



Collaborative Development of a North American Spatial Framework for River Assessment and Classification

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Abstract

In the past 15 years, river scientists have pioneered the development of fundamental frameworks to classify flowing waters in several regions of North America. However, these efforts and their resulting products have not been coordinated. An interdisciplinary workgroup has recently formed to draft a collective vision for rivers assessment and classification using a North American spatial framework. The end goal of these efforts is the development of one well-designed, ecologically-based spatial framework that will serve the many agencies and groups responsible for the varied aspects of river management: water quantity, water quality, environmental assessment, conservation planning, and fisheries management. This framework has tentatively been coined the River Information System (RIS).

Getting Started

The workgroup convened for an initial workshop on February 3-4, 2009 at the Ralph A. MacMullan Conference Center in Roscommon, MI with the objective of creating a vehicle for coordination among existing regional and national efforts. Attended by 16 specialists (Table 1), the workshop generated a preliminary list of desirable characteristics the RIS should possess (Table 2) and recommended a phased implementation approach (Table 3).

Table 1:

North American Federal/Provincial Agencies:

Ralph Abele, U.S. EPA, Region 1, Boston MA.
Joseph Flotemersch, U.S. EPA, Office of Research and Development, Cincinnati OH
Iris Goodman, U.S. EPA, Office of Research and Development, Washington DC
Jim McKenna, USGS Great Lakes Regional Aquatic GAP Program, Cortland NY
Les Stanfield, Ontario Ministry of Natural Resources
Jana Stewart, USGS Great Lakes Regional Aquatic GAP Program, Madison WI

Academia:

*Matt Baker, University of Maryland, Baltimore Campus
LeRoy Poff, Colorado State University, Ft. Collins
*Scott Sowa, (representing) Missouri Resource Assessment Partnership/University of Missouri, Columbia (Presently with The Nature Conservancy, Great Lakes Region)
*Paul Seelbach, Michigan Institute for Fisheries Research, University of Michigan, Ann Arbor.
James Thorp, Kansas Biological Survey, University of Kansas, Lawrence KS

Non-Profit Organizations:

Jonathan Higgins, The Nature Conservancy, Conservation Science Division, Chicago IL.
Arlene Olivero, The Nature Conservancy, Eastern Region Conservation Science Support, Boston MA

Private Sector:

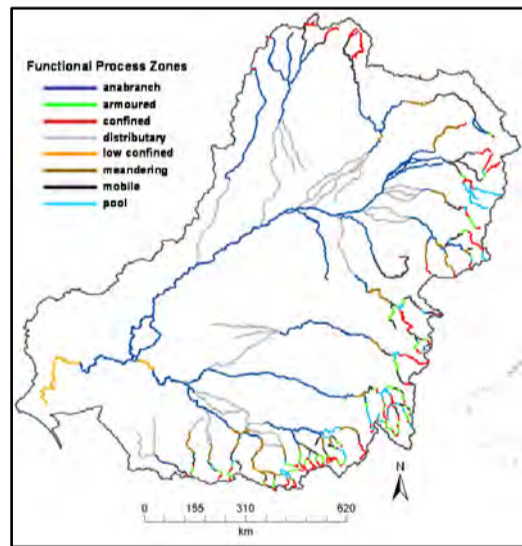
Piotr Parasiewicz, Mt Holyoke College & Rushing Rivers Institute, Amherst MA
Sheila North, Dynamac Corporation, Cincinnati OH

Multi-State Organizations:

Scott Robinson, Coordinator for the Southeast Aquatic Resource Partnership (SARP), Social Circle GA

State Agencies:

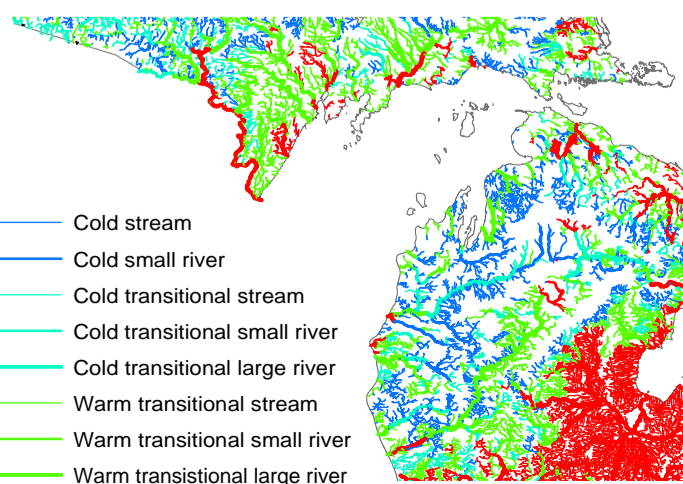
*University/State Agency Partnerships



Thoms et al., 2007

Table 2: Candidate list of desirable characteristics for the RIS

- Consistent geographic data framework
- Units at multiple yet nested spatial scales
- Valley-scale (functional process zone) characteristics and ecoregional analysis
- Structure for aggregation of similar neighbor arcs
- Structure to consider natural attributes first, separating these from human [anthropogenic] influences
- Strike a balance between current usefulness and investment
- Strong basic framework with utilization guidance to facilitate trans-boundary utility (e.g., Standardized units of measure of reporting)
- Promotion as an adaptive learning tool
- Federal-, regional-, and state-level steps
- Documentation of the rationale, justification, and explanation of chosen methodology
- High utility to multidisciplinary audience



Courtesy of Paul Seelbach

Status of TNC Classification (2005)

Courtesy of Jonathan Higgins

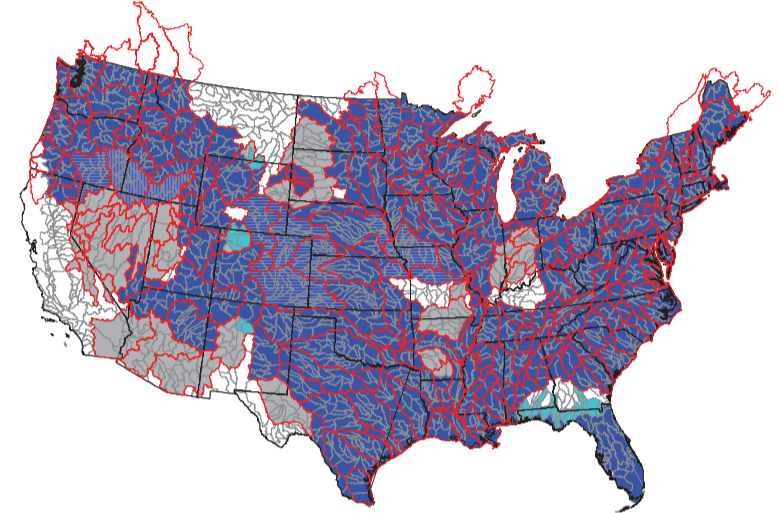
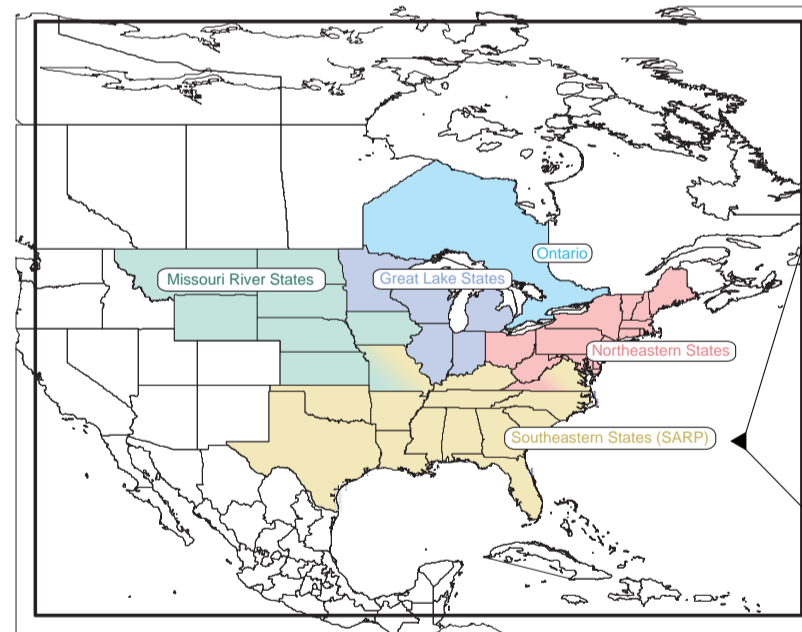


Table 3: Phased Implementation Plan

- **Phase 1:**
Secure funding and initiate efforts to merge existing classification systems in support of one (mostly) common framework operating across a large region of eastern North America (Figure 1). This phase should include decisions on how these and future data will be managed and made available to users.
- **Phase 2:**
Use lessons learned from Phase 1, the Nature Conservancy's international efforts, and existing regional partnerships (such as the Upper Mississippi, the NEAFWA Northeastern Stream Habitat Classification, Great Lakes GAP, and Missouri GAP) to support the classification of resources included in the Southeast Aquatic Resource Partnership (SARP; Figure 1). Once complete, this would include five regions of North America that together cover about 2/3 of the U.S. plus Ontario.
- **Phase 3:**
The RIS will ideally serve as a model for the eventual coverage of the remainder of North America, and as the information-rich, regional underpinning for the U.S. National Fish Habitat Initiative overarching frame (<http://fishhabitat.org/>).



The SARP is comprised of representatives from 14 southeastern states and includes participants from state agencies, non-governmental organizations (NGOs), grassroots groups, industry, business, and private sector interests. The intent of the SARP is to develop State and Federal partnerships that will extend beyond the traditional boundaries of fishery resource management agencies (<http://www.sarpaquatic.org/index.shtml>).

Figure 1: Geographic extent of initial North American collaborative efforts

Planned Near-Term Products:

Concept Paper:

Will outline why a broad-scale classification is vital to the sustainability of the rivers and streams of North America. *Writing team includes Paul Seelbach, James Thorp, and Joseph Flotemersch*

Technical Paper:

Will provide an overview of the problem being addressed, define and justify the spatial landscape and outline how best to classify them, and include a review of relevant publications and past projects/success stories. *Writing team include Jonathan Higgins, Joseph Flotemersch, Les Stanfield, Paul Seelbach, Arlene Olivero, Matt Baker, and Piotr Parasiewicz*

Symposium:

Collaborative development of a North American Spatial Framework for Rivers Assessment and Classification

American Fisheries Society: 139th Annual Meeting, Nashville, Tennessee; Aug 30 – Sep 3, 2009

The morning session of this full day symposium will present the findings, conclusions and recommendations resulting from the February 3-4, 2009 workshop. The afternoon session will be reserved for talks from the broader group of folks we hope to embrace with this symposium. Both the morning and afternoon sessions will conclude with a discussion period focused on how to best move forward with the RIS effort.