US Fish and Wildlife Service

- Principle Federal agency tasked with providing information to the American public on the extent and types of wetlands, and
- Provide decadal reports on wetland status and trends
Emergency Wetlands Resource Act of 1986

Congress mandated we:

1. Map wetlands of the United States
   - **NWI Geospatial Dataset**

2. Provide 10 year reports on the status and trends of the Nation’s wetlands to Congress
   - **Wetlands Status and Trends Reports**
     - *The yardstick* used to measure the results of billions of dollars worth of policy actions – regulations, compensatory and voluntary restoration, and conservation – as well as the effects of wetland change drivers.
USFWS National Wetland Inventory

- A polygonal wetland and deepwater habitat dataset with >33M features
- What most people consider to be NWI maps
- Widely considered to be the most accurate and detailed U.S. wetland geospatial dataset
  - A National Geospatial Data Asset (NGDA)
- The foundation of numerous decision support tools, and a critical input to other national wetland maps
NWI Geospatial Dataset
Why NWI Status and Trends?

- Provides consistent, reliable data to guide policy and gauge success
  - Results in conservation and restoration
  - Drives adaptive management of wetlands

- The USFWS Wetlands Status and Trends is a true interagency effort that leads to measurable impacts!
Wetlands Status and Trends National Reports

1780s to 1980s

1950s to 1970s

1970s to 1980s

1986 to 1997

1998 to 2004

2004 to 2009

2009 to 2019

Begins 2017
Wetlands Status and Trends
Regional Reports

- Mid-Atlantic
- Texas Coast 50s- 90s
- SC 1982 - 89
- Florida 1985 - 96
- Coastal 1998 to 2004
- Coastal 2004 to 2009
- Pothole Region 1997 to 2009
Project Introduction

Goal: To produce comprehensive, statistically valid acreage estimates of the Nation’s wetland resources over time

Results: Quantification of policy outcomes and support for decision-making, primarily at the federal, regional, and state, but also local level.
Status and Trends - Study Design

Key Study Elements:

- Scientific (non-regulatory) approach
  - Biological wetland definition
  - Published levels of uncertainty
  - Peer reviewed

- Sampling Scheme
  - 5,048 four mi² (~ten km²) plots
  - Stratified by physiographic province and wetness

- Monitor all wetlands
  - Measure gain and loss of wetland acreage for specific time periods
  - 9 wetland categories
  - Field verification
Wetland definition

- Based on Cowardin Classification System
- Biological, same as NWI mapping definition

- Exclusions
  - Stock watering tanks
  - Swimming pools
  - Industrial waste pits
  - Storm water drains (non-retention features)
  - Garden ponds or fountains (koi ponds)
  - Water treatment facilities
  - Municipal or industrial water storage tanks
  - Sewage treatment facilities (other than wetlands)
  - Water cooling towers or tanks
  - Road culverts or ditches
  - Other “ephemeral” waters
  - Seagrasses
Imagery Primary Source of Change Detection

Assumption, the polygon classification is correct!

This is a sample based study and not a mapping exercise.
# Attributions

Based on Cowardin Truncated, no water regimes, or special modifiers, no subclass

<table>
<thead>
<tr>
<th>Code</th>
<th>Salt Water Habitats</th>
<th>Common Description</th>
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</thead>
<tbody>
<tr>
<td>M1</td>
<td>Marine Subtidal*</td>
<td>Open Ocean</td>
</tr>
<tr>
<td>M2</td>
<td>Marine Intertidal</td>
<td>Near shore</td>
</tr>
<tr>
<td>E1UB</td>
<td>Estuarine Subtidal*</td>
<td>Open water/bay</td>
</tr>
<tr>
<td>E2EM</td>
<td>Estuarine Intertidal Emergent</td>
<td>Salt marsh</td>
</tr>
<tr>
<td>E2SS</td>
<td>Estuarine Intertidal Forested/Shrub</td>
<td>Mangroves or other estuarine shrubs</td>
</tr>
<tr>
<td>E2US</td>
<td>Estuarine Intertidal Unconsolidated Shore</td>
<td>Beaches, bars, flats</td>
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<tr>
<td>RIV</td>
<td>Riverine* (tidal and non-tidal)</td>
<td>Perennial river systems</td>
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<table>
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<th>Code</th>
<th>Freshwater Habitats</th>
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<tr>
<td>PFO</td>
<td>Palustrine Forested</td>
<td>Swamps, wetlands with woody plants greater than 6 meters tall</td>
</tr>
<tr>
<td>PSS</td>
<td>Palustrine Shrub</td>
<td>Wetlands with woody plants less than 6 meters tall</td>
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<tr>
<td>PEM</td>
<td>Palustrine Emergent</td>
<td>Inland marsh or wet meadow</td>
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<tr>
<td>PF</td>
<td>Palustrine Farmed</td>
<td>Farmed wetlands</td>
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<tr>
<td>PUB</td>
<td>Palustrine Unconsolidated Bottom (ponds)</td>
<td>Open water ponds/aquatic beds</td>
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<tr>
<td>PUBn</td>
<td>Pond-natural characteristics</td>
<td>Bog lakes, vernal pools, kettles, beaver ponds, alligator holes</td>
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<tr>
<td>PUBi</td>
<td>Pond-Industrial</td>
<td>Mine pits or drainage ponds, highway borrow pits, sewage lagoons, industrial holding ponds</td>
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<tr>
<td>PUBu</td>
<td>Pond-Urban use</td>
<td>Aesthetic or recreational ponds, golf course ponds, residential lakes, ornamental ponds, water retention ponds</td>
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<tr>
<td>PUBf</td>
<td>Pond-Agricultural use</td>
<td>Ponds in close proximity to agricultural, farming, or silviculture operations, such as farm ponds, dug outs for livestock, agricultural waste ponds, irrigation or drainage water retention ponds</td>
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<tr>
<td>PUBa</td>
<td>Pond-Aquaculture</td>
<td>Ponds singly or in series used for aquaculture, including fish rearing</td>
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<tr>
<td>LAC</td>
<td>Lacustrine*</td>
<td>Lakes and reservoirs</td>
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<table>
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<tr>
<th>Code</th>
<th>Uplands</th>
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<tbody>
<tr>
<td>U/A</td>
<td>Agriculture</td>
<td>Cropland, pasture, managed rangeland</td>
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<tr>
<td>U/B</td>
<td>Urban</td>
<td>Cities and incorporated developments</td>
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<tr>
<td>U/F/P</td>
<td>Forested Plantation</td>
<td>Planted or intensively managed forests, silviculture</td>
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<tr>
<td>U/RD</td>
<td>Rural Development</td>
<td>Non-urban developed areas and infrastructure</td>
</tr>
<tr>
<td>U/O</td>
<td>Other Uplands</td>
<td>Barren lands or areas that do not fall in any other wetland category</td>
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</tbody>
</table>
Change versus loss/gain

- **Change** = wetland to wetland
- **Loss** = wetland to upland or deepwater habitat
- **Gain** = deepwater or upland to wetland habitat
Quality Control Process

- Primary Photo Interpreter
- Quality Control Specialist

Feedback from NSST (optional)

- Logic checks (QC Tool)
- EcoReview (100%)
- Small fixes
The Current Effort

- Next report will span 2009 to 2019
- The resultant national report is currently scheduled for completion in 2020
  - Subsequent to the national report we hope to produce regional reports
    - Coastal Watersheds
    - Prairie Potholes
- Project planning and initial activities are underway
Interagency Support

- ‘09 contributions (USACE, EPA, NRCS): ~$1.2M

- In-kind resources welcome – imagery or statistical, editing, or publishing support
  - NOAA supported publication of both Coastal Watersheds reports
USFWS Wetlands Status and Trends

Influence of Status and Trends Reports
Status and Trends was used to determine the success of the “No Net Loss” policy – and most believe that the 1984 Status and Trends report led to the formation of the policy itself.
A Driver of National Ocean Council Policy Development

- Status and Trends data supported development of the National Ocean Council’s 2013 National Ocean Policy Plan.
Demonstrates Conservation Results for USDA

The report generated tremendous interest in wetlands…. [and] influenced all wetland policies forged by Congress throughout the decade…”

Ann Vileisis, “Discovering the Unknown Landscape, A history of America's Wetlands”

Agriculture has gone from the biggest driver of wetland loss to supporting a net gain in wetland area.

Net Wetland Gain/Loss 2004-2009

-115,960 -61,630 -88,940 -397,240 100,020 389,600

Land Use Category

Deep Water Urban Rural Development Silviculture Agriculture Other

Wetland loss causes: 1950s-70s March, 1984
Due in part to substantial mid-century wetland loss trends documented by Status and Trends, USACE added mitigation measures to the wetland permitting process which continue to have considerable conservation impacts today!
A Catalyst for Policy Development within NOAA

- NOAA is working to address loss trends identified by Status and Trends
  - NOAA Fisheries Habitat Blueprint
  - Limit coastal wetland loss to development
    - Coastal Zone Management Program
  - Encourage coastal wetland restoration
    - NOAA’s Community-Based Restoration Program
A Foundation for EPA’s Enhanced National Monitoring Effort

The EPA National Wetland Condition Assessment was designed to complement the Status and Trends dataset – and uses Status and Trends as a foundation. The respective datasets are strengthened by one another and as a result present a markedly more robust basis upon which to develop policy and management.
A Catalyst for Collaboration and Adaptive Management

Interagency Coastal Wetlands Workgroup: Statement of Purpose and Goals

**Purpose**
The Interagency Coastal Wetlands Workgroup (ICWWG) helps to address coastal wetland loss, management, and restoration by bringing together seven federal agencies with programs and authorities that protect and manage coastal wetlands.

**Background**
Wetlands in coastal watersheds of the U.S. were lost at an average rate of 80,000 acres per year between 2004 and 2009. This is an increase from 59,000 acres per year between 1998 and 2004 as documented by the U.S. Fish and Wildlife Service (FWS) and the National Oceanic and Atmospheric Administration (NOAA) in two reports on the Status and Trends of Wetlands in the Coastal Watersheds. The ICWWG was formed in 2009 in response to these loss trends.

Coastal wetlands include saltwater and freshwater wetlands located in coastal watersheds, specifically USGS 8-digit watersheds that drain into the Atlantic, Pacific, or Gulf of Mexico.

But inter-agency support for Status and Trends did not begin with ICWWG; instead there is a long history of inter-agency support for the Status and Trends project!
Status and Trends has been a Collaborative Effort

Wetlands Status and Trends
Questions!

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