Draft National Rivers and Stream Assessment NRSA 2008/09

Overview and Key Findings

Outline of Presentation

- Background on the National Aquatic Resource Surveys
- NRSA Design and Indicators
- Key Findings
- Comments Received
- Next Steps

What is NARS?


Coastal


Streams and Rivers


Wetlands


Lakes

- Series of surveys implemented by EPA and our state and tribal partners
- Assess all surface waters within the 48 contiguous states
- Cost effective, nationally consistent, regionally relevant means of tracking status and trends
- Builds from almost 20 years of research and pilots

Purpose of the National Aquatic Resource Surveys

- Assessing biological and recreational condition using indicators of condition and stress
- Documenting associations between indicators of condition and indicators of stress
- Building/enhancing state monitoring and assessment capacity

Why is NARS Important?

- **Fills critical water quality data gaps**
  - Statistical design provides national and regional conclusions on the health of broad population of waters, and changes over time, without sampling every water
  - Core indicators provide nationally consistent assessment relevant to Clean Water Act goals
- **Delivers data and reports that address nationally important policy questions**
  - NARS data and results support important agency priorities (e.g., nutrients in the Mississippi River Basin)

NARS Approach: National Consistency

- **Statistically representative design**

  -- Allows reporting on condition of each resource nationally and on a regional basis with documented confidence
- **Standard field and lab protocols**

  -- All indicators evaluated for credibility, to address national and state-identified needs
- **National quality assurance and data management**

  -- All partners use EPA-developed quality assurance project plan
- **Nationally consistent and regionally relevant data interpretation and peer-reviewed reports**

  -- Informal and formal peer review

National Rivers and Streams Assessment is the latest National Aquatic Resource Survey

- **First nationally-consistent, statistically representative assessment of the nation's rivers and streams**
  - Biological and habitat condition
  - Major stressors
  - Key human health indicators
  - Change in stream condition

- **The 1,942 sites sampled – plus 234 hand-selected reference sites and 200 re-sample visits – describe the condition of perennial stream and river miles across the lower 48 states**

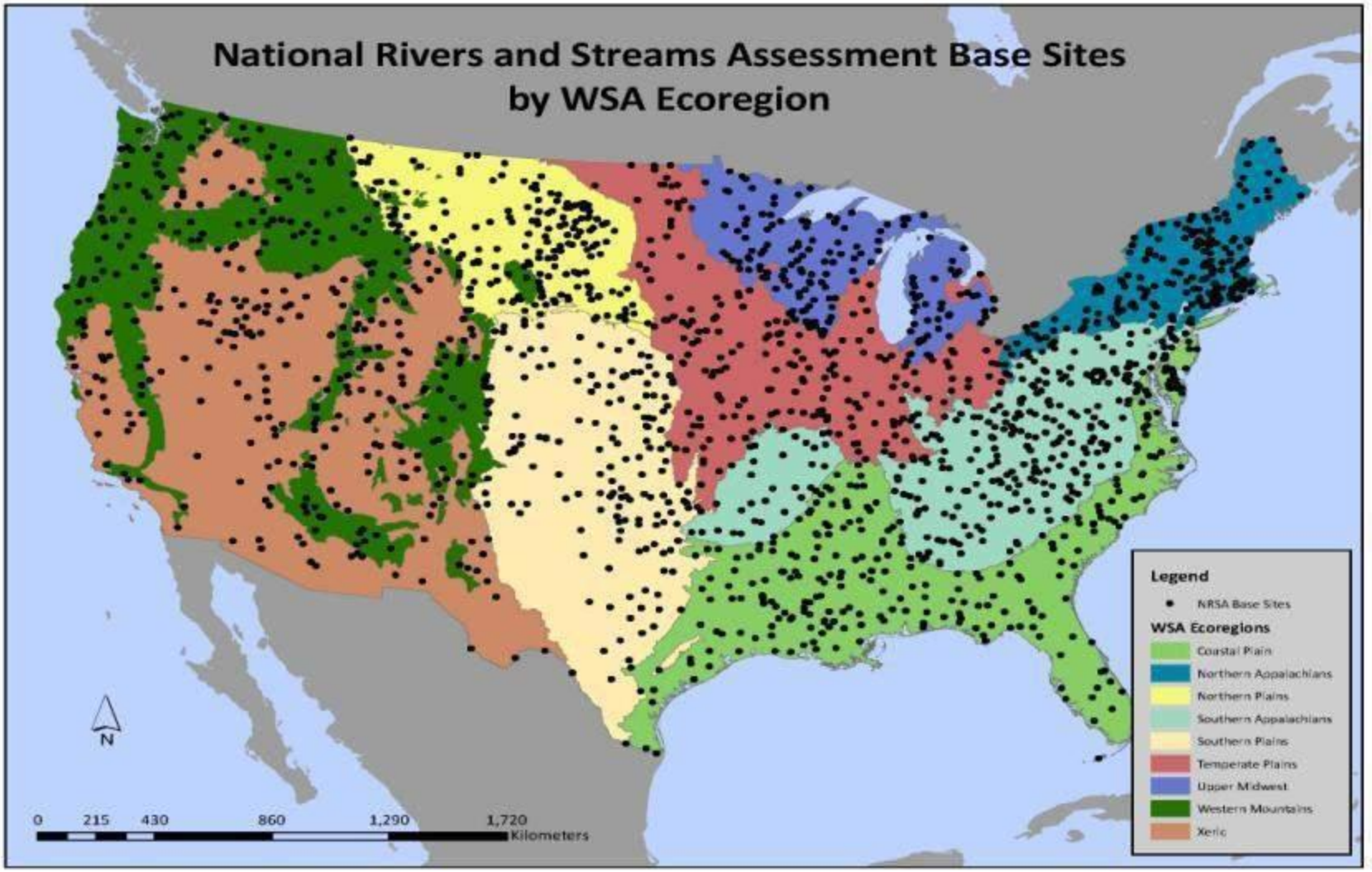
NRSA 2008/09: Design of the Survey

- **All streams and rivers within the 48 contiguous states that have flowing water during the study index period**
  - **Includes major rivers (including Great Rivers) and small streams**
  - **Includes run-of-the-river ponds and pools with less than 7 day residence time**
  - **Must have > 50% of the reach length with standing water**

- **The target population excludes:**
  - **Tidal rivers and streams up to head of salt**
  - **Slow moving reservoirs**

Statistical Distribution of Sample Sites

- Represents 1,194,000 million miles of rivers and streams

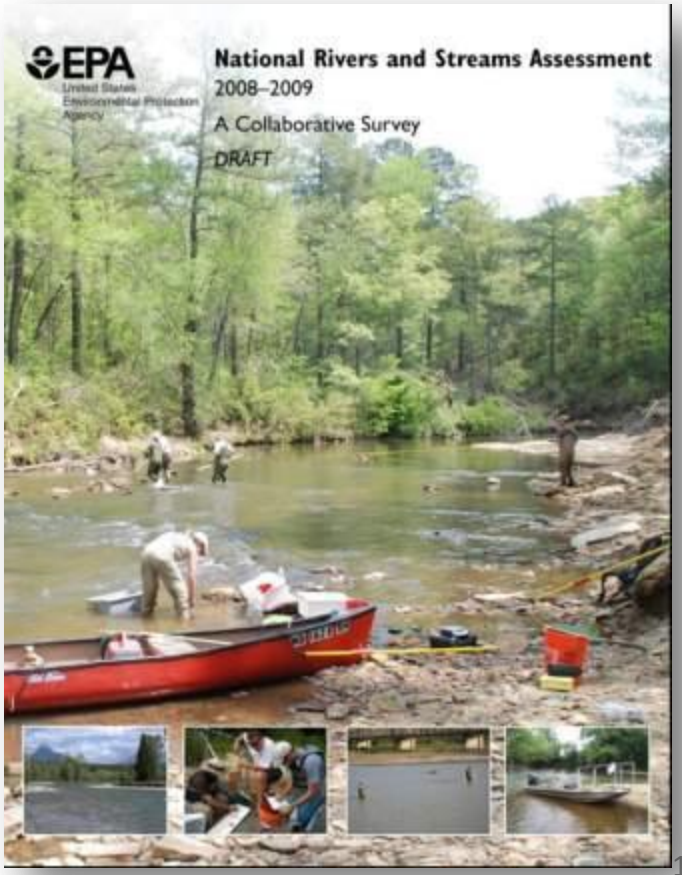


Draft NRSA Report for Public Comment includes:

- **Biological Integrity**
  - Benthic Macroinvertebrates
  - Fish Community Assemblage
  - Periphyton Assemblage
- **Habitat Quality**
  - Excess Sedimentation
  - Riparian Disturbance
  - Human Influence
  - In-stream fish habitat
- **Chemical stressors**
  - Nutrients (Nitrogen, Phosphorus)
  - DO
  - Salinity
- **Change in stream condition**
  - Compared to 2004 streams report
- **Human Health**
  - Enterococci
  - Fish Tissue: Mercury
- **Ecoregional Summaries**

Highlights include:

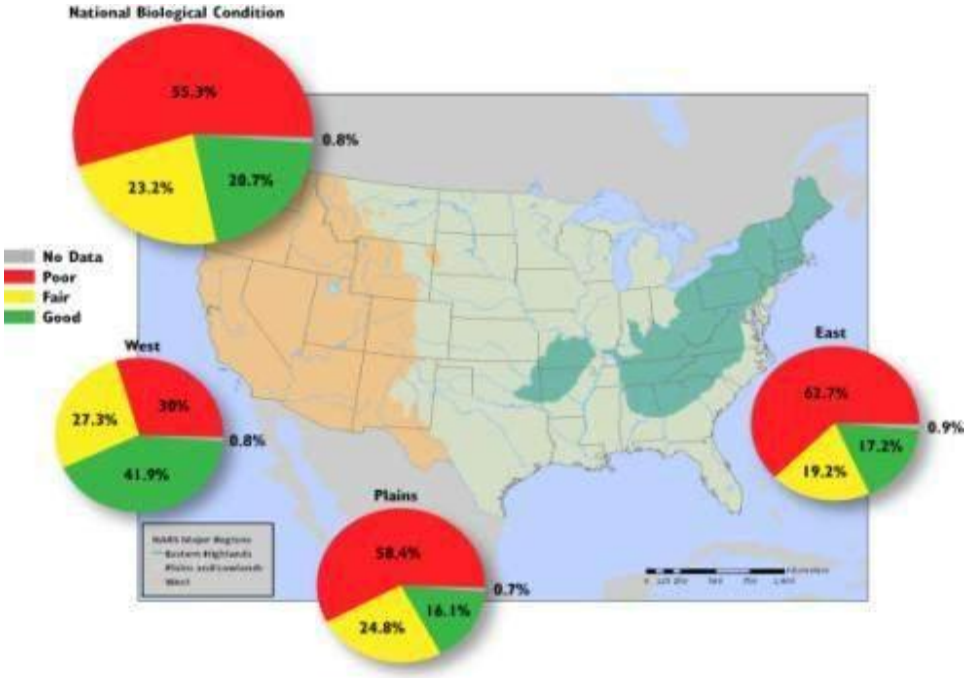
- Urban Waters for Fish Tissue PCBs and PFCs
- State Example for NRSA
- Importance of nutrients



Key Findings – Biological Condition

55% of our nation's river and stream miles are in poor biological condition, 23% are in fair condition, and 21% are in good condition. Rivers and streams that are in fair or poor biological condition can lead to loss of fishing and recreational opportunities.

Compared to a 2004 stream assessment, *7% fewer stream miles* are in good biological condition.

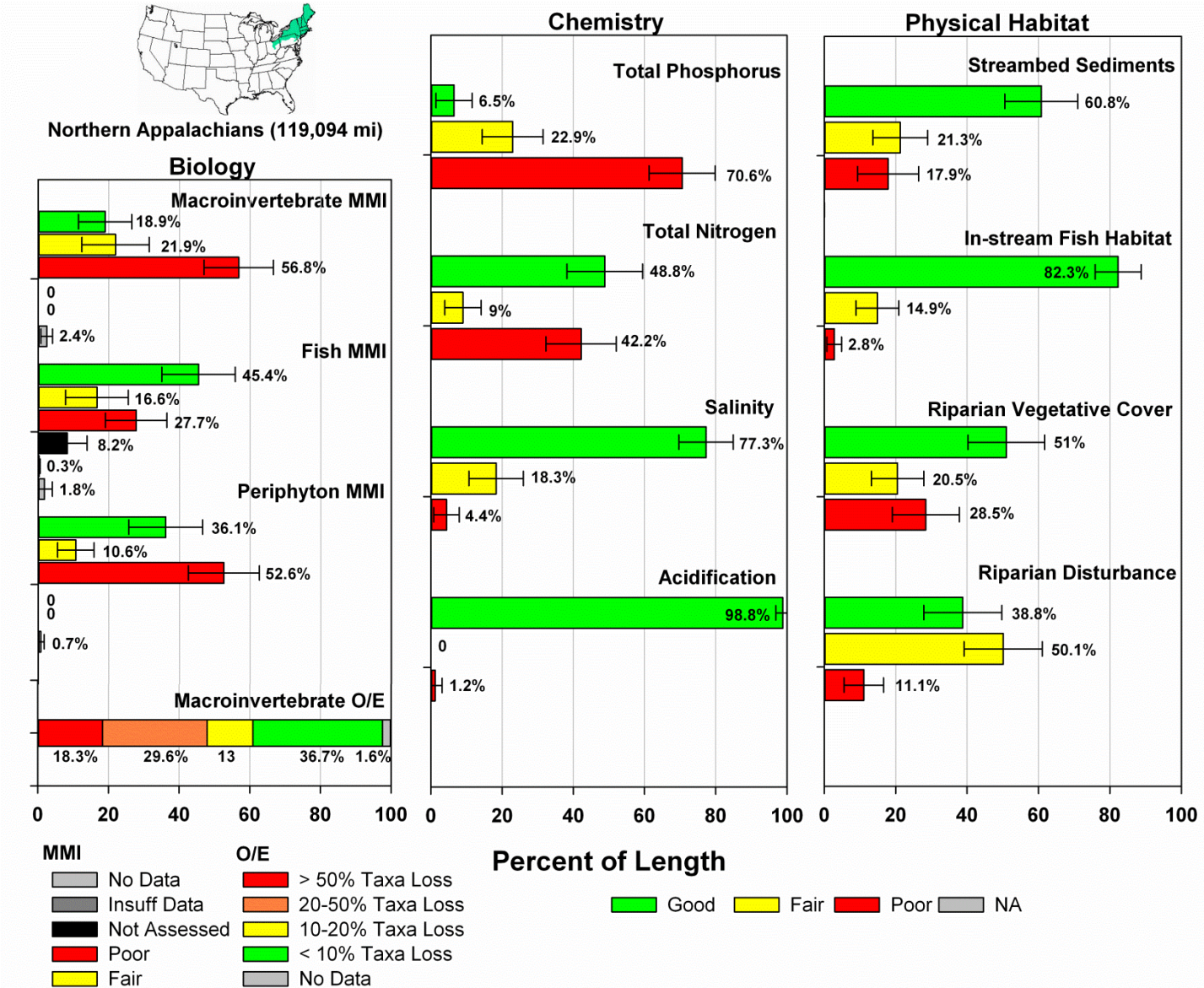


Key Findings from the NRSA – Major Stressors

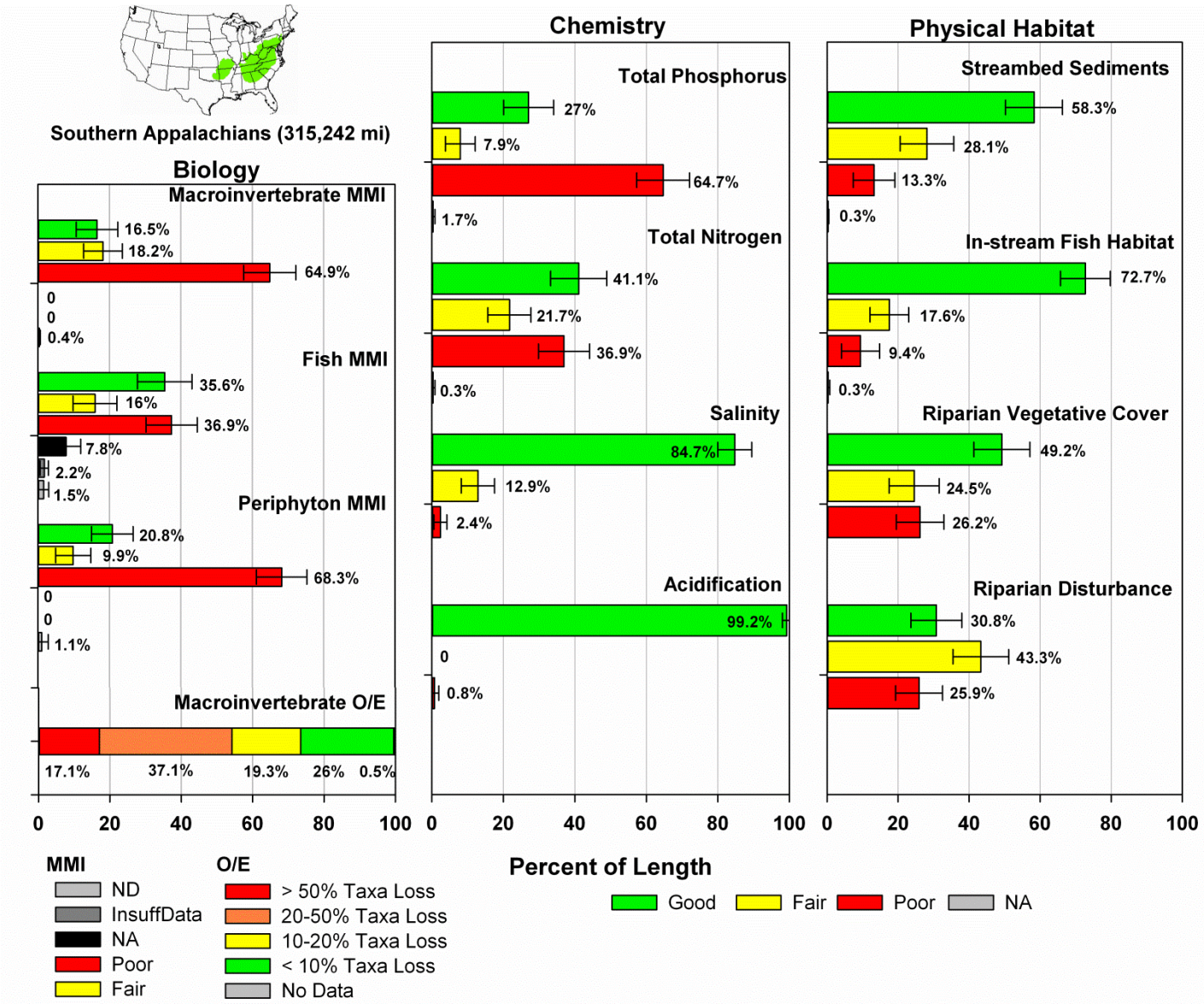
Nutrients and poor habitat continue to be widespread problems

- **Nutrients:**
  - 44% of the nation's river and stream miles have excessive levels of **phosphorus**
  - 29% have high levels of **nitrogen**
- **Habitat:**
  - **Poor quality vegetative cover** is widespread in 24% of rivers/streams
  - High levels of **human disturbance** near river and streambanks occur at 20% of the nation's river and stream miles

Northern Appalachians



Southern Appalachians



Key Findings in the NRSA – Human Health

Two indicators that show potential risk to human health -- enterococci bacteria and mercury in fish tissue -- are widespread in rivers and streams.

- **In >20% of river and stream miles, enterococci exceed thresholds protective of human health.**

- **Over 13,000 miles of rivers are found to have mercury in fish tissue at levels that exceed thresholds protective of human health.**

Public Comment

- Before public comment period, NRSA report went through internal review, external peer review, and State review

- Draft released for public comment on March 25, 2013; 45-day comment period

- Comments received from States, Environmental Organizations, Industry groups

General Categories of Comments

- Reference condition/Threshold development
- Cause and Effect
- Macroinvertebrates as leading bio indicator
- Comparability with CWA reports
- Data Analysis

Next Steps

- Present revisions to States and Partners for report and data analysis via regional webinars
- Review State/Partner comments and incorporate into report
- Finalize graphics and figures for report, final review of content
- Release final report to website and initiate printing

Questions ?

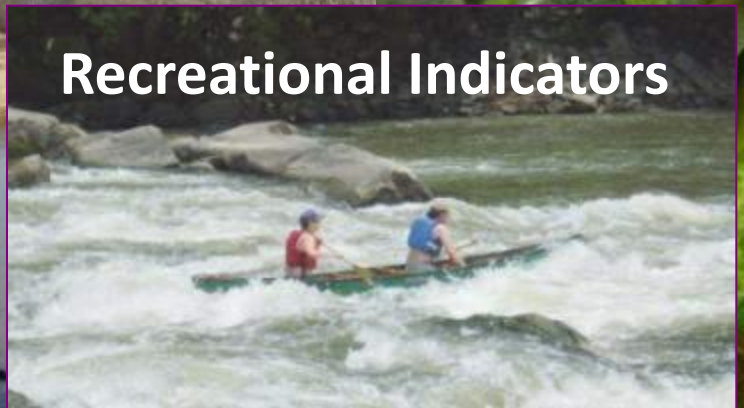

Benthic
macroinvertebrates


Water quality


Algal community


Physical habitat


Fish community and fish tissue


Recreational Indicators

Extra Slides

Determining Thresholds: Setting the Bar

- Reference Condition: Least disturbed condition
  - Represents 'best of what's left' in an altered landscape
- Baseline for evaluation of survey data
  - Set good/fair/poor condition categories for most indicators

Telegraph Creek, FL
http://water.dep.state.fl.us

Rock Bridge Fork, KY
www.water.ky.gov

Determining Thresholds: Setting the Bar

For the NRSA, two types of thresholds were used to determine condition:

- **Regionally reference-based thresholds**
  - Fixed percentile defines good/fair and fair/poor
  - Applied to bioindicators, habitat indicators and major stressors

- **National consistent thresholds**
  - Screening thresholds developed by EPA that are protective of human health
  - Applied to human health indicators