Assessing the Nation’s Waters: Accomplishments of the First Ten Years of the National Aquatic Resource Surveys (NARS) and Challenges for the Next Ten Years

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Water Quality Monitoring, Data and Information: Looking back – Where Were We in 2004?

Critiques
- GAO
- NRC
- NAPA
- Heinz Center
- EPA’s Enviro. Report

Limited Assessments
Lack of comparability and consistency
No national picture of water quality

Assessments of all U.S. waters*
- 564,000 rivers/stream miles (19%)
- 16 million lakes/reservoirs acres (39%)
- 25,000 bay/estuary square miles (29%)
- 1.8 million wetland acres (2%)

* ATTAINS, Assessed Waters for 2004
Strategy to incorporate Multiple Monitoring Tools

- Predictive tools
- **Statistical Survey Designs**
- Targeted monitoring designs
- Innovative approaches

...to support full range of decision objectives for all water body types at multiple scales.
Implementing a new approach for filling the information gap

Environmental Monitoring and Assessment Program initiated in 1989 by EPA’s ORD: Develop/Demonstrate tools to monitor:

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<th>Status</th>
<th>Trends</th>
<th>Relative importance of stressors</th>
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Technical foundation for current efforts to monitor aquatic systems under the National Aquatic Resource Surveys
1. Assess biological and recreational condition and changes over time of the nation’s waters using indicators of condition and stress

2. Rank stressors based on the relative associations between indicators of condition and indicators of stress

3. Build/enhance state and tribal monitoring and assessment capacity

National Aquatic Resource Surveys – A Partnership between EPA, States and Tribes

Coastal  Streams and Rivers  Wetlands  Lakes
National Consistency: NARS Approach

• Randomized design to report on condition of each resource nationally and regionally
  • 1,000 sites in lower 48

• Standard field and lab protocols

• National QA and data management

• Nationally consistent and regionally relevant data interpretation and peer-reviewed reports
2014: Where we are today

First ever, nationally consistent assessments of coastal waters, lakes and reservoirs, rivers and streams, and coming soon wetlands.

Assessments address ecological and human-health indicators; stressors; and changes over time

Expanded and strengthened partnerships

2014: More than 10,000 sites sampled

Sites Sampled as part of the National Aquatic Resource Surveys
2014: Comprehensive, consistent, and statistically-valid assessments

How much surface water have we assessed in the continental United States?

Coastal: >35,000 square miles

Lakes: >50,000 lakes (20 million acres) (with more coming)

Rivers/streams: >1.9 million miles

Wetlands: Extent estimate coming soon
### Biological Condition
- 55% of rivers/streams have poor biological communities.
- 22% of lakes have poor biological communities.
- 27% of coastal waters are rated poor for benthic condition.

### Stressors
In rivers, streams, lakes: the most widespread stressors were poor habitat and excess nutrients.

### Human Health
- Microcystins were detected in 1/3 of lakes and at were at levels of concern in 1%.
- Enterococci was found at levels exceeding a human health threshold in 4% of lakes and 23% of rivers/streams.

### Applying Results
- Evaluating nutrients in key areas (e.g., Mississippi River Basin)
- Lake shoreline protection/restoration campaign
- Background/baseline data for some oil related constituents in Gulf of Mexico
Partnerships are critical for implementation and improvement: States/Tribes

- States conducting surveys increased from 21 in 2004 to 50 in 2014

- States are using data to:
  - Evaluate and incorporate new field and analytical methods
  - Leverage field efforts to evaluate emerging contaminants, pesticides and other indicators
  - Assess statewide condition and changes over time

- States are Taking Action:
  - Use lakeshore habitat data to inform decision-makers of water quality issues including comparisons with state/regional conditions;
  - Apply relative and attributable risk to pose questions for water quality management scenarios
Partnerships are critical for implementation and improvement: **Other Agencies/External Partners**

• We have been Increasing efforts with federal partners to leverage resources and improve water quality assessments

• Use of the data
  • Assess status of waters on federal land and compare nationally/regionally

• Extensive datasets for continued research and discovery
  • Scientists
  • Academics
  • Others

• Opportunity -- NARS Campus Research Challenge
  • Proposals due May 15
Where are we headed in next 10 years?

Continue to deliver and improve nationally consistent and statistically-valid water quality information for:

- All surface waterbody types
- Water management efforts at multiple scales
- Expanded research and analysis opportunities
Opportunities and Challenges

• Opportunities
  • Change and trend analyses
  • Increase transfer of tools to states/tribes and others
  • Enhance data assessment and furthering research
  • Focus on continued collaboration and strengthening partnerships

• Challenges
  • Changes to methods, analyses -- impacts on consistency of the surveys
  • Transparency and documentation
  • Resources – funding and people
    • Implementing the core survey while working to expand analyses and increase/improve work with partners.
    • Desire to add indicators and scope of the surveys
Where to find Data

• Wadeable Streams Assessment
  • [http://water.epa.gov/type/rsl/monitoring/streamsurvey/web_data.cfm](http://water.epa.gov/type/rsl/monitoring/streamsurvey/web_data.cfm)

• National Rivers and Streams Assessment 2008-09 (Draft)
  • [http://water.epa.gov/type/rsl/monitoring/riverssurvey/](http://water.epa.gov/type/rsl/monitoring/riverssurvey/)

• National Lakes Assessment 2007 (2012 not yet available)
  • [http://water.epa.gov/type/lakes/NLA_data.cfm](http://water.epa.gov/type/lakes/NLA_data.cfm)

• National Wetland Condition Assessment 2011 (data not yet available)

• National Coastal Assessment (past surveys)
Thanks to many people for making this ten (plus) years, possible

• States
• Tribes
• EPA
  • NARS HQs team
  • ORD
  • Regions
• Federal agencies
• And many, many others .....

[Images of people in field settings]