

Geographically Isolated and Headwater Wetlands In Selected Areas of New England

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Today's Presentation

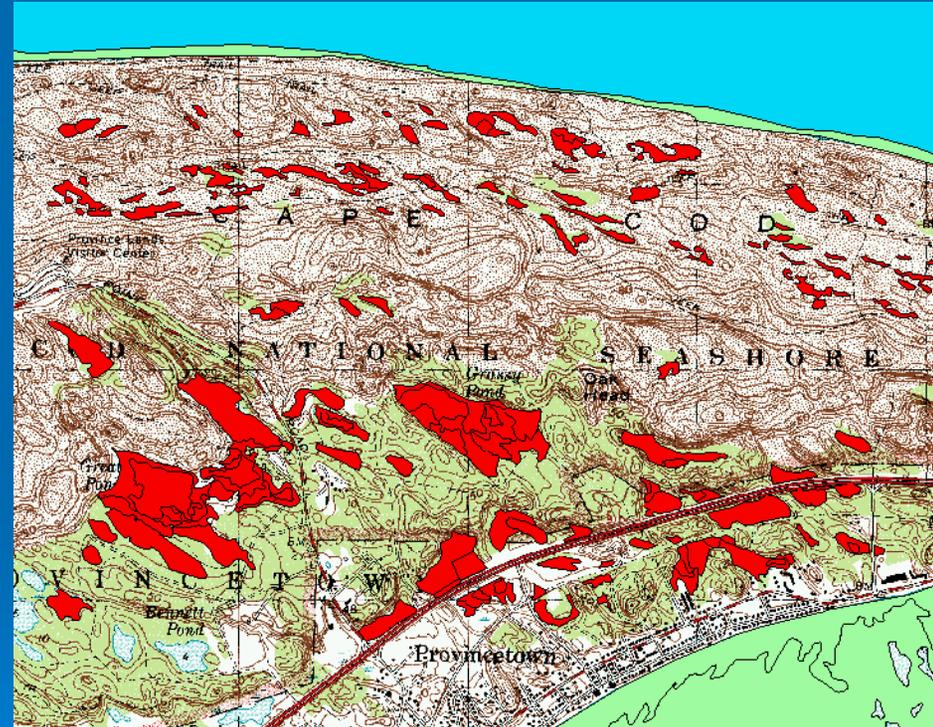
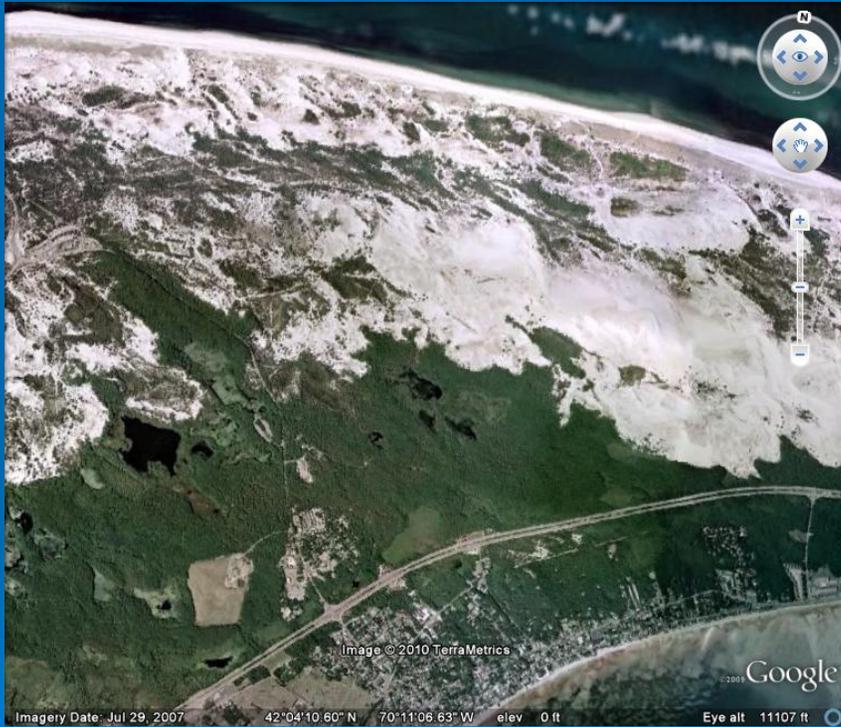
- To define these types of wetlands and briefly address their functions
- Briefly describe the methodology of how these wetlands were mapped by NWI
- Present summary data for these wetlands based on recently completed NWI projects in New England
- Introduce existing and forthcoming NWI reports and new projects for New England

Definition

- **Geographically Isolated Wetlands** = wetlands completely surrounded by upland with no apparent surface water connection to waters or other wetlands



Dune Wetlands



Woodland Vernal Pools



Other Isolated Wetlands



Functions of Isolated Wetlands

- Basin types retain all precipitation entering them
- Nutrient cycling and carbon sequestration (especially those forming organic soils for the latter)
- Amphibian breeding habitat
 - Interdunal swales – spadefoot toads (rapid metamorphosis); Province Lands may support highest concentrations in Northeast
 - Woodland vernal pools – various salamanders, frogs, toads, and red-spotted newts
- Habitat for other wildlife
- Maintaining local biodiversity (linkage to terrestrial ecosystems)

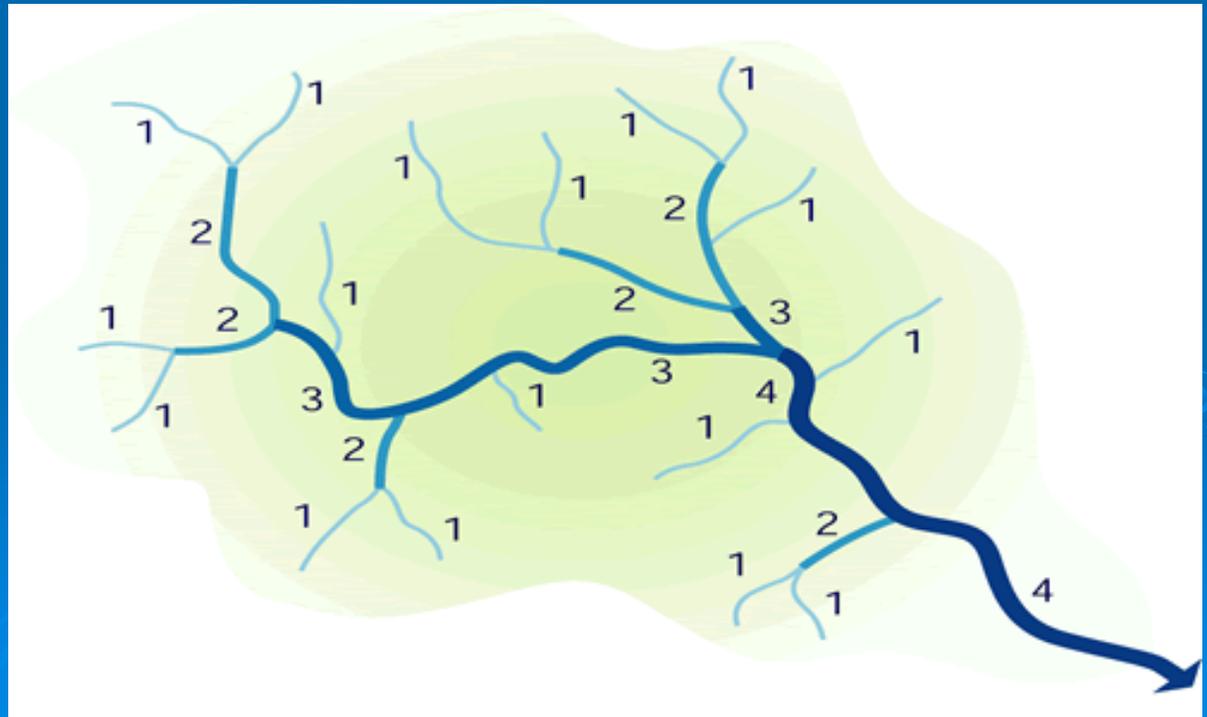
Definition

- **Headwater Wetlands** = wetlands that are the source of streams or located along first and second order perennial streams plus upstream intermittent watercourses



Stream Ordering

- Focus on perennial streams
- Intermittents = zero order





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Image MassGIS, Commonwealth of Massachusetts EOE

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Imagery Date: Mar 31, 2005

42°29'33.82" N 72°28'36.02" W elev 0 ft

Eye alt 3228 ft

Functions of Headwater Wetlands

- Streamflow Maintenance
 - Sources of streams
 - Groundwater discharge
 - Vital for Aquatic Life
- Virtually all other functions depending on water permanence of stream
 - Surface water detention
 - Nutrient cycling and carbon sequestration
 - Sediment and other particulate retention (streamside types)
 - Shoreline stabilization (streamside types)
 - Moderate water temperatures (forested and shrub types)
 - Contribute organic matter for stream biota
 - Habitat

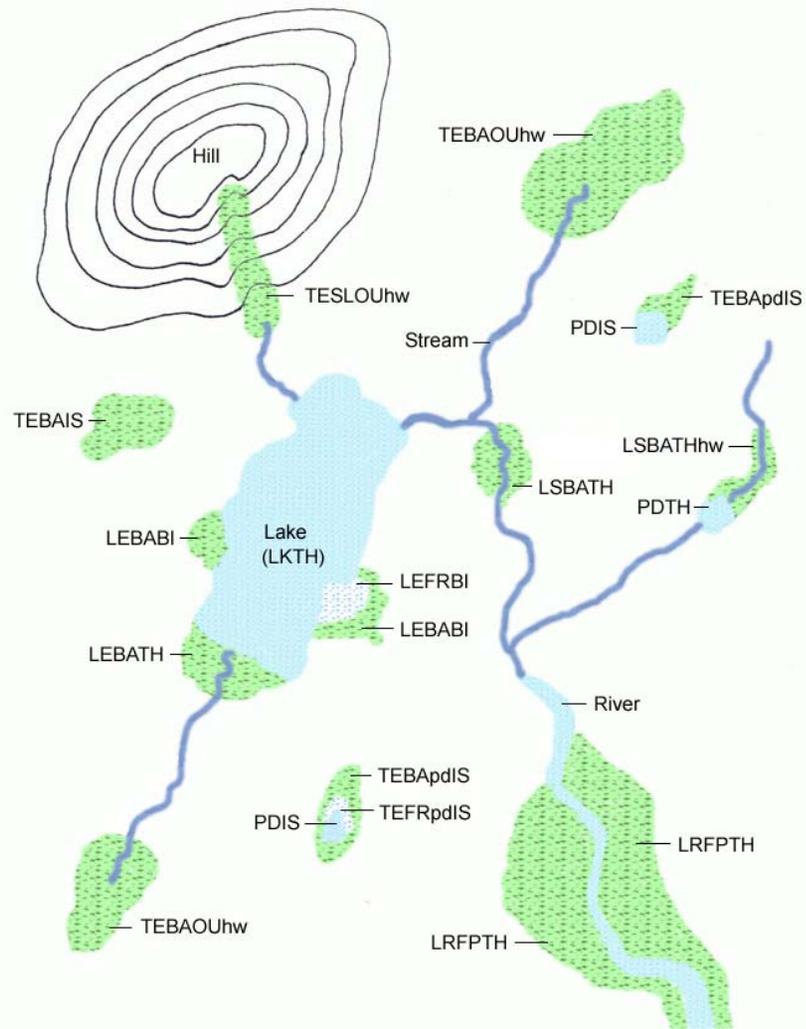
NWI Findings for Selected Areas

- The National Wetlands Inventory Program (NWI) has expanded the standard NWI wetland classification to include descriptors for hydrogeomorphic and other properties to better describe wetlands and to be able to use the enhanced database – **NWIPlus** – for predicting wetland functions
- Being done across Northeast as NWI data are updated and in priority areas elsewhere (depending on available funding)

Added Data to Create **NWIP**Plus – LLWW Descriptors

- **Landscape position**
 - Lentic
 - Lotic River, Lotic Stream
 - Terrene
- **Landform**
- **Water Flow Path**
 - Including throughflow, outflow, inflow, and isolated
- **Waterbody Type**

- Other modifiers – headwater, tidally restricted, etc.



Where has LLWW been applied in New England?

- Casco Bay watershed
- Boston Harbor Islands
- Cape Cod and the Islands
- Rhode Island
- Other MA watersheds (early effort)

NWIPlus Allows Us to Better Characterize Wetlands

- Differentiate more types of freshwater wetlands
- Can provide acreage data and estimate the percent of an area's wetlands that are
 - Geographically Isolated
 - Headwater
- Findings based on NWI mapping, stream data from other sources (e.g., NHD) and additional photointerpretation
 - Not all streams are mapped
 - Some “isolated” wetlands may be connected via small streams

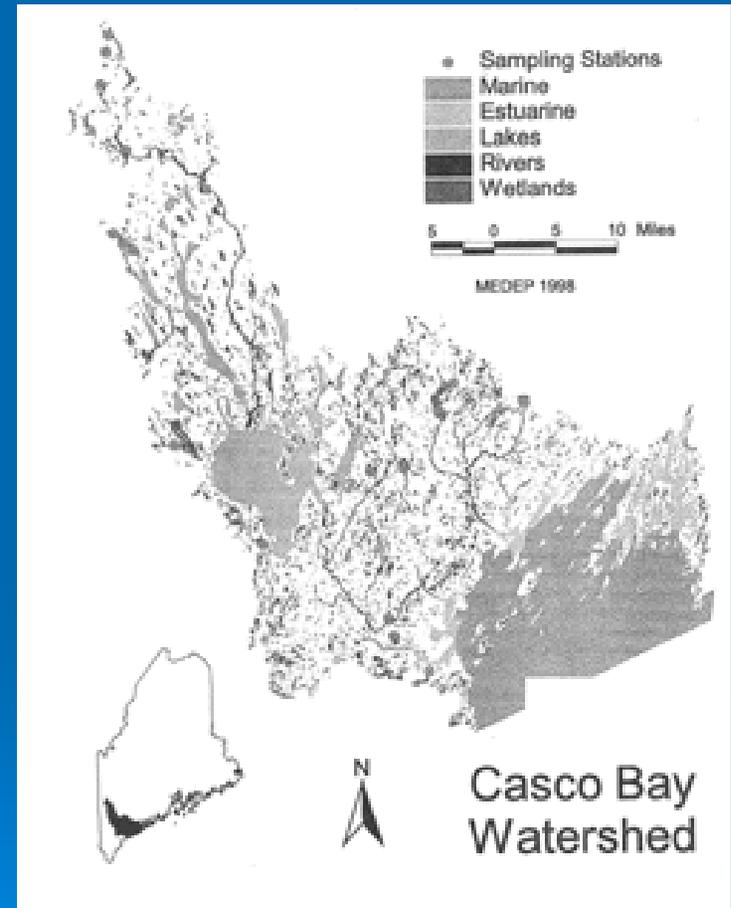
Results from New England Projects

Focus on Headwater and Isolated
Wetlands



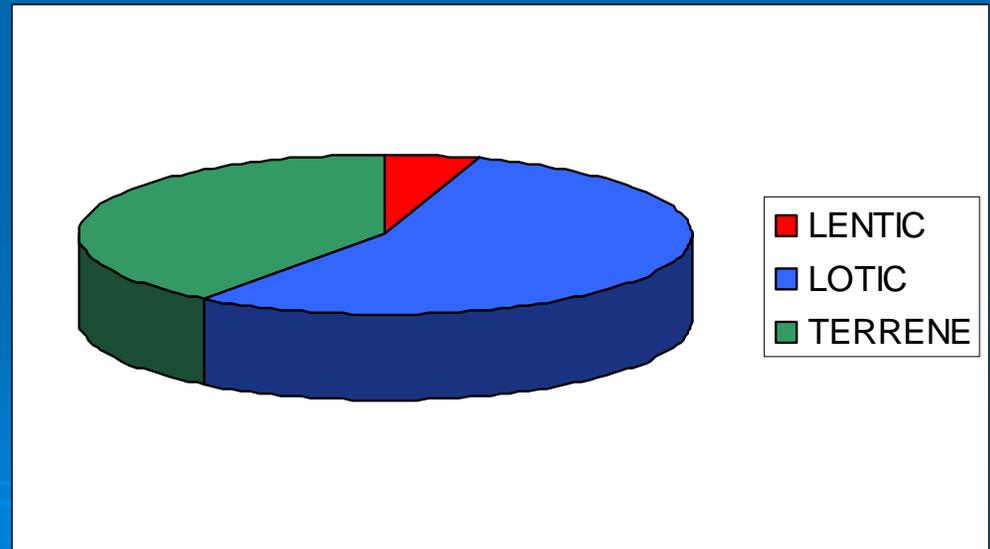
Casco Bay Watershed

- 1,216 sq. miles
- Presumpscot and Royal Rivers
- Sebago Lake
- 47,000 acres of wetlands



Casco Bay Wetlands

- Marine = 4,600 a.
(10%)
 - Estuarine = 6,500 a.
(14%)
 - Palustrine = 36,000 a.
(76%)
-
- Freshwater Wetlands
 - Lentic = 5%
 - Lotic = 55%
 - Terrene = 40%



Casco Bay Watershed

➤ Isolated Wetlands

- 13% of area's wetland acreage
- 17% of the palustrine wetland acreage
- 55% of the palustrine wetlands by number

➤ Headwater Wetlands

- *Limited to source of streams and wetlands along headwater lakes (for this study)*
- 20% of area's wetland acreage
- 25% of the freshwater wetland acreage

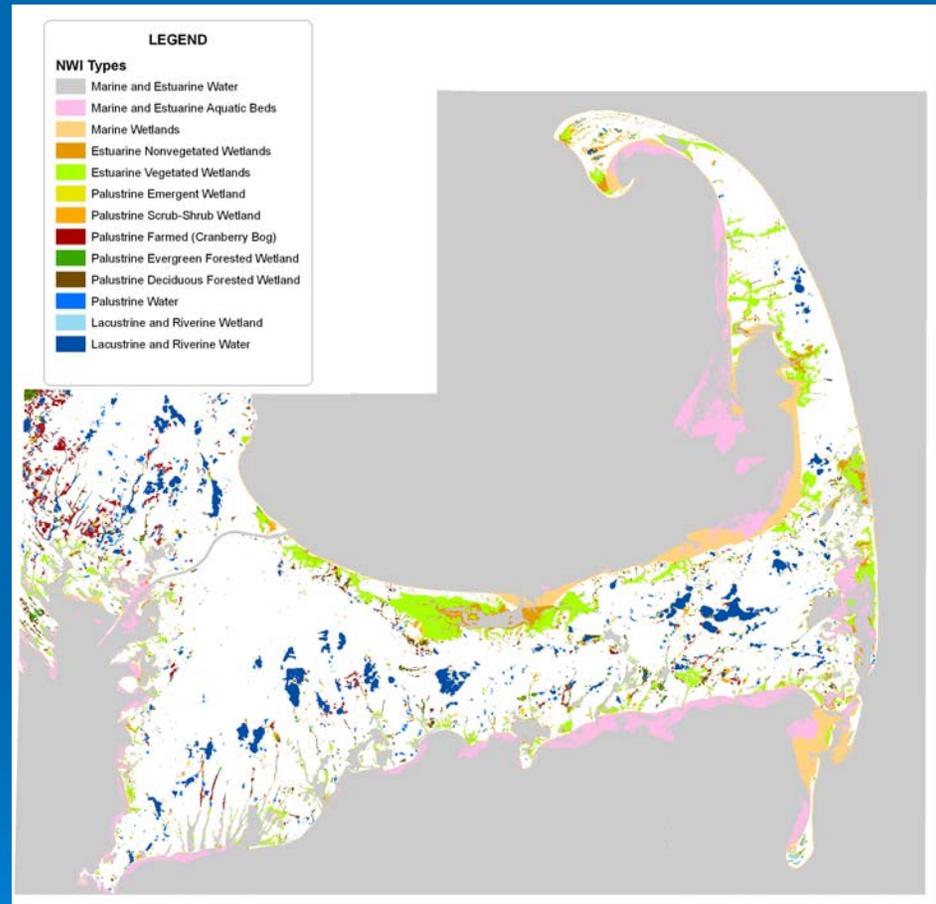
- >42% acreage of freshwater wetlands = isolated and headwater wetlands

Casco Bay Report

- Available at NWI website:
- <http://www.fws.gov>
- Click on “documents search engine” then type in “Casco Bay watershed” and you’ll find the report listed

Cape Cod and Vicinity

- 53,500 a. of wetlands
- 12-16% of land area
- Marine = 25%
- Estuarine = 40%
- Palustrine = 35%



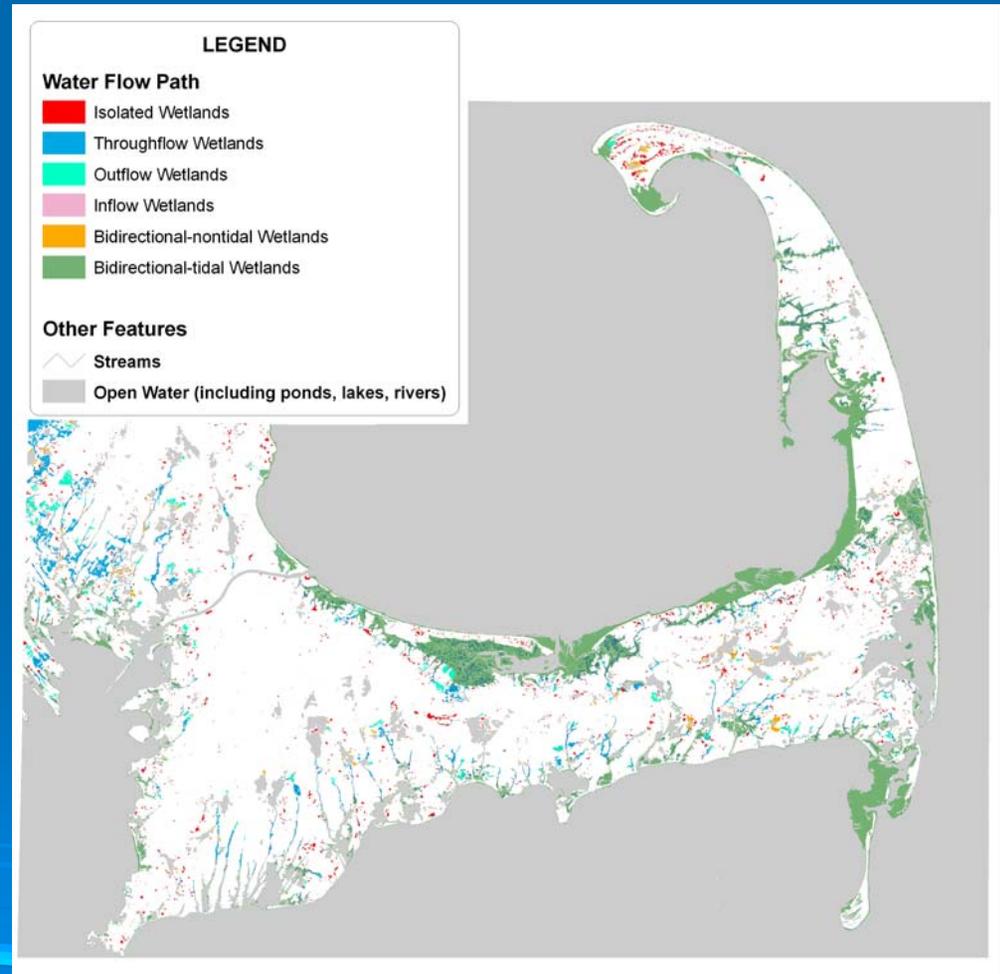
Cape Cod and Vicinity Freshwater Wetlands

➤ Freshwater Wetlands

- Lotic = 27%
- Lentic = 9%
- Terrene = 48%
- Ponds = 16%

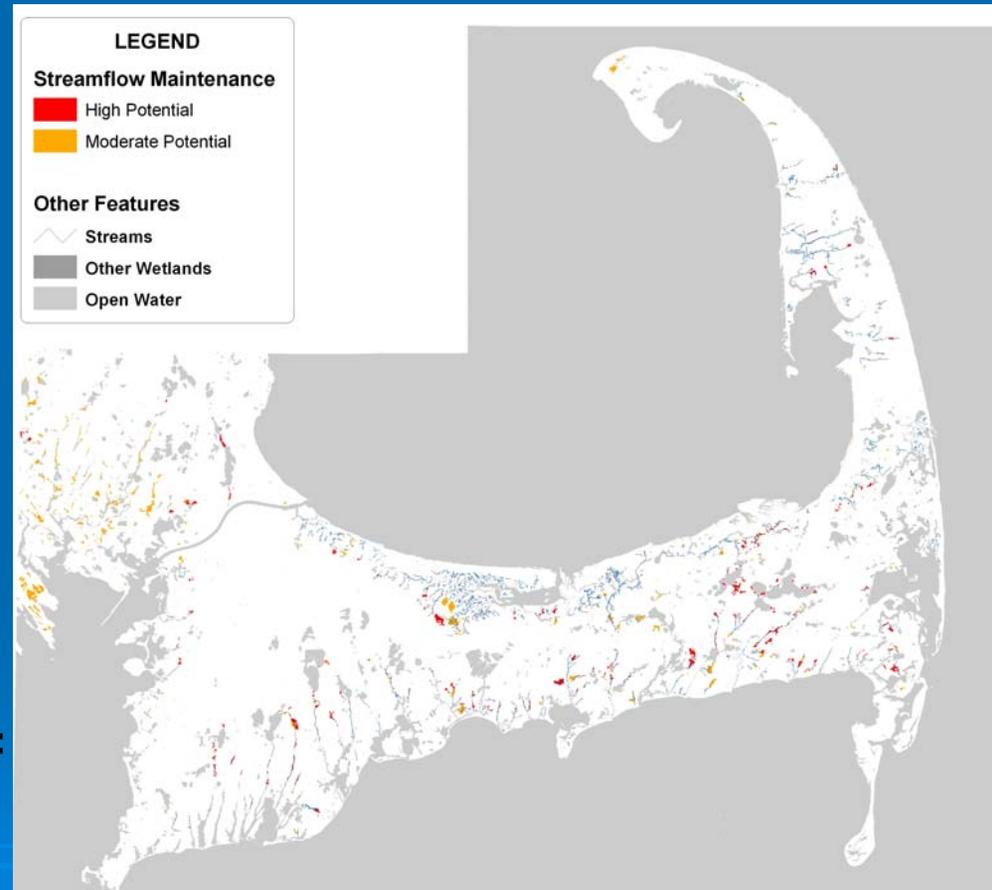
➤ Isolated Wetlands

- 10% of area's wetlands
- 35% of the freshwater wetlands



Cape Cod and Vicinity

- 9% of wetlands = important for streamflow maintenance
- 31% of freshwater wetlands
- Isolated and headwater wetlands = 66% of freshwater wetlands

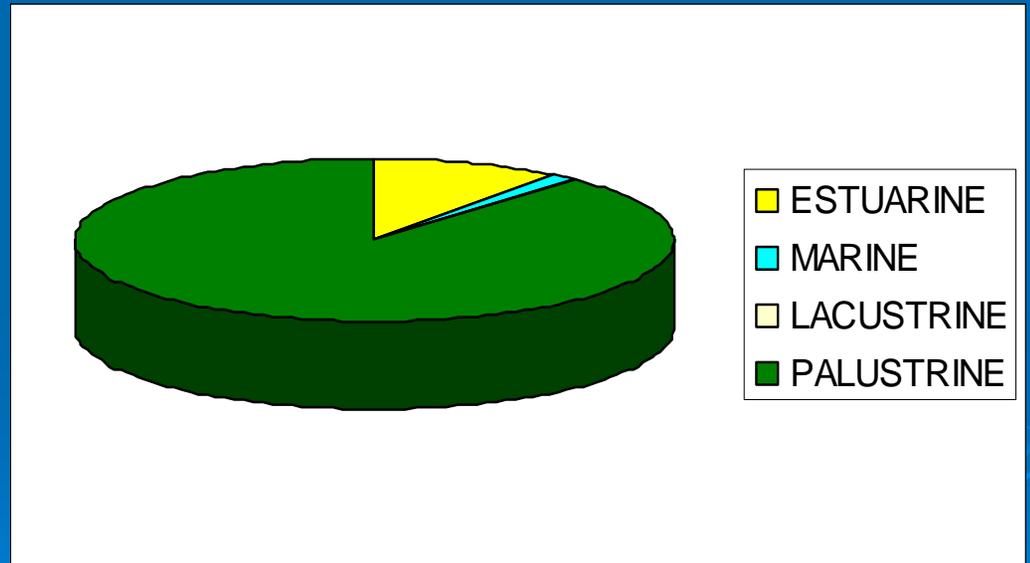


Cape Cod Report

- Soon will be available online:
 - Summarize data for Cape Cod and the Islands
 - NWI and LLWW stats
 - Plant community descriptions
 - Preliminary functional assessment
 - Narrative report with maps

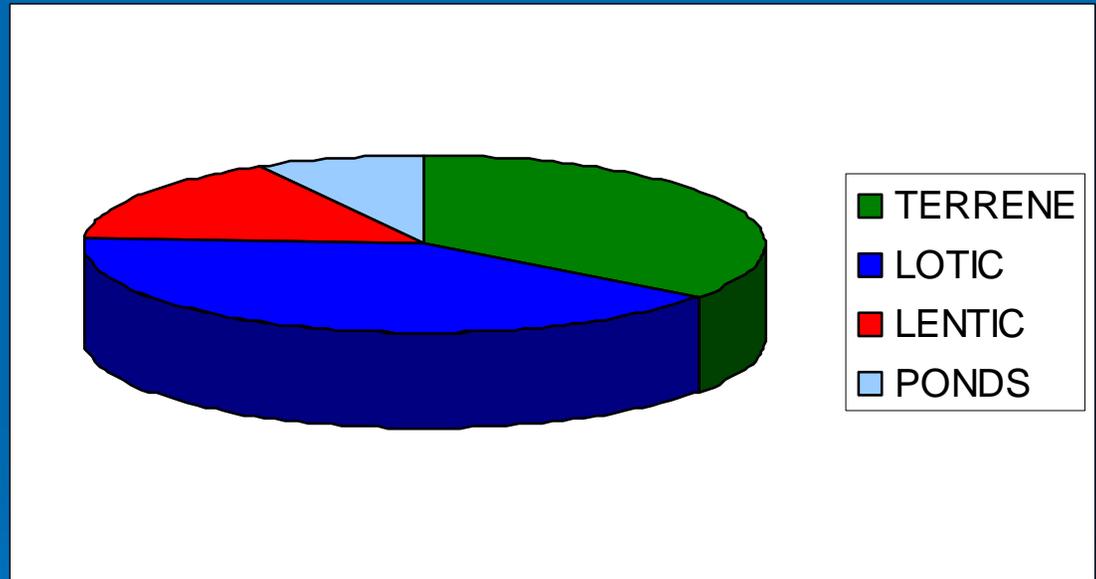
Rhode Island Preliminary Data

- Nearly 71,000 acres of wetlands
- Marine = 1%
- Estuarine = 10%
- Palustrine = 88%
- Lacustrine = <1%



Rhode Island Freshwater Wetlands

- Terrene = 35%
- Lotic = 41%
- Lentic = 16%
- Ponds = 8%



Rhode Island

Headwater and Isolated Wetlands

➤ Headwater wetlands

- Over 45,000 acres
- 64% of state's wetlands
- 72% of freshwater wetlands
- Vital for streamflow maintenance

➤ Isolated wetlands

- About 7,300 acres
- 10% of the state's wetlands
- 12% of freshwater wetlands

Rhode Island Report

- “Wetlands of Rhode Island” – in preparation (will include wetland characterization and functional assessment) – late 2010

Other New NWI Reports of Interest

- 2009 National Status Report on NWI
http://library.fws.gov/wetlands/nwi_status_2009.pdf
- “Wetlands of the Northeast: Results of the National Wetlands Inventory” – May 2010
- NWI wetland acreage summary reports for other New England states – late 2010/early 2011

Planned Projects

- Converting MADEP wetlands data for central and western MA to the Cowardin et al. system and adding LLWW descriptors – late 2010
- Adding LLWW descriptors to southern Maine NWI data – late 2010/early 2011
- Updating NWI data for Connecticut, complete with LLWW descriptors – CTDEP funded – start in 2010 (2-year project)
- Updating NWI data at coastal refuges – Moosehorn, Stewart McKinney, Great Bay, Parker River, and Monomoy

Summary

- Based on NWI studies, isolated and headwater wetlands represent a substantial part of the wetland resource in southern New England and may be the predominant type in some areas
 - 19% of Cape Cod wetlands
 - 33% of Casco Bay watershed wetlands
 - 74% of Rhode Island wetlands

Questions?

