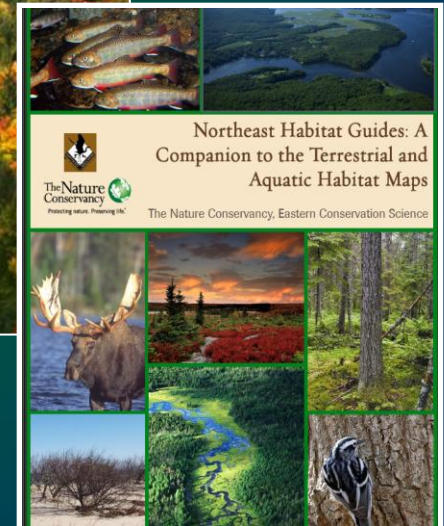
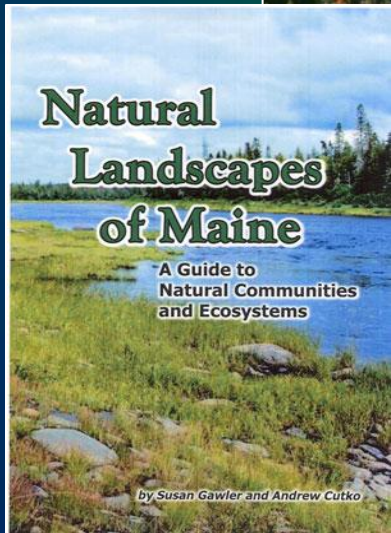


# State Wildlife Action Plan Element 2: Habitats



**Andy Cutko**  
**ME Department of Agriculture,  
Conservation, and Forestry**

# Topics to Be Covered

- **The Role of Habitats in SWAP**
- **Habitat Classification**
- **Assigning SGCN to Habitat Types**
- **Some Initial Results**
  - Habitats most important to SGCN
  - Habitats in Focus Areas
  - Habitats in Conserved Lands
- **Take Home Messages**

# Habitats in Maine's SWAP

Element 2: *“Identifies the extent and condition of wildlife habitats and community types essential to conservation of species identified under Element 1”*

- Multi-species, ‘coarse-filter’ approach
- Allows for management of species through management of habitats
- 90% of Maine land is privately owned

# NE Terrestrial Habitat Classification System

## NORTHEASTERN TERRESTRIAL WILDLIFE HABITAT CLASSIFICATION

The Northeast Habitat Classification and Mapping Project



a report to the Virginia Department of Game and Inland Fisheries  
on behalf of the Northeast Association of Fish and Wildlife Agencies  
and the National Fish and Wildlife Foundation

Susan C. Gawler  
NatureServe  
Boston, Massachusetts

November 2008



The Nature Conservancy  
Protecting nature. Preserving life.

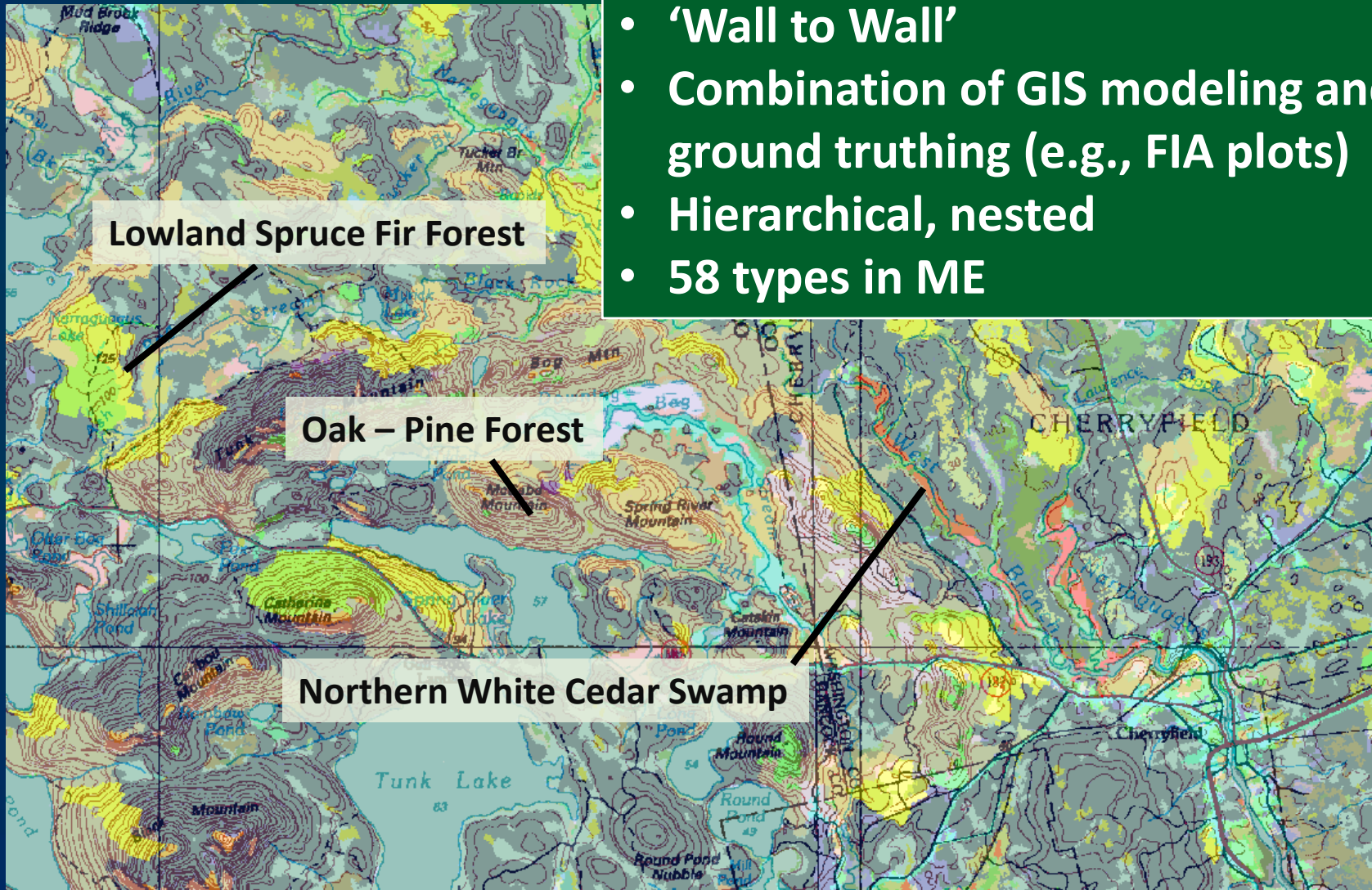
## Northeast Habitat Guides: A Companion to the Terrestrial and Aquatic Habitat Maps

The Nature Conservancy, Eastern Conservation Science



# NE Terrestrial Habitat Classification System

- 'Wall to Wall'
- Combination of GIS modeling and ground truthing (e.g., FIA plots)
- Hierarchical, nested
- 58 types in ME



# Classification Hierarchy

- **CLASS:** Forest and Woodland
- **FORMATION:** Northeastern Upland Forest
- **MACROGROUP:** Northern Hardwood and Conifer
- **SYSTEM:** Laurentian- Acadian  
Northern Hardwood Forest



# Habitat Classification: Types in 2005 Plan (21 types)

Alpine

Caves and Mines

Cliff Face and Rocky Outcrops

Coniferous Forest

Deciduous and Mixed Forest

Dry Woodlands and Barrens

Emergent Marsh & Wet

Meadows

Estuarine Emergent Saltmarsh

Estuaries and Bays

Freshwater Lakes and Ponds

Forested Wetland

Grassland, Agricultural, Old Field

Marine Open Water

Mountaintop Forests

Peatlands

Rivers and Streams

Rocky Coastlines and Islands

Shrub/Early Successional Forest

Shrub-scrub Wetland

Unconsolidated Shore

Urban/Suburban

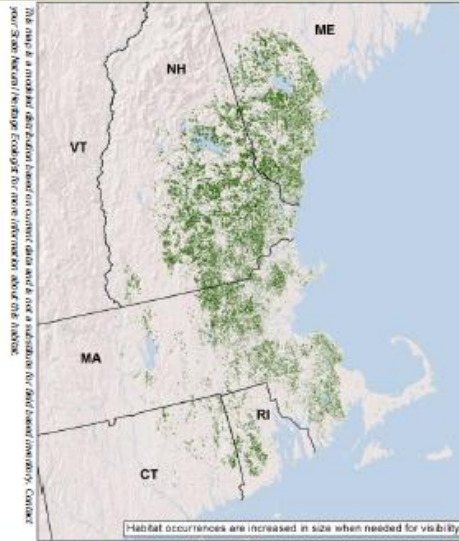
# Deciduous and Mixed Forest (2005)





# Northeastern Coastal and Interior Pine-Oak Forest

## Macrogroup: Northern Hardwood & Conifer



© Maine Natural Areas Program

### Description:

A mixed forest dominated by white pine, red oak, and hemlock in varying proportions. Red maple and white and black oak are common associates, and northern hardwoods like white ash and American beech can appear as minor components. This forest of low to moderate moisture is usually closed canopy and can be heavily coniferous, with some nearly pure stands of white pine and red maple; hemlock is often more abundant in moister settings. This system type occurs over broad areas, but most of it is in early to mid-successional stages and heavily fragmented. It may well be that it is more widespread and abundant as a result of human occupation of and changes to the New England landscape.

### Ecological Setting and Natural Processes:

Usually occurs on flat to rolling glacial landscapes on nutrient-poor, sandy substrates, and is often found near water or wetlands. Upper elevation limit is about 1000' to 1200' (305-365m) in central Massachusetts and southern New Hampshire, but it is usually considerably lower.

### Similar Habitat Types:

Often grades upslope to Appalachian (Hemlock-)Northern Hardwood, which has a stronger hardwood component. To the north, grades into Laurentian-Acadian Pine-Hemlock-Hardwood Forest, but it is not a Laurentian-Acadian system (from which white and black oak are essentially absent). Laurentian-Acadian Northern (Pine-)Oak Forests are cooler and drier, and feature red pine.

### Crosswalk to State Wildlife Action Plans:

State Distribution: CT, MA, ME, NH, RI

Total Habitat Acreage: 1,538,080

Percent Conserved: 15.8%

State	State Habitat %	State Acreage	GAP 1&2 (acres)	GAP 3 (acres)	Unsecured (acres)
NH	43%	654,780	12,748	89,778	552,254
MA	26%	403,139	9,054	81,076	313,009
ME	25%	391,837	5,423	19,849	386,586
RI	3%	50,081	2,770	15,070	32,241
CT	2%	38,443	835	7,136	30,471

### Crosswalk to State Name Examples:

White Pine-Oak Forest (MA), Oak-Hickory Forest (ME), Mixed Oak/White Pine Forest (RI)

## Places to Visit this Habitat:

Pachaug State Forest | CT  
Harold Parker State Forest | MA  
Sebago Lake State Park | ME  
Great Bay National Wildlife Refuge | NH  
Arcadia Management Area | RI

## Associated Species: *Appendix lists scientific names*

**BIRDS:** black-and-white warbler, blue-headed vireo, brown creeper, eastern wood-pewee, hermit thrush, ovenbird, pine warbler, scarlet tanager, veery, wood thrush

**MAMMALS:** black bear, gray fox, gray squirrel, northern flying squirrel, southern flying squirrel, white-footed mouse

**HERPTILES:** jefferson salamander, marbled salamander, black rat snake, eastern hognose snake, eastern worm snake, northern black racer, northern copperhead, northern redbelly snake

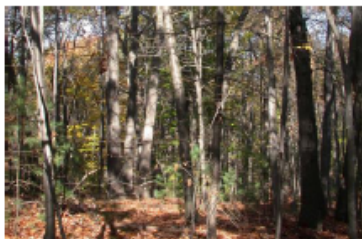
**PLANTS:** Sundial Lupine (*Lupinus perennis*), Large Whorled Pogonia (*Isotria verticillata*), Northern Blazingstar (*Liatris scariosa* var. *novae-angliae*), Philadelphia Panicgrass (*Panicum philadelphicum*), Sassafras (*Sassafras albidum*), Swamp Saxifrage (*Saxifraga pensylvanica*), Sand Violet (*Viola adunca*), Pale Green Orchid (*Platanthera flava* var. *herbiola*), Redtop Panicgrass (*Panicum rigidulum* var. *pubescens*)

## Species of Concern (G1-G4): *Appendix lists scientific names*

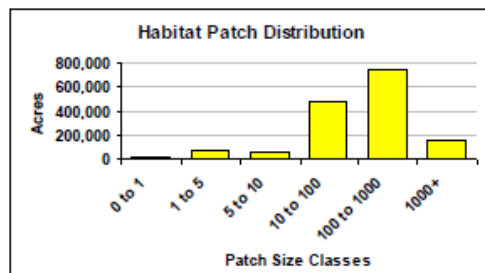
**BIRDS:** eastern whip-poor-will

**INSECTS:** red-winged swallow, ringed boghaunter

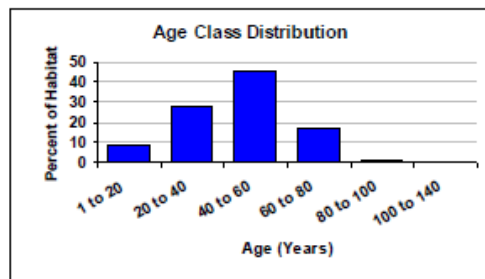
**PLANTS:** small whorled pogonia (*Isotria medeoloides*), climbing fern (*Lygodium palmatum*), plymouth gentian (*Sabatia kennedyana*)



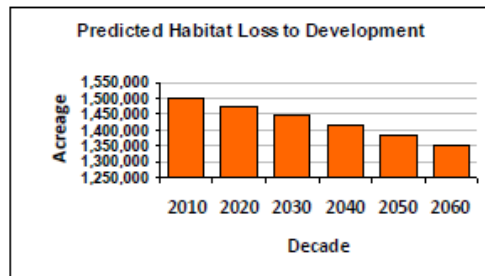
© Patricia Swain (Massachusetts Division of Fisheries & Wildlife/Natural



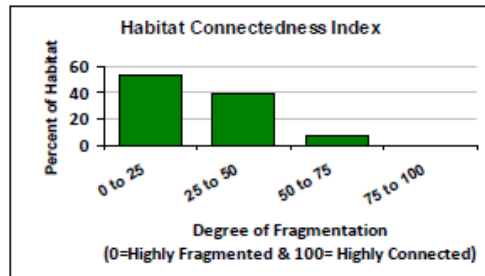
The average patch size for this habitat is 10 acres and the largest single patch is 2,638 acres. This chart shows the proportion of the habitat that is in each patch-size class.



This chart shows the average age of trees associated with this habitat based on forest inventory data. For non-forested systems or small habitats the average age is influenced by the surroundings.



This chart shows the predicted loss of habitat over the next five decades (146,436 acres) if loss continues at the same rate as 1990-2000. The average rate of loss is 2,929 acres per year.

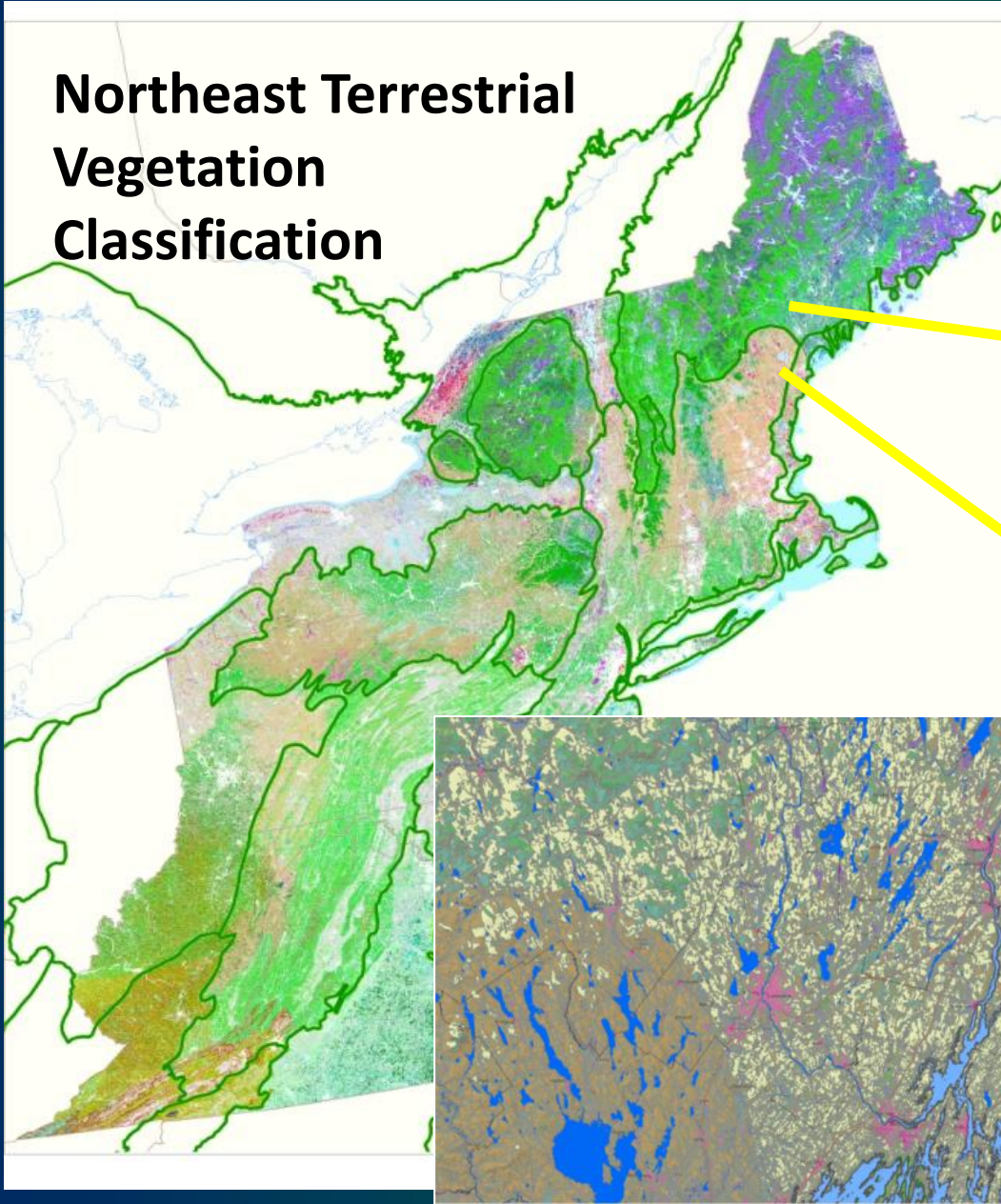


This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this chart shows the proportion of the habitat in each

# Northeast Terrestrial Vegetation Classification

“Laurentian – Acadian  
Northern Pine – Oak  
Forest”

“Northeastern Coastal  
and Interior Pine - Oak  
Forest”



# Habitat Classification: Types in 2005 Plan

Alpine

Caves and Mines

Cliff Face and Rocky Outcrops

Coniferous Forest

Deciduous and Mixed Forest

Dry Woodlands and Barrens

Emergent Marsh & Wet Meadows

Estuarine Emergent Saltmarsh

Estuaries and Bays

Freshwater Lakes and Ponds

Forested Wetland

Grassland, Agricultural, Old Field

Marine Open Water

Mountaintop Forests

Peatlands

Rivers and Streams

Rocky Coastlines and Islands

Shrub/Early Successional Forest

Shrub-scrub Wetland

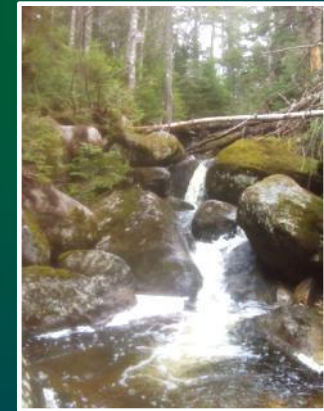
Unconsolidated Shore

Urban/Suburban

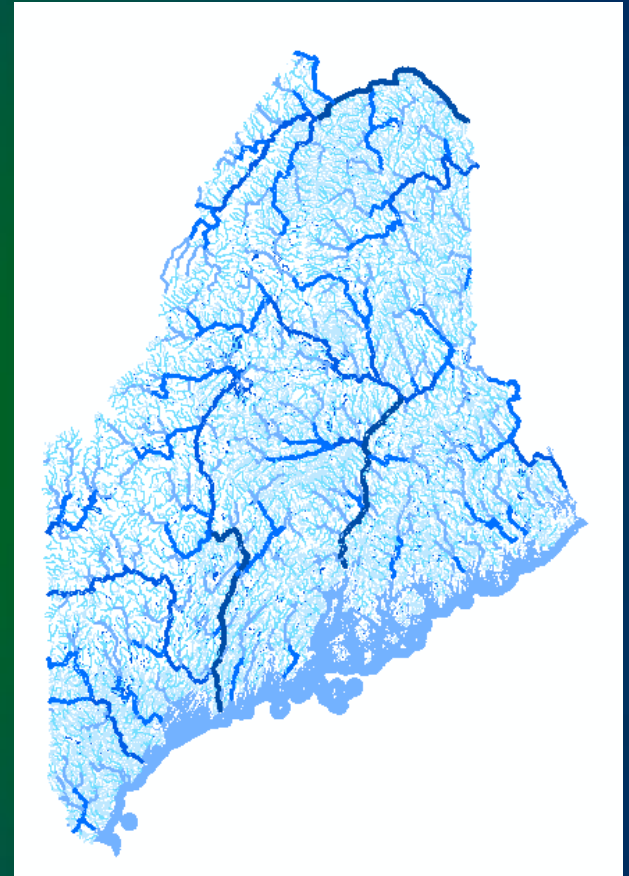
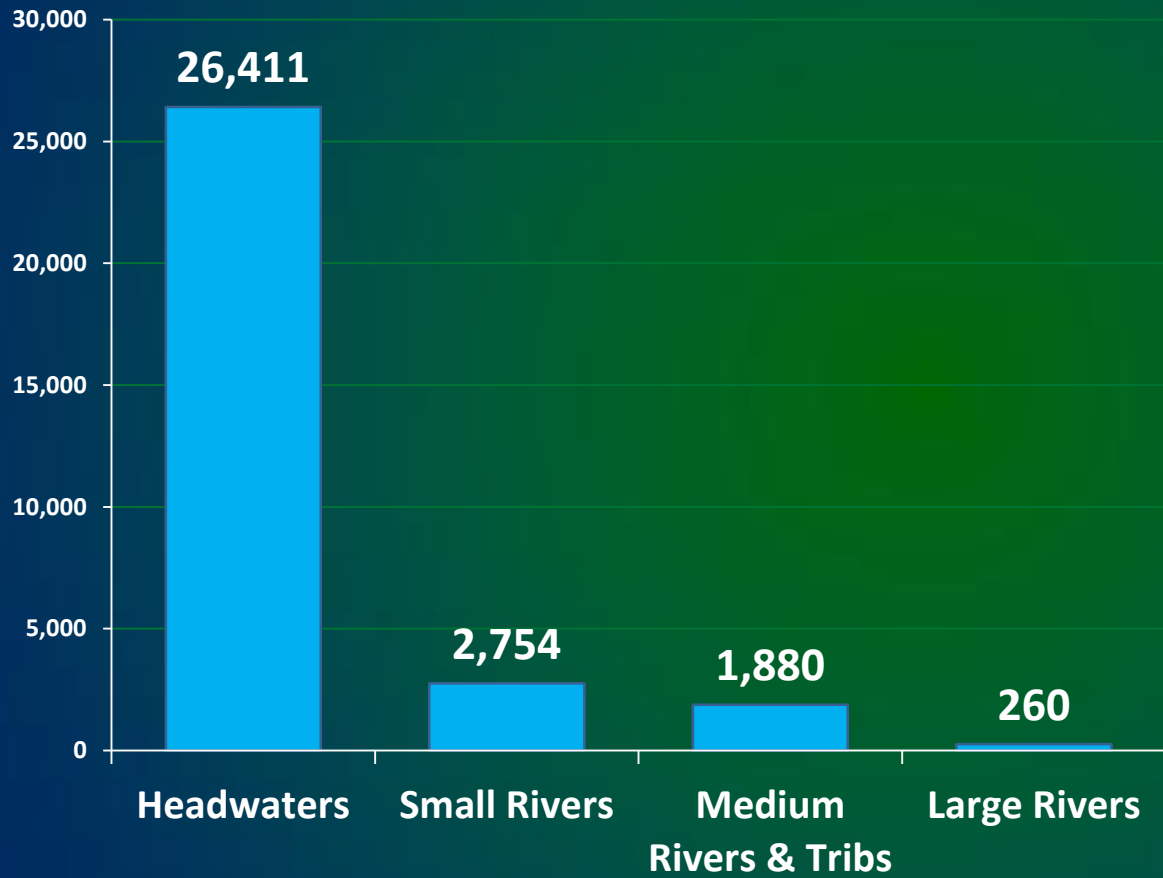
# Aquatic Habitat Types

## *Rivers and Streams*

- Large Rivers
- Medium Rivers
- Small Rivers
- Headwater Streams
- Ephemeral Streams



# River and Stream Miles



# Aquatic Habitat Types

## *Ponds & Lakes*

- Dystrophic



- Eutrophic
- Mesotrophic
- Oligotrophic



*Nutrients &  
Productivity*



- Vernal Pool

# Topics to Be Covered

- The Role of Habitats in SWAP
- Habitat Classification
- **Linking SGCN to Habitats**
- Some Initial Results
- Take Home Messages








# Linking SGCN to Habitats

SpeciesStatus\_fe : Database (Access 2007 - 2010) - Microsoft Access

File Home

frmMain

## MAINE'S FISHERIES AND WILDLIFE ACTION PLAN

SEARCH DATABASE

CREATE REPORTS

OPEN DATA ENTRY FORM

EXIT DATABASE

SpeciesStatus\_fe : Database (Access 2007 - 2010) - Microsoft Access

File Home

frmSpeciesStatus

## SPECIES: *Myotis leibii* (Eastern Small-footed Myotis)

Population: **No population specified** Species ID: 126 Status ID: 75

Comments: Northeast endemic with few records from Maine and considered rare throughout its range.

2015 CWCS Priority: 2 2015 SGCN Priority: 1

State Status: SC Federal Status: Tracked

Habitat Threats Listing History Recommendations

### 21 Key Habitats (2005 CWCS)

Habitat Type	CWCS Habitat	HabitatID
Primary	Cliff Face and Rocky Outcrops (includin	UR
Secondary	Caves and Mines	UCM
Secondary	Deciduous and Mixed Forest	UD

### Northeast Terrestrial Habitat Classification System (NETHCS) - 2015 Wildlife Action Plan

Macrogroup Name

Habitat System \*\*double click row to view definition\*\* [SHOW ALL HABITAT SYSTEMS](#)

ID	2015 Habitat System Name	2005 ID
47	Acadian-North Atlantic Rocky Coast	CC
58	Laurentian-Acadian Lakeshore Beach	CC
48	North Atlantic Cobble Shore	CC
106	Estuaries and Bays	CE
105	Marine Open Water	CO

[Associate selected habitat systems with species](#)

### HABITATS ASSOCIATED WITH SPECIES 2015 Habitat Review Completed

\*\*double click Habitat Notes field to expand\*\*

MacrogroupName	HabitatSystemName	HabNotes	SpHabID	2005 Hab
Boreal Upland Forest	Acadian Low-Elevation Spruce-Fir Forest and Flats	"secondary habitat" for upl	2537	UC
Boreal Upland Forest	Acadian Sub-Boreal Spruce Barrens	"secondary habitat" for upl	2542	UC
Cliff and Talus	Laurentian-Acadian Acidic Cliff and Talus	"primary habitat" for ledge	22	UR
Cliff and Talus	Laurentian-Acadian Calcareous Cliff and Talus	"secondary habitat" for led	21	UR
Extractive	Subsurface Mines & Caves	"primary habitat" for hiber	2562	NA
Outcrop / Summit Scrub	Laurentian-Acadian Calcareous Rocky Outcrop	"secondary habitat" for led	20	UR

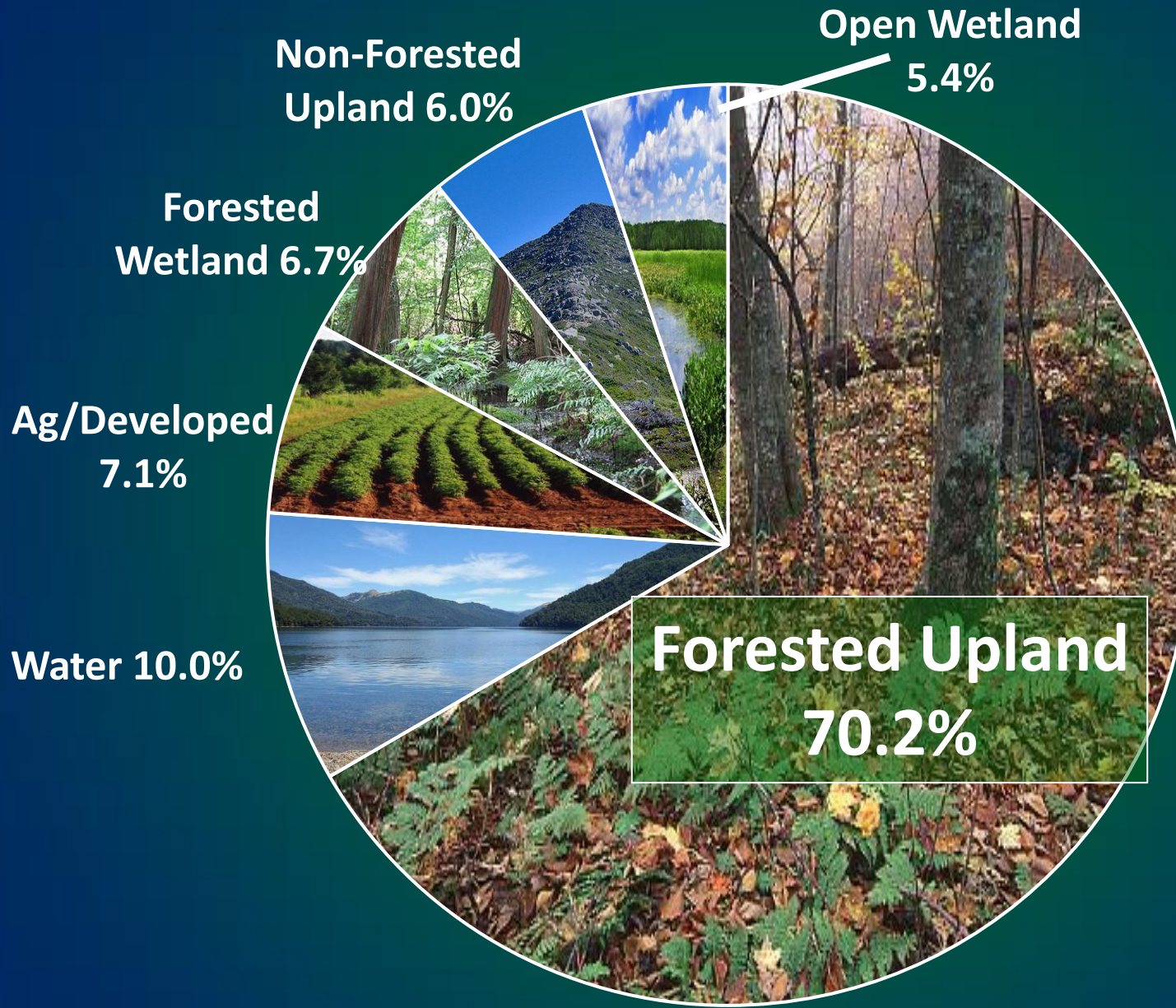
Record: 1 of 14

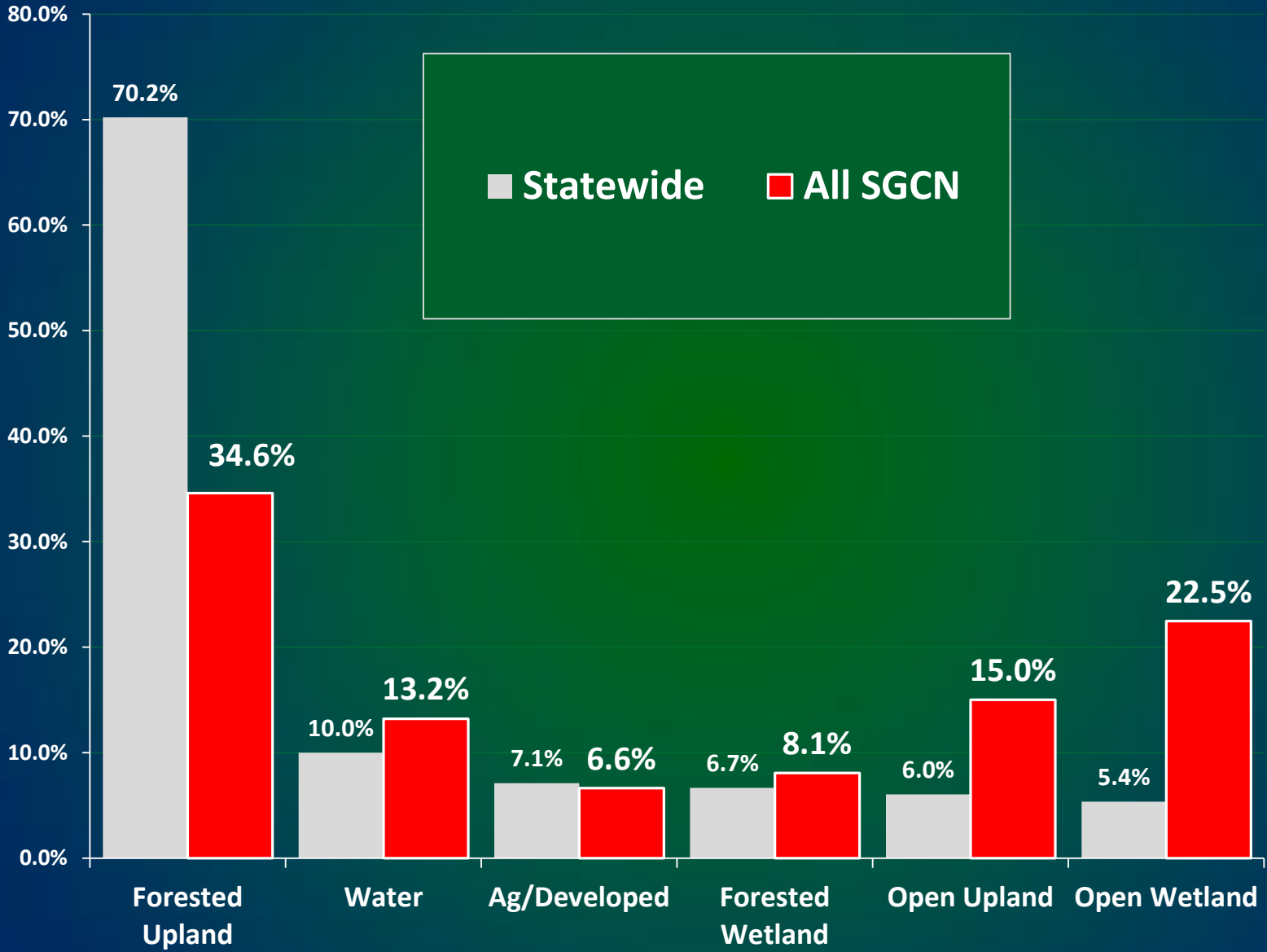
# Challenges in Assigning Species to Habitats

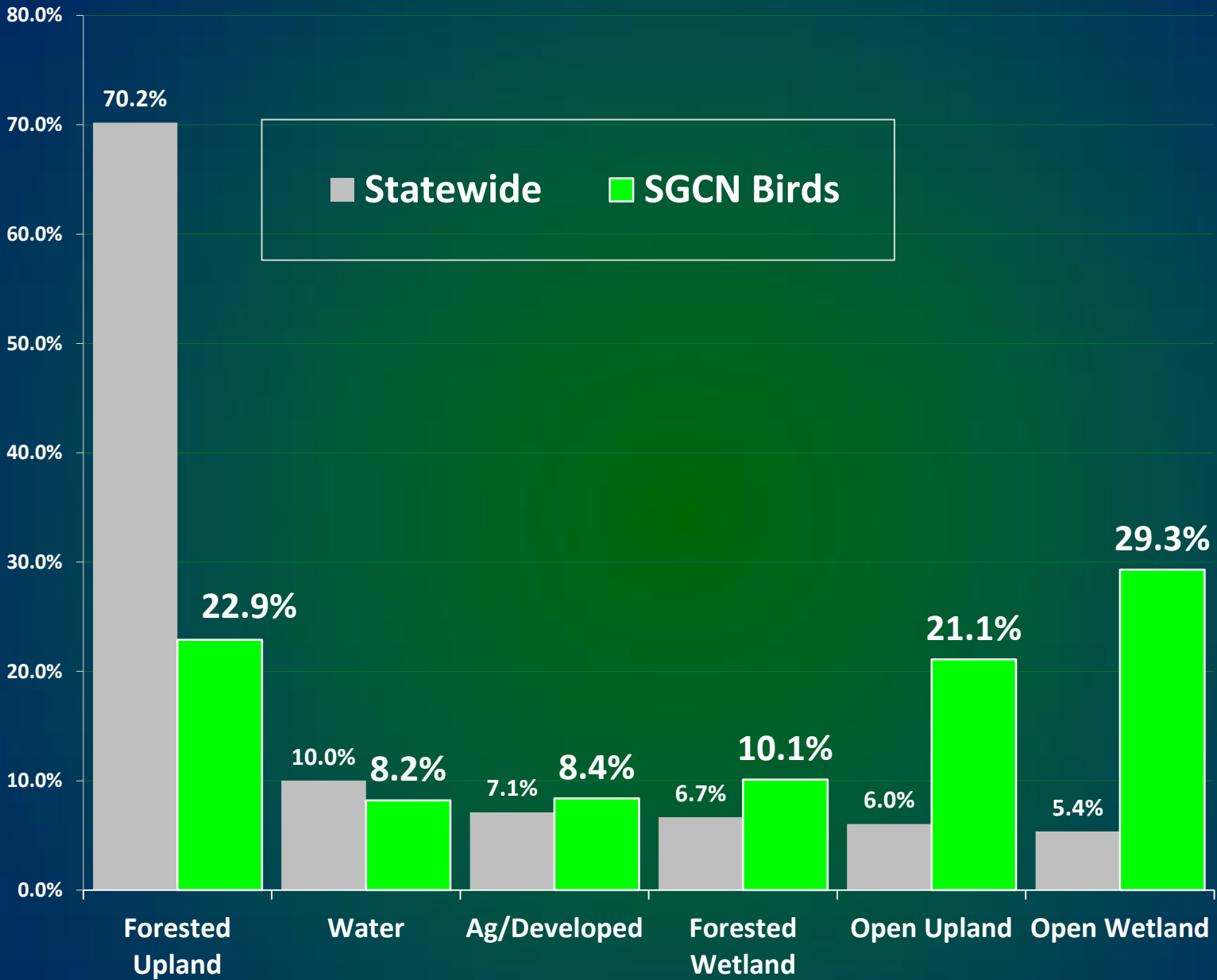
- Understanding the habitat descriptions!
- ‘Primary’ vs. ‘Secondary’ Habitats – What Habitat is Limiting?
- Extreme generalists (e.g., bats, tree swallows)
- Finest classification level possible (System vs. Macrogroup)
- Geography of habitats/range of species

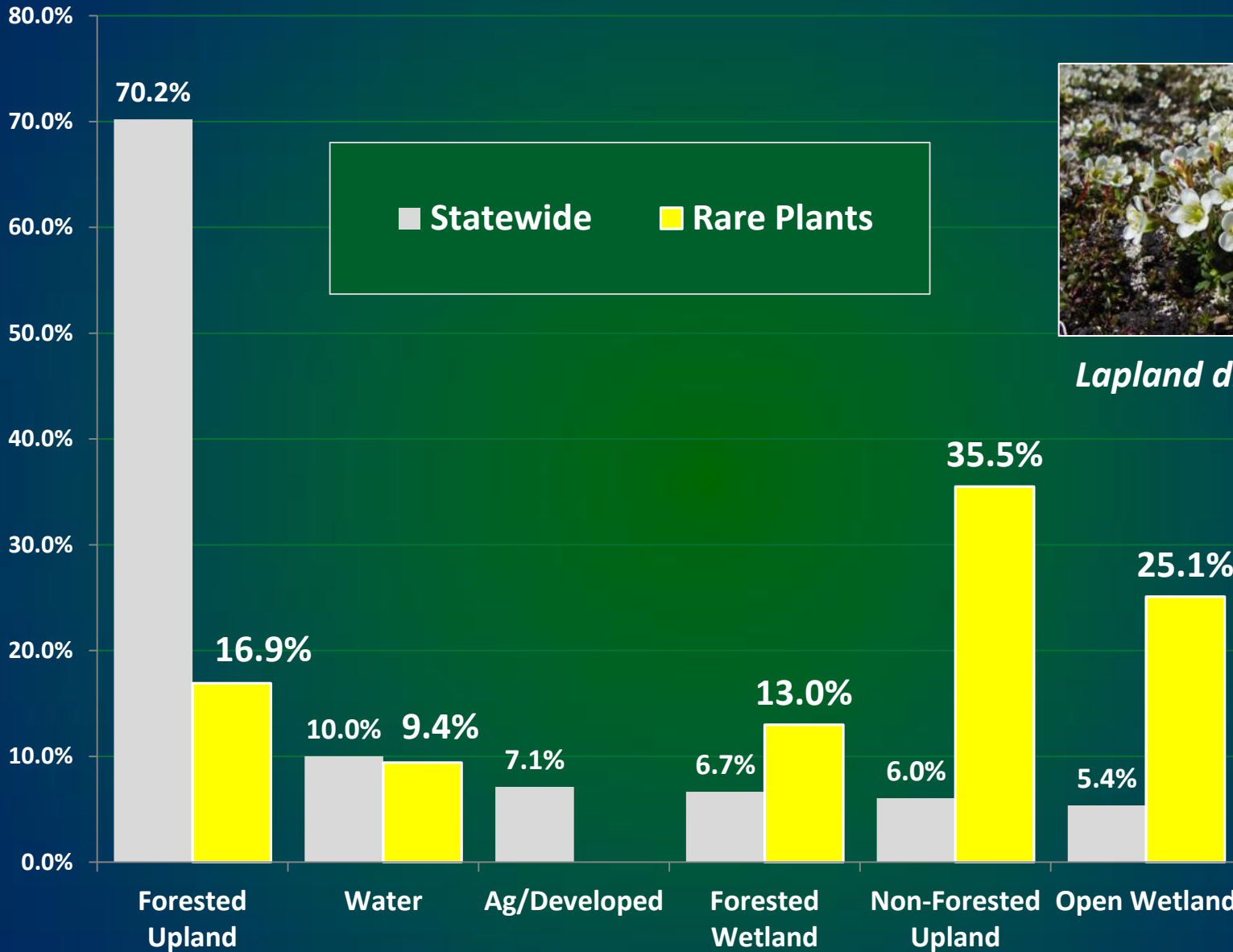
# Topics to Be Covered

- The Role of Habitats in SWAP
- Habitat Classification
- Linking SGCN to Habitats
- **Some Initial Results**
  - Habitats Most Important to SGCN
  - Habitats in Focus Areas
  - Habitats in Conserved Lands
- Take Home Messages

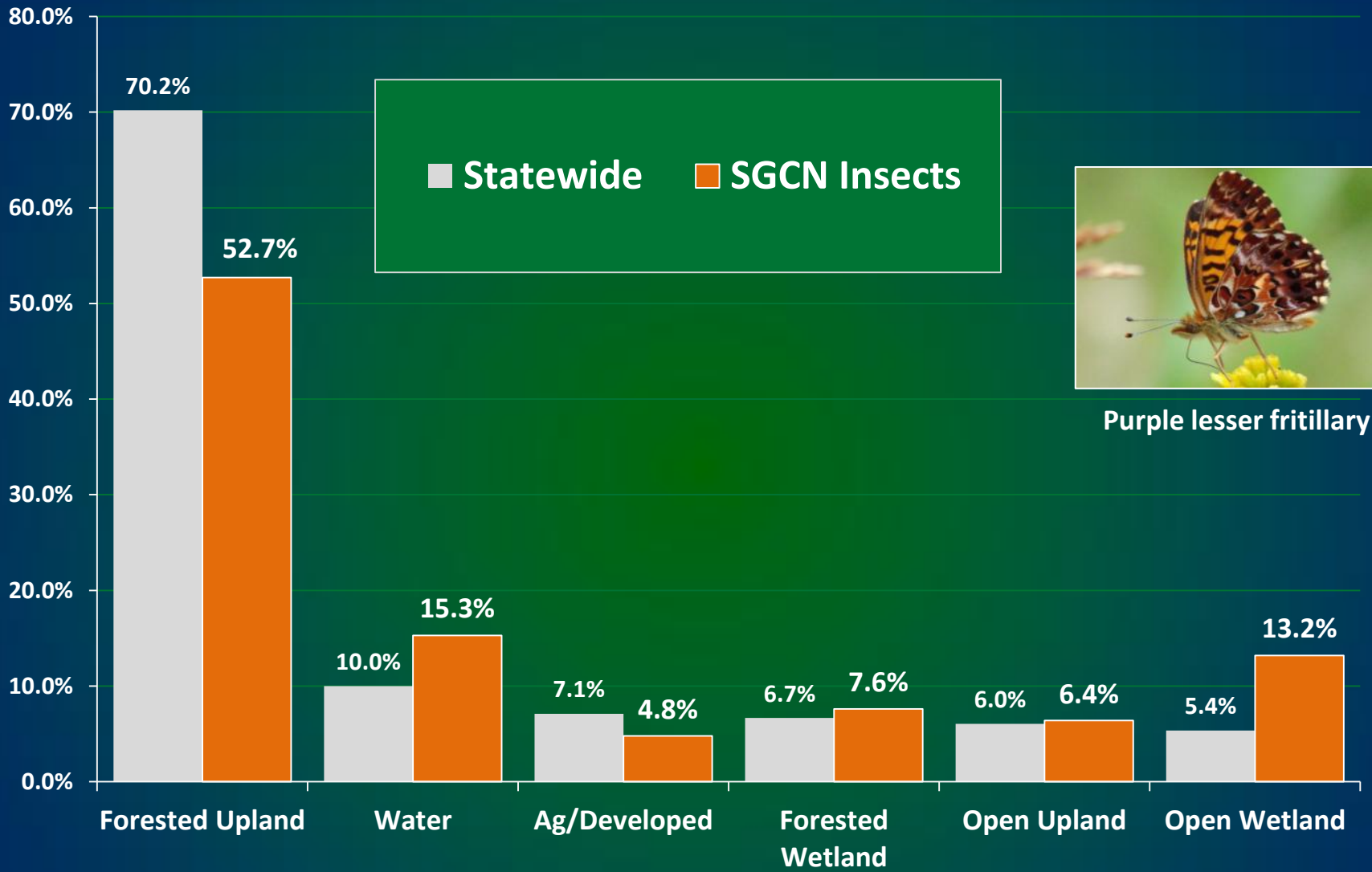








*Lapland diapensia*



Purple lesser fritillary

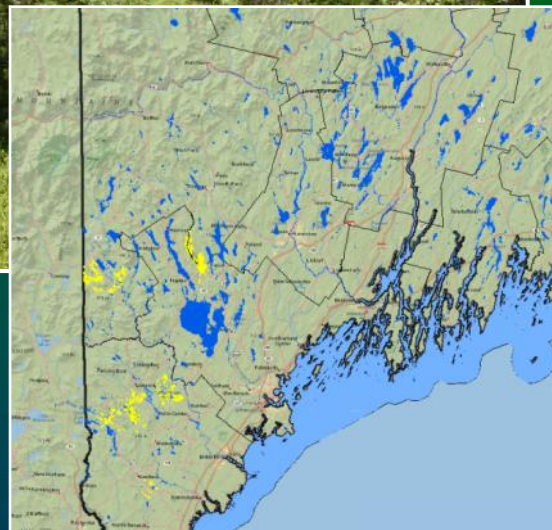


# Northeastern Interior Pine Barrens



9,000 acres, or  
1/20<sup>th</sup> of 1% of the  
state...

42 SGCN!



*Edward's hairstreak*

# Shrublands and Grasslands – 98 SGCN



**30,000 acres, or <0.15% of the state**



*Upland sandpiper*



*Northern black racer*

# Rivers and Streams – 63 SGCN

including the largest number of Priority 1 species (13)



*Brook Trout*



*Horneman's  
willow-herb*

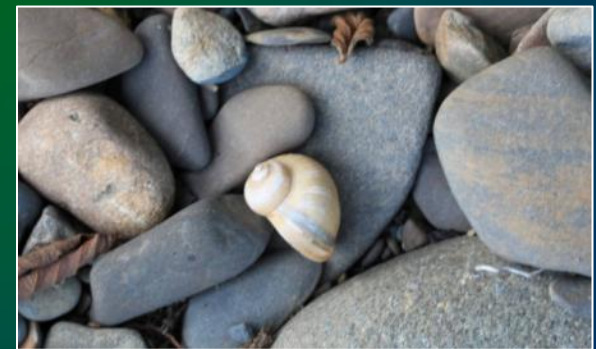


*Roaring Brook  
mayfly*

# Ponds & Lakes – 58 SGCN



*Arctic charr*



**Bigmouth Pondsnailed**

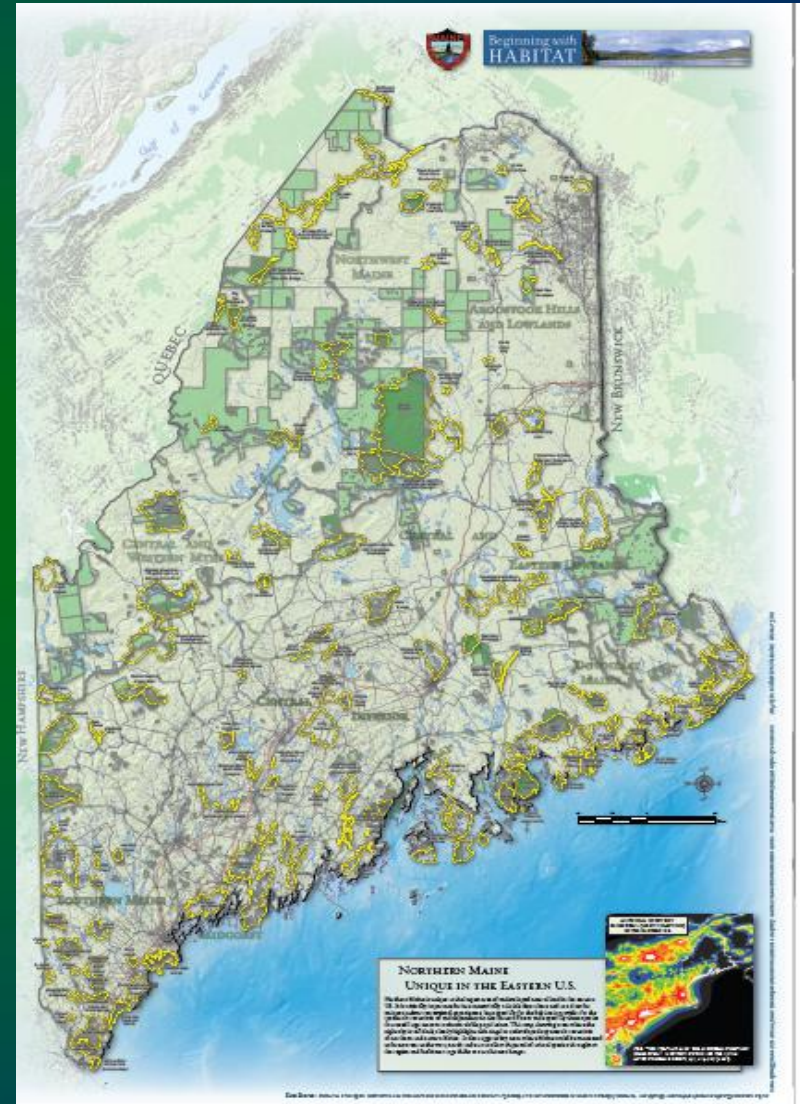
# Coastal Marshes and Waters (Salt Marsh, Intertidal) 70 SGCN (+)



*Salt marsh sparrow*

# What Habitats are in Focus Areas?

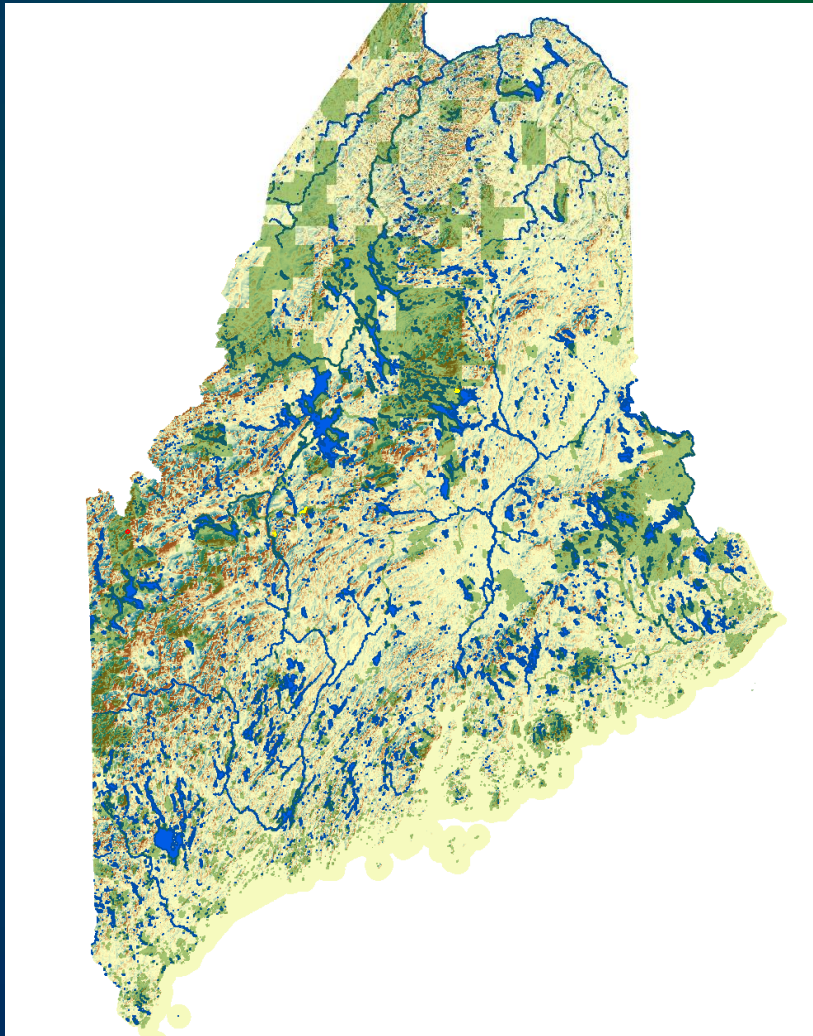
- Areas of statewide significance recognized in 2005 SWAP
- Concentrations of rare species, habitats, and their supporting landscape
- Non-regulatory
- Used for guiding conservation actions (land acquisition, municipal planning etc.)



Habitat MacroGroup	Acres In Focur Areas	% FA/ % State	# of Focus Areas
Alpine	3,624	9.6	5
Coastal Plain Swamp	511	7.5	4
Salt Marsh	19,396	7.1	27
Coastal Grassland & Shrubland	2,076	4.5	6
Cliff and Talus	18,965	4.2	48
Glade and Savannah	72	3.8	3
Central Oak-Pine	37,988	2.9	31
Northern Peatland	105,938	2.8	113
Floodplain Forest	6,505	2.2	38
Outcrop & Summit Scrub	14,076	2.1	38
Rocky Coast	681	2.1	6
Shrubland & Grassland	4,642	2.0	13
Water	357,646	1.6	126
Wet Meadow / Shrub Marsh	53,721	1.5	132
Northern Swamp	192,074	1.3	136
Emergent Marsh	50,902	1.1	135
Boreal Upland Forest	676,821	1.0	102
Urban/Suburban Built	59,327	0.7	130
Northern Hardwood & Conifer	647,329	0.7	128
Agricultural	35,709	0.4	102
Central Hardwood Swamp	108	0.4	3

Each habitat  
'macrogroup'  
occurs in  
multiple  
Focus Areas

# Conserved Lands in Maine: 2014



**3.8 million acres in  
Maine are now  
permanently  
conserved**



# Conserved Lands in Maine: 2014

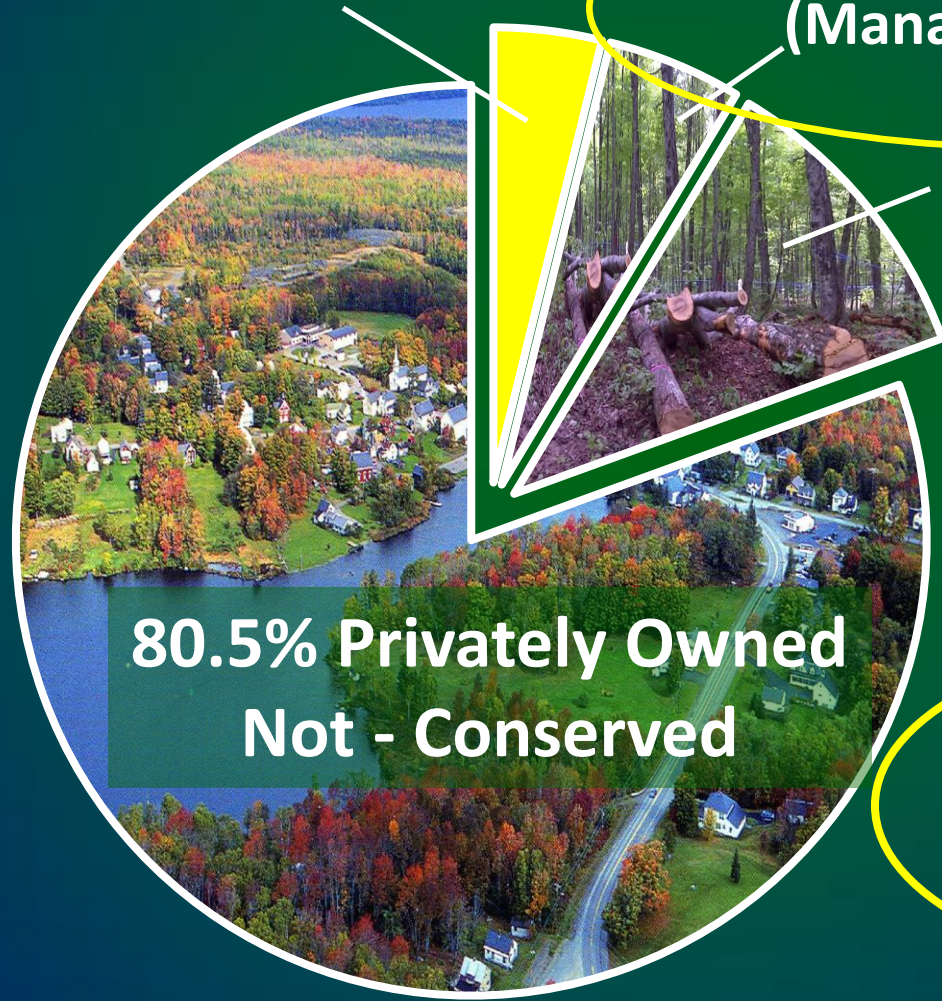
3.9% 'Reserved'

4.8% Fee Conserved Land  
(Managed Forest)

10.8% Managed Forest  
Conservation Easement

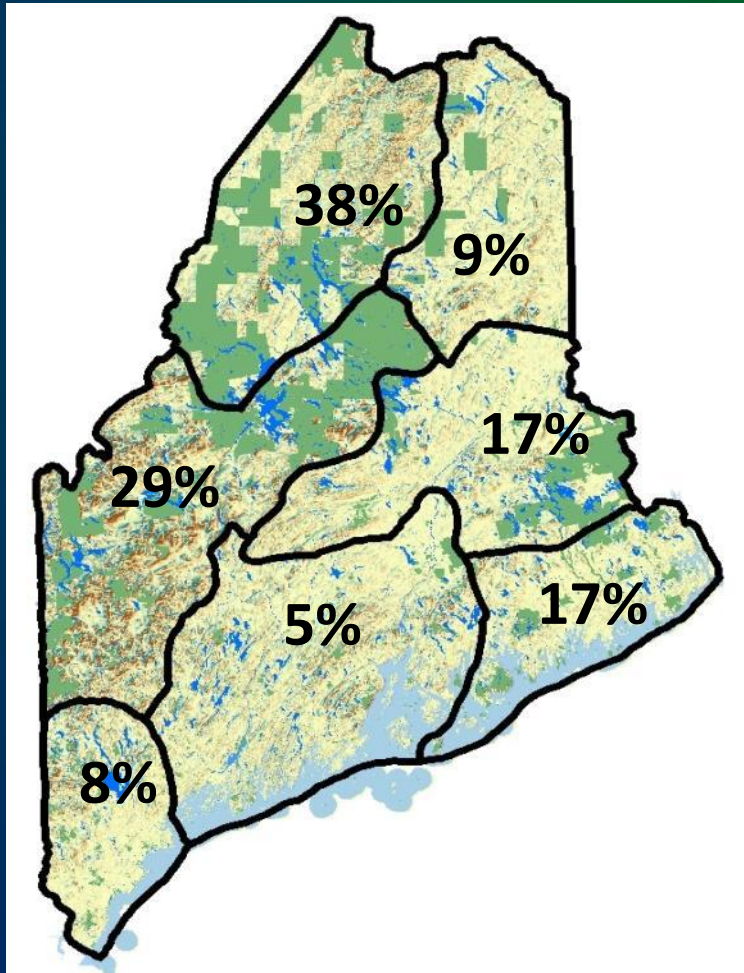
80.5% Privately Owned  
Not - Conserved

IFW WMAs:  
~100,000 acres  
(<1% of the state)

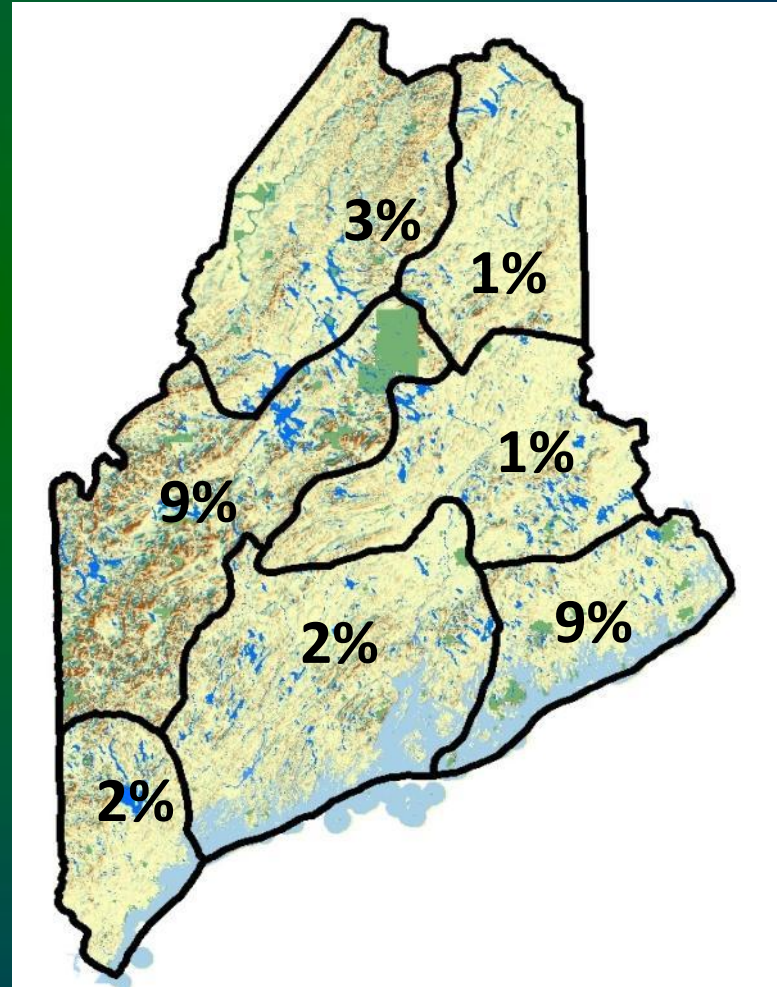


# Conserved Land in Maine: 2014

All Conserved Land: 19.5%

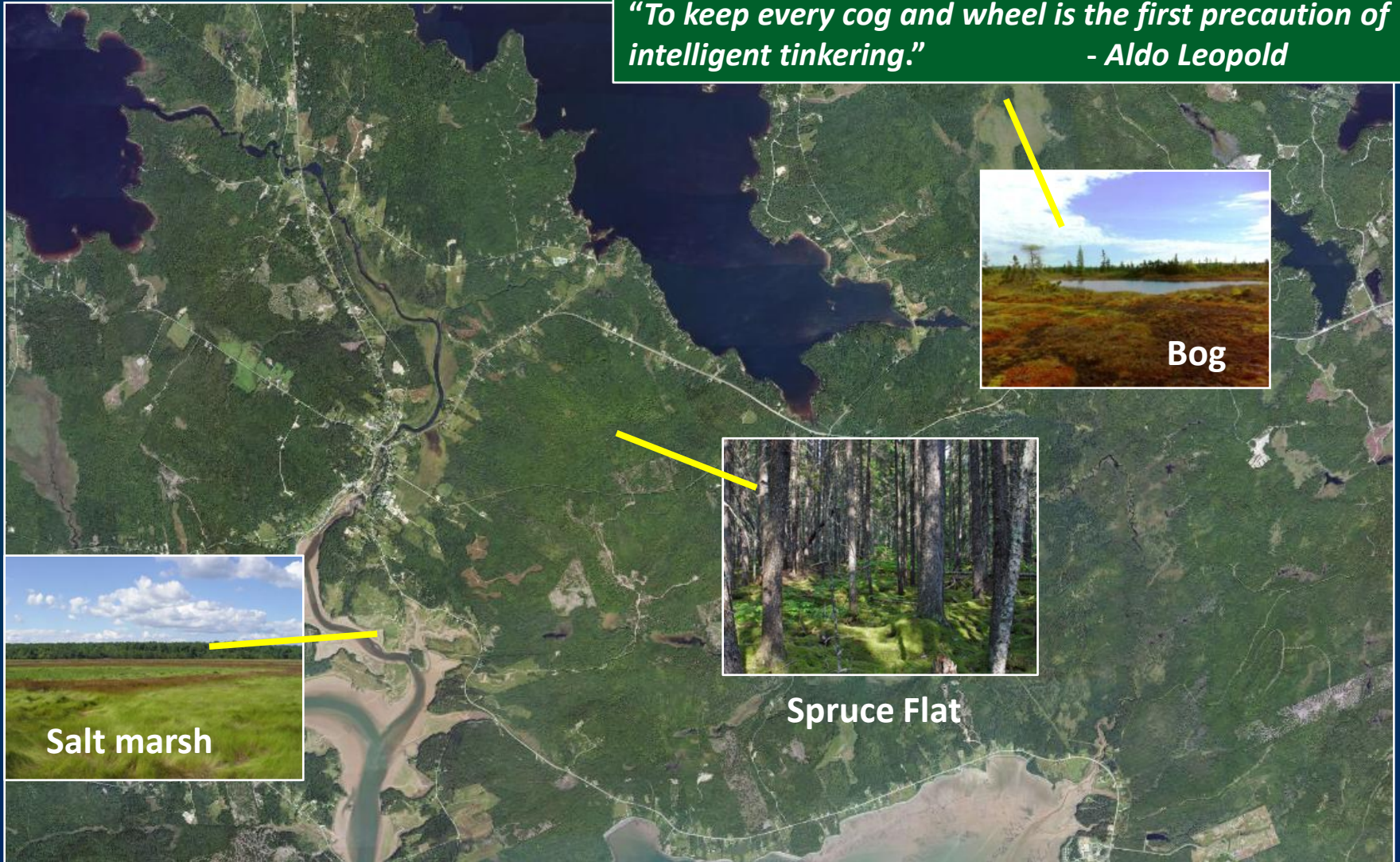


All 'Reserved' Land: 3.9%



# It's not just *how much* have we conserved, but *what* have we conserved?

*"To keep every cog and wheel is the first precaution of intelligent tinkering."*  
- Aldo Leopold



Bog



Spruce Flat



Salt marsh

# Conserved Lands and Habitats in Maine

- ✓ Each of 58 habitat types occurs in conserved lands *somewhere* in Maine
- ✓ Most wetland types are very well represented on conserved lands
- ✓ More than **99%** of Maine's 'alpine' (above treeline) is conserved, and sub-alpine forests are also well represented in conserved lands.
- ✓ Compared to mountain tops and wetlands, upland forests are less well represented, particularly in Southern Maine



# Take Home Messages

- The greatest number of SCGN are associated with upland forests
- Associating SGCN with habitats emphasizes the importance of water, wetlands, and riparian zones
- Other habitats of high importance include pine barrens, grasslands and shrublands, and coastal features
- With current digital data and SGCN habitat linkages, our capacity for place-based conservation planning is significantly improved from 2005