Reporting on Ecological Condition and Ecosystem Services for the 2011 National Wetland Condition Assessment

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NWCA Data Collection and Processing

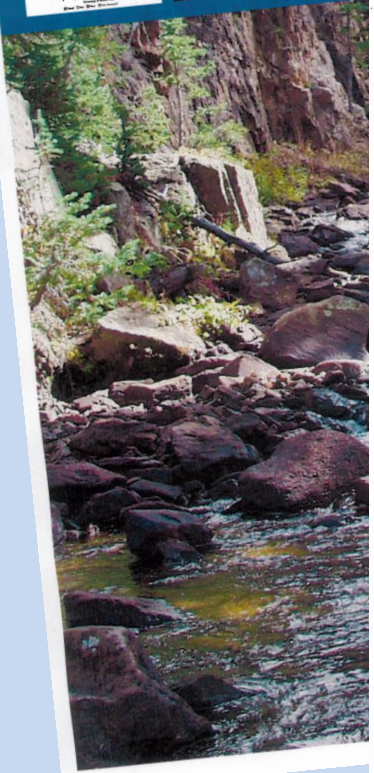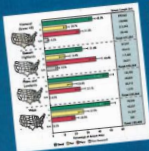| TYPE	INFORMATION	SAMPLES
Vegetation	QA / Unknown Identification	10,000
Soils	Chemistry, bulk density, enzyme, and isotope analysis	8,500
Water Chemistry / Chlorophyll-a	Water-quality analysis	2,000
Algae	Taxonomic identification and toxins	2,000
Site Forms (Packets)	Site characterization, vegetation composition and cover, soil profile, hydrology, stressors, buffer, and USA-RAM metrics	70,000+ pgs

≎EPA United States Environmental Protection Agency

National Health and Environmental Effects Research Laboratory Corvallis, OR 97333

EPA/600/R-11/104 September 2011

POTENTIAL FRAMEWORKS FOR REPORTING ON ECOLOGICAL CONDITION AND ECOSYSTEM SERVICES FOR THE 2011 NATIONAL WETLAND CONDITION ASSESSMENT
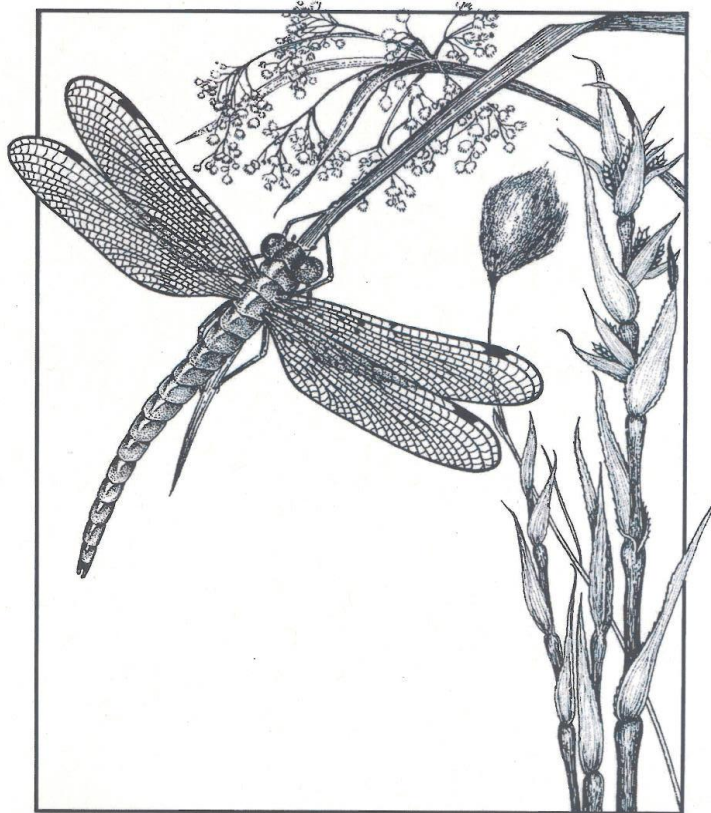
Chapters in NARS Reports

- Introduction and Overview of Assessment

- Description and Extent of resource

- Ecological condition of resource

- Extent of stressors

- Relationship between stressors and condition

- Summaries of the above by Ecoregion
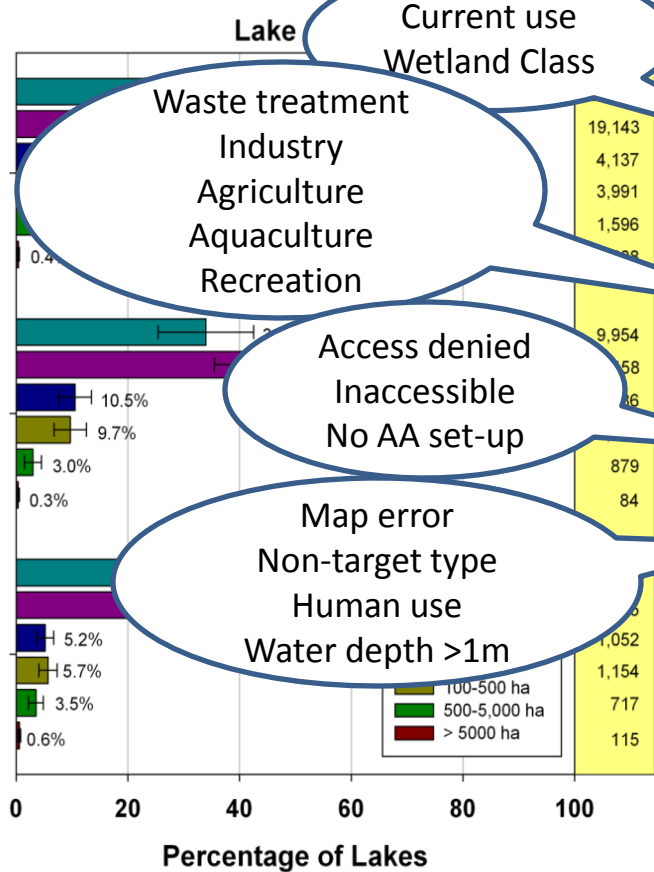
Description and Extent of Resource

Example fr[om]

Options for NWCA

USFWS S&T Class
HGM Class

Current use
Wetland Class

Waste treatment
Industry
Agriculture
Aquaculture
Recreation

Access denied
Inaccessible
No AA set-up

Map error
Non-target type
Human use
Water depth >1m

- Area of resource and by class
- Description of Palustrine Farmed Class
- Description of Palustrine Unconsolidated Bottom Class
- Description of unsampleable
- Description of non-target
- Relationship to FWS Status and Trends reporting

Condition of the Resource

The current state of the resource compared to reference relative to physical, chemical, and biological characteristics
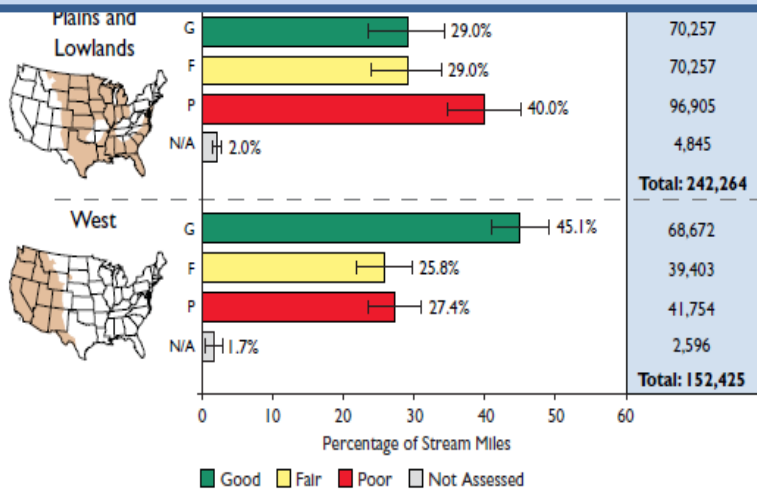

- Algae
- Use soil indicators

Figure 13. Biological condition of streams based on Macroinvertebrate Index of Biotic Condition
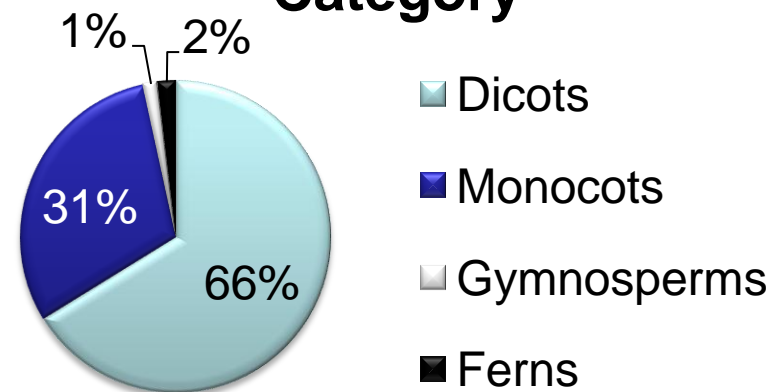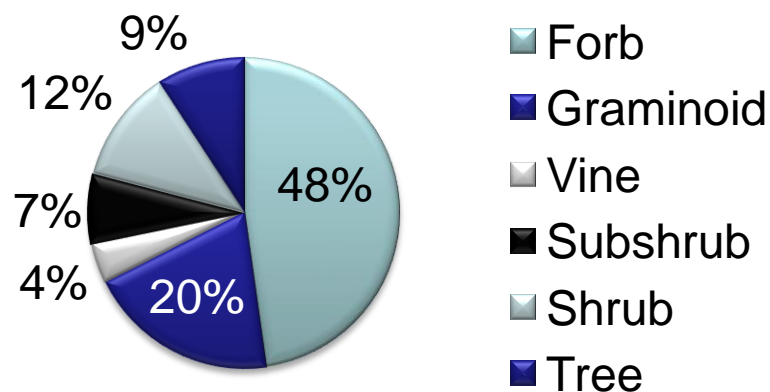
Numbers of Plant Taxa Observed in the 2011 NWCA (Incomplete):

- ❑ 3684 taxa (mainly species level)
- ❑ 192 families, 943 genera
- ❑ 444 Asteraceae, 399 Poaceae, 360 Cyperaceae
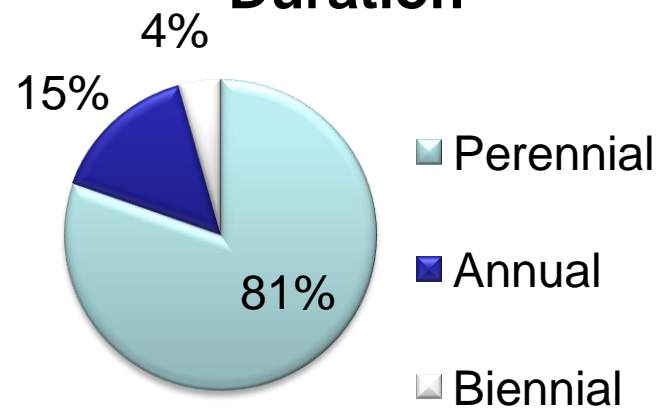
Category

1% 2%
31%
66%

- ☐ Dicots
- ☐ Monocots
- ☐ Gymnosperms
- ☐ Ferns

Growth Habit

9%
12%
7%
4%
48%
20%

- ☐ Forb
- ☐ Graminoid
- ☐ Vine
- ☐ Subshrub
- ☐ Shrub
- ☐ Tree

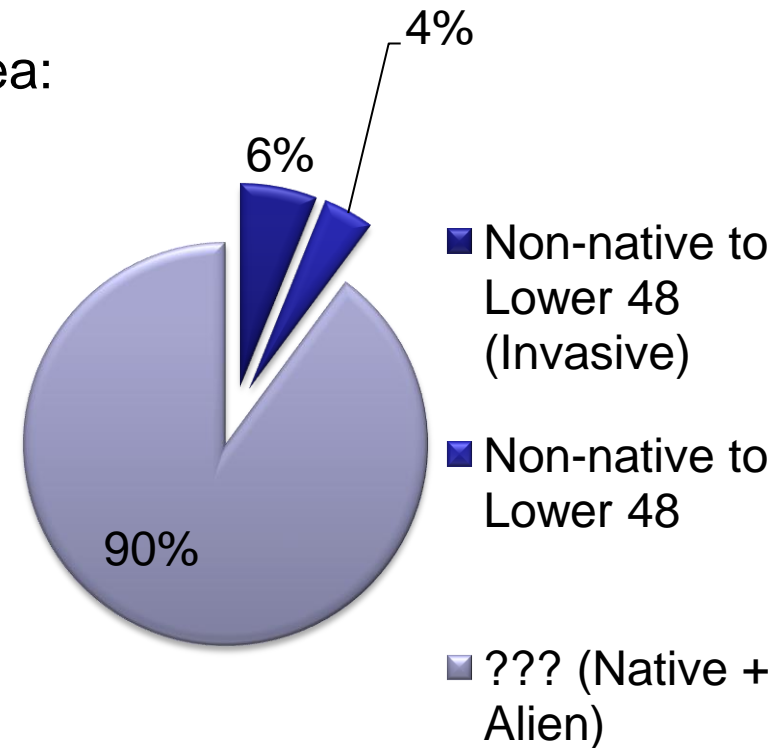## Duration

4%
15%
81%

- ☐ Perennial
- ☐ Annual
- ☐ Biennial

Non-Native Species (Incomplete):

Alien to Entire Lower 48 State Floristic Area:

❑ 372 (10%) of observed NWCA species
❑ At least 223 (60%) are listed as invasive

Other Likely Sources of Alien Species:

❑ **Adventive** species native in some parts of US, but introduced in others
❑ *Taxa with introduced subspecies or varieties*
❑ *Cryptogenic species* with native and introduced genotypes or unknown origin

4%

6%

90%

■ Non-native to Lower 48 (Invasive)

■ Non-native to Lower 48

■ ??? (Native + Alien)

Native Status

Extent of Chemical Stressors
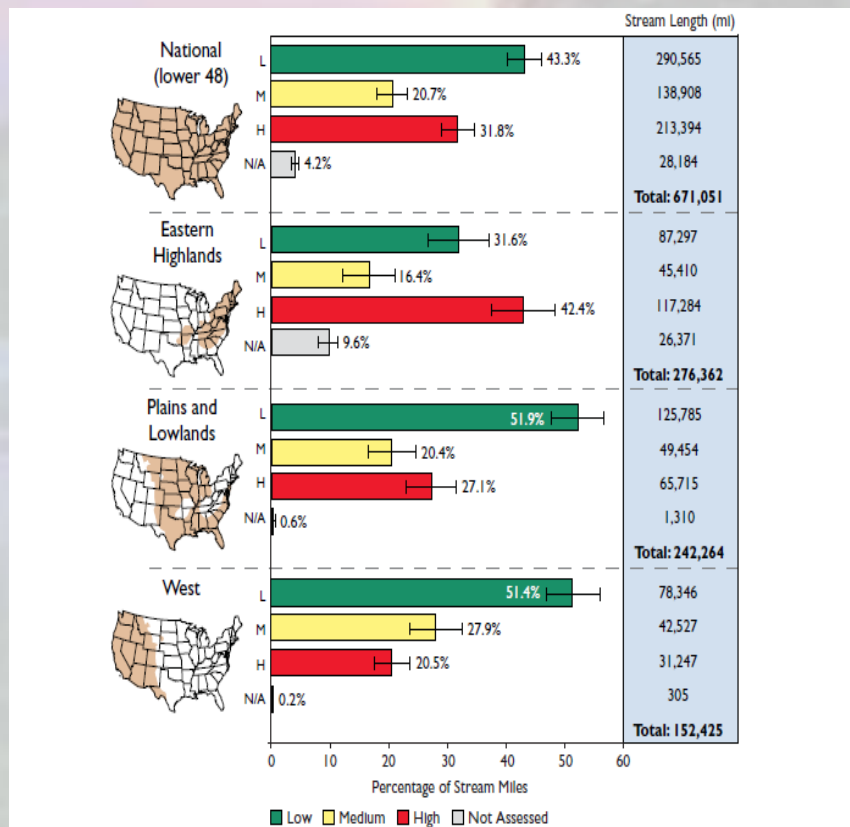
Example from WSA

Figure 16. Total nitrogen concentrations in U.S. streams (U.S. EPA/WSA). Percent of stream length with low, medium, and high concentrations of nitrogen based on regionally relevant thresholds derived from the least-disturbed regional reference sites. Low concentrations are most similar to reference condition; medium concentrations are greater than the 75th percentile of reference condition; and high concentrations are greater than the 95th percentile of reference condition.

Options for NWCA

Water chemistry
– pH
– Conductivity
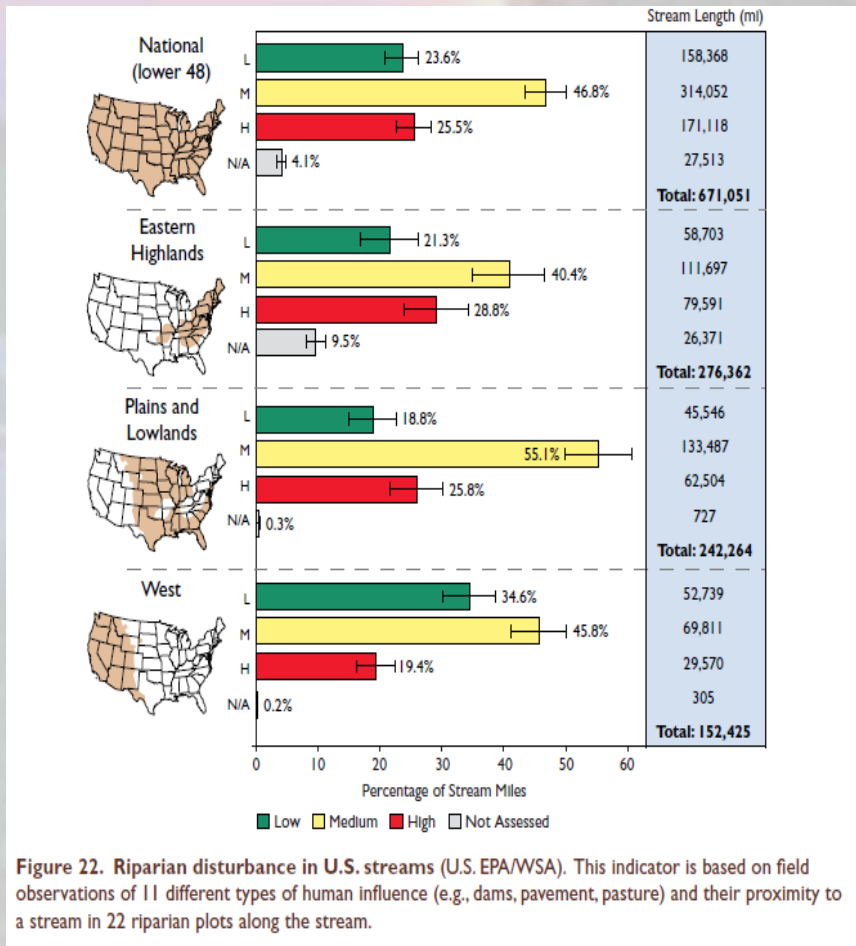– Nitrogen
– Phosphorus

Soil chemistry
– Carbon
– Nitrogen
– Sulfur
– Calcium
– Potassium
– Magnesium
– Sodium
– Aluminum
– Iron
– Manganese
– Trace Elements
  • Mercury
  • Arsenic
  • Cadmium
  • Lead
  • Zinc
  • Etc.

Extent of Physical Stressors

Example from WSA

Figure 22. Riparian disturbance in U.S. streams (U.S. EPA/WSA). This indicator is based on field observations of 11 different types of human influence (e.g., dams, pavement, pasture) and their proximity to a stream in 22 riparian plots along the stream.

Options for NWCA

In Assessment Area

– Vegetation Structure

– Hydrology stressors

– Soil bulk density

In Buffer

– Land use

– Vegetation structure

– Hydrology stressors

Stressors and Condition
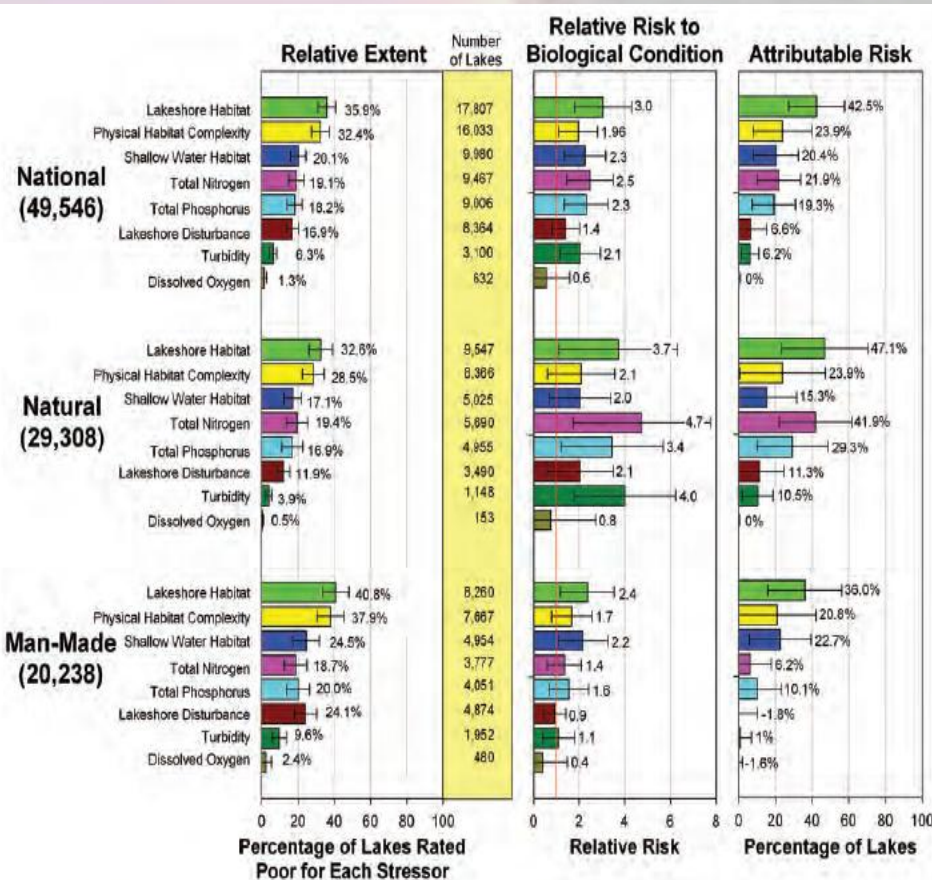
Example from NLA

Figure 15. Relative extent of poor stressors conditions. Relative risks of impact to plankton O/E and Attributable risk (combining Relative extent and Relative risk).

Relative risk – expresses the likelihood of having poor ecological condition when a stressor is high
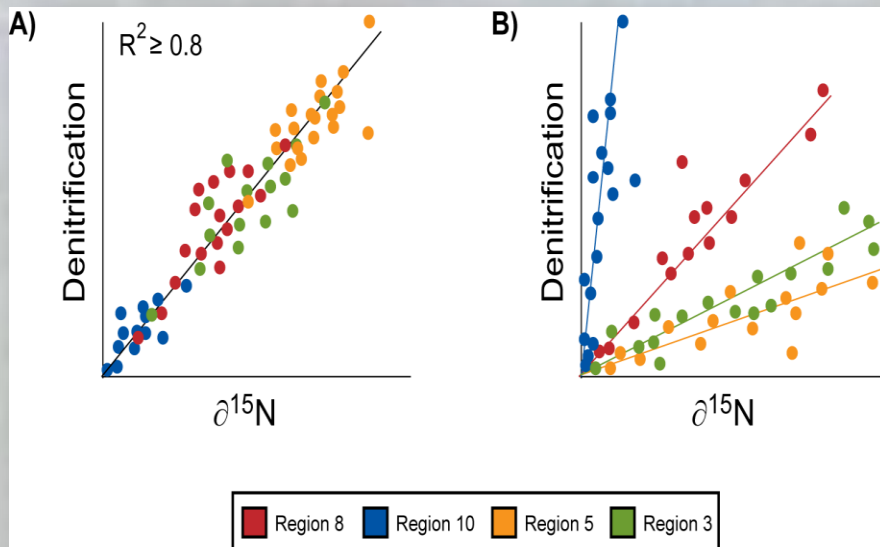
Attributable risk – estimates the proportion of the population in poor condition that would be reduced if a particular stressor were eliminated

Wetland Ecosystem Services

Provision of

Water for Consumption

thru

Signatures of the Stable Isotope of Nitrogen (δN15)

as an

Indicator of Denitrification

Timeline of Key Activities

- **May 2012:** Working Meeting w/ Partners

- **Sept 2012:** Lab Analysis and Data Management Complete

- **Fall/Winter 2012:** Data Analysis Workshops

- **Winter 2013:** Continue Data Analysis and Report Writing

- **Spring 2013:** Finalize Data Analysis and Report Text

- **Summer 2013:** Preliminary Report Review by States

- **Summer 2013:** Peer Review

- **Fall 2013:** Public Comment

- **December 2013:** Finalize Report

National Aquatic Resource Surveys (NARS)

Includes: Coastal Systems, Rivers and Streams, Lakes, Wetlands

http://water.epa.gov/type/watersheds/monitoring/aquaticsurvey_index.cfm