Chesapeake Bay Program
Science. Restoration. Partnership.

Blueprint for Building Partnerships and Recommendations for Scaling Brook Trout Restoration in Stronghold and Persistent Patches

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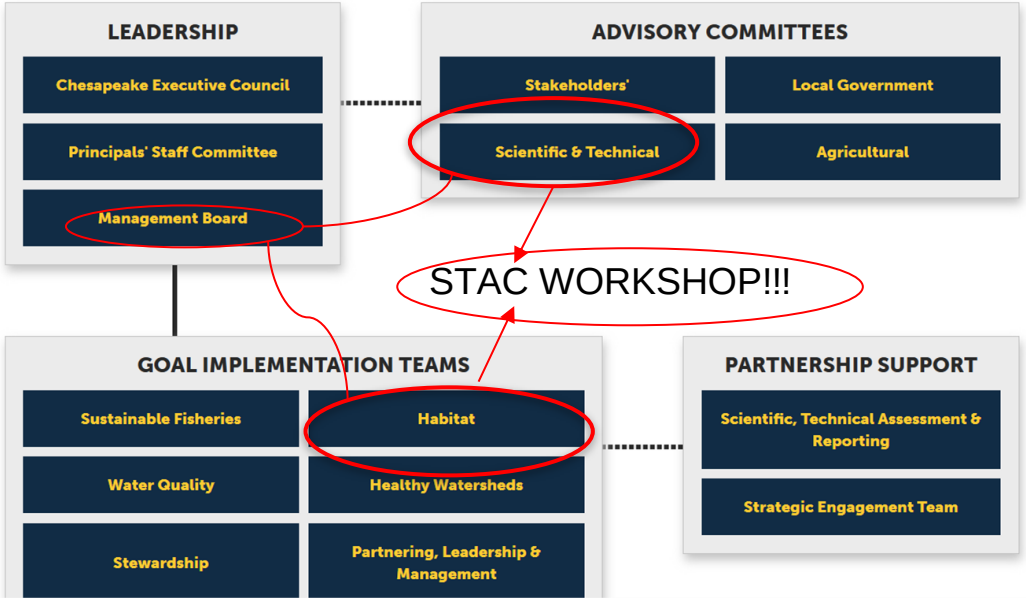
Chesapeake Bay Program

Chesapeake Bay Program



The Habitat Goal Implementation Team works to restore and enhance land and water habitats—including wetlands, living shorelines, underwater grasses, islands, forests and streams—to support key species and benefit water quality, recreational use and scenic value.

Chesapeake Bay Program

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Meetings

Upcoming | Past

Wetlands Workgroup Meeting: Tidal - June 2025

Tuesday, June 17, 2025 from 10:00am - 12:00pm

Add to calendar

Stream Health Workgroup Meeting - June 2025

Friday, June 20, 2025 from 10:00am - 12:00pm

Add to calendar

Wetlands Workgroup Meeting: Tidal & Nontidal - July 2025

Tuesday, July 15, 2025 from 10:00am - 1:00pm

Add to calendar

Contact

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Our Watershed Agreement Goals & Outcomes

Vital Habitats Goal

- Black Duck
- Brook Trout
- Fish Passage
- Stream Health
- Submerged Aquatic Vegetation (SAV)
- Wetlands

Our Workgroups & Action Teams

Black Duck Action Team

Brook Trout Action Team

Fish Passage Workgroup

Brook Trout Action Team

Brook Trout

Brook trout are essential to the headwater stream ecosystem and a valuable piece of the region's heritage and economy. Land trusts have even found that the possibility of restoring brook trout to local streams motivates private landowners to take conservation actions. But unless steps are taken to reverse brook trout population decline, the species could be at risk of becoming regionally threatened within three to four decades.

Outcome: Restore and sustain naturally reproducing brook trout populations in Chesapeake headwater streams with an eight percent increase in occupied habitat by 2025.

Lead Goal Implementation Team: Habitat Goal Implementation Team (GIT 2)

Lead Workgroup: Brook Trout Action Team

Management Strategy: 2024 11 MANAGEMENT STRATEGY 2025 2035 FINAL [PDF, 1.1 MB]

Work Plan: 2024 04 15 2024 2025 Brook Trout WORKPLAN printable version [PDF, 200.1 KB]

Strategy Review System Update: Narrative | Presentation

Archived Strategy Review System Documents: View Archived Strategy Review System Documents

Track Progress

Brook Trout Action Team a.k.a. workgroup

Recent Progress: No Change

According to an assessment completed in 2015 by the Eastern Brook Trout Joint Venture (EBTJV), wild brook trout occupy 33,200 square kilometers of habitat in the Chesapeake Bay watershed. This includes the streams they share with brown and/or rainbow trout.

There are 13,500 square kilometers of allopatric or “wild brook trout only” streams, which are comprised of 990 separate patches, or groups of contiguous catchments. This is the baseline from which progress toward this outcome will be measured, which means 14,600 square kilometers of habitat occupied only by wild brook trout serves as our restoration goal. Our annual restoration target is 137 square kilometers of habitat.

Outlook: Off Course

The Brook Trout Outcome is off course for being met by 2025. Changes in land use and climate continue to have significant detrimental impacts on brook trout habitat. The resources available to mitigate these impacts are insufficient to adequately sustain and restore brook trout populations at the necessary scale to achieve the outcome. Additionally, a more accurate and comprehensive system to document gains and losses in brook trout habitat is needed as current data are incomplete. Intervention and data support are needed to increase the rate of implementation and monitoring of conservation and restoration activities.

Brook Trout Action Team

Projects

Facilitating Brook Trout Outcome Attainability through Coordin With CBP Jurisdictions And Partners

Complete

This project populated a database to better evaluate progress toward the Chesapeake Bay Progra Trout Outcome.

Publications

2025-2035 Brook Trout Outcome Management Strategy

Publication date: October 28, 2024

This management strategy outlines approaches for achieving the 2014 *Chesapeake Bay Watershe Agreement*'s Brook Trout Outcome.

View document [PDF, 1.1 MB]

2024-2025 Brook Trout Workplan

Publication date: April 15, 2024

This two-year workplan was developed as part of the 2024 Strategy Review System cycle.

View document [PDF, 200.1 KB]

2024-2025 Brook Trout Outcome Review Document

Publication date: March 15, 2024

This **management strategy** outlines approaches for achieving the 2014 *Chesapeake Bay Watershed Agreement*'s 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 include:

- Protect highly functional wild brook trout patches from detrimental changes in land and water use practices through land conservation.
- Connect habitats that have a high likelihood of sustaining stable wild brook trout populations.
- Restore brook trout habitats that have been impacted by poor land and water use practices (e.g., livestock access to streams, polluted runoff, acid mine drainage).
- Enhance or restore natural hydrologic regimes (e.g., road decommissioning, increasing forest cover, improving soil health).
- Prevent and mitigate the spread of nonnative species into allopatric brook trout patches.
- Reintroduce wild brook trout into extirpated catchments or where an increase in genetic fitness of the population is needed and supported by science.

Importance of Brook Trout

- Only native Salmonid species in Chesapeake Bay Region
- Indicator of best water quality, and “least” disturbed land/watershed area
- Valuable economic resource for states and rural communities. EBTJV Report from 2019: $37.4 million in conservation projects generated $309 million in socioeconomic benefits.
- Valuable for Drinking water to downstream communities, minimizing erosion, pollution etc.

How Did We Get Here?

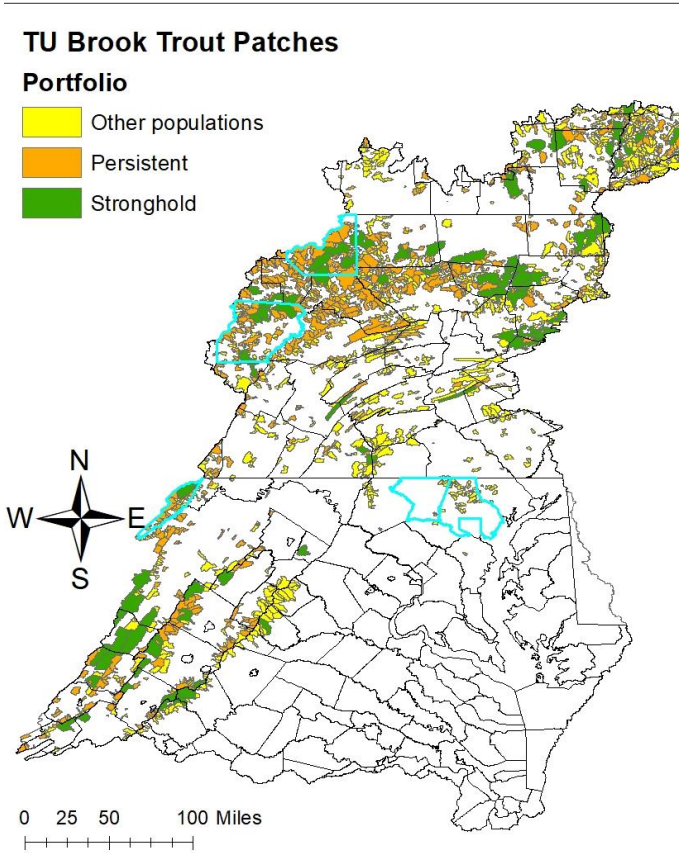
Brook Trout Outcome Goal 2014-2024: Increase Brook Trout occupied habitat by 8 percent by 2025.

- 2024 GIT Project, 0.5% Increase through 2025,
  - 5,419 Projects in Bay watershed
  - Only 94, 1.7% of projects BKT were know present at site
  - 1,645 Projects BKT presence unknown
  - 3,557 BKT data missing

Facilitating Brook Trout Outcome Attainability through Coordination with CBP Jurisdictions and Partners. Rummel et al. 2024.

Where are Brook Trout?

- Brook Trout Patch area makes up 22.7% of CB Watershed land area
- Stronghold and Persistent Patches make up 13.7 %



[Eastern Brook Trout Conservation Portfolio - Trout Unlimited]

***Next update Dec. 2026

What Makes a Stronghold?

	Range-wide Conservation Portfolio - 2017	PA Conservation Portfolio - 2020
Stronghold population (a.k.a. resilient)	At least 25km of allopatric brook trout habitat based on catchment-scale data AND at least 1 stream with >= 50 km² drainage area	> 2,500 brook trout
Persistent population (a.k.a. redundant)	5 – 25 km of allopatric brook trout habitat based on catchment-scale data AND patch-average occurrence probability of brook trout from PSU models >= 0.3 OR < 5 km allopatric brook trout habitat, > 10 km of stream habitat, and PSU modeled occurrence probabilities >= 0.5	500 – 2,500 brook trout (allopatric populations) OR 1,500 – 2,500 brook trout (sympatric populations)
Marginal population (a.k.a. other population)	All other populations	All other populations

Eastern Brook Trout Conservation Portfolio - Trout Unlimited

Project Locations 2017-2023

Table 6. Costs reported in database by project type.

Project Type	Total Number of Projects	Number of Projects Reporting Costs	Sum of Total Project Cost	Average of Total Project Cost
Abandoned Mine Drainage Restoration	5	0	NA	NA
AOP	233	11	$1,895,377	$172,307
Brook Trout Reintroduction	3	1	$184,969	$184,969
Dirt and Gravel Road Improvement	1566	1	$333,187	$333,187
Instream Habitat	678	38	$6,400,383	$168,431
Land Protection	157	25	$741,099	$29,644
Other	222	28	$6,715,291	$239,832
Riparian Restoration	2555	34	$8,798,490	$258,779
Grand Total	**5419**	**138**	**$25,068,796**	**$181,658**

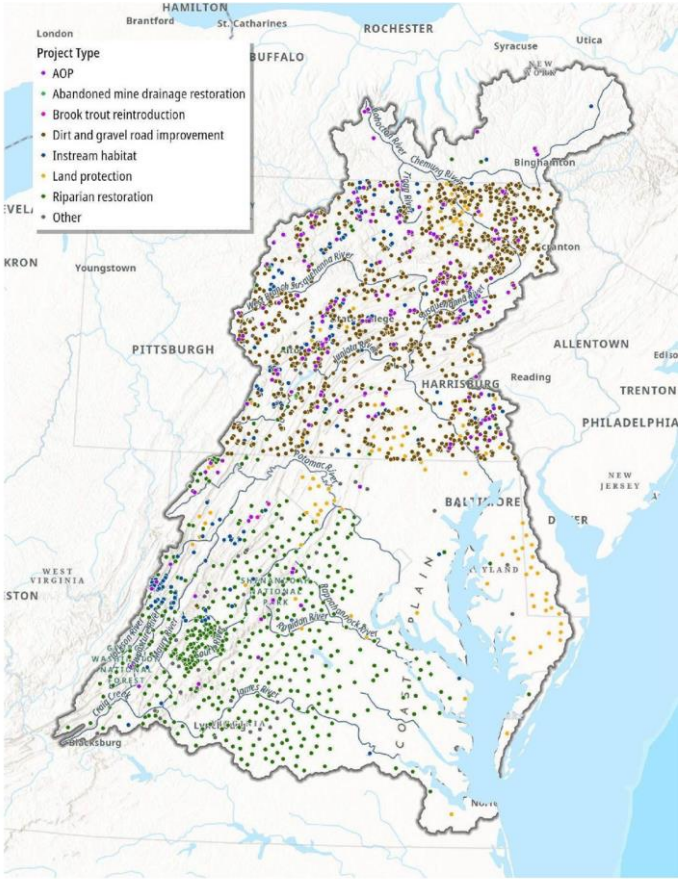


Figure 1. Project type and location within the Chesapeake Bay watershed.

2023 Rising Temperatures STAC Report

Coldwater Fisheries and Habitats: Chesapeake Bay Program partners need to accelerate conservation to protect the coldwater streams now supporting healthy aquatic life, especially native brook trout, which are extremely sensitive to rising water temperatures, and continue resiliency analyses and mapping to focus on coldwater habitat restoration efforts.

Rural Waters and Habitats: In rural areas, CBP partners should work to strategically restore forests and aquatic habitats while promoting good agricultural stewardship practices that can reduce the amount of heated runoff being generated by farms

Each state should develop a strategy that pulls federal, state (e.g., departments of environment, transportation), private, non-governmental organization (NGO), and landowner resources together for coldwater conservation partnerships.

Work with local governments to improve land use planning and evaluation of development projects in high quality habitat areas and to better utilize new and existing programs for protecting their coldwater fisheries.

Shifting Focus

- Direction of the workgroup is to increase brook trout conservation efforts on the ground in priority watersheds by working with local jurisdictions and across all levels of government and funding sources.

    - Recommended working with counties to MB in 2023. PA and MD supported our recommendations
        - PA: Potter and Clearfield Counties

New Outcome beyond 2025

Protect and enhance brook trout within the Chesapeake Bay watershed by increasing occupancy, abundance and resilience to changing environmental conditions.

- By 2035, increase brook trout occupancy by 1% in watersheds supporting **healthy populations** while achieving no net loss in other watersheds.
- By 2035, increase abundance at 10 long-term monitoring sites.
- By 2035, reduce identified threats by XX% to increase brook trout resilience in watersheds supporting healthy populations.

Threats = Resiliency

AMD

AOP

Dirt and Gravel Roads

Livestock Access

Lack of Riparian Forest

Impervious Surfaces

Goals of Workshop: Why are we here?

- Agree on a collaborative process to increase brook trout conservation in priority watersheds.

- Identify stakeholder roles and responsibilities for working together more efficiently and effectively.

- Provide recommendations on ways to increase awareness of brook trout conservation and increase project prioritization and implementation.

Threats

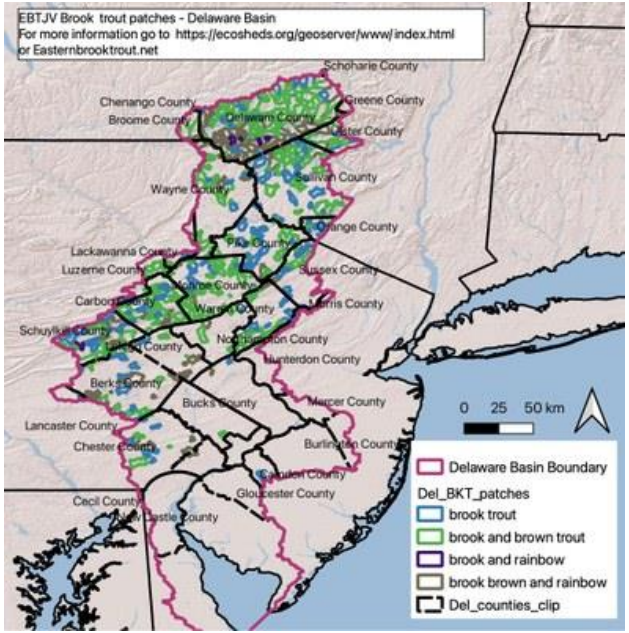
State	County	Conservation Portfolio	Unforested Acres	AMD Stream Miles	Miles Dirt and Gravel Roads	Count of lakes/ponds	AOP Barriers
Maryland	Baltimore	Other populations	1943.4	148.87	0	149	149
Maryland	Baltimore	Unique life history	198.7	5.51	0	12	12
Maryland	Carroll	Other populations		50.07	0	35	35
Maryland	Garrett	Other populations		127	0	89	89
Maryland	Garrett	Persistent		251.84	0	106	106
Maryland	Garrett	Stronghold	196.8	95.66	0	39	39
Pennsylvania	Clearfield	Persistent		109.65	12.15	467	467
Pennsylvania	Clearfield	Stronghold	1067.4	29.96	2.32	178	178
Pennsylvania	Potter	Persistent	5152.9	51.69	123.96	369	369
Pennsylvania	Potter	Stronghold	1439.6	0	31.05	39	39
Pennsylvania	Potter	Unique life history	936.5	108.38	10.42	85	85
Grand Total			**10935.3**	**978.63**	**179.9**	**1568**	**1568**

BKT Threats MAP PA and MD STAC Workshop

Examples of Brook Trout Collaboratives

The Delaware River Watershed Business Plan aims to improve eastern brook trout habitat in seven priority areas by increasing relative abundance in five of them and maintaining existing populations in the remaining two. This plan focuses on riparian restoration, aquatic organism passage improvements, in-stream restoration, and land protection. The plan is part of a broader effort to restore and protect the diverse natural resources of the Delaware River Watershed, from headwaters to the Bay, to support healthy populations of fish and wildlife.

The plan is part of a larger effort to restore and protect the diverse natural resources of the Delaware River Watershed, including its water quality and the health of its ecosystems.

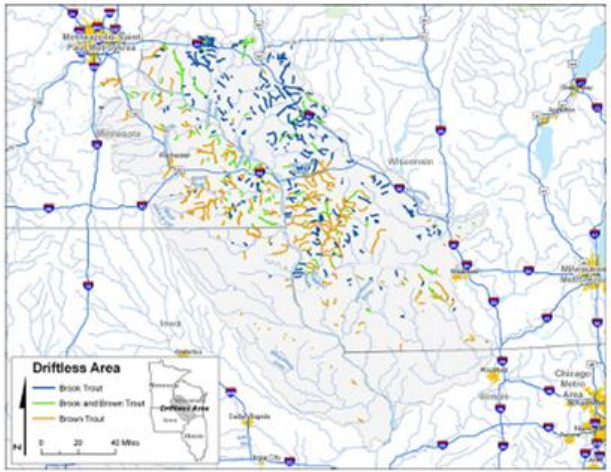


Examples of Brook Trout Collaboratives

SPECIES SUMMARY

The Driftless Area in the midwestern United States is a distinct landscape in the Upper Mississippi River Basin that was left unglaciated during the last glacial period ending 10,000 years ago. The term "driftless" indicates a lack of glacial drift, which are sediments left behind by glaciers. The area is characterized by karst topography, with springs, caves and sinkholes. Coldwater streams and rivers cut steep canyons prior to joining the Mississippi River. The Driftless Area encompasses southwestern Wisconsin, southeastern Minnesota, northeastern Iowa, and northwestern Illinois.

Driftless Area Map



The **D**riftless **A**rea **R**estoration **E**ffort seeks to: Improve riparian and instream habitat on cold, cool and warmwater streams. Protect, maintain and expand self-sustaining brook trout and smallmouth bass populations. Improve riparian and instream habitat for non-game species.

WI DNR Brook Trout Reserve Program

- Enrolling your property in the DNR's Streambank Easement Program.
- Volunteering to help resource managers with forest and fish habitat management projects.
- Planting trees along stream corridors to restore shade and keep streams cold.
- Implementing healthy land use practices in these watersheds.
- Identifying and fixing steam crossing impairments associated with roads.
- Joining local conservation or watershed groups.

Partnership=Progress

- How can we work together to meet the brook trout outcome Resiliency goal?
  - Are there co-benefits?
- Are brook trout a focal priority within your organization and conservation efforts?
- How do our organizational missions overlap?
  - Are brook trout part of that mission?
- What can we achieve in 10 years?

PA Brook Trout Partners

- PA Fish and Boat Commission
- Conservation Districts
- Center for Center for Dirt and Gravel Road Studies
- NRCS
- USGS
- USFWS
- SRBC
- EBTJV
- Trout Unlimited
- Western PA Conservancy
- Watershed Associations
- PA DEP
  - Chesapeake Bay Program Office
  - BAMR
- Stroud Water Research Center

Funders

- PA DEP Growing Greener
- Foundation for PA Watersheds
- Private Foundations
- National Fish and Wildlife Foundation