Upper Gunpowder Falls Watershed
Brook Trout Conservation Partnership

Photo by Matt Kline

May 2016

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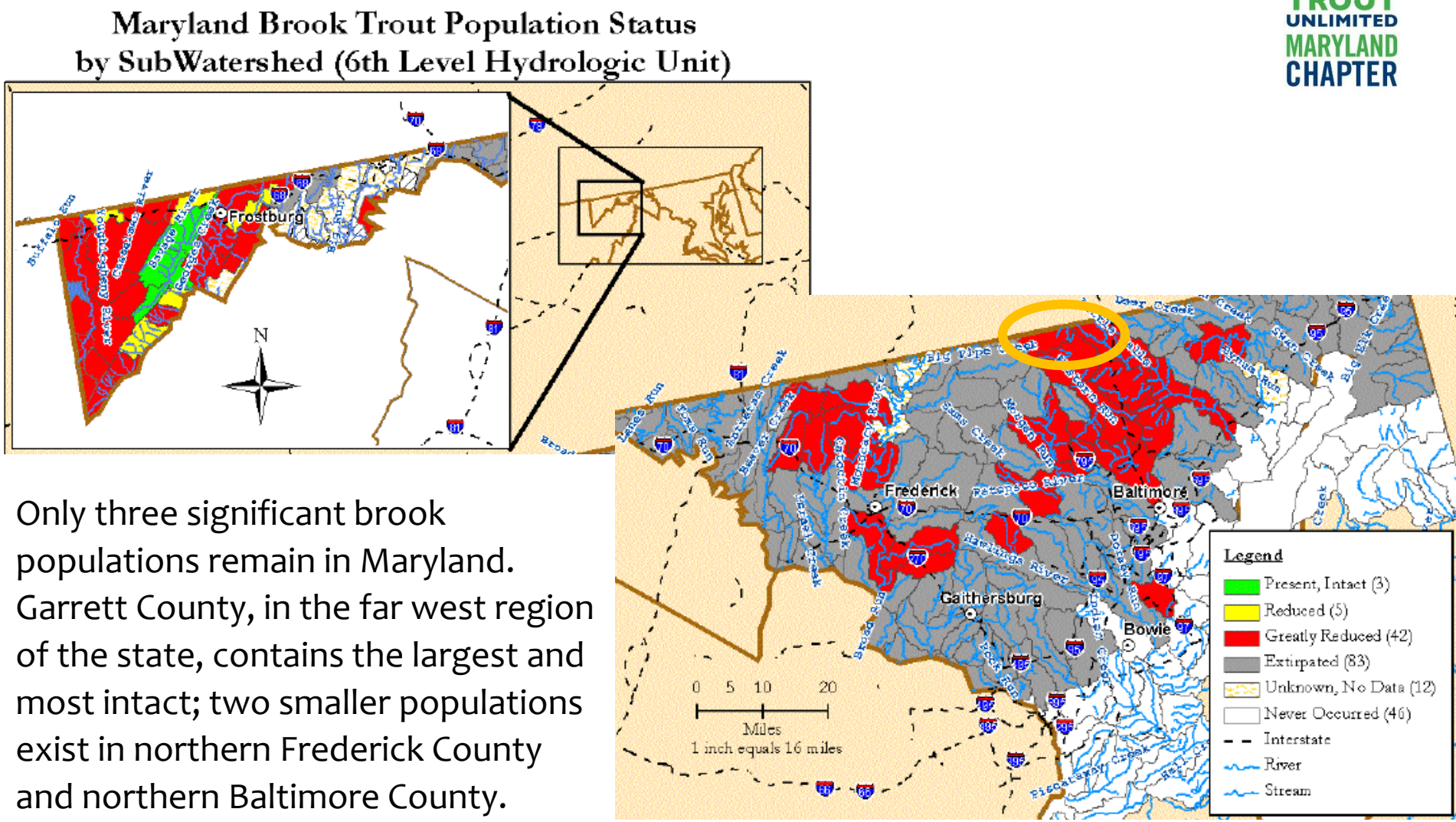
Maryland Brook Trout Population Status



Only three significant brook populations remain in Maryland. Garrett County, in the far west region of the state, contains the largest and most intact; two smaller populations exist in northern Frederick County and northern Baltimore County.

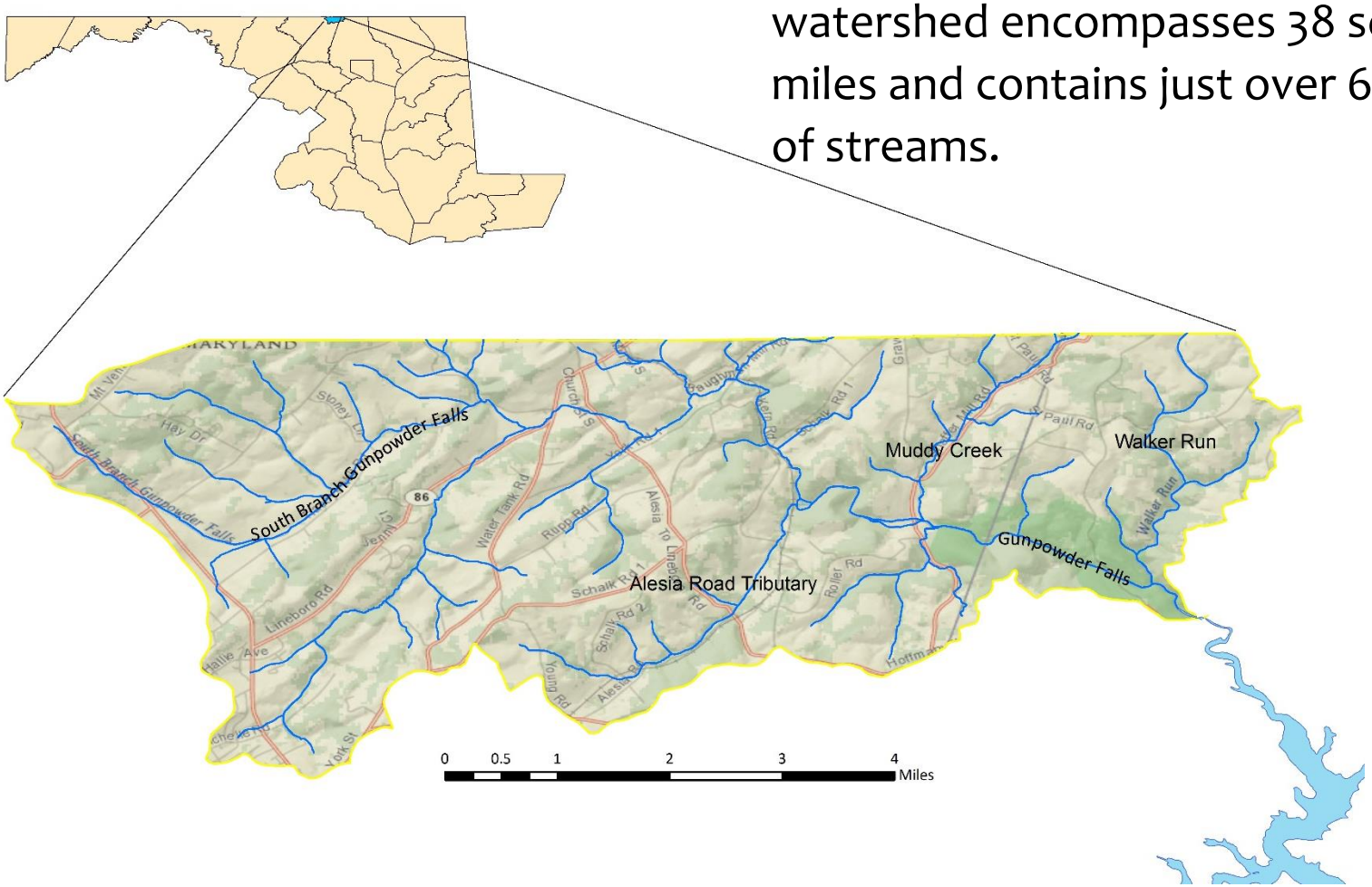
Source: 2006 Maryland Brook Trout Fisheries Management Plan

Key Facts on Maryland Brook Trout

- The brook trout is Maryland's only native freshwater trout species.
- Maryland Department of Natural Resources has listed brook trout as a 'Species of Greatest Need of Conservation' in its federally-mandated Wildlife Diversity Conservation Plan.
- Brook trout in Maryland represent great aesthetic, recreational, economic, and biological value.
- An important indicator species, brook trout require relatively pristine habitat conditions. Survival typically requires water temperatures below 68 degrees F.
- Human impacts such as deforestation, agricultural land use, and urbanization have resulted in the extirpation of brook trout from 62% of their historic habitat in Maryland.
- 41% of Maryland's brook trout waters are on privately owned land.
- Maryland's Gunpowder basin supports the second-highest number of brook trout in the state, holding 25.2% of the total Maryland population.

Upper Gunpowder Falls Watershed

The Upper Gunpowder Falls watershed encompasses 38 square miles and contains just over 60 miles of streams.

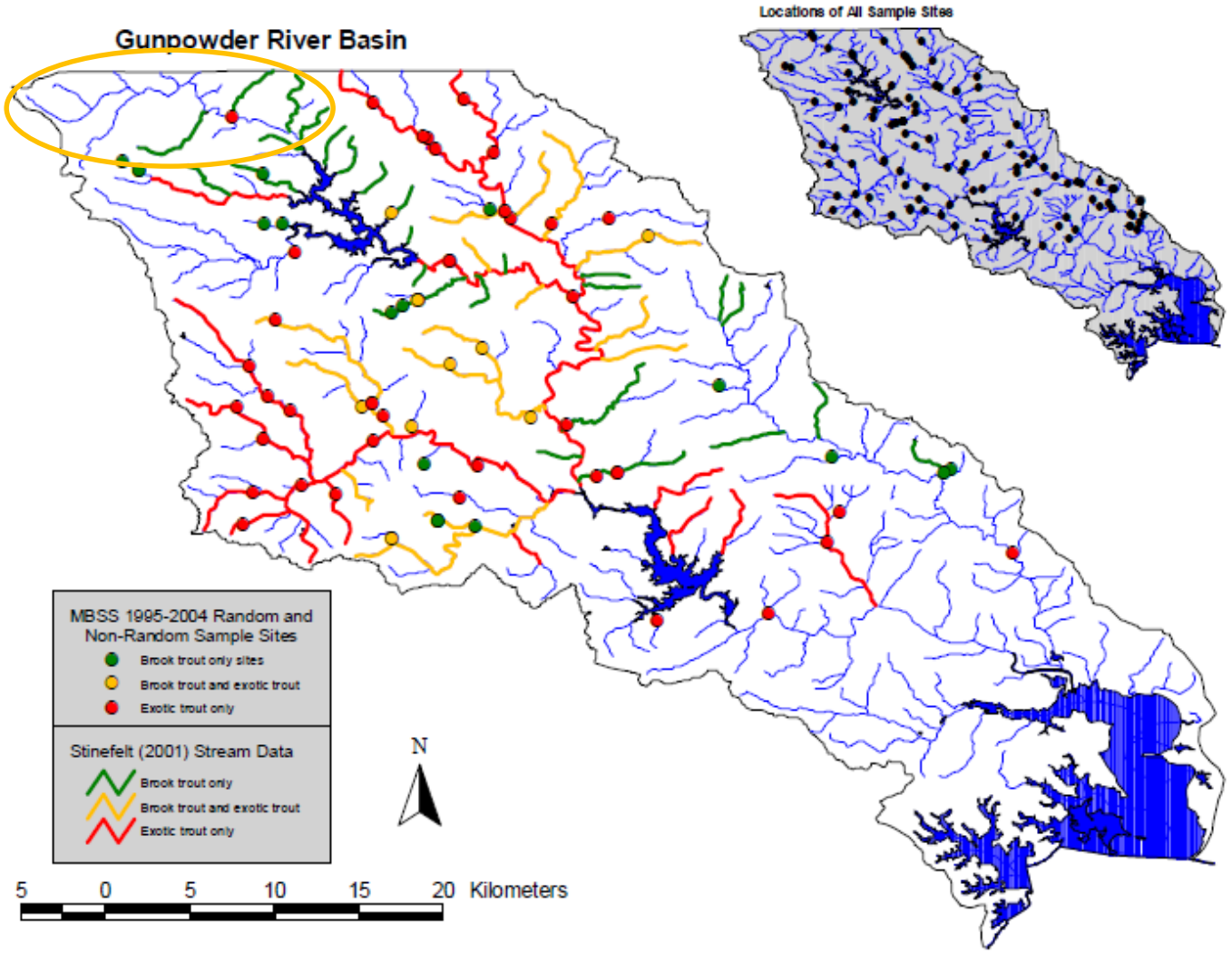


Why the Upper Gunpowder Falls Watershed

Alan Heft of MD Fisheries compared and contrasted population data, various GIS layers, and other characteristics of each, using Savage River as an example of the "ideal" scenario, to evaluate the main three watersheds in the Gunpowder Basin - Lower Gunpowder, Western Run, Upper Gunpowder**.** Predominate influencer included:

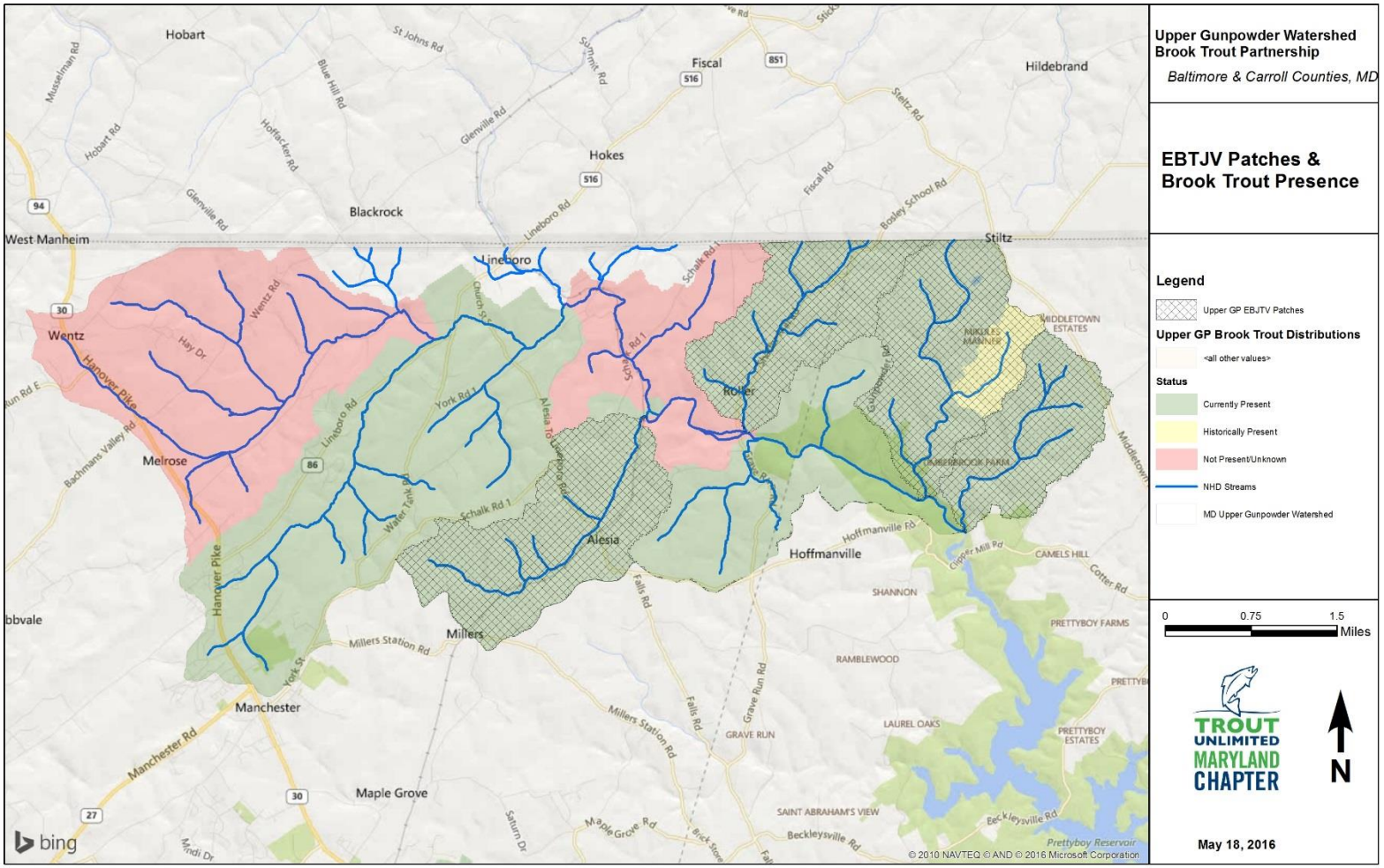
- Least amount of developed land (impervious surface)
- Most heavy existing tree cover (relative to other local watersheds but still not adequately forested)
- Most known and intact brook trout populations (based on the current data which is known to be far from complete.)
- Least amount of streams that are dominated by brown trout or in a location that has the potential to be taken over by brown trout.

Gunpowder River Basin Brook Trout Populations



Source: 2006 Maryland Brook Trout Fisheries Management Plan

Watershed Brook Trout Presence



Source: Eastern Brook Trout Joint Venture

Chesapeake Bay Management Strategy: Brook Trout

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Brook Trout Outcome

Management Strategy

Introduction

Brook Trout symbolize healthy waters because they rely on clean, cold stream habitat and are sensitive to rising stream temperatures, thereby serving as an aquatic version of a "canary in a coal mine". Brook Trout are also highly prized by recreational anglers and have been designated as the state fish in many eastern states. They are an essential part of the headwater stream ecosystem, an important part of the upper watershed's natural heritage and a valuable recreational resource. Land trusts in West Virginia, New York and Virginia have found that the possibility of restoring Brook Trout to local streams can act as a motivator for private landowners to take conservation actions, whether it is installing a fence that will exclude livestock from a waterway or putting their land under a conservation easement. The decline of Brook Trout serves as a warning about the health of local waterways and the lands draining to them. More than a century of declining Brook Trout populations has led to lost economic revenue and recreational fishing opportunities in the Bay's headwaters.

Vital Habitats Goal: Restore, enhance and protect a network of land and water habitats to support fish and wildlife, and to afford other public benefits, including water quality, recreational uses and scenic value across the watershed.

Brook Trout Outcome: Restore and sustain naturally reproducing Brook Trout populations in Chesapeake Bay headwater streams, with an eight percent increase in occupied habitat by 2025.

Priority Brook Trout Conservation Strategies

1. Protect highly functional Wild Brook Trout Only patches from detrimental changes in land use and water use practices.
2. Connect habitats that have a high likelihood of sustaining stable wild Brook Trout populations.
3. Improve access to Brook Trout spawning and seasonally important habitats (e.g., coldwater refugia, wintering areas).
4. Improve Brook Trout habitats that have been impacted by poor land and water use practices.
5. Mitigate factors that degrade water quality.
6. Enhance or restore natural hydrologic regimes.
7. Prevent and mitigate the spread of invasives/exotic species into patches containing wild Brook Trout only.
8. Re-introduce wild Brook Trout into catchments within Wild Brook Trout Only patches, where the species has been extirpated or an increase in genetic fitness of the population is needed.

Brook Trout Conservation Partnership Mission

A group of volunteers, organizations, and governmental agencies, the Partnership works collaboratively to improve water quality and stream habitat, helping to conserve and restore brook trout populations in the Upper Gunpowder Falls Watershed.

Founded Fall of 2014

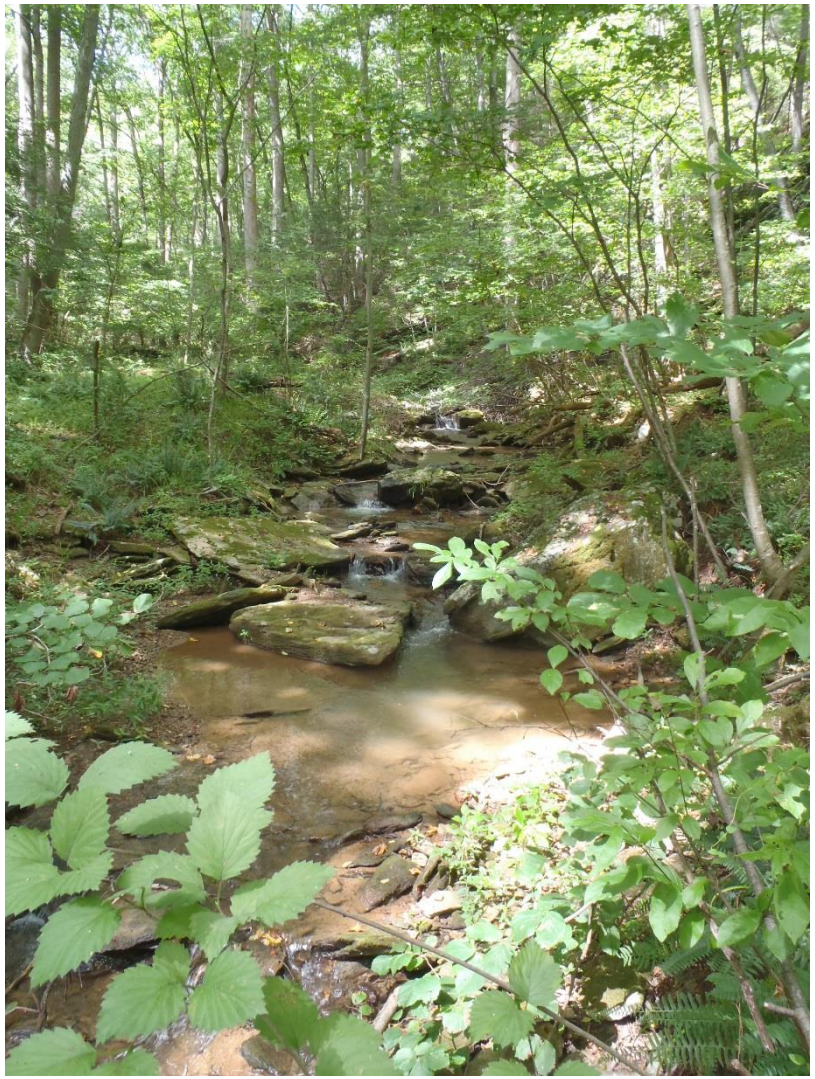
Brook Trout Conservation Partners

- Maryland Chapter Trout Unlimited
- Maryland Department of Natural Resources
  Inland Fisheries Management Division
- Maryland Biological Stream Survey
- Baltimore County
- Carroll County
- Prettyboy Watershed Association
- Gunpowder Valley Conservancy
- Eastern Brook Trout Joint Venture
- U.S. Fish and Wildlife Service – Chesapeake Bay Workgroup

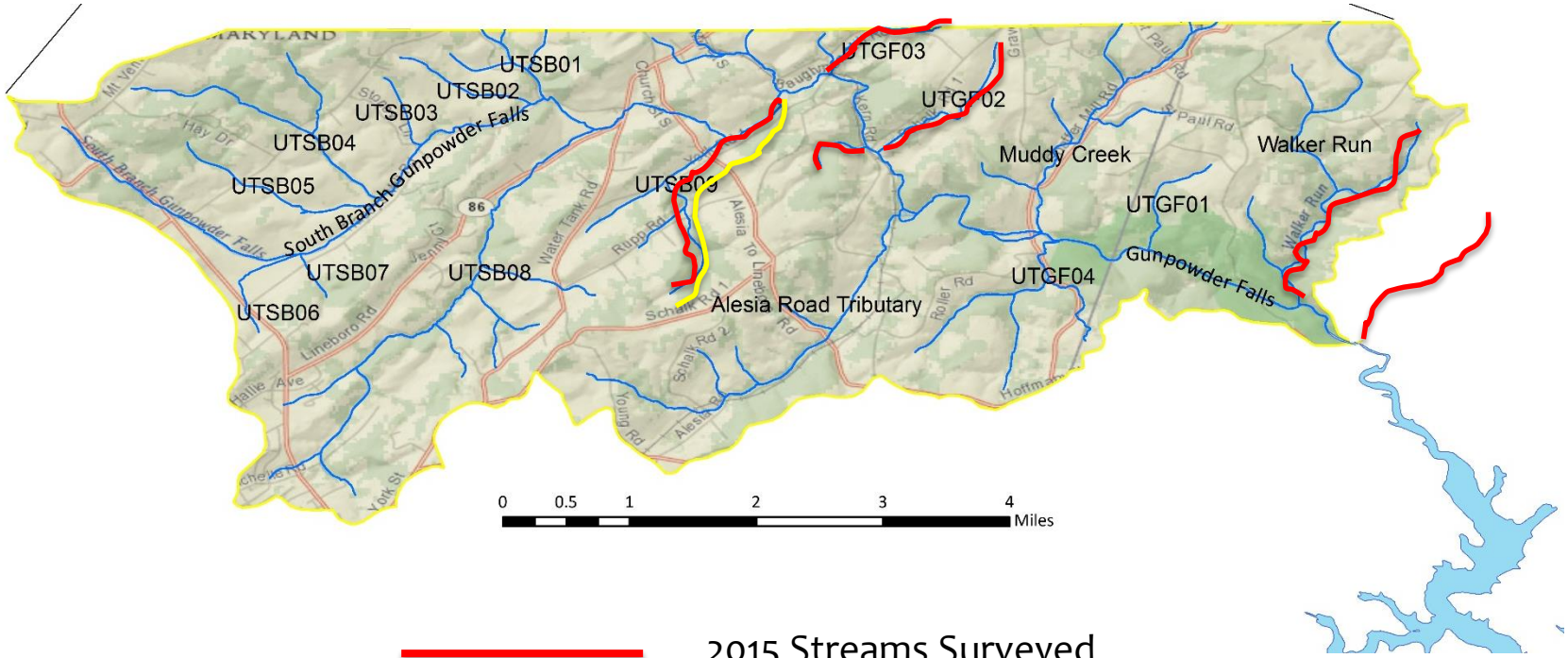
Brook Trout Conservation Partnership Objectives

- Ensure the protection and conservation of Maryland's remaining high quality habitat that supports brook trout populations.
- Return marginal stream habitat to a condition which will support the conservation and where feasible restoration of healthy historic brook trout ranges.
- Educate and engage landowners, emphasizing the importance and value of preserving the limited number of habitats in Maryland that support brook trout populations.
- Help land owners realize the full economic benefit of their property through best practices in conservation, forestry, and land management.
- Collaborate with private and public land owners to implement scientifically proven storm water management techniques that improve water quality in the Chesapeake Bay watershed.
- Connect private land owners with grant opportunities to improve land management practices.
- Promote land use and conservation strategies that respect land use rights while ensuring the protection of our water resources, habitat, and native flora and fauna.

Typical Stream Physiography



Fall 2015 Stream Survey



2015 Streams Surveyed

2015 New Brookie Population Discovered!

Fall 2015 Stream Survey

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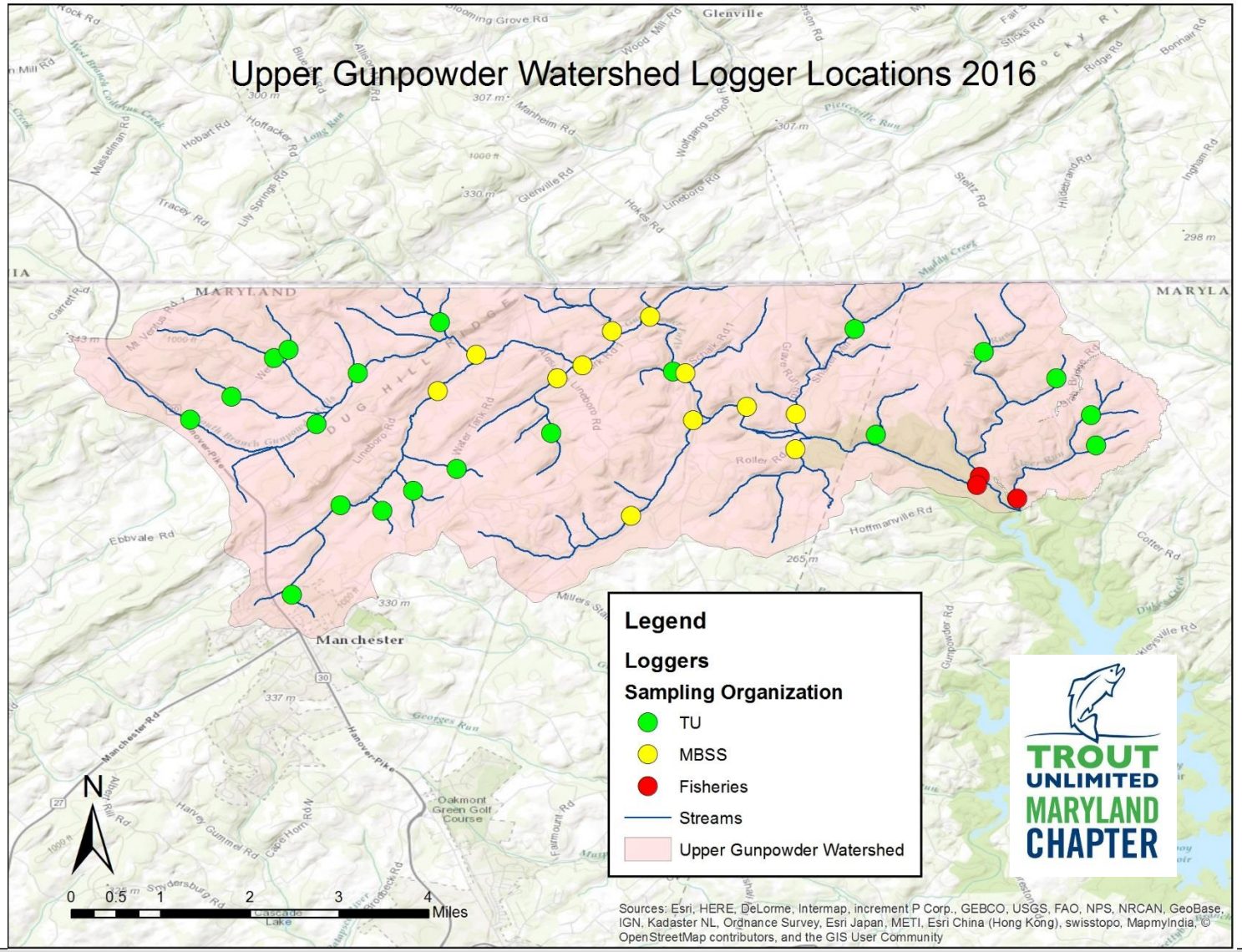
Spring 2016 Temperature Logger Deployment



Spring 2016 Temperature Logger Deployment

Spring 2016 Fish Tagging

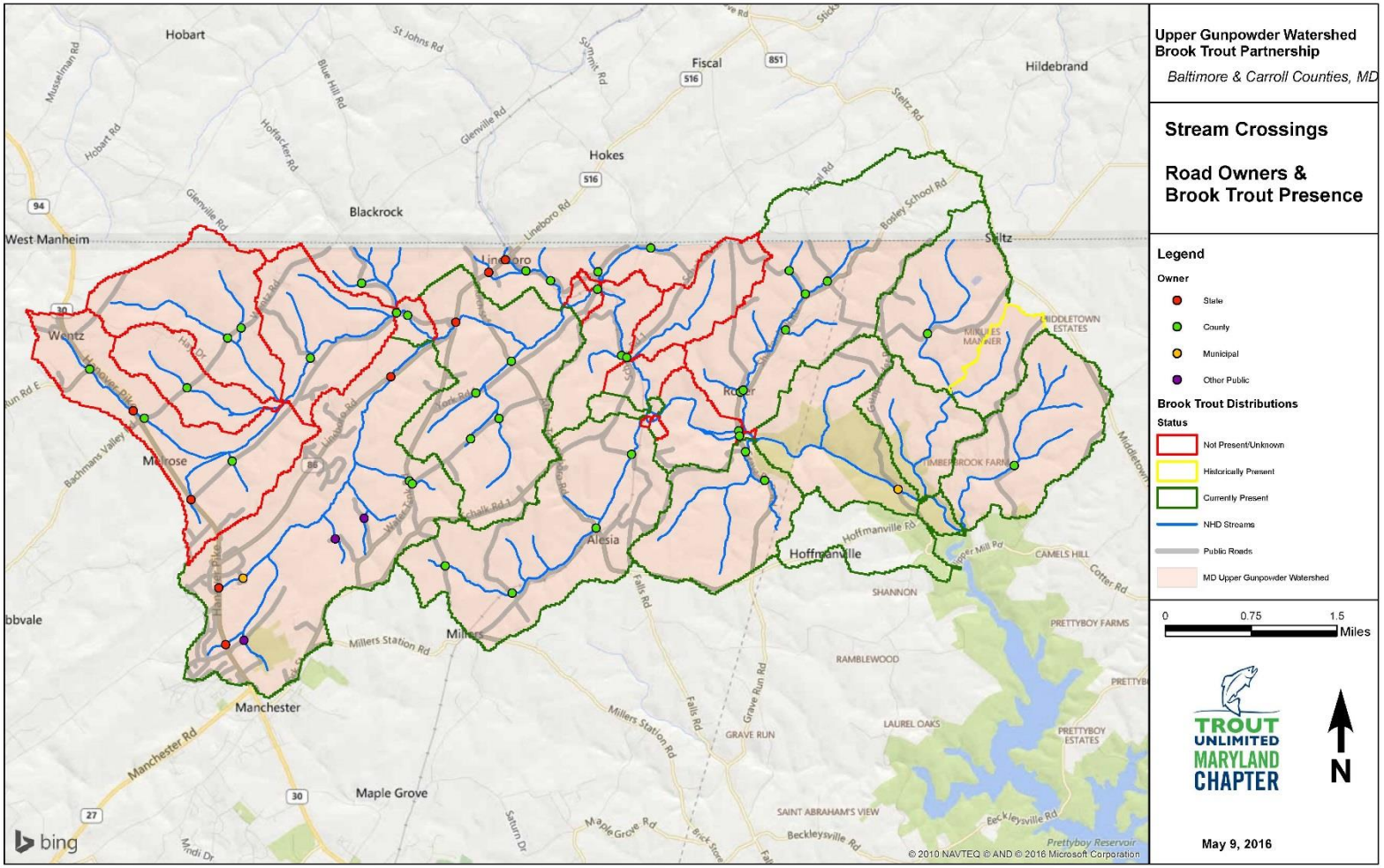
Road-Stream Crossing Assessments

North Atlantic Aquatic Connectivity Collaborative

Julie Devers, Kari Bradberry & Chris Reily
USFWS, Maryland Fish and Wildlife Conservation Office

- Inlet/Outlet dimensions
- Total length
- Inlet/outlet drop
- Substrate/water depth and width
- Crossing Condition
- Bankfull width
- Structures and barriers
- At least 50 descriptors and measurements collected per crossing…

County and State Road Culvert Locations



Accomplishments to Date

- Connected with allied partner organizations or agencies who have overlapping interests.
  - Maryland Biological Stream Survey
  - US Fish and Wildlife
  - Baltimore and Carroll Counties
- Developed a preliminary 20 Year work plan outline.
- Secured commitment of Director of MD Fisheries for the project
- Compiled existing data sets from various agencies in one location.
- Obtained TU Embrace-a-Stream grant for loggers and brochure.
- Designed informational brochure.
- Deployed 35 temperature loggers in Spring 2016.
- Tagging of 15 brook trout for 1-year movement monitoring.
- Identified 50 culverts for assessment by USFWS Grant in summer of 2016.

Next Steps

- Continue connect with allied partner organizations or agencies who have overlapping interests.
- Recruit technicians and/or specialists who have an interest in brook trout or conservation in general.
- Print and distribute brochure.
- Develop Facebook page for public communication.
- Begin to identify conservation projects e.g. tree planting, barrier removal, stream restoration, etc.
- Identify possible grant sources to support project needs.

Maryland Chapter Trout Unlimited Brook Trout Conservation Effort

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May 2016

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