

Classification & Visualization of Lake Sturgeon Habitat Suitability Using the Great Lakes GIS

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Objective

To classify spawning suitability for lake sturgeon in Michigan tributaries.

Primary Resources:

Lake Sturgeon Rehabilitation Strategy, State of Michigan, Department of Natural Resources, Fisheries Division
Special Report

Great Lakes GIS Project, Institute for Fisheries Research, University of Michigan, Michigan Department of Natural Resources

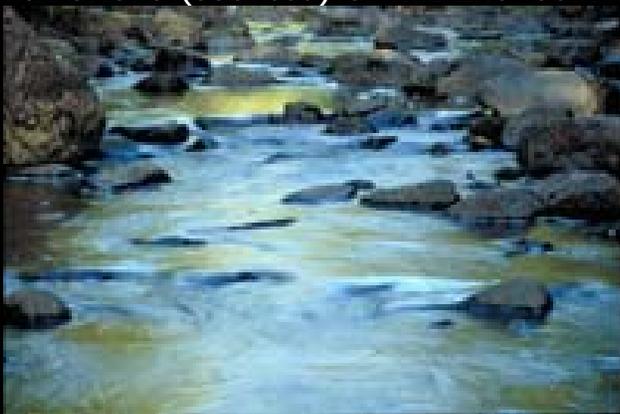
Port Austin (courtesy of MI Travel Bureau)



Indiana Dunes (courtesy of NPS)



North Shore (courtesy of MN Ext. Service)



Great Lakes GIS

→ a seamless, standardized, habitat-based GIS database for the Great Lakes

Contents

- 📁 Data
- 📁 Research Projects
- 📁 Support Documents
- 📁 Toolkits

Area of Interest



Michigan, Lake Superior Basin



Methods

1. Classify variables into lake sturgeon spawning suitability groups

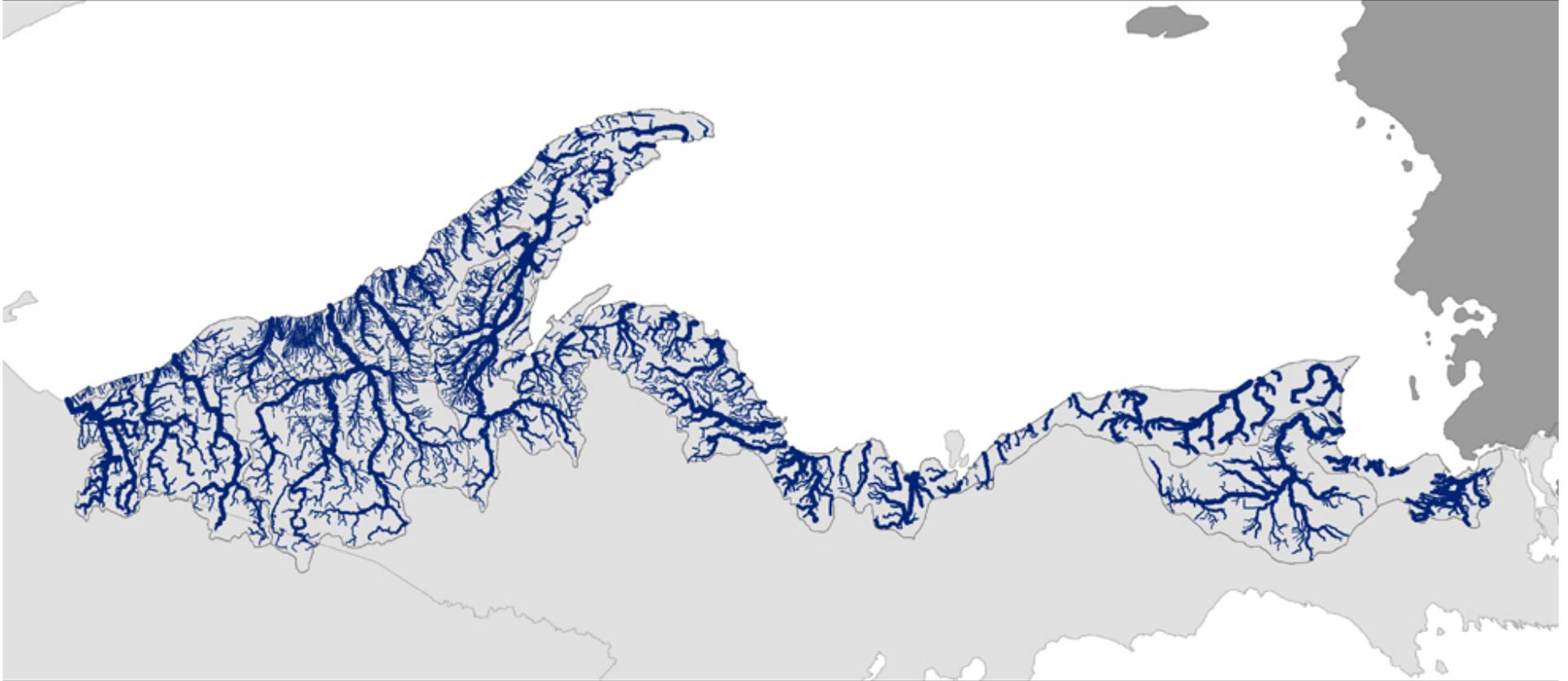
Variables: Discharge, Gradient, Temperature

Low=1, Medium=2, High=3

2. Spawning Suitability Index=
(discharge score + gradient score +
temperature score)

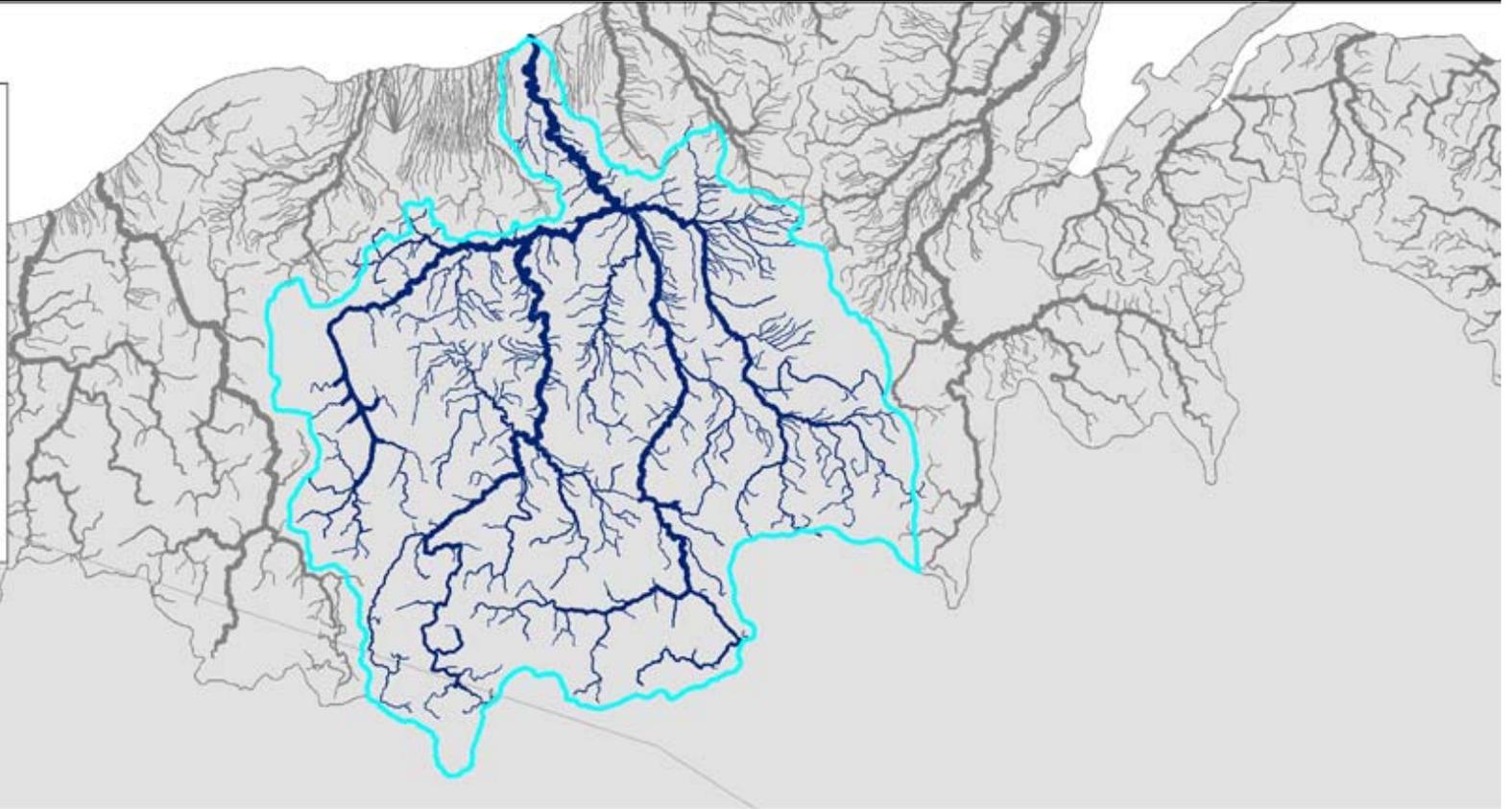
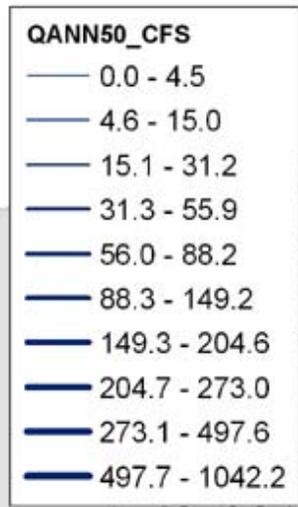
3. Perform hypothetical dam removal calculations

Discharge



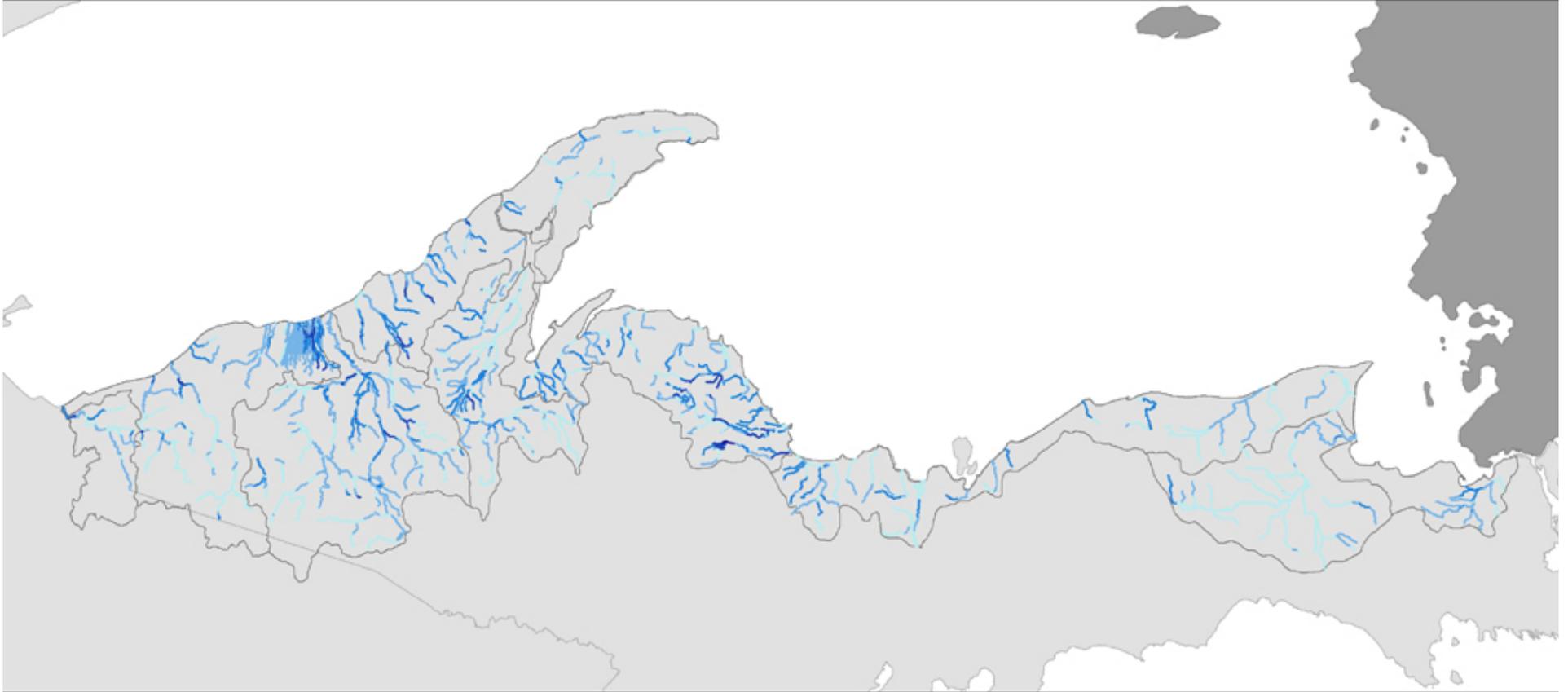
Source: Ecological Classification of Rivers for Environmental Assessment

Discharge



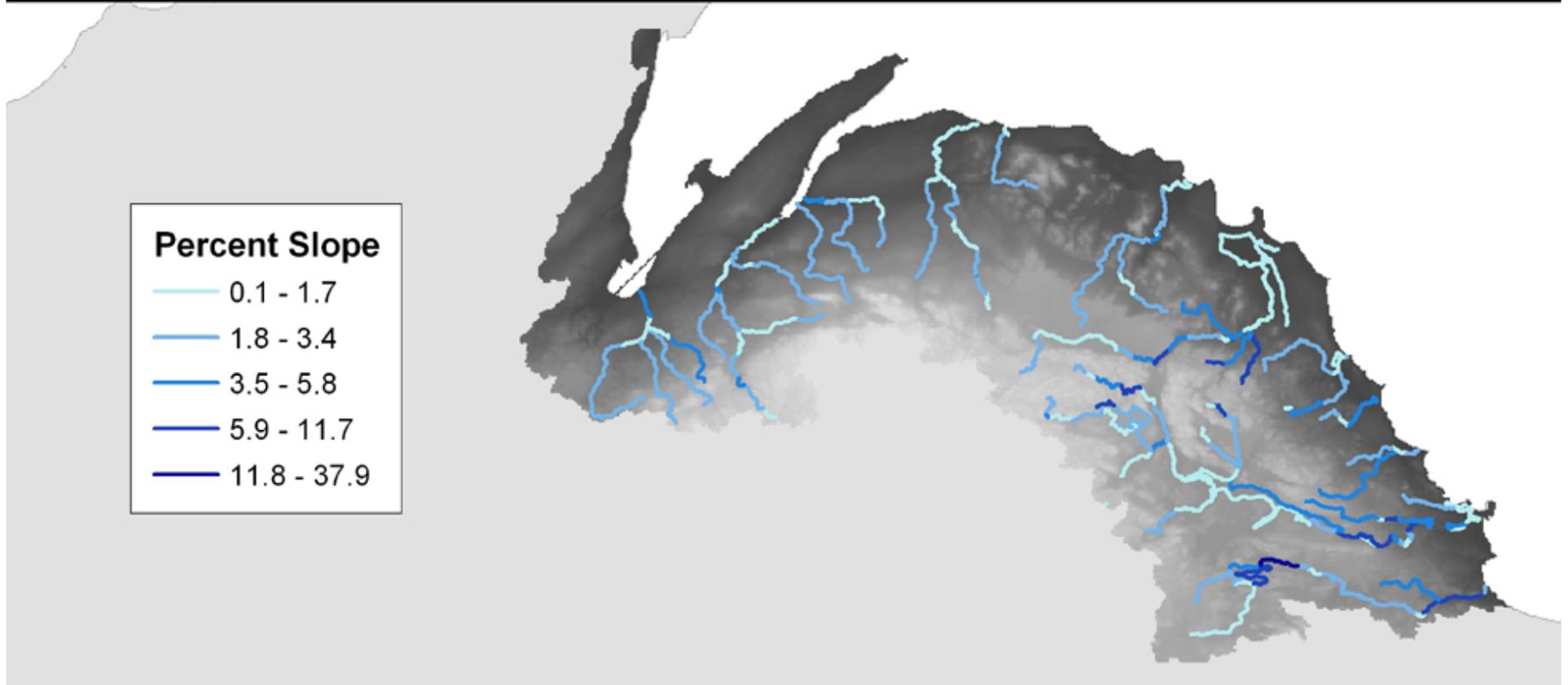
Source: Ecological Classification of Rivers for Environmental Assessment

Gradient



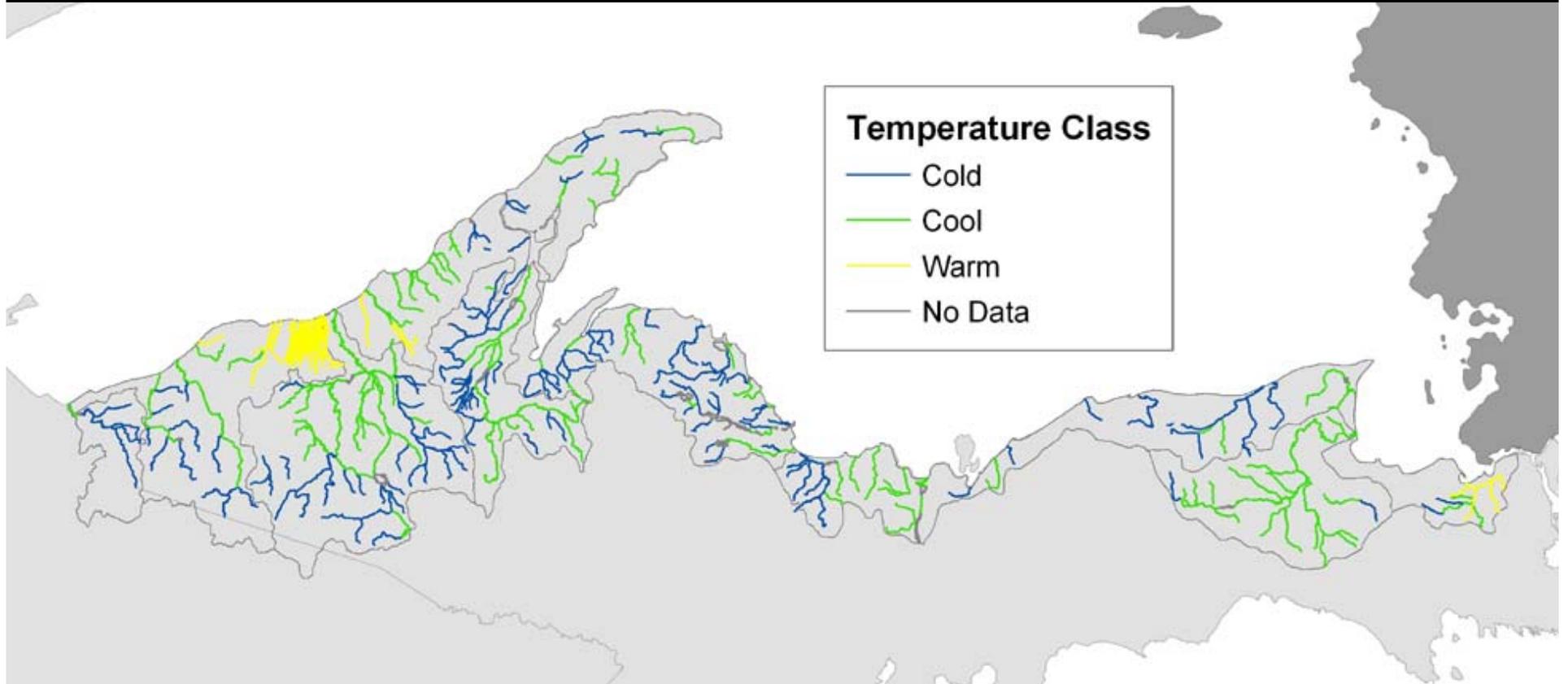
Source: National Elevation Data Set & Surface Tools v. 1.5

Gradient



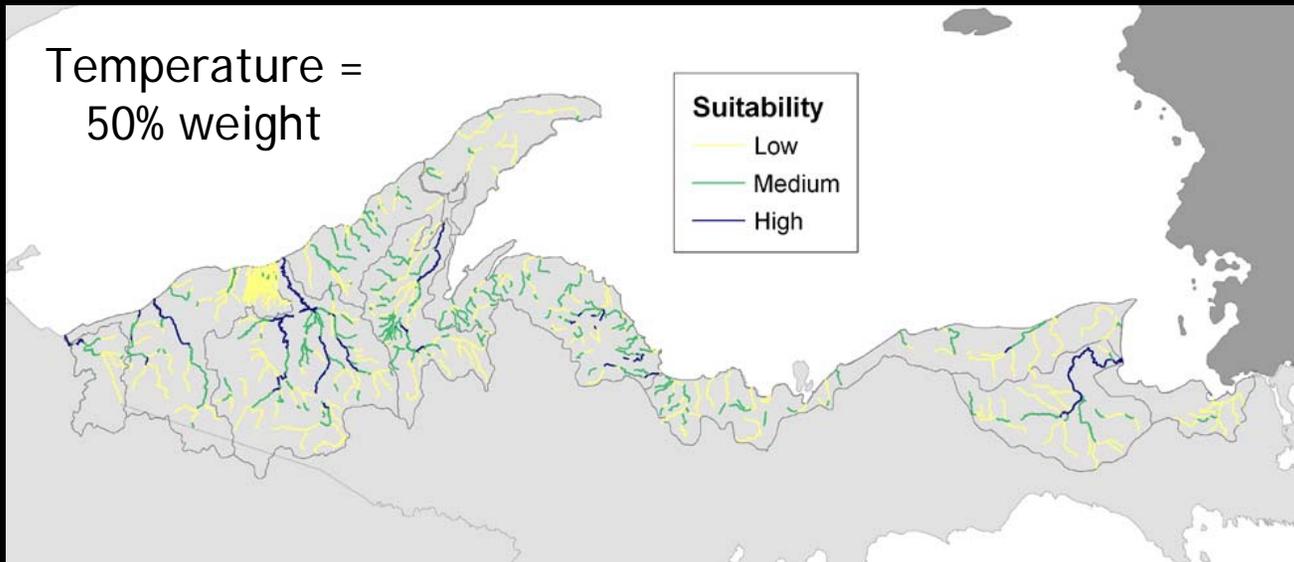
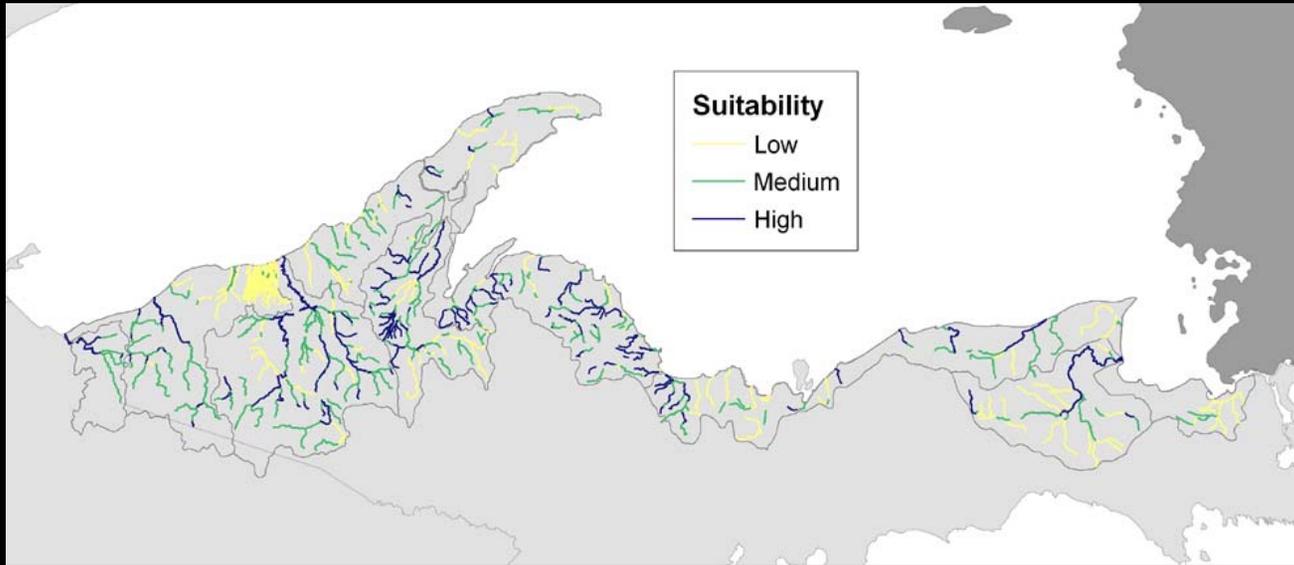
Source: National Elevation Data Set & Surface Tools v. 1.5

Temperature



Source: Valley Segment Classification

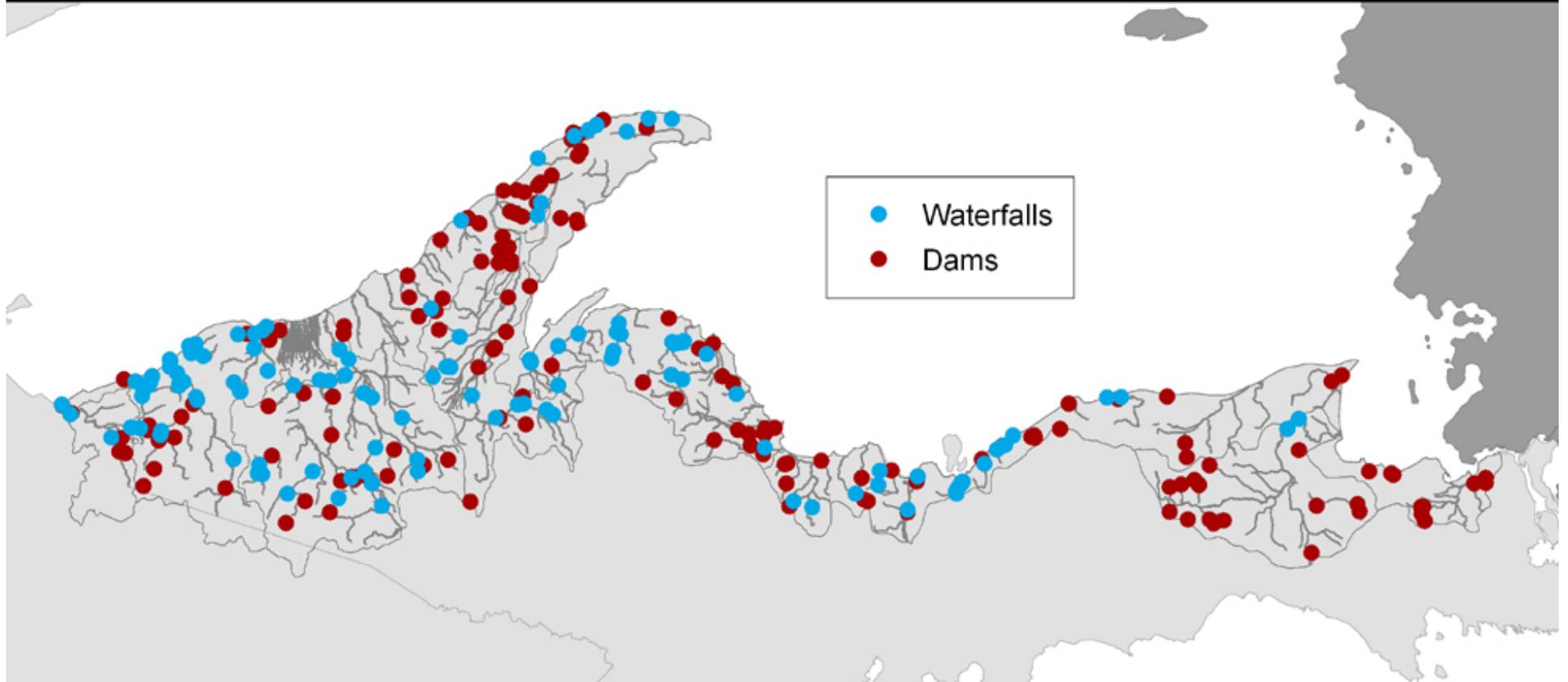
Sturgeon Spawning Suitability



Population Status



Barriers



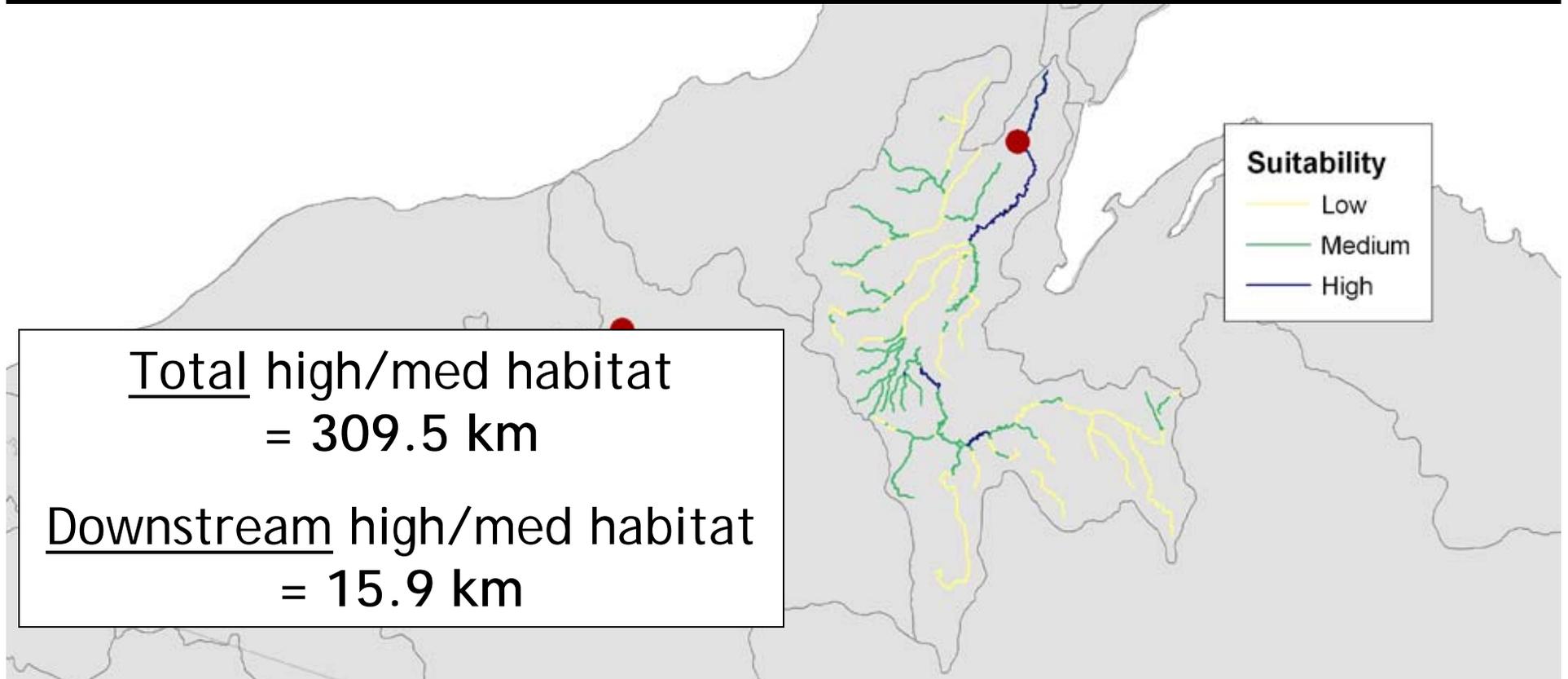
Source: Digital Water Atlas, Dam Database

Barriers



Source: Digital Water Atlas, Dam Database

Habitat Calculations



Direction for Future Research

- ** Add variables to analysis (e.g., substrate)
- ** Extend analysis basin-wide
- ** Compare historic spawning locations with spawning suitability model predictions
- ** Compare sturgeon spawning suitability rankings with sea lamprey habitat suitability (i.e., sturgeon suitability provides support for dam removal)