



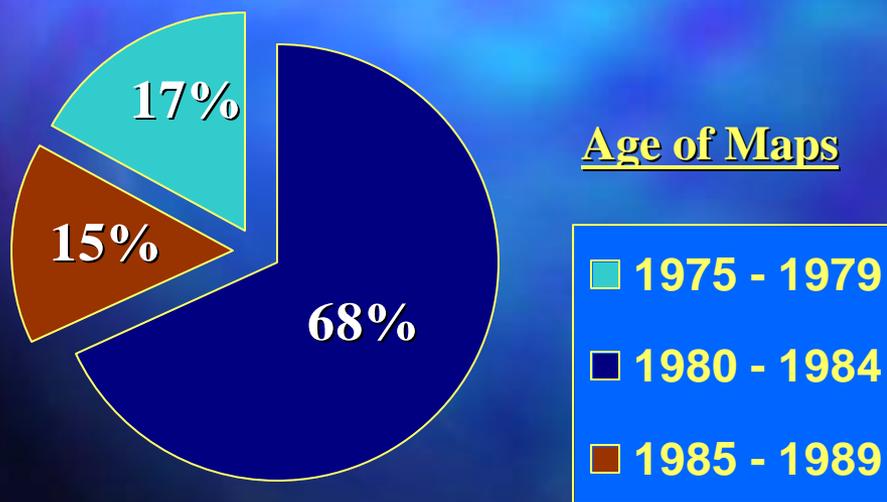
National Wetlands Inventory: A Strategy for the 21st Century and Expanded Data for Landscape Level Assessment

**U. S. Fish and Wildlife Service
Branch of Habitat Assessment
National Wetlands Inventory Program**

National Wetlands Inventory

- Established in 1974
- To create database on characteristics and extent of U.S. wetlands
 - Maps & Statistics
- In 1979, initiated national wetland trends study
- By 2003, produced maps for 91% of lower 48 states and 35% of Alaska; digits for 47% and 19%; three national trends reports

Today's Information Challenge: Resource Management in a Digital World



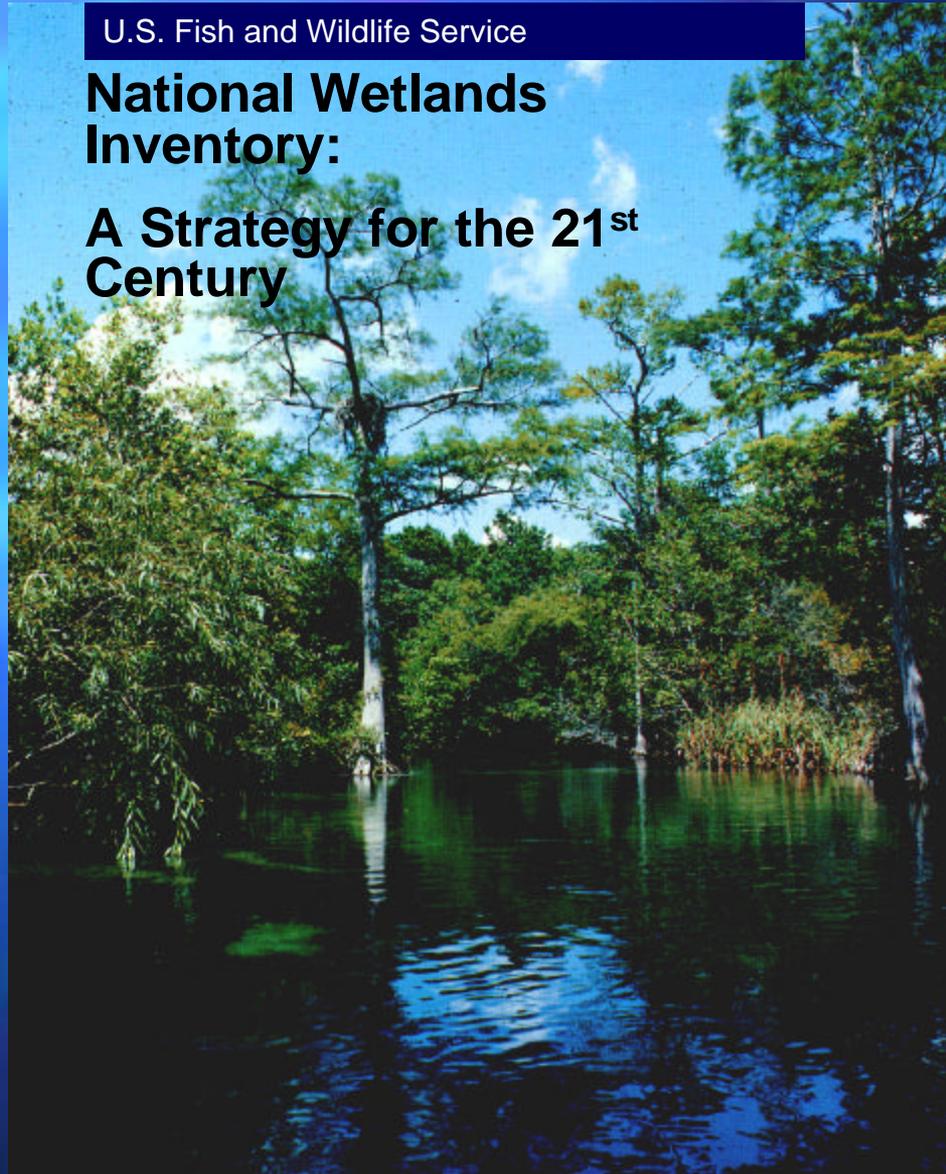
- The initial phase of NWI mapping is nearly complete, except for Alaska
- Only 40% of all maps are in digital format
- Resource managers require updated resource information and tools to address today's resource issues
- Need to replace outdated maps with updated digital products

NWI Strategic Plan

U.S. Fish and Wildlife Service

National Wetlands Inventory:

A Strategy for the 21st Century



New Goals for the NWI

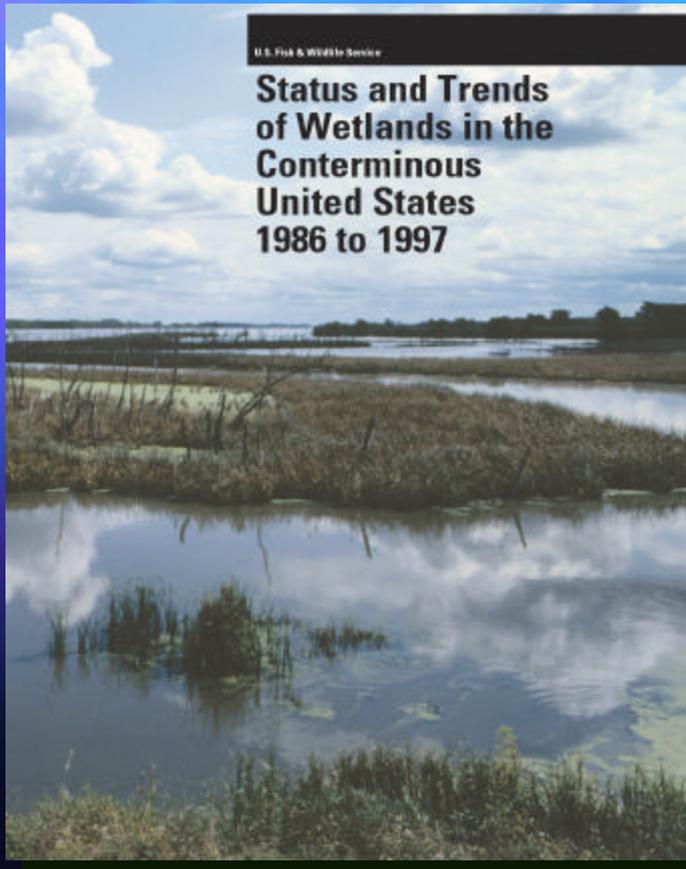
- **Strategic Mapping**
- **Habitat Trend and Change Analyses**
- **Identify and Assess Threats to Aquatic Habitats at Risk**

Goal 1 - Strategic Mapping

- **Update and enhance NWI digital data in high priority areas**
 - **Areas undergoing rapid change**
 - **National/regionally important wetland regions**
 - **Where existing data are out-of-date or incomplete**

Goal 2 -- Habitat Trend & Change Analyses

National & Regional Studies



- Completed
 - Texas
 - South Carolina
 - Hackensack Meadowlands (NJ)
- In Progress
 - Florida
 - Southeast US Wetlands
- Proposed
 - Puget Sound
 - Lake Michigan

Goal 3 -- Identify & Assess Threats to Habitats at Risk

- **Isolated Wetlands**
- **Riparian Habitats**
- **Stream Corridors**
- **Wetland and Waterbody Buffers**
- **Endangered Species Habitat**
- **Invasive Species**
- **Eelgrass and other Submerged Aquatics**
- **Hardened Shorelines**
- **“Natural Habitat”**

Goal 3 -- Identify & Assess Threats to Habitats at Risk - Example

Isolated Wetlands Report

U.S. Fish & Wildlife Service

Geographically Isolated Wetlands:

A Preliminary Assessment of their Characteristics and Status in Selected Areas of the United States



- Ecological profiles of 19 wetland types
- GIS-based wetland estimates
- Internet and CD-ROM publication

New Products

- **Enhanced NWI digital data**
- **Preliminary Assessments of Wetland Functions**
- **Watershed Characterizations**
- **Riparian Habitat Inventories**
- **Submerged Aquatic Vegetation Surveys**

Enhanced NWI Digital Data

- **Add attributes for:**
 - **Landscape Position**
 - **Landform**
 - **Water Flow Path**
 - **Waterbody Type**
- **Add other data (riparian, stream corridor, potential restoration sites, “natural habitat”)**

New Descriptors

KEYS FOR WETLANDS AND WATERBODY TYPES (LLWW)

- **Landscape Position** (Marine, Estuarine, Lotic, Lentic, and Terrene)
- **Landform** (Basin, Flat, Interfluve, Fringe, Slope, Floodplain, Island)
- **Water Flow Path** (Throughflow, Inflow, Outflow, Isolated, Bidirectional Flow)
- **Waterbody Type** (ponds, lakes, estuaries)

- **Enhancing NWI data - dependent upon:**
 - Regional priorities
 - Regional capability
 - Outside \$ support
- **Use data for preliminary wetland assessments and watershed characterizations**

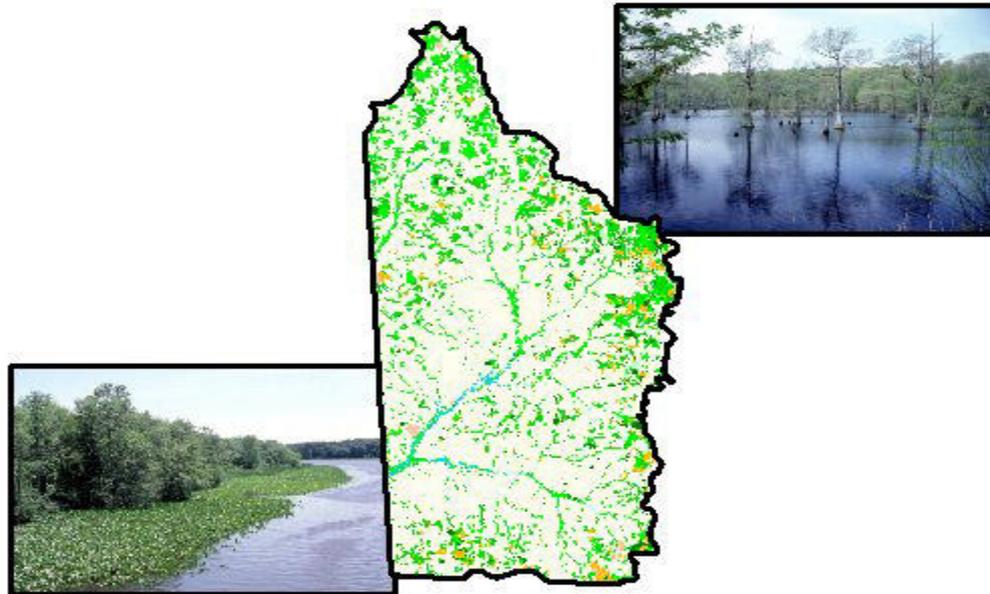
Preliminary Functional Assessments

- Based on remote sensing and available digital data
- Develop regional/local protocols for identifying wetlands of potential significance for various functions
- Enhancing NWI data with LLWW descriptors
- Analyze digital data
- Generate stats/maps and prepare watershed-based reports

Watershed-based Assessment Report Example (wetlands.fws.gov)

Watershed-based Wetland Characterization
for Delaware's Nanticoke River Watershed:

A Preliminary Assessment Report



National Wetlands Inventory



Contents of Watershed Report

- Introduction
- Methods
- Study Limitations
- Results (Maps/Stats)
 - Acreage by
 - NWI Type
 - LLWW Type (Landscape Position, Landform, Water Flow Path, Waterbody Type)
- Preliminary Functional Assessment (10 functions)
- Potential Wetland Restoration Sites
- Wetland/Waterbody Buffer Analysis
- Watershed Assessment (natural habitat integrity indices)
- Conclusion

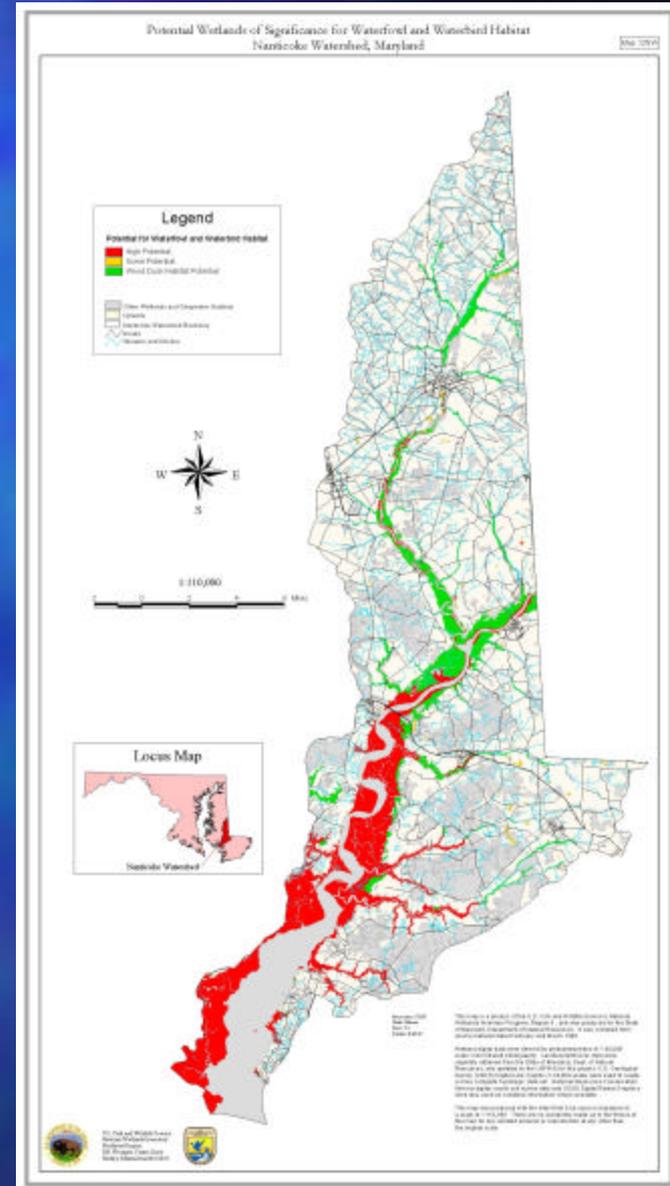
Functions for Assessment

- **Surface Water Detention**
- **Streamflow Maintenance**
- **Nutrient Transformation**
- **Sediment Retention**
- **Inland Shoreline Stabilization**
- **Coastal Storm Surge Detention/Shoreline Stabilization**
- **Fish/Shellfish Habitat**
- **Waterfowl/Waterbird Habitat**
- **Other Wildlife Habitat**
- **Biodiversity**

Waterfowl & Waterbird Habitat

High = 26%
Woodies = 13%
Some = <1%

Nanticoke Watershed
Maryland



Biodiversity

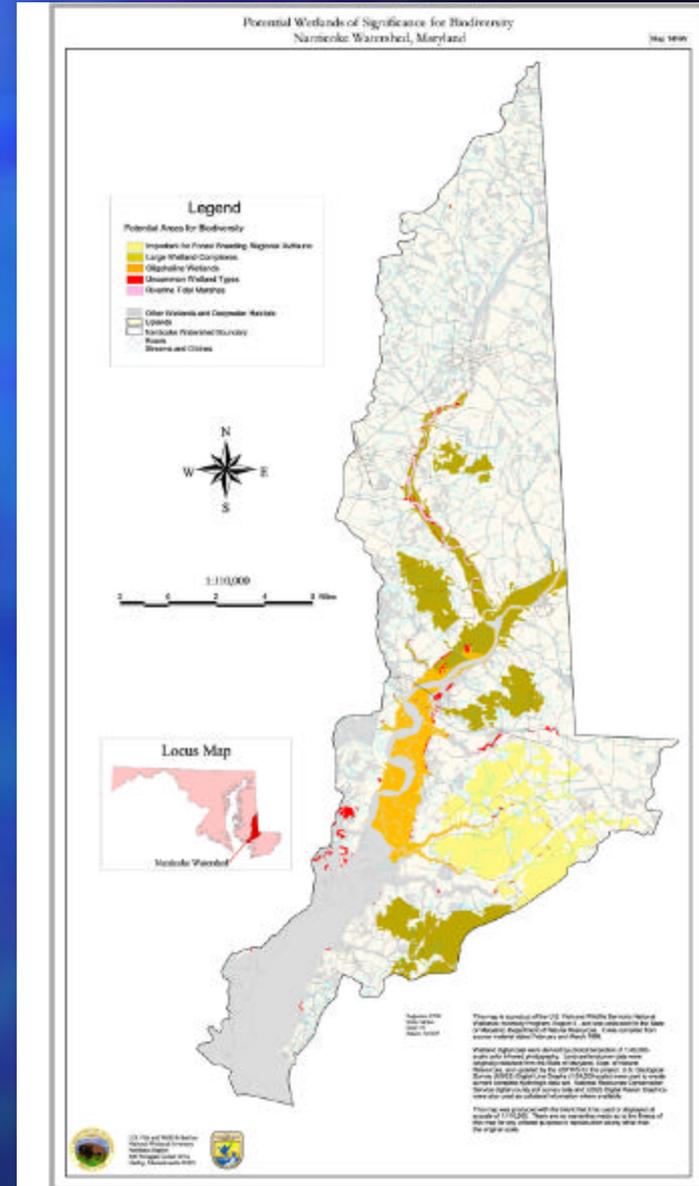
Estuarine
Oligohaline = 6259
acres

Interconnected
Forest = 10,275
acres (=16% of
wetlands)

Others

Overall = 50%+

Nanticoke Watershed
Maryland



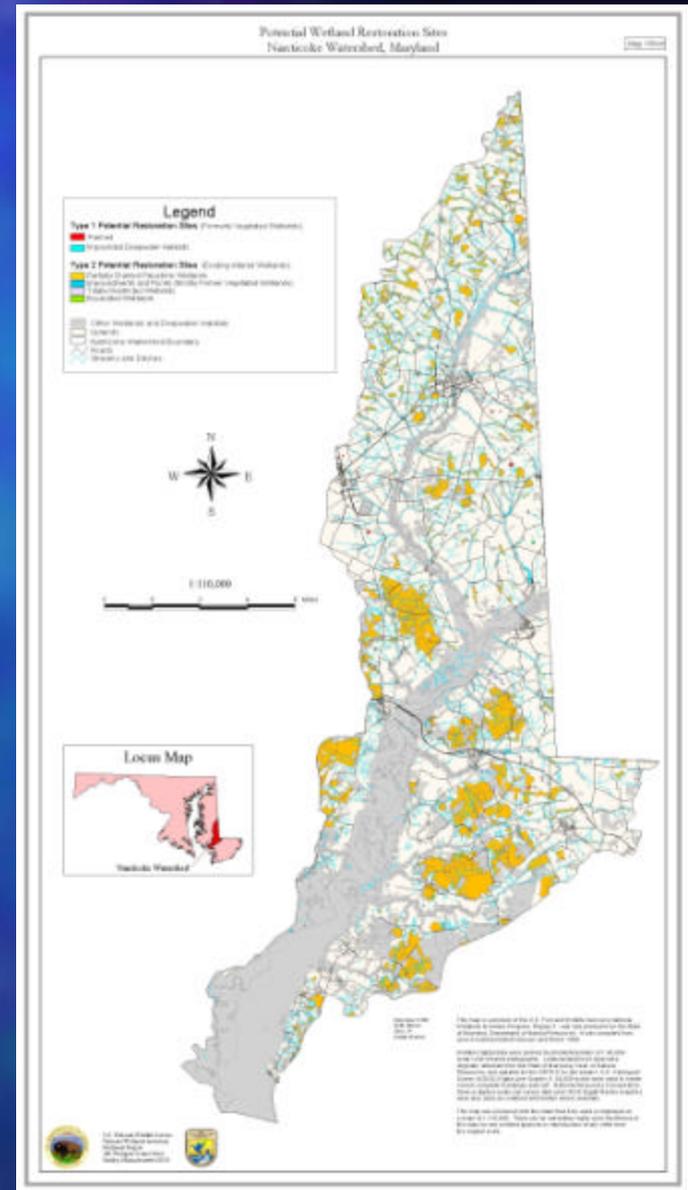
Potential Wetland Restoration Sites

- **Optional approaches**
 - **Generate from comparison between hydric soils data, NWI data, and land use/cover data**
 - **Perform additional photointerpretation**
- **Type 1 and Type 2 Sites**
 - 1 = Former Wetland**
 - 2 = Existing Wetland (impaired)**

Potential Restoration Sites

Type 1 = 360 acres
Type 2 = 22,146
acres
(mostly ditched)

Nanticoke Watershed
Maryland



Wetland/Waterbody Buffer Analysis

- **Examine 100m from wetland and waterbody edges**
- **Land cover/use**
- **Generate map and stats**

Watershed Assessment

- Remotely-sensed “natural habitat integrity indices”
- Use existing digital data or compile new data to determine the extent of natural habitat
- Data Sources
 - NWI Digital Data
 - Land Use/Cover Digital Data
 - Aerial Photos

Natural Habitat Integrity Indices

- **Natural Cover Index**
- **Stream Corridor Integrity Index**
- **Wetland and Other Waterbody Buffer Index**
- **Wetland Extent Index**
- **Standing Waterbody Extent Index**
- **Dammed Stream Flowage Index**
- **Channelized Stream Length Index**
- **Wetland Disturbance Index**
- **Index of Remotely-sensed Natural Habitat Integrity**

Natural Habitat Integrity Indices

- **Statistics for entire watershed and/or subbasins**
 - Values between 1.0 and 0.0 (=%)
 - Example: Natural Cover Index
 - 1.0 = undeveloped watershed
 - ~ 0.0 = a major city
 - Example: Channelized Stream Length
 - 1.0 = all streams channelized
 - 0.0 = all streams not channelized
- **Maps**
- **Database (for additional analyses)**

Summary

- **New program focus for the NWI**
- **Intensify program responsiveness to needs of the field biologists and resource managers**
- **Develop new technologies and products for resource management**
- **Establish new conservation mapping partnerships**