Chesapeake Bay Program
Science. Restoration. Partnership.

Brook Trout Outcome

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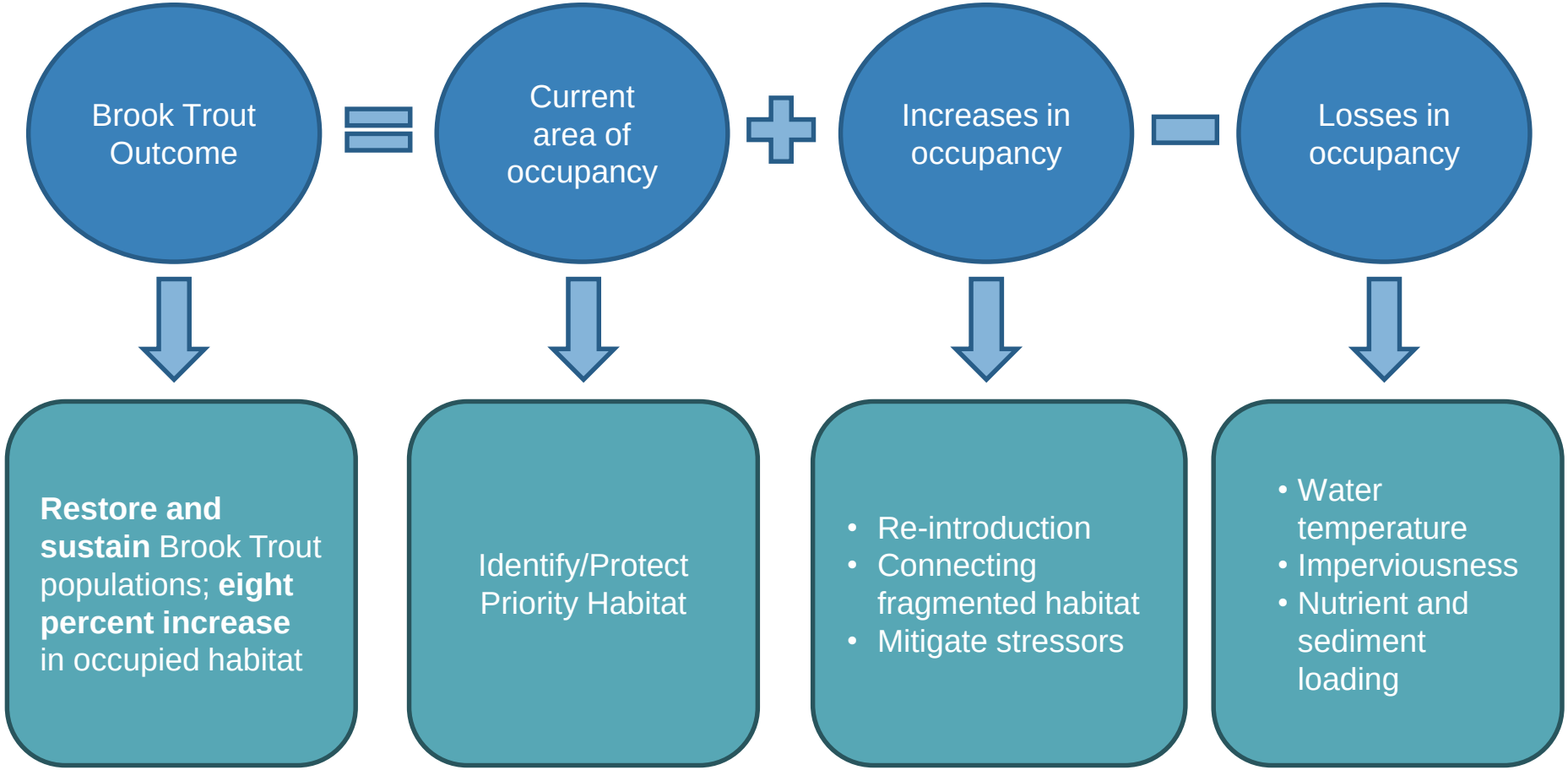
Through the Chesapeake Bay Watershed Agreement*, the Chesapeake Bay Program has committed to…*

Goal: Brook Trout Outcome

Outcome: *Restore and sustain naturally reproducing Brook Trout populations in Chesapeake Bay headwater streams, with an eight percent increase in occupied habitat by 2025 (1,100 sq km)*


Brook Trout Outcome
=
Current area of occupancy
+
Increases in occupancy
–
Losses in occupancy
Restore and sustain Brook Trout populations; eight percent increase in occupied habitat
Identify/Protect Priority Habitat
• Re-introduction
• Connecting fragmented habitat
• Mitigate stressors
• Water temperature
• Imperviousness
• Nutrient and sediment loading

Logic Behind Our Outcome

Decision Framework:

Factors	Current Efforts and Gaps	Management Approaches

• Scientific/Technical Understanding
• Partner Participation
• Agency Engagement
	• Driver/stressor impacts
	  • Climate/Land Use
	  • Temperature
	  • Sediment
	  • Invasives/exotics
	• Monitoring support
	• Genetics/genomics
		• Identify/communicate priority (best) areas
		• Emerging stressors/restoration priorities
		• Refine/apply decision support tools (DST)
		• Continue/expand monitoring

2020-21 Action Plan

GAP – Monitoring: Current monitoring does not capture all of the brook trout restoration and conservation being done in the watershed. Need systematic process to collect, collate, and analyze all stakeholder brook trout restoration and conservation projects.

ACTIONS

4.1. Explore monitoring brook trout using eDNA.

4.2. Streamline progress reporting process for partners.

- Collaborate with EBTJV, State, and NGO representatives to determine barriers and best approaches.
- Develop and maintain a tracking spreadsheet for all partners (including NGOs) to report on their work using a common set of brook trout attributes/metrics.

2020-21 Action Plan

GAP – Monitoring: Current monitoring does not capture all of the brook trout restoration and conservation being done in the watershed. Need systematic process to collect, collate, and analyze all stakeholder brook trout restoration and conservation projects.

ACTIONS

4.3. Track progress for partner specific activities

- MD DNR, NY DEC, PA FBC, VA GIF
- Develop a common set of brook trout attributes/metrics to be used across the watershed.

1.3. Identify and Increase engagement with local government and NGO's to incorporate projects benefiting brook trout conservation in Outcome metrics.

2020-21 Action Plan

GAP – Habitat Stressors: Better understanding of spatially explicit linkages between brook trout populations and stressors is needed to inform restoration and conservation decisions.

ACTIONS

2.1. Model groundwater influence on stream temperature at the reach-scale across the Chesapeake Bay headwaters.

- Collect stream temperatures and environmental covariates for landscape modeling.
- Apply multiple modeling techniques to evaluate covariate relationships to observed mean-daily temperatures.

2.2. Interactive effects of temperature and brown trout on brook trout.

- Summarize effects of invasive species on brook trout
- Analysis of brook trout population responses to brown trout management intervention.

2020-21 Action Plan

GAP – Climate Change: Understanding effects of climate change on brook trout

ACTIONS

2.1. Model groundwater influence on stream temperature to forecast future change scenarios at the reach-scale across the Chesapeake Bay headwaters.

2.3. Drought effects on brook trout population viability

- Assess flows within wadable stream networks.
- Evaluate brook trout growth and demographic responses to low-flow conditions

2020-21 Action Plan

GAP – Genetics and Genomics: Better understanding of population genetics and functional genomics.

ACTIONS

3.1. Collect data on population genetics and functional genomics and evaluate their role in informing conservation and restoration decisions.

- Develop a regional understanding of population genetic structure and its implications for conservation.
- Evaluate if reintroduction efforts have been successful at transferring genetic diversity from source stocks and the potential for genetic rescue.
- Identify priority genetics needs and host brook trout genetics workshop for managers.
- Develop online genetics portal.

4.1. Explore monitoring brook trout using eDNA.

2020-21 Action Plan

GAP – Partner Coordination: Better coordination among state, NGO, and BTWG partner engagement in brook trout conservation, restoration, and monitoring efforts.

ACTIONS

4.3. Track Progress of Partner Specific Activities

4.4. Improve Monitoring of Restoration activities and existing populations

- Help coordinate efforts among partners to incorporate new information into monitoring and restoration programs and identify funding opportunities. .

2020-21 Action Plan

GAP – Need to get information on existing knowledge necessary to conserve and restore brook trout habitat into the hands of decision makers to effect positive actions.

ACTIONS

1.1. Develop cache of outreach/communication products for quick response to requests.

1.2. Collaborate with other Work Groups/Action Teams on communication strategies and products.

1.3. Identify and increase engagement with local government and non-profit work benefiting Brook Trout conservation and restoration.


Questions?