MN State Wildlife Action Plan

& other Ecological Topics

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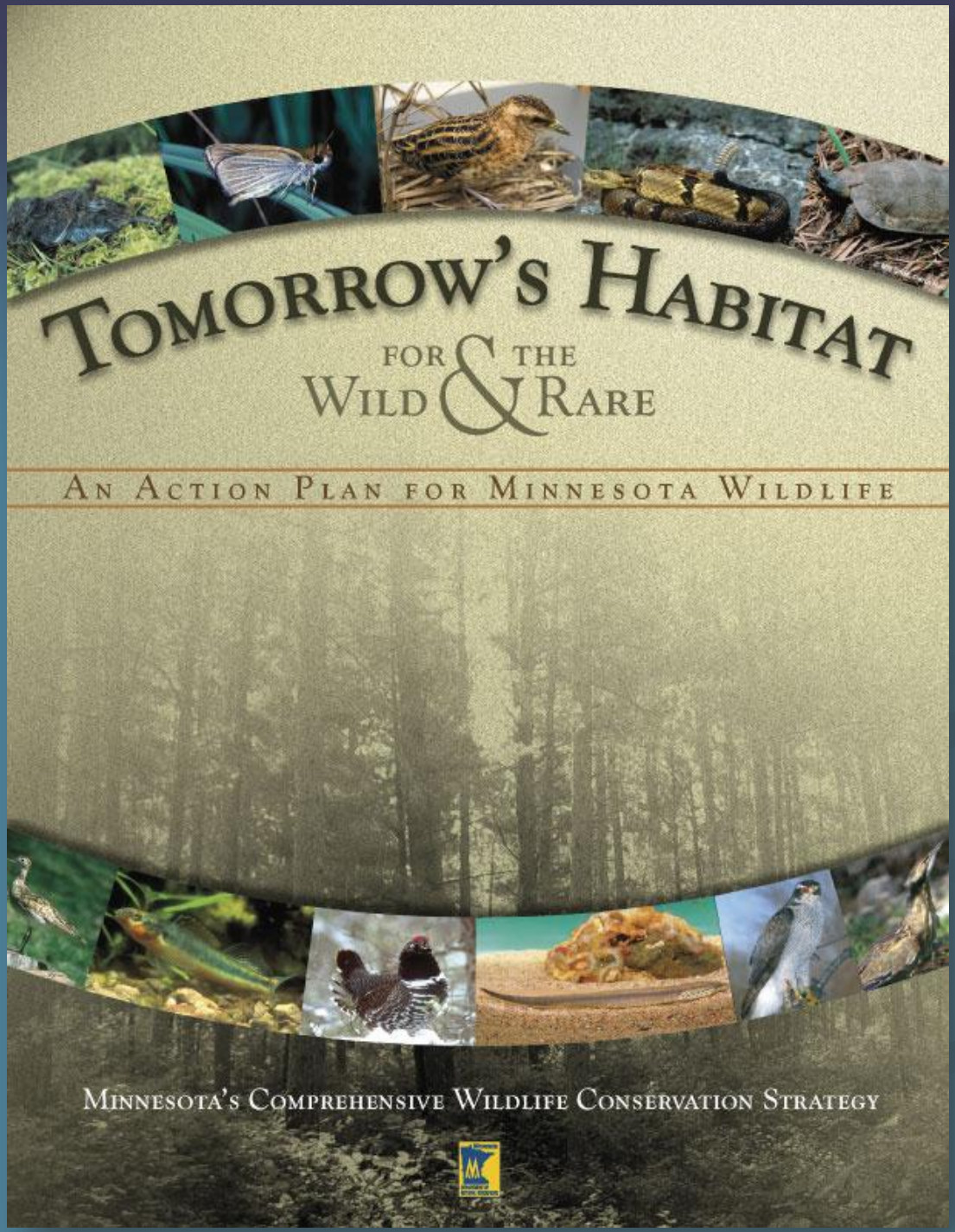
MFRC NE Landscape Plan Revision Committee

June 12, 2002


TOMORROW'S HABITAT
FOR THE WILD & RARE
AN ACTION PLAN FOR MINNESOTA WILDLIFE
MINNESOTA'S COMPREHENSIVE WILDLIFE CONSERVATION STRATEGY

State Wildlife Action Plan Background

- In 2002 Congress established the State Wildlife Grants (SWG) program to help states address the unmet needs of wildlife.

- To participate in the SWG program states were required to develop a comprehensive wildlife plan that considered all wildlife species in the state in relationship to their conservation need(s).

- Minnesota's plan (Tomorrow's Habitat for the Wild and Rare) was completed in September 2005 and approved by the U.S. Fish and Wildlife Service; this plan is also referred to as the State Wildlife Action Plan (SWAP).

- Approval of the plan allows MN to participate in the SWG program, which has provided about $1.1 million/yr to implement the plan in MN

Species in Greatest Conservation Need (SGCN)

- Definition: Wildlife species whose populations are rare, declining, or vulnerable in Minnesota.
- Slang: Siggen
- 292 of MN's 1,200 wildlife species assessed met the definition.
- About ½ of MN SGCN are state-listed species.

Plan Goals and Strategies

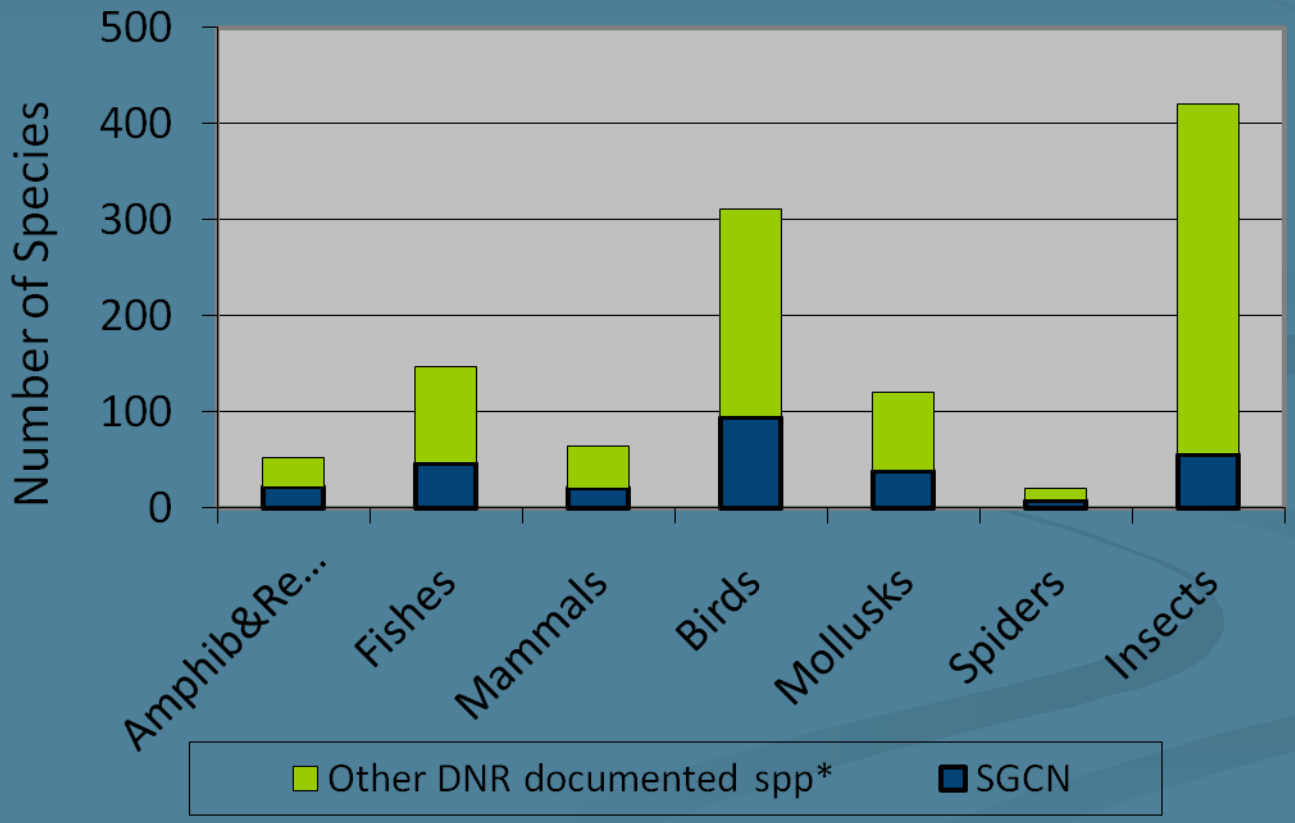
I. Stabilize and increase SGCN populations
   - Example: Identify key SGCN habitats and focus management efforts on them

II. Improve knowledge about SGCN populations
   - Example: Survey SGCN populations and habitats
   - Monitor long-term changes in SGCN populations and habitats

III. Enhance people's appreciation and enjoyment of SGCN
   - Example: field workshops

Minnesota's Species in Greatest Conservation Need

292/~1200 species



Species characteristics that may result in rarity

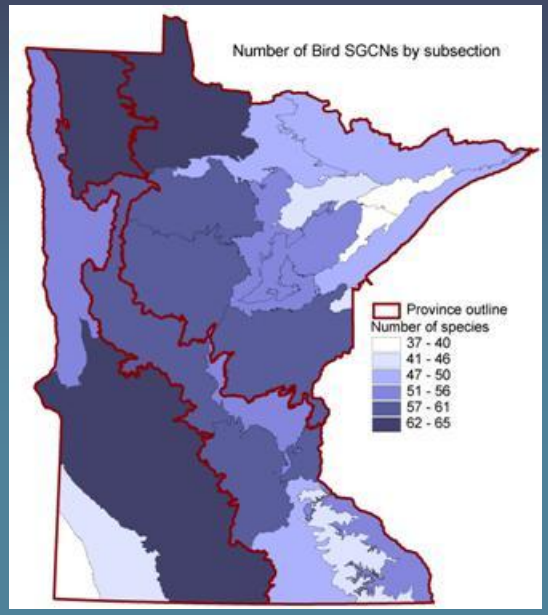
- Large home ranges/NPC landscapes
- Need unique, rare, isolated resources
- Dependent on ecosystem processes that no longer operate within RNV (e.g. fire).
- Low dispersal ability or low reproductive rate/success
- Highly localized or restricted distribution (endemics, relics)
- Concentrate their populations at very specific times of year (migratory stop-overs, bat hibernacula)

Species Problem Assessment - Stressors

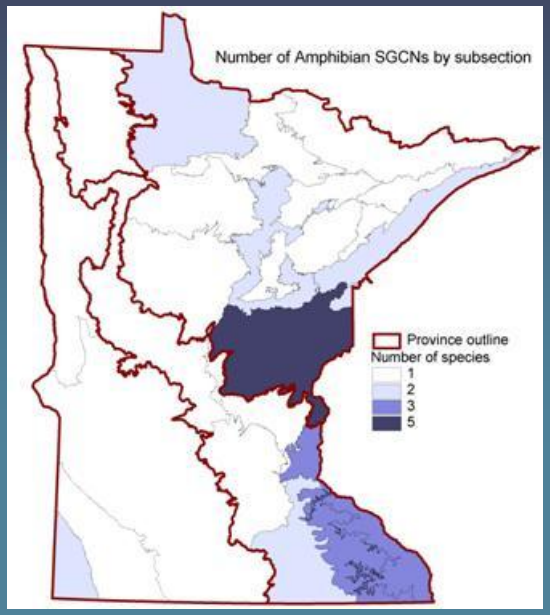
Problem	% of SGCN for which this is a problem
Habitat Loss in MN	76
Habitat Degradation in MN	83
Habitat Loss/Degradation Outside of MN	24
Invasive Species and Competition	24
Pollution	32
Social Tolerance/Persecution/Exploitation	21
Disease	3
Food Source Limitations	3
Other	18

Table 5.1, Page 60 of Tomorrow's Habitat

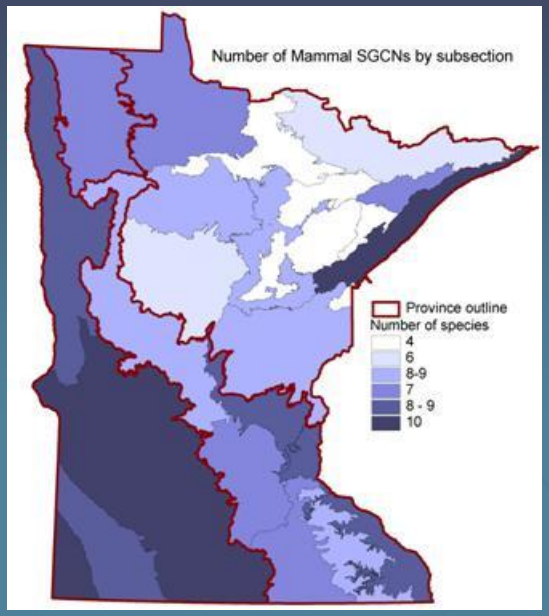
Birds



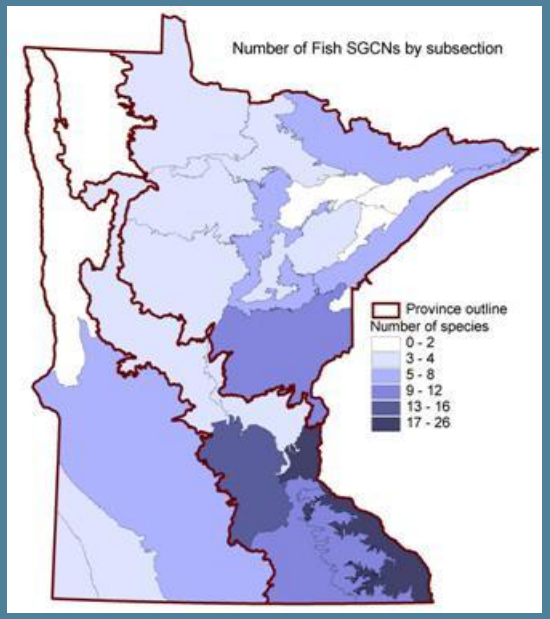
Amphibians



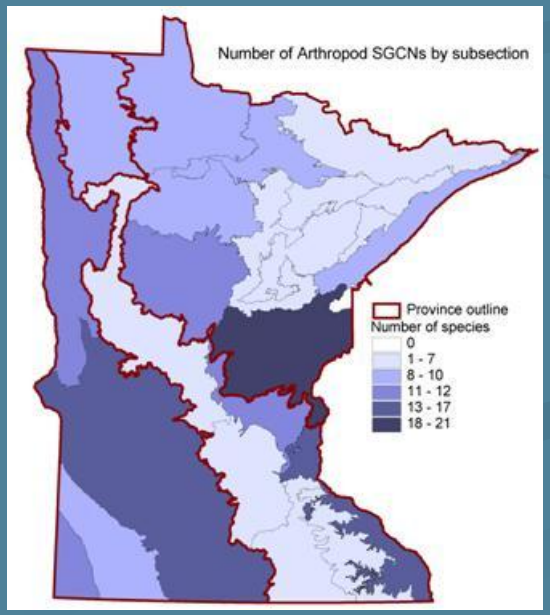
Mammals



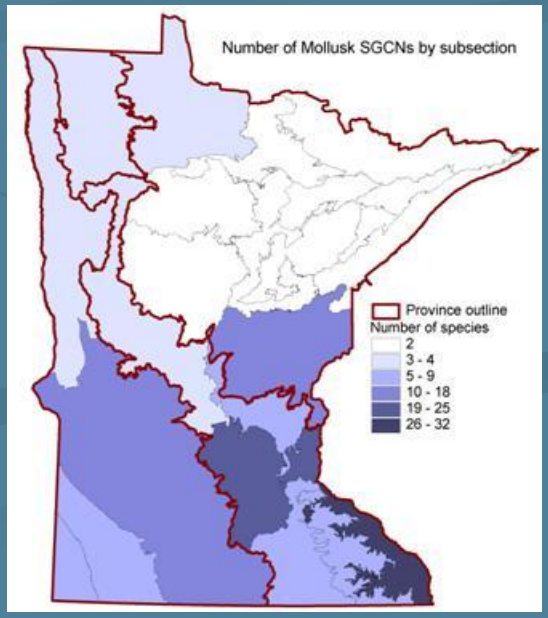
Fish



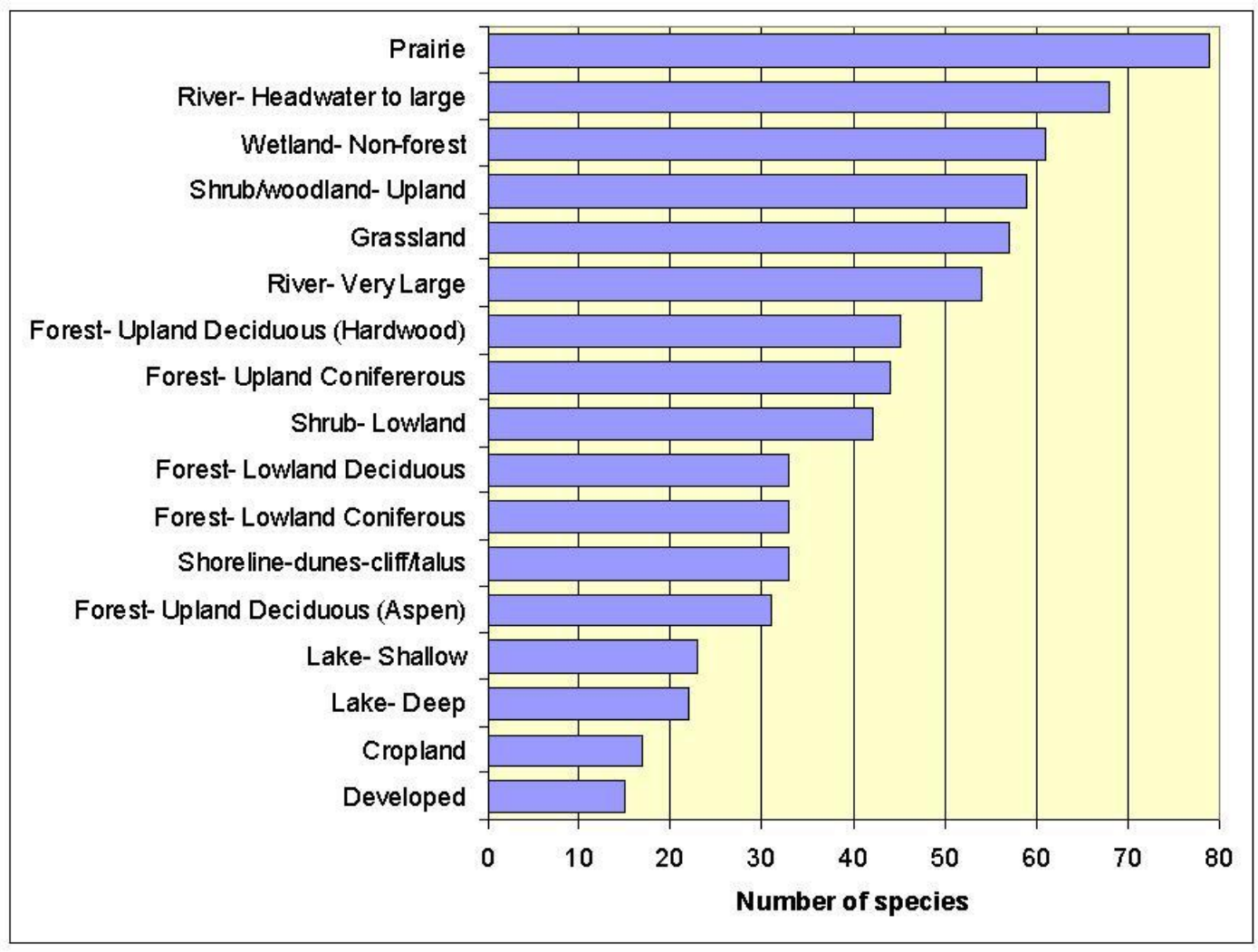
Arthropods



Mollusks



SGCN by Habitat statewide summary



SGCNs associated with many habitats
Some Habitats are "Key Habitats for SGCNs"

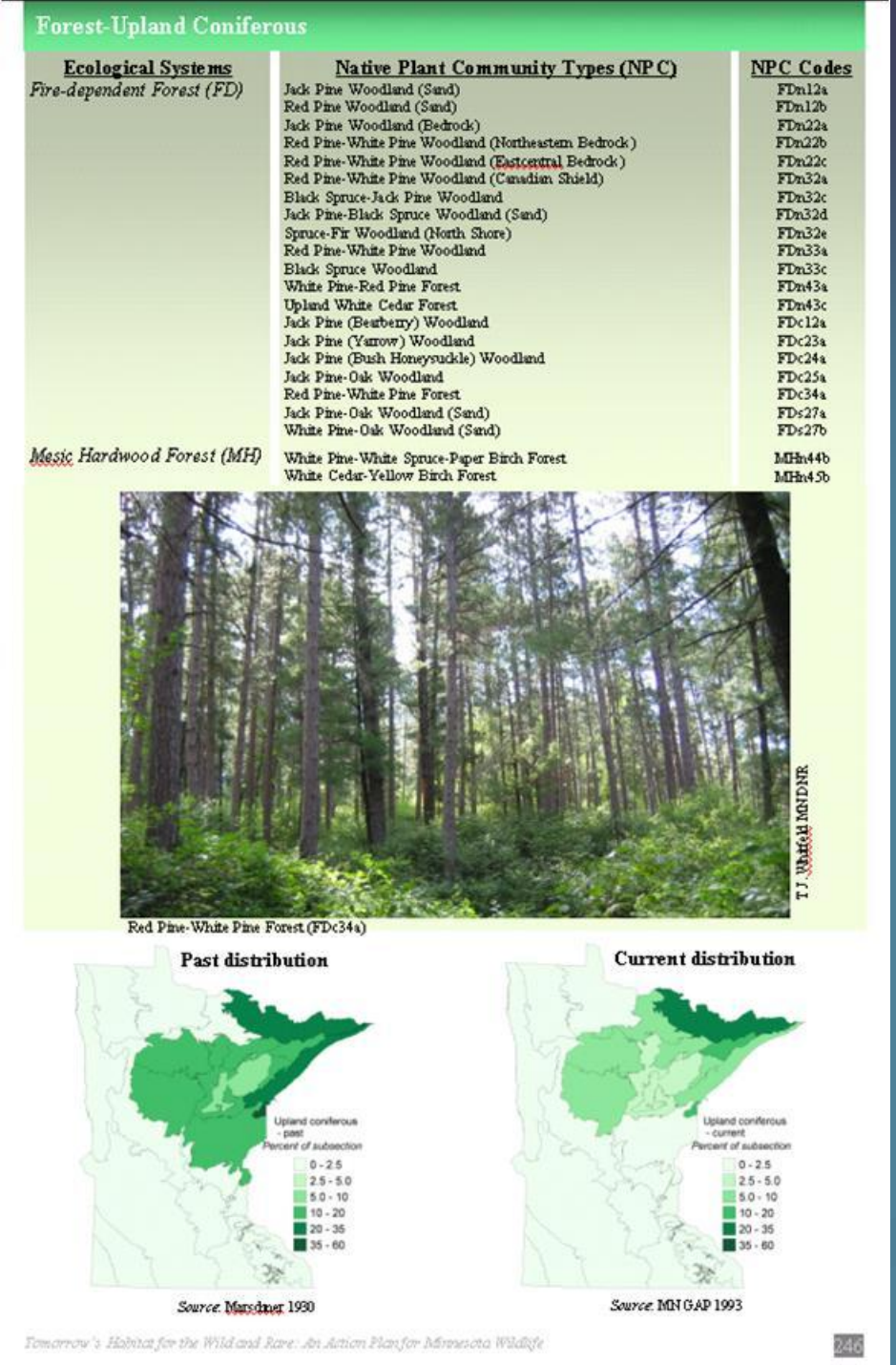
A. Terrestrial habitats used by the most SGCNs in a subsection

B. Specialist terrestrial habitat use - habitats in which 20% or more of the species are specialists (use 1 or 2 habitats)

C. Terrestrial habitat change - habitats that have declined by more than 50%

D. Aquatic habitat use - subsections with lakes or streams that have the most SGCN use of all subsections

E. Identification of key river reaches - stream reaches within TNC Areas of Biodiversity Significance and/or have significant fish and mollusk occurrences



Key Habitat Chapters

Features:

- Crosswalk to the Native Plant Community classification
- Maps of past and current distribution
- General description
- Examples of features important to SGCN
- Management applications

Subsection Profiles

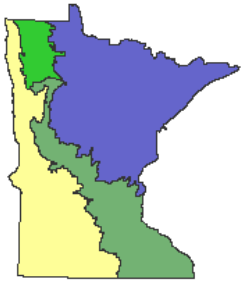
- *Subsection overviews*
- *Information on SGCN*
- *Subsection highlights*
- *SGCN by township*
- *Species problem analysis*
- *Key habitats important to SGCN*
- *Priority conservation actions*

Tomorrow's Habitat for the Wild and Rare
Action Plan Overview PDF
Action Plan PDF
SGCN List PDF
Subsection Profiles
Key Habitat Descriptions
Action Plan Homepage

Province and Subsection Profiles

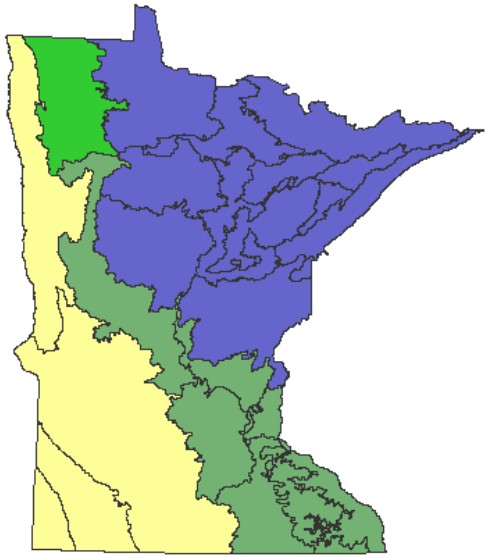
Province Profiles

Laurentian Mixed Forest Province (212)
go



Subsection Profiles

North Shore Highlands (212Lb)
go



Tomorrow's Habitat for the Wild & the Rare

An Action Plan for Minnesota Wildlife

North Shore Highlands

Subsection Profile

Minnesota's Comprehensive Wildlife Conservation Strategy

Minnesota Department of Natural Resources

North Shore Highlands

SUBSECTION OVERVIEW

The North Shore Highlands Subsection is a narrow strip 20 to 25 miles wide that follows the shoreline of Lake Superior from Duluth to the eastern tip of Minnesota. Lake Superior dominates the area and moderates its climate. The terrain varies from gently rolling hills to steep cliffs. There are 20 lakes larger than 160 acres in size. Numerous short streams, 10 to 15 miles in length, run from the highland to the shore of Lake Superior, most ending in waterfalls near the shoreline. A mosaic of forest habitats stretches across this landscape, heavily influenced by aspen-birch, with minor amounts of white and red pine, mixed hardwood-pine, and conifer bogs and swamp.

Recreation, tourism, and forestry are the predominant land uses in this subsection. There is tremendous development pressure along the highly environmentally sensitive Lake Superior shoreline, and second-tier development beyond the shoreline looks to be the next significant growth area. The North Shore Highlands is host to the popular North Shore State Trail, which is a major snowmobile destination. Parts of this trail are currently being considered for possible summer season ATV use, as are other areas along the shore. Much of the white pine-red pine forests have been logged and replaced with quaking aspen-paper birch. This subsection contains significant old-growth northern hardwood and upland northern white cedar forest. The subsection also contains the highest density of designated trout streams in Minnesota. The source of water for most of these streams is surface runoff.

Quick facts

Acres: 1,481,891 (2.7% of state)

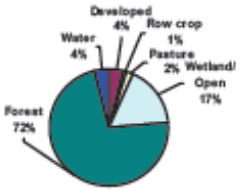
Ownership

Public	Private	Tribal
53.1%	43.1%	3.8%

Population density (people/sq. mi.)

Current	Change (2000-2010)
56	+2.8

Current Land Use/Land Cover



SPECIES IN GREATEST CONSERVATION NEED

84 Species in Greatest Conservation Need (SGCN) are known or predicted to occur within the North Shore Highlands. These SGCN include 25 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, 10 mammal SGCN are known or predicted to occur in the North Shore Highlands, approximately 46% of all mammal SGCN in the state.

SGCN BY TAXONOMIC GROUP

Taxa	# of SGCN	Percentage of SGCN Set by Taxon	Examples of SGCN
Amphibians	2	33.3	Eastern red-backed salamander
Birds	50	51.5	Black-throated blue warbler
Fish	8	17.0	Lake chub
Insects	9	16.1	Extra-striped snaketail dragonfly
Mammals	10	45.5	Canada lynx
Mollusks	2	5.1	Black Sandshell
Reptiles	3	17.6	Wood turtle
Spiders	0	0	NA

HIGHLIGHTS

- The North Shore Highlands and associated waters of Lake Superior are home to bald eagles, peregrine falcons, common terns, Franklin's ground squirrels, Connecticut warblers, boreal owls, merlins, common ravens, northern myotis, deepwater sculpin, and kiyi.
- This is one of the most important and visible migratory corridors for songbirds and raptors in the entire Midwest as birds pass along the North Shore and over Hawk Ridge every fall.
- Rivers and associated forests within this subsection provide important habitat for wood turtles.
- Areas important for SGCN include Cloquet Valley, Finland, Pat Bayle, and Grand Portage SFs; and many SPs and SNAs along the North Shore of Lake Superior.

SPECIES SPOTLIGHT

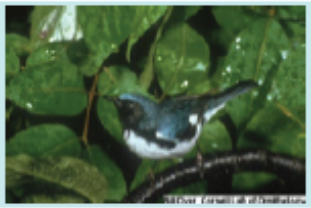
Black-throated blue warbler ***(Dendroica caerulescens)***

Distribution Limited to selected areas of hardwood and mixed hardwood-coniferous forests of northeastern Minnesota.

Abundance Rare, and limited to specific habitat areas of northeastern Minnesota, particularly along the North Shore of Lake Superior at Tettegouche State Park.

Legal Status Federally protected migratory bird.

Comments Population considered stable, but more assessment needed to determine long-term trends.



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SPECIES SPOTLIGHT

of key rivers/streams in Appendix I. For a more detailed explanation of the five analyses used, see Chapter 7, Methods and Analyses.

	ANALYSIS				
KEY HABITATS	A	B	C	D	E
Forest-Upland Coniferous (Red-white pine)	X	X	X		
Forest-Lowland Coniferous		X			
Shoreline-dunes-cliff/talus		X			
Lake-Deep				X	
River-Headwater to Large					X

Description of Analyses

A: Terrestrial habitat use analysis - terrestrial habitats that represent more than 5% of 1890s or 1990s landcover and are modeled to have the most SGCN using them based on a z-test with $p<0.01$.

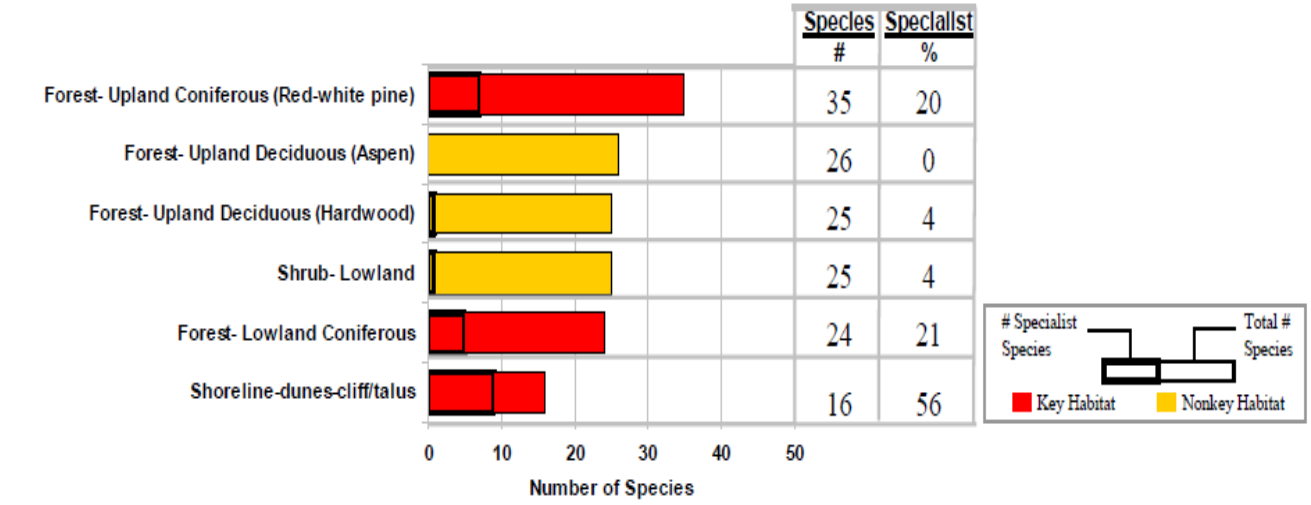
B: Specialist terrestrial habitat use analysis - terrestrial habitats that represent more than 5% of 1890s or 1990s landcover and have more than 15 species, 20% of which use 2 or fewer habitats (specialist species).

C: Terrestrial habitat change analysis - terrestrial habitats that represent more than 5% of the 1890s landcover and have declined by more than 50% in the 1990s landcover. For wetlands this change was based on an analysis done by Anderson & Craig in *Growing Energy Crops on Minnesota's Wetlands: The Land Use Perspective* (1984).

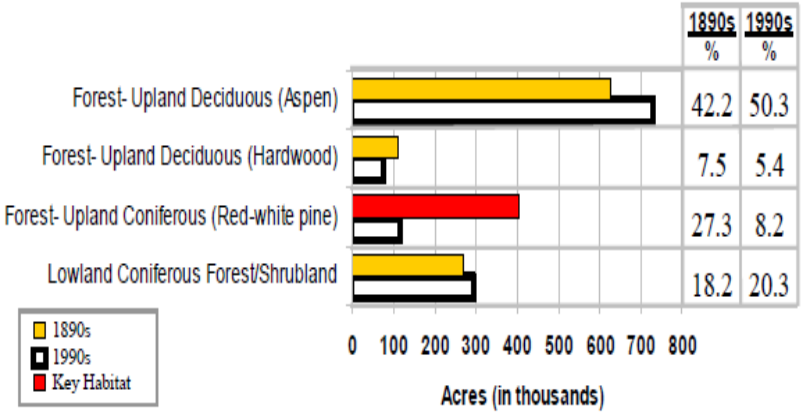
D: Aquatic habitat use analysis - lake or stream habitats that have the most SGCN use based on a z-test with $p<0.01$ of all subsections.

E: The Nature Conservancy/SGCN occurrence analysis - stream reaches identified in the Areas of Aquatic Biodiversity Significance in the four TNC Ecoregional Assessments and reaches with high SGCN occurrences (see Appendix I for list of stream reaches).

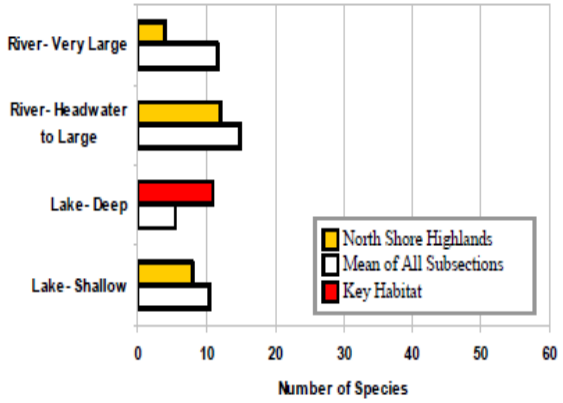
A/B – Terrestrial Habitat Use/Specialist Terrestrial Habitat Use



C – Terrestrial Habitat Change



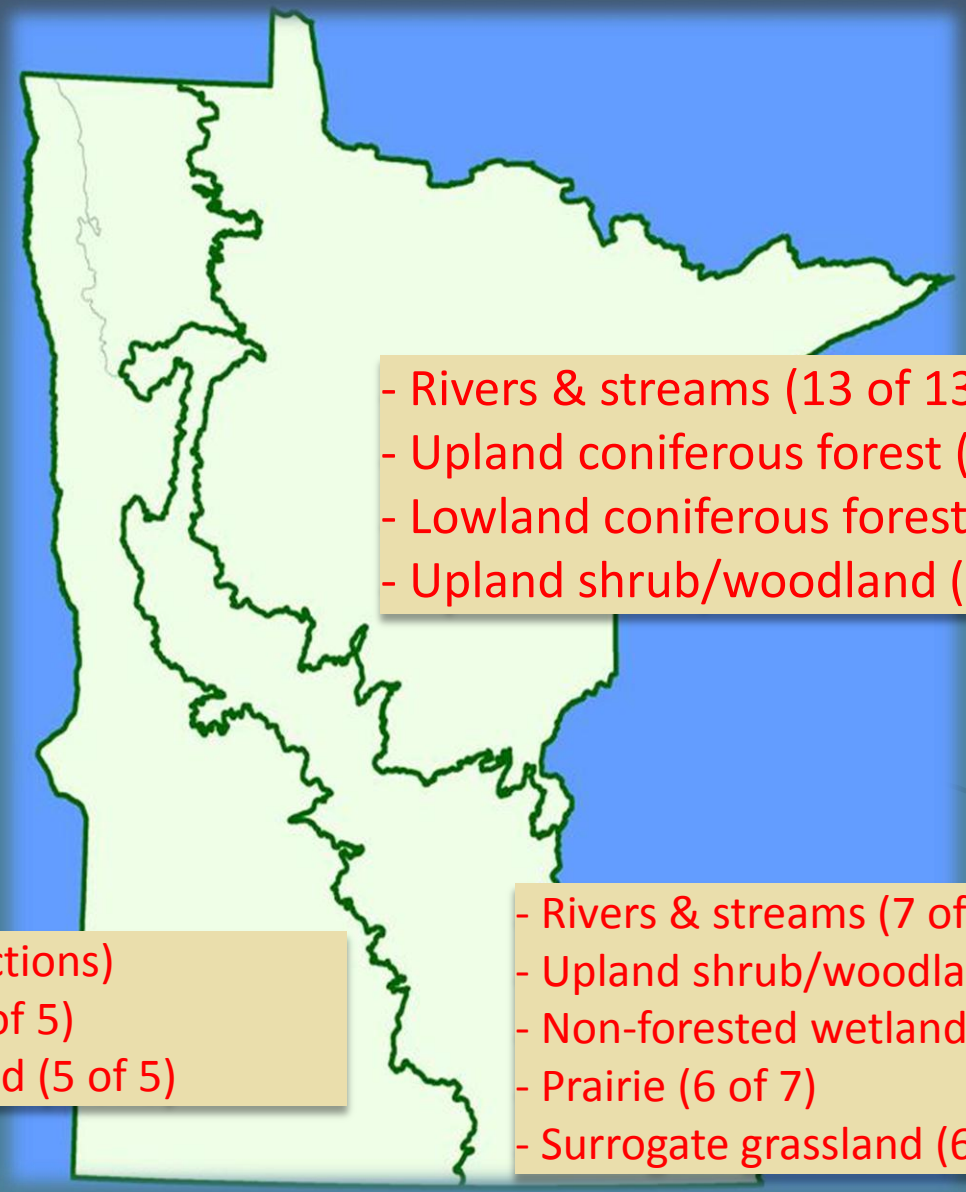
D – Aquatic Habitat Use



E – The Nature Conservancy/SGCN Occurrence

To reference the key rivers and streams for the subsection, see Appendix I.

Top Key Habitats by Province



- Rivers & streams (13 of 13 subsections)
- Upland coniferous forest (12 of 13)
- Lowland coniferous forest (10 of 13)
- Upland shrub/woodland (6 of 13)

- Prairie (5 of 5 subsections)
- Rivers & streams (5 of 5)
- Non-forested wetland (5 of 5)

- Rivers & streams (7 of 7 subsections)
- Upland shrub/woodland (7 of 7)
- Non-forested wetland (7 of 7)
- Prairie (6 of 7)
- Surrogate grassland (6 of 7)

Online link to the State Wildlife Action Plan:

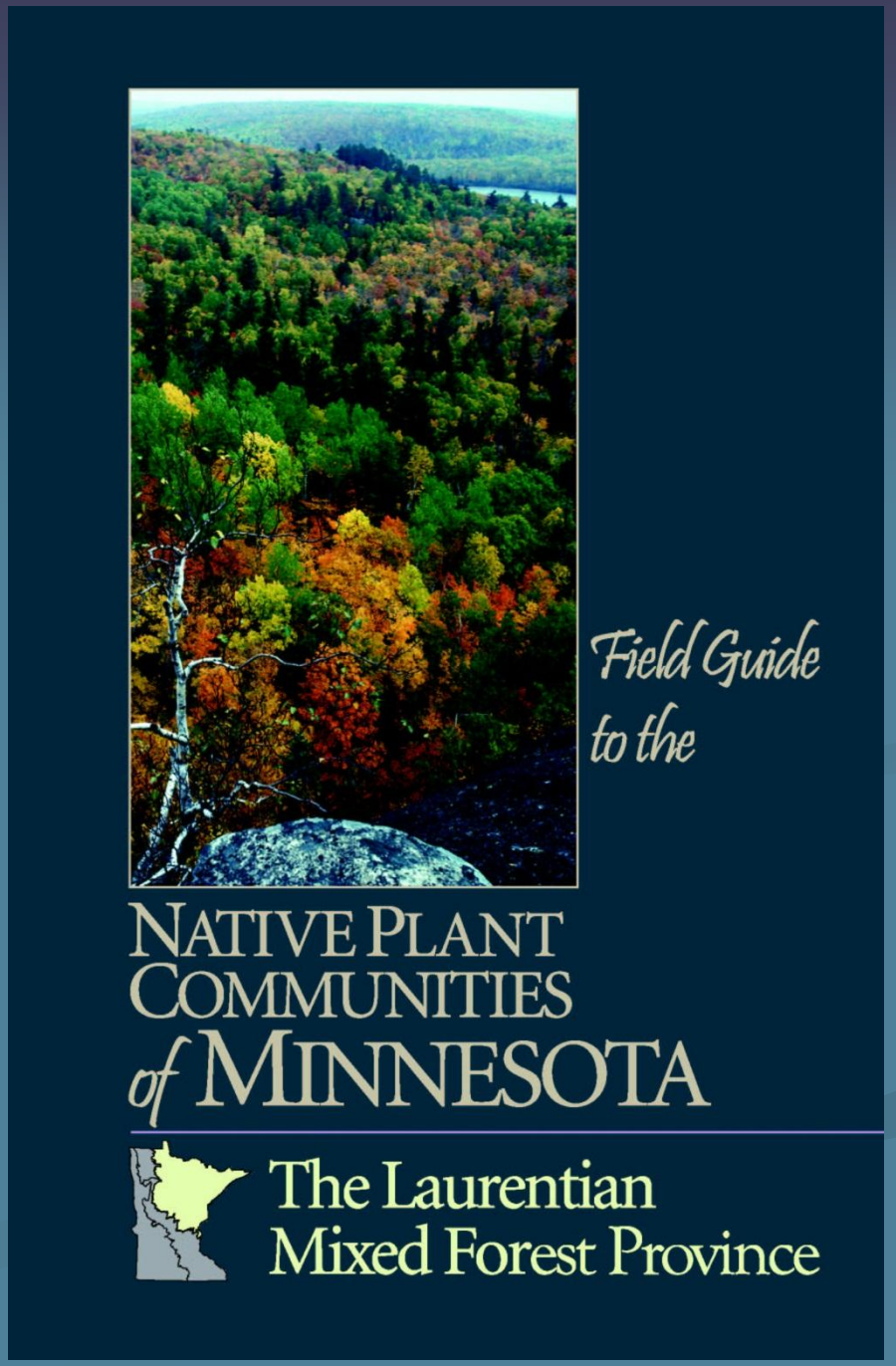
www.mndnr.gov/cwcs

Minnesota
DEPARTMENT OF
NATURAL RESOURCES

Minnesota
DEPARTMENT OF
NATURAL RESOURCES

Key to the Native Plant Communities

A field guide for everyone and a reference tool for resource managers



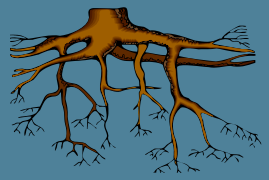
Connecting Plant Communities and Silviculture

Disturbance Regime

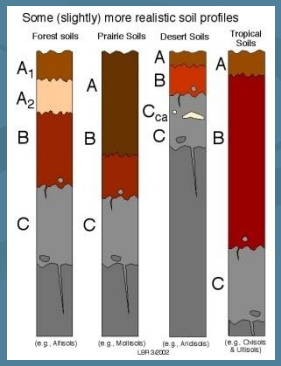
ECS Tree Table

ECS Tree Replacement Table

Autecology Table



Soils and Operability



Minnesota Department of Natural Resources

Multiple Pathways

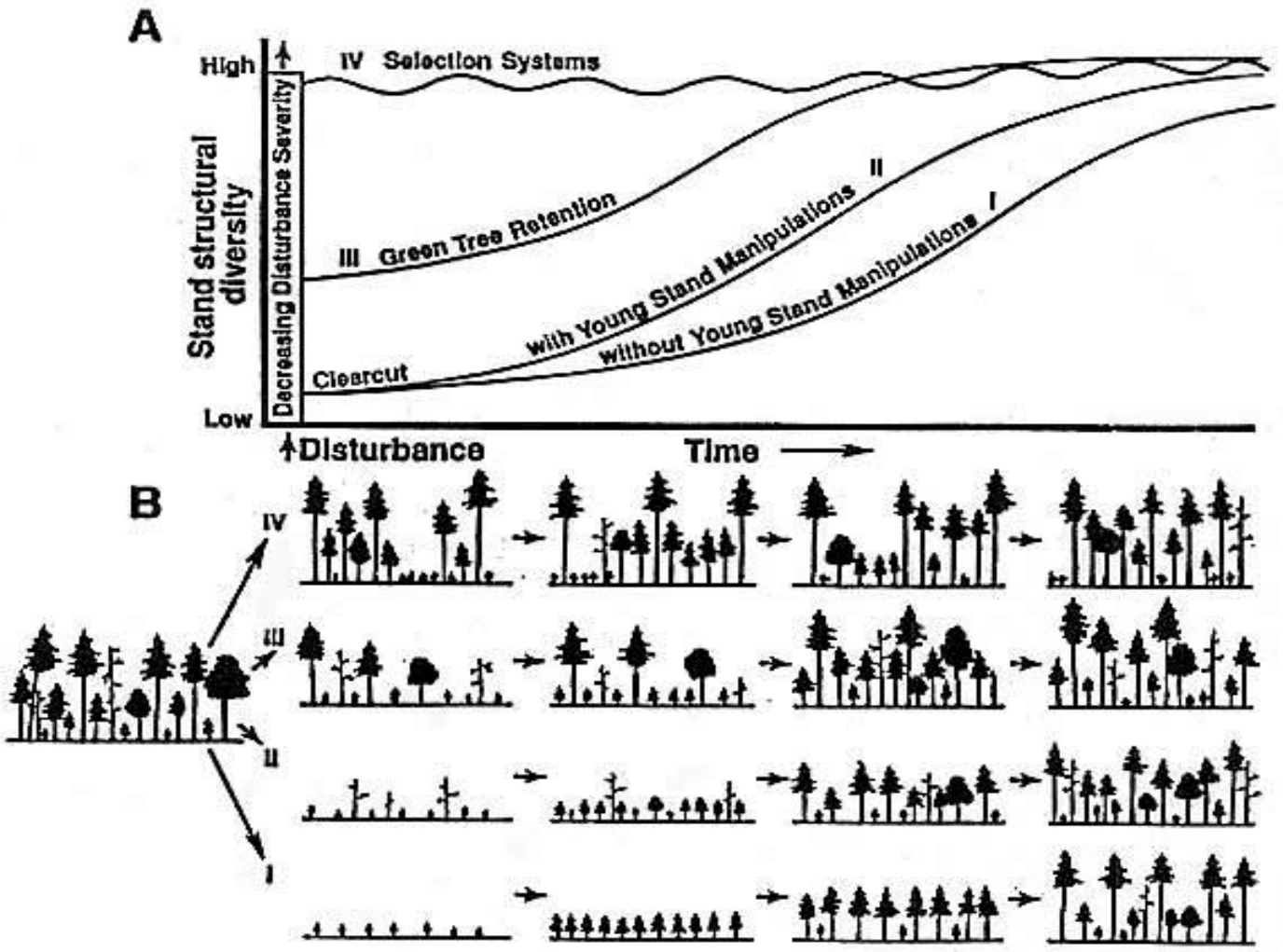
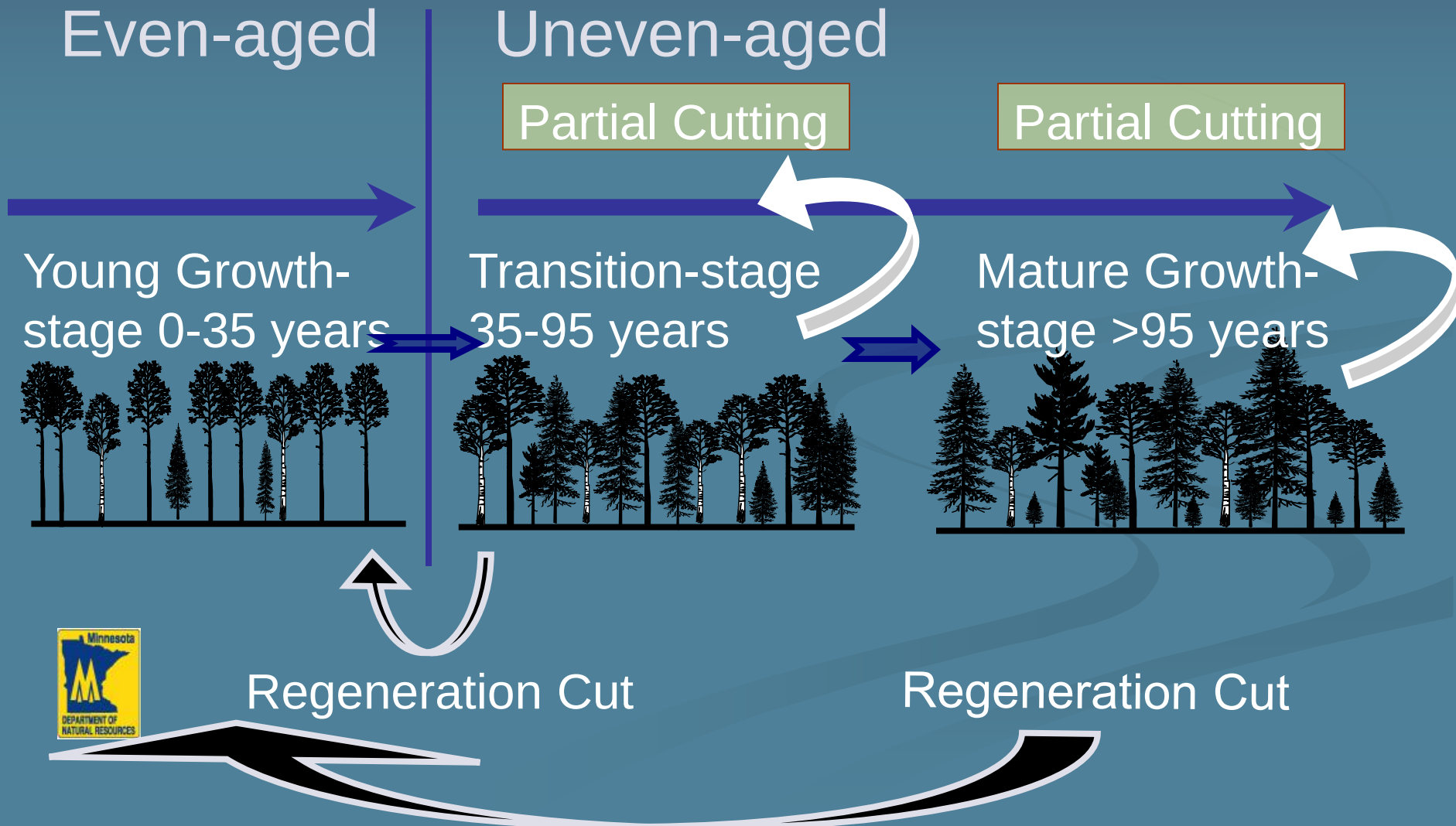
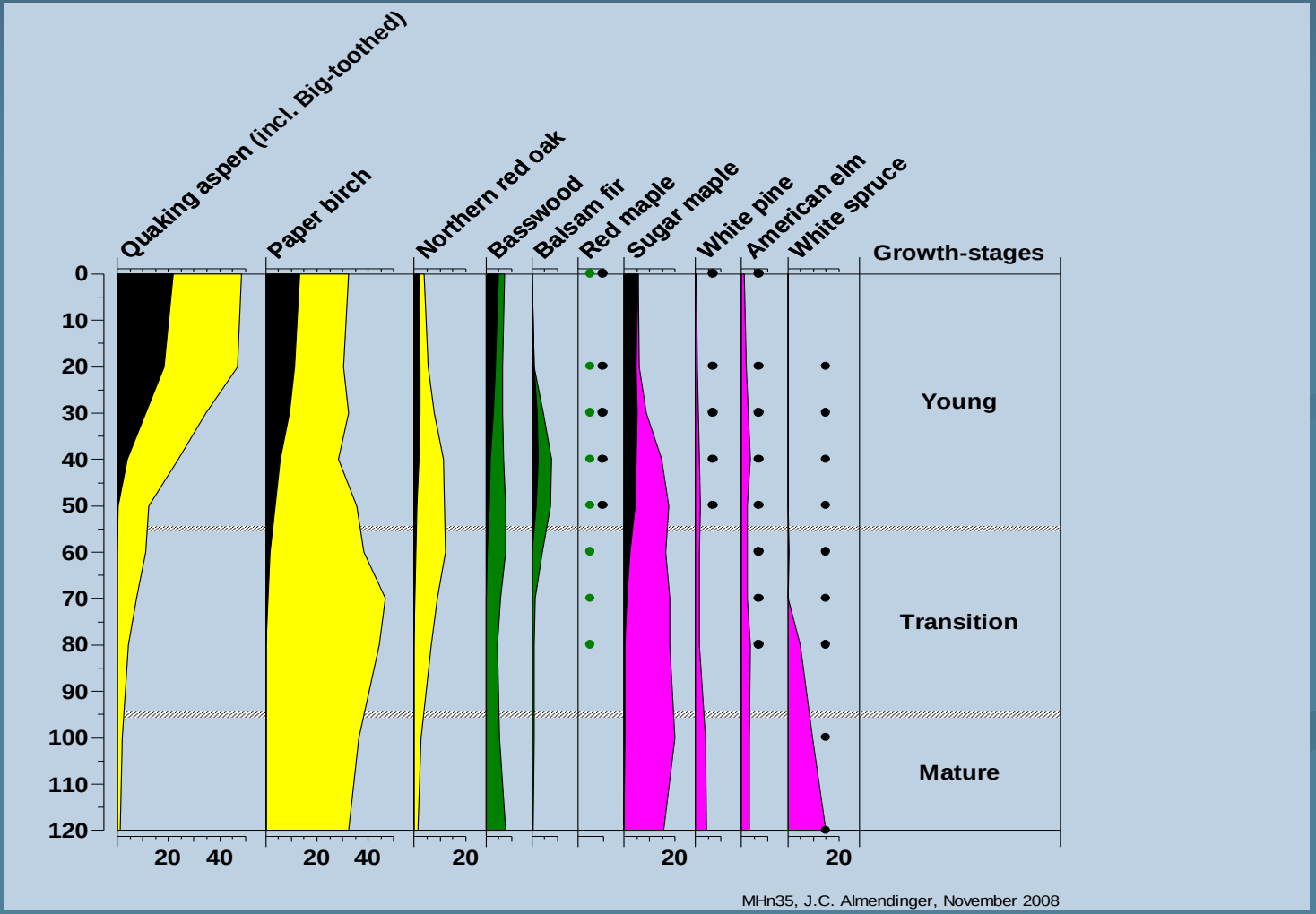


Figure 1. Alternative methods (A) (I–IV) to produce structurally diverse stands (B) that contain individual old-growth features or imitate the structure of natural old-growth stands.

MHn44 – Northern Wet-mesic Boreal Hardwood Forest



Connecting Plant Communities and Silviculture



Connecting Plant Communities and Silviculture

Grouped by ecological system and Floristic Region

Suitability Index

- **Green:** excellent
- **Blue:** good
- **Yellow:** fair
- **Shaded:** poor
- **White:** not suited

Trees ranked by competitive ability within NPC Class

Importance of Tree Species by Native Plant Community *Upland Forests*

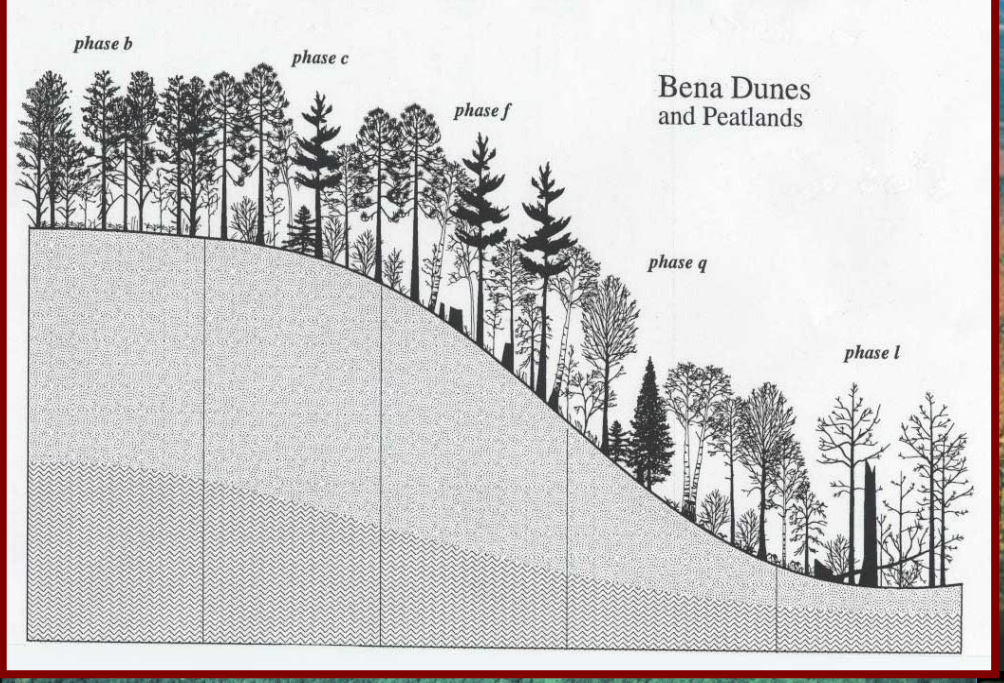
Ecological System	Fire Dependent Forests & Woodlands																	Mesic Hardwood Forests															
Floristic Region	Northern					NW			Central					Southern				Northern					NW	Central					Southern			
Native Plant Community Class	FDn12	FDn22	FDn32	FDn33	FDn43	FDw24	FDw34	FDw44	FDc12	FDc23	FDc24	FDc25	FDc34	FDs27	FDs36	FDs37	FDs38	MHn35	MHn44	MHn45	MHn46	MHn47	MHw36	MHc26	MHc36	MHc37	MHc38	MHc47	MHs37	MHs38	MHs39	MHs49
Quaking aspen	4	-	4	4	3	2	1	1		2	2	3	3		2	7	8	5	1	6	3		5	3	4	6		9		15		
Jack pine	1	2	1	6	10	3	4		1	1	1	1	9	4																		
Red pine	2	1	3	1	4				2	4	3	6	1											11								
White pine	-	3	5	3	2								2	3		6			7	9				10	9		3	7		5		
White spruce	3		-	10	7		3	6										-	5	7	14							-				
Big-toothed aspen		5		7						-		5	8	-		9		7			15			7	10		-		14	12	13	
Northern pin oak												2		1		1	2												3			
Black cherry														-		11	7												12	13	-	-
Red cedar														-																		
Black oak														2																		
Shagbark hickory																	3												11			
Basswood													10	-	3		14	2	9	5	2	2	1	5	3	2	7	1	5	3	2	1
Paper birch	-	4	6	2	1					3	4	7	5	10	8	10	12	4	3	3	9	4	-	2	8	3	5	10	10	11		
Sugar maple																	-	1	13	1	5	1		8	2	1	1	3	9	2	1	2
Northern red oak		7		11						6	6	4	4	8	4	2	5	3	11		10	5		1	1	5	2	5	1	1	3	15
Red maple		6	-	8	8							8	6			5		6	4	8	4	8		4	6			6				
Bur oak						1	2	3		5	5	9	7	6	1	3	1	10	12		6		2	6	5	7	-	4	6	7	12	4
Ironwood														-				8				6		12	13	4	9	12	8	6	6	11
White oak														5		4	6							9	12		8		2	4	10	
Bitternut hickory														11			10								11		11		15	9	7	15
Butternut																									-			11	-		11	14
Slippery elm														-	-		-								-			-	7	16	4	5
Rock elm																																8
Silver maple																																
American elm								5						9	5	12	4		-		16		3		-	8		13	4	10	5	6
Green ash								4							7	8			14		7	10	4	13	7	9	10	8	-	8	9	10
Box elder															6	-	11											-	17	17		7
Hackberry																	13												13			9
Cottonwood														12									-									12
Black walnut														7			9												-			13
Swamp white oak																																
River birch																																
White cedar					5														10	4	8	7										
Balsam fir	5		7	5	6													11	2	10	12	-					6					
Balsam popular						-	5	2											8		11		7									
Black ash																			6		1	9	6		14		12	2	16	14	8	3
Yellow birch																		9		2	13	3					4					
Tamarack																																
Black spruce			2	9	9																											

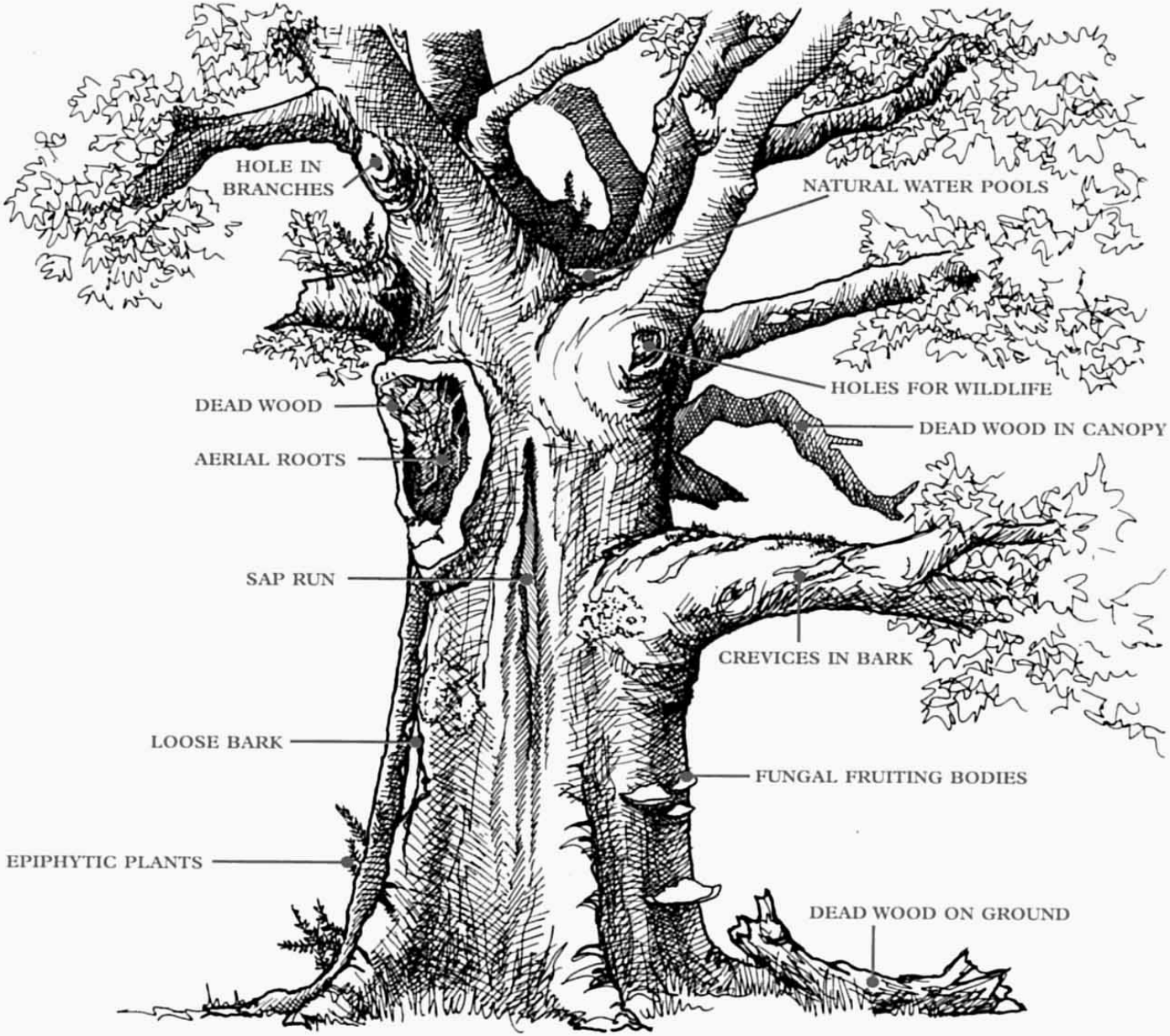
Row shading: ability of tree species to compete with all vascular plants within NPC class (**GREEN**=excellent, **BLUE**=good, **YELLOW**=fair, **SHADED**= poor, WHITE=not suitable)

Column numbers: rank of tree species in order of competitive ability within each NPC class; 1=most suited; -- indicates trace presence

*Row shading and column numbers are based upon the importance value (IV) of a tree in each NPC Class, which is the product of percent presence and percent cover when present (IV=% presence *x* mean % cover when present). Row shading (not suited to excellent) is based upon the rank order of a tree's IV compared to the full range of IVs expressed by all plants - a rough estimate of absolute suitability. Column numbers (1,2,3, ...) are the rank order of a tree's IV compared to other trees - a rough estimate of relative suitability.

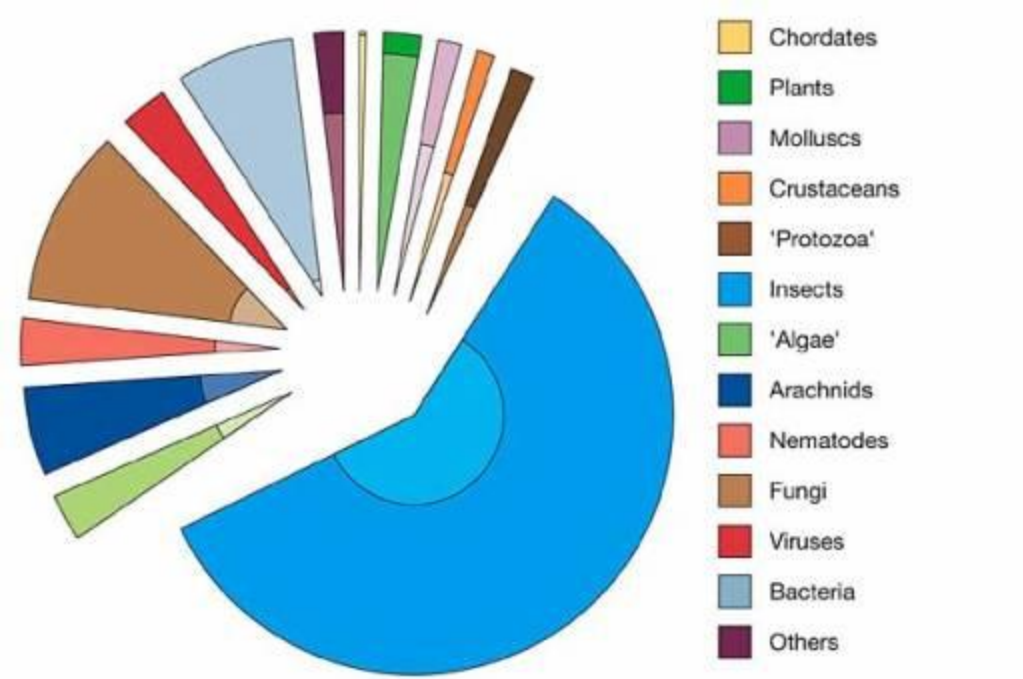
Ecological Land Classification Program
Division of Forestry
Minnesota Department of Natural Resources


phase b
phase c
phase f
phase q
phase l
Bena Dunes
and Peatlands



Minnesota
DEPARTMENT OF NATURAL RESOURCES


Global Species diversity by Taxa group



From Purvis & Hector, Nature vol. 405 (2000) p 212. Courtesy of Nature Publishing

Number of species in Minnesota

Plants

Vascular plants	2024
Lichens, mosses, and liverworts	1000

Animals

Breeding birds	243
Fish	159
Butterflies	135
Mammals	80
Mussels	46
Reptiles	29
Amphibians	20
Insects other than butterflies	Unknown – 100s

Minnesota's flora & fauna compared to the List of Endangered, Threatened, and Special Concern Species (1996)

	Endangered	Threatened	Special Concern	Total Listed Species	Estimated # of Species
Vertebrates	9	11	58	78	500
Insects/ Mollusks	18	21	40	79	180
Plants	69	69	144	282	3000
TOTAL	96	101	242	439	3680

MFRC NE Landscape Rare Species Summary
State-listed species

	# of species	Fungus	Invertebrate Animal	Vertebrate Animal	Nonvascular plant	Vascular plant
END	21	4	1	1	1	14
THR	33	1	3	5	0	24
SPC	92	6	12	15	1	58
NON	69	6	1	9	4	49
Total	**215**	**17**	**17**	**30**	**6**	**145**

DEFINITIONS

State Listed Species

A species is considered **endangered**, if the species is threatened with extinction throughout all or a significant portion of its range within Minnesota.

A species is considered **threatened**, if the species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range within Minnesota.

A species is considered a **species of special concern**, if although the species is not endangered or threatened, is extremely uncommon in Minnesota, or has unique or highly specific habitat requirements and deserves careful monitoring of its status. Species on the periphery of their range that are not listed as threatened may be included in this category along with those species that were once threatened or endangered but now have increasing or protected, stable populations.

Trends: Updates to MN's list of rare species

Summary of proposed list revisions.

"preparing to submit the rule making material to the Governor's Office for approval to proceed with rule making. Once we have that approval, the next step in the rule making process will be to publish a Notice of Intent to Adopt Rules in the State Register, which will include notice of public hearings and will trigger the opening of a 30 day comment period."

MN DNR
Rare Species Guide

Endangered,
Threatened, and Special
Concern species.

- Information on the status, distribution, ecology, conservation and management of MN's rarest animals and plants.
- Query 439 species profiles based on name, taxonomic group, status, county, watershed, ECS subsection, and/or habitat.

http://www.dnr.state.mn.us/rsg/index.html

NatureServe EXPLORER

An Online Encyclopedia of Life

NatureServe

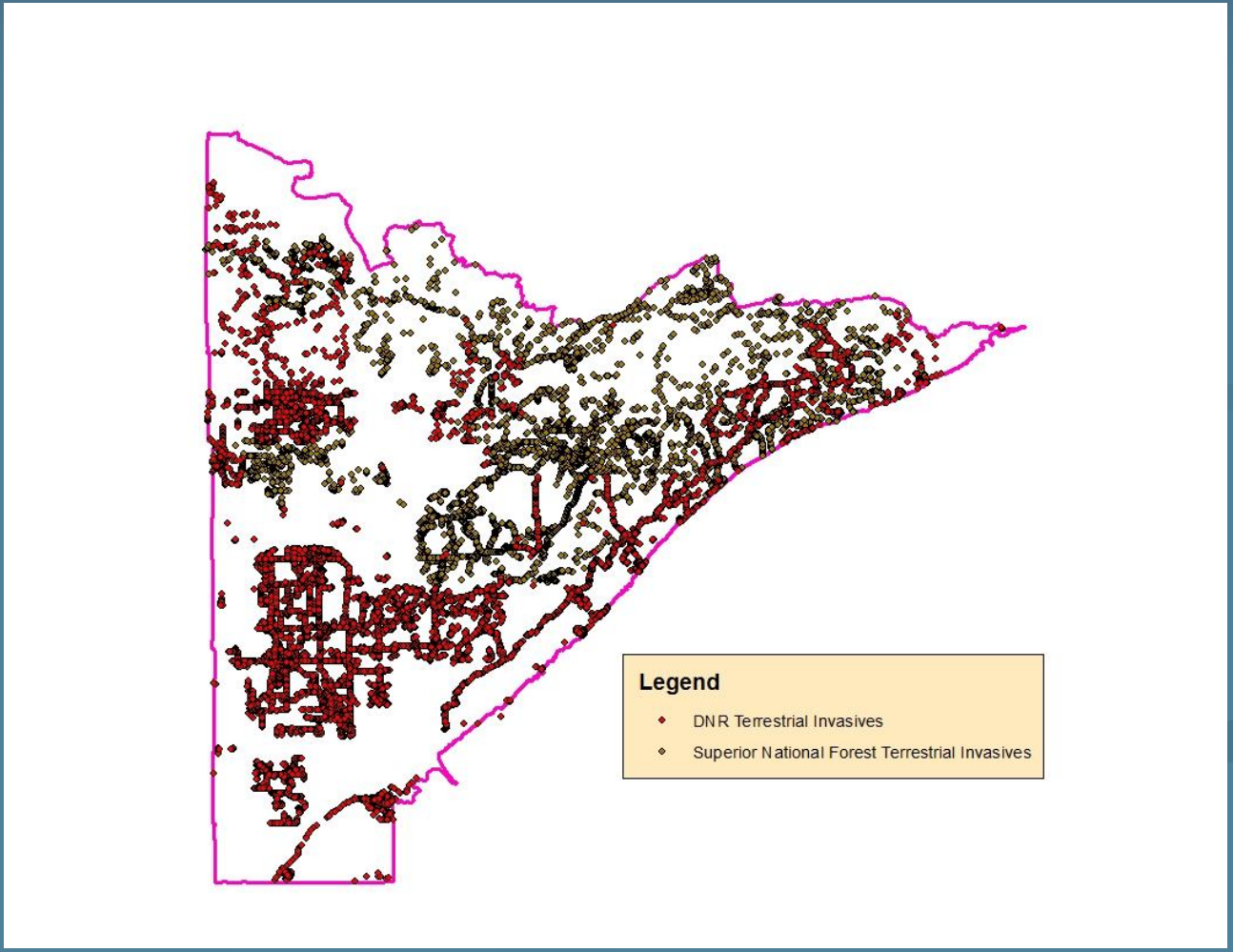
An authoritative source for information on more than 70,000 plants, animals, and ecosystems of the United States and Canada. Explorer includes particularly in-depth coverage for rare and endangered species.

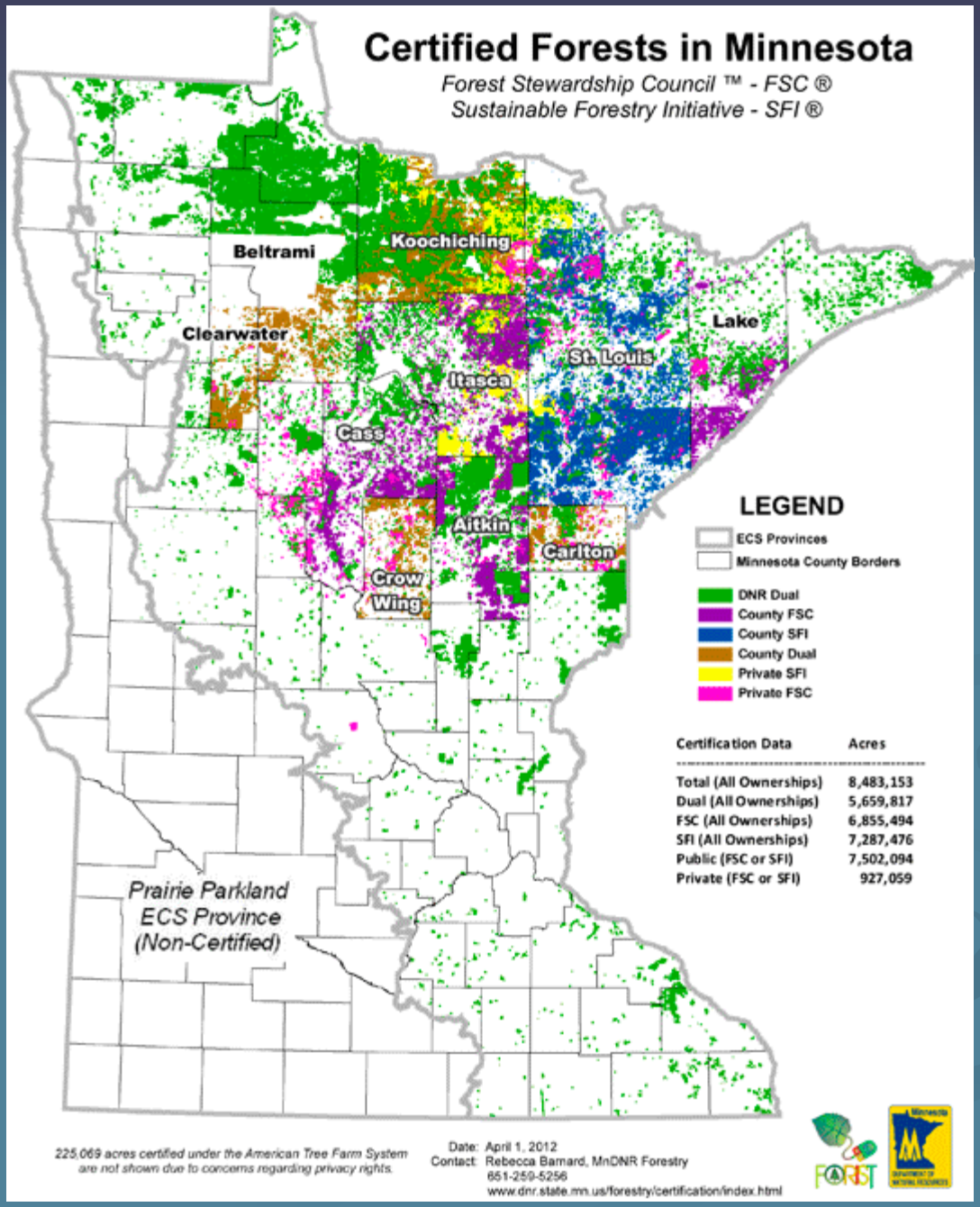
- scientific and common names
- conservation status
- distribution maps
- images for thousands of species
- life histories, conservation needs
- and more

Minnesota Department of Natural Resources

http://www.natureserve.org/explorer/

Trends: tending the working forest for terrestrial invasive plant species as a part of normal work.




Certified Forests in Minnesota
Forest Stewardship Council ™ - FSC ®
Sustainable Forestry Initiative - SFI ®
Beltrami
Koochiching
Clearwater
Lake
St. Louis
Itasca
Cass
Aitkin
Carlton
Crow Wing
Prairie Parkland ECS Province (Non-Certified)
LEGEND
ECS Provinces
Minnesota County Borders
DNR Dual
County FSC
County SFI
County Dual
Private SFI
Private FSC
Certification Data Acres
Total (All Ownerships) 8,483,153
Dual (All Ownerships) 5,659,817
FSC (All Ownerships) 6,855,494
SFI (All Ownerships) 7,287,476
Public (FSC or SFI) 7,502,094
Private (FSC or SFI) 927,059
225,069 acres certified under the American Tree Farm System are not shown due to concerns regarding privacy rights.
Date: April 1, 2012
Contact: Rebecca Barnard, MnDNR Forestry
651-259-5256
www.dnr.state.mn.us/forestry/certification/index.html

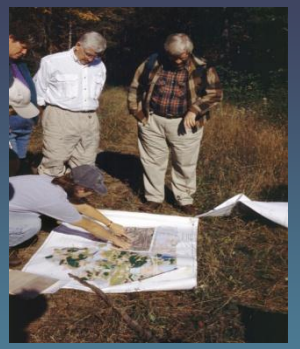
Remember to show MBS status map.

Topics we could have but didn't talk about today:

- Rare plants & fungi;
- Biodiversity Significance and applications to management decisions;
- Specific sites of conservation interest
- The emergence of a DNR "Watershed Division";
- Impaired waters;
- More detail on the topics that have been presented.







The End

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