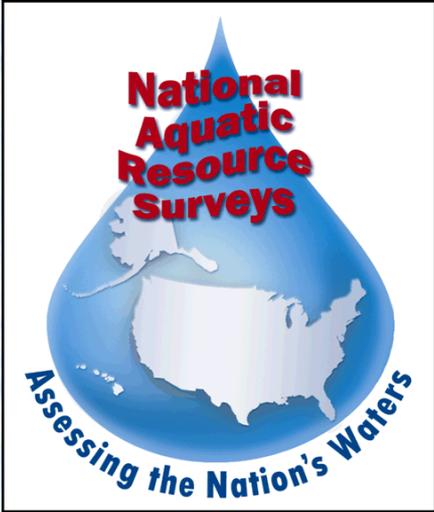


Collaboration to Understand Water-Quality Stressors

National Aquatic Resource Surveys (NARS) and NAWQA



Workgroup on Integration of NAWQA and NARS

NAWQA/USGS:

Bob Gilliom (Co-Chair)

Charlie Crawford

Daren Carlisle

Mark Munn

Pete Van Metre

NARS/EPA:

Steve Paulsen (Co-Chair)

Ellen Tarquinio

Phil Kaufmann,

Richard Mitchell

Amina Pollard

John Stoddard

John Vansickle

Mark Corbin (Office of Pesticides)

National Aquatic Resource Surveys: Objectives:

1. Assess biological and recreational condition of aquatic resources 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

Goal of NAWQA/NARS Collaboration

Improve understanding of the causes of impaired biological integrity by expanding the scope of stressor assessment and expanding the analysis of biological conditions in relation to stressor levels.





National Consistency: The NARS Approach

- Randomized design to report on condition of each resource nationally and on a regional basis with documented confidence
 - 2,000 sites for national & regional scale reporting in lower 48
- Standard field and lab protocols
 - All indicators evaluated for credibility
 - Selected to address national and state-identified needs
- National QA and data management
- Nationally consistent and regionally relevant data interpretation and peer-reviewed reports

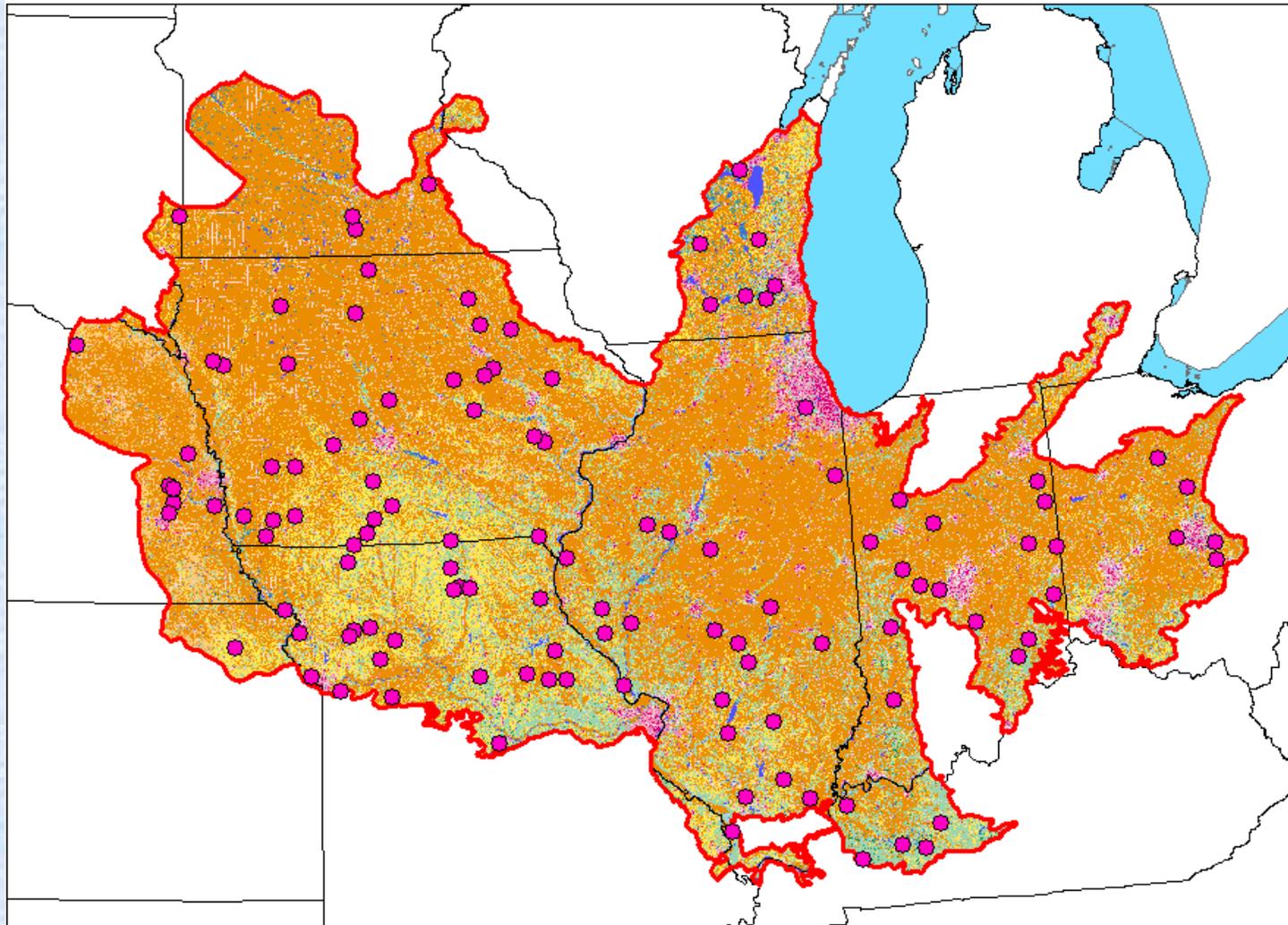
National Aquatic Resource Survey Schedule

	2011	2012	2013	2014	2015
Rivers/ Streams	Lab/Data Analysis; Research	Report; Design	Field	Field	Lab/Data Analysis
Coastal	Lab/Data Analysis	Report	Research	Design	Field
Wetlands	Field	Lab/Data Analysis	Report	Research	Design
Lakes	Design	Field	Lab/Data Analysis	Report	Research

Schedule for 2013 collaboration- field sampling

- Fall 2012-Winter 2013:
 - Site evaluation and reference site selection
- Spring 2013:
 - Training on field methods
- May 2013-September 2013:
 - Field Sampling
- June 2014:
 - All data back from national labs for collaboration

The Temperate Plains Study will be a hybrid of the NARS National Design and a NAWQA Regional Synoptic Study



Survey Design

- **Probability-based survey design**
 - **Spatially balanced, stratified**
- **Balance sample size by stream size**
 - 1st – 4th order (~900 sites)
 - 450 were sampled in WSA
 - 5th+ order (~900 sites)
- **Other sites**
 - Repeat sites (~200)
 - Reference sites (~200 sites)
 - Additional sites (~100)
- **Total sites ~2300**
- **Data collected in 2013 2014**
- **Report in 2016**

HERE 1475 FT
ABOVE
THE OCEAN
THE MIGHTY
MISSISSIPPI
BEGINS
TO FLOW
ON ITS
WINDING WAY
2652 MILES
TO THE
GULF OF
MEXICO

National Rivers and Streams Assessment Base Sites by WSA Ecoregion



Potential Indicators NRSA 13-14

- **Water Chemistry**
- **Periphyton**
- **Benthic macroinvertebrates**
- **Enterococci**
- **Fish Community**
- **Physical habitat characteristics**



NAWQA-NARS Collaboration for the Temperate Plains Region will test an approach to enhance assessment of these factors.

