

A Joint Assessment for the Conservation of Wetlands and Grasslands

Last summer, the leadership of the Fish and Wildlife Service and MN DNR, responding from a request from the Governor, directed certain personnel from within the MN DNR and USFWS to develop science-based priority areas for wetland and grassland conservation. At that time, we agreed that whatever we came up with would be a living strategy that would be continually updated and refined as more partners joined the Working Lands Initiative (WLI) and more and better information becomes available.



WLI Technical Assessment Team

Rex Johnson – Co-Chair, USFWS-HAPET

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Peter Buessler – MN DNR

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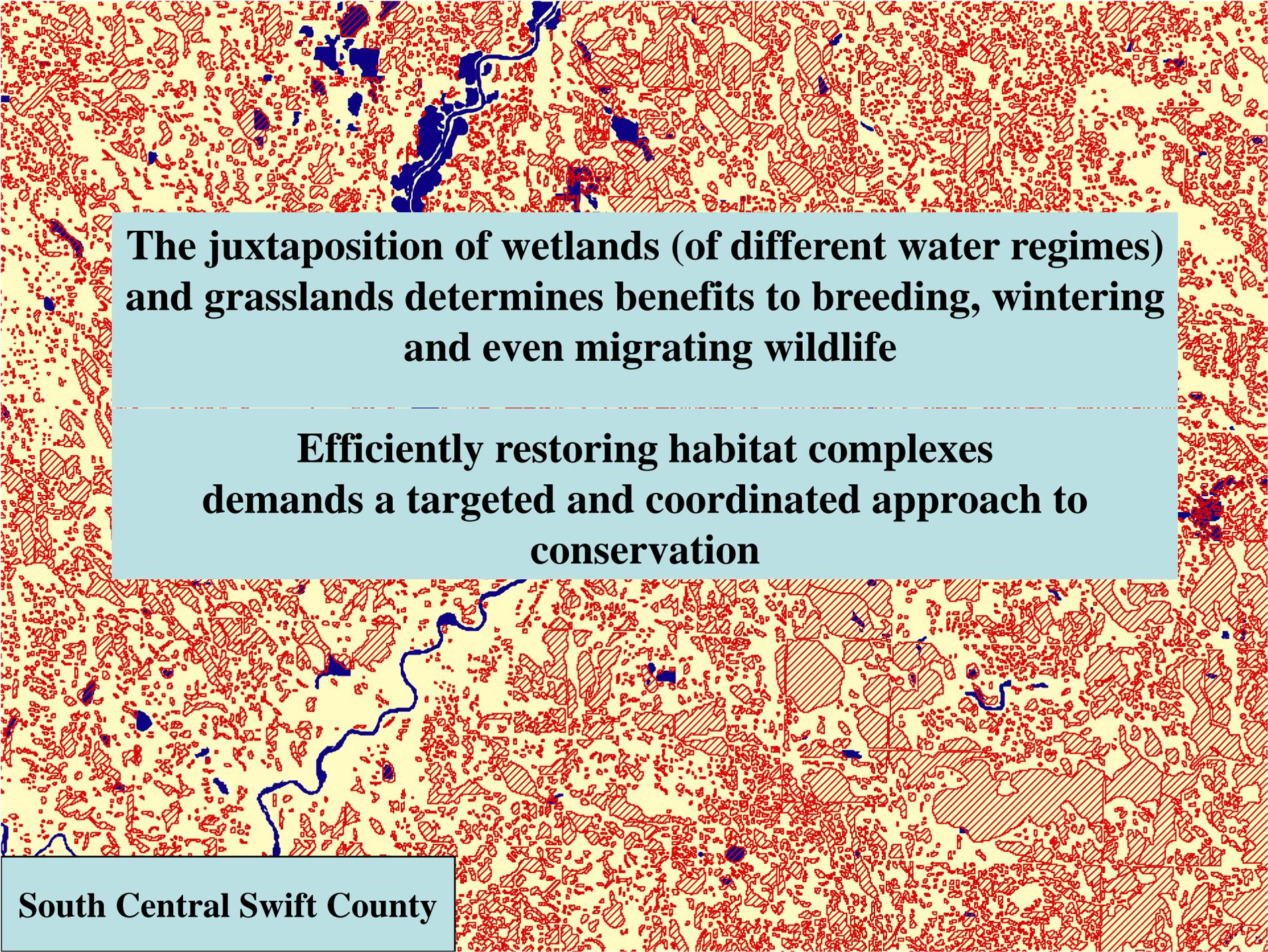
Mark Oja – NRCS

Bill Penning – MN DNR

Doug Norris – MN DNR

Kurt Haroldson – MN DNR

Jon Schneider – Ducks Unlimited

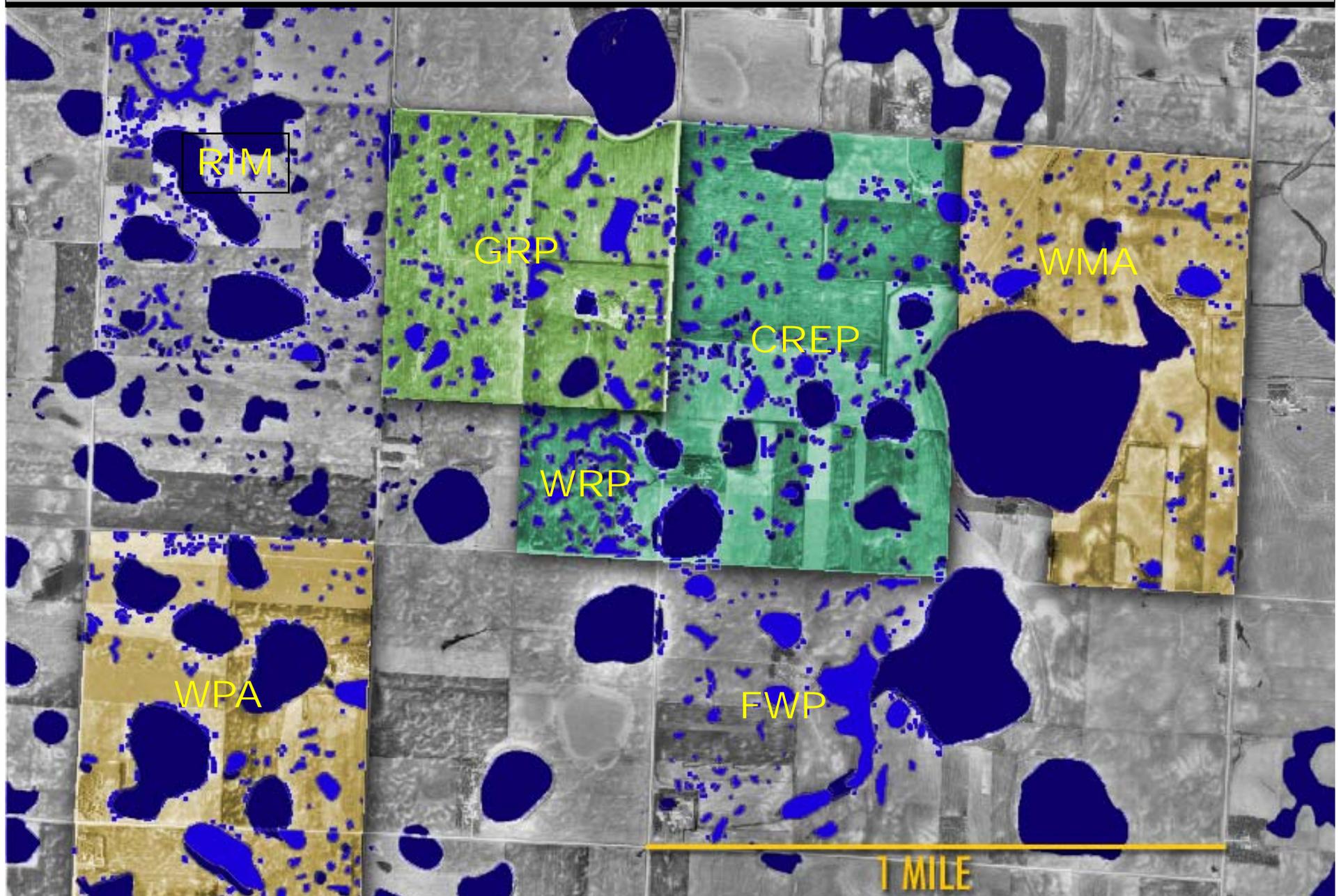


The juxtaposition of wetlands (of different water regimes) and grasslands determines benefits to breeding, wintering and even migrating wildlife

Efficiently restoring habitat complexes demands a targeted and coordinated approach to conservation

South Central Swift County

We should think about creating habitat complexes by complexing multiple programs

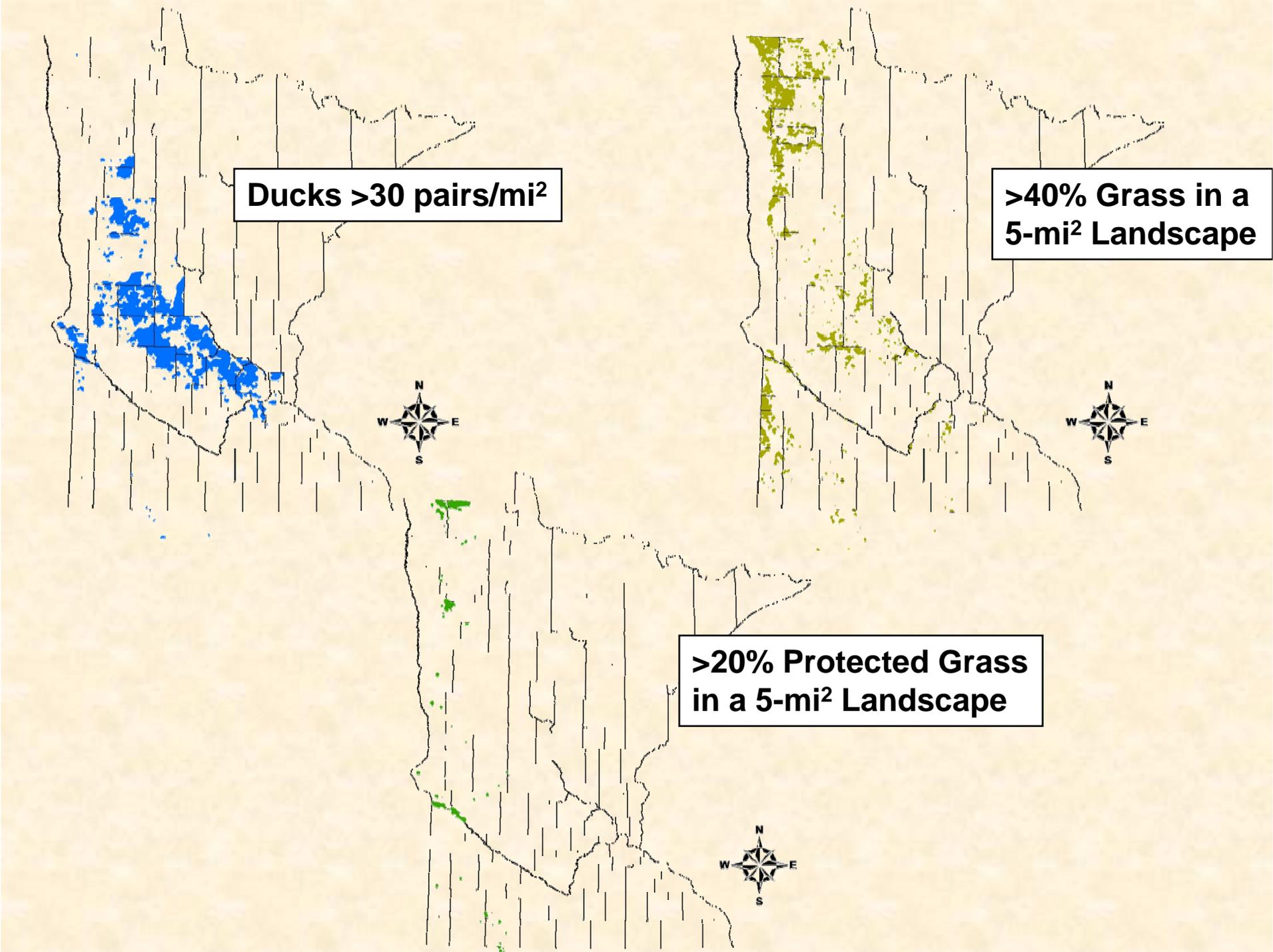


Our Goal:

The conservation of wetland and grassland habitat complexes

Our definition of a satisfactory habitat complex:

- 4 to 9-mi² in extent
- ≥ 30 duck pairs/mi² or 20% wetlands
 - \geq Half temporary or seasonal
- Maximum of 40-60% grassland
 - \geq half permanently protected
- ≥ 1 pheasant core wintering area
- 1 winter food plot

The image displays three maps of Minnesota, each overlaid with a grid of vertical lines. The top-left map shows blue shaded regions representing duck density. The top-right map shows yellow-green shaded regions representing grass cover. The bottom map shows green shaded regions representing protected grass. Each map includes a compass rose with cardinal directions (N, S, E, W) labeled.

Ducks >30 pairs/mi²

**>40% Grass in a
5-mi² Landscape**

**>20% Protected Grass
in a 5-mi² Landscape**

Existing Habitat Complexes

**>30 pairs/mi² and
>40% grass and
>20% protected grass
in a 5 mi² landscape**





Our Planning Area –

**The Prairie Pothole Region,
Aspen Parklands and
intensively farmed counties
in the Prairie-Hardwood
Transition Zone**

Where should we focus our collective actions to restore grassland and wetland habitat complexes to meet the needs of grassland and wetland wildlife, including:

- **Upland nesting ducks**

- **Pheasants**

- **Other native wildlife species that depend on these habitats?**

Focal species represent the habitat needs of a broader array of species that are usually less sensitive to landscape and local habitat features and to management and the habitat structure that results from management.

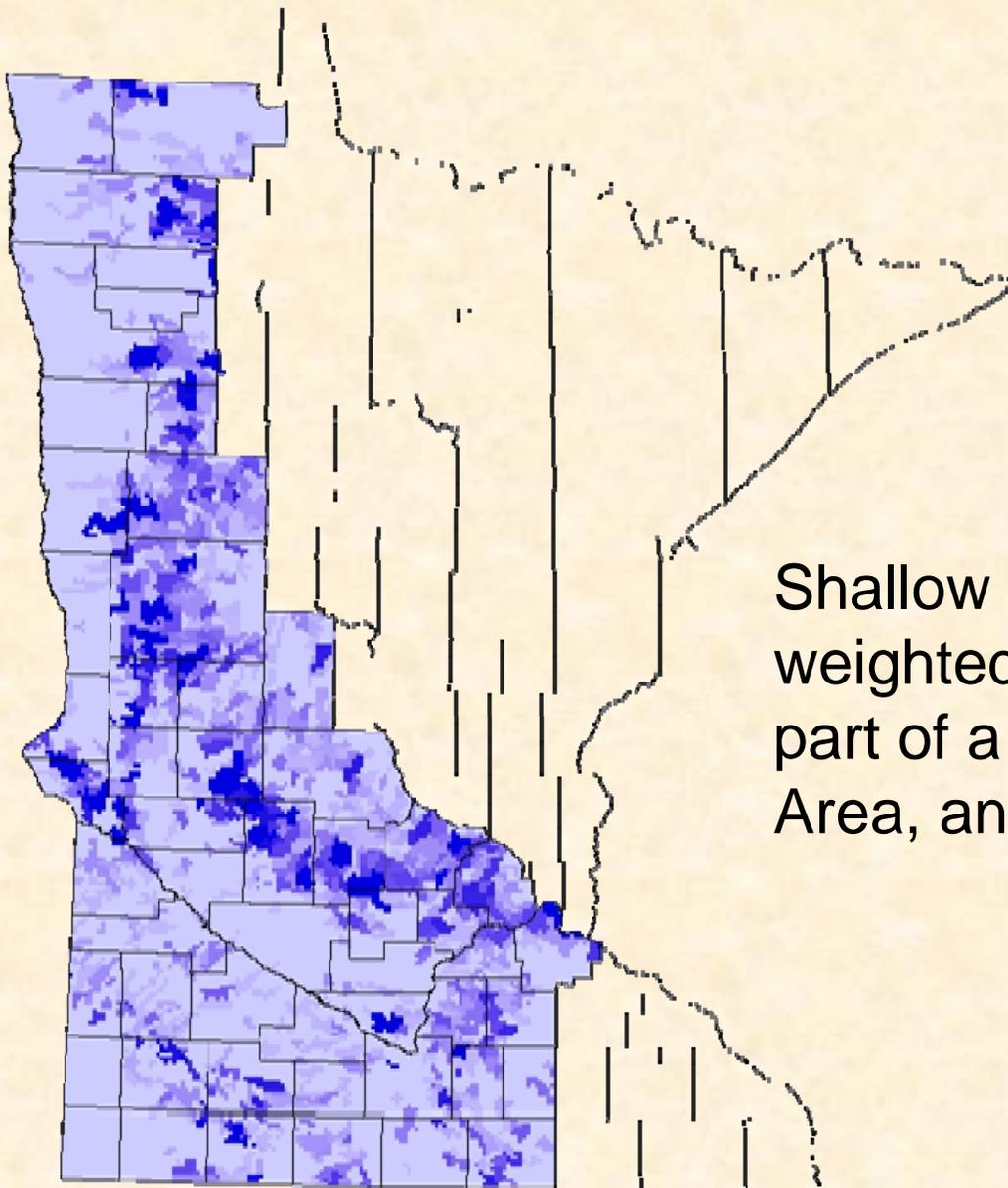
The suite of focal species should represent the relevant range of landscape types and disturbance/management. Core ranges of focal species should cover the planning unit.

Landscape/Site/Management	Focal Species
<u>Matrix of large wetlands embedded in grassland landscapes</u> – disturbed habitats (hayed, grazed or burned periodically)	Black Terns
<u>Wetland Complexes</u> (small and shallow to larger and deeper) – tall, rank grasslands (that are generally idled)	Upland-Nesting Ducks
<u>Grassland landscapes with embedded small wetlands</u> – disturbed (grazed or hayed)	Migrant Shorebirds
<u>Landscapes with numerous shallow wetlands</u> – disturbed (hayed, grazed or tilled annually)	Grassland Birds -GBCAs
<u>Large blocky grasslands</u> with mosaic of disturbance <u>Low relief grasslands with embedded wetlands</u> – disturbed – haying or grazing	Marbled Godwits
<u>Grassland-wetland complexes</u> – idled in most years	Pheasants

Wetlands

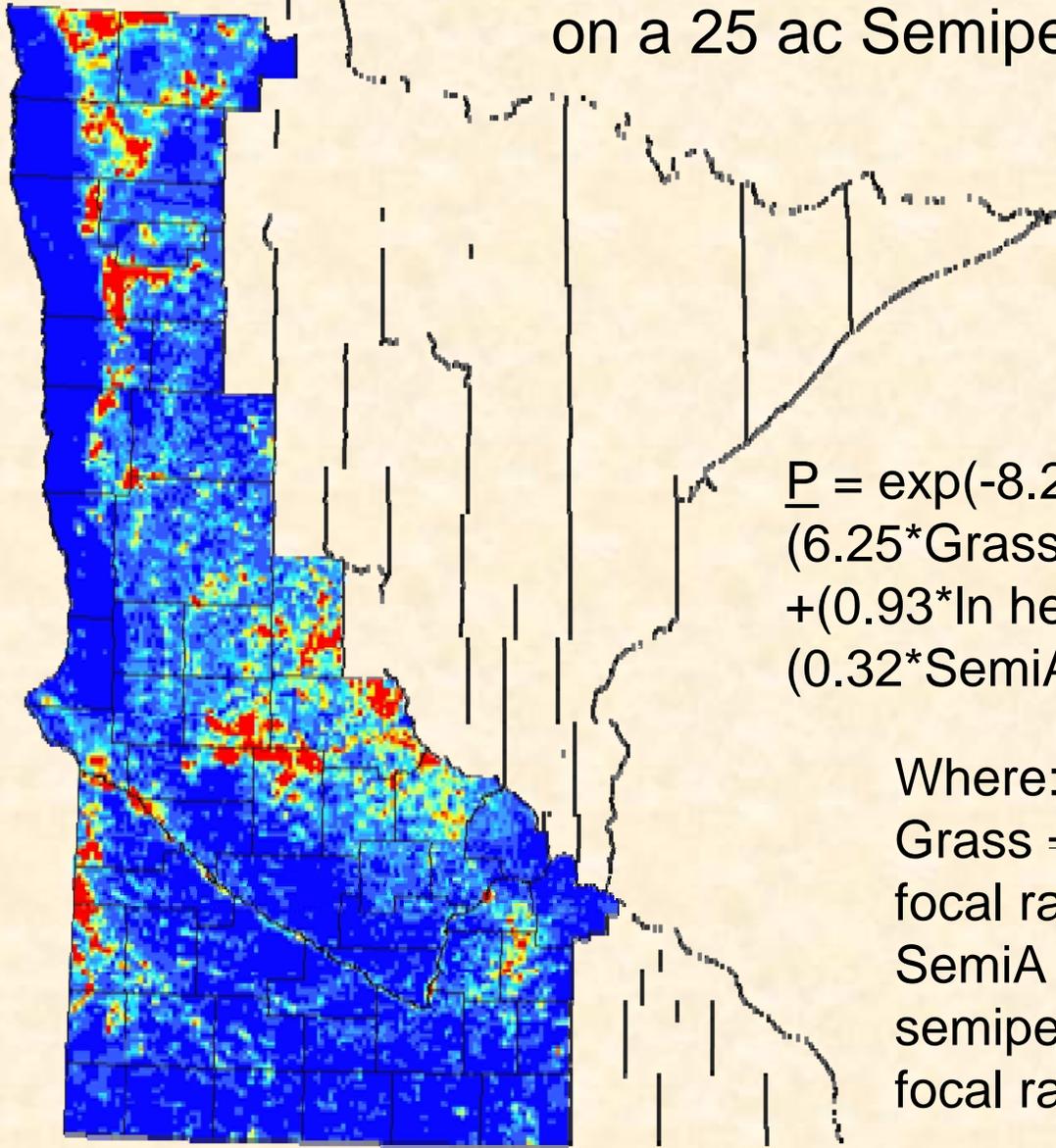
Targeted protection and restoration are based on the same criteria –

- **Potential to impact populations of focal species based on**
 - **Integrity of the surrounding wetland complex**
 - **Juxtaposition of grassland and wetland**
- **Potential for significant water quality enhancement benefits for shallow lakes**



Shallow Lake Watersheds
weighted by 1.5 if they comprise
part of a Ducks Unlimited Emphasis
Area, and 1.0 if they do not.

Relative Potential for Breeding Black Terns on a 25 ac Semipermanent Wetland



$$\underline{P} = \frac{\exp(-8.27 + (0.93 * \ln \text{ hectares}) + (6.25 * \text{Grass}) + (0.32 * \text{SemiA}))}{1 + \exp(-8.27 + (0.93 * \ln \text{ hectares}) + (6.25 * \text{Grass}) + (0.32 * \text{SemiA}))}$$

Where:

Grass = proportion of grass in 2 mi focal radius; and

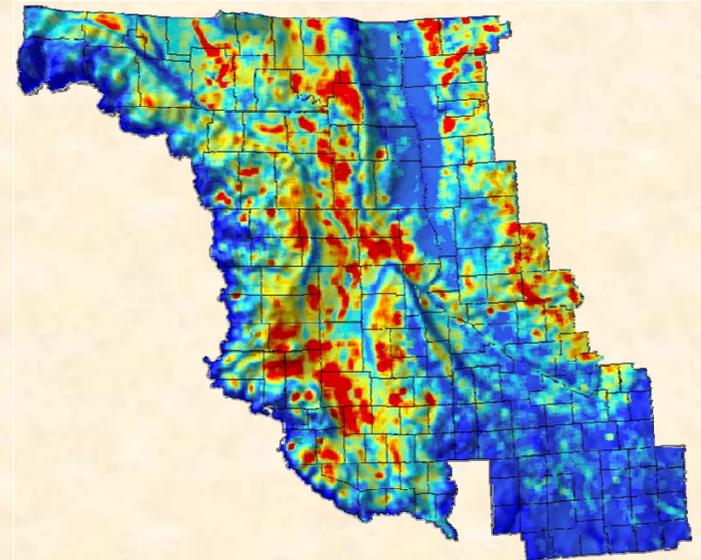
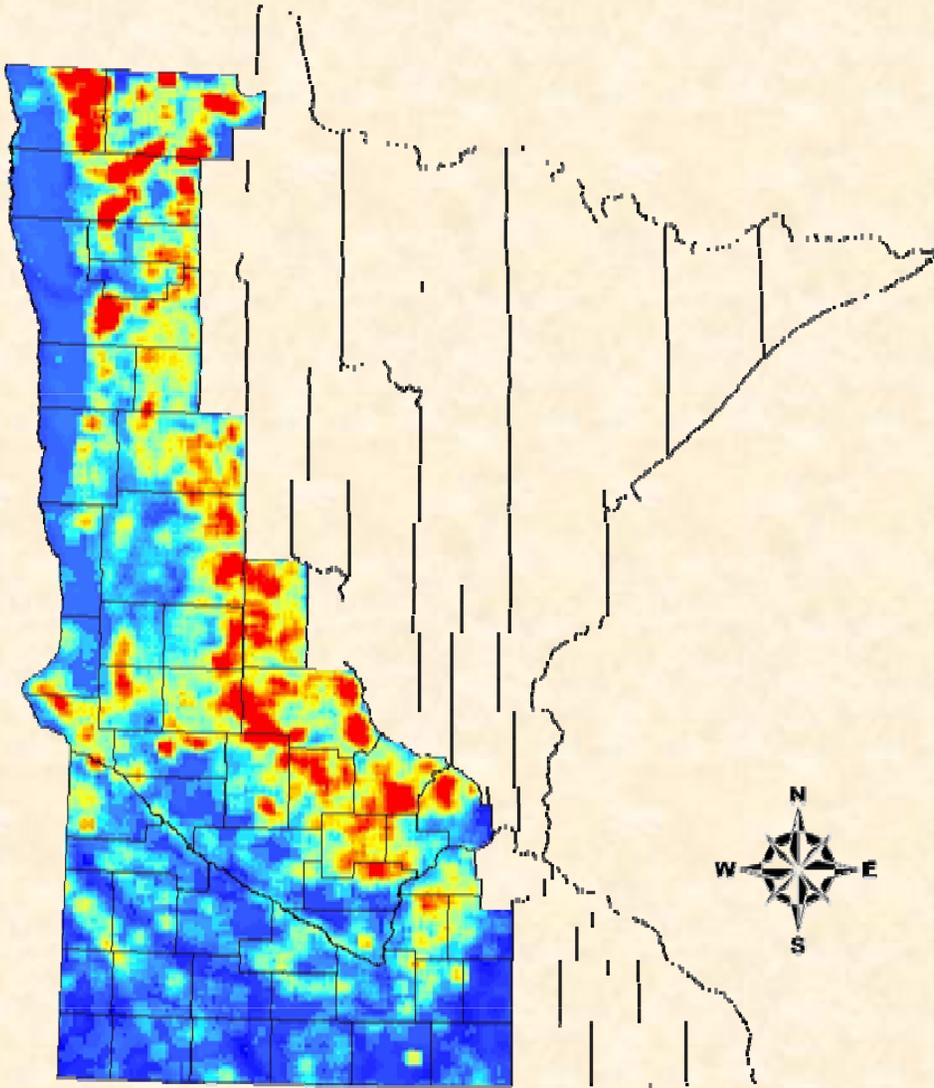
SemiA = natural log of semipermanent area within a 2 mi focal radius.

(Naugle et al. 2001. Wetlands 21:1-17)

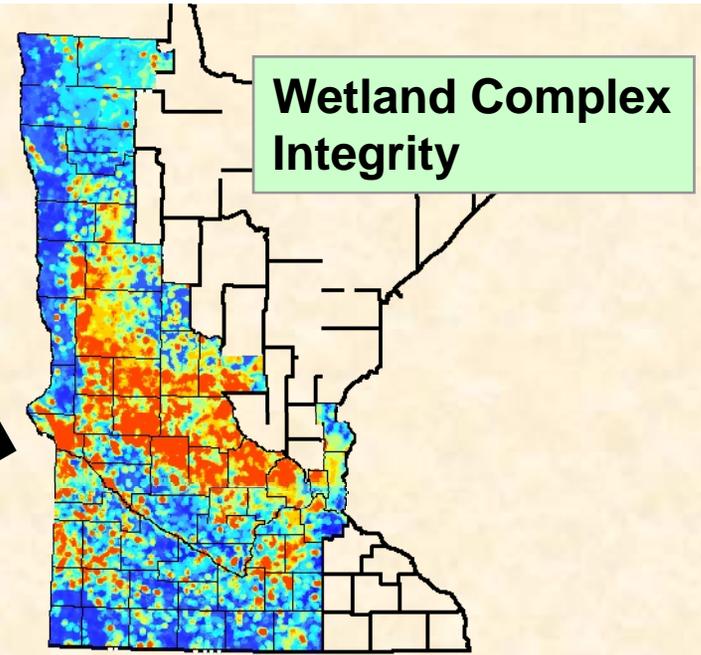
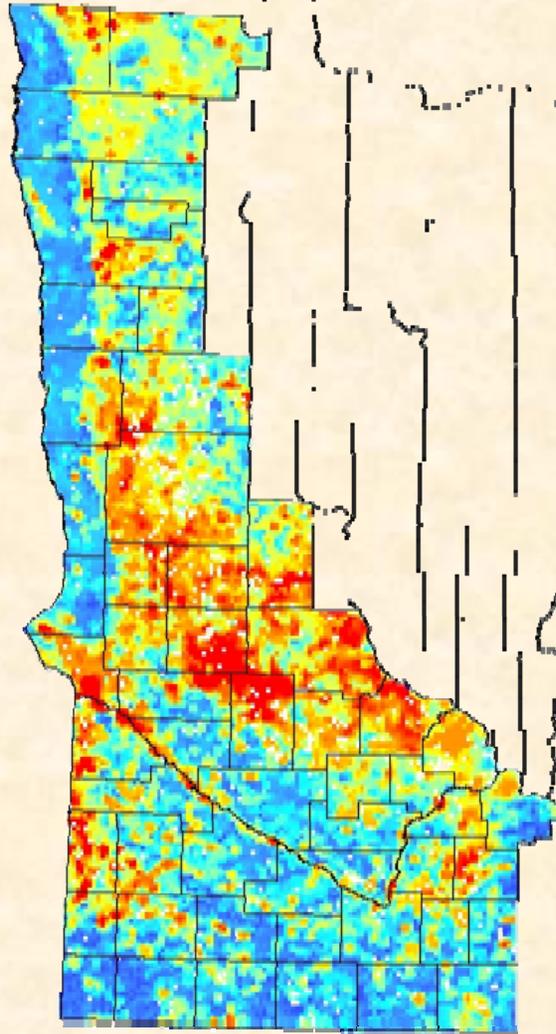
Landscapes for Upland Sandpiper, Hudsonian Godwit, Dunlin, and White-rumped Sandpiper during Spring Migration



Average slope
Percent grass
Percent palustrine (ln)
Proportion of temporary and seasonal

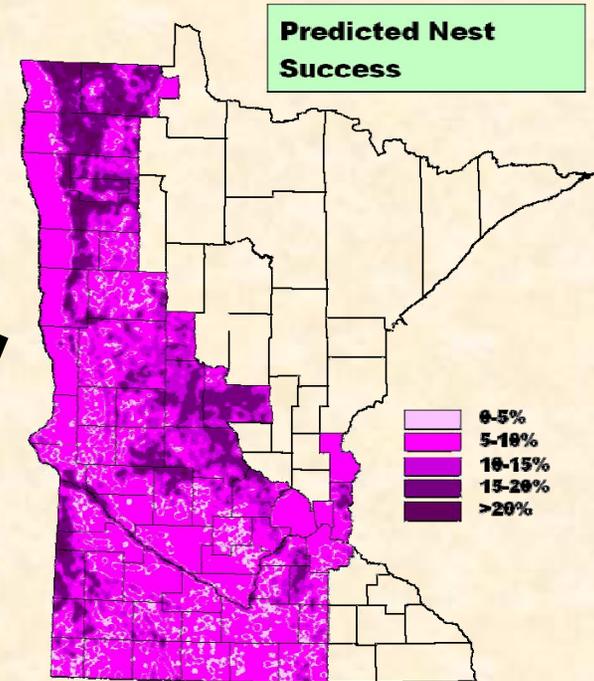


Wetland Priority for Breeding Ducks (SWAP)



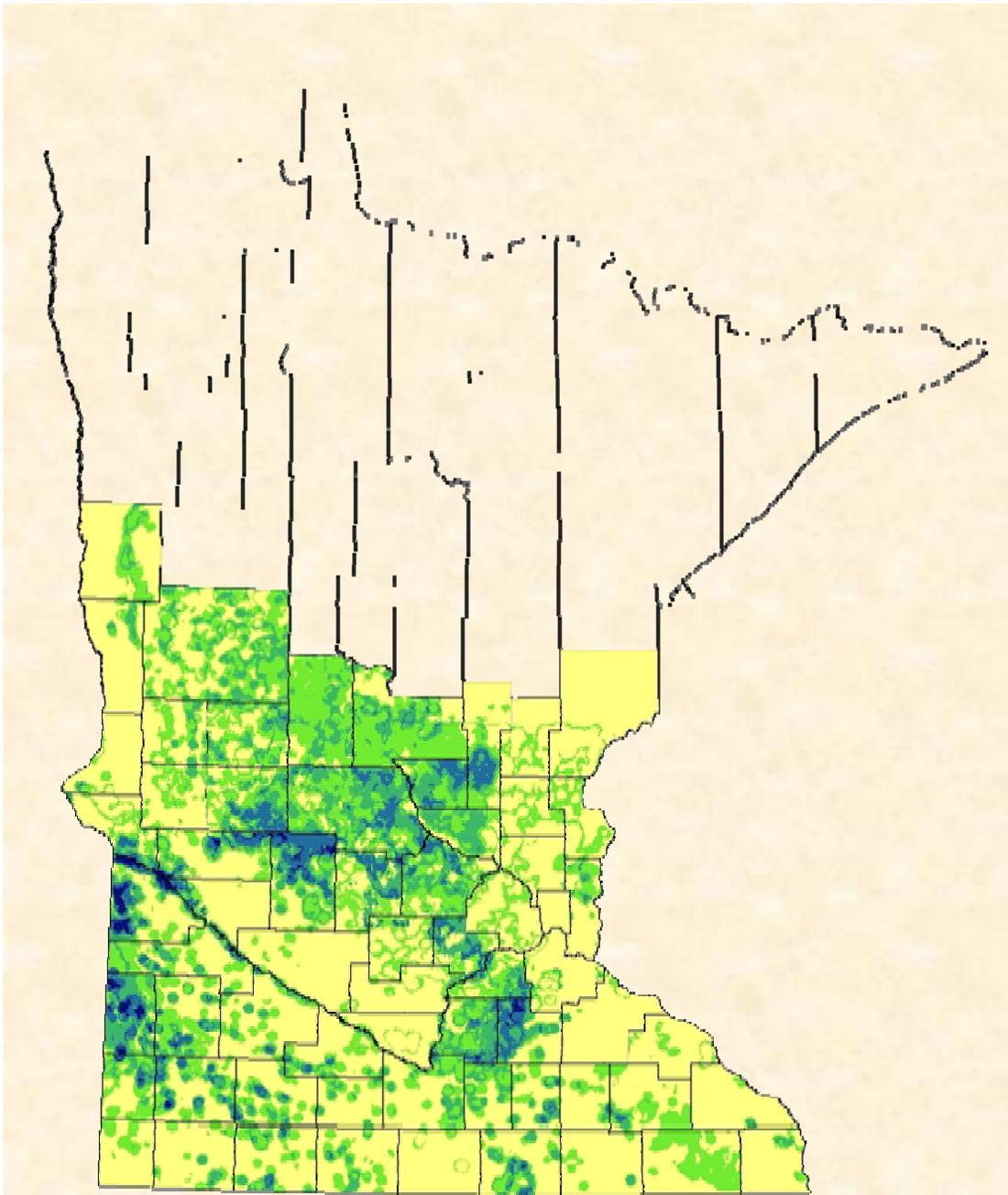
Wetland Complex Integrity

+



Predicted Nest Success

- 0-5%
- 5-10%
- 10-15%
- 15-20%
- >20%



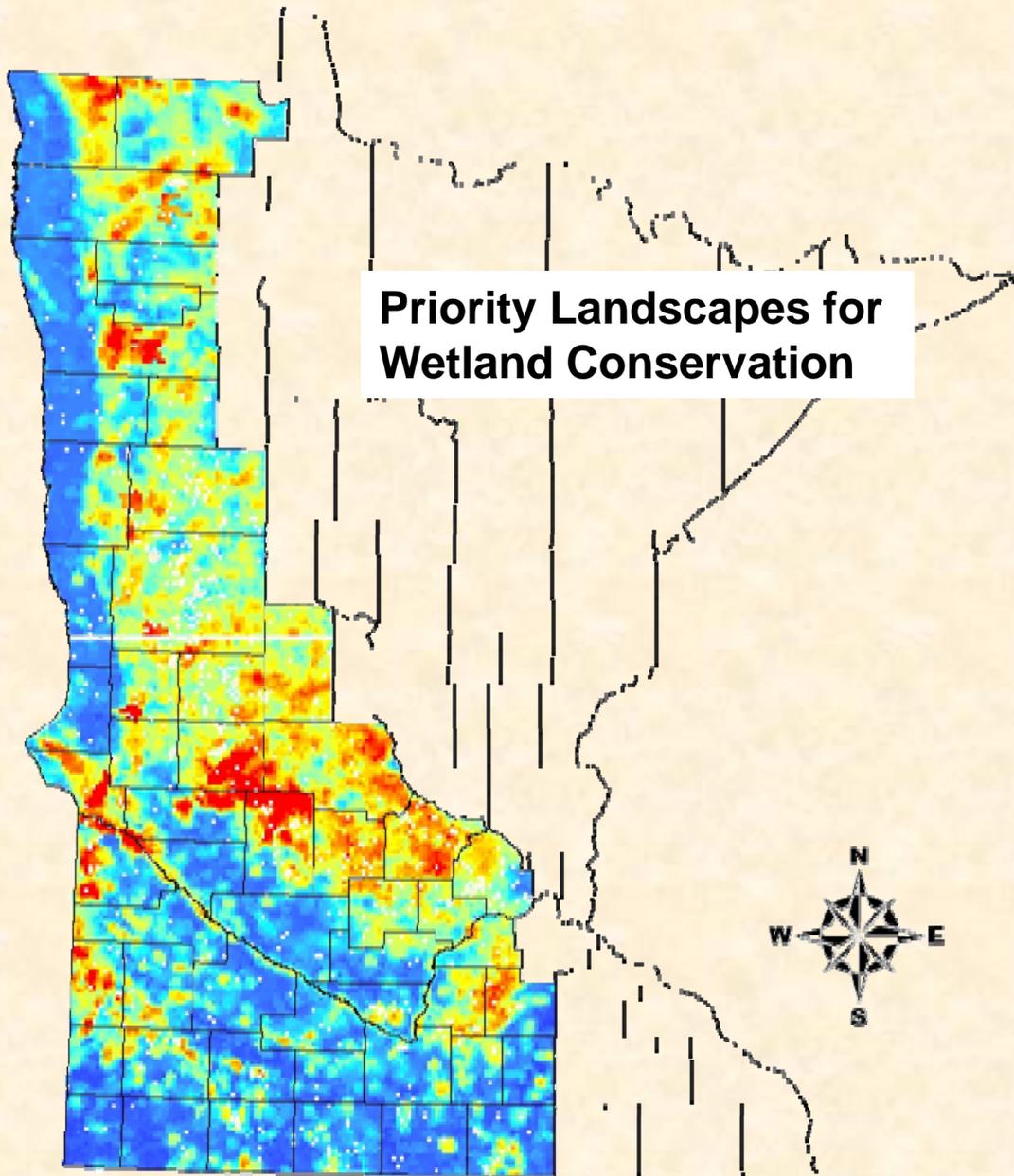
Wintering areas	Percent Grassland	Wetland Restoration score	Wetland Protection score	Total Wetland Restore/protect Score
< 20 acres of cattail wintering cover	< 10 % grass	0	5	5
< 20 acres of cattail wintering cover	11 - 20 % grass	12.5	10	22.5
< 20 acres of cattail wintering cover	21 -30 % grass	25	10	35
< 20 acres of cattail wintering cover	31 - 40 % grass	37.5	10	47.5
< 20 acres of cattail wintering cover	> 40 % grass	25	10	35
20-40 acres of cattail wintering cover	< 10 % grass	0	20	20
20-40 acres of cattail wintering cover	11 - 20 % grass	25	20	45
20-40 acres of cattail wintering cover	21 -30 % grass	50	20	70
20-40 acres of cattail wintering cover	31 - 40 % grass	75	20	95
20-40 acres of cattail wintering cover	> 40 % grass	50	20	70
40-60 acres of cattail wintering cover	< 10 % grass	25	20	45
40-60 acres of cattail wintering cover	11 - 20 % grass	50	40	90
40-60 acres of cattail wintering cover	21 -30 % grass	75	40	115
40-60 acres of cattail wintering cover	31 - 40 % grass	100	40	140
40-60 acres of cattail wintering cover	> 40 % grass	75	40	115
60-80 acres of cattail wintering cover	< 10 % grass	25	20	45
60-80 acres of cattail wintering cover	11 - 20 % grass	50	40	90
60-80 acres of cattail wintering cover	21 -30 % grass	75	60	135
60-80 acres of cattail wintering cover	31 - 40 % grass	100	60	160
60-80 acres of cattail wintering cover	> 40 % grass	75	60	135
>=80 acres of cattail wintering cover	< 10 % grass	0	20	20
>=80 acres of cattail wintering cover	11 - 20 % grass	12.5	40	52.5
>=80 acres of cattail wintering cover	21 -30 % grass	25	60	85
>=80 acres of cattail wintering cover	31 - 40 % grass	37.5	80	117.5
>=80 acres of cattail wintering cover	> 40 % grass	25	80	105

Pheasants – Wetland Protection and Restoration

Available Wintering Cover
Access to Nesting Cover

PHIP Ratings:

- Undisturbed Habitats
- Land Use Patterns
- Current Population Index
- Winter Severity Index



**Priority Landscapes for
Wetland Conservation**

Shallow Lakes WQ

+

Black Terns

+

Migrant Shorebirds (wetland)

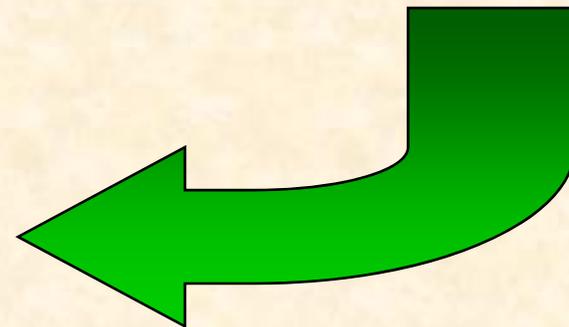
+

Wetland for Ducks

+

Wetlands for Pheasants

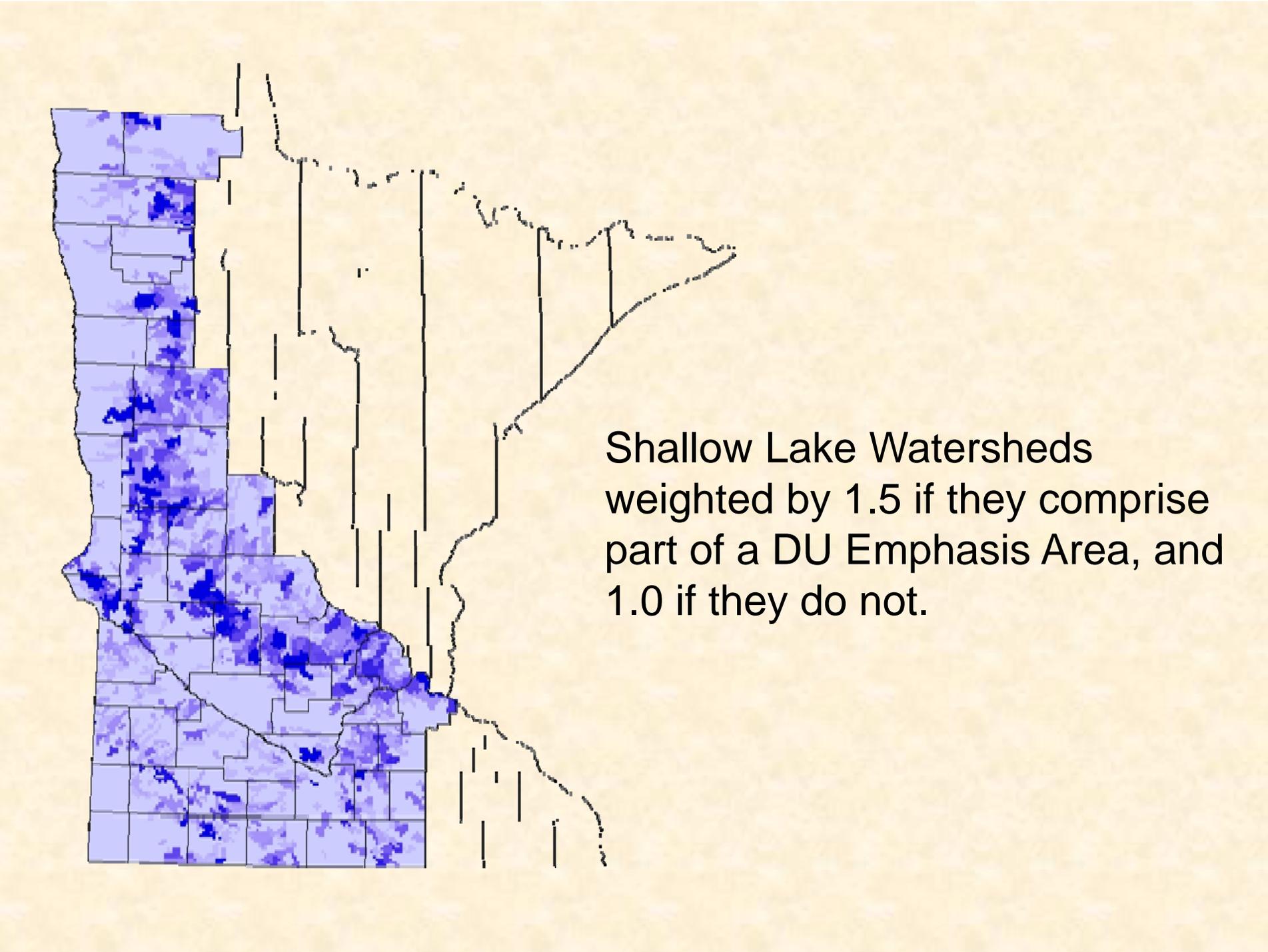
**Priority Landscapes for
Wetland Conservation**

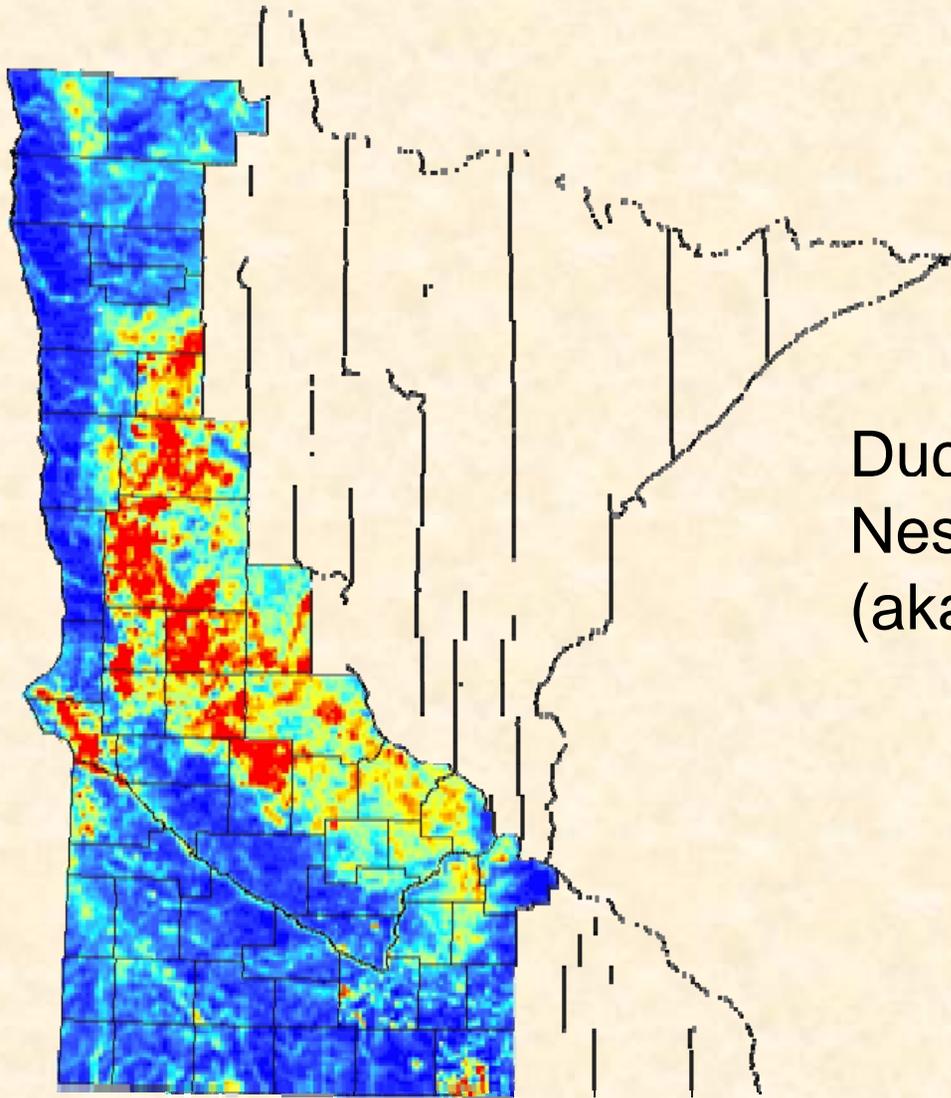


Grasslands

Targeted protection and restoration are based on –

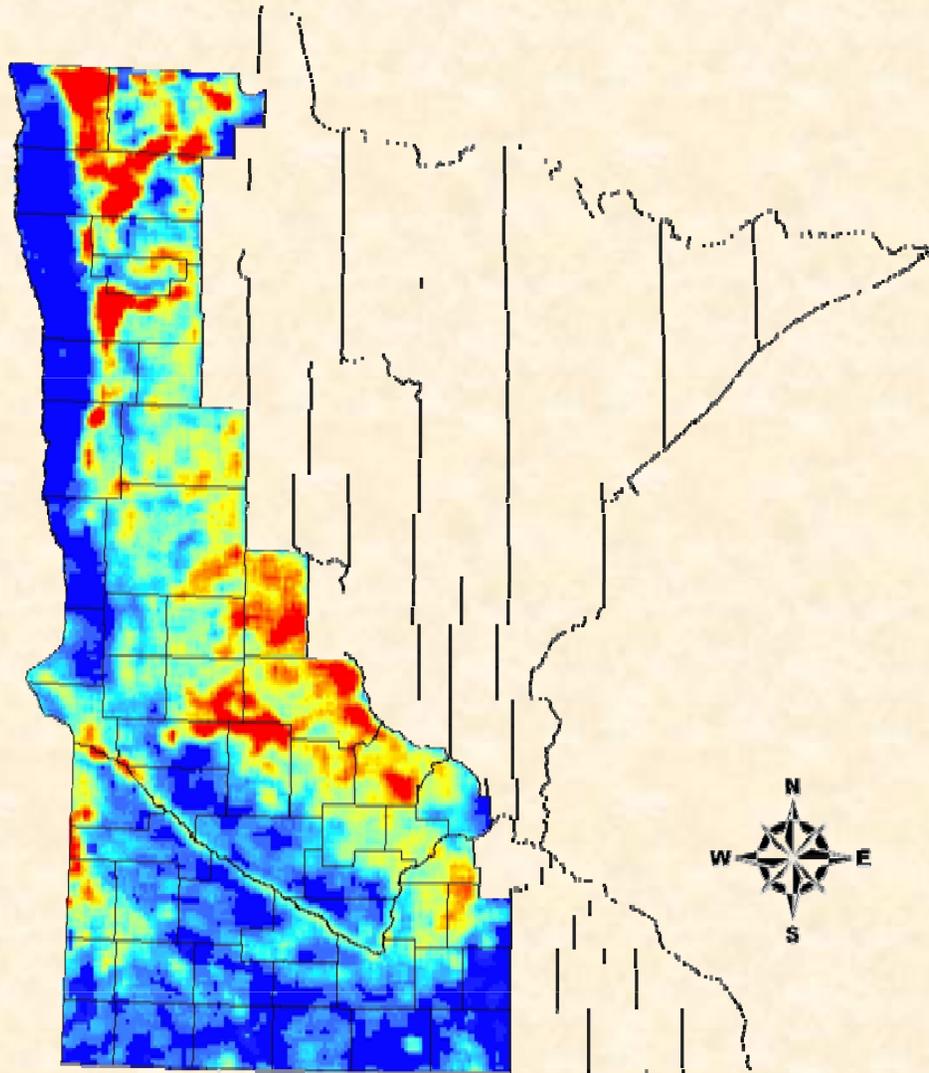
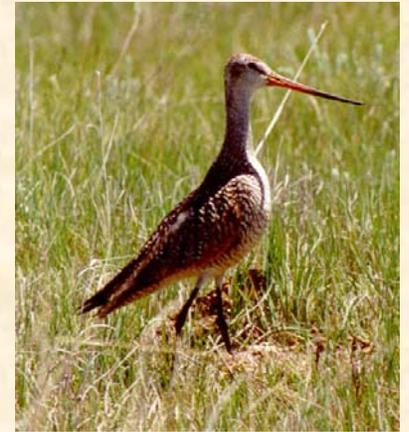
- **Potential to impact populations of focal species based on**
 - **Integrity of the dimensions of the grassland patch**
 - **Surrounding landscape context (percent grassland and terrain relief)**
 - **Juxtaposition of grassland and wetland**
- **Potential for significant water quality enhancement benefits for shallow lakes**
- **Restoration is also based on the potential to create large, “blocky” patches with a minimal additional cropland retirement**



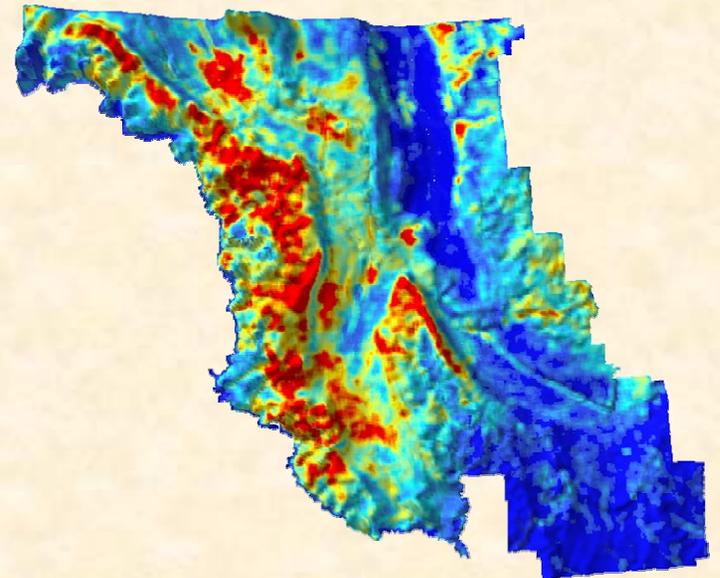


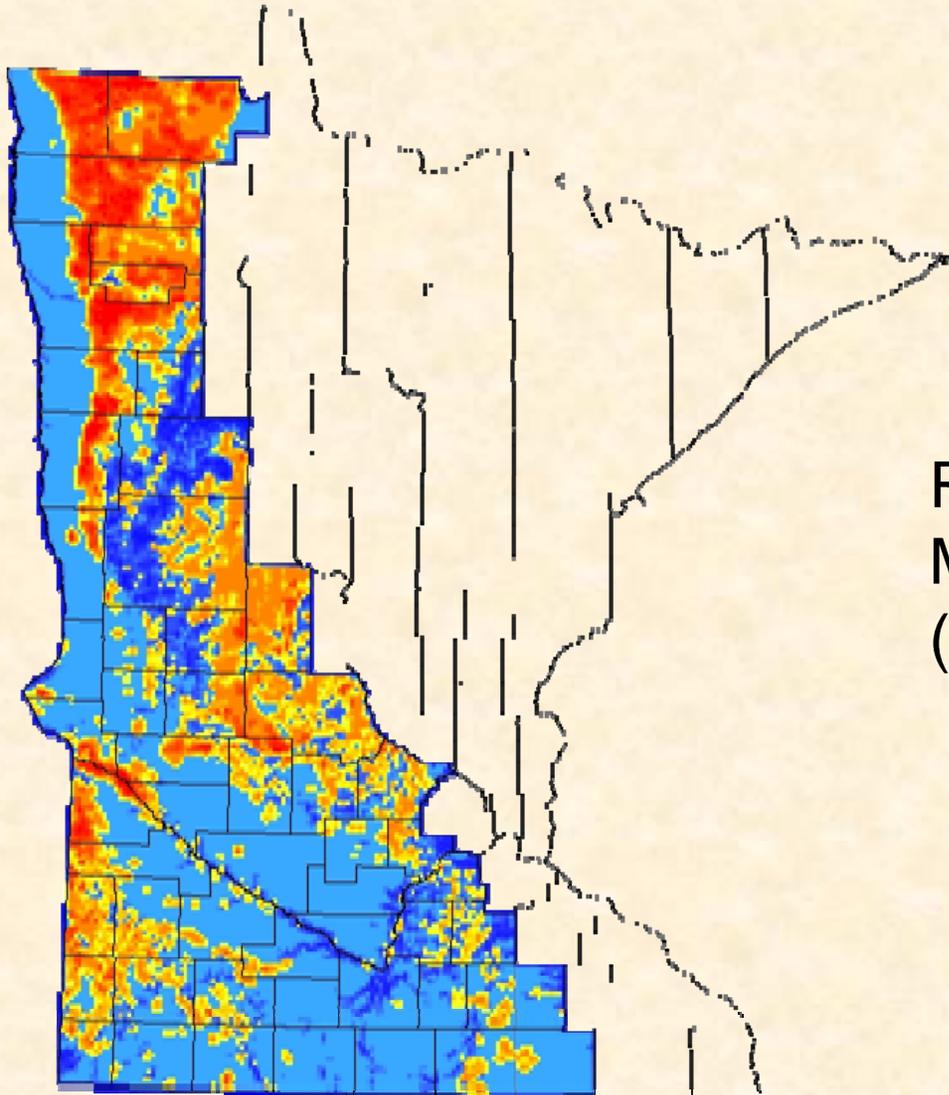
Duck Pair Access to Grassland
Nesting Habitat
(aka. Thunderstorm Map)

Landscapes for American Avocet, Marbled Godwit, and Willet during Spring Migration

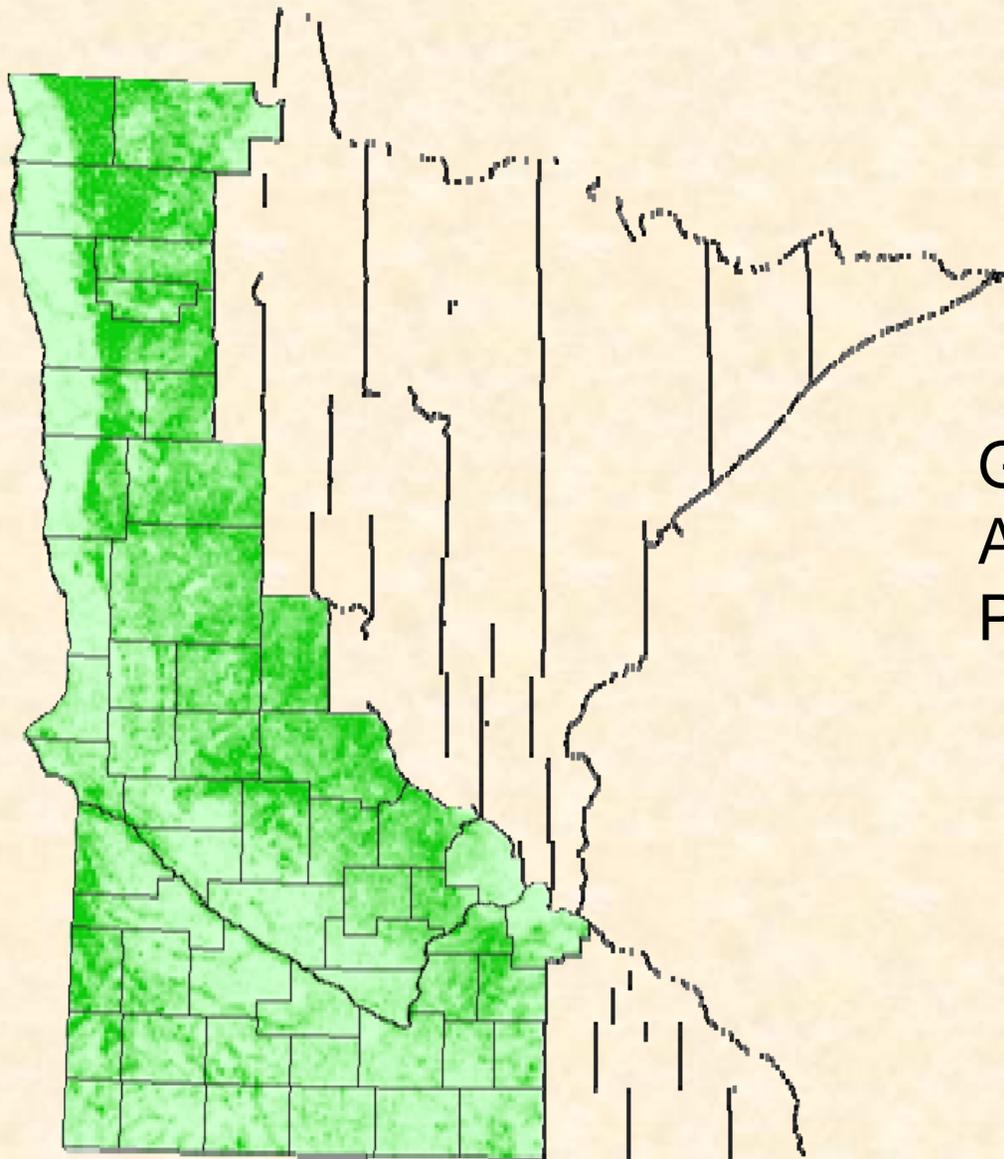


Average slope
Percent grass
Percent palustrine (ln)
Proportion of temporary and seasonal

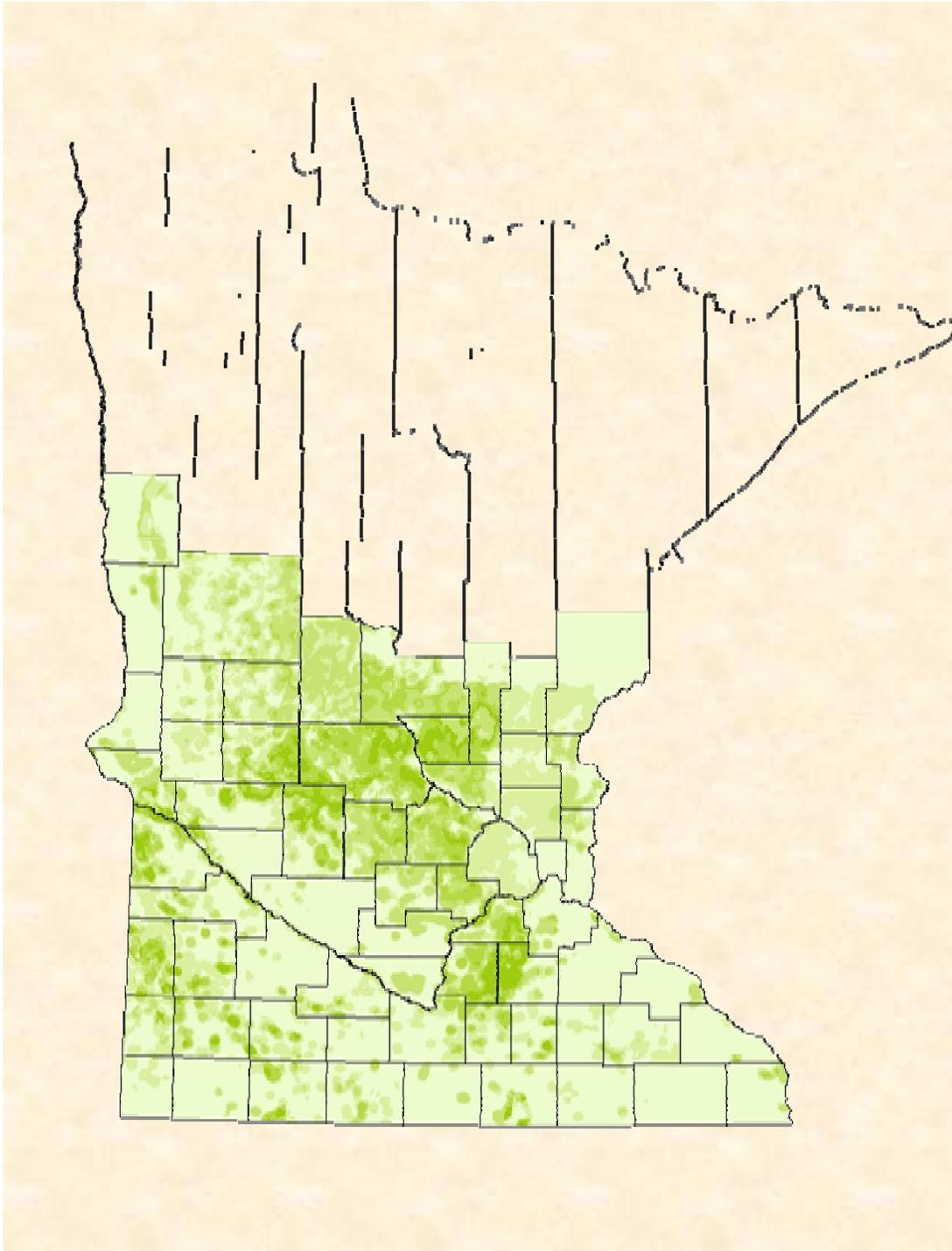




Relative Potential as
Marbled Godwit Habitat
(Breeding Shorebirds)



Grassland Bird Conservation
Area- based Priority for
Protection and Restoration



Wintering areas	Percent Grassland	Grassland Restoration score	Grassland Protection score	Total Grassland Restore/protect Score
< 20 acres of cattail wintering cover	< 10 % grass	6.25	5	11.25
< 20 acres of cattail wintering cover	11 - 20 % grass	12.5	10	22.5
< 20 acres of cattail wintering cover	21 -30 % grass	18.75	15	33.75
< 20 acres of cattail wintering cover	31 - 40 % grass	0	20	20
< 20 acres of cattail wintering cover	> 40 % grass	0	15	15
20-40 acres of cattail wintering cover	< 10 % grass	12.5	10	22.5
20-40 acres of cattail wintering cover	11 - 20 % grass	25	20	45
20-40 acres of cattail wintering cover	21 -30 % grass	37.5	30	67.5
20-40 acres of cattail wintering cover	31 - 40 % grass	0	40	40
20-40 acres of cattail wintering cover	> 40 % grass	0	30	30
40-60 acres of cattail wintering cover	< 10 % grass	25	15	40
40-60 acres of cattail wintering cover	11 - 20 % grass	50	30	80
40-60 acres of cattail wintering cover	21 -30 % grass	75	45	120
40-60 acres of cattail wintering cover	31 - 40 % grass	0	60	60
40-60 acres of cattail wintering cover	> 40 % grass	0	45	45
60-80 acres of cattail wintering cover	< 10 % grass	50	20	70
60-80 acres of cattail wintering cover	11 - 20 % grass	75	40	115
60-80 acres of cattail wintering cover	21 -30 % grass	100	60	160
60-80 acres of cattail wintering cover	31 - 40 % grass	0	80	80
60-80 acres of cattail wintering cover	> 40 % grass	0	60	60
>=80 acres of cattail wintering cover	< 10 % grass	50	25	75
>=80 acres of cattail wintering cover	11 - 20 % grass	75	50	125
>=80 acres of cattail wintering cover	21 -30 % grass	100	75	175
>=80 acres of cattail wintering cover	31 - 40 % grass	0	100	100
>=80 acres of cattail wintering cover	> 40 % grass	0	75	75

Pheasants – Grassland Protection and Restoration

**Available Nesting Cover
Access to Wintering Cover**

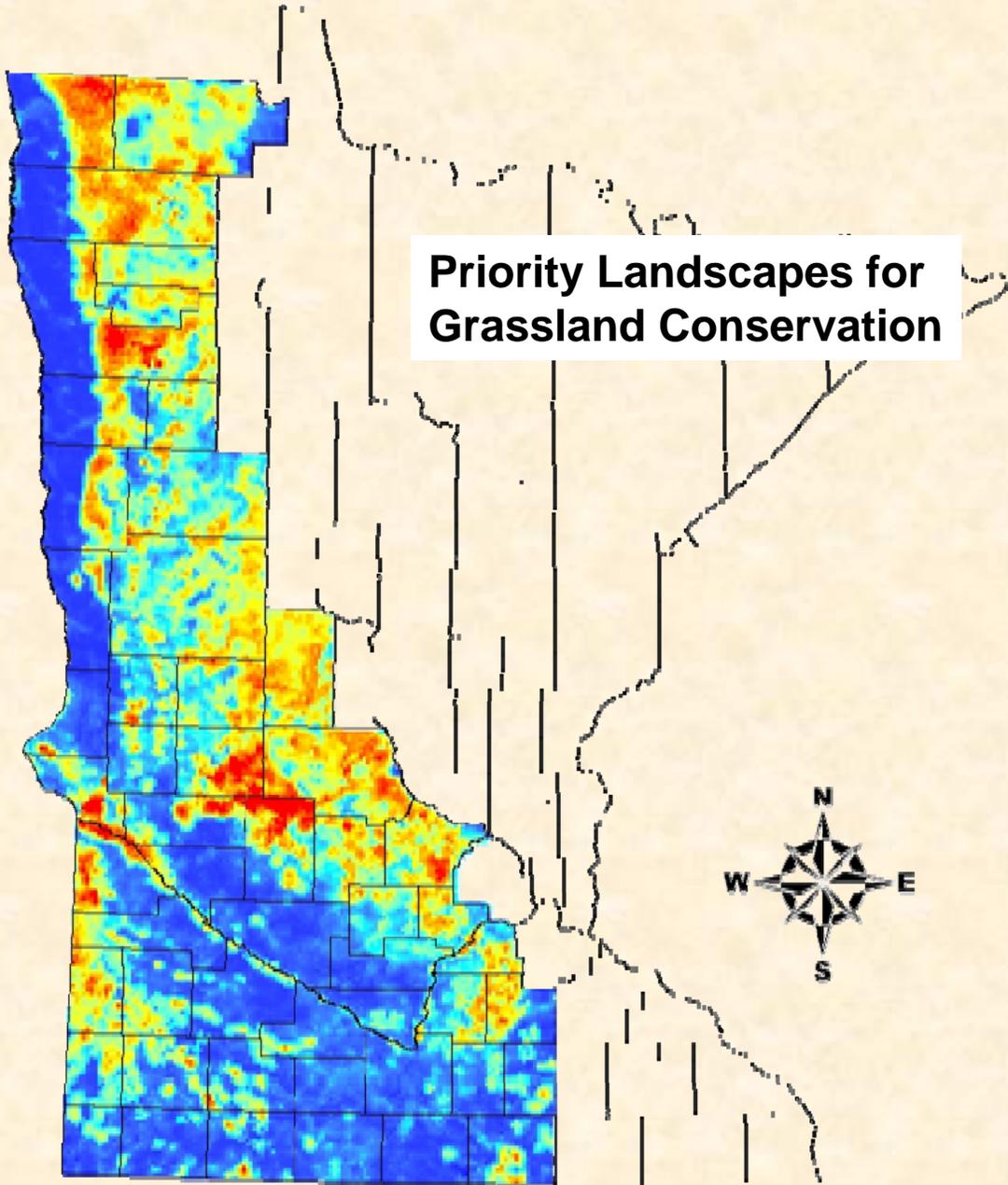
PHIP Ratings:

Undisturbed Habitats

Land Use Patterns

Current Population Index

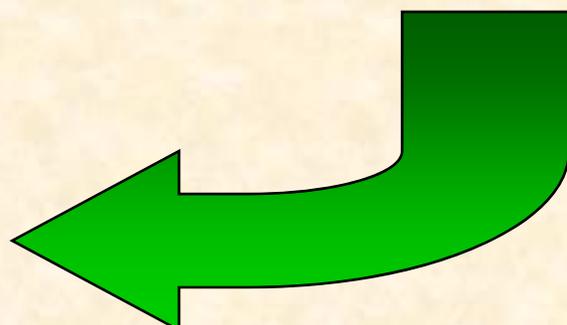
Winter Severity Index



**Priority Landscapes for
Grassland Conservation**

- Shallow Lakes WQ
 - +
 - Grasslands for Ducks
 - +
 - Migrant Shorebirds (grass)
 - +
 - Marbled Godwits
 - +
 - Grassland nongame birds
(GBCAs)
 - +
 - Grasslands for Pheasants
-

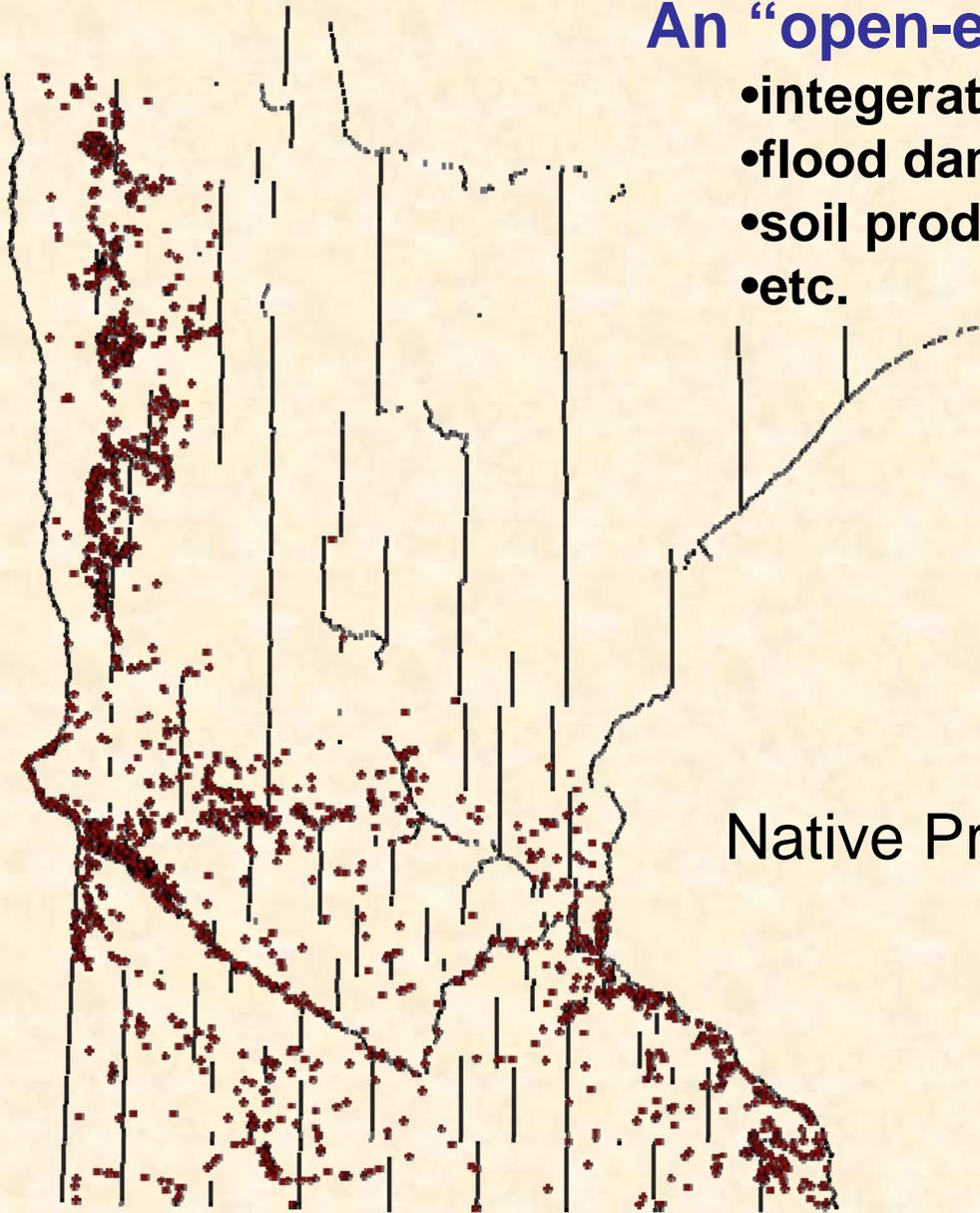
**Priority Landscapes for
Grassland Conservation**



An “open-ended” assessment process

- integrate water quality
- flood damage reduction priority areas
- soil productivity or erodibility indices
- etc.

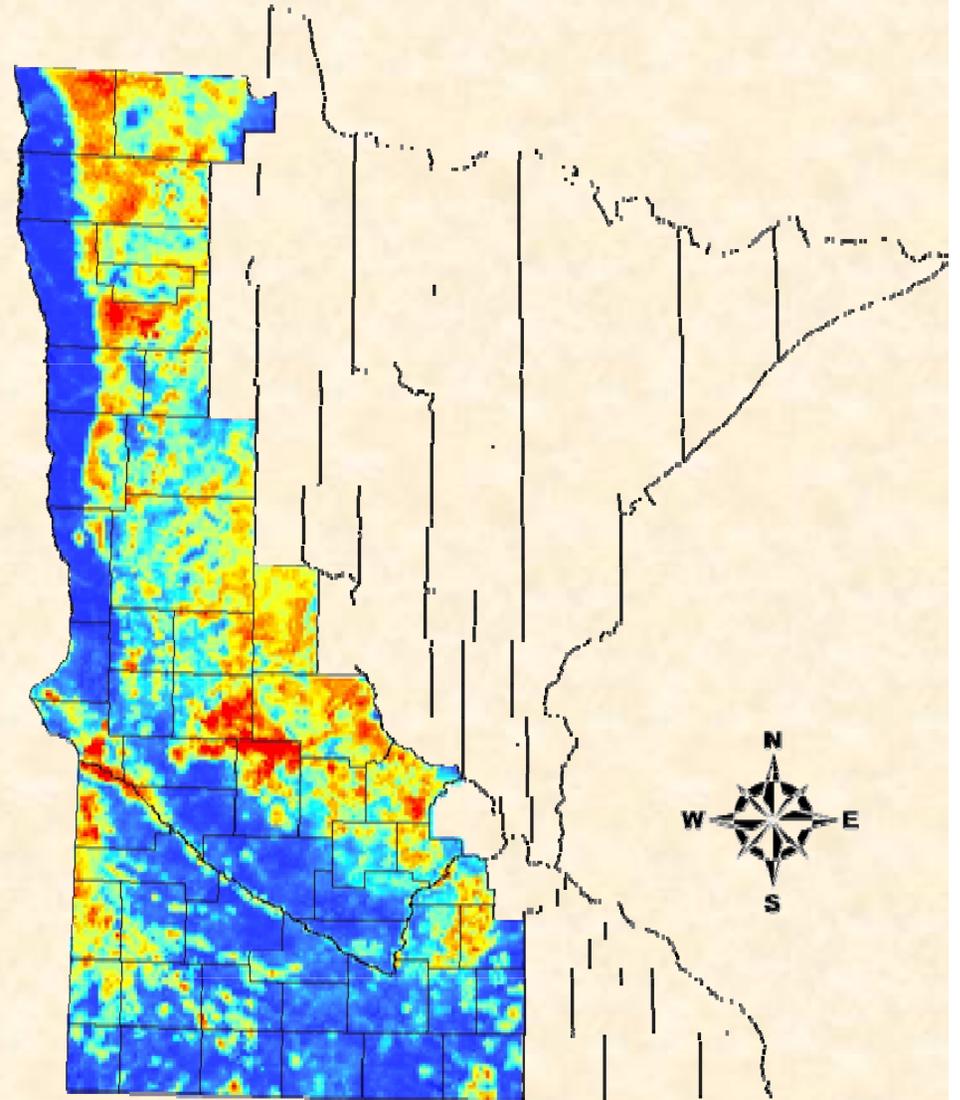
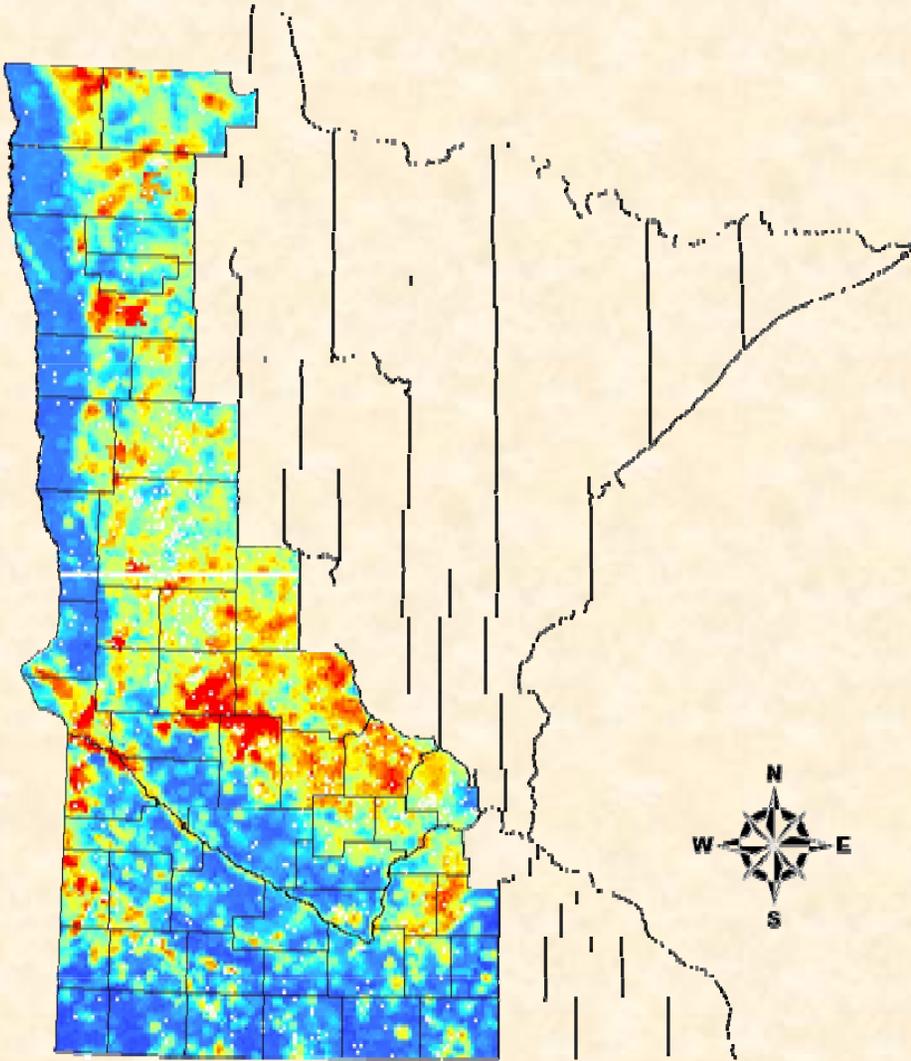
Native Prairie Tracts

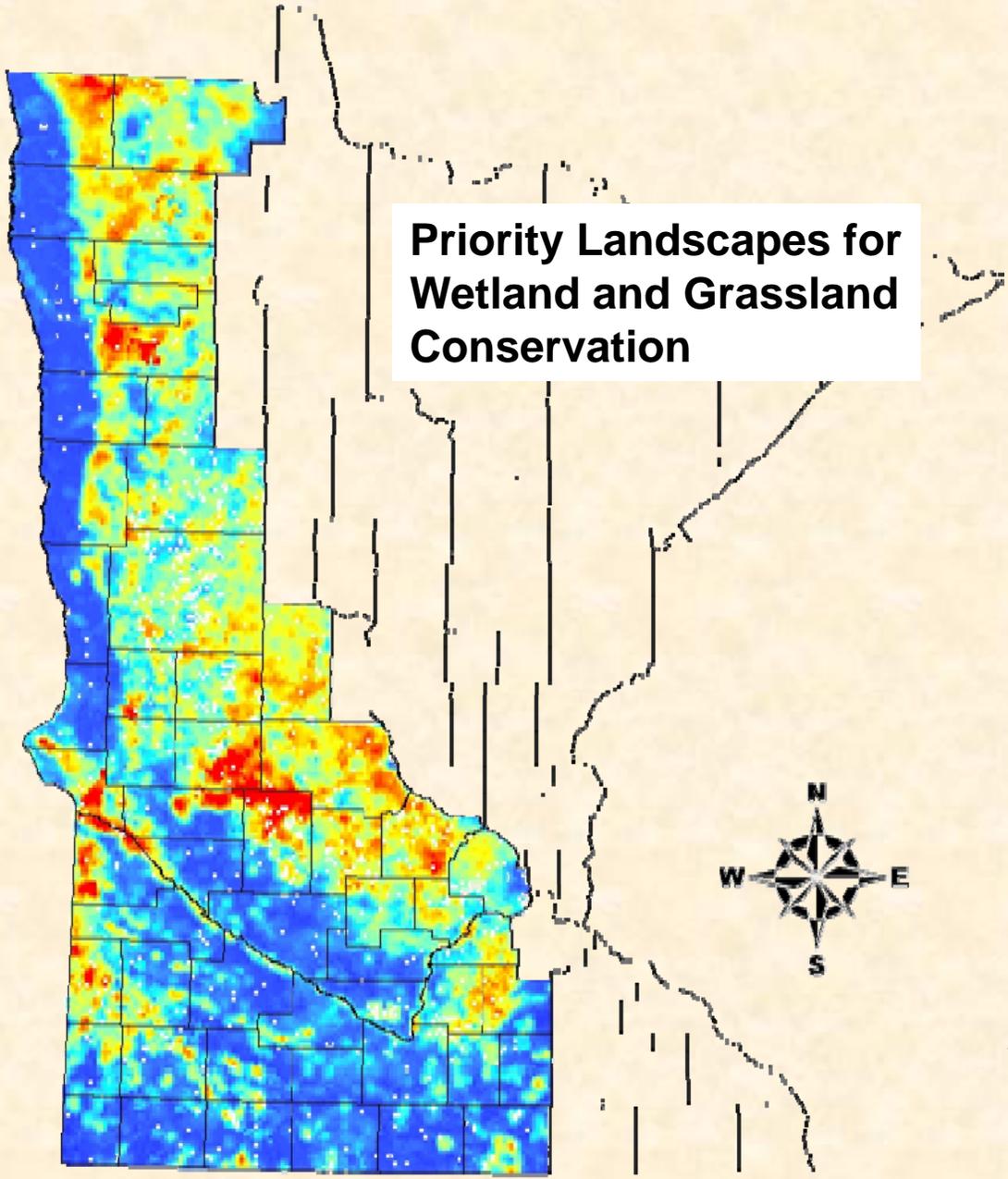


**Priority Landscapes for
Wetland Conservation**

+

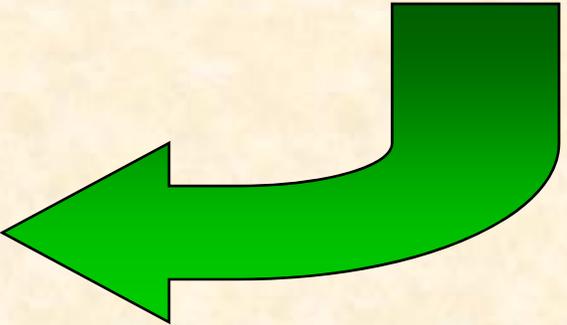
**Priority Landscapes for
Grassland Conservation**





Priority Landscapes for Wetland Conservation + Priority Landscapes for Grassland Conservation

Priority Landscapes for Wetland and Grassland Conservation



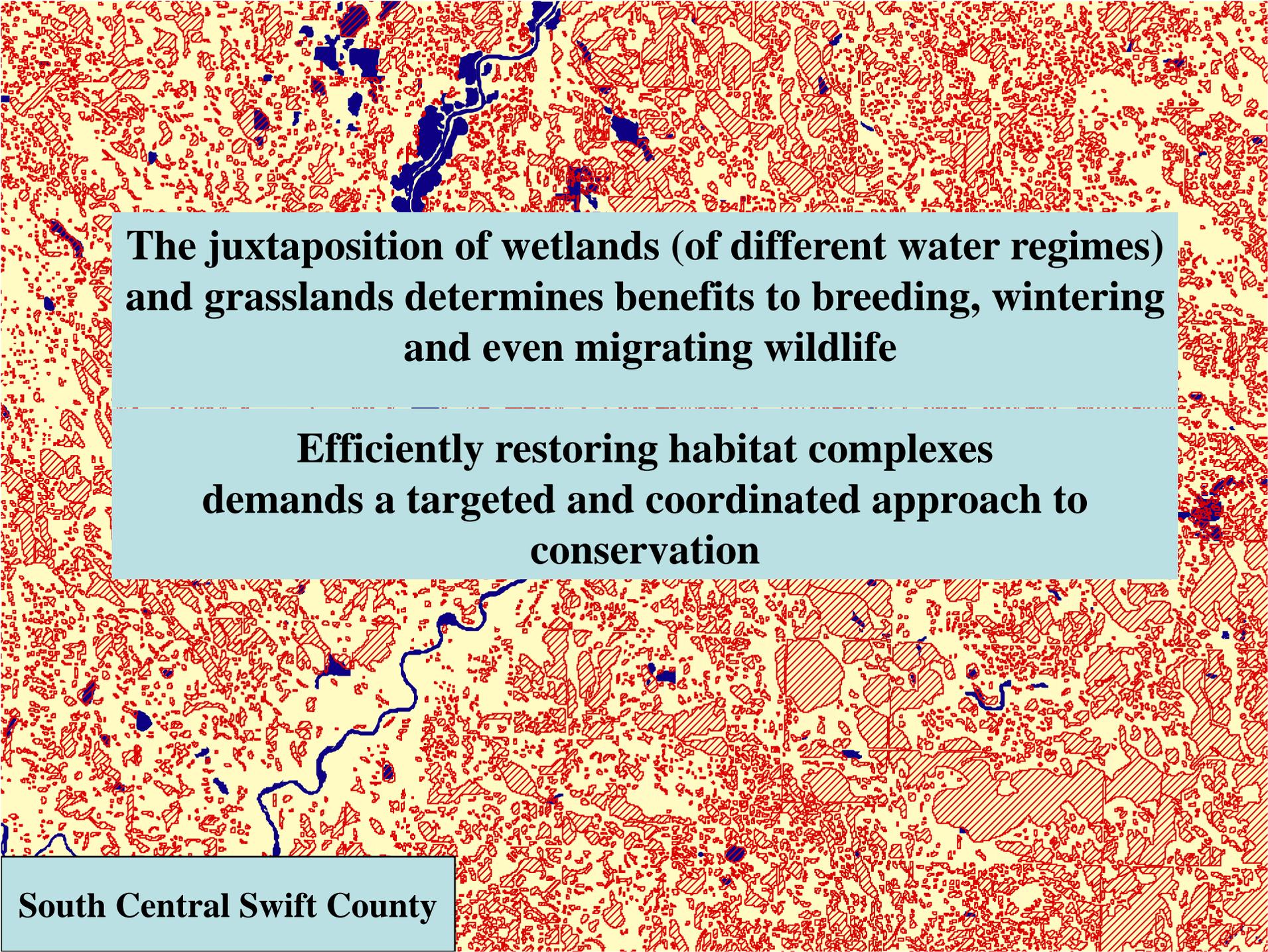
Each spatially-explicit element of the Conservation Strategy should be accompanied by its underlying data, that is,

for each 40-ac parcel,

- **Overall Wetland Index**
 - **Shallow Lake Index**
 - **Black Tern Index**
 - **Upland Nesting Waterfowl (Wetland) Index**
 - **Migrant Shorebird (Wetland) Index**
 - **Pheasant (Wetland) Index**
- **Overall Grassland Index**
 - **Shallow Lake Index**
 - **Upland Nesting Waterfowl (Grassland) Index**
 - **Grassland Nongame Bird Index**
 - **Breeding Marbled Godwit Index**
 - **Migrant Shorebird (Grassland) Index**
 - **Pheasant (Grassland) Index**
- **Native prairie tracts**
- **Overall Conservation Index**

This will enable managers to make appropriate site-scale management decisions from an ecoregional perspective

'Yellow Medicine'	117	40	18	33	'SWSW'	90	9	65	18	160	23	45
'Yellow Medicine'	117	40	19	23	'SWNW'	58	10	49	18	160	23	37
'Yellow Medicine'	117	40	19	24	'SEW'	71	9	55	19	160	23	40
'Yellow Medicine'	117	40	19	32	'NWSW'	49	10	44	17	160	22	34
'Yellow Medicine'	117	40	19	31	'NESW'	60	9	49	17	160	22	36
'Yellow Medicine'	117	40	19	42	'NWSE'	77	9	58	18	160	23	41
'Yellow Medicine'	117	40	19	33	'SWSW'	48	10	44	14	160	21	33
'Yellow Medicine'	117	40	19	34	'SESW'	46	9	41	16	160	22	32
'Yellow Medicine'	117	40	19	43	'SWSE'	67	9	52	17	160	22	38
'Yellow Medicine'	117	40	30	22	'NWNW'	50	9	43	13	160	20	32
'Yellow Medicine'	117	40	30	21	'NENW'	46	9	41	14	160	21	32
'Yellow Medicine'	117	40	30	12	'NWNE'	51	8	42	16	160	22	33
'Yellow Medicine'	117	40	30	23	'SWNW'	53	9	45	12	160	20	33
'Yellow Medicine'	117	40	30	24	'SEW'	46	9	41	14	160	21	32
'Yellow Medicine'	117	40	30	13	'SWNE'	44	8	38	15	160	22	31
'Yellow Medicine'	117	40	30	32	'NWSW'	44	8	38	12	160	20	30
'Yellow Medicine'	117	40	30	31	'NESW'	43	8	38	13	160	20	30
'Yellow Medicine'	117	40	30	42	'NWSE'	43	8	38	14	160	21	30
'Yellow Medicine'	117	40	30	33	'SWSW'	43	7	36	10	160	19	28
'Yellow Medicine'	117	40	30	34	'SESW'	42	7	35	12	160	20	28
'Yellow Medicine'	117	40	30	43	'SWSE'	40	7	34	14	160	21	28
'Yellow Medicine'	117	40	28	44	'SESE'	95	9	68	17	160	22	46
'Yellow Medicine'	117	40	31	22	'NWNW'	48	7	39	9	160	19	30
'Yellow Medicine'	117	40	31	21	'NENW'	40	7	34	11	160	20	28
'Yellow Medicine'	117	40	31	12	'NWNE'	39	7	34	12	160	20	28
'Yellow Medicine'	117	40	31	11	'NENE'	39	7	34	13	160	20	28
'Yellow Medicine'	117	40	32	22	'NWNW'	44	7	37	15	160	22	30
'Yellow Medicine'	117	40	33	12	'NWNE'	94	10	69	17	160	22	46



The juxtaposition of wetlands (of different water regimes) and grasslands determines benefits to breeding, wintering and even migrating wildlife

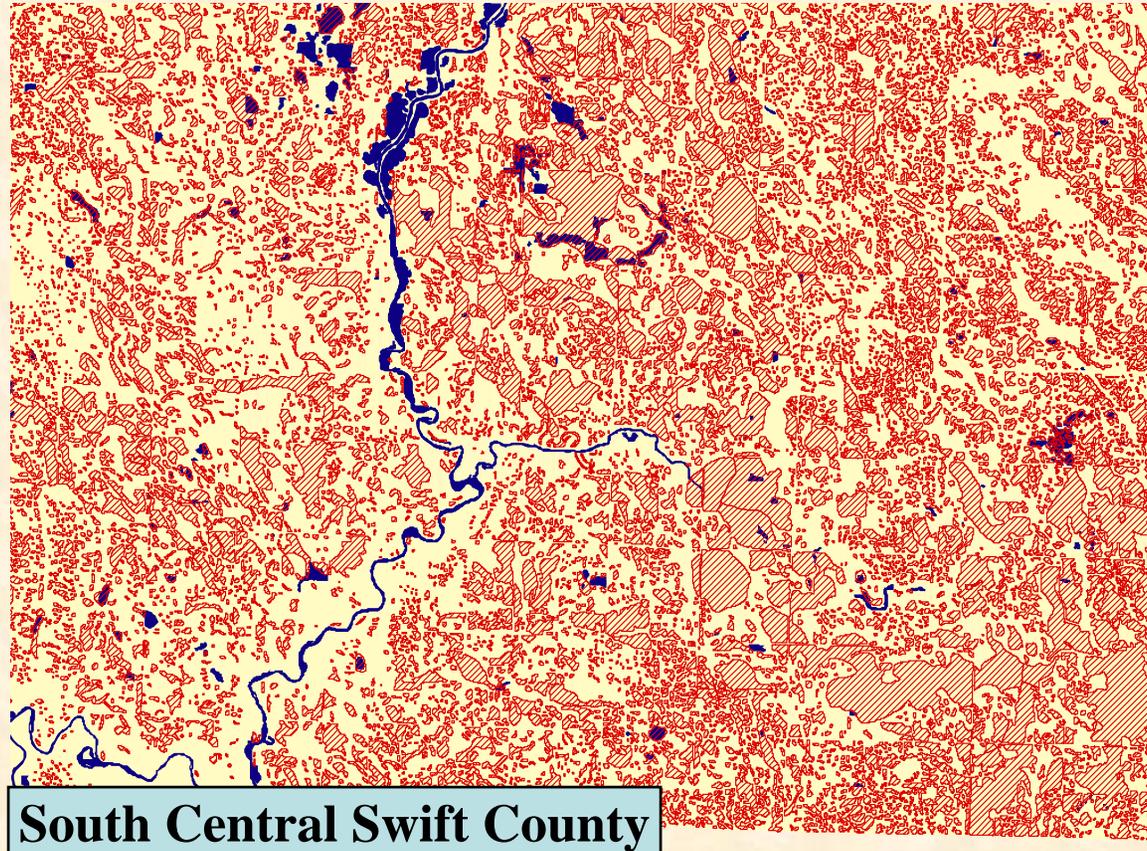
Efficiently restoring habitat complexes demands a targeted and coordinated approach to conservation

South Central Swift County

Moving forward –

Potential Technical Assistance from HAPET

- 1) New spatial data – e.g., restorable wetlands data, land cover data



South Central Swift County

2) Management Decision Support Tools tailored to your area

