



CHESAPEAKE
PROGRESS

Habitat Outcomes and Indicators at the Chesapeake Bay Program

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Chesapeake Bay Program

Science. Restoration. Partnership.

Habitat Outcomes and Indicators at the Chesapeake Bay Program

1. The Indicators Framework
2. Indicators and their use in adaptive management toward our outcomes
3. How indicators are communicated via ChesapeakeProgress.com
4. How adaptive management and indicators affect funding for projects
5. Habitat outcomes currently tracked by indicators at the CBP

Indicators

A summary measure that provides information on the state of, or change in, the system that is being measured.

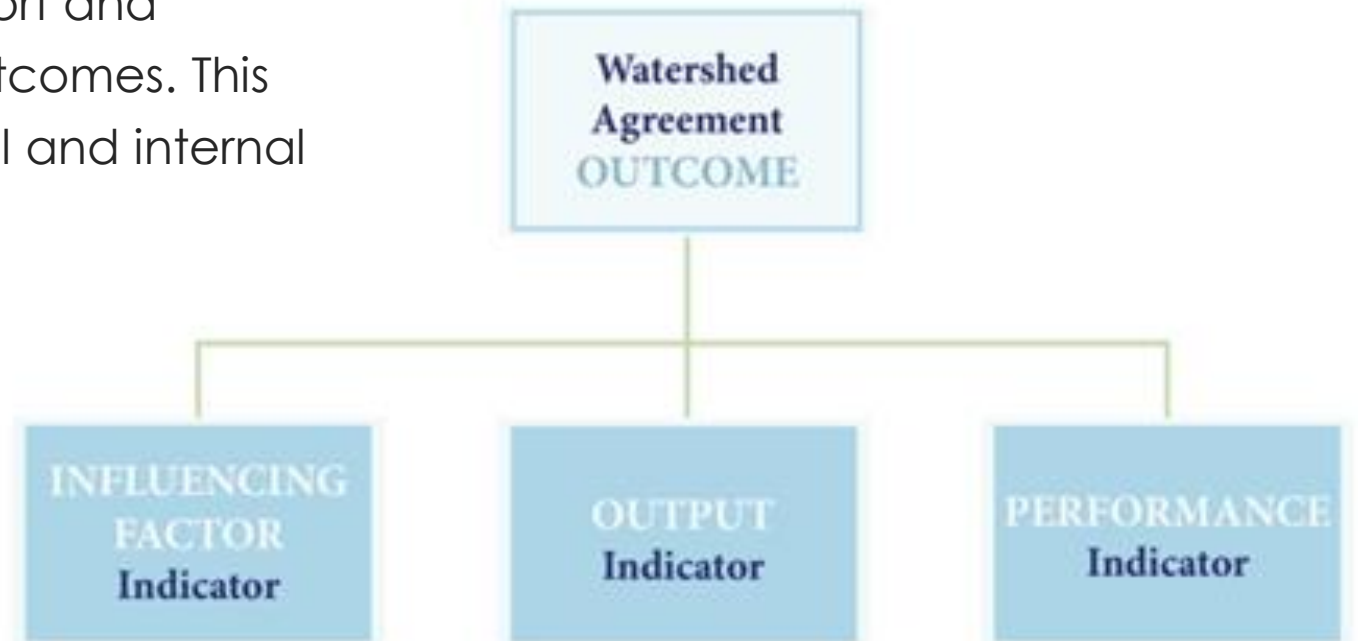
Influencing Factors – What KEY influencing factors are impacting the achievement of an outcome?

Outputs – Are we doing what we said we would do in our Logic & Action Plans and Management Strategies?

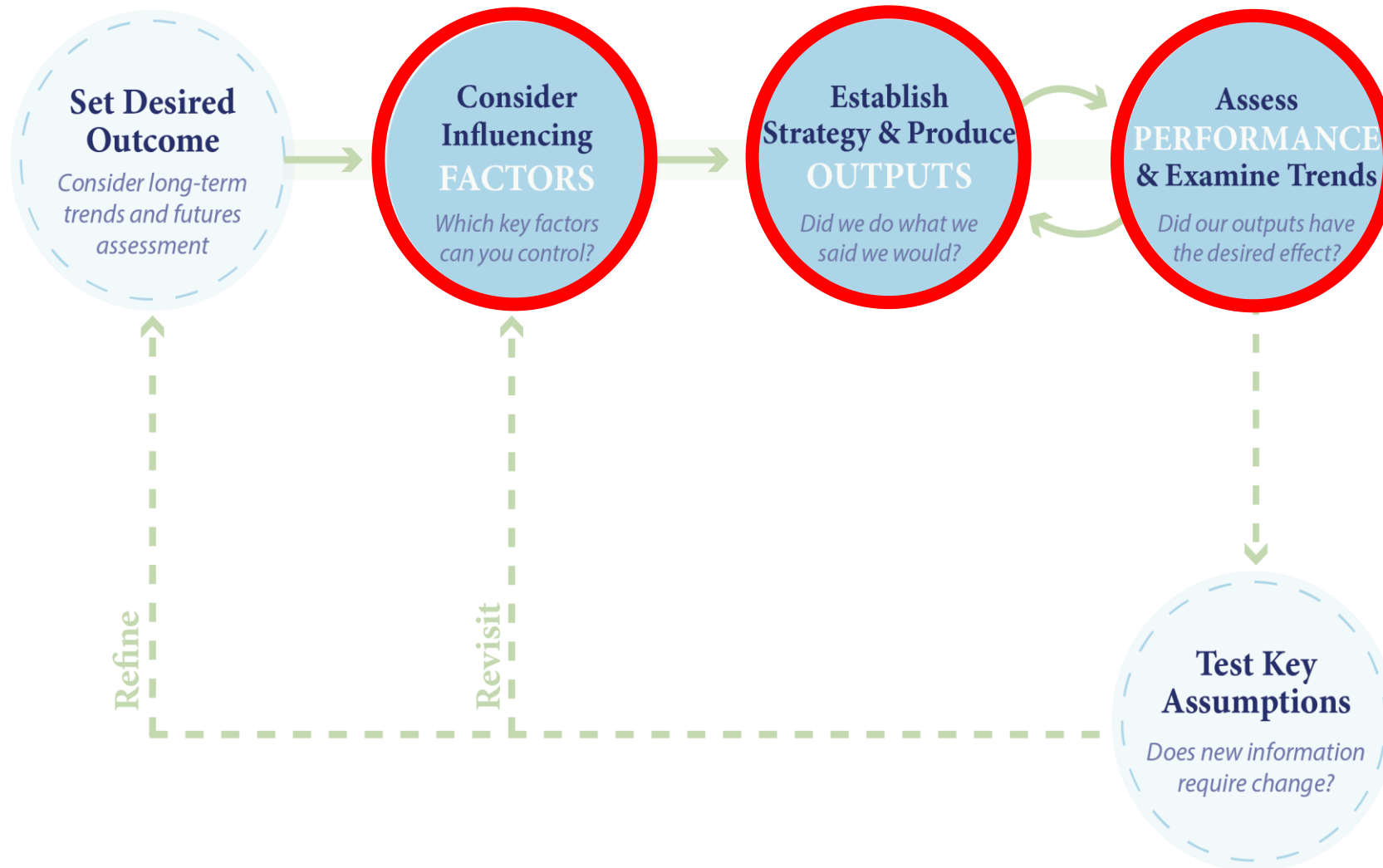
Performance – Are we achieving the outcome?

The Indicators Framework

The [Indicators Framework](#) is a conceptual model that demonstrates the relationships between indicators and describes how they will be used. The Framework is aligned with the Agreement at the Outcome level and includes the information needed to support and communicate progress towards these outcomes. This model is a mechanism to support external and internal communication.



Indicators and Adaptive Management (SRS Process)



Indicator Update Process and Roles

Described in more detail [here](#)

Data provider / Subject Matter Expert (SME) – provides updated data file and methods document.

Indicators Coordinator (IC) / Accountability and Budget Team Leader – QA/QC documents.

Web Content Specialist – updates web text for ChesapeakeProgress page with SME review and approval.

GIS team – updates maps, if associated with indicator.

Communications Director – works with IC to establish and implement a partnership communications plan, which may include other communications products such as blog posts, press releases, etc.

Web Content Specialist – Once approved by all parties, uploads the new web text on the outcome page on ChesapeakeProgress along with the associated documentation.

Key Indicator Documents

Analysis & Methods (A&M) document:

- Data source and collection methodology
- Analysis
- Key background
- Adaptive management
- “Communicating the Data” section

Excel Data File

- Includes recent and past data
- Important caveats
- ChesapeakeProgress data

Available for download on ChesapeakeProgress.

Indicator Update Cycles and Timing

- All indicators are updated at a frequency agreed upon by the outcome's Goal Implementation Team, which generally is every 1, 2, or 5 years depending on data availability
- Timing of update is determined by data availability but also external communication factors for some outcomes
 - Ex: Blue Crab Abundance is updated ahead of July 4th to align with public interest in blue crab ahead of the holiday's festivities
- As a result, we have an indicators "Busy Season," where there are multiple indicators in different stages of the update process simultaneously (~April-July)

Fish Passage



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](#).*

Progress

Recent Progress: Increase

In 2018 and 2019, 1,379 additional stream miles were opened to fish passage through dam removal projects, far exceeding the target to open an additional 132 miles every two years

Outlook: On Course

In 2016, the [Fish Passage Workgroup](#) reached their 2025 goal to open an additional 1,000 stream miles, which was established in the [2014 Chesapeake Bay Watershed Agreement](#). After requesting public feedback, the [Principals' Staff Committee \(PSC\)](#), in January 2020, [approved an outcome modification](#) proposed by the Fish Passage Workgroup. The modification is more consistent with the best available science and establishes a new target to open an additional 132 miles every two years to fish passage.

In 2018 and 2019, 1,379 additional stream miles were opened to fish passage, exceeding the two-year target. With the exception of 2019, where the majority of the miles opened occurred through one significant dam removal project, there has been a recent decrease in miles added annually over the past few years. The workgroup attributes the low number of miles added to a decrease in the number of dam removals across all watershed states. Many dams are privately-owned and many owners are not willing to pursue dam removal at this time. This limits the number of potential dam removal projects each year. Opportunities to restore fish passage through the retrofitting or removal of culverts—in addition to the removal of dams—are being investigated. The workgroup is planning on using infrastructure funding to incentivize and expand dam removal and culvert initiatives.

Management Strategy

To achieve this outcome, Chesapeake Bay Program partners have committed to:

- Restoring historical fish migration routes by removing dams and opening streams to the movement of fish;
- Documenting the return of fish to opened streams by establishing the presence or absence of target species (i.e., alewife, blueback herring, American shad, hickory shad, American eel and/or brook trout) at a select number of projects within the Chesapeake Bay watershed; and
- Using the [Chesapeake Bay Fish Passage Prioritization Project](#) to implement high-priority dam removal and fish passage projects.

Monitoring and assessing progress toward the outcome will occur through data related to the number of stream miles opened each year (with a target of 132 miles opened every two years) and the presence of target species at restoration sites.

As part of the Chesapeake Bay Program's partnership-wide implementation of adaptive management, progress toward this outcome was reviewed and discussed by the Management Board in [August of 2021](#). It will be reviewed and discussed by the Management Board again in August 2023.

[Download Management Strategy \(.pdf\)](#)

Logic & Action Plan

Chesapeake Bay Program partners have committed to taking a series of specific actions that will support the management approaches listed above.

Completed actions from this outcome's Logic & Action Plan include:

- ✓ In 2016, The Nature Conservancy launched the [Chesapeake Bay Fish Passage Prioritization Tool](#) to help natural resource managers identify the fish passage restoration projects that would most benefit migratory and resident fish. The tool also allows users to develop custom management scenarios and model the potential effects of a fish passage restoration projects at a given dam.
- ✓ In May 2017, the Fish Passage Workgroup gained formal Chesapeake Bay Program acceptance of the methodology behind the "miles opened" metric to support its definition of an upstream functional network.
- ✓ In February and October of 2017, partners held the first and second meetings of the Pennsylvania Aquatic Connectivity Team.
- ✓ Partners have completed several dam removal projects including the removal of the [Bloede Dam](#) on the Patapsco River in Maryland and the [Monumental Mills Dam](#) along Hazel River in Culpepper County, Virginia. In addition, six dams have been removed in Pennsylvania: Dugan Run, Wildcat Run, the Camp Michaux Lower Dam, the Eckenrode Mills Dam, the Mountain Springs Dam 2 and the Solomons Creek Dam.

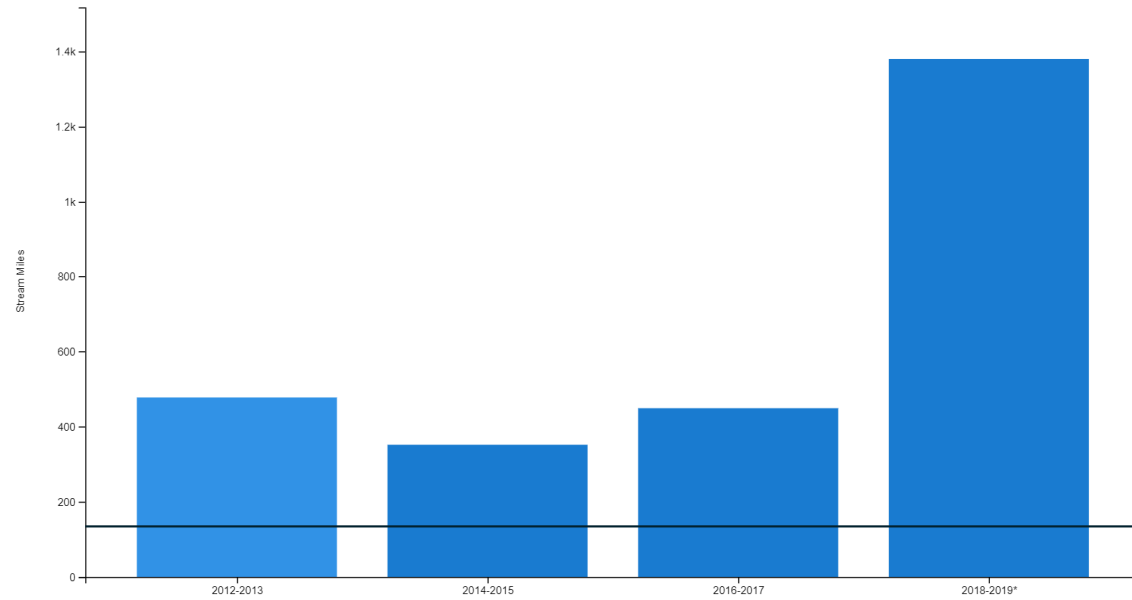
[Learn About Logic & Action Plan](#)

Fish Passage Indicators

Stream Miles Opened to Fish Passage (2012-2019) ▲

All of the stream miles opened between 2012-2019 were via dam removal projects. *2018 and 2019 miles were updated August 2021 to reflect a more complete data download.

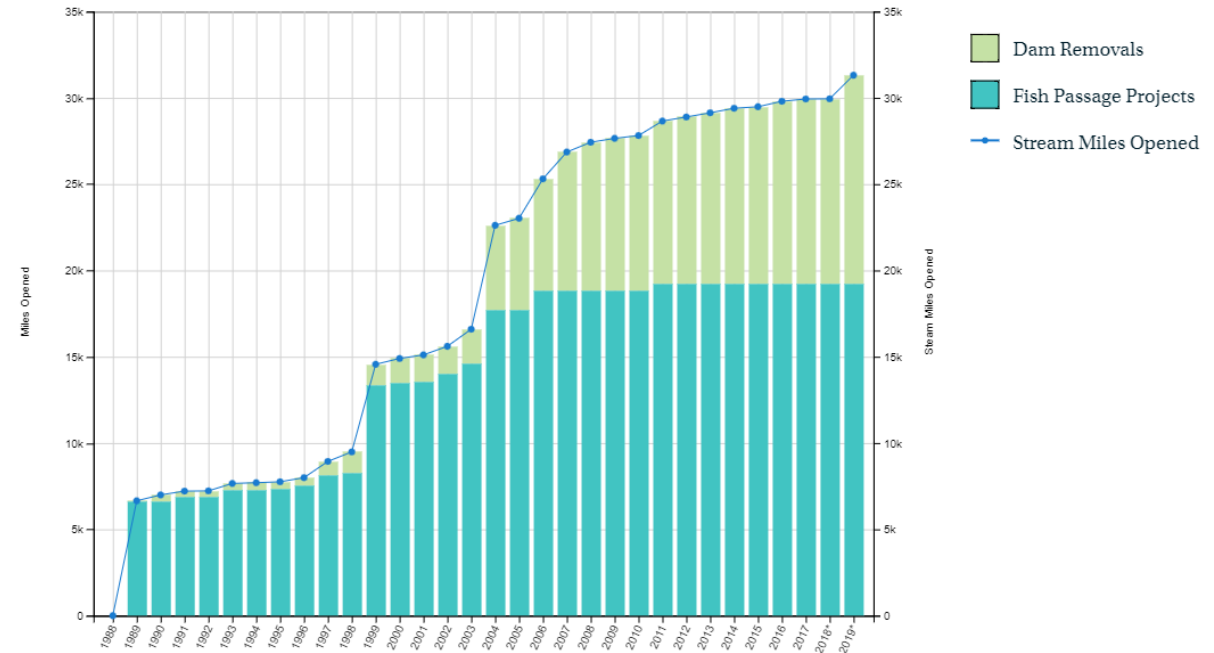
[VIEW CHART](#) [VIEW TABLE](#)



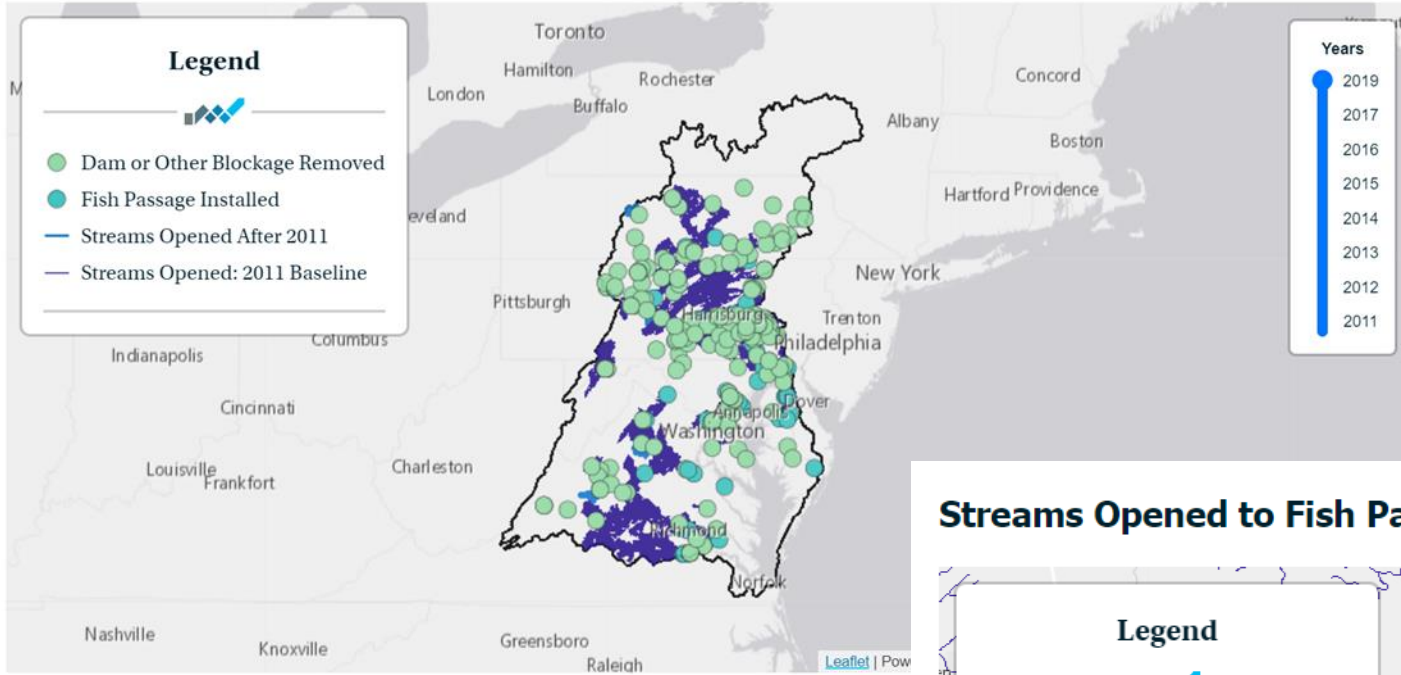
Stream Miles Opened 1988-2019 (Cumulative)

Stream Miles Opened to Fish Passage via Dam Removals and Fish Passage Projects. *2018 and 2019 miles were updated August 2021 to reflect a more complete data download.

[VIEW CHART](#) [VIEW TABLE](#)

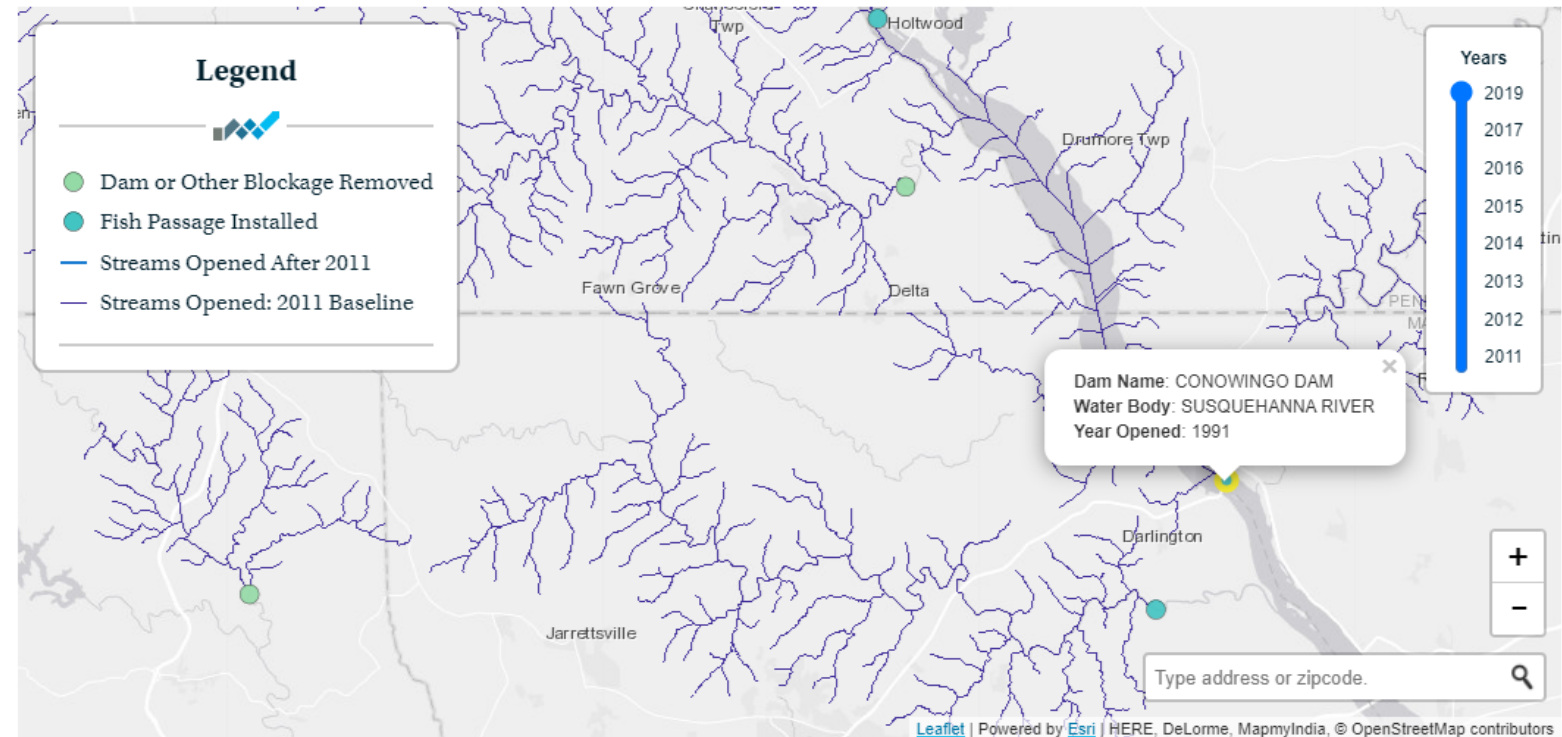


Streams Opened to Fish Passage (1989-2019) [↗](#)



Interactive map

Streams Opened to Fish Passage (1989-2019) [↗](#)





Indicators updated regularly with quality data



The Partnership sees impact of funded projects on outcome progress



Funding requests are strengthened when supported with data that show a project is important to achieving the outcome.

Benefits of
maintaining
indicators

Looking Beyond 2025



- The Beyond 2025 Steering committee (organized by the Management Board)
 - *Will be assessing our outcomes for beyond 2025*

Submerged Aquatic Vegetation

Fish Passage

Stream Health

Brook Trout

Wetlands

Black Duck

Watershed
Agreement
Outcomes:
Habitat GIT

Submerged Aquatic Vegetation

Fish Passage

Stream Health

Brook Trout

Wetlands

Black Duck

Outcomes
Currently
Tracked with
Indicators

Submerged Aquatic Vegetation

Sustain and increase the habitat benefits of submerged aquatic vegetation (SAV) in the Chesapeake Bay. Achieve and sustain the ultimate outcome of 185,000 acres of SAV Bay-wide necessary for a restored Bay. Progress toward this ultimate outcome will be measured against a target of 90,000 acres by 2017 and 130,000 acres by 2025.

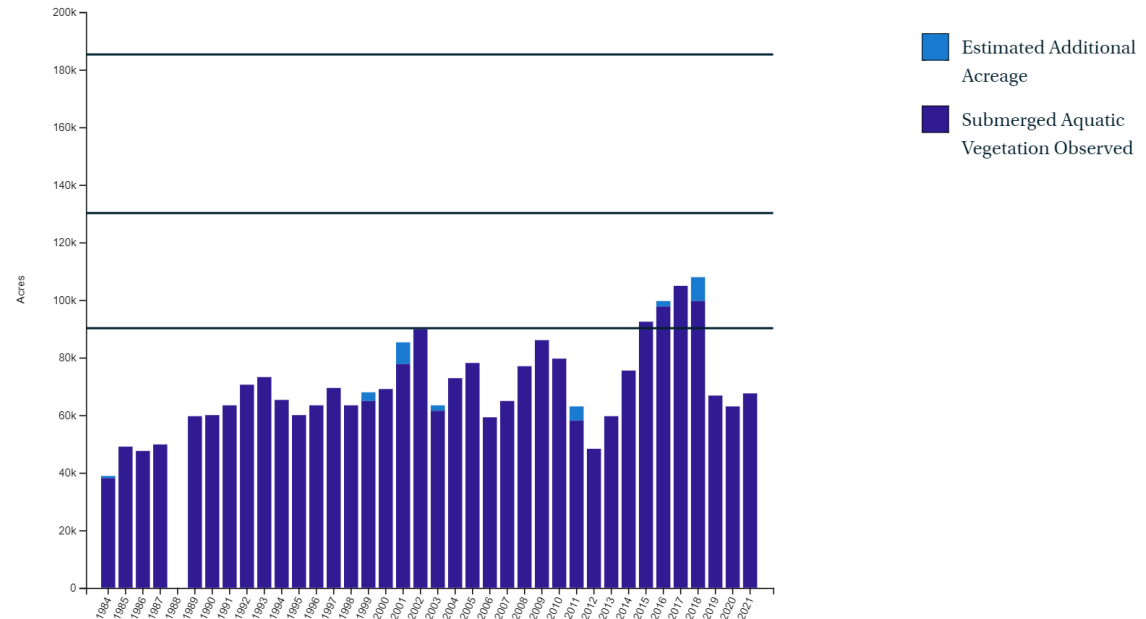


The Submerged Aquatic Vegetation (SAV) Outcome is off course. Gains from 2020 to 2021 are positive, indicating an on-course trajectory, but these gains don't yet offset the recent major declines of underwater grasses observed in 2019. Additional years of positive trajectory will help clarify whether this recent gain in 2021 is the start of a new positive trend toward higher levels of SAV across the Bay, but it is unlikely that the 2025 goal of 130,000 acres will be reached.

Submerged Aquatic Vegetation (SAV) Abundance (1984-2021)

*Estimated Additional Acreage: Factors such as adverse weather conditions, water clarity, or security restrictions over military air space prevented researchers from collecting aerial imagery. For these unmapped areas, estimates of SAV acreage are based on the prior year's survey. Data was not collected in 1988.

[VIEW CHART](#) [VIEW TABLE](#)

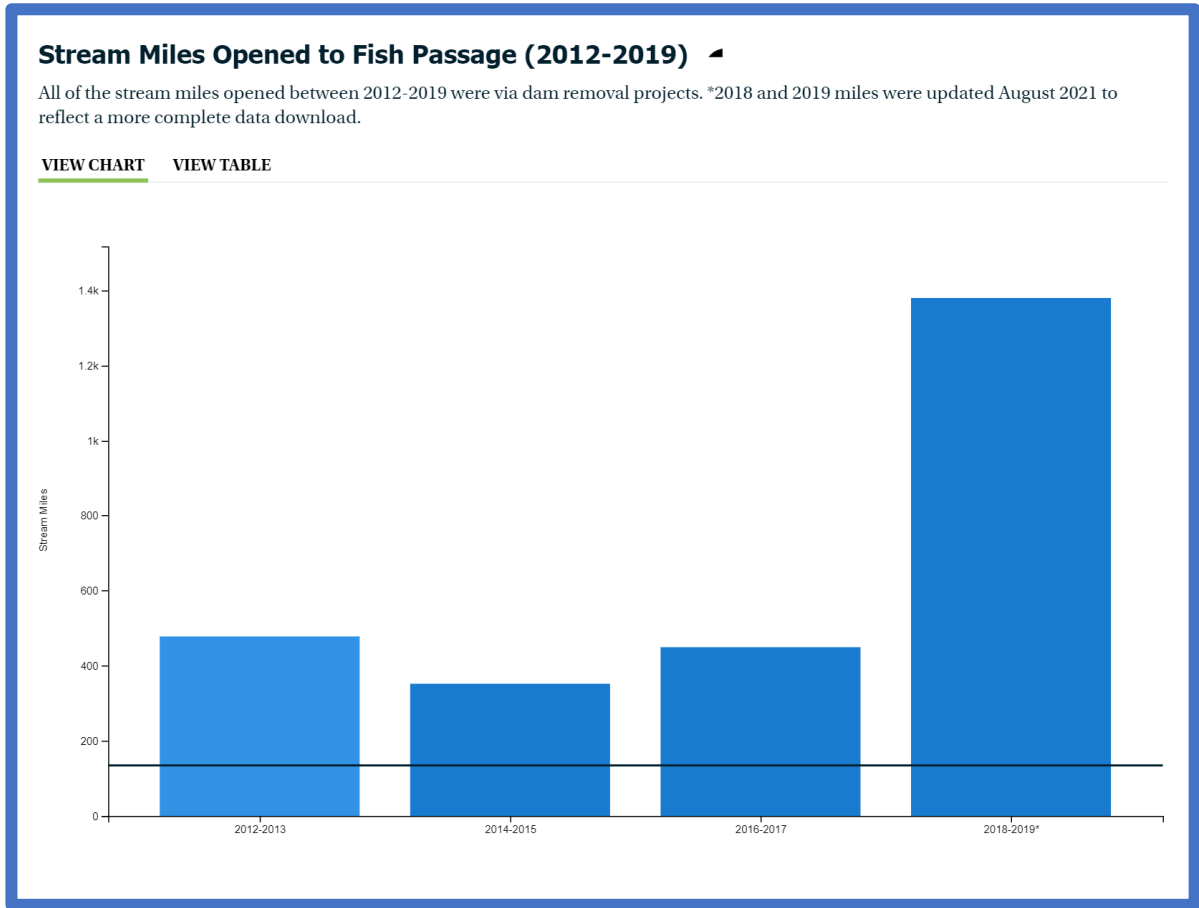


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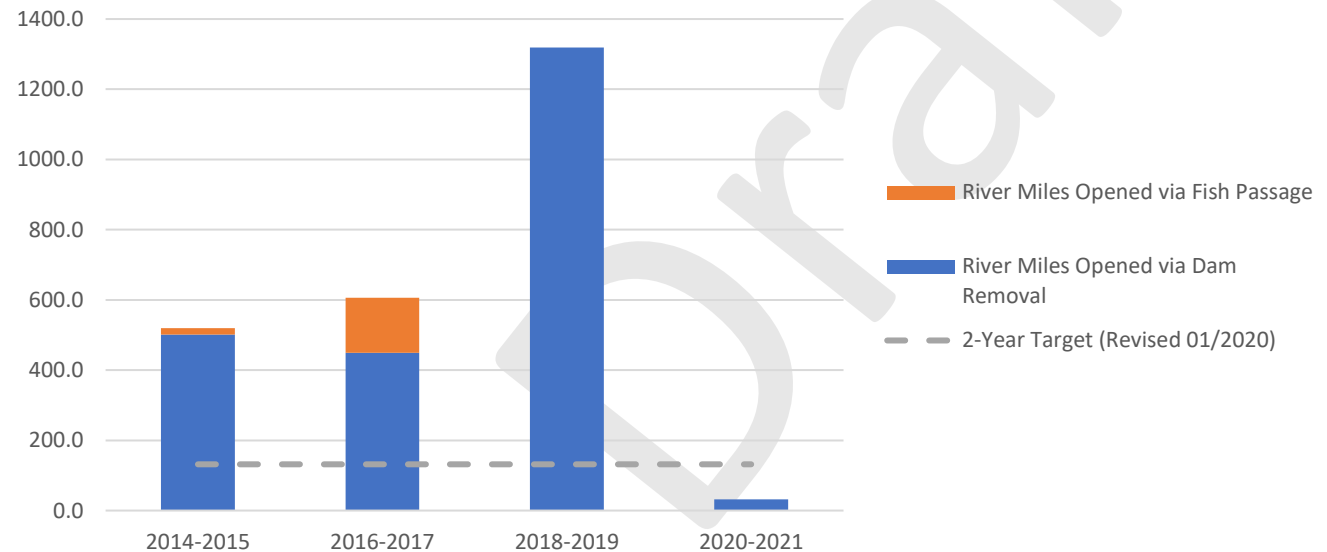
RECENT PROGRESS
DECREASE (2021)



OUTLOOK
ON COURSE

In 2020 and 2021, 32.6 additional stream miles were opened to fish passage through dam removal projects, which does not meet the target to open an additional 132 miles every two years.

Stream Miles Opened to Fish Passage



Stream Health

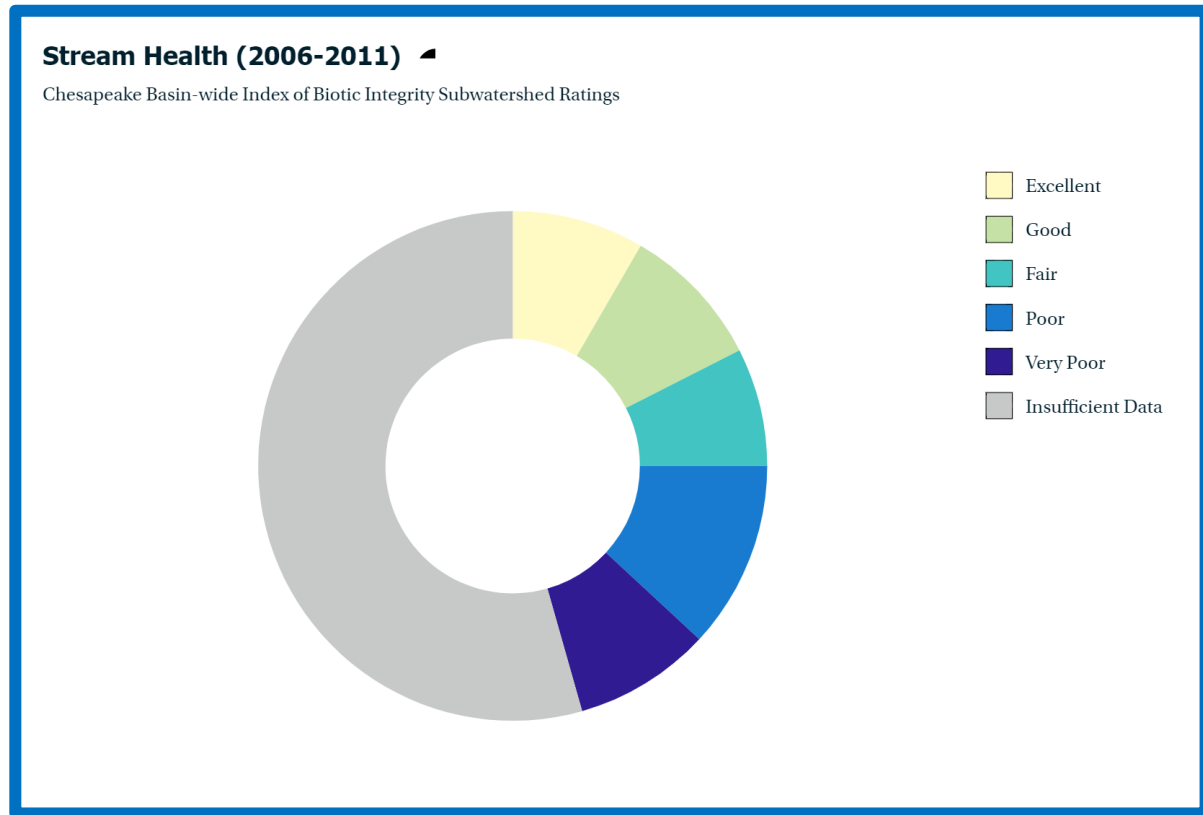
Continually improve stream health and function throughout the watershed.

Improve health and function of 10% of stream miles above the 2008 baseline for the watershed.

RECENT PROGRESS
NO CHANGE(2018)

OUTLOOK
UNCERTAIN

In 2018, researchers and resource managers established the six years between 2006 and 2011 as the baseline period for our indicator of stream health. Known as the Chesapeake Basin-wide Index of Biotic Integrity, or Chessie BIBI, this indicator describes the quality of assessed streams in relation to all of the streams in the watershed. During this baseline period, the Chessie BIBI ranked 25 percent of the Bay watershed with fair, good or excellent stream conditions and 21 percent with poor or very poor conditions.



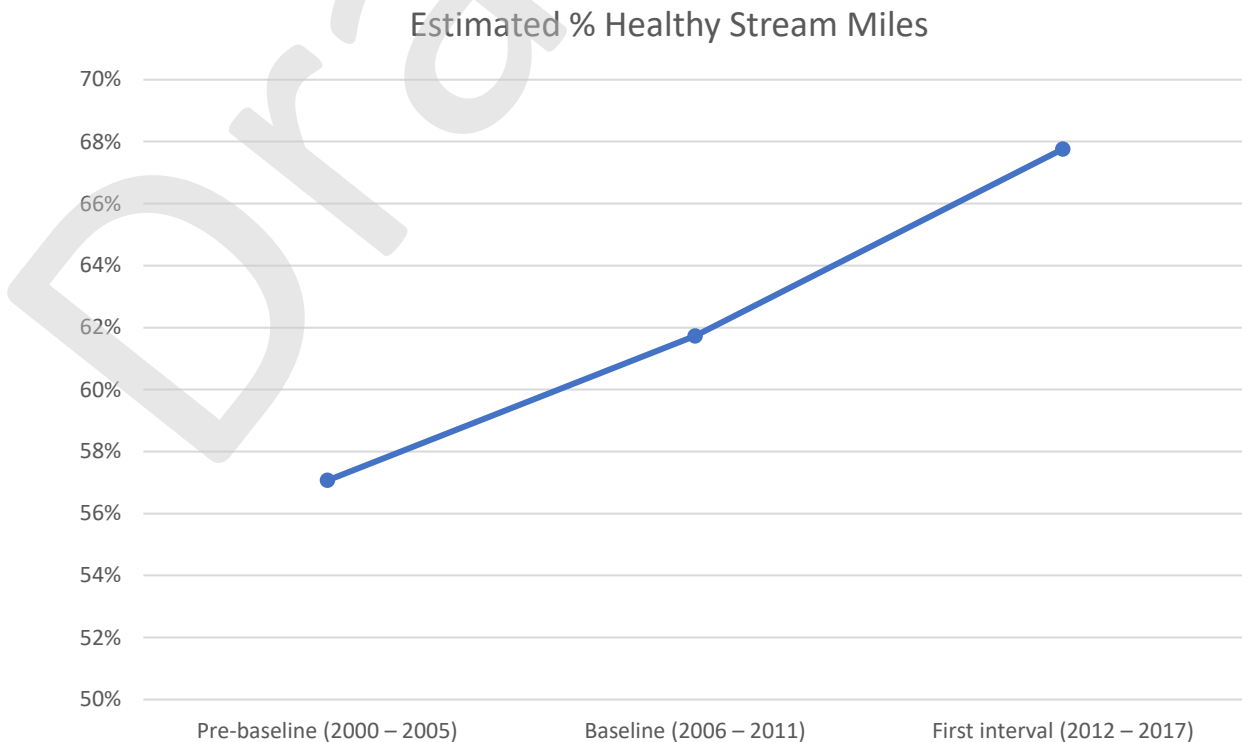
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Other Impacts of ChesapeakeProgress

Some external groups such as the Chesapeake Bay Foundation source their data from what is presented on ChesapeakeProgress

If ChesapeakeProgress is out of date, then their assessment of progress made toward Agreement outcomes is also out of date

ChesapeakeProgress is a transparent view of our progress and highlights and builds support for our work, including from outside funders



Questions?