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# **National Aquatic Resource Surveys Update and the 2011 National Wetland Condition Assessment**

NEAEB Annual Meeting

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EPA - New England

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# National Aquatic Resource Surveys (NARS)

- **Independent reviews highlight monitoring limitations**
  - Incomplete data for full range of needs
  - Inability to support statistically-valid characterization of nation's waters
- **ASIWPCA report on “Water Quality Monitoring Programs”**
  - Monitoring is fundamental, yet first to be cut
  - Funding shortfall exceeds \$100 million
- **EPA Monitoring Initiative**
  - Increase to base 106 grant
  - \$10 million for enhancing state monitoring programs
  - \$8.5 million for collaboration on statistical surveys

# Key Findings/Recommendations from Reports:

- General Accounting Office, 2000
  - EPA and States cannot make statistically valid inferences about water quality and lack data to support management decisions
- National Research Council, 2001
  - A uniform, consistent approach to ambient monitoring and data collection is necessary to support core water quality programs
- National Academy of Public Administration, 2002
  - Improved water quality monitoring information is necessary to help states make more effective use of limited resources
- Heinz Center Report, 2002
  - There is inadequate data for national reporting on fresh water, coastal and ocean water quality indicators.
- Draft Report on the Environment, 2003
  - No current way to develop a national picture of water quality
- Environmental Integrity Project, Flying Blind, 2004
  - Basic CWA reporting requirements are not adequately met.
- Resources for the Future, 2004

# National Water Resource Survey Schedule

	FY07	FY08	FY09	FY10	FY11	FY12	FY13
Lakes	Field	Lab, data	Report	Research	Design	Field	Lab, data
Rivers	Design	Field	Lab, data	Report*	Research	Design	Field
Streams	Research	Design	Field	Lab, data	Report	Research	Design
Coastal	Report	Research	Design	Field	Lab, data	Report	Research
Wetlands	Research	Research	Research	Design	Field	Lab, data	Report

\*The rivers and streams results will be combined into one report issued in 2011, that covers condition of both rivers and streams and changes in stream condition since the baseline report that was finalized in 2006.

# *Basic Components of Surveys*

- Randomized design to report on conditions at national, regional, and state (optional) scale
- Standard field and lab protocols
- National QA program and data management
- Nationally consistent and ecoregional relevant data interpretation and reports

# Implementation of NARS

- Short-term strategy
  - Rotate through water resources
  - Standardized design
  - Standardized methods



- Long-term vision
  - State-scale surveys roll into national surveys
  - More flexibility in methods, implementation, schedule, with appropriate rigor

# Implementation Challenges

- Increasing state and tribal implementation of field and lab work
- Integrating multiple methods (comparability)
- Interpreting biological data
- Transferring analytical tools and techniques
- Expanding use of nationally consistent data sets to support additional protection and management objectives



# Monitoring and Assessment Partnership (MAP Team)

- **Goal**: Implementation plan to improve the efficiency and effectiveness of state, regional, and national monitoring and assessment programs.
- **Situational Assessment**
  - Interview a selection of State and EPA technicians and managers (in process)
  - Identify issues of concern and suggest concrete recommendations for moving forward
- **Findings of Situational Assessment will be presented at NWQMC Conference in April** (Thursday afternoon special session)

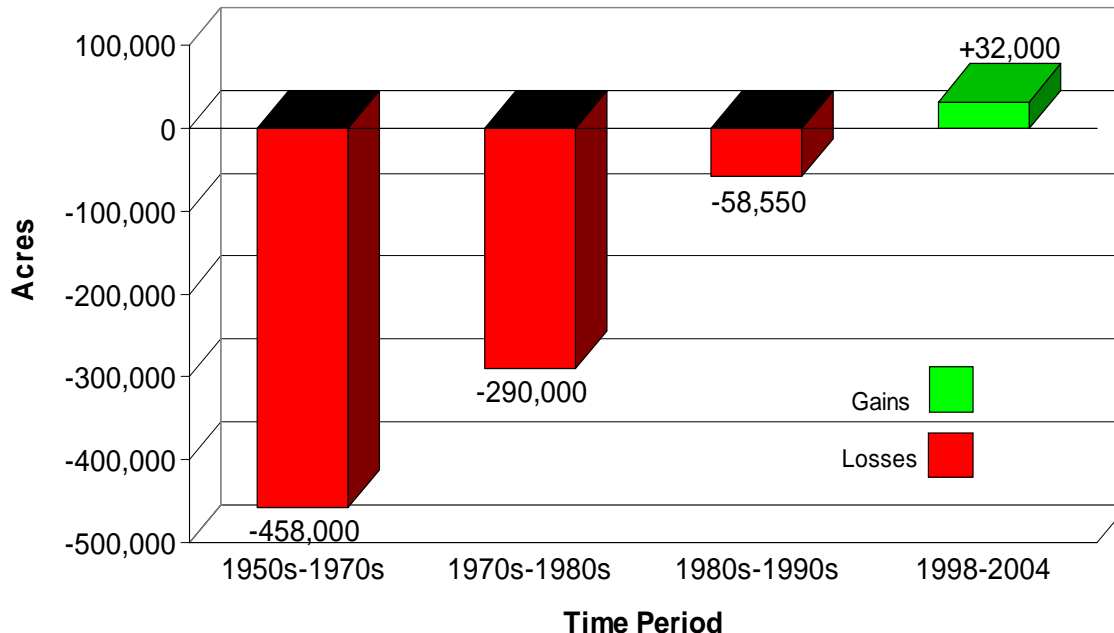
# What is the Condition of the Nation's Wetlands?

Existing sources of information do not provide a sufficient answer to this question.

## 2004 CWA 305b Report

- 10 States reported
- 1.8 million acres
- 1.5% of the estimated 107 million acres in the conterminous United States

Average Annual Net Loss and Gain Estimates for Wetlands in the Conterminous United States, 1954-2000



2005 FWS Wetland Status & Trends Report  
*(Trends in Wetland Acreage)*

# National Wetland Condition Assessment Goals

1. Produce a national report that describes the ecological condition of the nation's wetlands.
2. **Help States and Tribes implement wetland monitoring and assessment programs.**
3. Advance the science of wetlands monitoring and assessment.

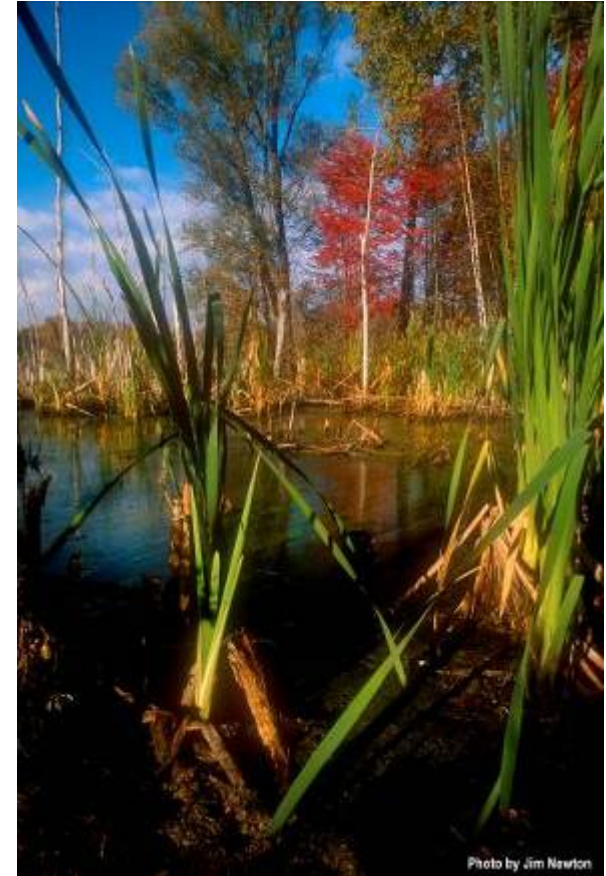


Photo by Jim Newton

# NWCA Benefits for State Programs

- Through active participation in the NWCA, States will have:
  - An experienced sampling team
  - Sampling Equipment
  - Level 3 Field Sampling and Lab Methods
  - A broad-scale multi-metric index (MMI)
  - A calibrated Rapid Assessment Method (RAM)
  - Reference data for some wetland types

# Target Population

**All wetlands of the conterminous U.S. including tidal and non-tidal wetted areas that have rooted vegetation and/or open water  $\leq 1$  meter in depth.**

FWS Status and Trend Category	Common Examples	
<b>Estuarine Intertidal Emergents</b>	■ Saltwater marsh	■ Brackish marsh
<b>Estuarine Intertidal Forested/Shrub</b>	<ul style="list-style-type: none"> <li>■ Mangrove forest</li> <li>■ Swamp tupelo</li> </ul>	
<b>Palustrine Forested</b>	<ul style="list-style-type: none"> <li>■ Bottomland hardwoods</li> <li>■ Cypress swamps</li> </ul>	■ Vernal pools
<b>Palustrine Shrub</b>	<ul style="list-style-type: none"> <li>■ Bogs</li> <li>■ Pocosins</li> </ul>	<ul style="list-style-type: none"> <li>■ Bayberry fens</li> <li>■ Natural cranberry bogs</li> </ul>
<b>Palustrine Emergents</b>	<ul style="list-style-type: none"> <li>■ Lacustrine/Riverine fringe</li> <li>■ Freshwater marsh</li> </ul>	<ul style="list-style-type: none"> <li>■ Fens</li> <li>■ Wet Meadows</li> </ul>
<b>Palustrine Unconsolidated Bottom / Aquatic Bed</b> ( <i>some subcategories</i> )	<ul style="list-style-type: none"> <li>■ Depressional wetlands</li> <li>■ Prairie potholes / kettles</li> <li>■ Other natural ponds</li> </ul>	<ul style="list-style-type: none"> <li>■ Urban/residential ponds</li> <li>■ Other created ponds with natural characteristics</li> </ul>
<b>Palustrine Farmed</b> ( <i>not currently in crop production</i> )	■ Agricultural fields that currently have characteristics of natural wetlands	

# Special Categories

**Aquatic Resources that are technically in the sample frame, but have little to no characteristics of natural wetlands. Thus, they will be reported in terms of extent in the frame, but not sampled in the field.**

<b>FWS Status and Trend Category</b>	<b>Common Examples</b>
<b>Palustrine Unconsolidated Bottom / Aquatic Bed</b> ( <i>some subcategories</i> )	<ul style="list-style-type: none"><li>■ Industrial ponds (cooling, waste, water retention)</li><li>■ Mining reclamation ponds</li><li>■ Agricultural ponds (livestock, waste, water retention)</li><li>■ Aquaculture ponds (fish farms, commercial cranberry)</li><li>■ Other created ponds without natural wetland features</li></ul>
<b>Palustrine Farmed</b>	<ul style="list-style-type: none"><li>■ Agricultural fields that are currently, or were very recently, planted with commercial crops</li></ul>

# NWCA Design Objectives

## Objectives to balance in the sample design

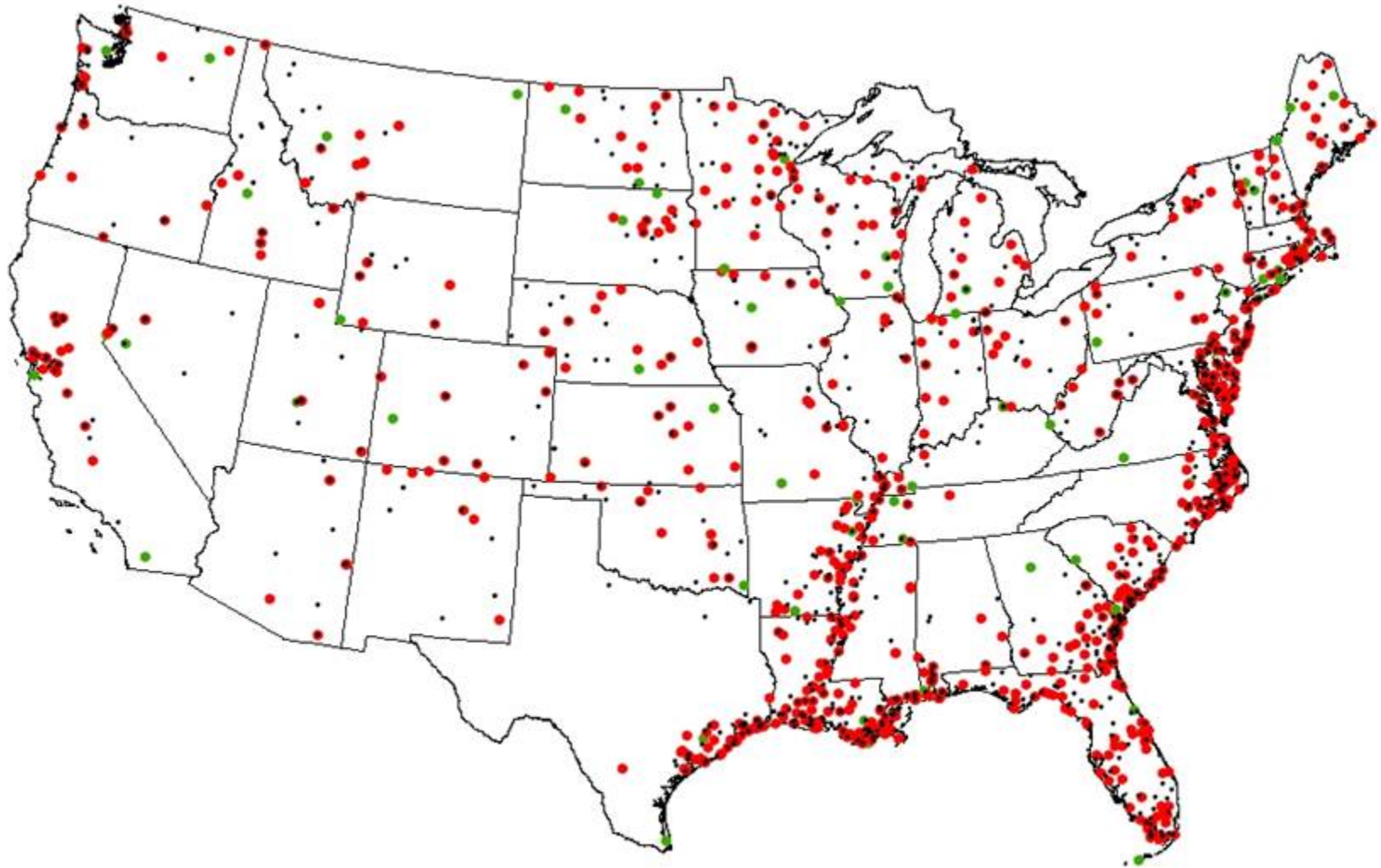
- ★ ○ Report Condition of Each Wetland Class, Nationally.
- Report Condition of All Wetlands, Regionally (e.g. Ecoregion, EPA Region).
- Report Condition of Coastal Wetlands, Nationally.
- Build State and Tribal Capacity (ensure each state has sites to sample).
- ★

# Features of Design

- The design stratifies by state based on wetland acreage.
  - I.e., states with more wetland acreage have more sites.
- Each states gets a minimum of 8 sites (VT, AZ) and the maximum is 71 (FL and LA).
- Each wetland type is expected to have 128 sites.

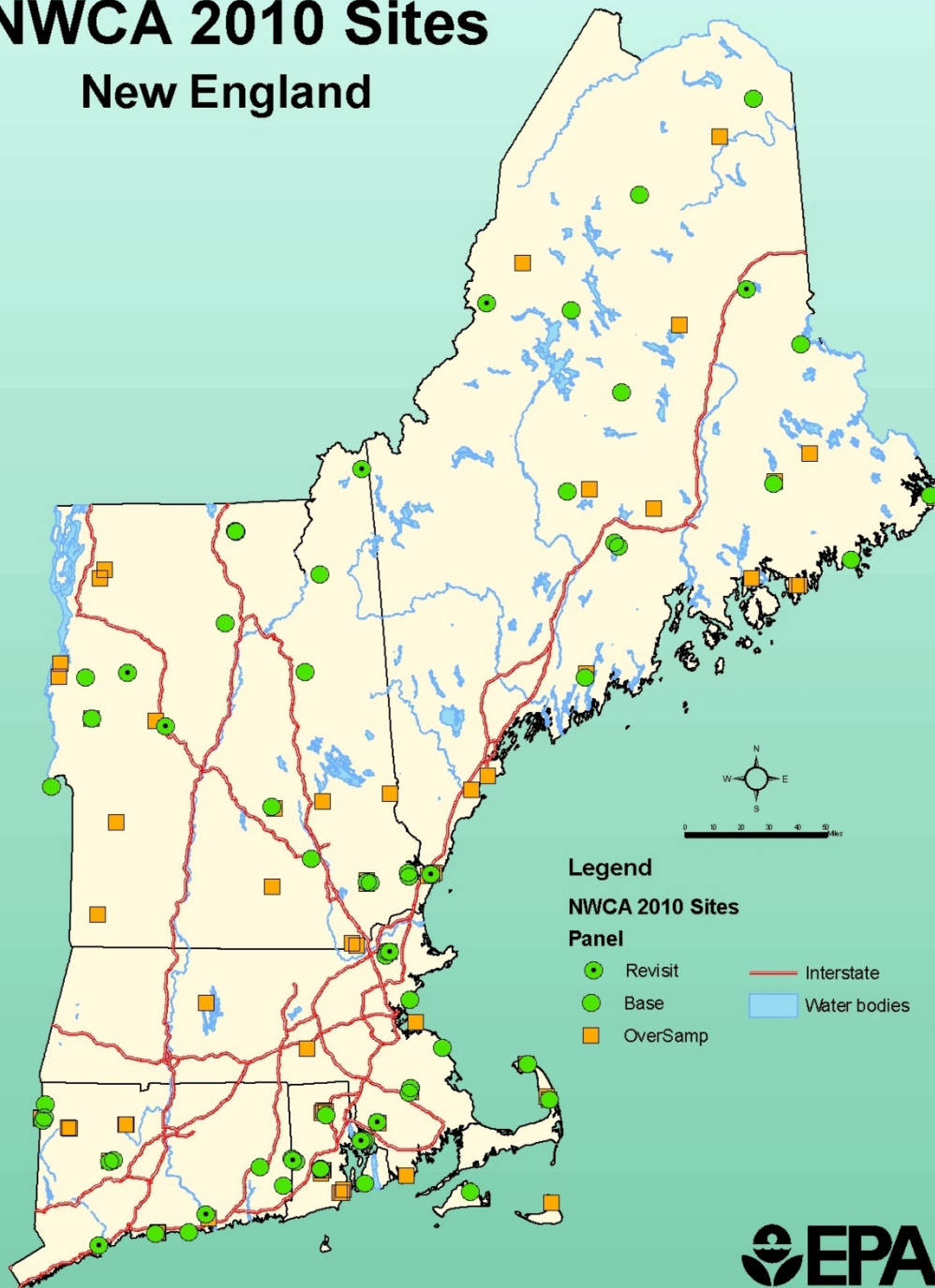


# 2011 NWCA Site Map



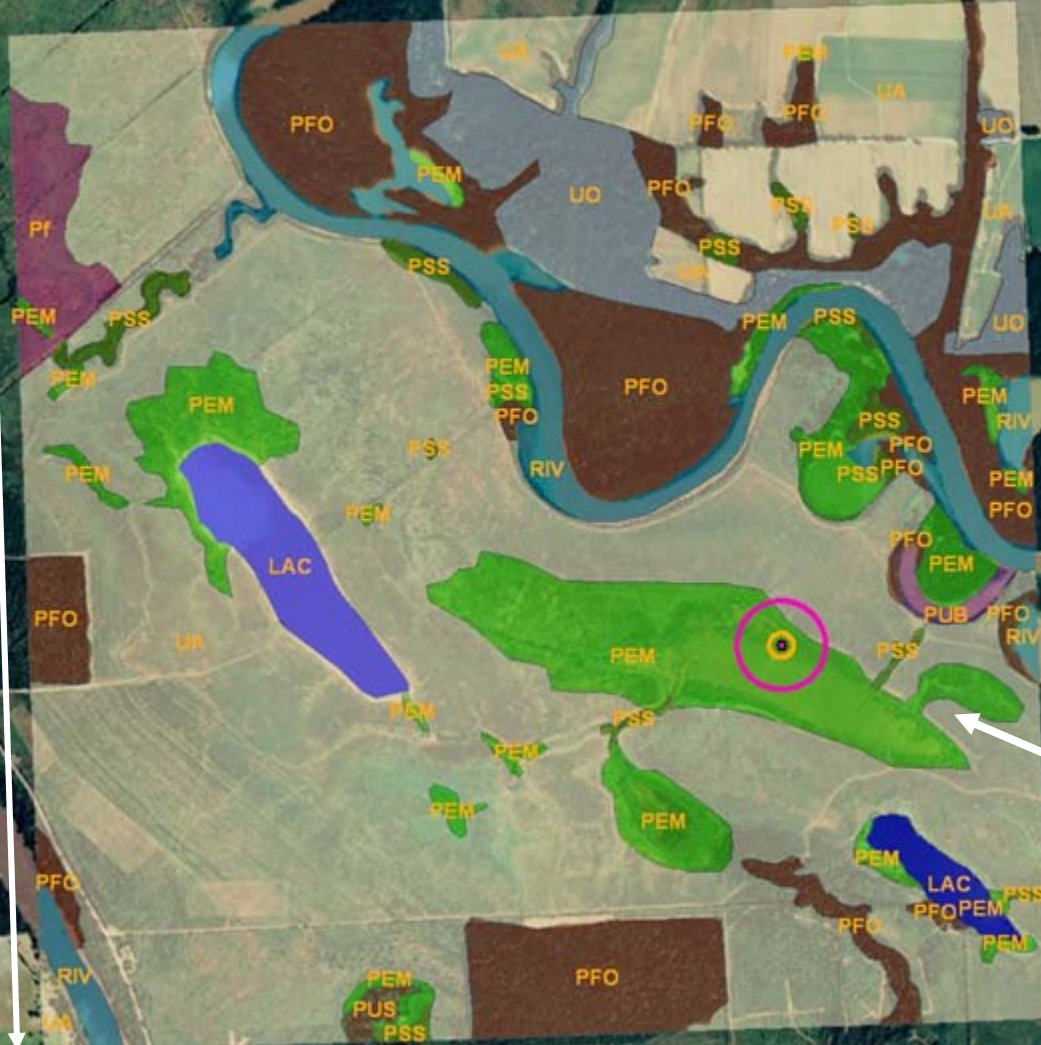
# NWCA 2010 Sites

## New England

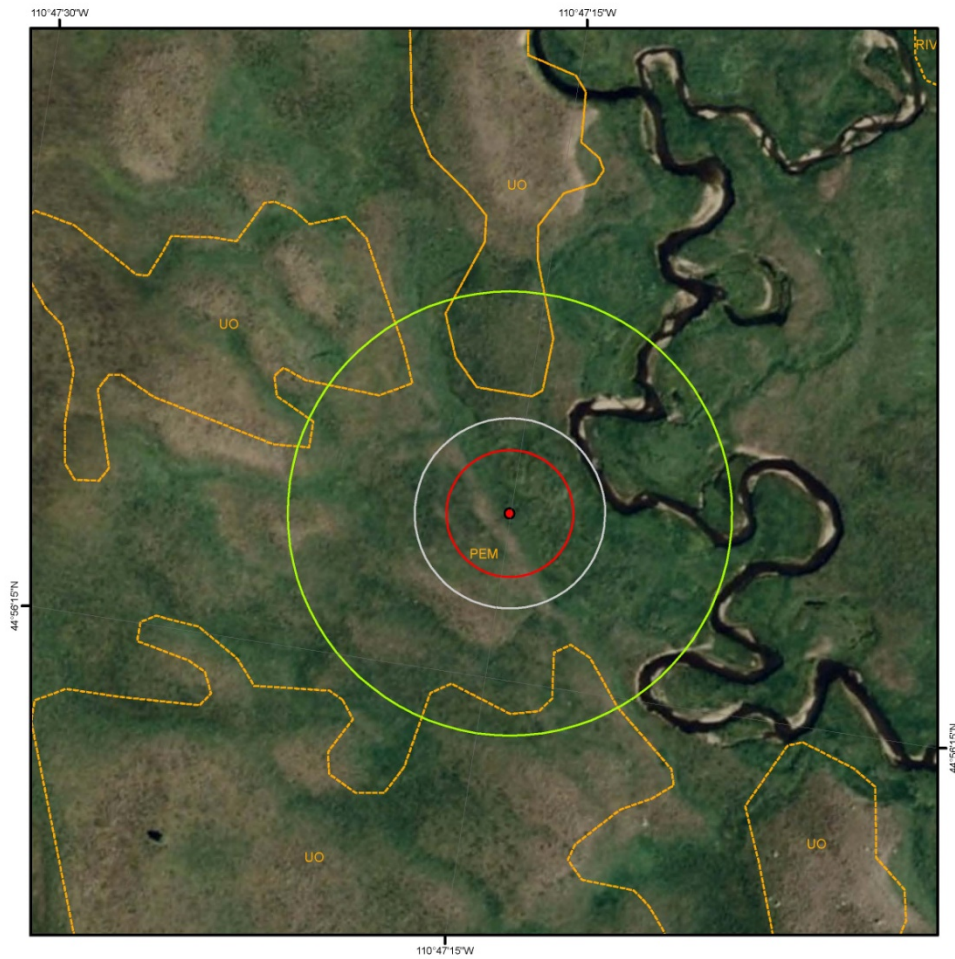


# Fish and Wildlife Service Status and Trends Plot (with coded wetland attributes)

2 mi



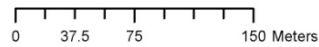
**NWCA Sample Point**  
AA is in orange circle (40m)  
Buffer is pink circle (140m)



County: St. Park, WY  
 Latitude: 44.9384376314  
 Longitude: -110.787508246  
 Wetland Class: PEM  
 Panel: Base  
 Ownership: Federal  
 Name: Yellowstone NP

### Site NWCA11-2790

Map Scale 1:3,000



- NWCA Site
- ◻ 40 meter assessment area (AA)
- 60 meter radius (pt relocation)
- 140 meter buffer
- ⋯ 2005 S&T Wetland Class

Imagery Information:  
 Layer Title: World\_Imagery  
 Sources: ESRI, i-cubed, USDA FSA, USGS, AEX,  
 GeoEye, Getmapping  
 URL: <http://services.arcgisonline.com/arcgis/services>

Projection: Albers  
 Central\_Meridian: -96,000000  
 Standard\_Parallel\_1: 29,500000  
 Standard\_Parallel\_2: 45,500000  
 Latitude\_Of\_Origin: 23,000000  
 Datum: D\_North\_American\_1983



# Number of Sites by State in EPA Region 1

State	E2EM	E2SS	PEM	PSS	PFO	Pf	PUB	Revisits	Total Site Visits
CT	3	1	2	1	2	0	2	2	13
MA	3	3	2	1	1	0	2	2	14
ME	3	0	2	4	3	0	2	2	16
NH	3	0	2	2	2	0	2	2	13
RI	2	0	2	2	2	0	2	2	12
VT	0	0	2	2	2	0	2	2	10

# Number of Sites by Wetland Type

<b>FWS Status and Trend Category</b>	<b>Common Examples</b>	<b>Number of Sites</b>
<b>Estuarine Intertidal Emergent</b>	<ul style="list-style-type: none"> <li>■ Saltwater Marsh</li> </ul>	<b>127</b>
<b>Estuarine Intertidal Forested/Shrub Scrub</b>	<ul style="list-style-type: none"> <li>■ Mangrove Forest</li> <li>■ Swamp Tupelo</li> </ul>	<b>127</b>
<b>Palustrine Forested</b>	<ul style="list-style-type: none"> <li>■ Bottomland Hardwoods</li> <li>■ Cypress Swamps</li> </ul>	<b>133</b>
<b>Palustrine Shrub/Scrub</b>	<ul style="list-style-type: none"> <li>■ Bogs</li> <li>■ Pocosins</li> </ul>	<b>130</b>
<b>Palustrine Emergent</b>	<ul style="list-style-type: none"> <li>■ Fringe Wetlands</li> <li>■ Freshwater Marsh</li> <li>■ Wet Meadows</li> </ul>	<b>127</b>
<b>Palustrine Unconsolidated Bottom / Aquatic Bed</b> <i>(some subcategories)</i>	<ul style="list-style-type: none"> <li>■ Prairie Potholes/Kettles</li> <li>■ Natural Ponds</li> <li>■ Created Ponds</li> </ul>	<b>130</b>
<b>Palustrine Farmed</b> <i>(not currently in crop production)</i>	<ul style="list-style-type: none"> <li>■ Agricultural Fields with natural wetland characteristics</li> </ul>	<b>126</b>

Indicators	Rationale	Measures
Vegetation	<p>Composition &amp; abundance of hydrophytic vegetation is an expression of the underlying wetland structure.</p> <p>Plants respond to many physical, chemical, or biological disturbances.</p>	Species inventory, % cover
Algae	Rapid response to ecological change (i.e., nutrients), indication recent inundation, standardized across all wetland types	Chl-a, taxonomic identification, Species composition & abundance
Soils	Clues to hydrology, indicative of ability to sustain biological communities, hydric soils key indicator of wetlands	Chemical & nutrient analysis, bulk density, etc.
Hydrology & Water Chemistry	Define wetlands, influence biological community composition, impact biogeochemical processes, and indicate recent or historical disturbances.	Sources, alterations, depth , inlets, outlets pH, DO, conductivity, temperature, TP, TN, NH4, etc.

# Assessment of Wetland Physical Habitat, Buffer and Stressors

- Test a Rapid Method to:
  - Assess wetland physical habitat and identify stressors.
  - Diagnose indicator performance based on buffer condition.
  - Provide States and Tribes with an easily adapted tool.

<b>USA Rapid Assessment Method Attributes</b>
<b>Landscape</b>
<b>Buffer</b>
<b>Hydrology</b>
<b>Physical Structure</b>
<b>Biological Structure</b>



# Remaining Planning Activities: 2010



Indicators	Survey Design	Reference Condition	Survey Administration
<p><b>Refine FOM based on testing comments (4/15/2010)</b></p>	<p><b>Distribute Sample Locations (March 2010)</b></p>	<p><b>Draft Data Analysis Plan (Winter 2010)</b></p>	<p><b>Communicate with States and Tribes (Always)</b></p>
<p>NWQMC Field Demonstration Workshop (April 2010)</p>	<p>Finalize site reconnaissance procedures (March 2010)</p>	<p>Develop approach to defining reference condition (Summer 2010)</p>	<p>Coordinate with Regions on State and Tribal 106 work plans (Spring 2010)</p>
<p>EPA ORD Technical Review Workshop (Spring 2010)</p>	<p>Distribute site maps (May 2010)</p>	<p>Identify targeted reference sites (May 2010)</p>	<p>One-on-One meetings as needed (Spring – Summer 2010)</p>
<p>Final FOM (Fall 2010)</p>	<p>Initiate Site Reconnaissance Process (Spring 2010)</p>	<p>Facilitate State and Tribal Workgroup (2010)</p>	

# Using the NWCA Results

- Establish the **national baseline** of wetland condition.
- Coordinate with the U.S. FWS Wetland (acreage) Status and Trends program.
- Enhance State and Tribal wetland monitoring programs
- Identify wetland types and geographies that are especially degraded
- Identify the stressors most commonly associated with degraded wetland conditions.
- Inform development of ecologically-meaningful performance standards to direct restoration and improvement activities.
- Explore ways to quantify the ecosystem services that are derived from wetlands and their restoration.

# Key Contact Information

- Regional Contacts:
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Questions and Comments?