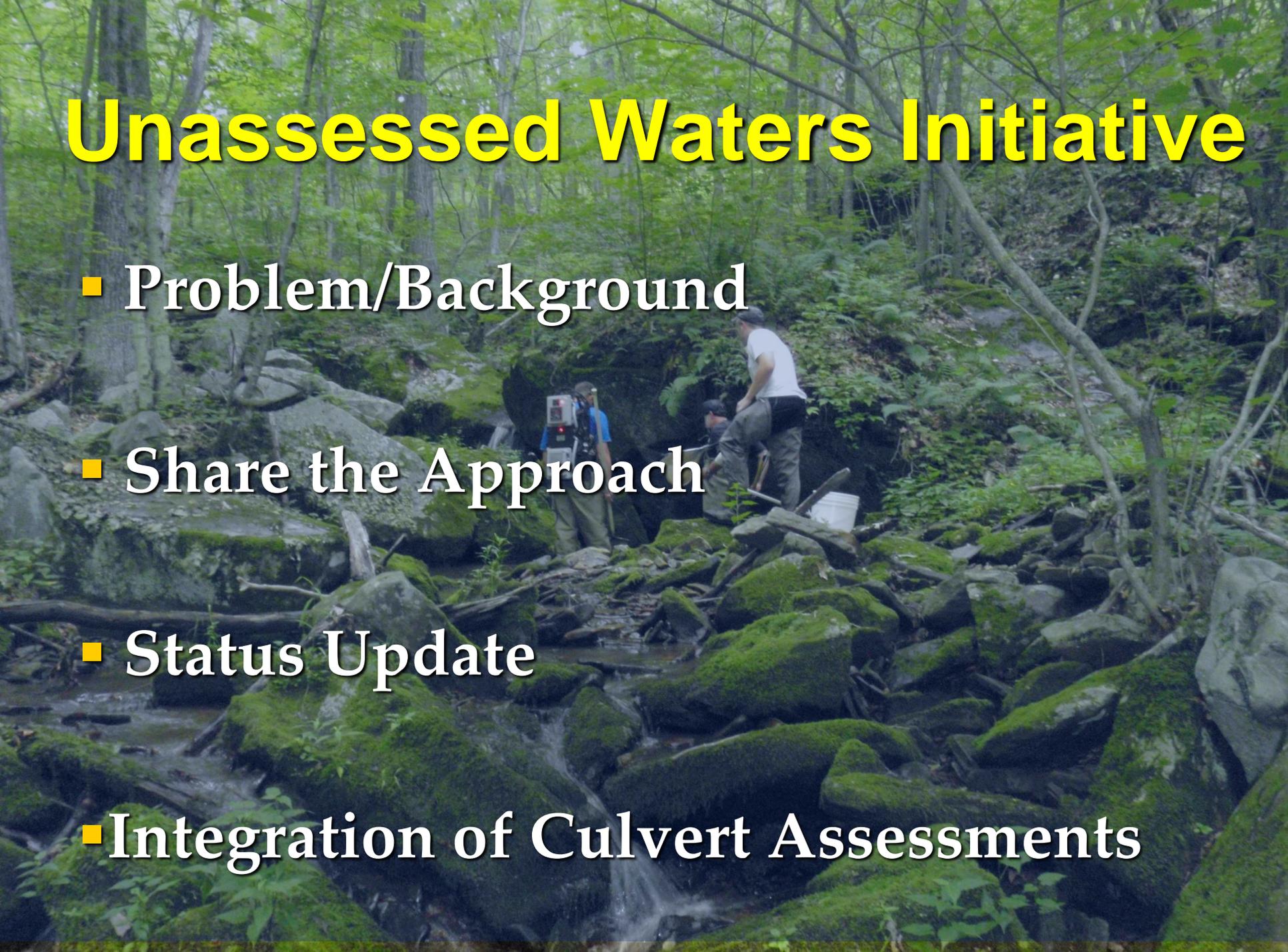


Unassessed Waters Initiative (2010 -2017)

Robert Weber and Aiden Simpson
Fisheries Biologist
PA Fish and Boat Commission
Division of Fisheries Management

3 11:52 AM

Unassessed Waters Initiative

A photograph of a forest stream with mossy rocks and people in the background. The scene is a lush green forest with a stream flowing over large, moss-covered rocks. In the background, several people are visible, some wearing field gear, suggesting a field study or assessment. The overall atmosphere is natural and serene.

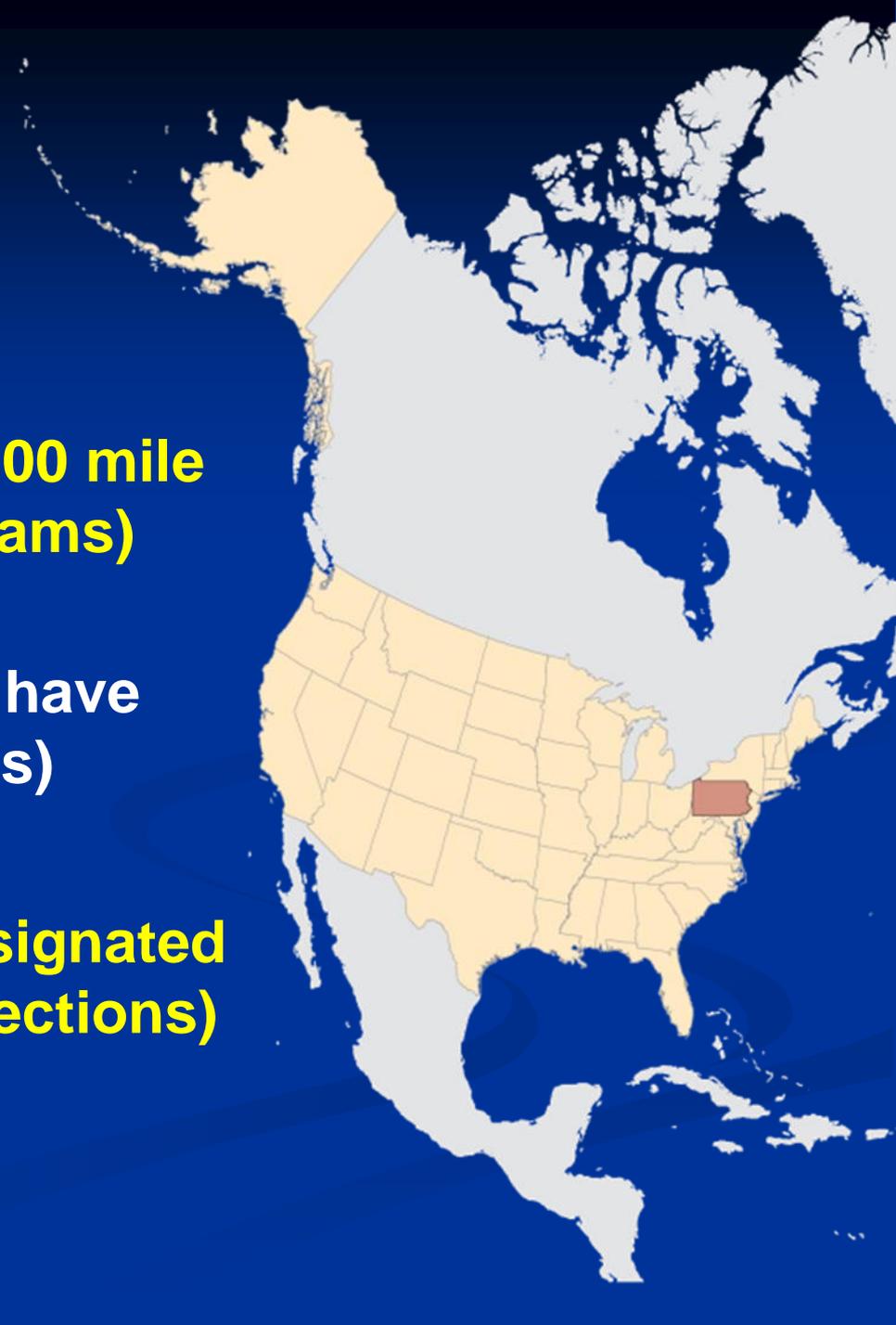
- Problem/Background
- Share the Approach
- Status Update
- Integration of Culvert Assessments

Pennsylvania's Flowing Water Resource

**PA estimated to contain 86,500 mile
of flowing water (62,725 streams)**

**Approximately 32,400 miles have
been sampled (9,207 streams)**

**To date, 15,040 miles are designated
as wild trout waters (4,590 sections)**



Problem/Background

- To date, approximately 53,000 waters in Pennsylvania have not been surveyed (700 are named)
- **Most are small first and second order streams**
- Proper classification through biological surveys is necessary to adequately protect and manage these streams
- **Human development and resource extraction are primary threats**



Pipeline Construction



Road Construction



Urbanization



Division of Fisheries Management

Major Issues

- Erosion and Sedimentation
- Lost Stream Connectivity
- Forest Fragmentation
- Increased Impervious Surfaces
- Climate Change



Strategic Trout Plan (2009-2010)

Priority Issue #1

“The PFBC has not assessed all of the streams throughout the Commonwealth. As a result, the total number of streams that support wild trout populations in Pennsylvania is unknown, which leads to inadequate protection for these streams. The PFBC does not currently have the resources to assess the most at-risk streams at a rate that would outpace the rate of degradation.”

Unassessed Waters Initiative

A photograph of a forest stream with mossy rocks and people in the background. The scene is a lush green forest with a stream flowing over large, moss-covered rocks. In the background, several people are visible, some appearing to be conducting field research or maintenance. The overall atmosphere is natural and serene.

Goal:

Proactively identify and properly classify the most at-risk streams which support naturally reproducing trout populations in order to protect, conserve and enhance those waters as wild trout streams.

Wild Trout Identification and Listing Benefits

Protection

- **Qualifies for a minimum PA-DEP designation of Cold Water Fishes (CWF)**
- **Wetlands associated with the floodplain qualify as Exceptional Value in Chapter 105**

Conservation

- **Provide information on potential habitat enhancements**
- **Provides data to EBTJV range wide strategy**



Wild Trout Identification and Listing Benefits

Recreation

- **Increased knowledge about wild trout distribution**

Education/mentoring

- **College students involved in the program gain valuable career experience and appreciation for wild trout**



Strategies:

- Involve interested partners in identifying wild trout populations in unassessed waters.
- Use GIS technology to identify potential wild trout streams (watersheds) most at risk.
- Develop prioritized lists of unassessed streams.
- Develop consistent sampling priorities



2010 to present

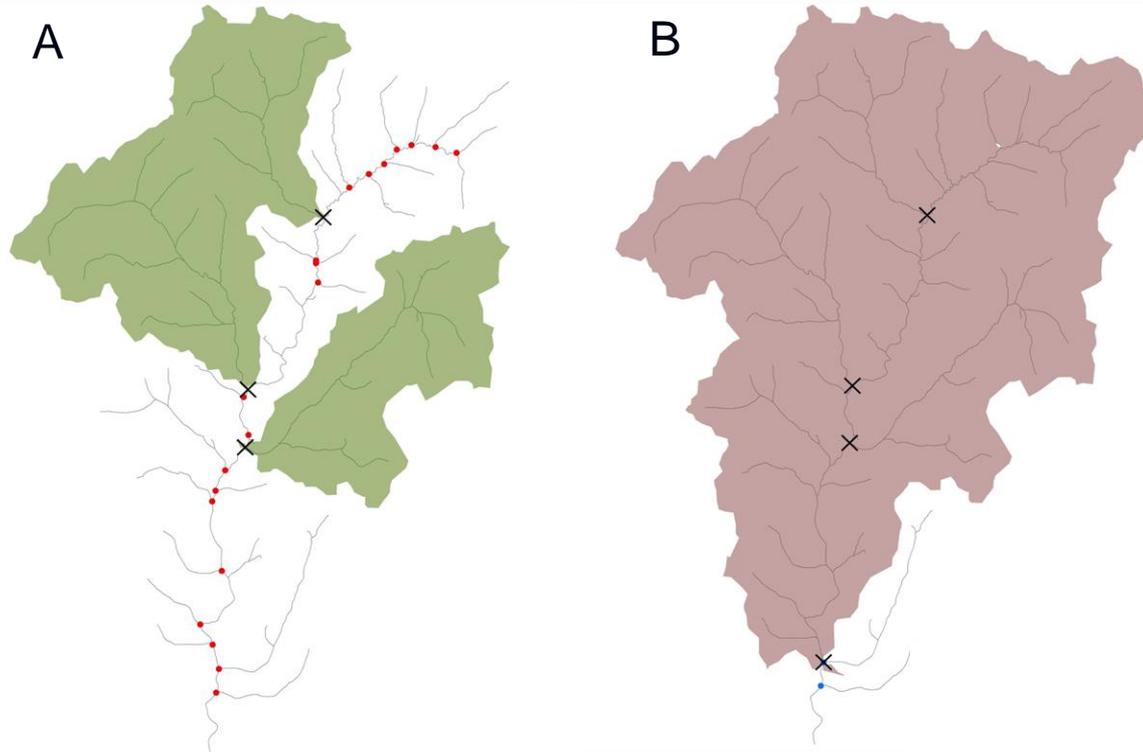
- Developed and implemented pilot program with two colleges.
- Expanded to nine partners in 2011, 15 in 2013.
- Send sampling crews to high priority watersheds and on waters determined to be most at **risk**



Sampling Priorities



Priorities

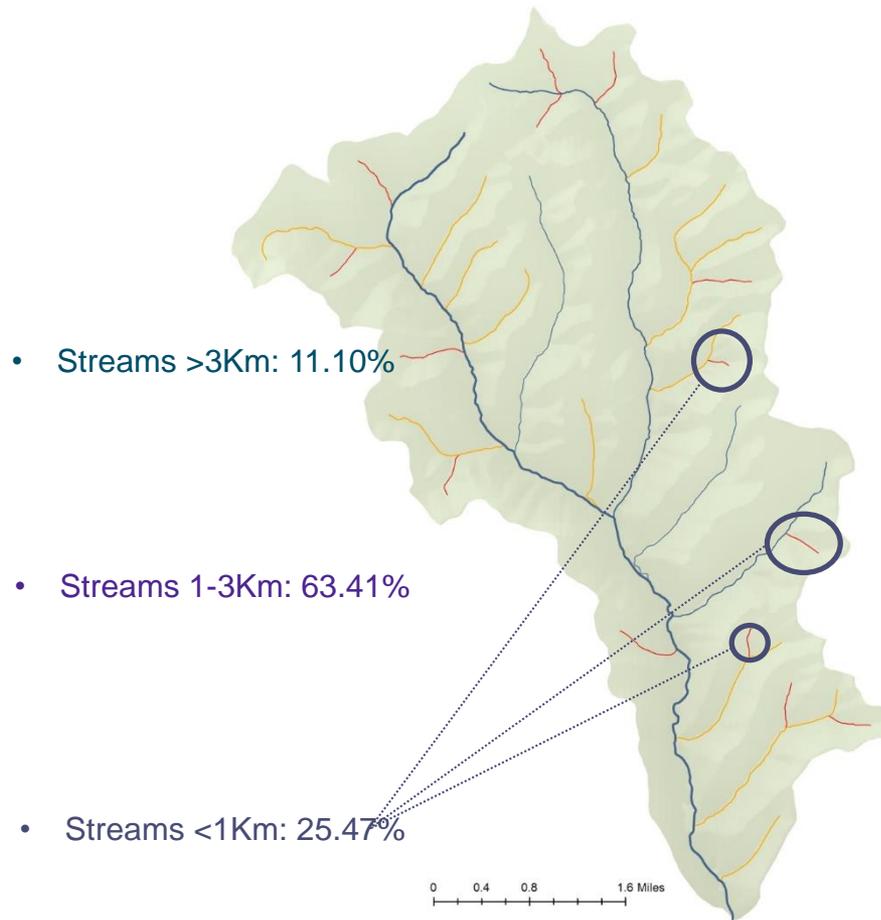


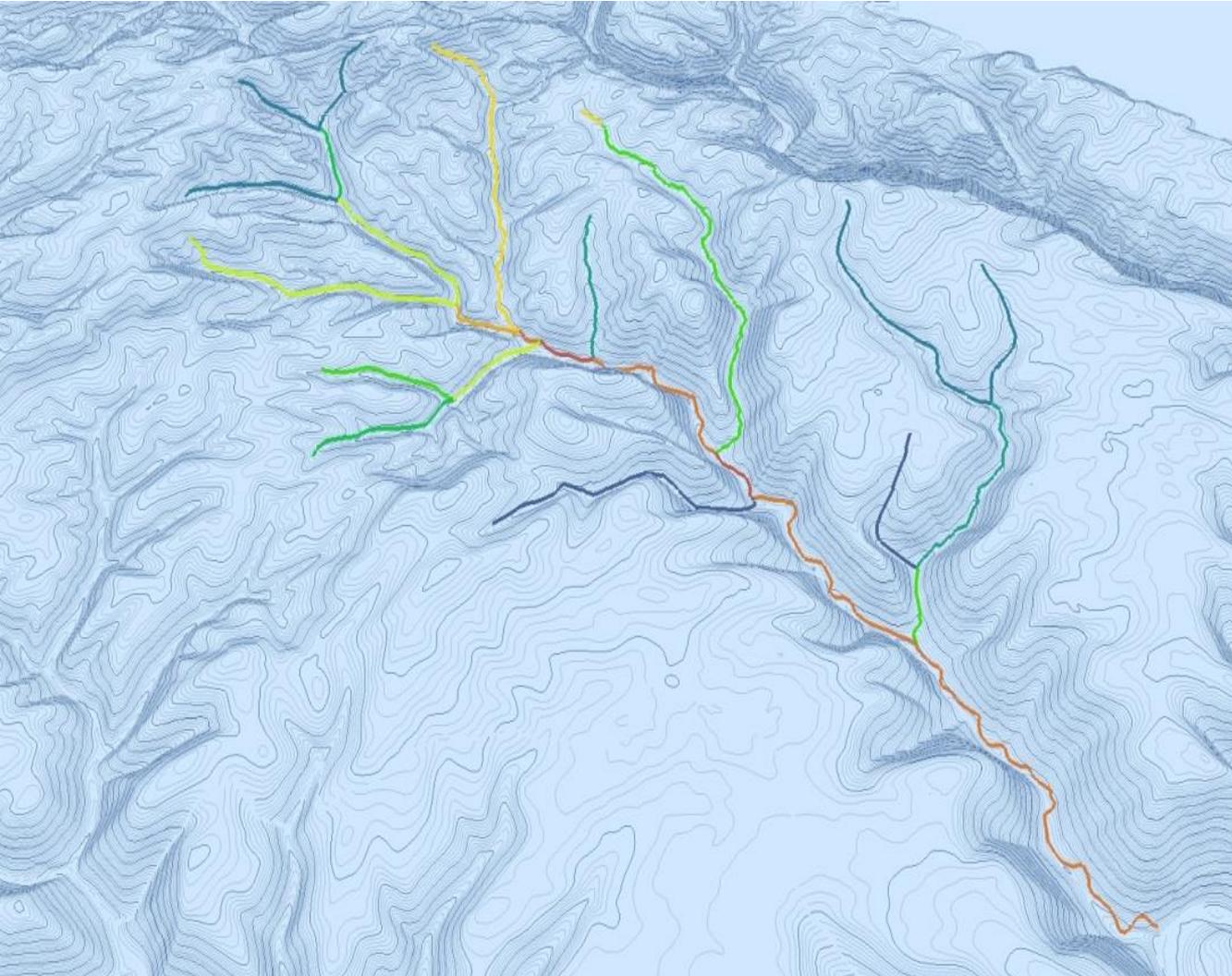
- ✕ Survey Location
- A – Future High Priority
- B – Future High Priority

- Protection of undocumented wild trout habitat
- Focus on stream sections
 - Potential to provide habitat
 - Currently inadequate protections

Challenges

- Remaining unassessed waters
 - Small
 - Dynamic
 - Susceptible
- Streams w/out linkage
 - Disconnected
- Wild trout presence
 - Connectivity



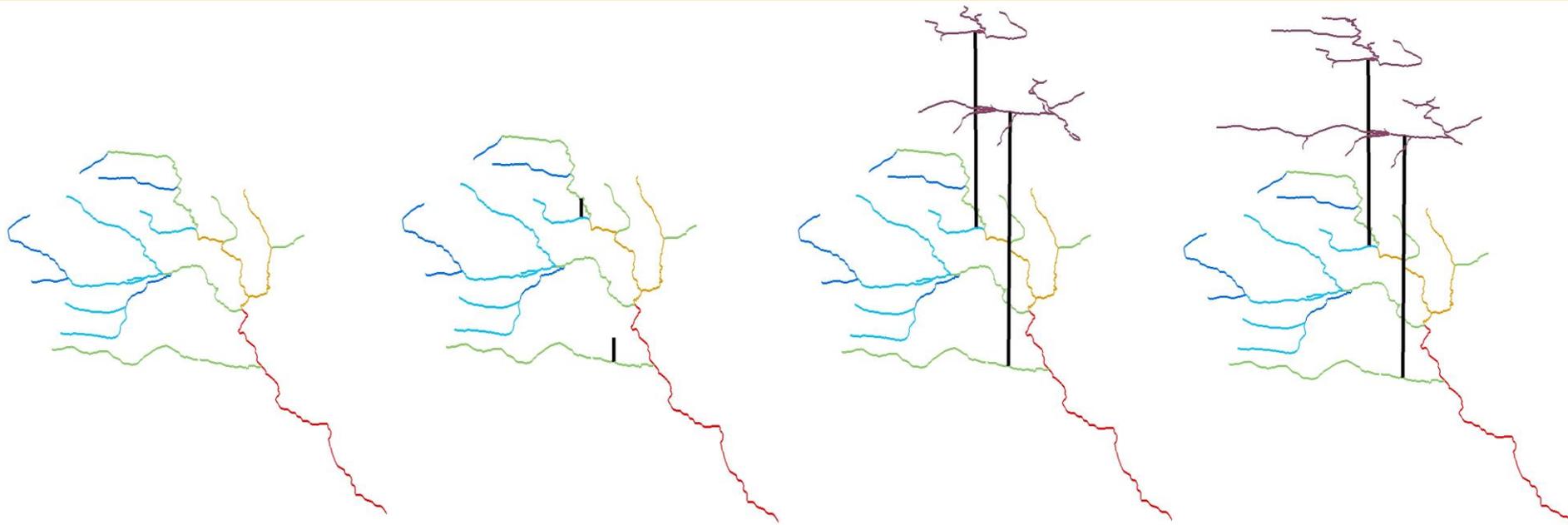


Solution

- Spatially model predictions
 - Seasonally available habitat
 - Movement & dispersal
- Predictions scaled
 - Thermal habitat
 - Brook Trout occurrence

DeWeber, J. T., & Wagner, T. (2015). Predicting Brook Trout occurrence in stream reaches throughout their native range in the eastern United States. *Transactions of the American Fisheries Society*, 144(1), 11-24.

Method for highlighting unassessed streams using Network Analyst Extension



Step 1

Construct network out of available stream layer

Step 2

Add existing sites where wild trout have been documented

Step 3

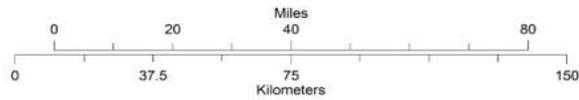
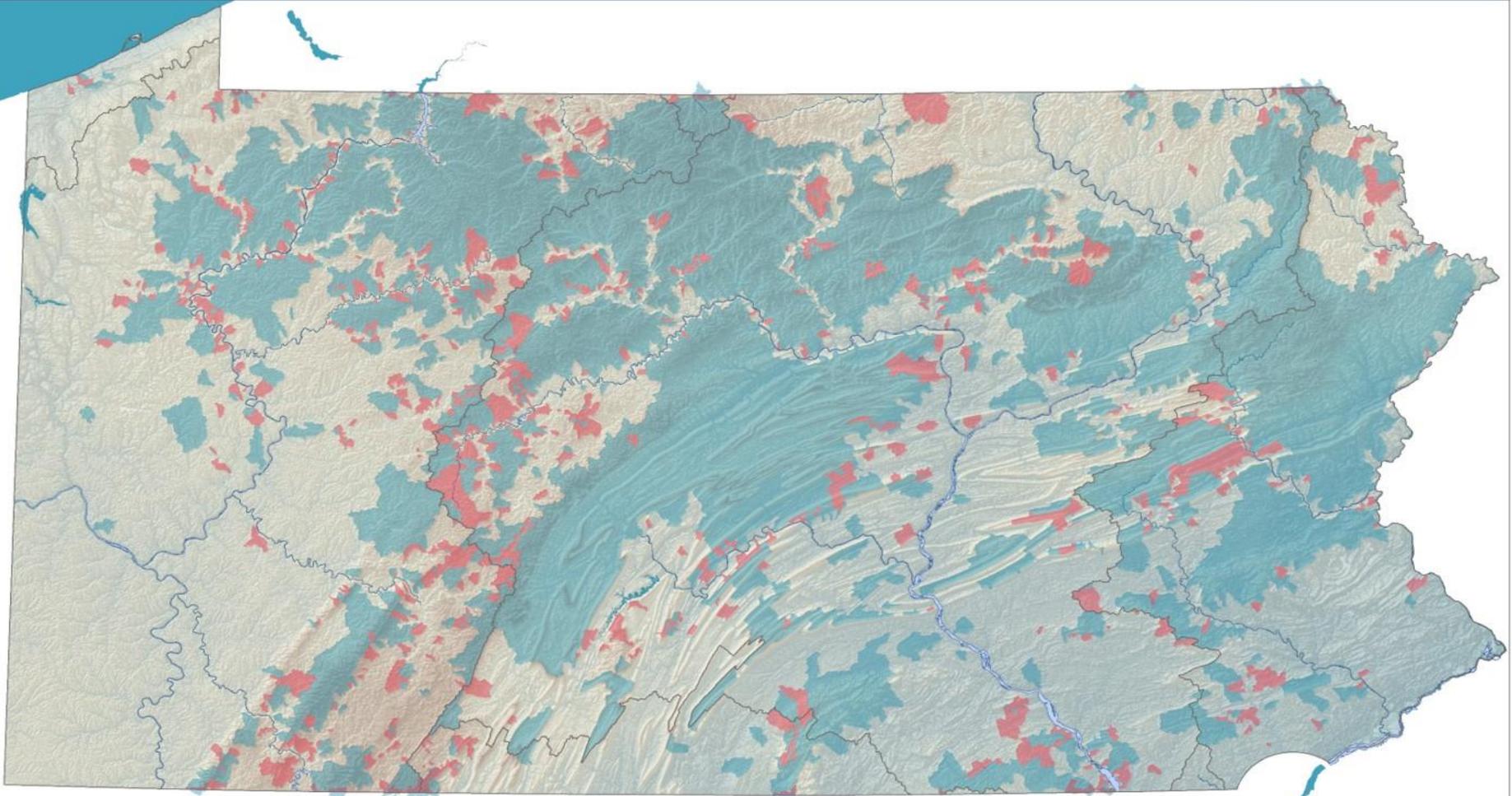
Generate "population zones" around sites with adult wild trout present

Step 4

Scale the predicted extent of zones based on the attached habitat suitability data

DESIGNATED WILD TROUT CATCHMENTS

Updated July, 2017



LEGEND

- Area Added Since 2009
- Area Existing Prior to 2009



Unassessed Waters Initiative Summary

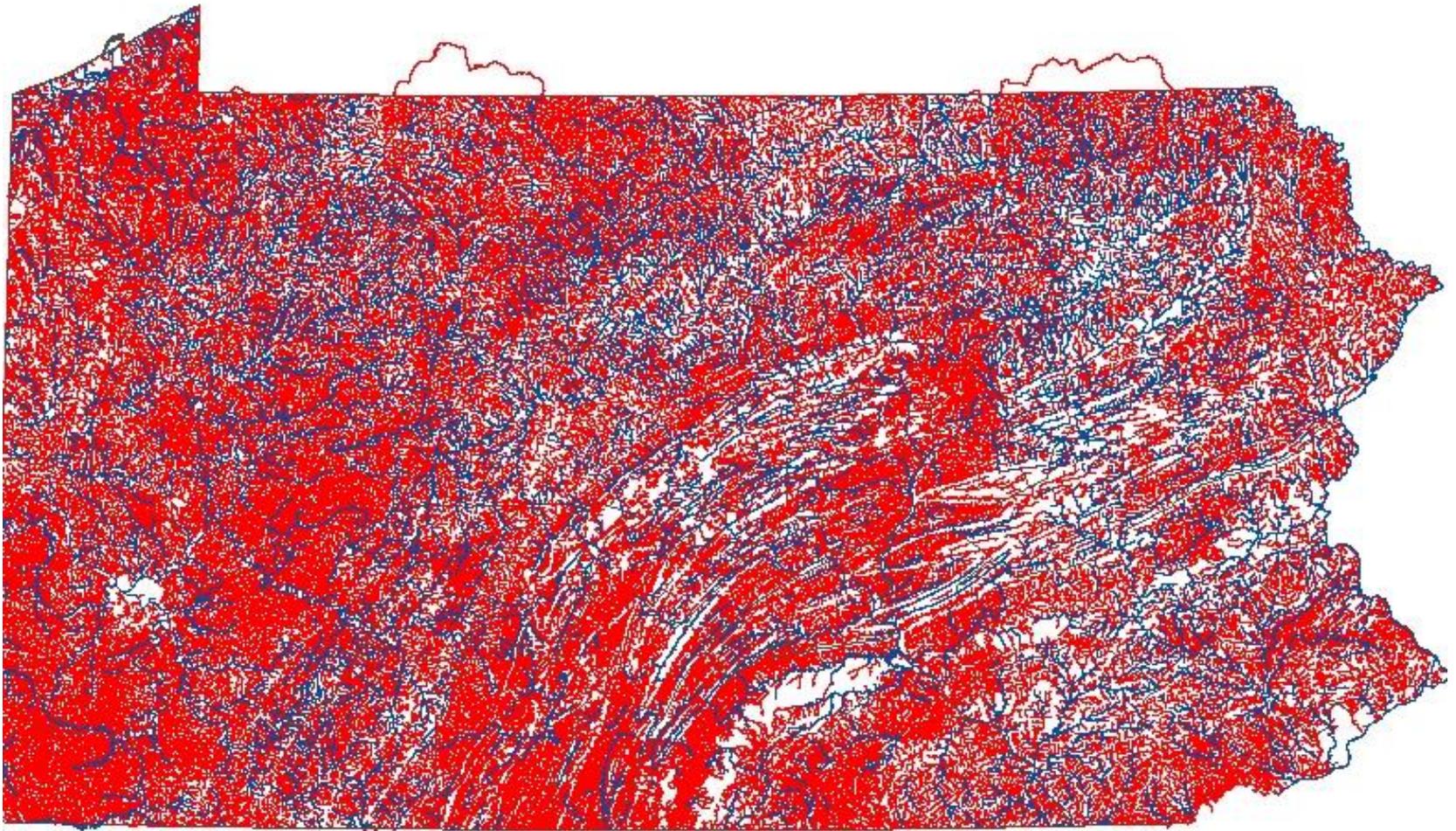
	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>
Partners	86	437	606	766	724	522	624
PFBC Staff	217	305	262	324	336	370	353
Total	303 (809 mi)	742 (1,762 mi)	868 (2,057 mi)	1,090 (2,424 mi)	1,060 (1,959 mi)	892 (1,578 mi)	977 (1,821 mi)
% Wild Trout	54%	55%	52%	38%	48%	40%	38%

**7 Year Total – 5,932 Streams Sampled
12,410 Miles of Streams**

Since 2010, 1,233 new streams added to the wild trout list (4,559 miles)

Since 2010, 428 new sections added to the Class A list (1,048 miles)

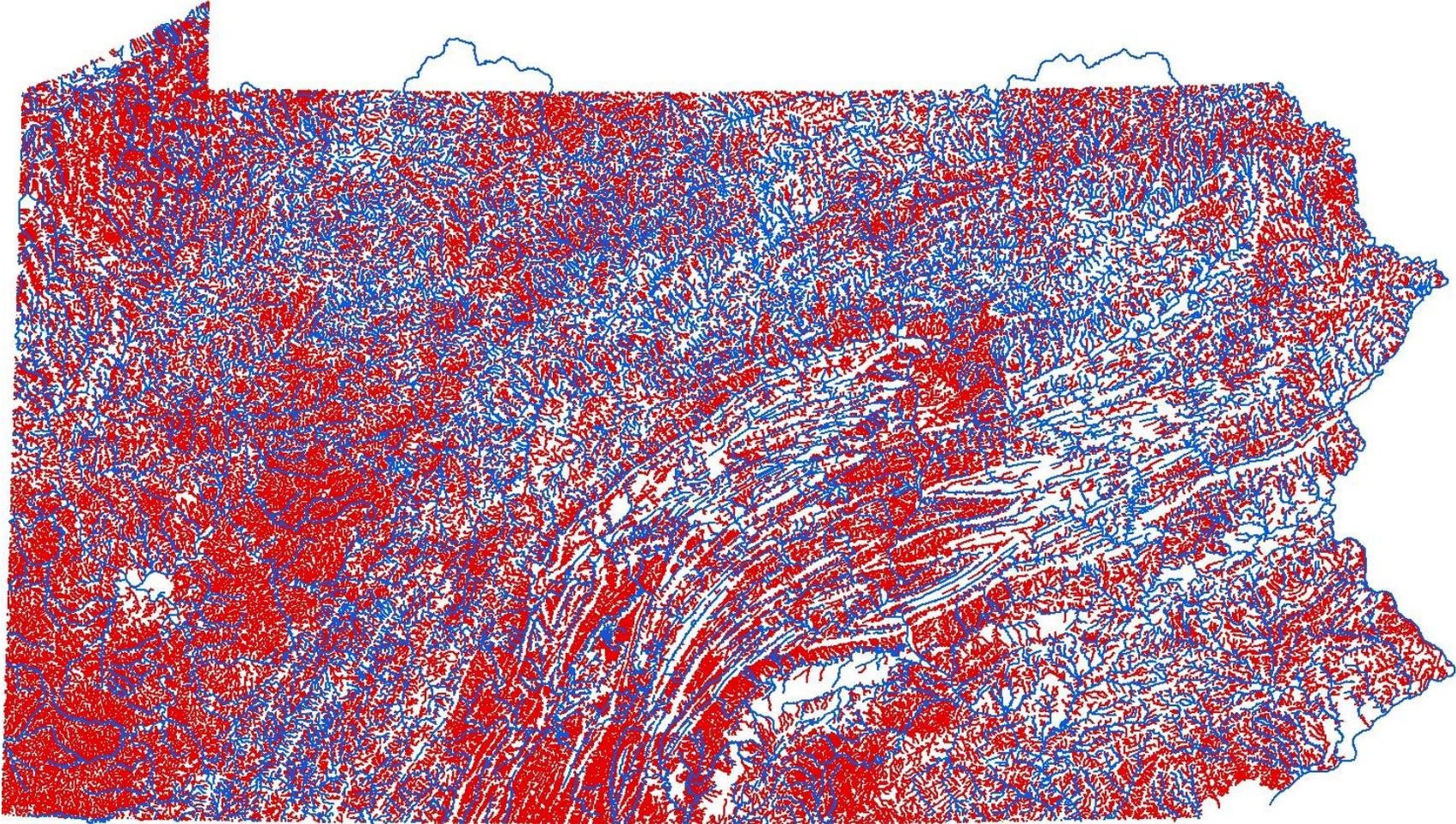
Pennsylvania's Flowing Water Resources - 2009



 **Surveyed Sections**

 **Unassessed Sections**

Pennsylvania's Flowing Water Resources - 2016



 **Surveyed Sections**

 **Unassessed Sections**

Unassessed Waters Initiative - Culvert Assessment

Pilot program with two UW partners in 2017

Objectives:

- **Utilize existing field evaluation methodology and incorporate UW sampling**
- **Develop a statewide fish passage barrier inventory. To better understand population connectivity.**

Potential expansion of program in 2018

Unassessed Waters Initiative - Funding

National Fish and Wildlife Foundation Grants

ACT 13 – Marcellus Shale Impact Fee

