Monitoring Range Production and Condition At Wind Cave National Park

- preliminary findings

National Park Service, U.S. Department of the Interior

Range Production – estimated by two methods

NRCS Technical Guides for the Black Hills (paper exercise)

NRCS Double-Sampling Method (field work)

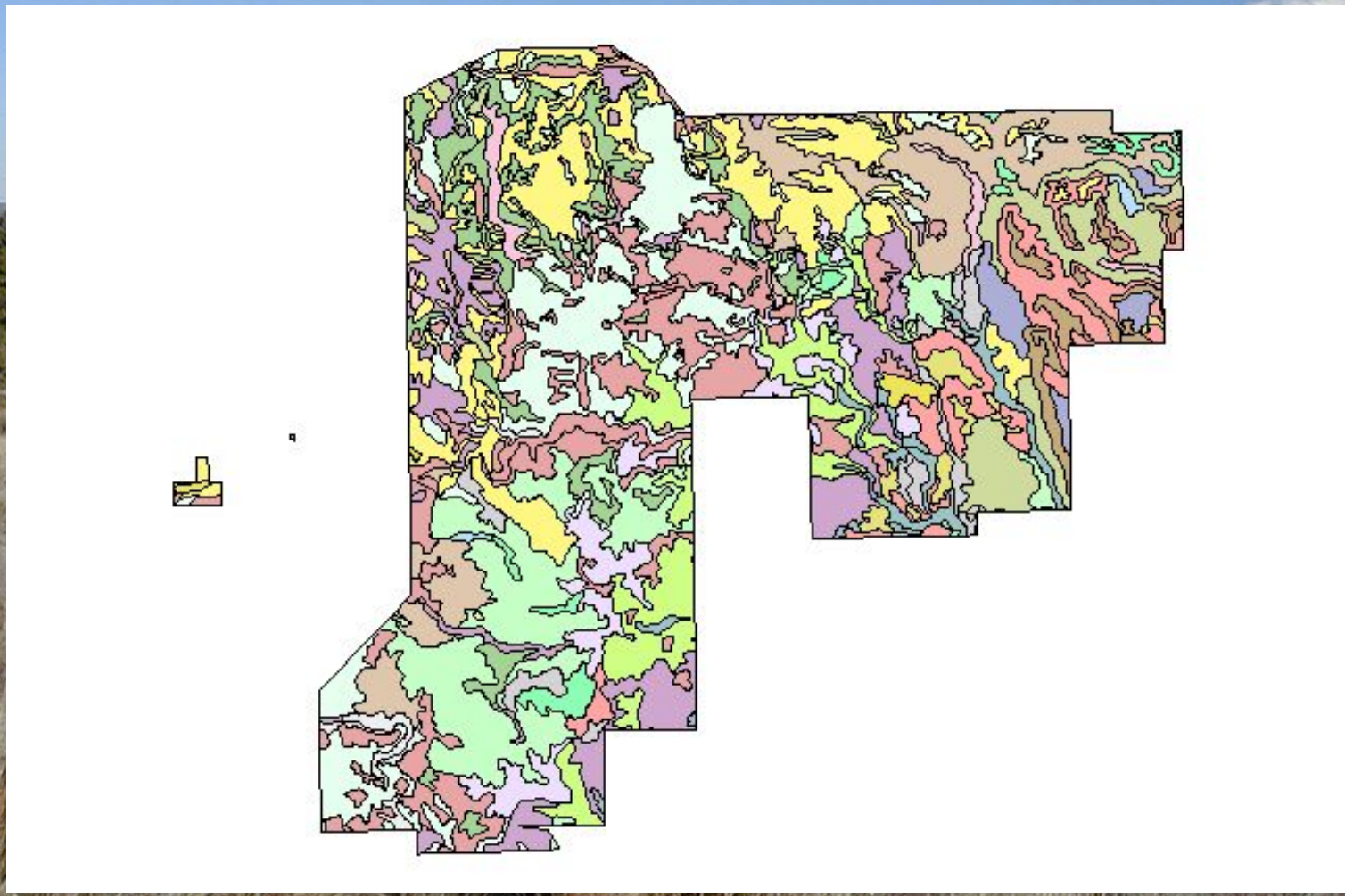
28,295 acres

mixed-grass prairie and ponderosa pine forest

granite outcrop, limestone plateau, red valley, hogback

Used the USDA NRCS Soil Map for the Park, to determine:

1) acres within each soil designation
2) acres within range and grazeable woodland site designations.



Ecological Site Designations

Range Sites

- clayey
- loamy terrace
- mountain prairie
- overflow
- rock outcrop
- savannah
- shallow
- silty
- stony hills
- subirrigated
- thin claypan
- thin upland

Grazable Woodlands

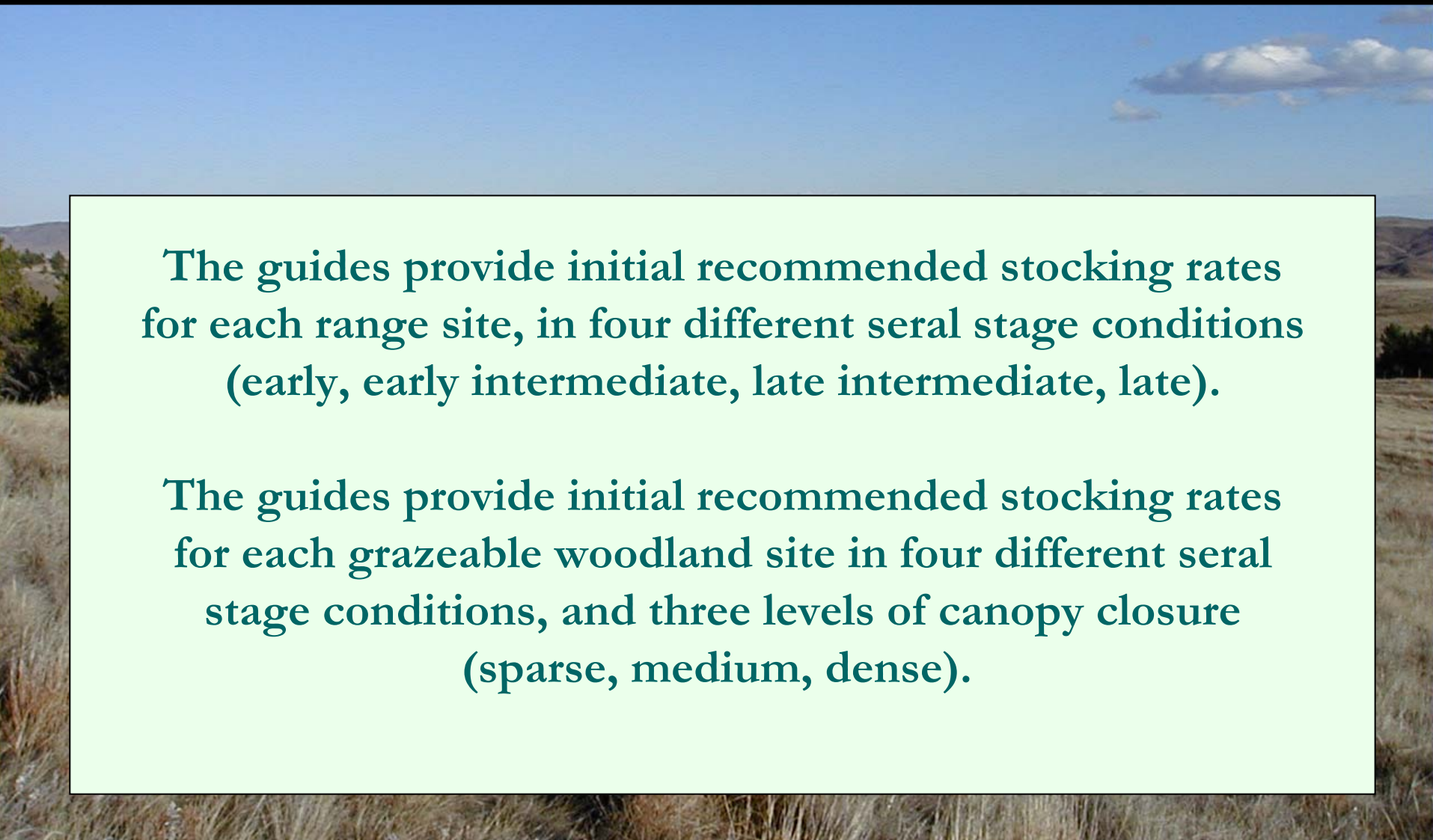
- cool slope
- rock outcrop
- rocky side slope
- shallow ridge
- silty gw
- silty foot slope
- warm slope

Acres Per Ecological Site

Range Site	Number of Acres	Grazeable Woodland Site	Number of Acres
Clayey	1218.0573	Cool Slope	1758.5262
Loamy Terrace	16.0480	Rock Outcrop	1550.5810
Mountain Prairie	22.4341	Rocky Side Slopes	959.8298
Overflow	1018.4244	Shallow Ridge	1931.7611
Rock Outcrop	733.2006	Silty GW	5.4565
Savannah	1303.6195	Silty Foot Slopes	336.5794
Shallow	3010.7642	Warm Slope	2898.0810
Silty	3519.5832	Unassigned GW	1723.1791
Stony Hills	4700.8655		
Subirrigated	14.9973		
Thin Claypan	69.4667		
Thin Upland	949.4427		
Unassigned RS	389.5350		

Range Production - estimated with technical guides

NRCS Technical Guides for the Black Hills



The guides provide initial recommended stocking rates for each range site, in four different seral stage conditions (early, early intermediate, late intermediate, late).

The guides provide initial recommended stocking rates for each grazeable woodland site in four different seral stage conditions, and three levels of canopy closure (sparse, medium, dense).

Range Production

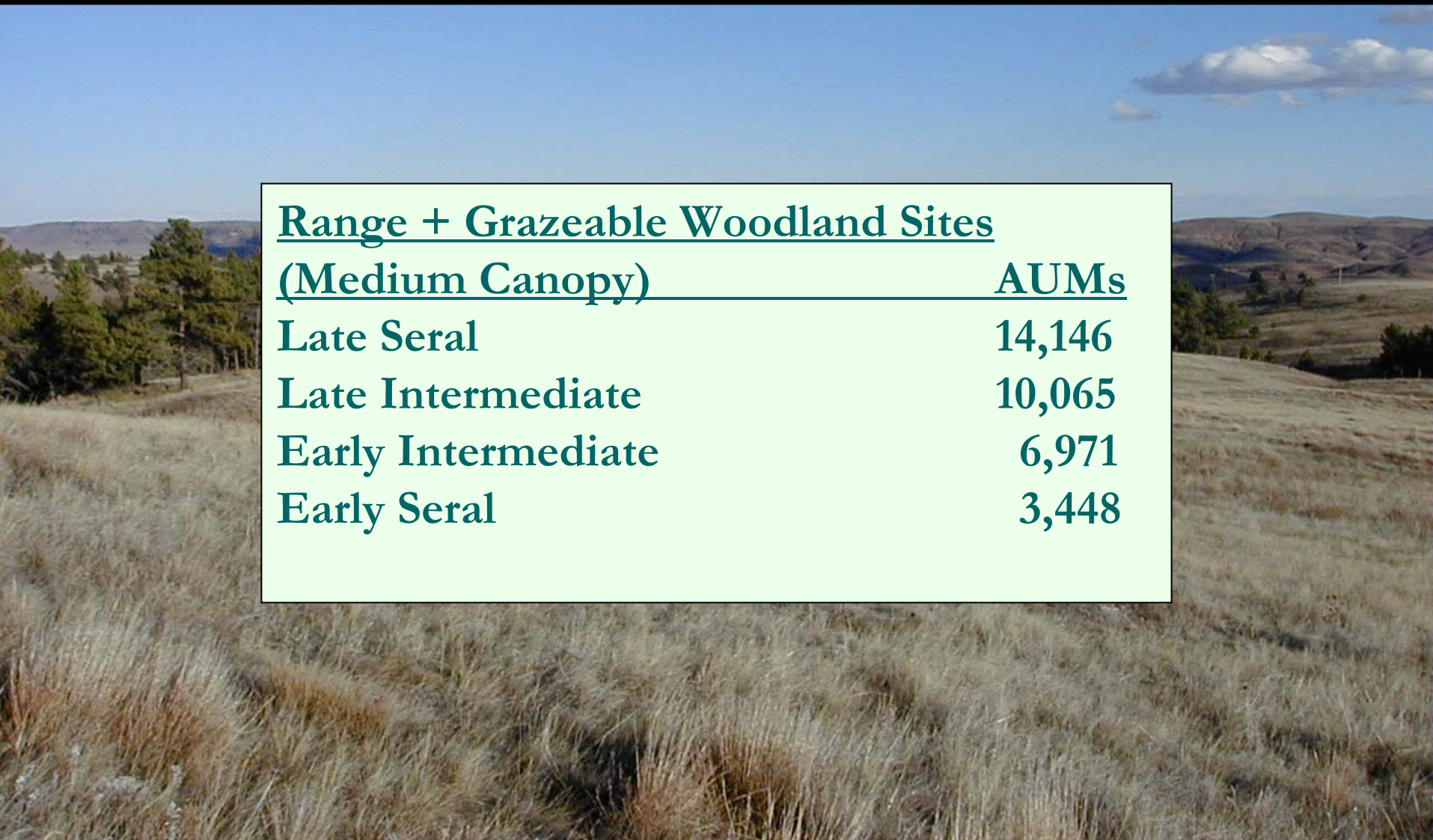
If ¼ is allocated for wildlife…

Range Site	AUMs
Late Seral	12,422
Late Intermediate	9,301
Early Intermediate	6,211
Early Seral	3,089

Grazeable Woodland Sites	AUMs Sparse	AUMs Med	AUMs Dense
Late Seral	2,931	1,724	683
Late Intermediate	1,204	764	199
Early Intermediate	2,886	760	0
Early Seral	924	359	0

Range Production

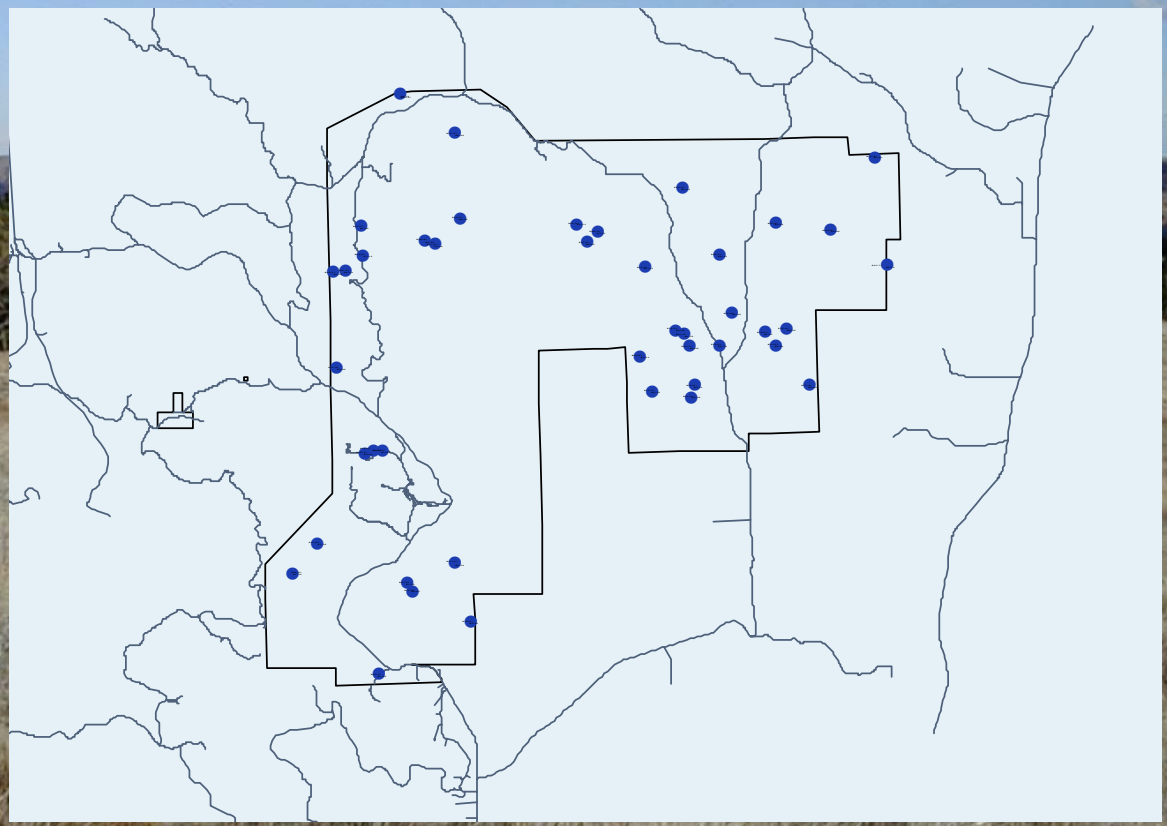
If ¼ is allocated for wildlife…



Range + Grazeable Woodland Sites (Medium Canopy)	AUMs
Late Seral	14,146
Late Intermediate	10,065
Early Intermediate	6,971
Early Seral	3,448

Range Production – estimated with double sampling

36 transects established




07/21/2004


08/03/2004

08/04/2004


08/13/2004

Range Production

If ¼ is allocated for wildlife…

Ecological Sites	AUMs
Range sites	3658
Grazeable woodland sites	1689
Total	5347

Tech Guides vs. Double-Sampling (w/o reconstruction)

If ¼ is allocated for wildlife…

Range + Grazeable Woodland Sites	AUMs
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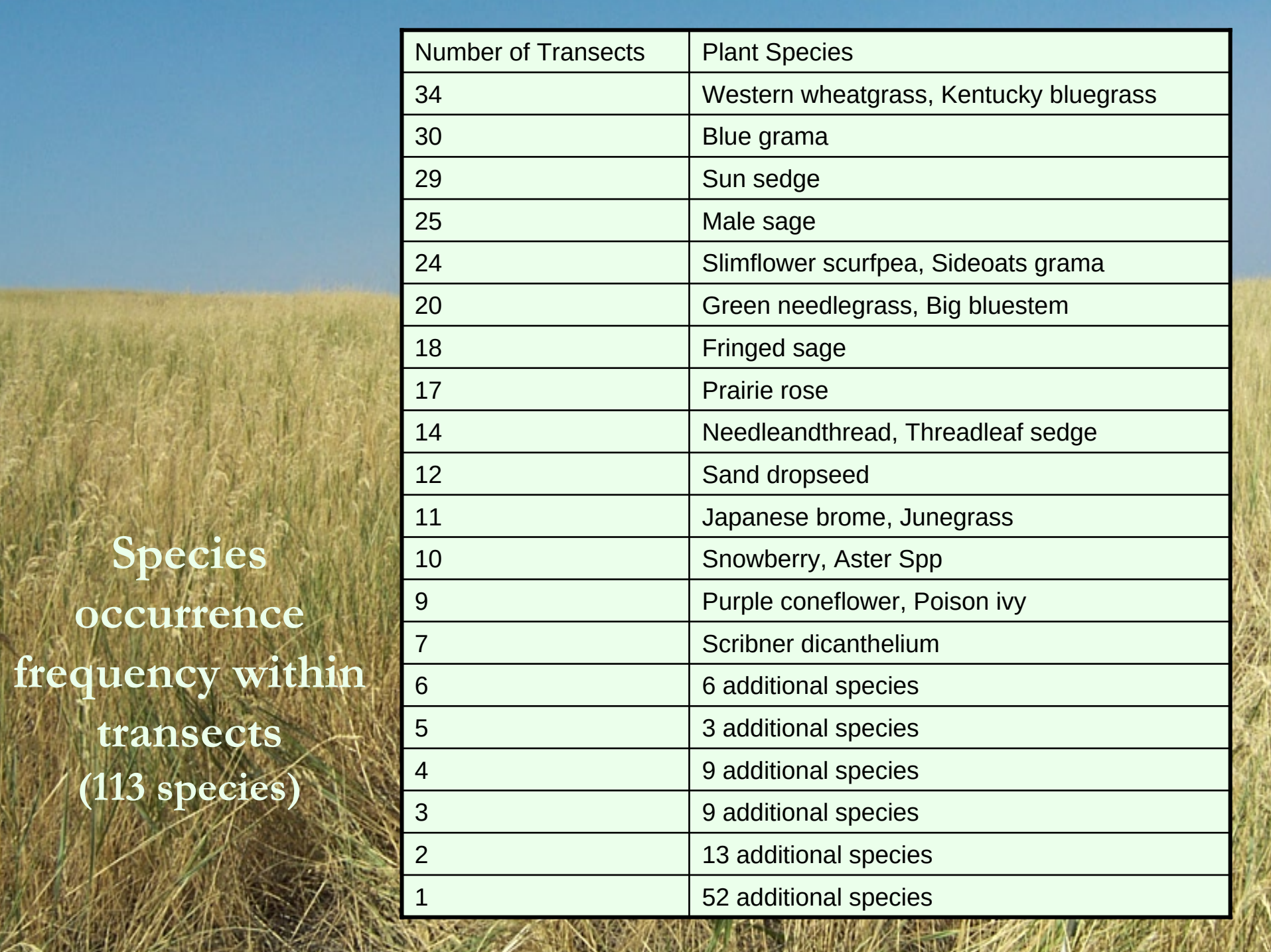
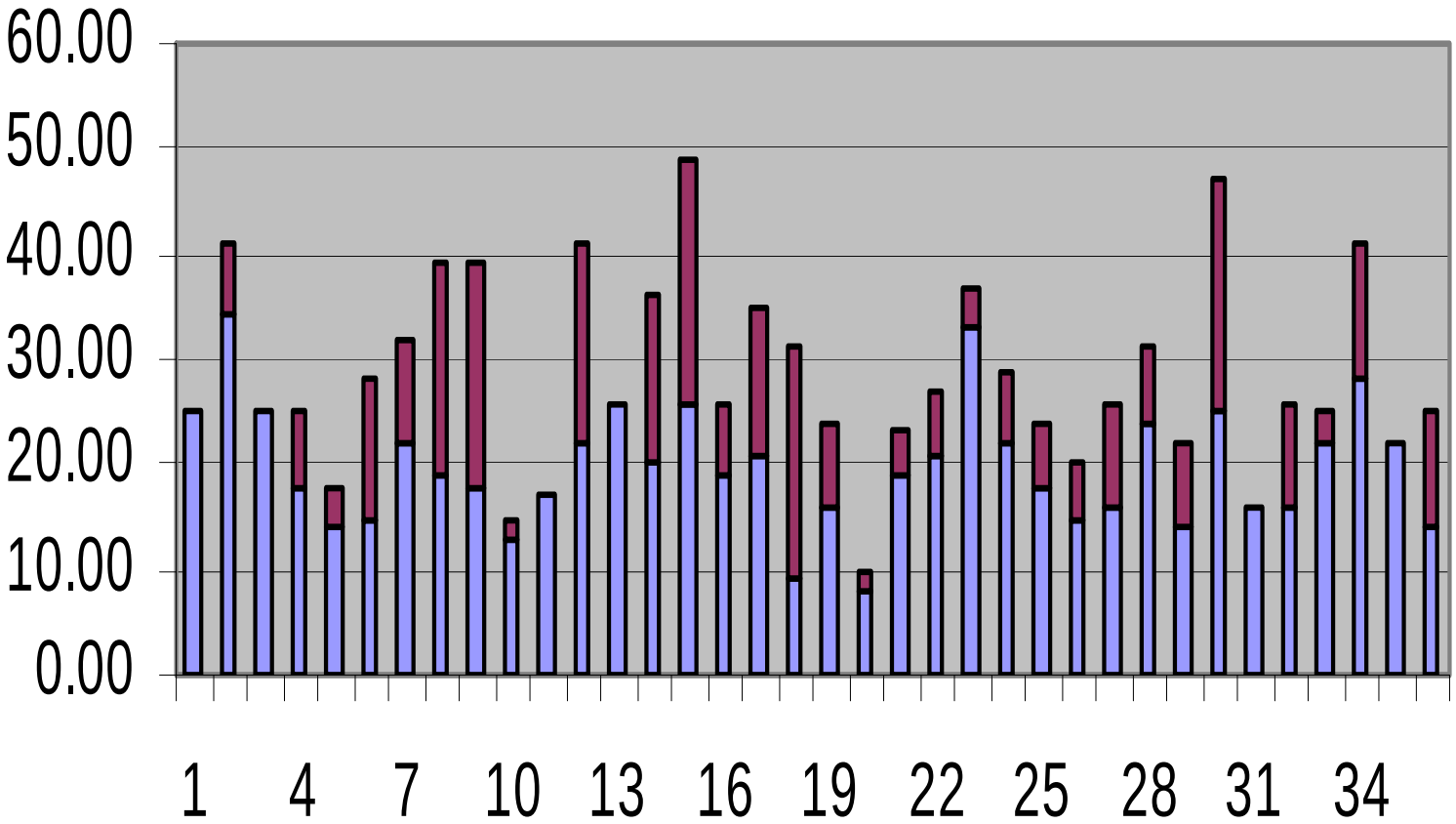
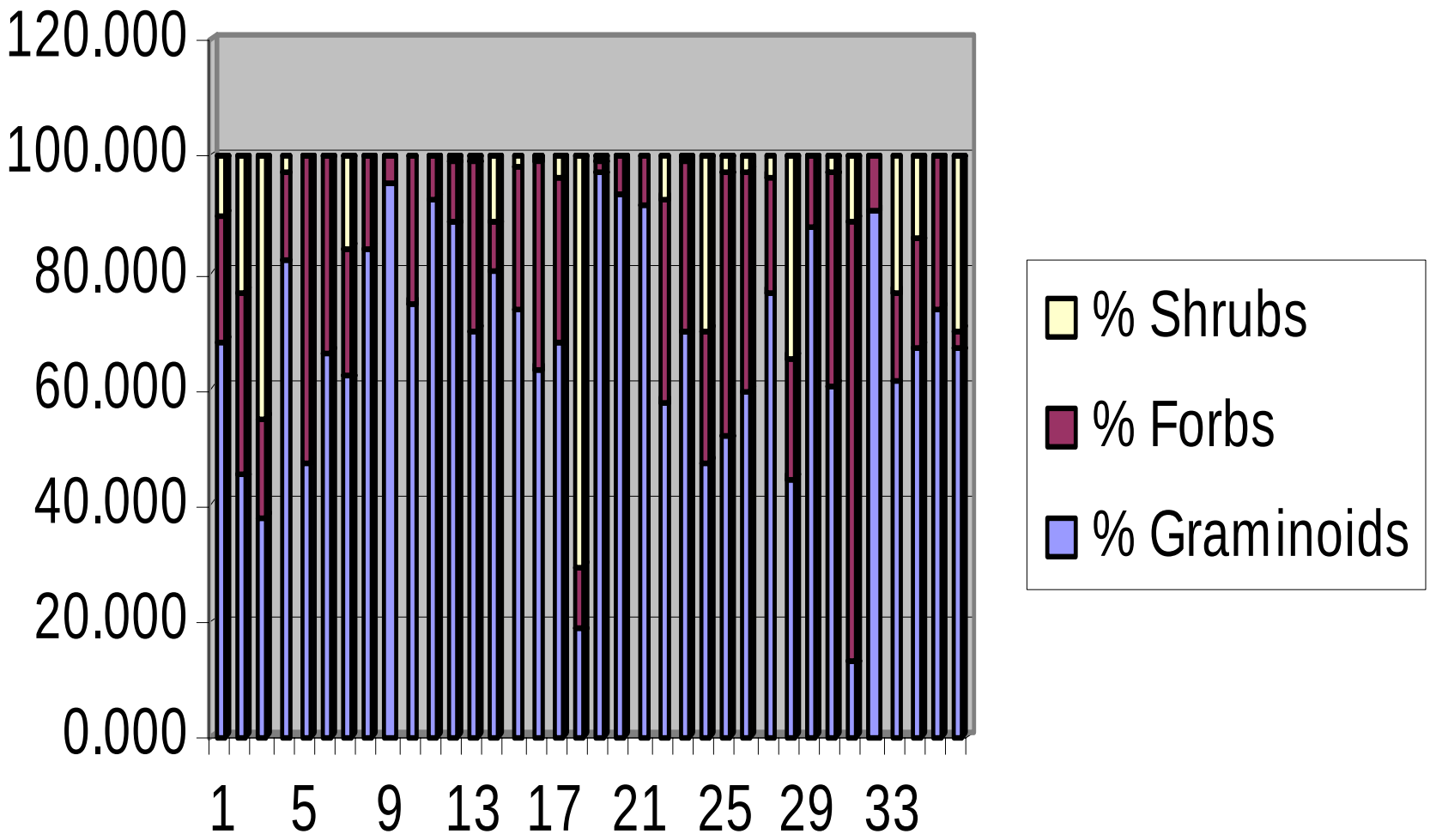


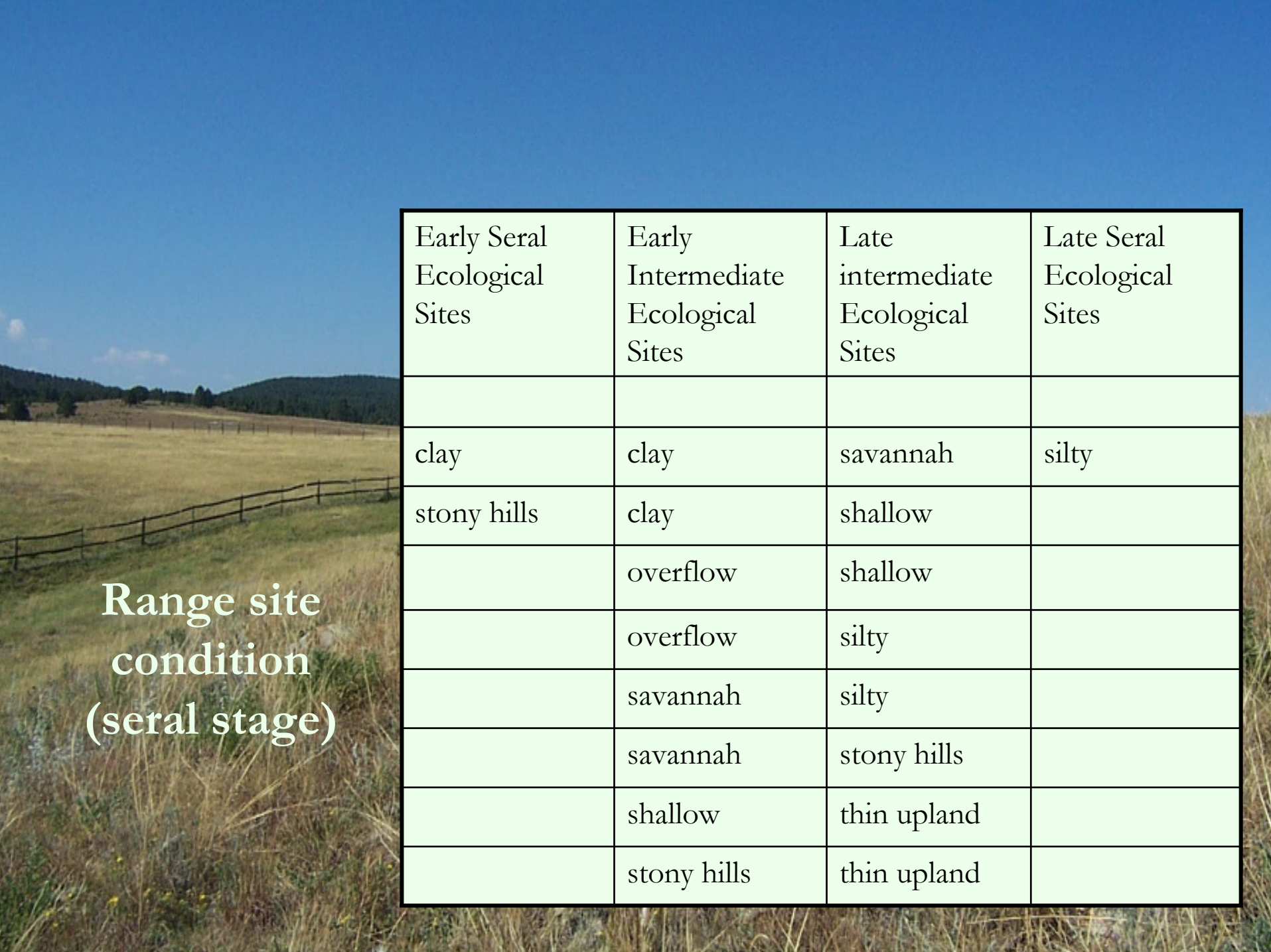
Species occurrence frequency within transects (113 species)

Number of Transects	Plant Species
34	Western wheatgrass, Kentucky bluegrass
30	Blue grama
29	Sun sedge
25	Male sage
24	Slimflower scurfpea, Sideoats grama
20	Green needlegrass, Big bluestem
18	Fringed sage
17	Prairie rose
14	Needleandthread, Threadleaf sedge
12	Sand dropseed
11	Japanese brome, Junegrass
10	Snowberry, Aster Spp
9	Purple coneflower, Poison ivy
7	Scribner dicanthelium
6	6 additional species
5	3 additional species
4	9 additional species
3	9 additional species
2	13 additional species
1	52 additional species



Species within, and adjacent to, transects.


120.000
100.000
80.000
60.000
40.000
20.000
0.000
1
5
9
13
17
21
25
29
33
% Shrubs
% Forbs
% Graminoids



Range site condition (seral stage)

Early Seral Ecological Sites	Early Intermediate Ecological Sites	Late intermediate Ecological Sites	Late Seral Ecological Sites
clay	clay	savannah	silty
stony hills	clay	shallow	
	overflow	shallow	
	overflow	silty	
	savannah	silty	
	savannah	stony hills	
	shallow	thin upland	
	stony hills	thin upland	

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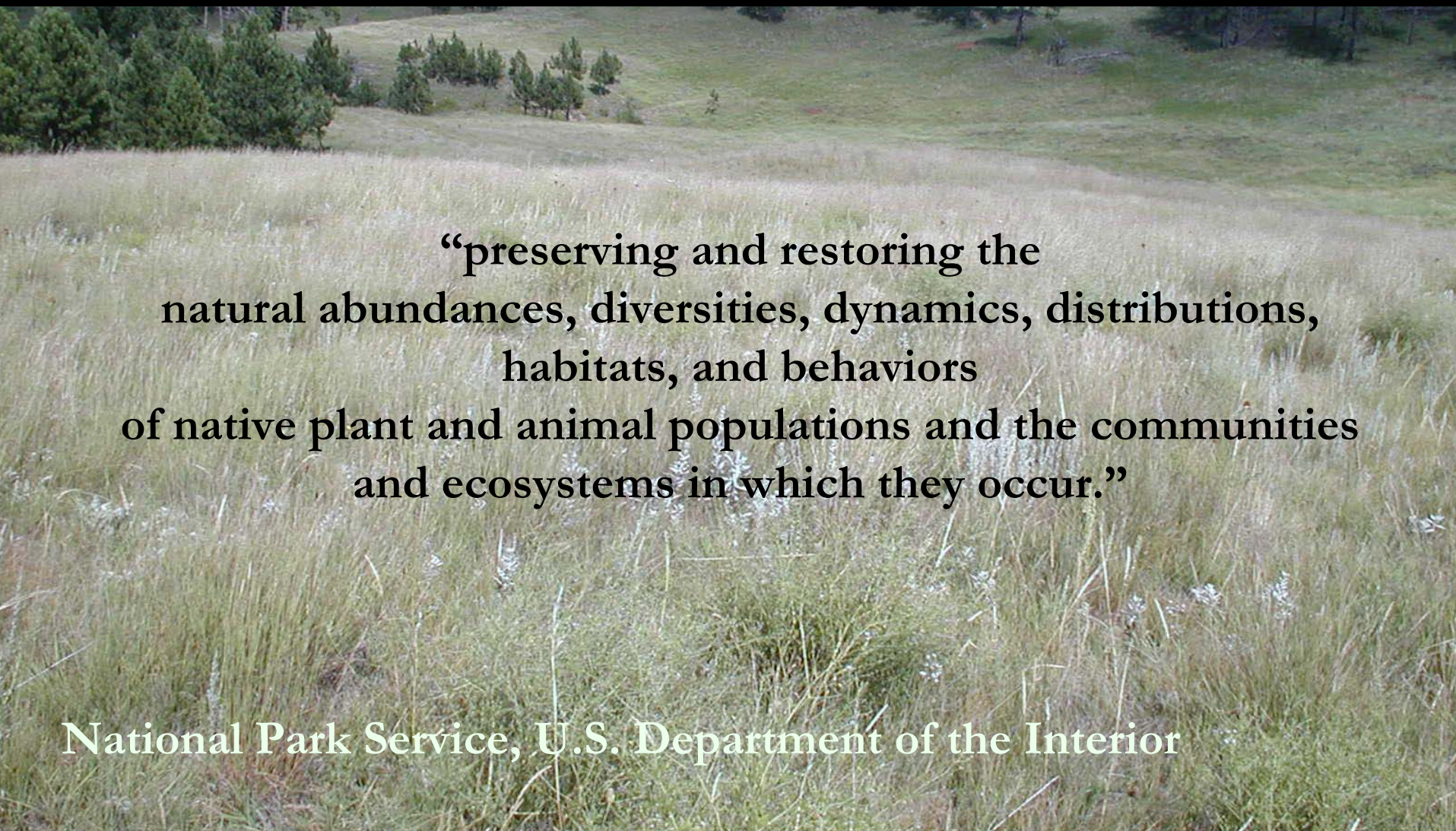

"preserving and restoring the
natural abundances, diversities, dynamics, distributions,
habitats, and behaviors
of native plant and animal populations and the communities
and ecosystems in which they occur."

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