BIENNIAL STRATEGY REVIEW SYSTEM
Chesapeake Bay Program

Logic and Action Plan: Pre-Quarterly Progress Meeting

Brook Trout– 2018-2019

*[NOTE: make sure to edit **pre**- or **post**- in the text above, to tell the reader whether this logic and action plan is in preparation for your quarterly progress meeting or has been updated based on discussion at the quarterly progress meeting.]*

Long-term Target: Restore and sustain naturally reproducing brook trout populations in Chesapeake headwater streams with an eight percent increase in occupied habitat by 2025.
Two-year Target: 137 km2 of restored brook trout habitat per year.

Instructions: Before your quarterly progress meeting, provide the status of individual actions in the table below using this color key.
Action has been completed or is moving forward as planned.
Action has encountered minor obstacles.
Action has not been taken or has encountered a serious barrier.

Additional instructions for completing or updating your logic and action plan can be found on ChesapeakeDecisions.

Factor	Current Efforts	Gap	Actions	Metrics	Expected Response and Application	Learn/Adapt
What is impacting our ability to achieve our outcome?	*What current efforts are addressing this factor?*	*What further efforts or information are needed to fully address this factor?*	*What actions are essential (to help fill this gap) to achieve our outcome?*	*What will we measure or observe to determine progress in filling identified gap?*	*How and when do we expect these actions to address the identified gap? How might that affect our work going forward?*	*What did we learn from taking this action? How will this lesson impact our work?*

Scientific and Technical Understanding: Climate Change Scientific and Technical Understanding: Habitat Stressors	USGS, NPS, USFS, and academic institutions have active research programs	Better understanding of population genetics, functional genomics, acid mine drainage, and spatially explicit linkages between brook trout populations and stressors is needed to inform conservation decisions and decision support tools.	(2.1) Consider acid mine drainage-impacted streams and unconventional oil and gas development. (2.2) Consider the impacts of trout population genetics on restoration/conservation decisions.	Develop a spatially explicit dataset of AMD-impacted streams suitable for restoration/conservation actions; Genetics white paper.	Improved decision support tools that account for how climate change and other stressors interact; improved conservation decisions that consider adaptive potential of brook trout populations and location of vulnerable habitats.	Impacts of AMD and UOG on brook trout quantified, but resources are still lacking to implement protection/mitigation efforts on a large scale. Still need genetics information and this will be a focus for next work plan.
Scientific and Technical Understanding: Monitoring Partner Coordination: Monitoring	State and NGO partners are conducting annual monitoring of brook trout streams.	Funding; data and analyses to correlate habitat restoration to improvements in brook trout populations; develop annual occupancy reporting process.	(4.1) Explore monitoring Brook Trout using eDNA as a cost saving measure. (4.2) Streamline progress reporting process for Partners. (4.3) Track progress of partner specific activities.	Tracking spreadsheet developed and updated; eDNA report.	Analysis and tracking of monitoring results will provide quantitative data to evaluate progress on outcome and help identify at-risk populations.	eDNA tools still need testing. Still need a functional process to consolidate and track progress, more monitoring of restoration projects, additional metric that recognizes conservation efforts that prevent loss of existing brook trout habitat.
Scientific and Technical Understanding: Refinement and coordination of use of	USGS, NPS, USFS, NGO's and academic institutions have active research programs	Decision support tool coordination and training for practitioners in order to best guide restoration efforts; refinement of available tools.	(2.1) Consider acid mine drainage-impacted streams and unconventional oil and gas development.	DST workshop planned/held; Genetics webinar held; AMD spatially explicit dataset developed.	Better understanding of how DSTs and genetics work/can be applied will improve	With the loss of the LCC's, the DST effort has stalled. Not a high priority of partners. Need better information on groundwater inputs, suitable habitat to

decision support tools	that will help refine DSTs.				conservation and restoration decisions.	inform conservation/restoration decision-relevant reach scales.
Partner Coordination: Refinement and coordination of use of decision support tools			(2.2) Consider the impacts of trout population genetics on restoration/conservation decisions. (3.1) Inform conservation decision making using available Brook Trout Decision Support Tools.			
Scientific and Technical Understanding: Restoration	USGS, NPS, USFS, NGO's and academic institutions have active research programs.	Decision support tool coordination and refinement in order to best guide restoration efforts.	(2.1) Consider acid mine drainage-impacted streams and unconventional oil and gas development. (2.2) Consider the impacts of trout population genetics on restoration/conservation decisions.	Develop a spatially explicit dataset of AMD-impacted streams suitable for restoration/conservation actions; improved understanding of vulnerable brook trout populations; Genetics white paper.	Better understanding of both environmental and genetic factors affecting brook trout habitat and populations will improve restoration decisions.	
Government Agency Engagement: Decision-maker and public awareness of brook trout issues	CBP created co-benefit templates to inform WIP developers; "Best of the Best" fact sheets being created by BTAT.	Communication strategy and products to educate and engage the public and decision makers on priority brook trout habitat for conservation.	(1.1) Communicate "best of the best" patches in context of local conservation planning. (1.2) Develop cache of outreach/communication products for quick response to requests. (1.3) Collaborate with other Action Teams on communication	Collaborative meetings with Communications Team; outreach strategy; White paper; database of communication products.	Improved understanding of environmental factors affecting brook trout habitat and populations and location of high quality brook trout streams by local	Need more support from CBP on outreach and communication.

			strategies and products.		decision makers will lead to better land-use decisions and reduce stressors.	
	"Best of the Best" fact sheets being created by BTAT.	Government agency awareness of brook trout habitat/needs, engagement with decision support tools designed to inform habitat conservation activities.	(1.1) Communicate "best of the best" patches in context of local conservation planning. (3.1) Inform conservation decision making using available Brook Trout Decision Support Tools.	Webinar and workshop held; outreach strategy; collaborative meetings with Communications Team.	Improved understanding of environmental factors affecting brook trout habitat and populations and location of high quality brook trout streams by local decision makers will lead to better land-use decisions and reduce stressors.	
Partner Coordination: Coordination with restoration groups to target opportunities to increase habitat and presence	Trout Unlimited Home Rivers Initiative (restoration); various state efforts.	Better coordination among state, NGO, and BTAT partner engagement in brook trout restoration/monitoring efforts.	(4.3) Track progress of partner specific activities. (4.5) Improve monitoring of restoration activities and existing populations.	Identify key points of contact and maintain regular communication/engagement.	Better coordination and communication will help identify restoration opportunities and reporting.	

ACTIONS – 2018-2019					
Action #	**Description**	**Performance Target(s)**	**Responsible Party (or Parties)**	**Metrics**	**Expected Timeline**
Management Approach 1: Identify and Communicate Priority Focal Areas for Brook Trout Conservation					
1.1	Communicate "best of the best" patches in context of local conservation planning.	a. Develop outreach/communication strategy for delivering "Best of the Best" template handout to local decision makers. b. Identify relevant decision-makers at the state and local level.	BTAT, CBP Communications Team, Local Government Advisory Committee.	Collaborative meetings with Communications Team; outreach strategy	June 2018
1.2	Develop cache of outreach/communication products for quick response to requests.	a. Develop white paper synthesizing state of current knowledge (beneficial/harmful BMP's, economic benefits, co-benefits). b. Develop a coldwater education tool for presenting to state and municipal government environmental regulatory and permitting agencies to inform and educate as to needs and life history requirements of trout.	BTAT, EBTJV, State partners, NGO partners.	White paper; database of communication products.	December 2018
1.3	Collaborate with other Action Teams on communication strategies and products.	a. Meet and coordinate with other Action Teams.	BTAT, CBP Workgroups, CBP Communications Team, LGAC.	Communication strategy and collaborative product(s).	September 2018
Management Approach 2: Consider Climate Change and Emerging Stressors in Determining Restoration Priorities					
2.1	Consider acid mine drainage-impacted streams and unconventional oil and gas development.	a. Obtain and summarize AMD data from states for prioritization tool inclusion. b. Review current AMD impacted streams in western Maryland and develop a list of streams (if any) to consider and evaluate for potential brook trout reintroduction.	BTAT, EBTJV, State partners, CBP GIS team.	Develop a spatially explicit dataset of AMD-impacted streams suitable for restoration/conservation actions.	February 2019

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2.2	Consider the impacts of trout population genetics on restoration/conservation decisions.	a. Work with partners to include genetic information to spatially explicit DSTs, e.g., Conservation Portfolio Planning tool.	BTAT, EBTJV, State partners, NGO partners.	Genetics white paper.	September 2018
		b. Develop introductory genetics white paper.			
Management Approach 3: Refine and Apply Decision Support Tools					
3.1	Inform conservation decision making using available Brook Trout Decision Support Tools.	a. Hold genetics workshop/webinar on available genetic tools (eDNA, etc.).	BTAT, EBTJV, State partners, NGO partners.	Genetics webinar/workshop held.	December 2018
		b. Hold DST Workshop to inform participants on the various aspects of the available brook trout-related decision support tools.	BTAT, EBTJV, State partners, NGO partners, CBP.	DST workshop planned/held.	December 2018
Management Approach 4: Continue and Expand Brook Trout monitoring efforts					
4.1	Explore monitoring Brook Trout using eDNA as a cost saving measure.	a. Evaluate eDNA approaches to develop methodology/protocols, determine costs, etc.	BTAT, EBTJV, State partners, NGO partners.	eDNA report.	June 2018
		b. Develop eDNA GIT project proposal with Fish Passage Workgroup.	BTAT, Fish Passage Workgroup.	GIT Funding Project proposal submitted.	
4.2	Streamline progress reporting process for Partners.	a. Canvass EBTJV, State, and NGO representatives with regard to obstacles to reporting progress/restoration tracking, possible solutions.	BTAT, CBP Staff.	Report on obstacles and solutions to improved partner project tracking.	February 2019
		b. Develop and maintain a tracking spreadsheet for all partners (including NGOs) to report on their work using the same attributes/language.		Tracking spreadsheet developed and updated.	

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4.3	Track progress of partner specific activities.	a. PA – Brook Trout were reintroduced into Limestone Run in central Pennsylvania during 2016 and 2017. This project will be monitored in 2018 to determine if additional brook trout are needed.	Pennsylvania FBC.	Partner progress tracked; restoration project type, expected success.	February 2019
		b. MD – Complete 5-year statewide brook trout census of historically known/suspected/predicted brook trout populations.	Maryland DNR.	Partner progress tracked; restoration project type, expected success.	February 2019
		c. MD – Continue statewide brook trout genetics survey and analysis in the Upper Savage River watershed and Big Pipe Creek.	Maryland DNR.	Partner progress tracked; restoration project type, expected success.	February 2019
		d. VA – Quantitative monitoring of Nor St. Mary's River, Little Stony Creek, and others.	VA Dept. of Game and Inland Fisheries.	Partner progress tracked; restoration project type, expected success.	February 2019
		e. VA – collect genetic samples from rec established brook trout populations to determine genetic composition/health	VA Dept. of Game and Inland Fisheries.	Partner progress tracked; restoration project type, expected success.	February 2019
		f. VA – Continue long-term stream tem monitoring from several wild brook trou	VA Dept. of Game and Inland Fisheries.	Partner progress tracked; restoration project type, expected success.	February 2019
4.4	Review and refine Brook Trout guiding documents with new restoration/monitoring knowledge.	a. Management Strategy will be reviewed and updated if necessary.	BTAT.	Management Strategy reviewed, possibly updated.	2019

ACTIONS – 2018-2019					
Action #	**Description**	**Performance Target(s)**	**Responsible Party (or Parties)**	**Metrics**	**Expected Timeline**
4.5	Improve monitoring of restoration activities and existing populations.	a. Help coordinate efforts among partners to incorporate new information into monitoring and restoration programs and identify funding opportunities.	BTAT, EBTJV, State partners, NGO partners.	Projects to address gaps for specific factors are identified and accomplished; gaps are targeted by funding opportunities, e.g., NFWF.	February 2019