

The Rare Wetland Communities of Michigan

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Natural Communities of Michigan: Classification and Description



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Michigan Natural Features Inventory
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Wildlife Division and
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MICHIGAN STATE
UNIVERSITY
EXTENSION

Michigan
Natural
Features
Inventory

A Field Guide to the Natural Communities of Michigan

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Exploring the Prairie Fen Wetlands of Michigan



Michael A. Kost and Dana A. Hogle

Open Dunes

Community Abstract

Critical and rare rank: G5/S3

Common name: Great Lakes beachgrass dune. Other communities of the dunes include Great Lakes pine forest, Great Lakes pine barrens, Great Lakes juniper dune shrubland.

Range: Open dunes are biologically distinct postglacial features associated with the Laurentian Great Lakes and other large inland lakes, as well as the shorelines of many oceans and seas. These along the Laurentian Great Lakes are distinguished from other coastal dunes by a distinctive Great Lakes flora and fauna, although some plant species are shared with dunes of the Pacific Northwest (Wickham 1983). Great Lakes open dunes occur in Illinois, Indiana, Michigan, New York, Pennsylvania, Wisconsin, and in the Canadian province of Ontario. Small, isolated dune areas also occur on the shores of Lake Champlain in Vermont (Thompson and Sorenson 2000).

Rank justification: There are approximately 171,000 acres of sand dunes along Michigan's Great Lakes shoreline, including areas of Lakes Superior, Michigan, and Huron. Other major areas of sand dunes are located at Long Point, Ontario; Pelee Island, Pennsylvania; and on Lake Erie along the western end of Lake Ontario in New York.

Currently, there are over 40 occurrences for open dunes in Michigan. The frequency of many wooded dunes and reeds complements support the same plant species typically found on open dunes.

While most dune areas remain intact, degradation has occurred on many dunes as the result of residential and road development, sand mining, golf course development, and recreational use by off-road vehicles (Dovey et al. 1982). Logging has altered the forested portions of many dunes, generally reducing the amount of upland conifer

disturbance. Many non-native plants are attributed to a result of residential development (Lange 1997, Cohen and Albert 1991, 1993). These non-natives are a major source of degradation, disrupting normal dune migration, causing dune stabilization, and often replacing native plant species.

Landscapes context: Great Lakes dunes are relatively young, as the Great Lakes were occupied by ice until approximately 16,000 years ago. The dune sands are derived from glacial sediments, including boulders and cobbles, and sandy silt (Dovey and Endelman 1970). Most of our larger dunes complexes are associated with the Lake Michigan stage of the Great Lakes, when water levels were 23 to 30 feet higher than present day lake levels (Dovey and Endelman 1970). These higher lake levels resulted in greater amounts of coastal erosion and dune formation. There are also numerous dunes further inland, often associated with glacial Lake Algonquin water levels, from about 12,000 years ago. Most of these older dunes are completely forested and are not represented in our database of open dunes.

Natural processes: A combination of wave erosion and sand deposition resulted in the formation of Great Lakes coastal dunes. The sand source for the coastal dunes was glacial sediment that was eroded by waves and by waves working bluff along the Great Lakes shoreline. These sediments were then moved along the Great Lakes shoreline by near-shore currents, and then deposited along the shoreline by wave action. Strong winds then carried the sand inland, creating dunes.

Elaborate classifications of dune types have been developed (Lange 1947, Calver 1947, Buckles 1979, Kelly 1962, Shaw 1964). Open dunes include the full range of dune types found in Michigan, including foredunes, parallel dunes, perched dunes, blow dunes, and barrier dunes.

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Resources:
Comprehensive Report,
55 Abstracts, and 5 books. Available through MNFI
(<http://mnfi.anr.msu.edu>) and Amazon.com

33 Wetland Communities: 26 considered rare*

Marsh (9, 6 rare)

- Submergent Marsh
- Emergent Marsh
- Great Lakes Marsh*
- Inland Salt Marsh*
- Coastal Plain Marsh*
- Intermittent Wetland*
- Interdunal Wetland*
- Southern Wet Meadow*
- Northern Wet Meadow

Bog (2, 1 rare)

- Bog, Muskeg*

Fen* (5, all rare)

- Prairie Fen, Northern Fen,
- Coastal Fen, Patterned Fen, Poor Fen

Wet Prairie* (5, all rare)

- Wet Prairie, Wet-mesic Prairie, Wet-mesic Sand Prairie
- Lakeplain Wet Prairie, Lakeplain Wet-mesic Prairie

Shrub Wetland (3, 1 rare)

- Southern Shrub-Carr
- Inundated Shrub Swamp*
- Northern Shrub Swamp

Forested Wetland (8, 7 rare)

- Floodplain Forest*
- Wet-mesic Flatwoods*
- Southern Hardwood Swamp*
- Northern Hardwood Swamp*
- Hardwood-Conifer Swamp*
- Rich Tamarack Swamp*
- Rich Conifer Swamp*
- Poor Conifer Swamp

Palustrine/Terrestrial (1, rare)

- Wooded Dune and Swale Complex*


Natural Community Ranks

State (S) Rank S1- S5: Rare = S1, S2, S3

- S1: Critically Imperiled
(< 5 high quality occurrences)
- S2: Imperiled
(6-20 high quality occurrences)
- S3: Vulnerable
(21-100 high quality occurrences)
- S4: Apparently Secure
- S5: Demonstrably Secure

Natural Community Element Occurrence (EO) Ranks

High Quality = A & B Ranks

- A (highest quality)
 - B
 - C
 - D (lowest quality)
- 

Ranking Criteria

- Size
- Landscape Context
- Condition

Great Lakes Marsh S3

Occurs in bays along shores of the Great Lakes and extends inland along rivers

- Contains zones of submergent marsh, emergent marsh, and wet meadow

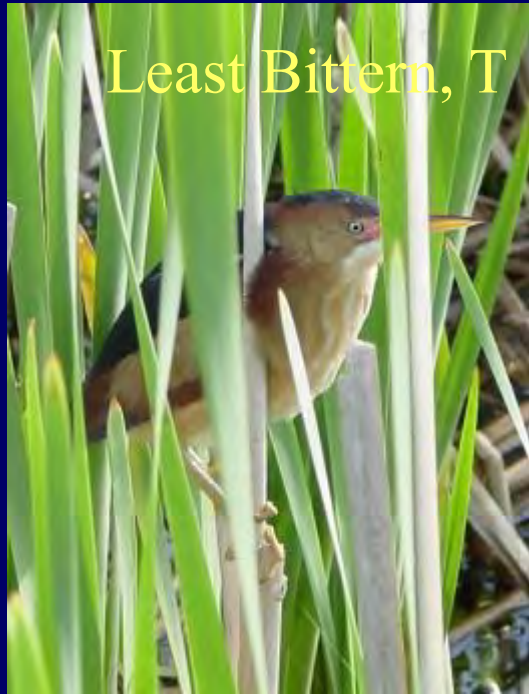


Great Lakes Marsh S3

- Influenced by changes in Great Lakes water levels
- Can extend several miles inland along rivers
- Supports 35 rare species: 10 plants & 25 animals



Great Lakes Marsh supports 35 rare species: 10 plants & 25 animals





Rare Species Explorer

[New Search](#)

Species Search

Criteria

Scientific or Common Name

Taxonomic Group

All
All Animals
All Plants
Amphibians
Birds
Fish

Habitat / Community Type

All
Palustrine
Marsh
Interdunal wetland
Intermittent wetland
Submergent marsh

Survey Period Beginning

Any time

Survey Period Ending

Any time

Federal Status

- ☒ Listed Endangered (LE)
☒ Listed Threatened (LT)

Results

Column Name	Display	Sort By
Scientific Name	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>
Common Name	<input checked="" type="checkbox"/>	<input type="radio"/>
Taxonomic Group	<input checked="" type="checkbox"/>	<input type="radio"/>
State Status	<input type="checkbox"/>	<input type="radio"/>
US Status	<input type="checkbox"/>	<input type="radio"/>
State Rank	<input type="checkbox"/>	<input type="radio"/>
Global Rank	<input type="checkbox"/>	<input type="radio"/>
Habitat / Community Type	<input type="checkbox"/>	
Survey	<input type="checkbox"/>	

Intermittent Wetland S2 and Coastal Plain Marsh S2

- Occur on sandy lake plain and outwash along lakeshores or in shallow depressions experiencing fluctuating water levels seasonally and from year to year
- Soils range from loamy sand and peaty sand to muck and are strongly acid
- Strong zonation – concentric rings of vegetation



Intermittent Wetland dominated by herbs and shrubs

Intermittent Wetland S3

Dominated by a mix of marsh and bog vegetation



Coastal Plain Marsh S2

Many plants from the Atlantic and Gulf coastal plains



Vegetation varies yearly due to fluctuating water levels



Coastal Plain Marsh supports 66 rare species: 44 plants & 22 animals



Hall's bulrush, T



Dwarf burhead, E



Cross-leaved
milkwort, SC

Maryland
meadow
beauty, T

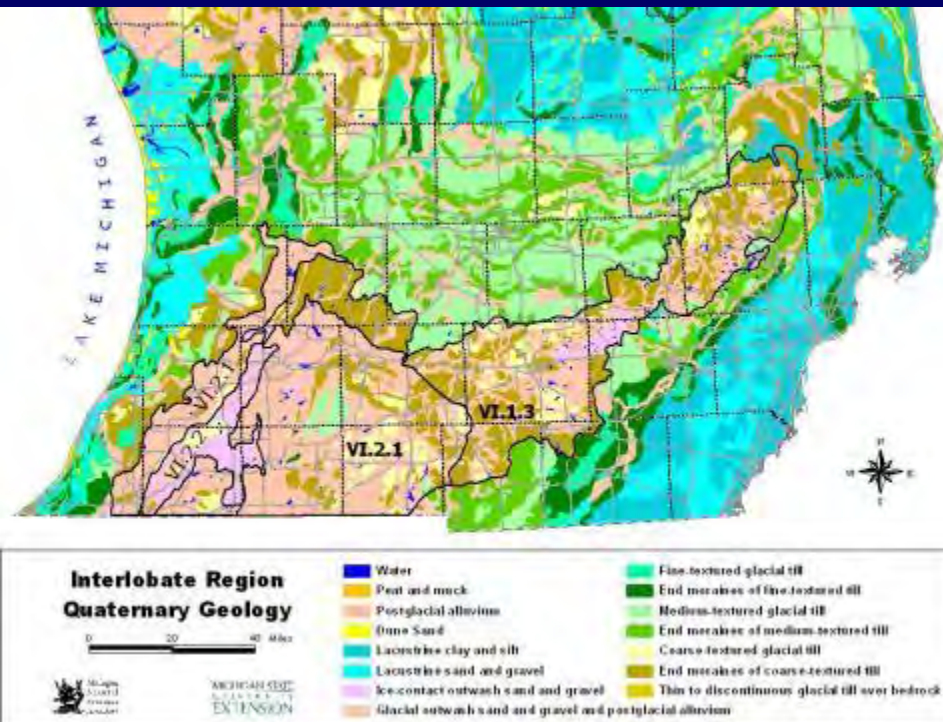


Meadow beauty,
SC

Wet Prairie S1 & Wet-mesic Prairie S1

Occur predominately on sandy
outwash plains in the Interlobate
Region along streams and margins
of lakes and depressions.

Soils neutral loams



Wet Prairie S1

Occur on saturated,
seasonally inundated sites

Dominants: Blue-joint
grass, prairie cordgrass
and sedges



Wet-mesic Prairie S1

Occurs on moist, occasionally
inundated sites

Dominants: big bluestem,
Indian grass, prairie cordgrass,
and sedges



Lakeplain Wet Prairie S1 & Lakeplain Wet-mesic Prairie S1

Occur on level, sandy lake plains and deposits of dune sand over silt or clay lake plains. Soils are typically very fine sandy loams.



Lakeplain Wet Prairie S1 & Lakeplain Wet-mesic S1

Open conditions maintained by fire and seasonal flooding



Lakeplain Wet Prairie S1

Dominated by bluejoint grass, cordgrass, Baltic rush, sedges, and twig-rush



Lakeplain Wet-mesic Prairie S1

Dominated by big bluestem, little bluestem, Indian grass, switch grass, and sedges



Wet Prairies (all types combined) support 89 rare species - 53 plant and 36 animal species



Prairie white-fringed orchid
Federally Threatened,
State Endangered



Dickcissel
Special Concern



Grasshopper sparrow
Special Concern



Blazing Star Borer
Special Concern



Eastern fox snake
State Threatened

Wet Prairies support 16 Rare Insects in Michigan

Scientific Name	Common Name
<i>Appalachia arcana</i>	Secretive locust
<i>Dorydiella kansana</i>	Leafhopper
<i>Flexamia delongi</i>	Leafhopper
<i>Flexamia reflexa</i>	Leafhopper
<i>Meropleon ambifusca</i>	Newman's brocade
<i>Neoconocephalus lyristes</i>	Bog conehead
<i>Neoconocephalus retusus</i>	Conehead grasshopper
<i>Orchelimum concinnum</i>	Red-faced meadow katydid
<i>Orchelimum delicatum</i>	Delicate meadow katydid
<i>Orphulella pelidna</i>	Green desert grasshopper
<i>Papaipema beeriana</i>	Blazing star borer
<i>Papaipema cerina</i>	Golden borer
<i>Papaipema maritima</i>	Maritime sunflower borer
<i>Papaipema speciosissima</i>	Regal fern borer
<i>Paroxya hoosieri</i>	Hoosier locust
<i>Spartiniphaga inops</i>	Spartina moth

Prairie Fen S3

Occurs in Interlobate Region of S.L.P on mildly alkaline peat and marl – a calcium carbonate precipitate.



Hydrology supported by steady flow of cold, calcareous groundwater



Prairie Fens are dominated by sedges, grasses, forbs, and scattered shrubs and trees, especially poison sumac and tamarack



Prairie Fen supports 59 rare species – 23 plant and 36 animal species (25 insects)

Poweshiek skipperling, LE,T



Swamp metalmark, SC



Prairie Indian plantain, SC



Mitchell's satyr, LE, E



White lady slipper, T



Bog S4

Occur in isolated depressions on deep, acid peat.

Colonize lakes over 100's of years



Bog S4

Often surrounded by a moat



Dominated by leather leaf, sphagnum mosses, and sedges
Low plant diversity but many species found in few other wetlands types



Other common species include pitcher plant, sundew, cotton-grass, bog rosemary, cranberries, blueberries, bog laurel, and Labrador tea.
Supports 50 rare species – 19 plants & 31 animals (17 insects)



Shrub Wetland Communities

Northern Shrub Thicket S5

Dominated by speckled alder



Southern Shrub-carr S5

Dominated by willow & dogwood

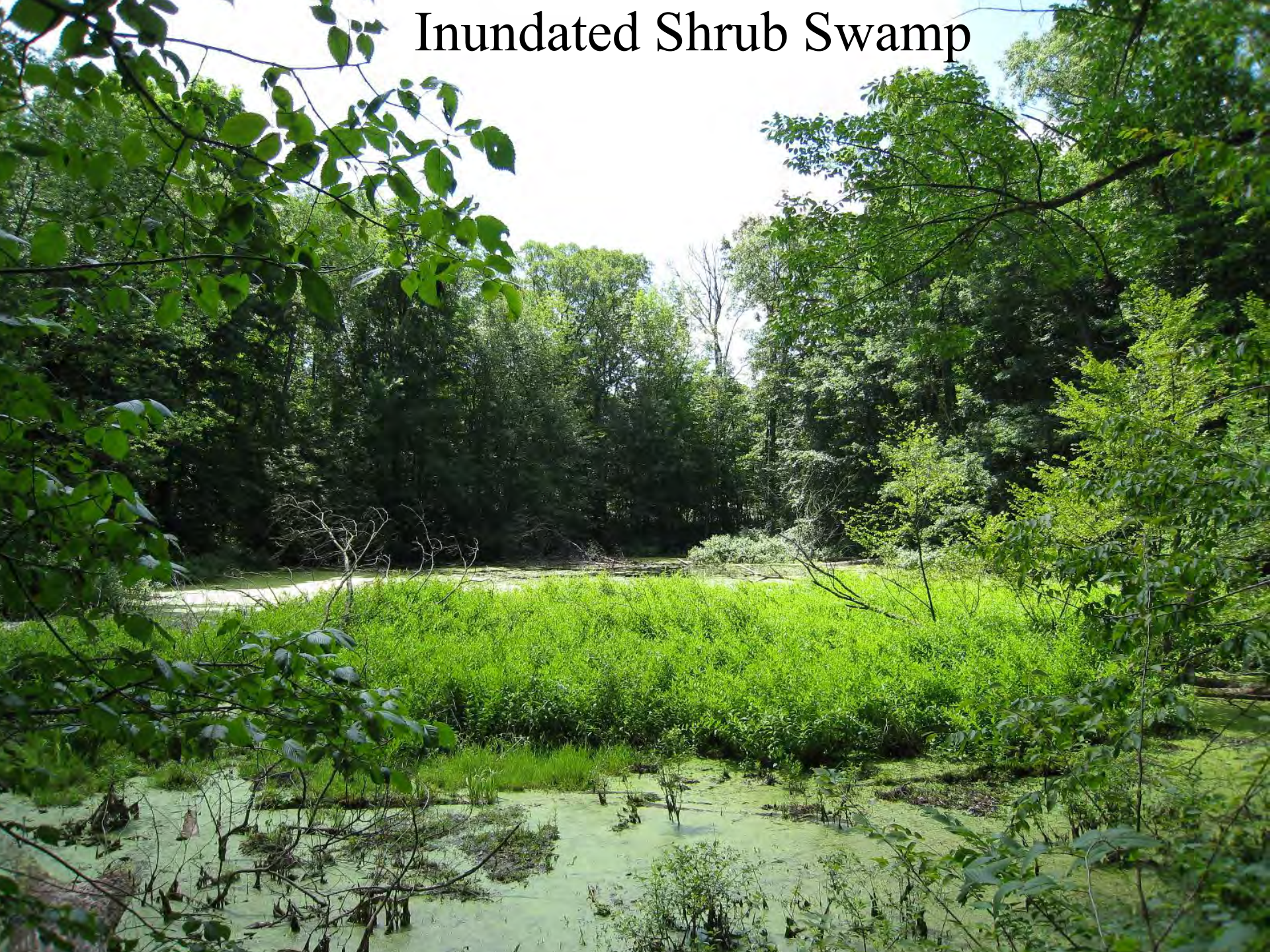


Inundated Shrub Swamp S3

Dominated by buttonbush

Small wetland type that often occurs within other natural communities such as floodplain forest and upland forests

Inundated Shrub Swamp



Inundated Shrub Swamp supports 16 rare species –
11 plant and 5 animal species

Copperbelly water snake, Federally Threatened, State Endangered



Blanding's Turtle, SC



Spotted Turtle, T

Floodplain Forest S3

Occurs along 3rd order or greater streams. Seasonal inundation is common.

Typically dominated by silver maple, green ash, sycamore, red maple, American elm, and black ash. Conifers often present in northern MI.

Fluvial processes create great diversity of ecological zones, soil conditions, and local topography

101 Rare Species – 59 plant and 42 animal species





Southern Hardwood Swamp S3

Occurs in depressions on neutral to mildly alkaline soils



Dominated by red maple, green ash, black ash and American elm.
Natural disturbances: Spring flooding, disease, and windthrow



Windthrow is common in forested wetlands and promotes diversity



Microtopography bolsters diversity: 60 rare species: 35 plants & 25 animals



Wet-mesic Flatwoods S2

- Occurs on southeast lake plain on mineral soils
- Dominated by oaks, hickories, maples, ashes, and basswood
- Seasonally inundated
- Occasionally burned along with adjacent lakeplain prairies and lakeplain oak openings



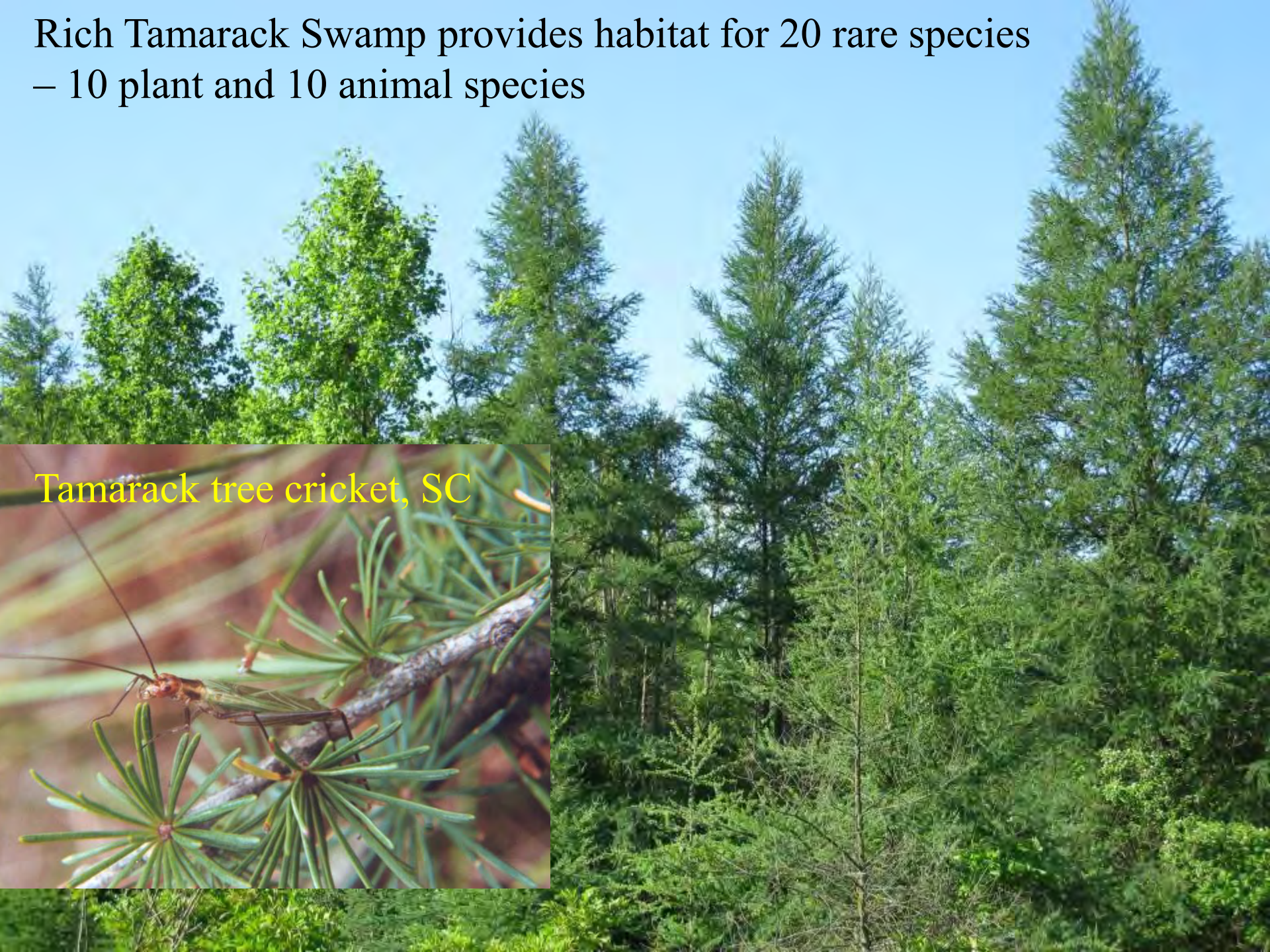
47 rare species – 21 plant and 26 animal species. Rare trees include pumpkin ash, T; Shumard's oak, SC; and swamp cottonwood, E;

Rich Tamarack Swamp S3

- Groundwater fed (minerotrophic) swamps dominated by tamarack
- Occurs in depressions and channels on glacial outwash and moraines, and ice-contact topography
- Soils are neutral to mildly alkaline peat (organic soils)



Rich Tamarack Swamp provides habitat for 20 rare species
– 10 plant and 10 animal species



Tamarack tree cricket, SC



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Thank You!



