Balancing management priorities for grassland and sagebrush birds in the Thunder Basin National Grassland

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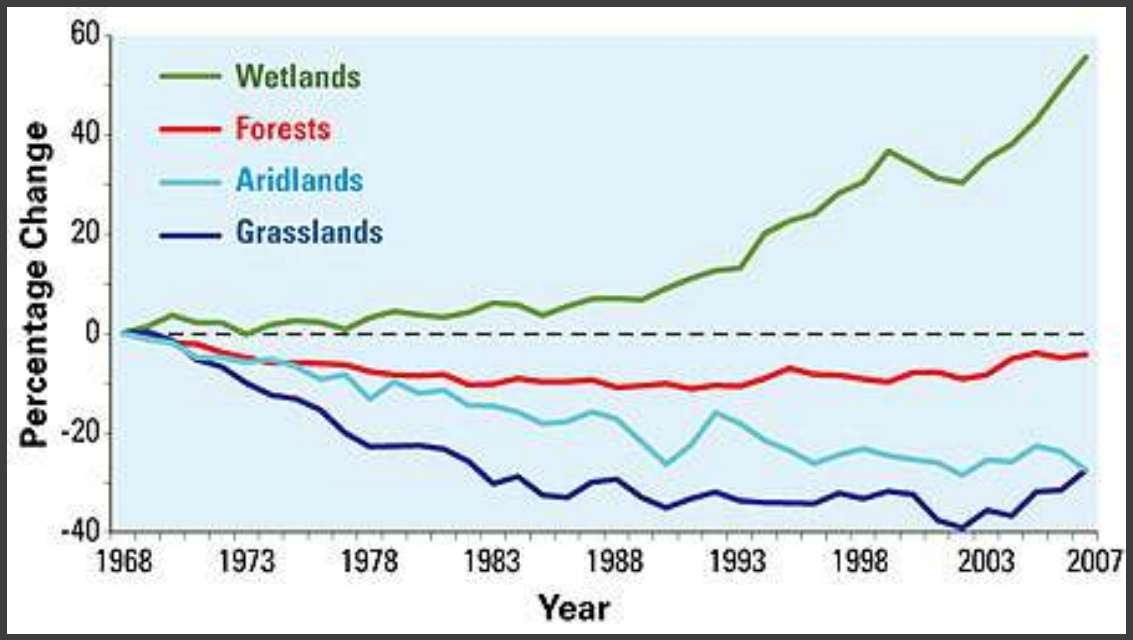
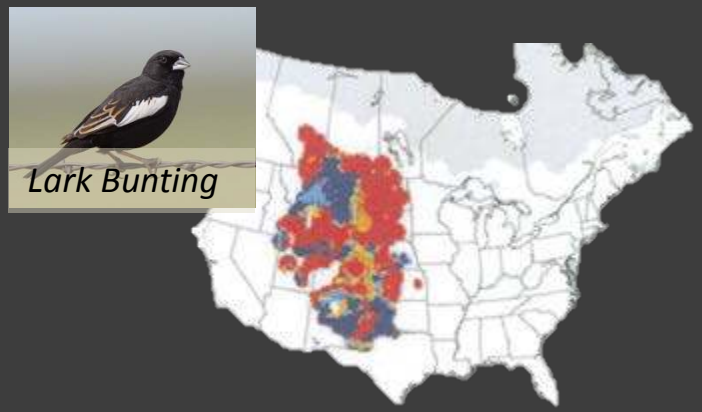
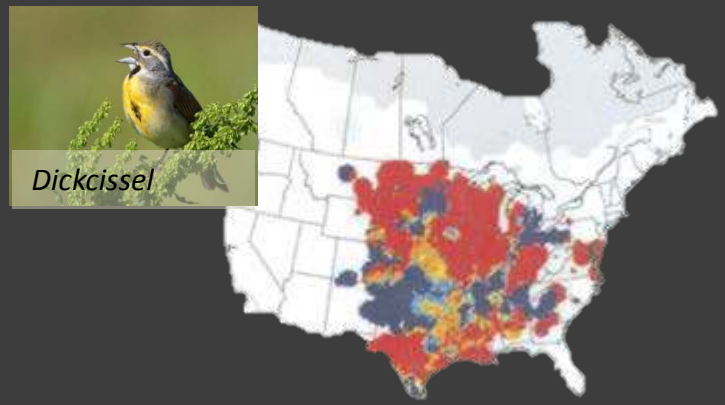
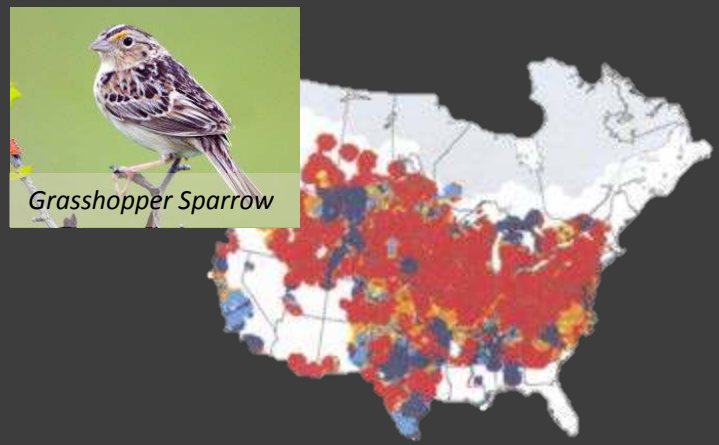
Declining Grassland and Shrubland Birds









Brennan and Kuvlesky 2005, State of the birds 2009

Rangeland bird management in complex landscapes

Focal species and management priorities will differ by rangeland type

Grassland (tall, mixed, short)
Shrubland, scrub-shrub

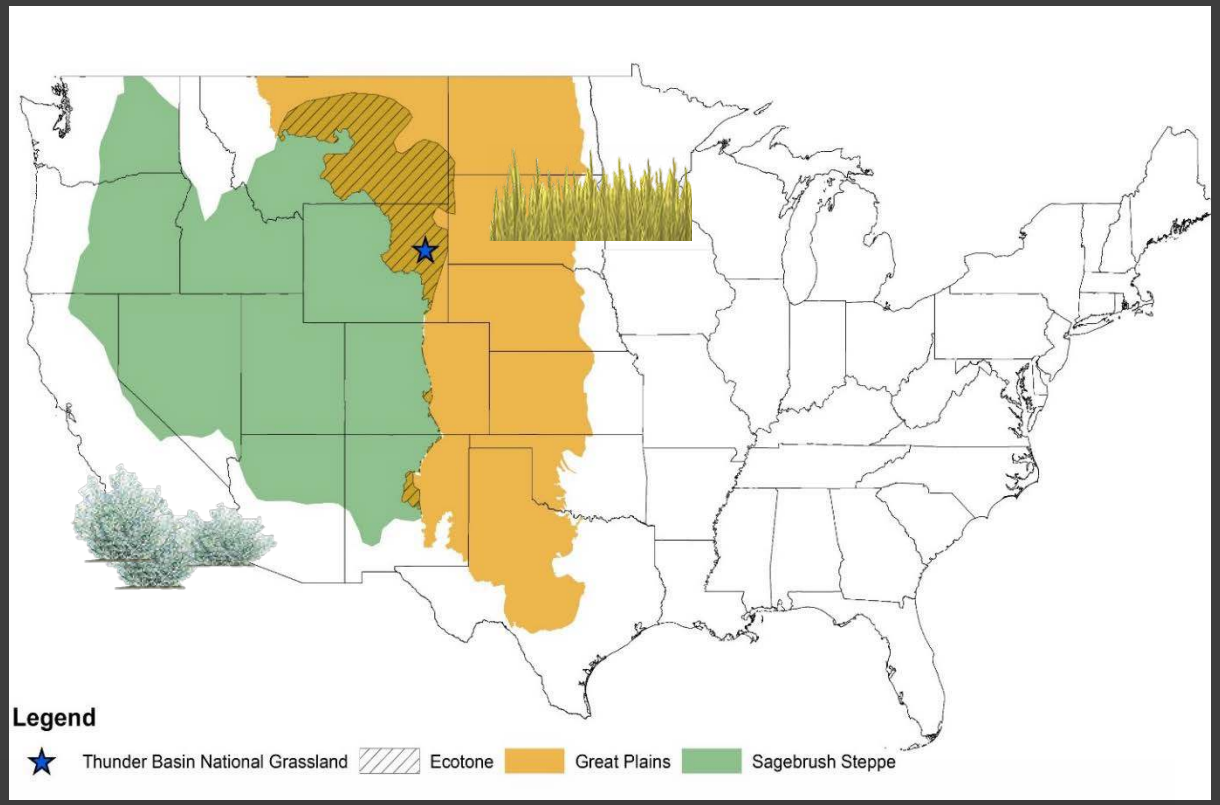
What if a landscape contains multiple habitat types?

Habitat heterogeneity

Species Diversity

Management conflict?

Thunder Basin – Shaped by environmental gradients and disturbance



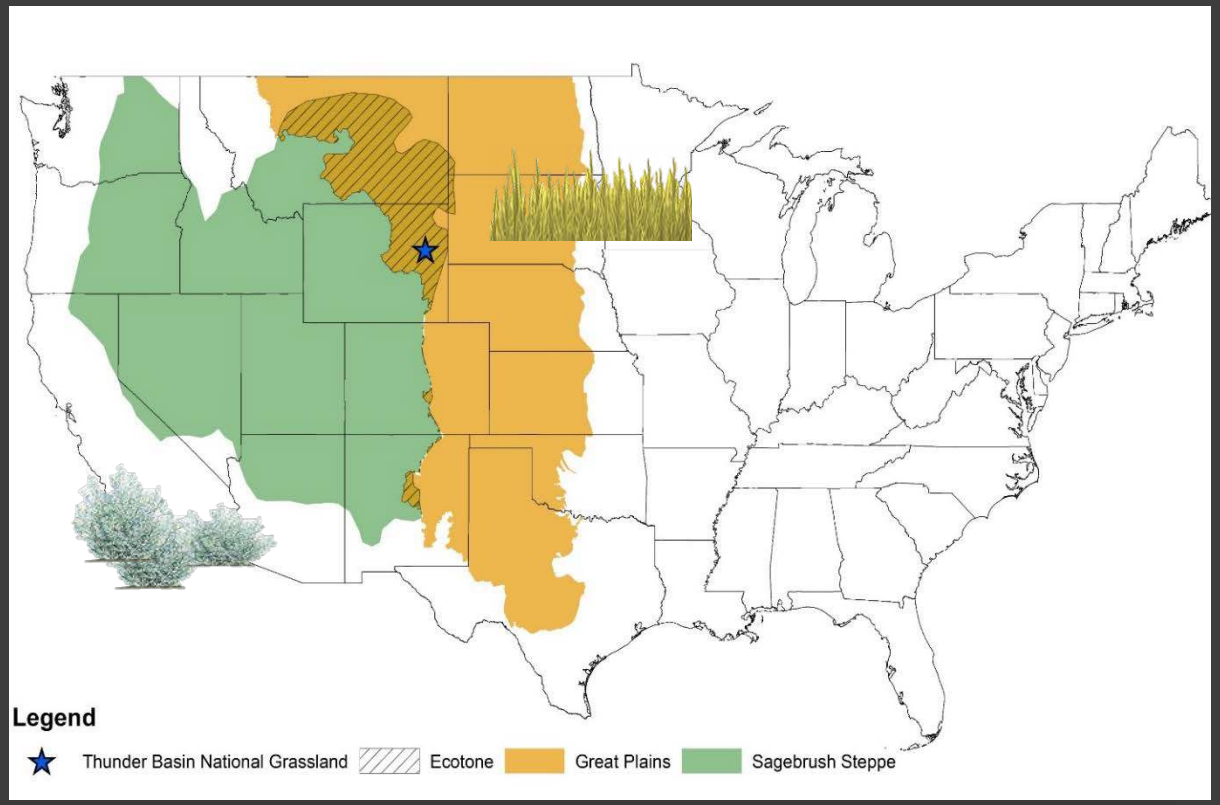
Thunder Basin – Shaped by environmental gradients and disturbance

Environmental heterogeneity

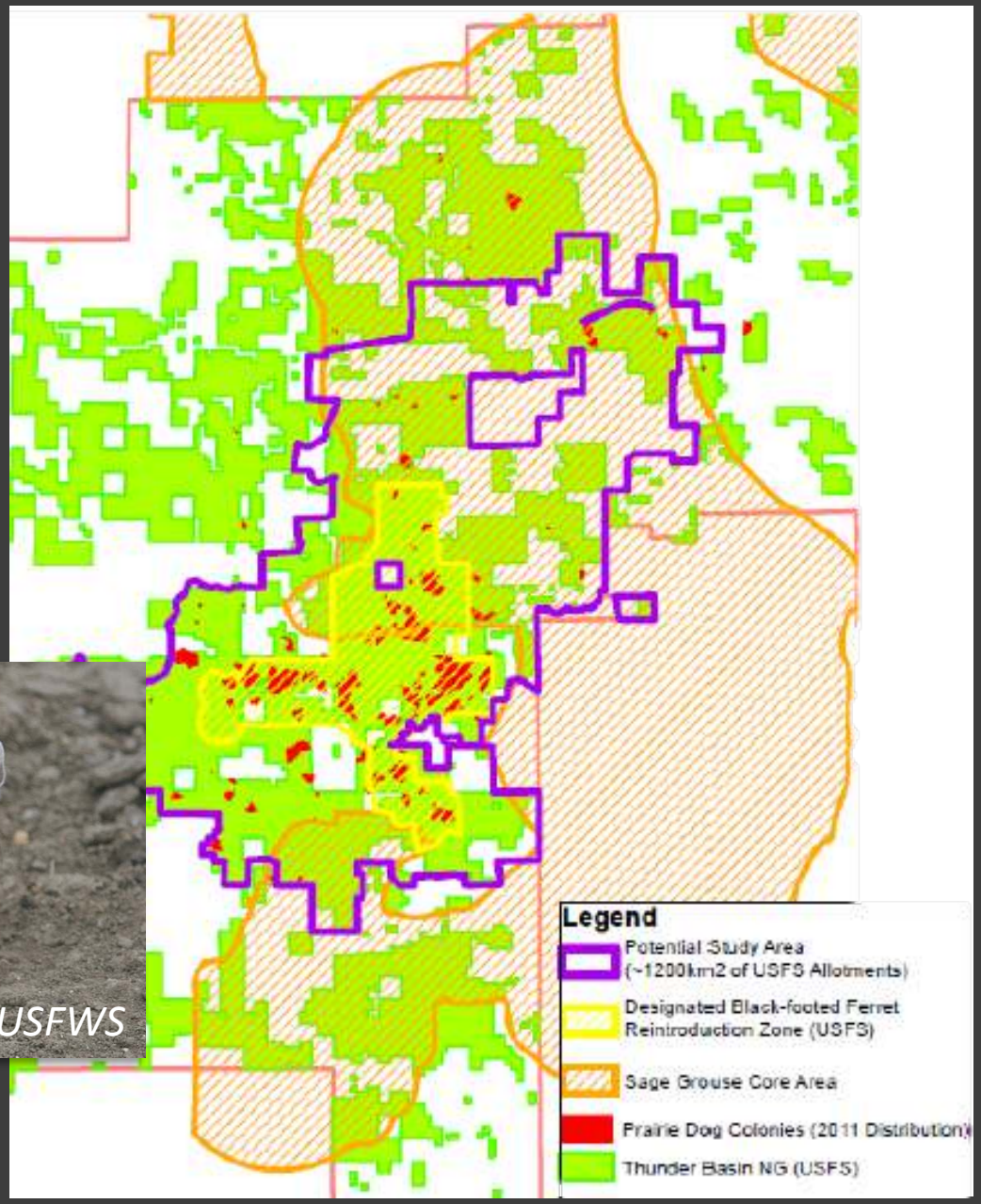
Species Diversity

Disturbance gradients

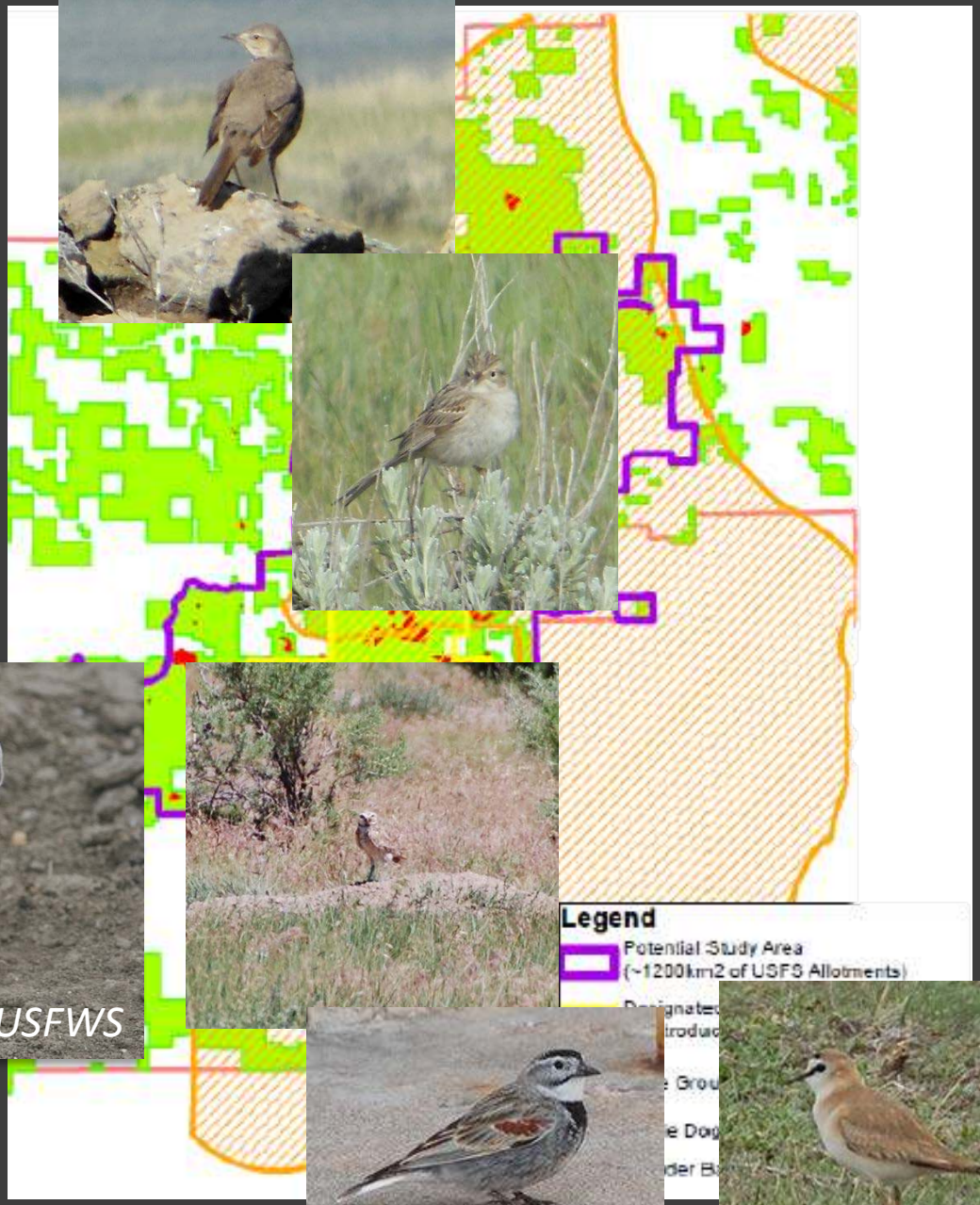
Species Diversity




USFWS


Legend
Potential Study Area
(~1200km2 of USFS Allotments)
Designated Black-footed Ferret
Reintroduction Zone (USFS)
Sage Grouse Core Area
Prairie Dog Colonies (2011 Distribution)
Thunder Basin NG (USFS)


USFWS


Legend
Potential Study Area
(~1200km2 of USFS Allotments)

Wildlife habitat

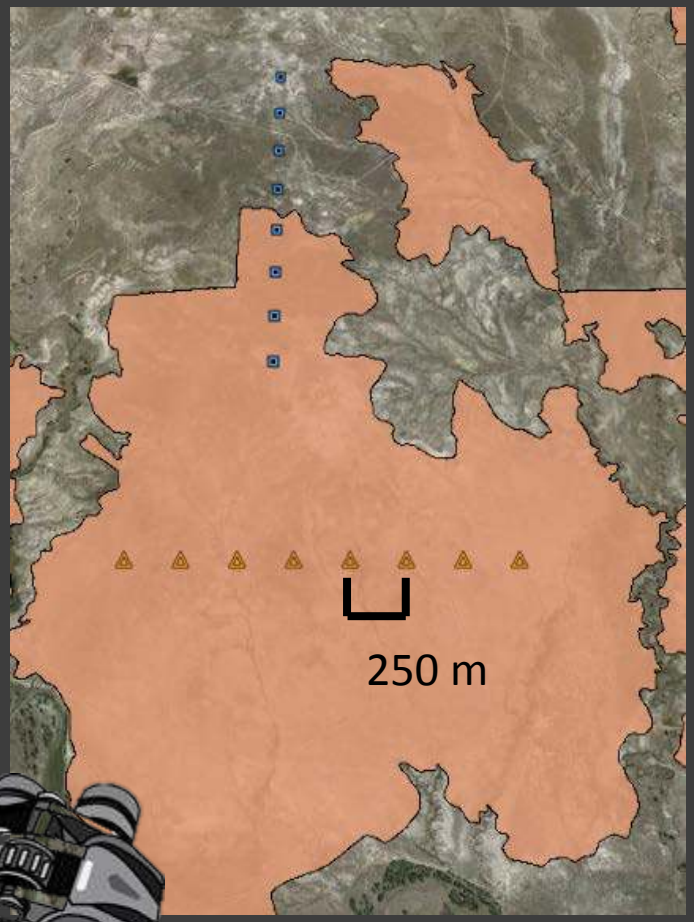
Thunder Basin National Grassland
Land Use

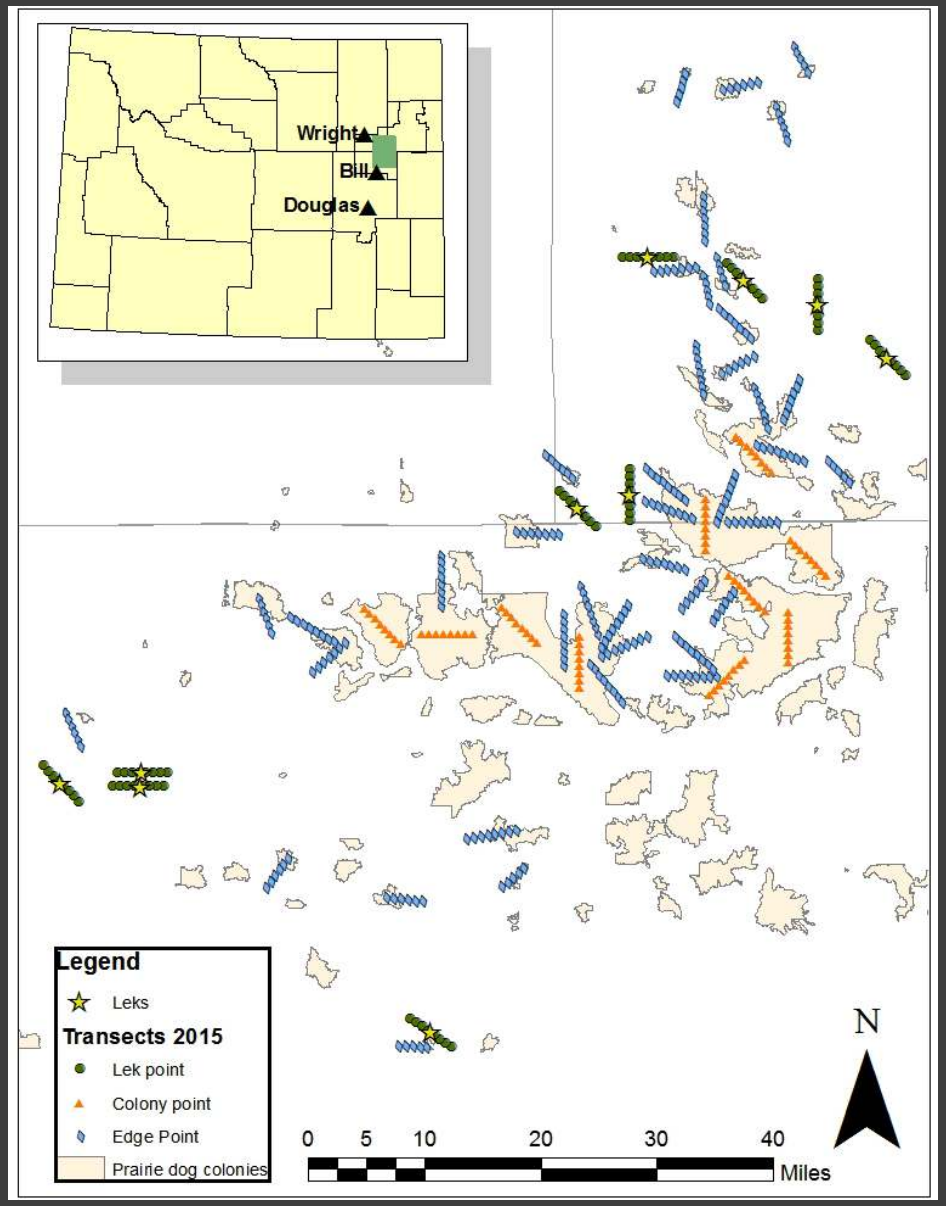
Given potential conflicts, can we target effective strategies for multi-guild management in a complex landscape?

Will require an understanding of:

- How individual bird species respond to amount and quality of habitat
- How diversity and community structure differ among habitat types

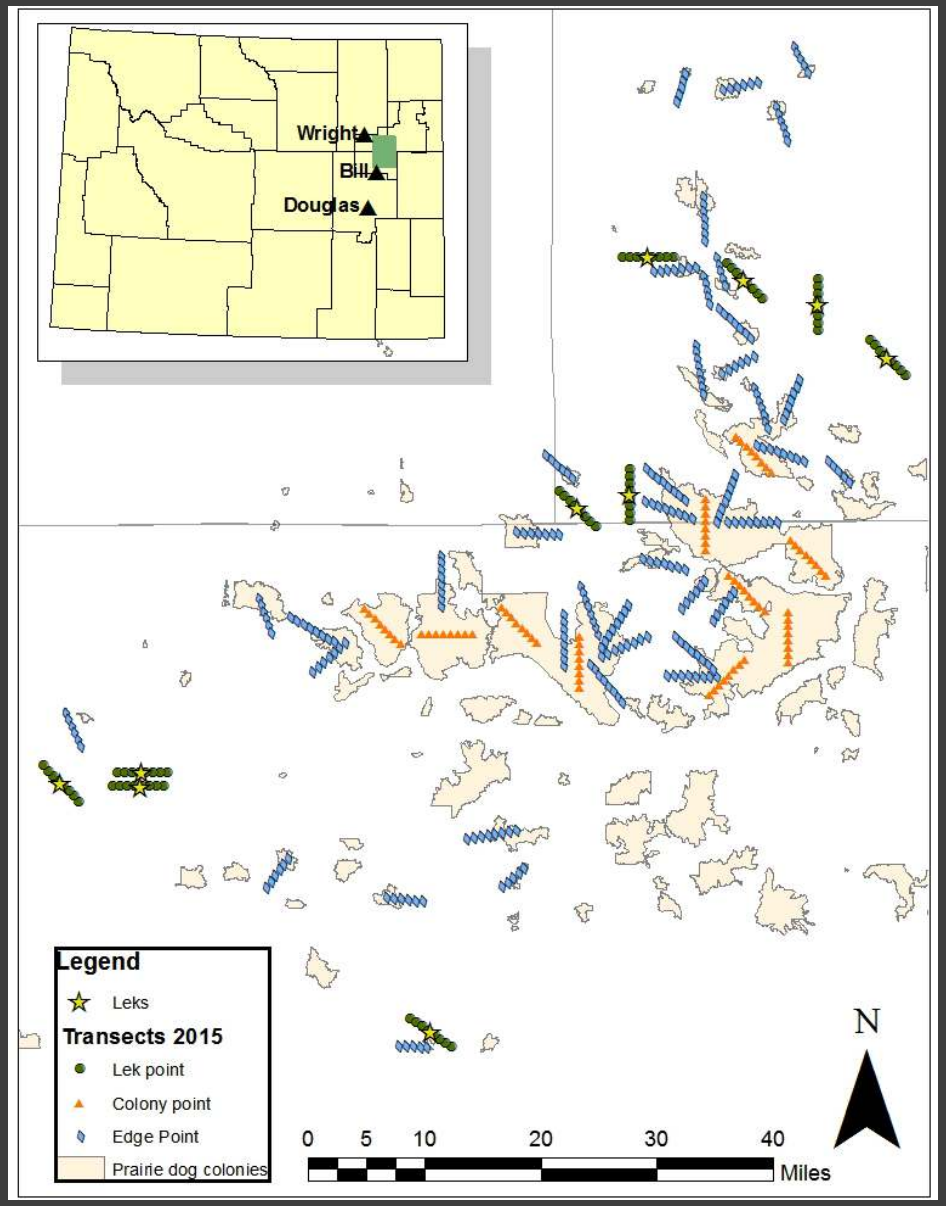
Community Responses: Methods



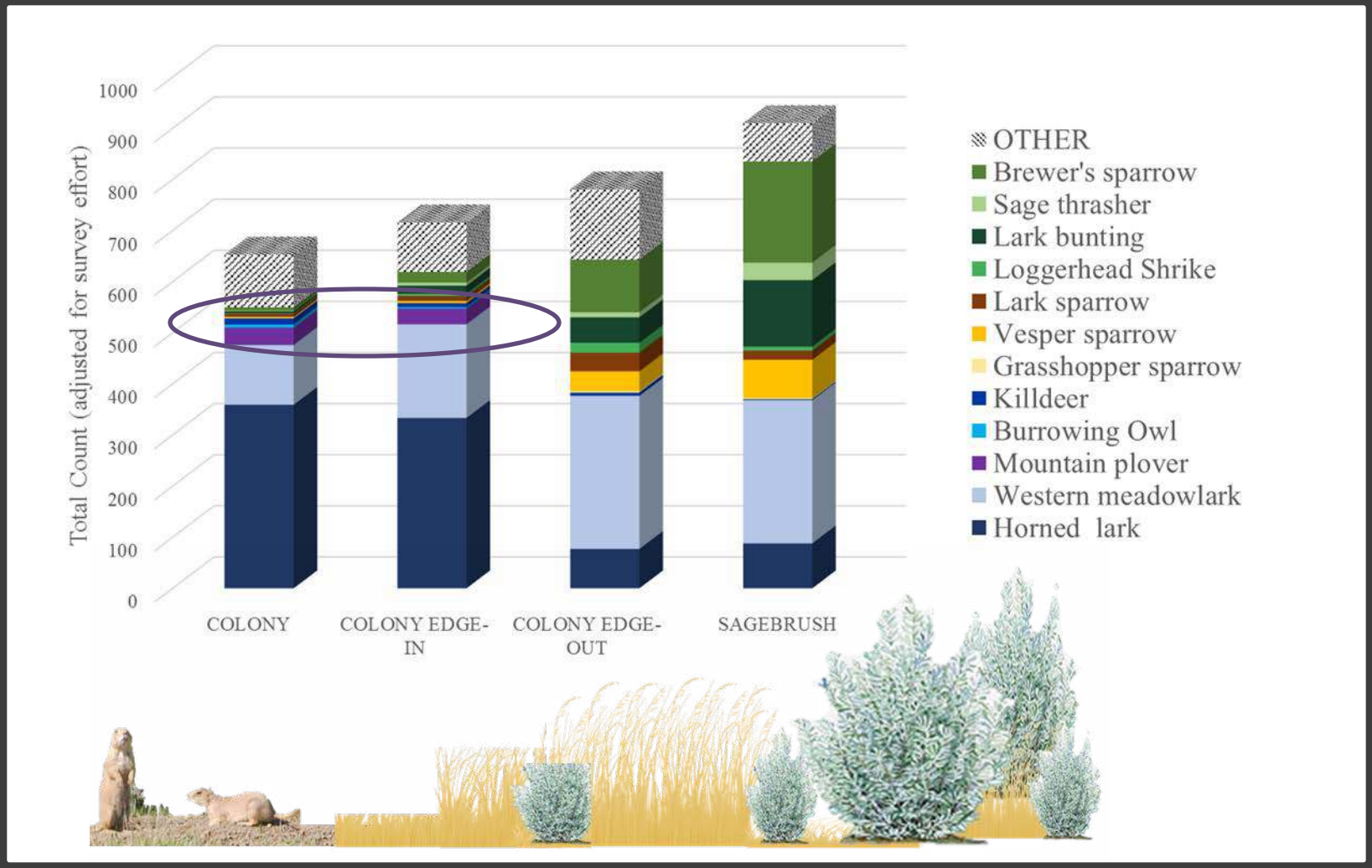


Community Responses: Methods

Colony
Edge (inside, outside)
Sagebrush

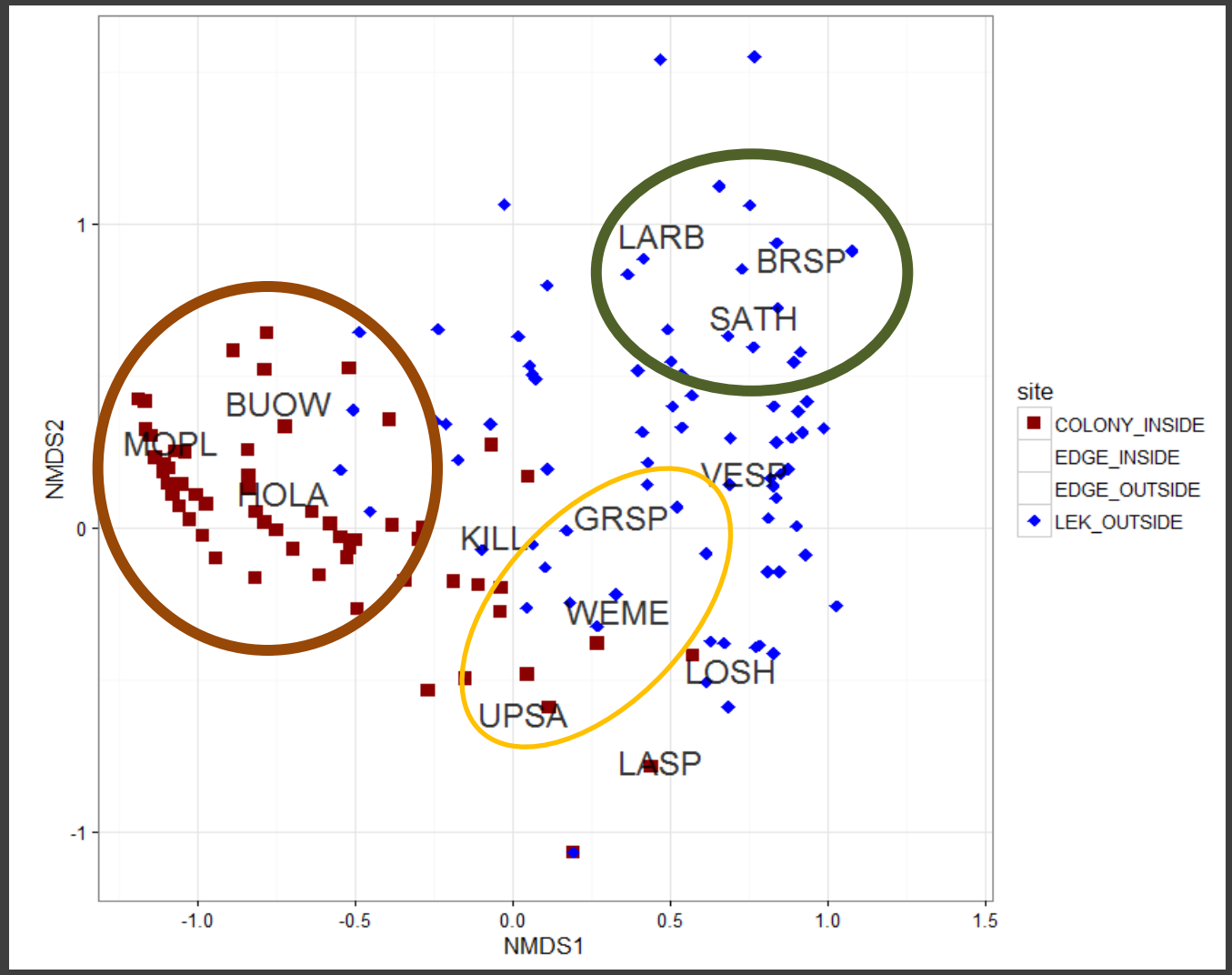


RESULTS (preliminary): Species abundance by strata



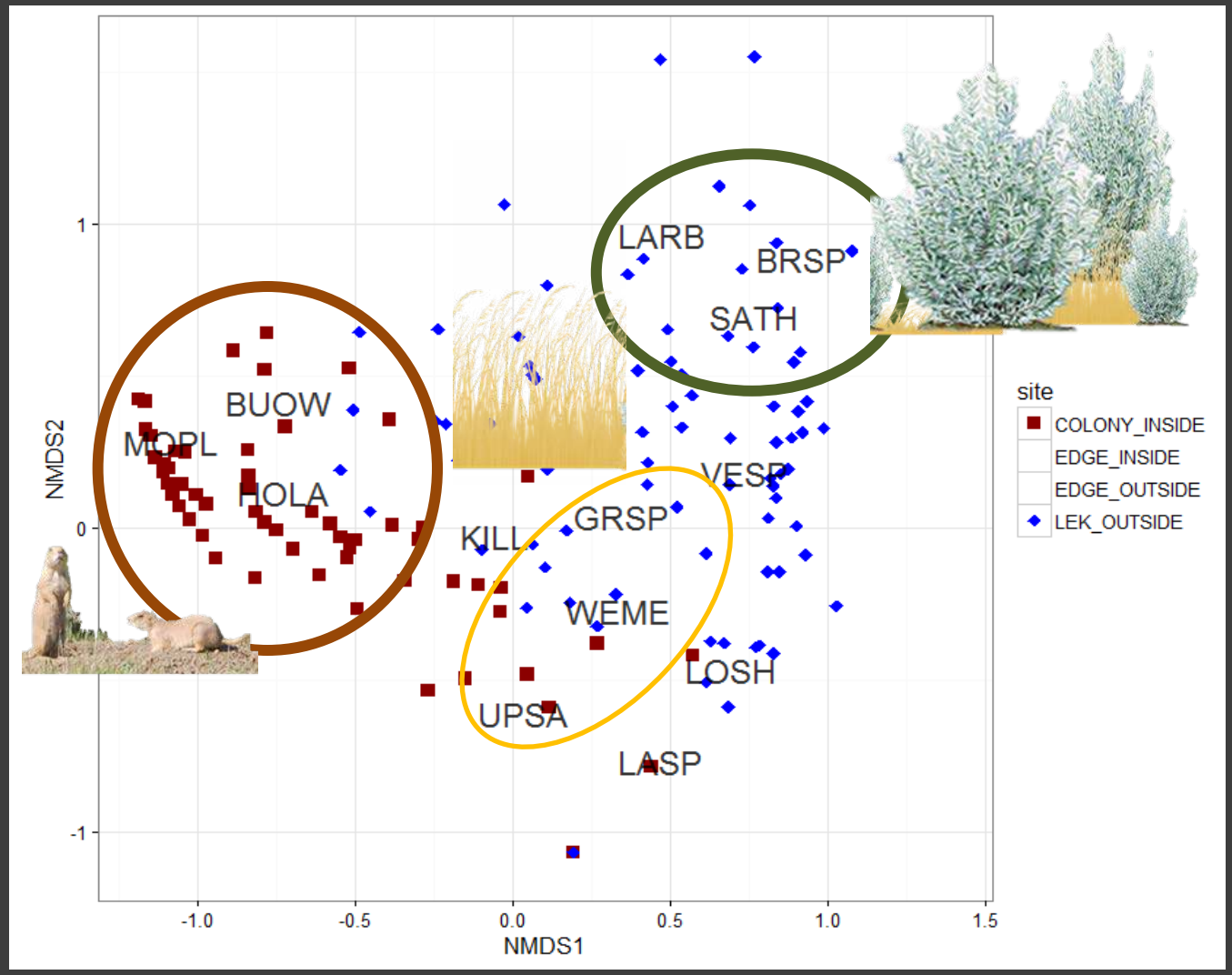
2016

RESULTS: Ordinations of Community Data



BRSP = Brewer's Sparrow; BUOW = Burrowing Owl; GRSP = Grasshopper Sparrow, HOLA = Horned Lark; LARB = Lark Bunting; LASP = Lark Sparrow; MOPL = Mountain Plover ; SATH = Sage Thrasher; UPSA = Upland Sandpiper; VESP = Vesper Sparrow; WEME = Western Meadowlark;

RESULTS: Ordinations of Community Data



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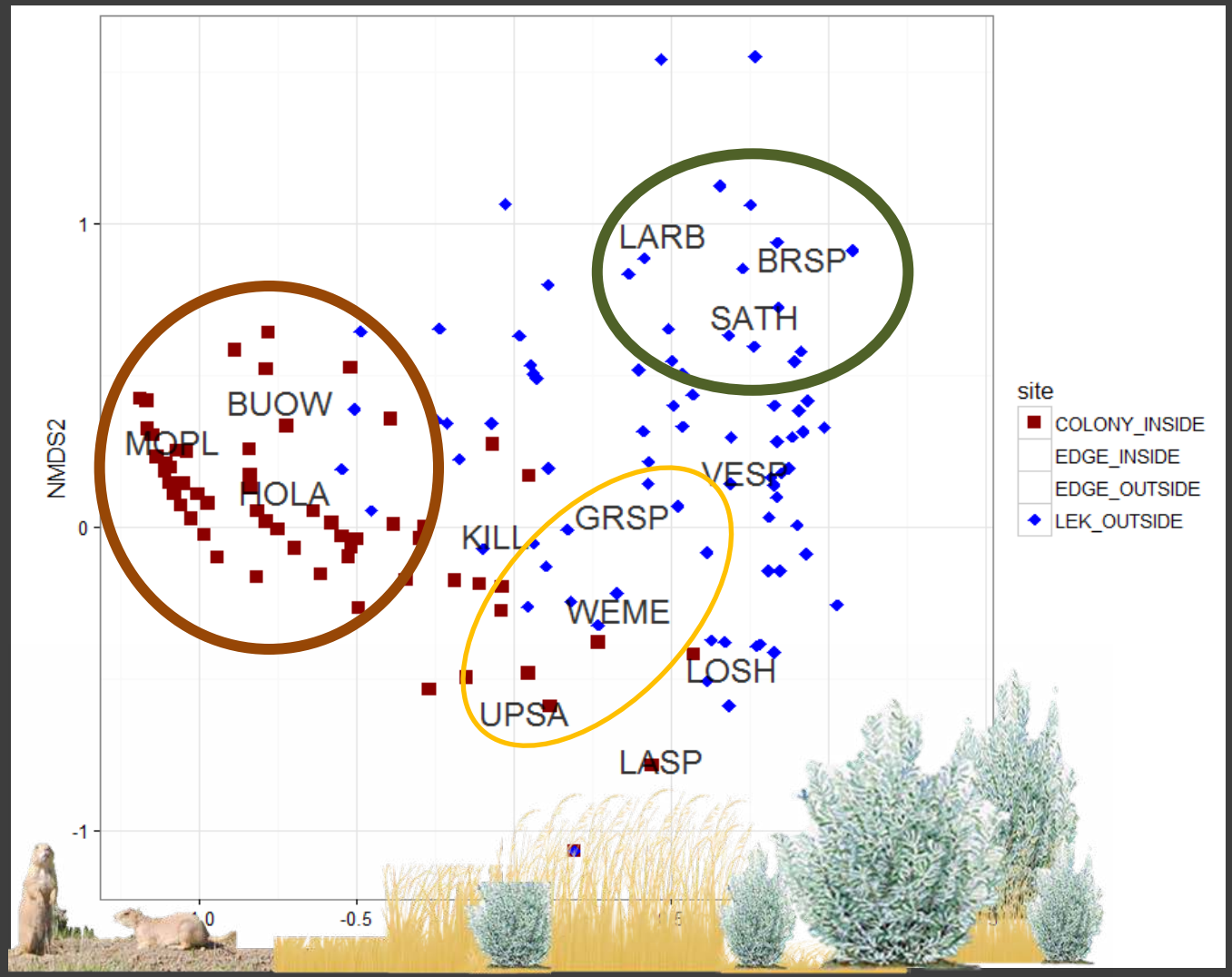

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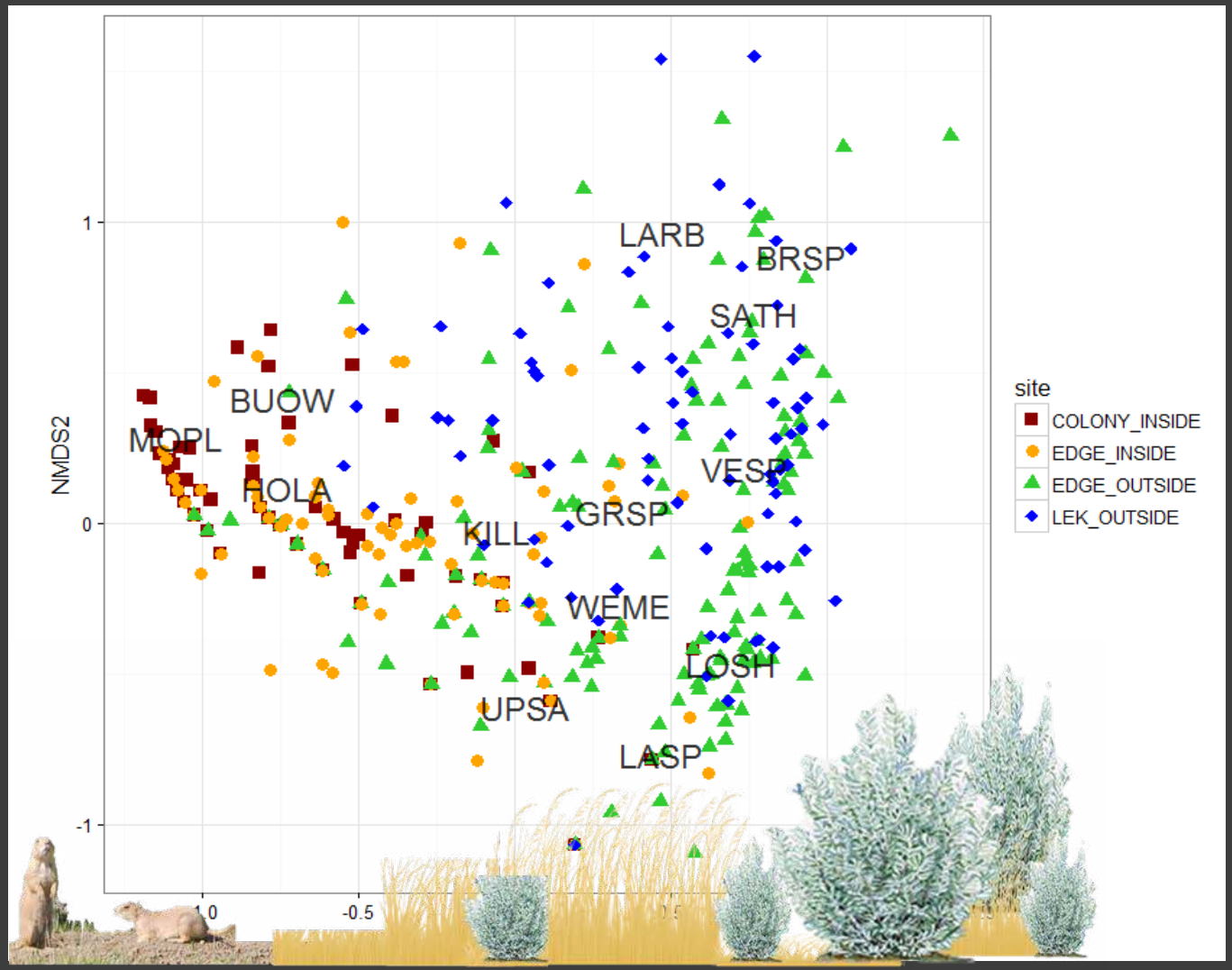

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Results: Diversity metrics (transect scale)

Species Richness	4.2 (2-8)	6.12 (3-10)	7 (5-9)

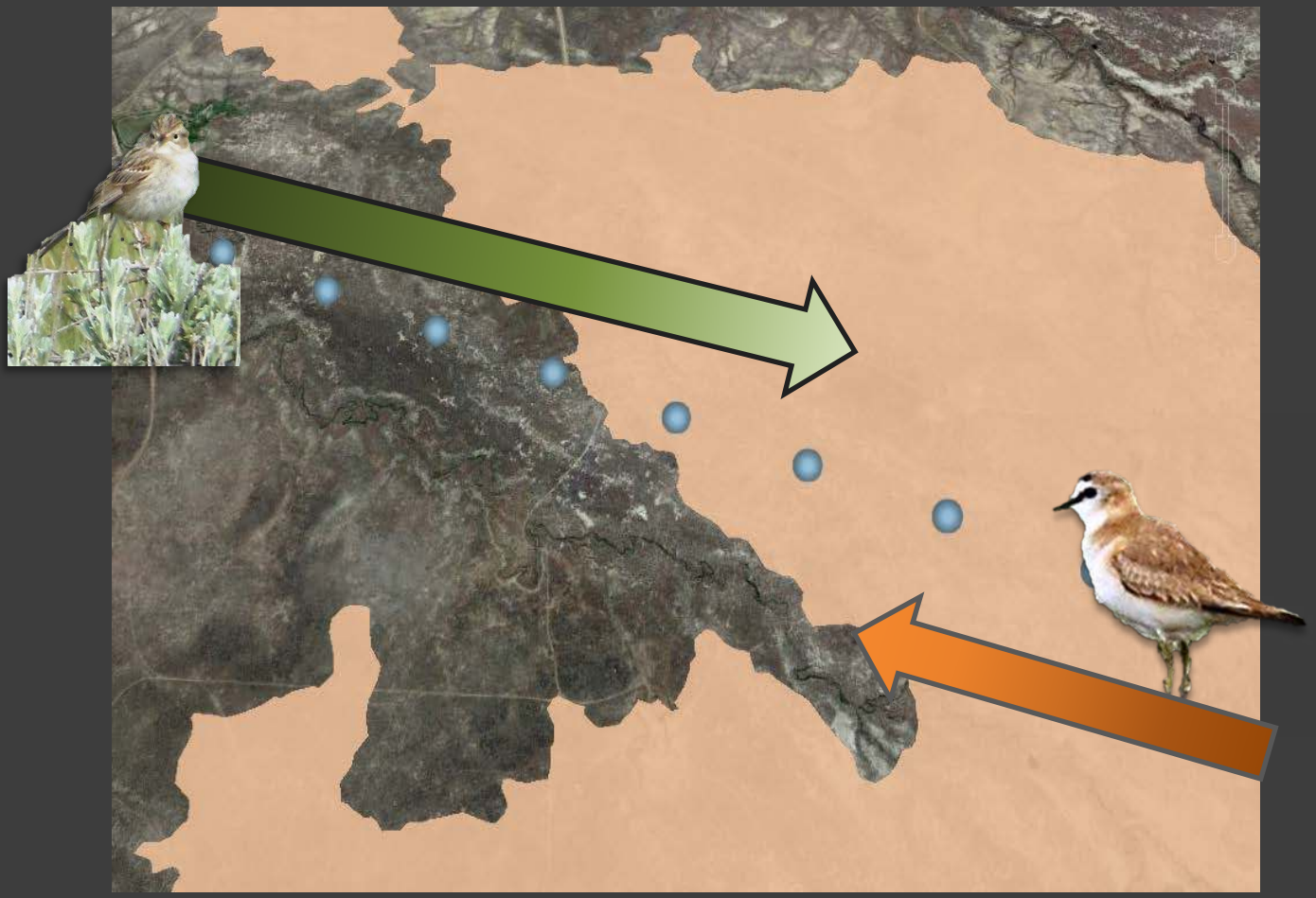
Traditional metrics (e.g., Richness, H′) of diversity at small scales indicate greater importance of sagebrush habitat for avian biodiversity

But what are our actual management goals?

RESULTS: Species turnover across edges

Observed one-way spillover of sagebrush birds into colonies

Shortgrass specialists (Mountain plover, Burrowing owl) found exclusively on colonies



Species Diversity vs. Conservation Value

Not all diversity is created equal

WY SGCN Tier* x **USFS Sensitive** x **IUCN Redlist** *(Partners in Flight)*

*2016 SGCN Draft list

Species Diversity vs. Conservation Value

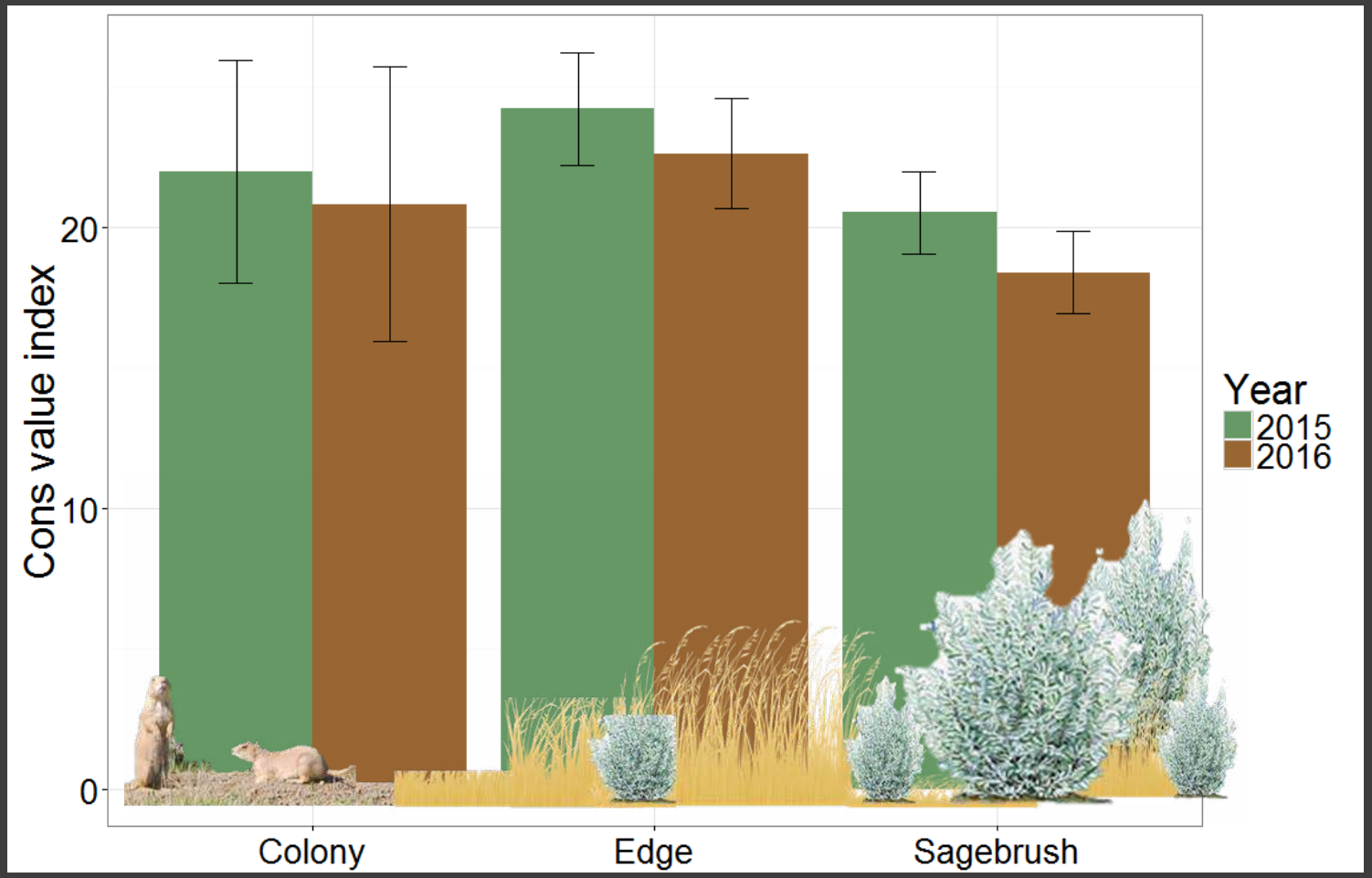
Not all diversity is created equal

Example: Loggerhead Shrike

SGCN Tier II (3) x USFS (2) =

Conservation Value Score = 6

Results: Diversity metrics



Results: Diversity metrics

Summary

High bird diversity in TBNG

Within study strata, species fall out in rough "guilds"

Traditional metrics of species richness and biodiversity are higher in sagebrush…

- One-way spillover of sagebrush species into colony (not the reverse)
- High conservation value in colony habitat

<u>Next steps – Address single-species responses to spatial distribution and vegetation composition of colonies</u>

<u>How many of each species do we "need" to sustain the community?</u>

Acknowledgments

CONTACT INFO:
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EEOB working group

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USDA United States Department of Agriculture Agricultural Research Service