



1

2026 MWPCP Training Courses

MWPCP Courses

- Hydrogeomorphic Method of Classifying Wetlands -Baxter- April 23 & 24
- Hydrogeomorphic Method of Classifying Wetlands-Rochester- April 28 & 29
- Soils on the Landscape- North Branch- May 20 & 21
- Plant ID & Rapid FQA- Cloquet & Lino Lakes- July 7 & 21
- Functional Assessment Method - Shoreview -Oct 13 & 14
- WCA Rule virtual training- November 18
- New Normal?: Emerging Topics in the Wetland World –Metro- December 8

2

2026 MWPCP Training Courses

Introduction to Wetland Delineation and Regulations

- Introduction to Wetland Delineation and Regulations: MNDOT Training Center, Shoreview, MN- June 8-12
- Introduction to Wetland Delineation and Regulations: Cloquet Forestry Center, Cloquet – August 31-September 4
- Introduction to Wetland Delineation and Regulations: Northland Arboretum, Baxter, MN - September 14-18

Professional Exams

MWPCP Exams will be offered at 1pm on: June 12 in Shoreview, September 4 in Cloquet & September 18 in Baxter

3

Minnesota Wetland Professional Certification Program

Wetland Plant ID & FQA Agenda

- Plant ID concepts
- Common species: grasses, sedges, rushes
- Plant ID Stations
- Intro to FQA Concepts & Methods
- Small Group Field Exercise
- Data Input, Interpretation and Discussion

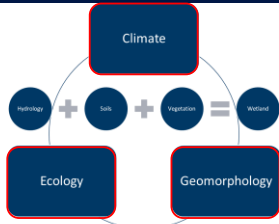
Class Portal: <https://bwsr.state.mn.us/node/4681>



4

Zoom out to Zoom In

- Overarching factors that determine much of the condition of an area
- Examples:
 - Geomorphology determines landscapes and soil parent material
 - Climate determines antecedent precipitation
 - Ecology determines dominate plant communities



5

Native Plant Community Resources

System Summaries & NPC Factsheets

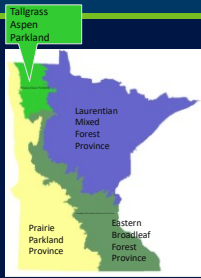
- Upland Forests and Woodlands
- Wetland Forests
- Upland Grasslands, Shrublands, and Sparse Vegetation
- Wetland Grasslands, Shrublands, and Marshes



<https://www.dnr.state.mn.us/npc/index.html>

6

Native Plant Communities



Minnesota uses a hierarchical, nested ecological land classification system

Provinces: defined by major climatic zones, native vegetation and biomes

4 provinces

7

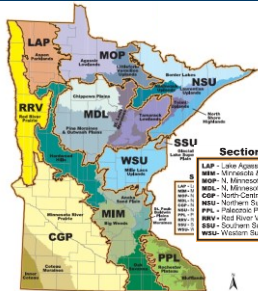
Eastern Broadleaf Forest Province

- Large province- Almost 12 million acres across MN, IA, WI, OH, NY, IL, IN, KT, MS, AR
- Transition between semi-arid prairie and semi-humid mixed forest of SE/NE
 - Prairie species meet eastern ranges
 - Forest species meet western ranges
- Landforms largely glacial deposits and recent erosion
- Precipitation approximately equals evapotranspiration
- Avg Precipitation 24-35 inches
- Avg temperatures 38-46 F



8

Ecological Sections & Subsections



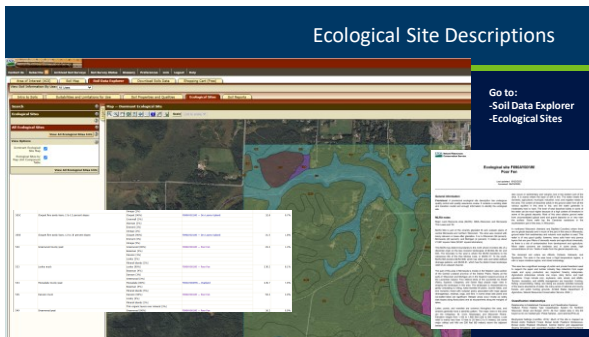
Section Names

- LAP - Lake Agency, Aspen Parklands
- MOP - Minnesota & Wisconsin Woodlands
- NSU - Northern Superior Uplands
- MDL - Minnesota Duff & Lake Plains
- SSU - Southern Superior Uplands
- RRV - Red River Valley
- CGP - Central Glacial Plains
- WSU - Western Superior Uplands
- PPL - Prairie Parkland
- MIN - Minnesota

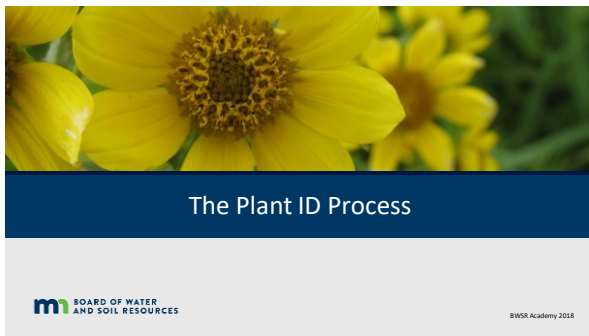
Sections (10): elevation, plant distribution and regional climate.

Subsections (26): defined by glacial deposits and features, surface bedrock, local climate, topography, distribution of plants

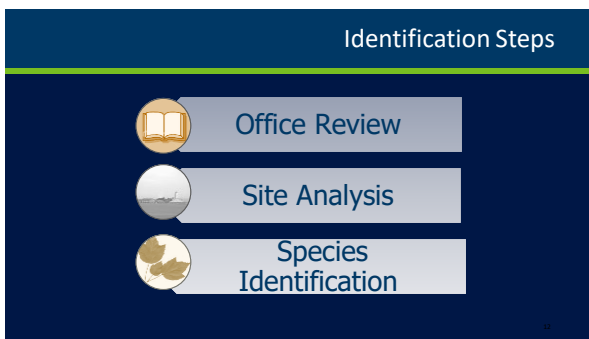
9



10

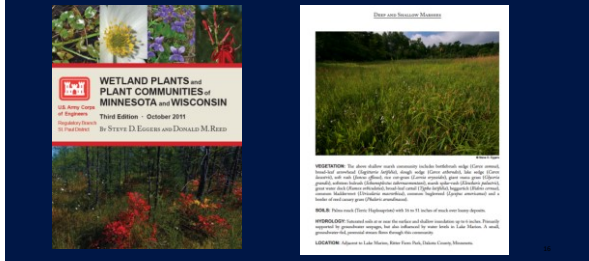


11



12

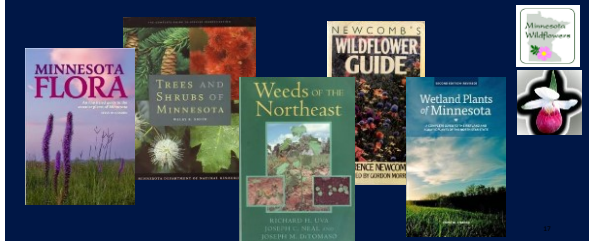
Office Review



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Office Review

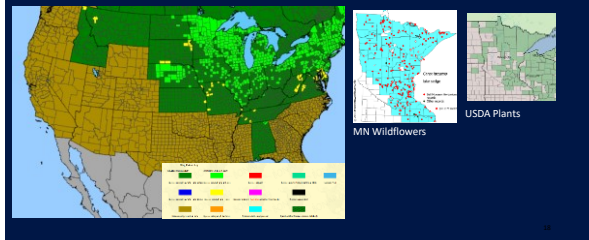
Determining What Plant ID Resources to Bring Along



17

Office Review

Range Information / Maps / Atlases



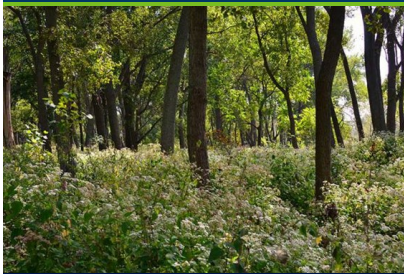
18

Site Analysis



19

Site Analysis



Time of Year – September

Soil – loamy, slightly
rocky/gravelly

Habitat – disturbed woodland
with sparse canopy

Indicator Plant species



20

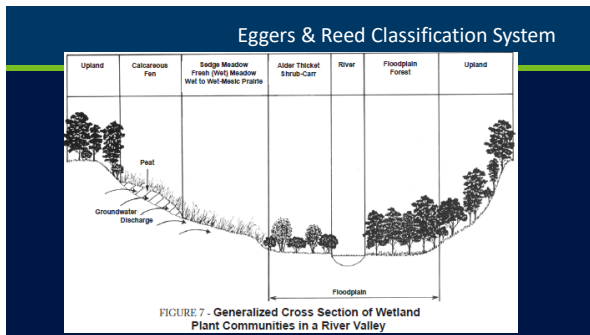
Eggers & Reed Classification System

Primarily based on plant communities,
but includes “typical” associated
hydrologic regimes

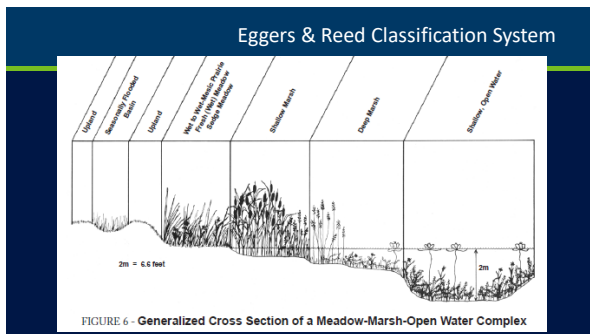
Shallow, Open Water
Deep Marsh
Shallow Marsh
Sedge Meadow
Fresh (Wet) Meadow
Wet/Wet-Mesic Prairie
Calcareous Fen
Open Bog/Coniferous Bog
Shrub-Carr/Alder Thicket
Hardwood Swamp/Coniferous Swamp
Floodplain Forest
Seasonally Flooded Basin



21



22



23

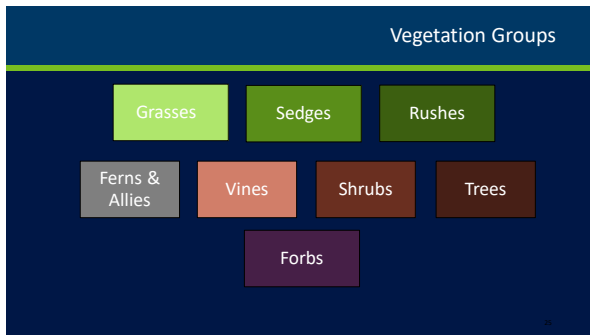
Many Plant Families:

Some common wetland plant families:

- Mint (Lamiaceae)
- Aster (Asteraceae)
- Vervain (Verbenaceae)
- Milkweed (Apocynaceae)
- Smartweed (Polygonaceae)
- Loosestrife (Lythraceae)
- Burreed (Sparganiaceae)
- Cattail (Typhaceae)
- Water Plantain (Alismaceae)
- Iris (Iridaceae)
- Legume (Fabaceae)
- Carrot (Apiaceae)
- Grasses (Poaceae)
- Sedges (Cyperaceae)




24

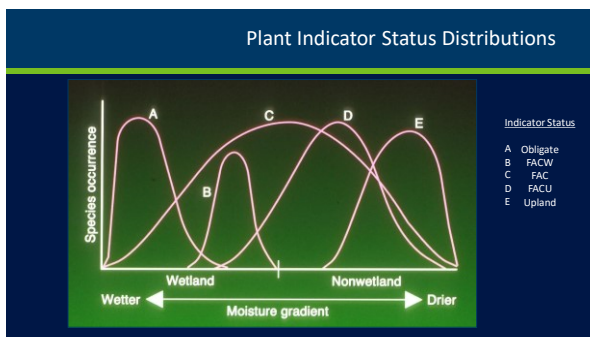


25

Plant Indicator Status

Wetland Indicator Status	Indicator Symbol	Definition
Obligate Wetland	OBL	Plants that almost always grow in wetlands. Estimated probability of >99% for growing in wetland.
Facultative Wetland	FACW	Plants that usually occur in wetlands. Estimated probability of 67% - 99% for growing in wetland (1%-33% in upland)
Facultative	FAC	Plants with similar likelihood of occurring in both wetland and upland. Estimated 33%-67% for growing in wetland.
Facultative Upland	FACU	Plants that sometimes grow in wetland. Estimated 1% - <33% for growing in wetland (>67% - 99% in upland).
Obligate Upland	UPL	Plants that rarely occur in wetland. Estimated probability of <1% for growing in wetland (>99% in upland).

26



27

Shallow, Open Water

Hydrology: **permanently inundated**, Water depths less than 8.2 feet (2.5 meters)

Vegetation: Dominated by submergent, floating and floating-leaved species



© Steve D. Eggers

28

Shallow, Open Water



Long-leaf pondweed (*Potamogeton nodosus*), leafy pondweed (*Potamogeton foliosus*) and wild celery (*Vallisneria spiralis*) dominate this example.

© Steve D. Eggers

29

Deep Marshes



© Steve D. Eggers

Hydrology: **semi-permanently inundated** by 6 inches to 3 feet or more of water during the growing season

Vegetation: Dominated by herbaceous emergent, submergent, floating and floating-leaved species

30

Bulrushes (*Scirpus*, *Schoenoplectus*, *Bulboschoenus*)

River Bulrush
Bulboschoenus fluvialis
(OBL)



Softstem Bulrush
Schoenoplectus tabernaemontani
(OBL)



31

Shallow Marshes

Hydrology: Soils saturated to the surface to inundated up to 6 inches of water for a significant portion of most growing seasons

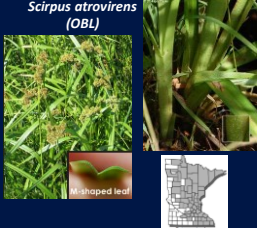
Vegetation: Cattails, water plantain, bulrush, wild rice, wild iris, and bur reed



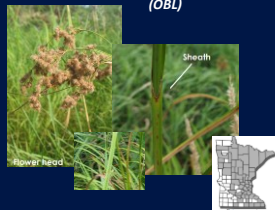
32

Bulrushes (*Scirpus*, *Schoenoplectus*, *Bulboschoenus*)

Green Bulrush
Scirpus atrovirens
(OBL)



Woolgrass
Scirpus cyperinus
(OBL)



33

Giant Bur-reed – *Sparganium eurycarpum*

- Stems erect,
- Leaves long and linear
- Flowers crowded in round heads with male and female flowers separate



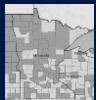
Triangular leaf cross-section

Male

Female

34

Narrowleaf and Hybrid Cattail – *Typha angustifolia* and *Typha x glauca*



- Narrow Leaves extend beyond spike
- Staminate and pistillate portions of spike separate, with gap



NCNE	MW	GP
OBL	OBL	OBL



Gap in spike



35

Broadleaf Cattail – *Typha latifolia*



- Broad leaves usually don't extend past spike
- Upper staminate and lower pistillate portions of the spike are continuous



Continuous spike

36

Water Plantain – *Alisma subcordatum*

- Basal leaves elliptical or egg shaped on long stalks
- 3 White or pinkish flowers about 1/8" wide
- Found along muddy shores



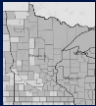
NCNE	MW	GP
OBL	OBL	OBL



37

Broad Leaf Arrowhead – *Sagittaria latifolia*

- Flowers grow in whorls of 3 from an un-branched stalk
- Leaf shaped like an arrow head



NCNE	MW	GP
OBL	OBL	OBL



38

Harlequin Blue Flag Iris – *Iris versicolor*

- Deep purple base
- Blue flower with 3 petals, 3 sepals and large yellow center
- Found in the North

NCNE	MW	GP
OBL	OBL	OBL



39

Virginia Iris – *Iris virginica*

- Green base
- Purple flower with small yellow center
- Found in the south



NCNE	MW	GP
OBL	OBL	OBL

40

Fresh (Wet) Meadows

Hydrology: Water table often **drop below 12 inches** after early portion of growing season

Vegetation: Dominated by grasses, such as reed canary grass and reedtop, and/or forbs such as giant goldenrod and marsh aster



41

Bugleweed – *Lycopus americanus*



Small 4-lobed white flowers in axils

Similar to field mint, but not strongly scented

NCNE	MW	GP
OBL	OBL	OBL



42

Giant Goldenrod – *Solidago gigantea*

- Alternate, 3-veined leaves
- Wet sites

NCNE	MW	GP
FACW	FACW	FAC



43

Sneezeweed – *Helenium autumnale*

- Yellow flowers with three teeth at the end of each ray
- Winged stem

NCNE	MW	GP
FACU	FACU	FACU



Three teeth



44

Boneset – *Eupatorium perfoliatum*

- Coarsely toothed leaf
- Perfoliate
- Hairy stem

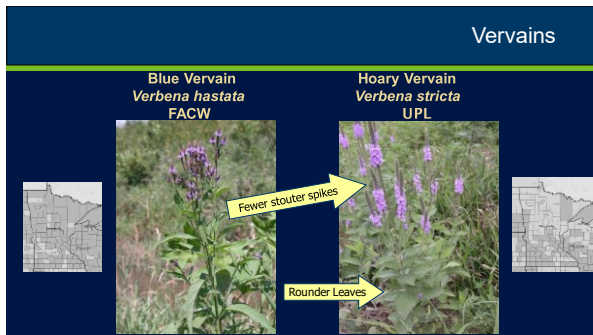
NCNE	MW	GP
FACW	OBL	FACW



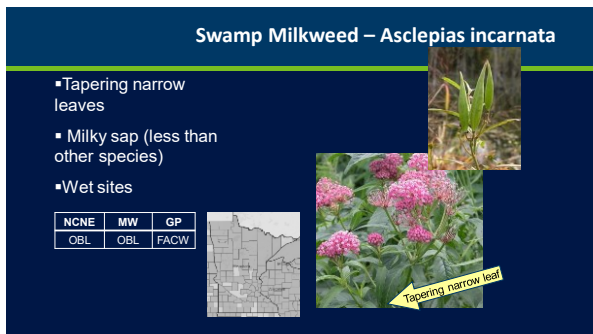
Leaves joined into one



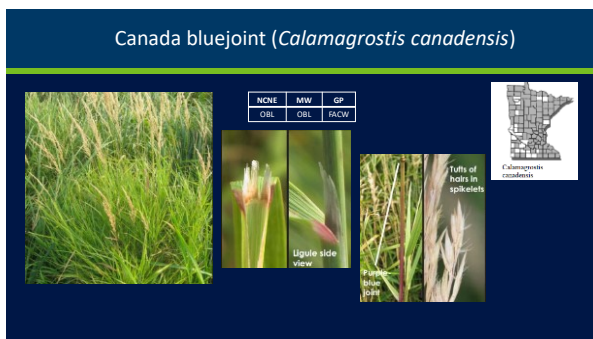
45



46



47



48

Reed canary grass (*Phalaris arundinacea*)



49

Sedge Meadows

Hydrology: Saturated soils most of the growing season.

Vegetation: Dominated by sedges, primarily *Carex*, but also woolgrass and other sedge family members, Canada blue-joint grass may be subdominant, can have floating mat (Sedge Mat) when fringing deeper hydrologic regimes



© Steve D. Aggarwal

50

Carex Sedges – around 150 species in Minnesota


www.minnstate.edu/conservation/

51

Carex Sedges



- Triangular stems
- Flower heads variable
- Each achene enclosed in a perigynium
- Scales subtend perigynium



52

Common Obligate Wetland Carex

Lake Sedge
Carex lacustris



Slough Sedge
Carex atherodes



Common Beaked Sedge
Carex utriculata



53

Common Wetland Carex

Awl fruited Sedge
Carex stipata
(OBL)



Tussock Sedge
Carex stricta
(OBL)



Fox sedge
Carex vulpinoidea



54

Carex pellita



Woolly sedge
Carex pellita
(OBL)



55

Wet to Wet-Mesic Prairies

- Hydrology: Saturated soils most of the growing season
- Vegetation: Dominated by native prairie grasses, often with a rich diversity of hydrophytic prairie forbs such as Prairie cord-grass, big bluestem, gayfeather, green bulrush, mountain mint, sawtooth sunflower, New England aster, white lady-slipper, etc.



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56

Kentucky Bluegrass (*Poa pratensis*)

NCNE	MW	GP
FACU	FAC	FACU



Fowl Bluegrass (*Poa palustris*)

NCNE	MW	GP
FACW	FACW	FACW



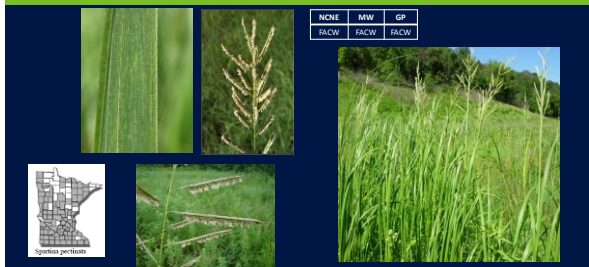
57

Redtop (*Agrostis gigantea*)



58

Prairie Cordgrass (*Spartina pectinata*)



59

Big bluestem (*Andropogon gerardii*)



60

Seasonally Flooded Basins

Hydrology: seasonally flooded,
Typically ponded for a few weeks early
in the growing season then drying out

Vegetation: Mudflats left by receding
water are colonized by annuals



Condition shown is in May –
cropped corn field. By mid- to
late growing season, annual
species such as wild millet
(FACW) and smartweeds
(FACW-OBL) would dominate

© Steve D. Eggers

61

Smartweeds

Pennsylvania Smartweed
[*Persicaria pensylvanicum*]
FACW



Thumbprint on leaf

Both at wet sites

Water Smartweed
[*Persicaria amphibium*]
OBL

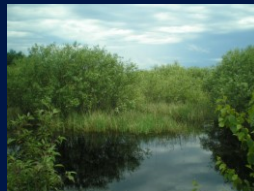


62

Shrub-Carr and Alder Thickets

Hydrology: saturated to seasonally
flooded

Vegetation: Native willows,
dogwoods and/or alders dominate.
Disturbed sites may have non-native
glossy buckthorn.



© Steve D. Eggers

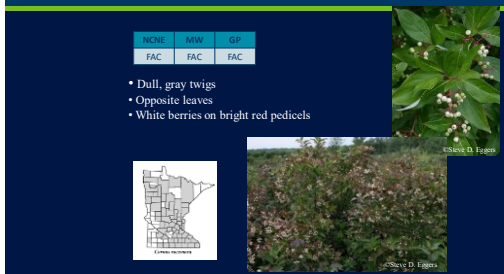
63

Red-osier Dogwood – *Cornus sericea*



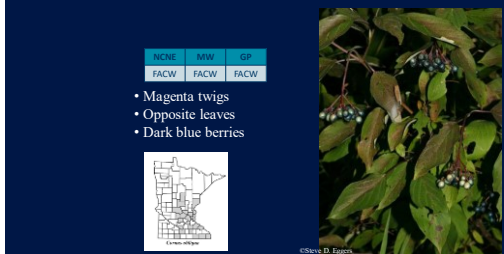
64

Gray Dogwood – *Cornus racemosa*



65

Silky Dogwood – *Cornus obliqua*



66

Twig Comparison

Left: **Red-Osier Dogwood** – bright red twigs, white pith, white berries

Middle: **Gray Dogwood** – gray twigs, brown pith, white berries

Right: **Silky Dogwood** – magenta twigs, brown pith, dark blue berries

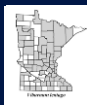


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67

Nannyberry – *Viburnum lentago*

NCNE	BNW	GP
FAC	FAC	FACU



© 2004 Gary Fowles

68

Willows (*Salix* spp.)

18 species native in Minnesota, 3 species naturalized

- Leaf width vs. length
- Upper and lower surface texture, color
- Leaf edges
- Stipules may be present



©2004 Gary Fowles

69

Hardwood and Coniferous Swamps

Hydrology: saturated, may be seasonally inundated

Vegetation: Black Ash, Tamarack/Black Spruce, no continuous sphagnum moss



70

Tamarack – *Larix laricina*

NCNE	MPW	GP
FACW	FACW	FACW

- Deciduous
- Needles are bunched
- Common to swamps and bogs



71

Balsam fir – *Abies balsamea*

- Needles continuous along stem and branches
- Needles ¼ to 1 inch and flat
- Cones are purple

NCNE	MPW	GP
FAC	FACW	FAC

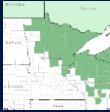


72

Black Spruce – *Pinus mariana*

- Branches short and drooping
- Needles are 4 angled with a blunt tip
- Dark (blackish) foliage

NCNE	MMW	GP
FACW	FACW	FACW



73

N. White Cedar – *Thuja occidentalis*

- Spicy fragrance when crushed
- Needles turn yellow-brown in winter
- Needles are bicolored

NCNE	MMW	GP
FACW	FACW	FACW



74

Calcareous Fens



- Hydrology: upwelling groundwater discharge continuously saturates organic soils, Specific soil and water chemistry (CaCo)
- Vegetation: Rarest wetland type in MN. Supports disproportionate number of T & E species: sterile sedge, beaked spikerush, hardstem bulrush, Grass of Parnassus, Kalm's lobelia, white lady-slipper, Riddell's goldenrod

75

Floodplain Forests

Hydrology: seasonally inundated, relatively well-drained for most of the growing season

Vegetation: silver maple, American elm, river birch, green ash, black willow, box elder, eastern cottonwood



76

Maple - *Aceraceae*



Red maple
(*Acer rubrum*)



NCNE	MTW	GP
FAC	FAC	FAC



Sugar maple
(*Acer saccharum*)



NCNE	MTW	GP
FACU	FACU	UPL



Silver maple
(*Acer saccharinum*)

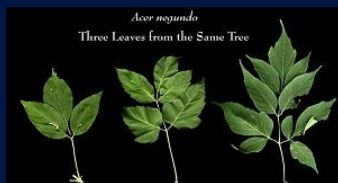


NCNE	MTW	GP
FACW	FACW	FAC

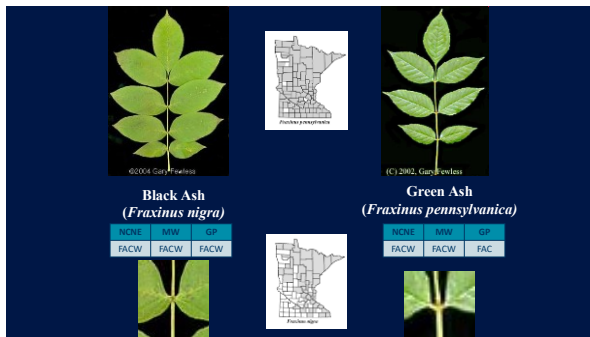
77

Box Elder – *Acer negundo*

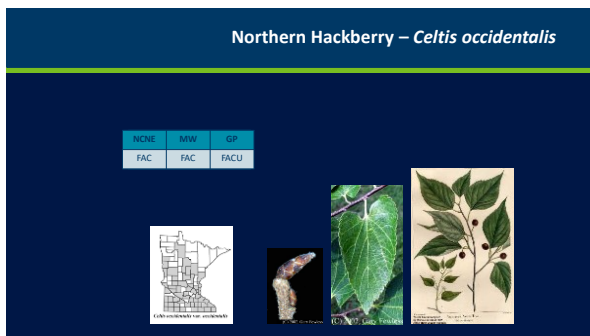
NCNE	MTW	GP
FAC	FAC	FAC



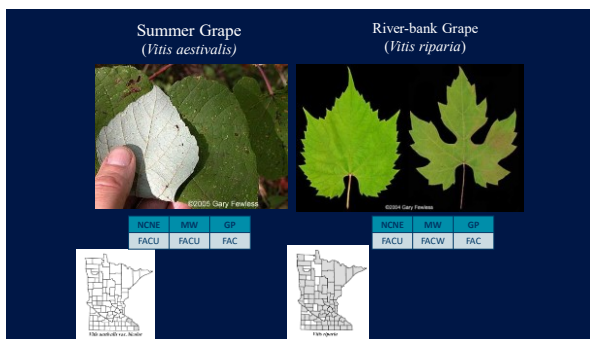
78



79



80



81

Open and Coniferous Bogs

Hydrology: saturated, with acidic, peat soils low in nutrients

Vegetation: tamarack, black spruce, continuous mat of *Sphagnum* moss, bog sedge, wire-grass sedge, cottongrass, leatherleaf, labrador tea and unique flora not found in any other habitat. Many orchid species.



© Steve D. Eggers



Sphagnum Moss

82

Bog Birch – *Betula pumila*

WCNE	MW	GP
OBL	OBL	OBL



©2012 Gary Fewless



©2012 Gary Fewless



Betula pumila: *pumila*

83

Meadowsweet – *Spiraea alba*

WCNE	MW	GP
FACW	FACW	FACW

Alternate leaves
• Leaves not woolly



Spiraea alba



©Steve D. Eggers

84

Steeplebush – *Spiraea tomentosa*

NCNE	MTW	CP
FACW	FACW	FACW

- Leaves alternate
- White to orange woolly undersides



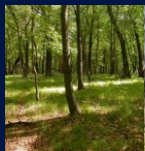
85

Uplands



86

Carex pensylvanica (Upland)



87

Switchgrass (*Panicum virgatum*)

NICNE	MW	GP
FAC	FAC	FAC



88

Bromegrass (*Bromus inermis*)

NICNE	MW	GP
UPL	FACU	UPL



89

Canada Wild Rye (*Elymus canadensis*)

NICNE	MW	GP
FACU	FACU	FACU



90

Quack Grass (*Elymus repens*)

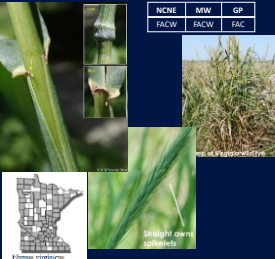
NCNE	MW	GP
FACU	FACU	FACU



Elymus repens

Virginia Wild Rye (*Elymus virginicus*)

NCNE	MW	GP
FACU	FACU	FAC



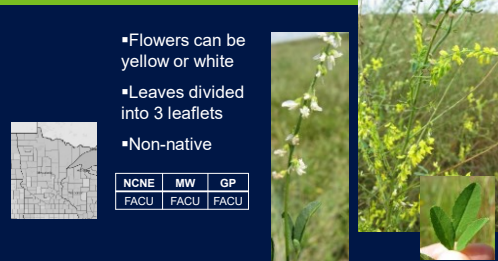
Elymus virginicus

91

Yellow Sweet Clover - *Melilotus officinalis*

- Flowers can be yellow or white
- Leaves divided into 3 leaflets
- Non-native

NCNE	MW	GP
FACU	FACU	FACU



92

Wild Parsnip – *Pastinacea sativa*

- Contact with the plant can cause a sun-induced rash
- Compound umbel of yellow flowers with 5 petals
- Pinnately lobed leaves
- Tall growth habit.

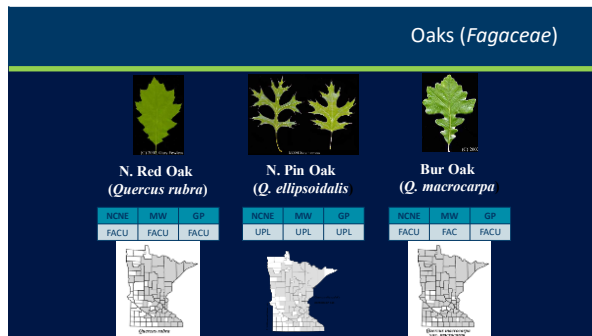
NCNE	MW	GP
UPL	UPL	UPL



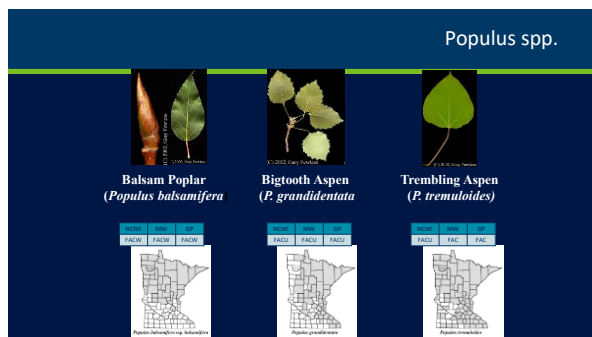
93



94



95



96

Cottonwood – *Populus deltoides*

NCNE	MW	GP
FAC	FAC	FAC

- Opposite leaves (CAP), compound
- Small, purple-black berries
- Twigs brittle due to large pith



97

Glossy Buckthorn – *Frangula alnus*

NCNE	MW	GP
FAC	FACW	FAC

- Leaf margins entire (not toothed)

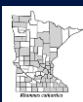


98

Common Buckthorn – *Rhamnus cathartica*

NCNE	MW	GP
FAC	FAC	FACU

- Leaf margins with fine teeth



99



100
