BIENNIAL STRATEGY REVIEW SYSTEM
Chesapeake Bay Program

Logic and Action Plan: Post-Quarterly Progress Meeting

Fish Passage Outcome – 2022-2024: Continually increase access to habitat to support sustainable migratory fish populations in the Chesapeake Bay watershed's freshwater rivers and streams. By 2025, restore historical fish migration routes by opening an additional 132 miles every two years to fish passage. Restoration success will be indicated by the consistent presence of Alewife, Blueback Herring, American Shad, Hickory Shad, American Eel and Brook Trout, to be monitored in accordance with available agency resources and collaboratively developed methods.* (**In January 2020, the outcome was modified from the original language.*)

Long-term Target: Open an additional 1000 miles by 2025. This original outcome and target has been exceeded through fish passage efforts completed by the work group. Since fish passage is still restricted in many watersheds by dams and road crossings, the workgroup will continue opening stream miles at the rate specified in the Bay Program agreement and bi-yearly work plans (132 miles of habitat every two years). This new outcome was approved in January 2020.

Two-year Target: Open an additional 132 miles by 2023.

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?*
Local Legislative Engagement: Policy maker understanding of the ancillary	The workgroup has established relationships with state dam safety programs to coordinate dam removal.	*Additional coordination in MD and VA needs to occur so fish passage experts are working closely with dam safety*	1.3 - Coordinate dam removal activities with the state Dam Safety Programs	Improvement in the number of dam safety programs that highlight dam removal as an option for end of	Likely a long-term improvement that will make dam removal easier over time but have few immediate benefits. Dam safety	

benefits of dam removal		*offices to target potential dam removal projects at high-risk dams.*		utility and life cycle planning	programs are largely unstaffed and devote time the vast majority of their time to critical dam safety inspections.	
Landowner Engagement: Dam owner understanding of the ancillary benefits of dam removal	The workgroup continues conducting outreach to dam owners on the benefits of dam removal through workshops and outreach materials.	*The workgroup lacks outreach professionals. The workgroup would benefit from the assistance of the Bay Program in developing high quality outreach materials to mail to dam owners.*	1.2 - Continue dam removal activities in the Chesapeake Bay 1.7 - Consult with the Chesapeake Bay Program Communications Workgroup to develop communications products	The increased number of dam owners willing to remove their dams	In the longer term, more high priority dam removals on public/private land will occur. A "waitlist" of possible dam removal projects could be generated.	
Landowner Engagement: Dam owner willingness to remove dams	The workgroup continues outreach to dam owners on the benefits of dam removal through brochures and workshops. The Workgroup is also investigating various incentive programs for dam removal including possible mitigation banking.	*The workgroup lacks outreach professionals. The workgroup would benefit from the assistance of the Bay Program in developing high quality outreach materials to mail to dam owners.*	1.2 - Continue dam removal activities in the Chesapeake Bay 1.3- Coordinate dam removal activities with the state Dam Safety Programs 1.7 - Consult with the Chesapeake Bay Program Communications Workgroup to develop communications products	The increased number of dam owners willing to remove their dams	In the longer term, more high priority dam removals on public/private land will occur. A "waitlist" of possible dam removal projects could be generated. A shift in focus to culvert projects is also expected pending small numbers of viable dam removal projects	
Use Conflict: Limited financial resources: With the	The workgroup has completed the Chesapeake Bay Fish Passage Prioritization Tool which priorities	*Road crossings need to be assessed to determine the severity of each*	3.1- Continue using the Chesapeake Bay Fish Passage Tool to implement high priority dam removal,	Number of road crossings assessed in the fish passage prioritization tool	Will be an ongoing effort of the workgroup taking place over the next 4-5 years. Culvert	

average cost of stream barrier removal in Maryland, Pennsylvania and Virginia hovering around $200,000, the Fish Passage Workgroup needs increased financial resources to continue to remove dams and improve fish passage at road crossings.	dam removal projects. The workgroup currently uses the ranking to guide our dam removal efforts and strategically invest public funds. Limited culvert data has been added to this tool; however, the vast majority of road crossings have not been assessed to determine whether or not it represents a fish barrier.	*potential barrier and associated fish passage benefits. This assessment will determine the most severe barriers and will allow the workgroup to better align limited financial resources with the best projects to meet the fish passage outcome.*	culvert and fish passage projects		rankings will be developed to guide road crossing projects and strategically invest public funding for improved fish passage	
			1.4 - Continue road/stream crossing assessments, project development and project implementation			
			2.5- Conduct target species monitoring (+/- and relative abundance) at road culverts in VA			
			2.6-Continue to develop environmental DNA (eDNA) tool to detect shad. Continue sampling for river herring and apply river herring eDNA analysis to determine priority fish passage projects and develop habitat use models			
			2.1- Monitor NOAA funded dam removal projects for the presence/absence of target fish species (Tier I monitoring)			
			2.2- Conduct Tier II monitoring on select dam removals (Currently, the Patapsco River monitoring is the only river designated as a Tier II site by NOAA)			

			2.3 - Conduct target species monitoring of select dam removals in VA (+/- and relative abundance) 2.4 - Conduct target species counts at technical fishways in VA			
Habitat Condition: Populations of targeted fish species- particularly river herring, shad and American eel- have declined nationwide	There are many reasons for declining populations including habitat conditions, water quality, bycatch, climate change including possible changes in migratory patterns and spawning areas, overfishing, and others. The workgroup does not see these factors directly influencing whether the mileage goal outcome is met but instead as factors influencing the overall recovery of the target species. As such, no work plan action has been identified.	Information related to bycatch and possible changes due to climate changes have not been well documented. The workgroup continues to review data and research produced by climate change professionals to assess any potential impacts to fish distribution in various watersheds.	NA	NA	Long term effort including hosting workshops and seminars and collaboration with different groups to increase understanding within the workgroup. This will allow workgroup members to better understand the factors affecting target species.	

ACTIONS – 2022-2024					
Action #	**Description**	**Performance Target(s)**	**Responsible Party (or Parties)**	**Geographic Location**	**Expected Timeline**
Management Approach 1: During the period 2011-2025, restore historical fish migratory routes by opening 1,000 additional stream miles, with restoration success indicated by the presence of Alewife, Blueback Herring, American Shad, Hickory Shad, American Eel and/or Brook Trout.					
1.1	Continue dam removal activities in the Chesapeake Bay	Complete removal of the Bloede Dam (monitoring phase). Complete a feasibility/design study for Daniels Dam.	Maryland Department of Natural Resources (MD DNR), National Oceanographic and Atmospheric Administration (NOAA), US Fish and Wildlife Service (USFWS), American Rivers	Ilchester, MD	Ongoing
		Complete removal of the Cypress Branch Dam.	MD DNR, NOAA, USFWS, American Rivers	Millington, MD	May-22
		Complete design for the Fort Meade Dam.	USFWS, American Rivers, NOAA	Ft. Meade, MD	2022
		Complete design for the Frank Bentz Memorial Lake Dam.	American Rivers, MD DNR	Thurmont, MD	2022
		Complete design for the Chiques Roller Mill Dam.	American Rivers, PA Fish and Boat Commission	Manheim, PA	2022
		Complete removal of the Kehm Run Dam.	American Rivers, PA Fish and Boat Commission	York, PA	2022
		Complete removal of Oakland Dam.	American Rivers, USFWS	Susquehanna Depot, PA	July-22

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Action #	**Description**	**Performance Target(s)**	**Responsible Party (or Parties)**	**Geographic Location**	**Expected Timeline**
		Complete removal of Brush Mountain Dam.	American Rivers, PA Fish and Boat Commission	Altoona, PA	2022
		Complete planning phase for the removal of the Rapidan Mill Dam on the Rapidan River.	The Center for Natural Capital	Rapidan, VA	2022
		Complete planning phase for the removal of Ashland Mill Dam from the South Anna River.	Private Consulting Firm	Ashland, VA	2022
		Complete design of the College Lake Dam	American Rivers, Virginia Department of Wildlife Resources, NOAA	Lynchburg, VA	2022
1.2	Continue dam removal activities in the Chesapeake Bay	Various dam removal planning, design and implementation projects - many projects are in a feasibility study phase where there are no immediate milestones during 2022-2023. Continue outreach to dam owners on the benefits of dam removal through brochures and workshops.	Fish Passage Workgroup	Varies	Varies
1.3	Coordinate dam removal activities with the state dam safety programs	Establish or continue relationships with state dam safety programs. Have dam safety programs acknowledge dam removal as an option for end of utility and life cycle planning.	Fish Passage Workgroup	Entire Chesapeake Bay region	Varies
1.4	Continue road/stream crossing activities (assessments, project development and project implementation) in the Chesapeake Bay	Over 165,000 road/stream crossing are present in the Chesapeake Bay watershed. High priority road/stream crossings will be assessed for fish passage and climate resilience. High priority projects will be	Fish Passage Workgroup	Entire Chesapeake Bay region	Varies

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		constructed using aquatic passage design recommendations.			
1.5	Recommendations for Aquatic Organism Passage at Maryland Road Stream Crossings	Distribute the final Maryland guidance document Version 1 to regulatory and design professionals for implementation; and begin discussions with other states for adopting/modifying guidance for entire Chesapeake	Fish Passage Workgroup	Entire Chesapeake region	Ongoing
1.6	Finalize Dam Removal Mitigation Crediting Guidance for future mitigation projects to incentivize future dam removal projects	Fish Passage Workgroup review and provide comments to USACE on draft mitigation calculator; Complete the final guidance document with calculator tool, and distribute the document to regulatory and dam removal practitioners for implementation	Fish Passage Workgroup	State of Maryland	2022
1.7	Consult with the Chesapeake Bay Program Communications Workgroup to develop communications products	Coordinate closely with the CBP Communications workgroup when developing communication products to ensure consistent messaging and that best practices are used.	Fish Passage Workgroup	Chesapeake Bay watershed	Ongoing
Management Approach 2: Document return of fish to opened stream reaches by establishing the presence or absence of target species at a select number of projects within the Chesapeake Bay watershed.					
2.1	Monitor NOAA funded dam removal projects for the presence/absence of target fish species (Tier I monitoring)	All NOAA funded dam removals will be monitored for Tier I metrics.	NOAA, funding recipients	At dam removal sites	Ongoing
2.2	Conduct Tier II monitoring on select dam removals (Currently, the Patapsco River monitoring is the only river designated as a Tier II site by NOAA).	Conduct Tier II monitoring on the Patapsco River.	NOAA, American Rivers, MD DNR, University of Maryland Baltimore County (UMBC), US	Patapsco River near Ellicott City, MD	Ongoing through 2023

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			Geological Survey (USGS), MGS, USFWS		
2.3	Conduct target species monitoring of select dam removals in VA (+/- and relative abundance)	Boat electrofishing upstream of Harvell Dam removal on the Appomattox River and Embrey Dam removal on the Rappahannock River.	Virginia Department of Wildlife Resources (VDWR)	Appomattox River in Petersburg, VA and Rappahannock River near Fredericksburg, VA	Ongoing but dependent on continued availability of funding for fish passage technician crew
2.4	Conduct target species counts at technical fishways in VA	Continue annual American Shad count at Boshers Vertical Slot Fishway (mulitiple species including American Shad and Striped Bass). Continue electronic herring run count at Walkers Dam Denil fishway. Continue development of monitoring protocols for newly constructed pool and weir fishway on Chandlers Pond Dam (multiple species including American Eel and herring).	VDWR	Boshers Dam in Henrico County on James River near Richmond, VA. Walkers Dam in New Kent Count on Chickahominy River near Lanexa, VA. Chandlers Pond Dam near Montross, VA	Ongoing but dependent on continued availability of funding for fish passage technician crew
2.5	Conduct target species monitoring (+/- and relative abundance) at road culverts in VA	Continue annual backpack electrofishing at selected road stream crossing fish passage projects on Rappahannock tributaries.	VDWR	Rappahannock tributaries	Ongoing but dependent on continued availability of funding for fish passage technician crew

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Action #	**Description**	**Performance Target(s)**	**Responsible Party (or Parties)**	**Geographic Location**	**Expected Timeline**
2.6	Continue to develop environmental DNA (eDNA) tool to detect American Shad. Continue sampling for River Herring and apply River Herring eDNA analysis to determine priority fish passage projects and develop habitat use models	Develop and test tools for American Shad. Use River Herring tools already developed (completed task in previous fish passage work plan).	Smithsonian Environmental Research Center, University of Maryland Center for Environmental Science	Frozen samples collected in Patapsco River; if funded, expand to entire Chesapeake Bay	Ongoing to be completed in 2021
Management Approach 3: Use the Chesapeake Bay Fish Passage Tool that was completed by the workgroup to implement high priority dam removal and fish passage projects.					
3.1	Continue using the Chesapeake Bay Fish Passage Tool to implement high priority dam removal, culvert and fish passage projects.	Continue to conduct culvert and bridge assessments in areas with anadromous species and Brook Trout to determine extent of fish blockages due to road and rail infrastructure. Add information to the Chesapeake Fish Passage Tool. Update Chesapeake Fish Passage Tool with new IT platform, scripts.	USFWS, NOAA, Maryland, Virginia and Pennsylvania, American Rivers, TNC	Entire Chesapeake Bay region	Ongoing