



Bogs and Butterflies, Swamps and Salamanders:

Integrating Minnesota's Wetland
Monitoring Program and Wildlife
Action Plan

Participants:

- Dept. of Natural Resources
- Pollution Control Agency
- Bd. of Water and Soil Resources
- Minn. Dept. Agriculture
- USFWS

Funded by USEPA
Wetland Program
Development Grant



Minnesota Pollution Control Agency



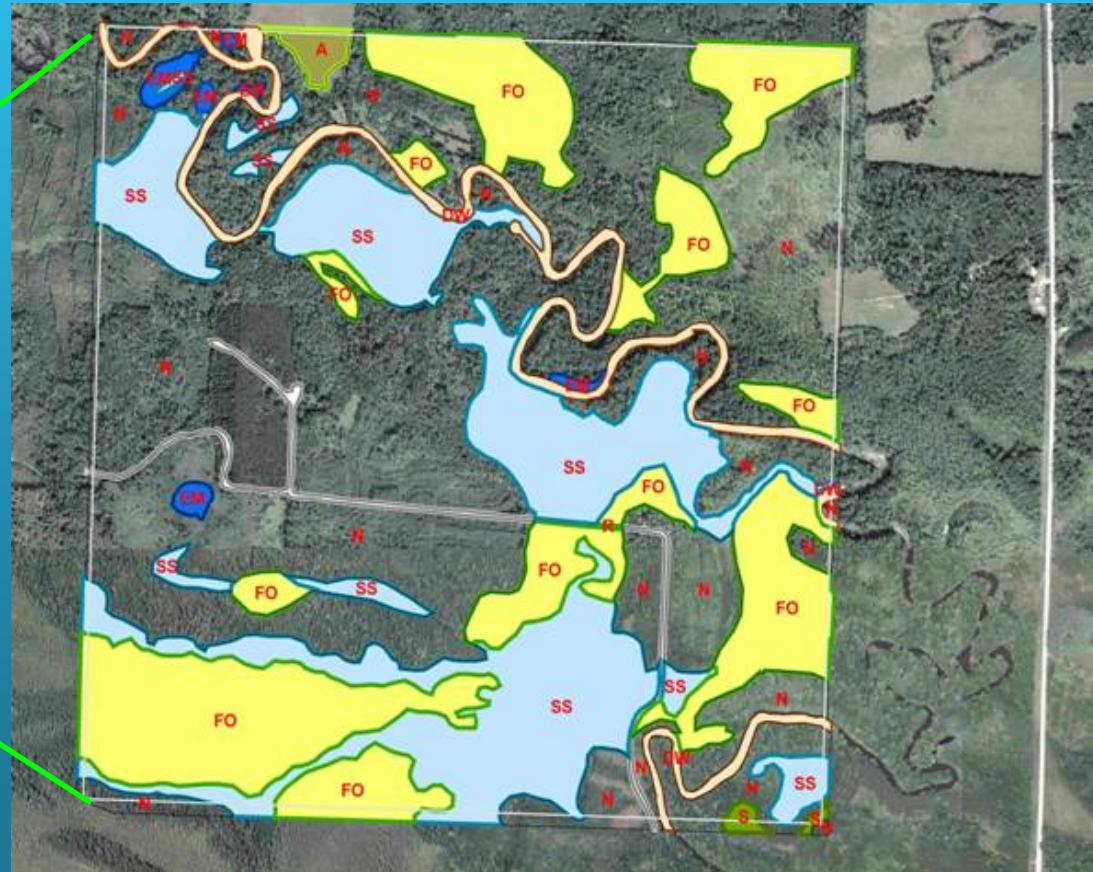
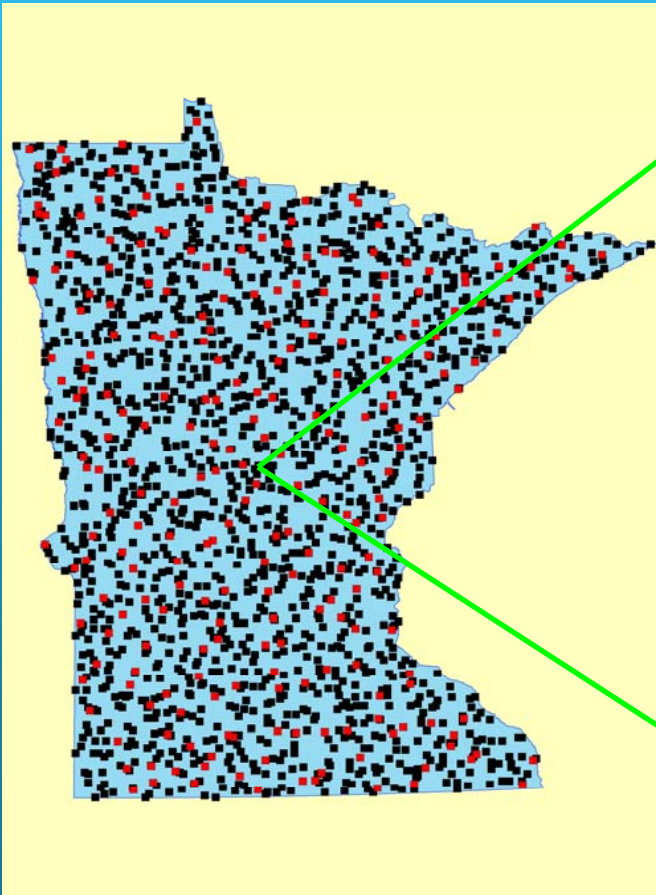


Monitoring & Assessment Strategy Components

- Trends in wetland quantity
 - Stratified random sampling using aerial photography
- Wetland quality assessments
- Wetland mapping (Status)
- Electronic permitting and integrated accounting system

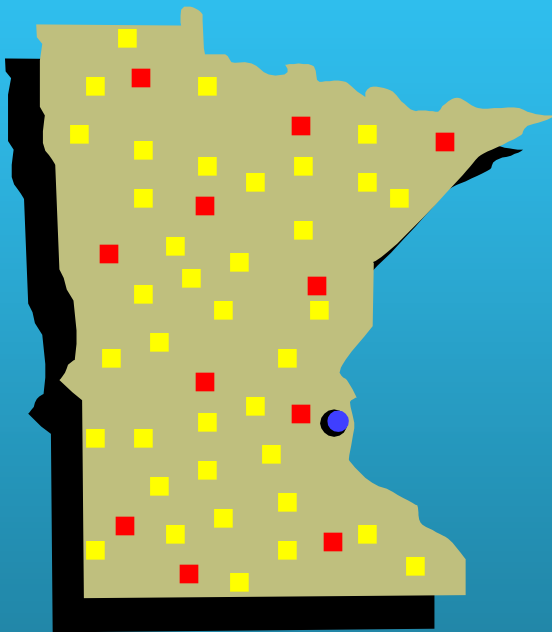
Random Sample Survey

- 4,990 1-Square Mile Plots
- Repeating, 3-year sampling cycle

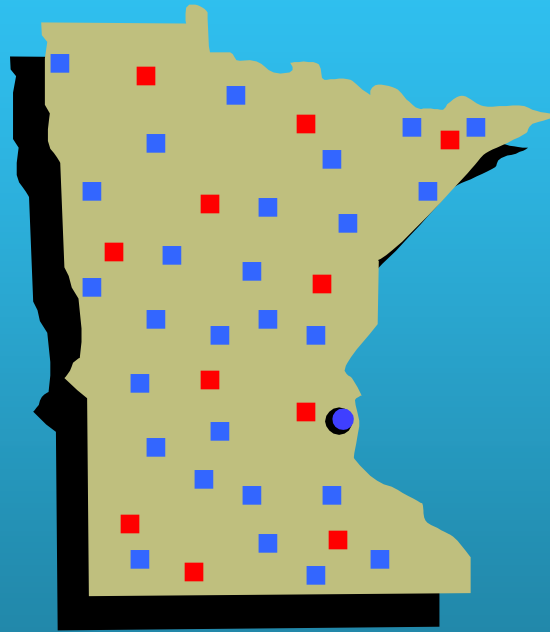




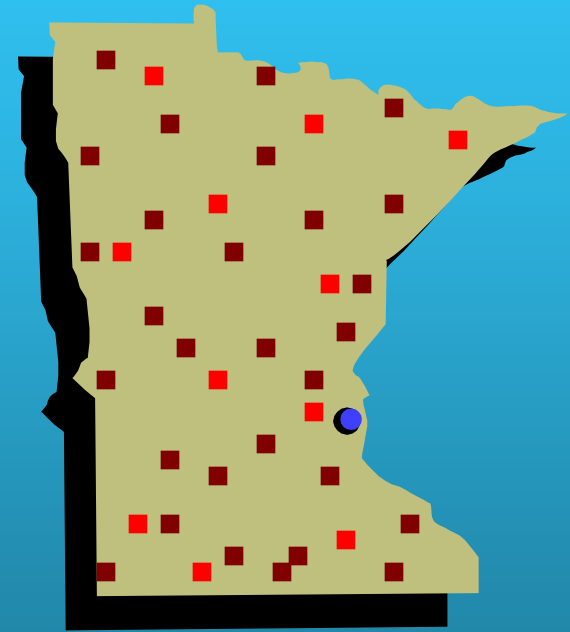
Random Sample Survey: Cyclic Design



Year (Panel) 1
1,580 unique
250 common



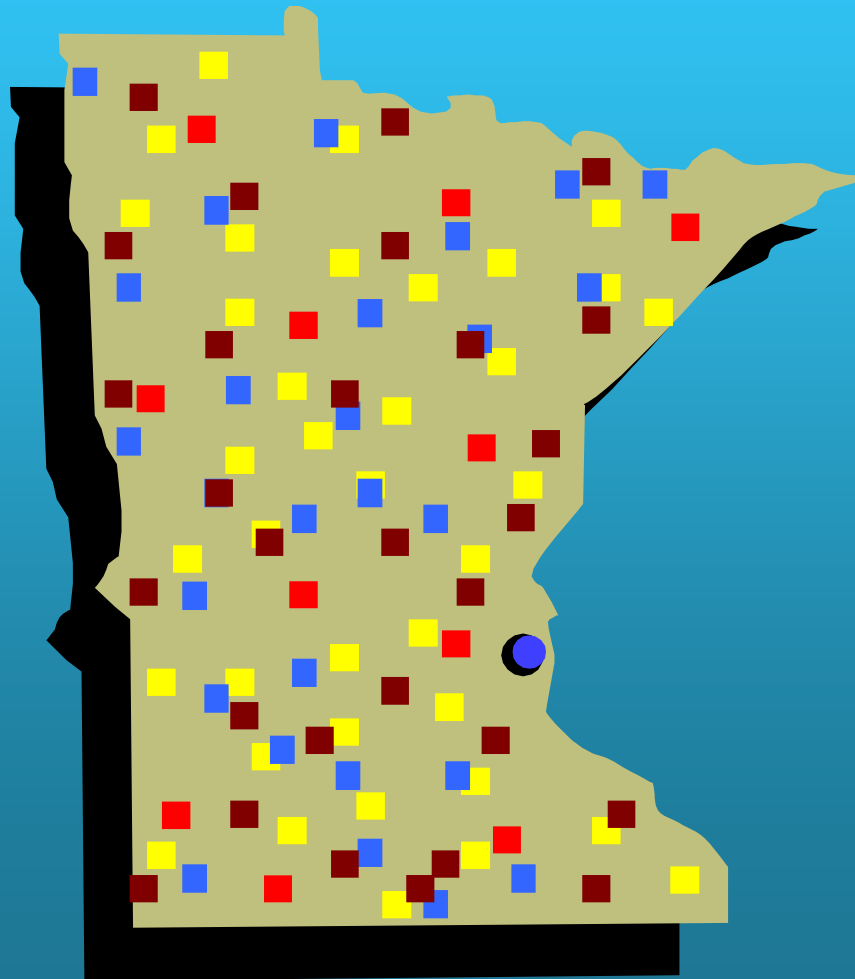
Year (Panel) 2
1,580 unique
250 common



Year (Panel) 3
1,580 unique
250 common



Random Sample Survey: Cyclic Design



After 3 years:

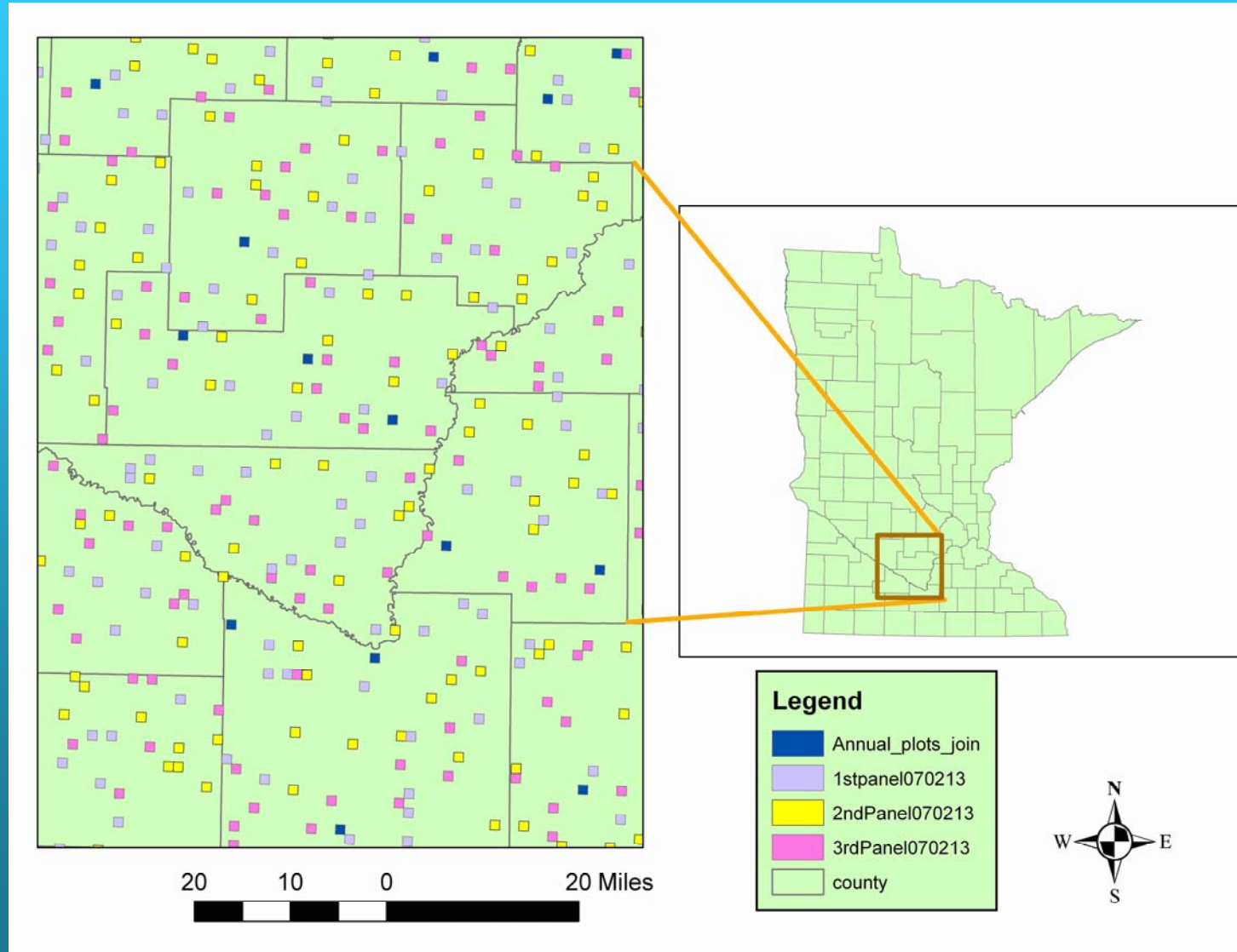
4,740 unique plots

250 common plots

= 4,990 total samples



Random Sample Survey





Polygon Classification

Wetland classes

- Emergent
- Aquatic bed
- Forested
- Scrub-shrub
- Unconsolidated bottom
- (Cultivated)

Hydrologic Regime

- Temporary
- Seasonal
- Saturated
- Inundated

Non-wetland use classes

- Agricultural
- Natural
- Silvicultural
- Urban
- Rural Development
- Deep Water -
(Lacustrine/Riverine)
- Other



Wetland *Quality* Assessment

- Level 1: Landscape Scale Assessment
 - Land use data or other remote sensing indicators
 - Remote sensing of vegetation diversity
- Level 2: Rapid Assessment
 - Minnesota Routine Wetland Assessment (MnRAM)
 - Floristic Quality Assessment Index (coefficients completed for Minnesota plants, May 2007)
- Level 3: Intensive Field Assessment
 - Index of Biological Integrity (IBI) for depressional wetlands
 - Validation of Level II and Level I methods

2007 Wetland Quality Survey

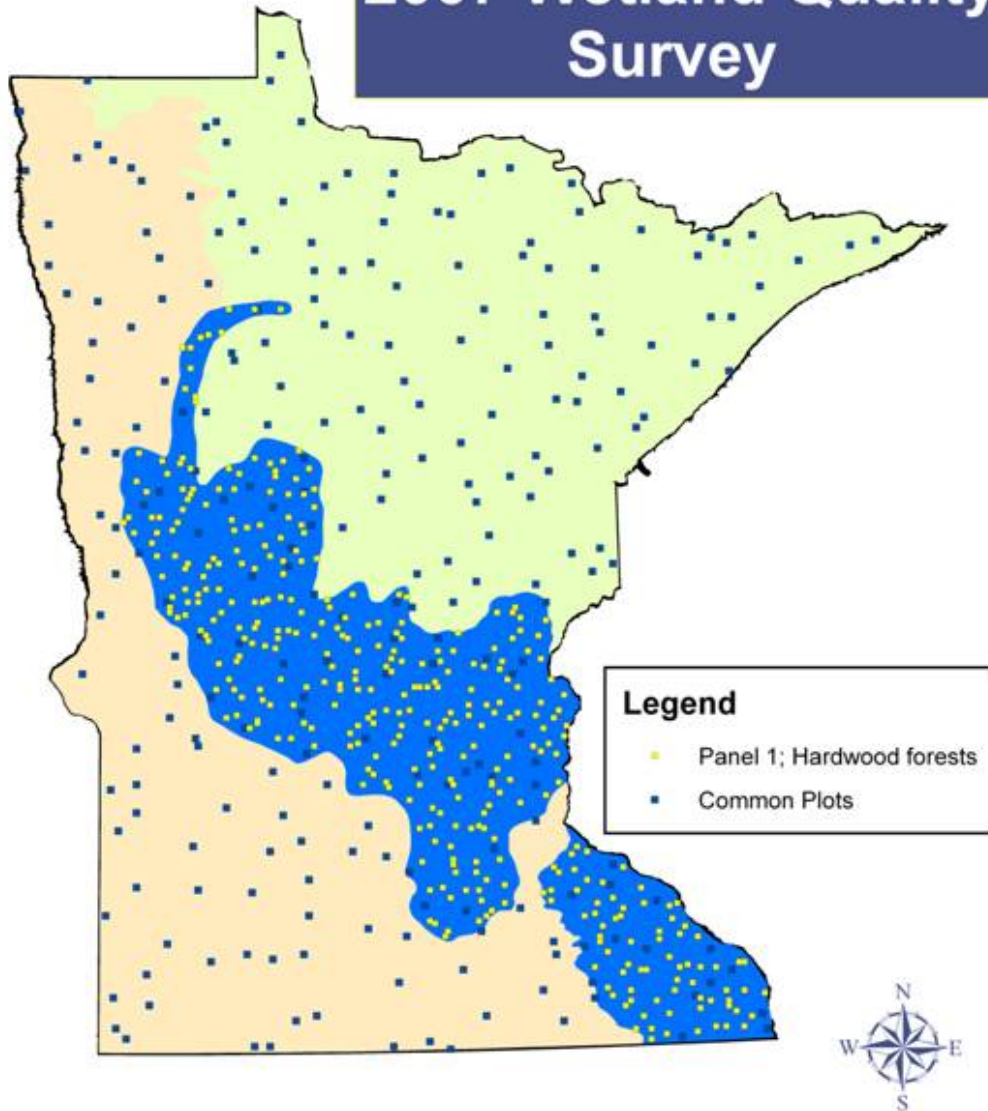


Figure 1

- Central Hardwoods Ecoregion (50 depressional wetlands)

- Rotate “focus” ecoregions in successive years

- 9 wetlands sampled statewide annually to estimate natural variation over time (i.e. changing climate)

- Inferences will be based on depressional Wetlands

- Indicators

- Invertebrate IBI
- Plant IBI
- MnRAM



TOMORROW'S HABITAT

FOR THE
WILD & RARE

AN ACTION PLAN FOR MINNESOTA WILDLIFE



MINNESOTA'S COMPREHENSIVE WILDLIFE CONSERVATION STRATEGY





Focus on Species in Greatest Conservation Need (SGCN)

Definition within *Tomorrow's Habitat*:

Wildlife species whose populations are rare, declining, or vulnerable in Minnesota.

Examples of Minnesota species in greatest conservation need



Heather vole



© MN DNR, Carrol Henderson

Common moorhen



© MN DNR, Carol Hall

Blanding's turtle



© Robert Dana

Dakota skipper

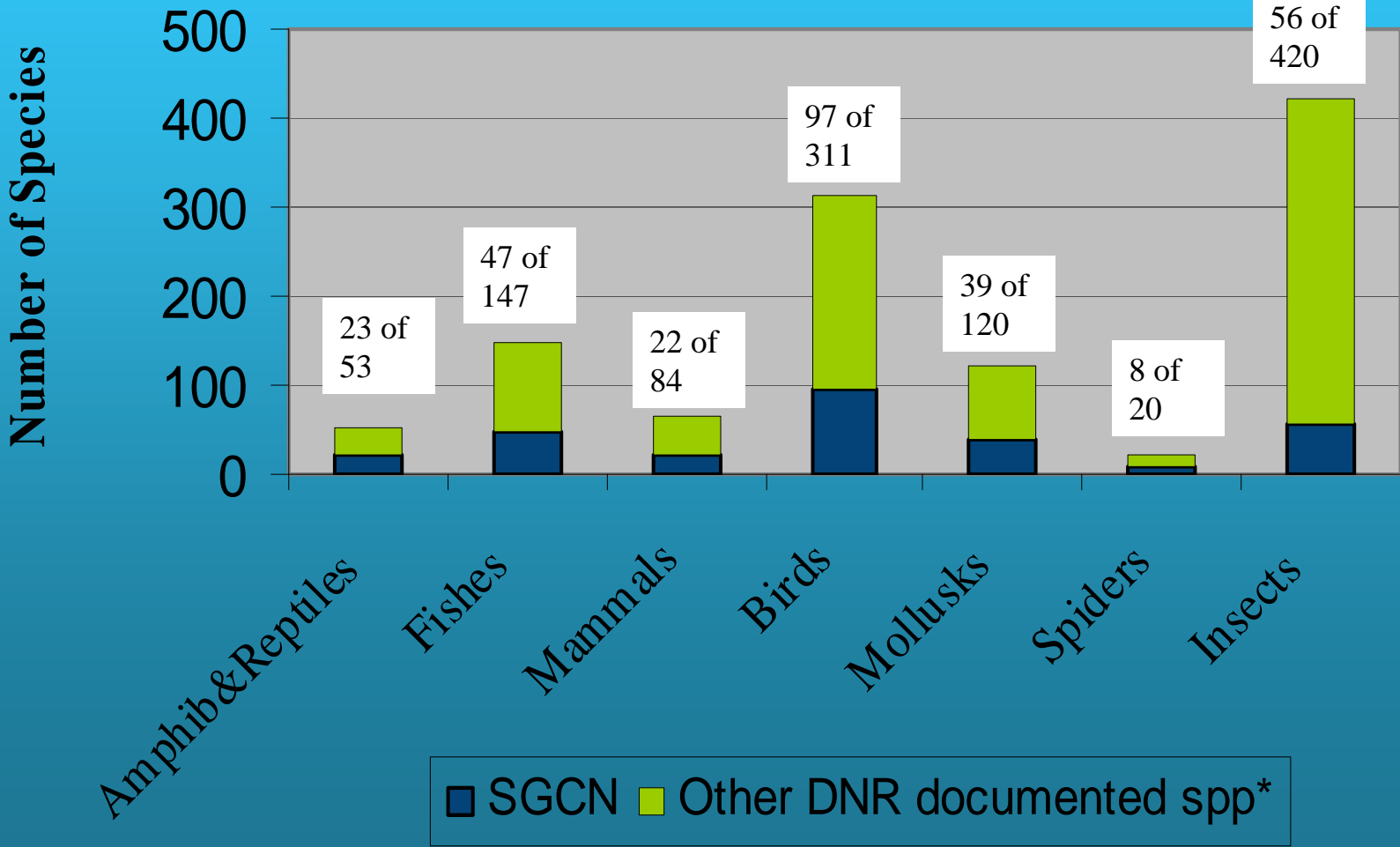


© MN DNR, Carol Hall

Spotted salamander

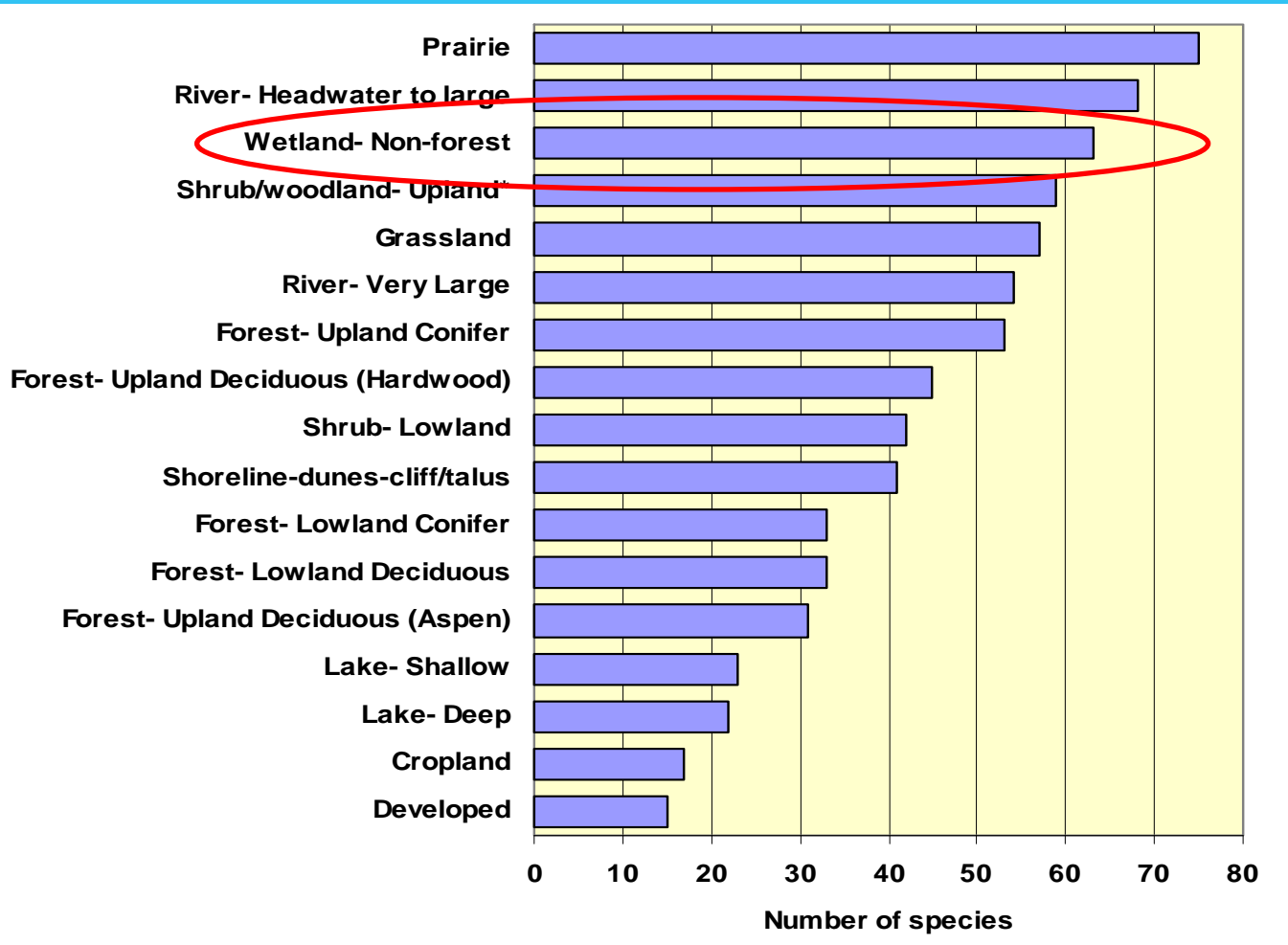


Species in Greatest Conservation Need



SGCN by Habitat

Statewide Summary



SUBSECTION OVERVIEW

The Mississippi River forms the western boundary of the Anoka Sand Plain Subsection. A broad, flat, sandy lake plain dominates the majority of this area and forms the eastern and northern boundaries. Historically, the predominant vegetation was oak savanna and upland prairies surrounded by varied wetland complexes.

This subsection stretches across the northern Twin Cities metropolitan area, including St. Cloud to the west and North Branch to the east, and has the second fastest-growing population in the state. Urban development and agriculture (primarily sod and vegetable crops), which occurs in about one-third of the subsection, has resulted in the loss of prairie and savanna and drainage of peatlands.

SPECIES IN GREATEST CONSERVATION NEED

97 Species in Greatest Conservation Need (SGCN) are known or predicted to occur within the Anoka Sand Plain. These SGCN include 39 species that are federal or state endangered, threatened, or of special concern. The table, SGCN by Taxonomic Group, displays by taxonomic group the number of SGCN that occur in the subsection, as well as the percentage of the total SGCN set represented by each taxon. For example, 8 mammal SGCN are known or predicted to occur in the Anoka Sand Plain, approximately 36% of all mammal SGCN in the state.

SGCN BY TAXONOMIC GROUP

Taxa	# of SGCN	Percentage of SGCN Set by Taxon	Examples of SGCN
Amphibians	1	16.7	Common Mudpuppy
Birds	56	57.7	Eastern meadowlark
Fish	3	6.4	Greater redbhorse
Insects	9	16.1	Uncas skipper
Mammals	8	36.4	American badger
Mollusks	9	23.1	Fawnsfoot
Reptiles	8	47.1	Gopher snake
Spiders	3	37.5	<i>Tutelina formicaria</i>

SPECIES SPOTLIGHT

Blanding's turtle (*Emydoidea blandingii*)
Distribution Found in marshes, ponds, and river bottoms of Central, East-Central, Southeastern, and Southwestern MN, especially where adjacent uplands have sandy soil suitable for nesting.
Abundance Abundant in some localized areas of SE MN, but also regularly encountered in the Anoka Sand Plain and recently found to be more common than previously known along small streams adjacent to prairies and grasslands of SW MN. Reasons for decline include changes due to land use, urban sprawl into former nesting areas, and fragmentation of remaining habitats.
Legal Status State list-Threatened.
Comments Travels up to a mile from wetlands to uplands for nesting, and moves between wetlands throughout the summer, making it vulnerable to road traffic.



Quick facts

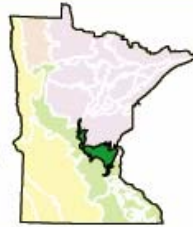
Acres: 1,199,711 (2.2% of state)

Ownership

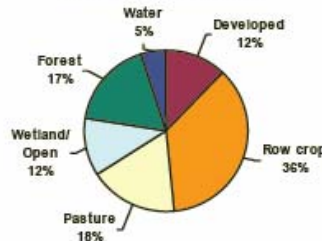
Public	Private	Tribal
9.7%	90.3%	0.0%

Population density (people/sq. mi.)

Current	Change (2000-2010)
627	+103



Current Land Use/Land Cover



HIGHLIGHTS

- This subsection is well-known for sandhill cranes, trumpeter swans, bald eagles, bobolinks, and lark sparrows. Other important species are badgers, Blanding's turtles, and gopher snakes.
- Important habitat features include dry prairie associated with scattered wetlands, rivers, and streams, which provide excellent habitat for Blanding's turtles, both species of hognose snakes, and bullsnakes.
- Some of the best examples of dry oak savanna in the state occur in this subsection.
- Carlos Avery WMA and Sherburne NWR are important stopover sites for migratory birds.

25 Subsection profiles

The subsection profiles are the heart and soul of the MN CWCS

- 6 pages of rich, accessible information:
 - Overview
 - Species found in the subsections
 - Key habitats in the subsections
 - Conservation actions specific to the subsections



Key Habitats

Anoka Sand Plain

KEY HABITATS	ANALYSIS				
	A	B	C	D	E
<u>Oak Savanna</u>	X		X		
<u>Prairie</u>	X	X	X		
<u>Wetland-Nonforest</u>	X	X	*		
<u>Grassland</u>	X				
<u>Shoreline-dunes-cliff/talus (Dune habitat)</u>		X			
<u>Lake-Shallow</u>				X	
<u>River-Headwater to Large</u>					X



Species Problem Analysis

St. Paul Baldwin Plains and Moraines

Problem	Percentage of SGCN in the Subsection for Which This Is a Problem
Habitat Loss in MN	82
Habitat Degradation in MN	87
Habitat Loss/Degradation Outside of MN	31
Invasive Species and Competition	26
Pollution	36
Social Tolerance/Persecution/Exploitation	24
Disease	3
Food Source Limitations	2
Other	12

Priority conservation actions

Examples:

- Enforce the Wetland Conservation Act
- Maintain and enhance riparian areas along priority stream reaches
- Research important aspects of SGCN habitats and populations within the subsection

Ten-Year Goals, Management Challenges, Strategies, and Priority Conservation Actions

Goal I: Stabilize and increase SGCN populations

Management Challenge 1 – There has been significant loss and degradation of SGCN habitat

Strategy 1A – Identify key SGCN habitats and focus management efforts on them

Priority Conservation Actions to Maintain, Enhance, and Protect the Key Habitats

1. **Oak savanna habitats**, actions include:
 - a. Manage invasive species
 - b. Use prescribed fire and other practices to maintain savanna
 - c. Encourage oak savanna restoration efforts
 - d. Provide technical assistance and protection opportunities to interested individuals and organizations
2. **Native prairie habitats**, actions include:
 - a. Manage invasive species
 - b. Use prescribed fire and other practices to maintain prairie
 - c. Manage grasslands adjacent to native prairie to enhance SGCN habitat
 - d. Encourage prairie restoration efforts
 - e. Provide technical assistance and protection opportunities to interested individuals and organizations
3. **Nonforested wetlands**, actions include:
 - a. Enforce the Wetlands Conservation Act
 - b. Manage habitats adjacent to wetlands to enhance SGCN values
 - c. Provide technical assistance and protection opportunities to interested individuals and organizations
4. **High-quality grassland habitats**, actions include:
 - a. Maintain high-quality grasslands
 - b. Support the maintenance of pasture and grassland habitats valuable to SGCN
 - c. Encourage when appropriate transformation of plowed fields into pasture/grasslands
 - d. Provide technical assistance and protection opportunities to interested individuals and organizations
5. **Dune habitats**, actions include:
 - a. Support the protection of dune habitats from damaging development
 - b. Enhance dune habitats to support SGCN
 - c. Provide technical assistance and protection opportunities to interested individuals and organizations
6. **Shallow lake habitats**, actions include:
 - a. Maintain good water quality in shallow lakes
 - b. Enhance near-shore terrestrial and aquatic habitats
 - c. Provide technical assistance and protection opportunities to interested individuals and organizations
7. **Stream habitats**, actions include:
 - a. Maintain good water quality, hydrology, geomorphology, and connectivity in priority stream reaches
 - b. Maintain and enhance riparian areas along priority stream reaches
 - c. Provide technical assistance and protection opportunities to interested individuals and organizations

Management Challenge 2 – Some SGCN populations require specific management actions

Strategy 1B – Manage federal and state listed species effectively

Priority Conservation Actions for Specific SGCN

1. Implement existing federal recovery plans
2. Develop and implement additional recovery plans
3. Provide technical assistance to managers, officials, and interested individuals related to listed species
4. Enforce federal and state endangered species laws, as well as other wildlife laws and regulations

Strategy 1C – Manage emerging issues affecting specific SGCN populations

Priority Conservation Actions for Specific SGCN

1. Work with partners to effectively address emerging issues affecting SGCN populations
2. Enforce federal and state wildlife laws and regulations



Implementation Goals & Strategies

- Goal 1: Stabilize and increase SGCN populations
- Goal 2: Improve knowledge about SGCNs
 - Strategy 2C: Monitor long-term changes in SGCN populations and habitats
- Goal 3: Enhance people's appreciation and enjoyment of SGCNs



Monitoring Approach for *Tomorrow's Habitat*

Focus on Key Habitats:

- Prairies, surrogate grasslands, savannas
- Key river reaches
- Lakeshores
- Wetlands
- Upland & lowland coniferous forest

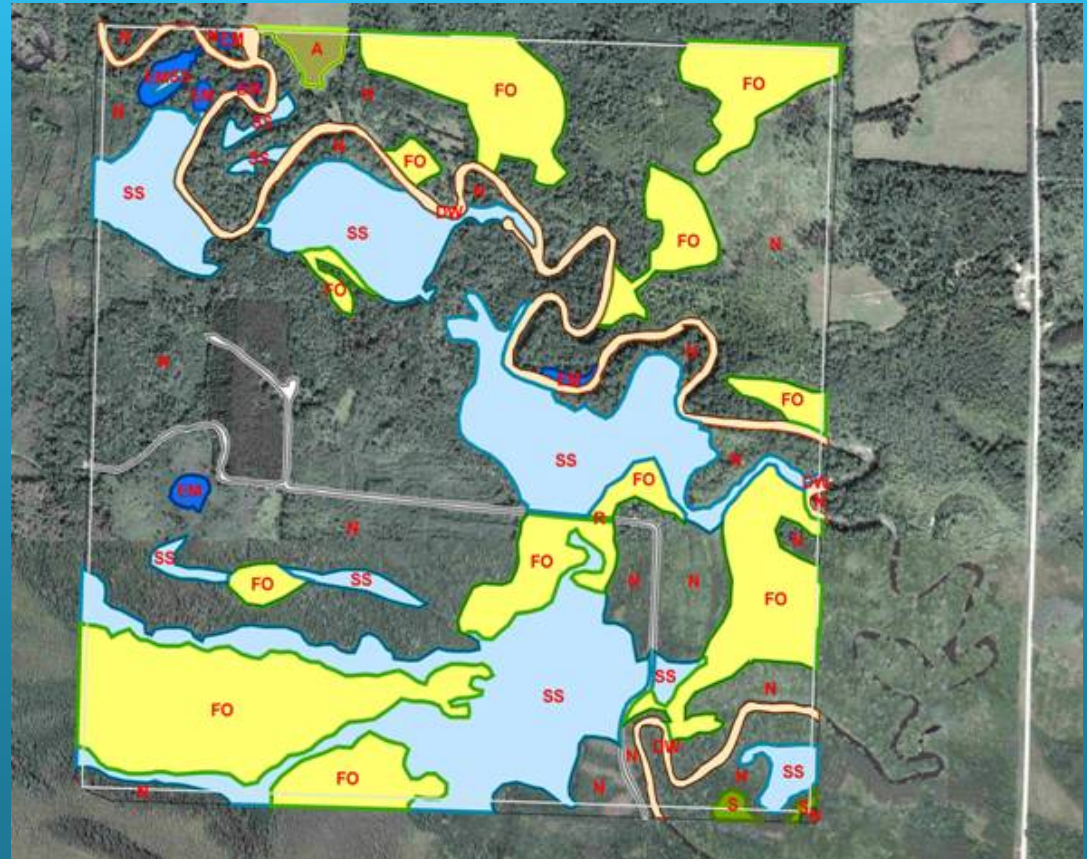


- Amount
- Quality
- Associated species in greatest conservation need

Integrated Monitoring: Wetlands and Wildlife Action Plan



- Habitat trends (quantity & quality)
- Wildlife population surveys
- Other??



Integrated Monitoring: Wetlands and Wildlife Action Plan



Focal species monitoring:



Frog & Toad
Survey

Dragonfly Survey



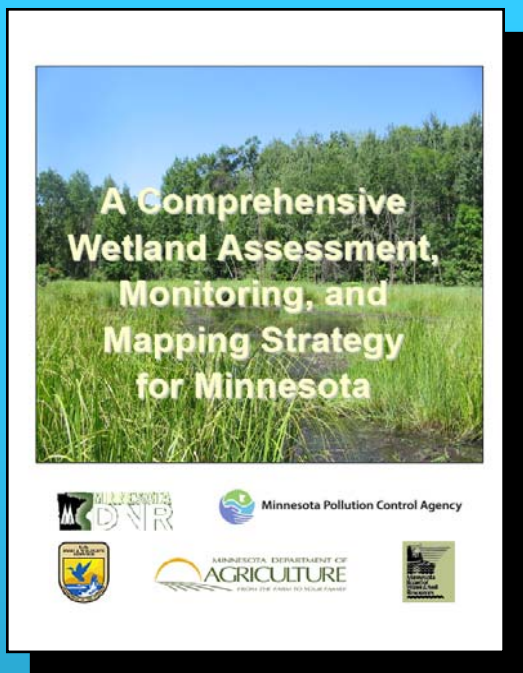
Breeding Bird
Survey



Integrated Monitoring: Wetlands and Wildlife Action Plan

Focal species monitoring: tied to drivers of change, e.g. habitat conversion, climate change

- **Dispersal limited** - e.g. Blanding's turtle
- **Area dependent** - e.g. cerulean warbler
- **Habitat structure dependent** - e.g. northern goshawk nesting and foraging sites in living cavity trees
- **Disturbance dependent** - e.g. Karner blue butterfly and fire
- **Native plant community dependent** - e.g. marbled godwit (prairie and semi-permanent/seasonal wetlands)
- **Species dependent** - e.g. phlox moth and phlox
- **Chemically sensitive** - e.g. Powesheik skipper?



http://www.dnr.state.mn.us/ecological_services/wetlands.html

Contacts:

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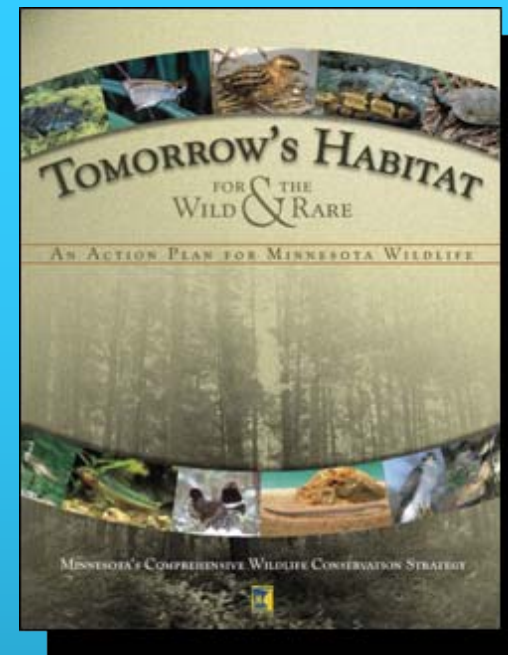
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<http://www.dnr.state.mn.us/cwcs/index.html>

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