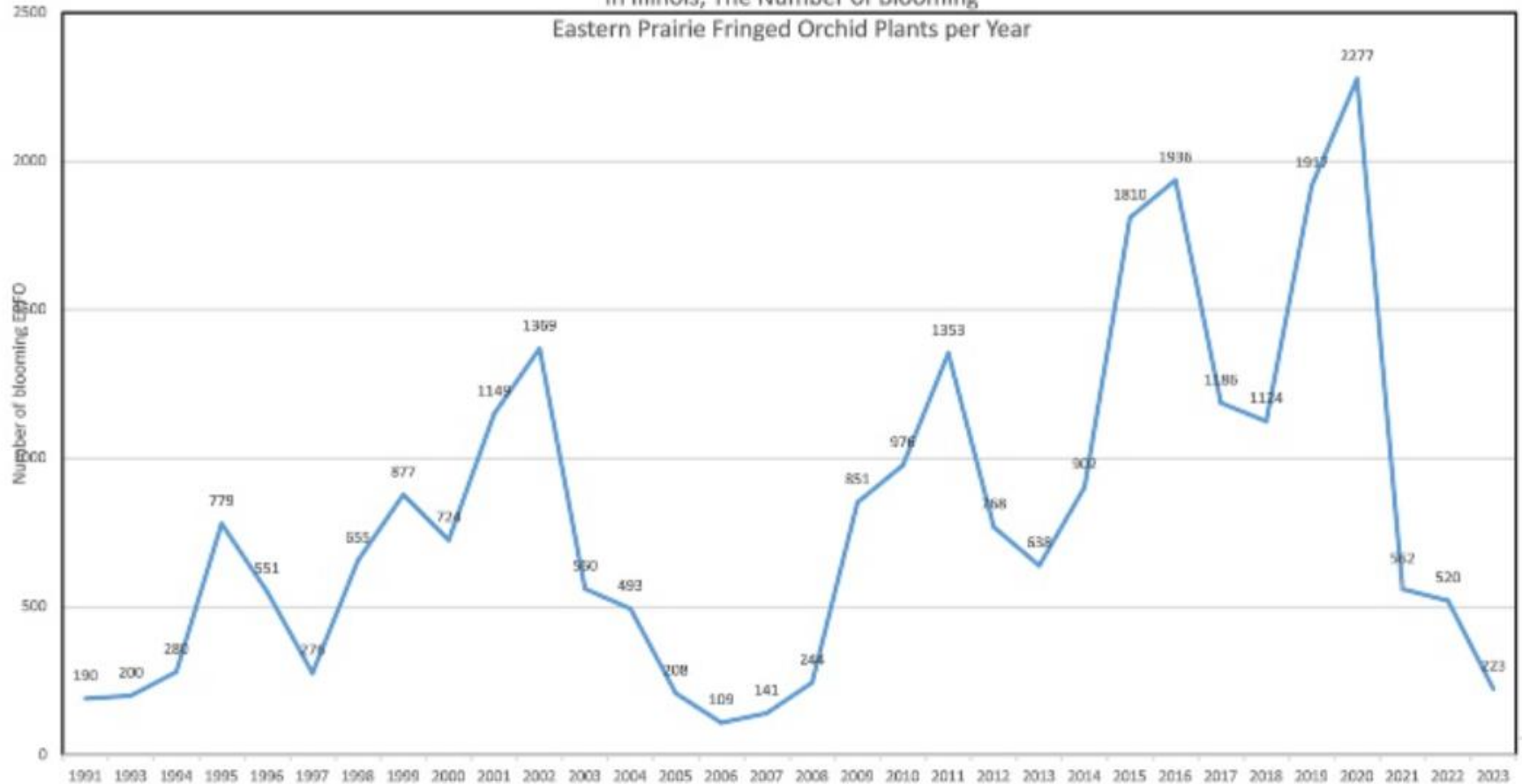|	
Abundant flowers, especially prairie clover and yarrow. Grasses still low density from last year's grazing. Not much litter. A few scattered patches grazed short.	Medium density/height of grass. Pretty good flower abundance, though most of the rosinweed was grazed before flowering.
Almost uniformly short vegetation with quite a bit of bare ground exposed. A few forbs ungrazed, especially hoary vervain. Strong abundance of western ragweed.	A wall of grass. Hard to walk through. Good abundance of the taller wildflowers but didn't see many early species blooming.

- Volunteer collected data
- Stephen Packard's Strategies for Stewards blog
- https://woodsandprairie.blogspot.com/

Community Health Index　　　　　　　　　**Natural Community Type:**　　　　Upland Prairie Glaciated
Subtype:　　　　　　　　　　　　　　　　　　　　　None
Sampling Unit ID:
Site Name:
Sampling Date:
Evaluator(s):

Section I - Landscape Context (accounts for 10% of the total possible score)

(Ia) % of surrounding landscape (one mile radius - from the edge of the community boundaries) in native vegetation:

%	Points
0-25	0.5
26-50	1
51-75	1.5
76+	2.5

Score: [　　　　]

(Ib) Size of the prairie community:

Acres	Points
<1	0
1- 5	0.5
6 - 10	1
11 - 20	2
21-40	3
41-80	4
81-160	5
>160	6

Score: [　　　　]

(Ic) Distance to associated community types (e.g., savanna, other prairie remnants):

Miles	Points
>1	0.25
0.6-1	0.5
0.25-0.5	0.75
< 0.25	1

Score: [　　　　]

(Id) Presence of prairie swales and headwater drainages embedded within the upland prairie community:

Yes = 0.5
Yes, but swales or drainages are incised/downcut = 0.2
No = 0

Score: [　　　　]

Data and Resources

Dolomite Glade
Dolomite Glade CHI_VER. 08102021

Glaciated Plains Savanna
Glaciated Plains Savanna CHI_VER. 071221

Glaciated Plains Woodland
Glaciated Plains Woodland CHI_VER. 071221

Hardpan Prairie Unglaciated
Hardpan Prairie Unglaciated CHI_VER._050421

Igneous Glade
Igneous Glade CHI VER._050421

Karst Fen (Open Fen Subtype)
Karst Fen (Open Fen Subtype) CHI_VER. 022321

Ozark Acidic Woodland Pine Subtype
Ozark Acidic Woodland Pine Subtype CHI VER. 040621

Ozark Woodland Oak Subtype
Ozark Woodland Oak Subtype VER. 040621

Sandstone Glade
Sandstone Glade CHI VER._05042021

Upland Prairie Glaciated
Upland Prairie Glaciated CHI_VER. 08102021

Upland Prairie Unglaciated
Upland Prairie Unglaciated CHI XL Ver._090321

White River Dolomite Glade
White River Dolomite Glade CHI VER. 071221

https://research.mdc.mo.gov/dataset/community-health-index-models

Qualitative Rapid Assessment – Where are we at?

Site: _____

Date: _____

Observer(s): _____

Please fill out the following for each QRA focus area and include a map showing the area's location within the site.

Barrier Weeds Present or Adjacent:

Characterize the area generally:
Matrix species abundance:

Conservative species abundance:

Relevant management history or site history:

Other notes such as bare soil, wildlife use, etc:

Management actions needed	When	With what urgency

QRA Value: _____

Any additional explanation for QRA Value:

QRA Guide

0 – Restoration has not yet started
Typically, these are degraded areas. However, high quality areas may fall into this category if they aren't currently under active management.

1 – Structure: The right shape
Management Focus: Controlling Invasives

1.1 Restoration has started (barrier weeds are abundant, otherwise mostly weedy species present).

1.2 Restoration in progress, heavy focus on barrier weeds (barrier weeds are abundant but not everywhere; few native species present).

1.3 Barrier weeds under control but still not many native species; may be primarily bare ground, dead weeds, or annual weeds. Ready for seeding.

2— Composition: the right species
Management Focus: Seeding

2.1 Native matrix established, forbs present but widespread, perennial weeds only scattered. Barrier Weeds may be present but are no longer the primary management focus. Annual or biennial weeds may be prevalent.

2.2 Forbs becoming more diverse and uniform across site, weeds widely dispersed.

2.3 Plant communities diverse and rich across site.

3—Function: all the pieces are in the right place
Management Focus: Maintaining (ideally with fire)

Barrier Weeds, Matrix Species, and High-quality Indicator Species for BGI Sites

PRAIRIE	
Barrier Weeds	
Cirsium arvense	Canada thistle
Dipsacus spp.	Teasel
Lotus corniculatus	Bird's Foot Trefoil
Melilotus spp.	Sweet Clover
Pastinaca sativa	Wild Parsnip
Phalaris arundinacea	Reed Canary Grass
Securigera varia	Crown Vetch
Solidago altissima*	Tall Goldenrod
Seeding can begin while working to eradicate	
Matrix Species	
Bouteloua curtipendula (dry)	Side-oats grama
Coreopsis palmata	Prairie Coreopsis
Eryngium yuccifolium	Rattlesnake Master
Heliopsis helianthoides	False sunflower
Monarda fistulosa	Wild Bergamot
Pedicularis canadensis	Wood betony
Ratibida pinnata	Yellow coneflower
Schyzicharium scoparium	Little Bluestem
Silphium spp.	Silphiums
Sporobolus heterolepis	Prairie Dropseed
High-quality Indicator Species	
Asclepias sullivantii	Prairie milkweed
Asclepias viridiflora (dry)	Short Green Milkweed
Carex meadii	Mead's Sedge
Ceanothus americanus	New Jersey tea
Comandra umbellata	Bastard Toadflax
Dichanthelium leibergii	Leiberg's Panic Grass
Dichanthelium scribnerium (dry)	Scribner's Panic Grass
Dodecatheon meadia	Shooting Star
Gentiana puberulenta	Prairie Gentian
Hesperostipa spartea	Porcupine Grass
Heuchera richardsonii	Prairie Alum Root
Hypoxis hirsuta	Yellow Star Grass
Lilium philadelphicum	Prairie Lily
Lithospermum canescens	Hoary Puccoon
Oxalis violacea	Violet Wood Sorrel
Phlox pilosa fulgida	Prairie Phlox
Polygala senega	Seneca Snakeroot
Psoralidium tenuiflorum (dry)	Scurfy Pea
Viola pedatifida	Prairie Violet

Poplar Creek Prairie Stewards – Forest Preserves of Cook County

Restoring grassland birds and healthy prairie at Galloping Hill

SHAW

NATURE

RESERVE

MISSOURI BOTANICAL GARDEN

Thank you!

msaxton@mobot.org – Mike Saxton