Living Resources Assessment

Shallow Water Habitat Sentinel Site Workshop #1

September 17, 2025

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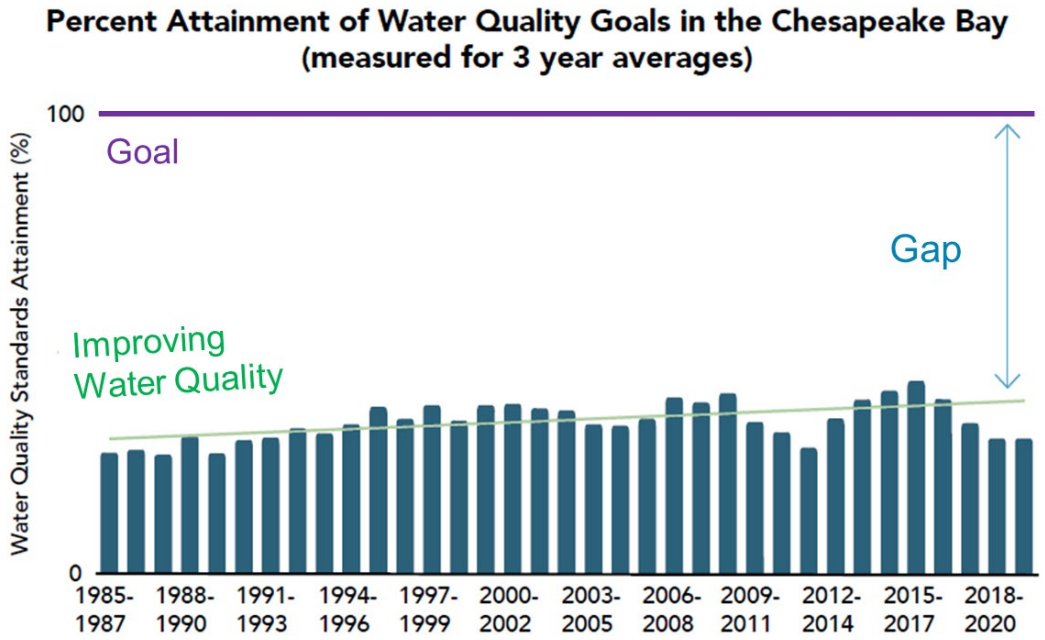
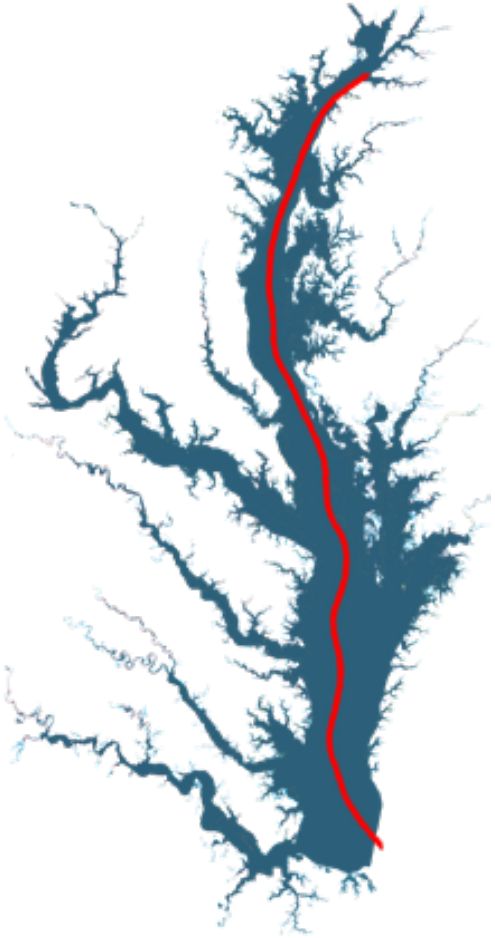
Motivation: The CESR Report

- 40+ years of Chesapeake Bay restoration
- Improvements have been made, plus value in holding the line
- Why is there a gap & how do we close it?
- What might we do differently going forward?

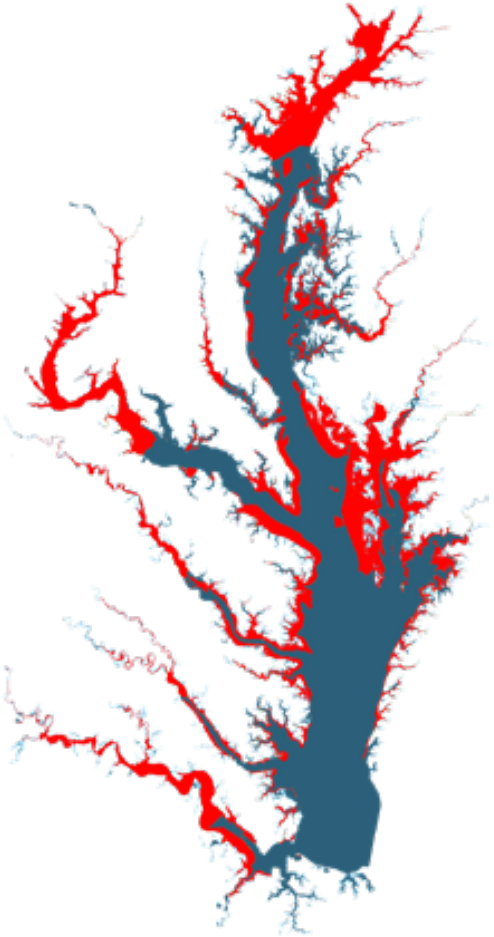


CESR: Changing Focus
Accelerating Living Resource Response on Our Way to Meeting Overall Goal

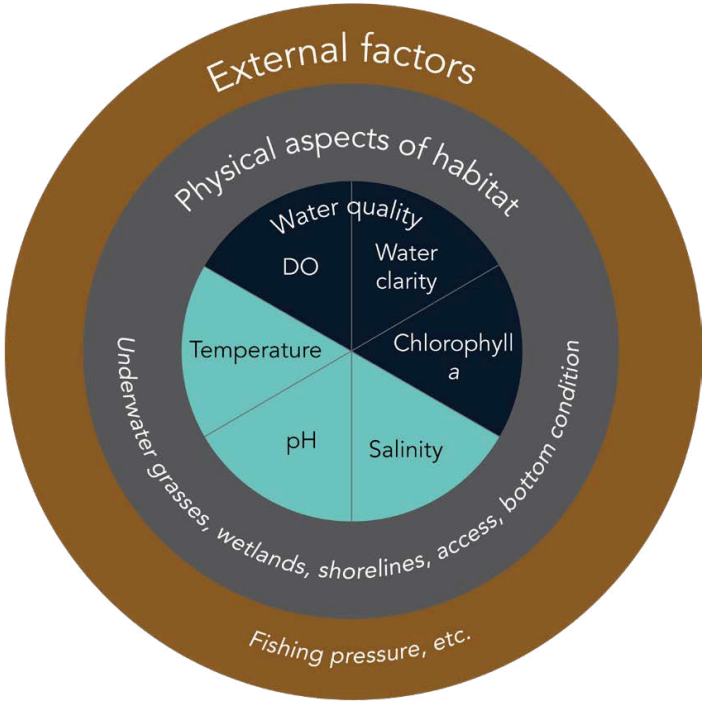
Deep water DO is most challenging water quality goal



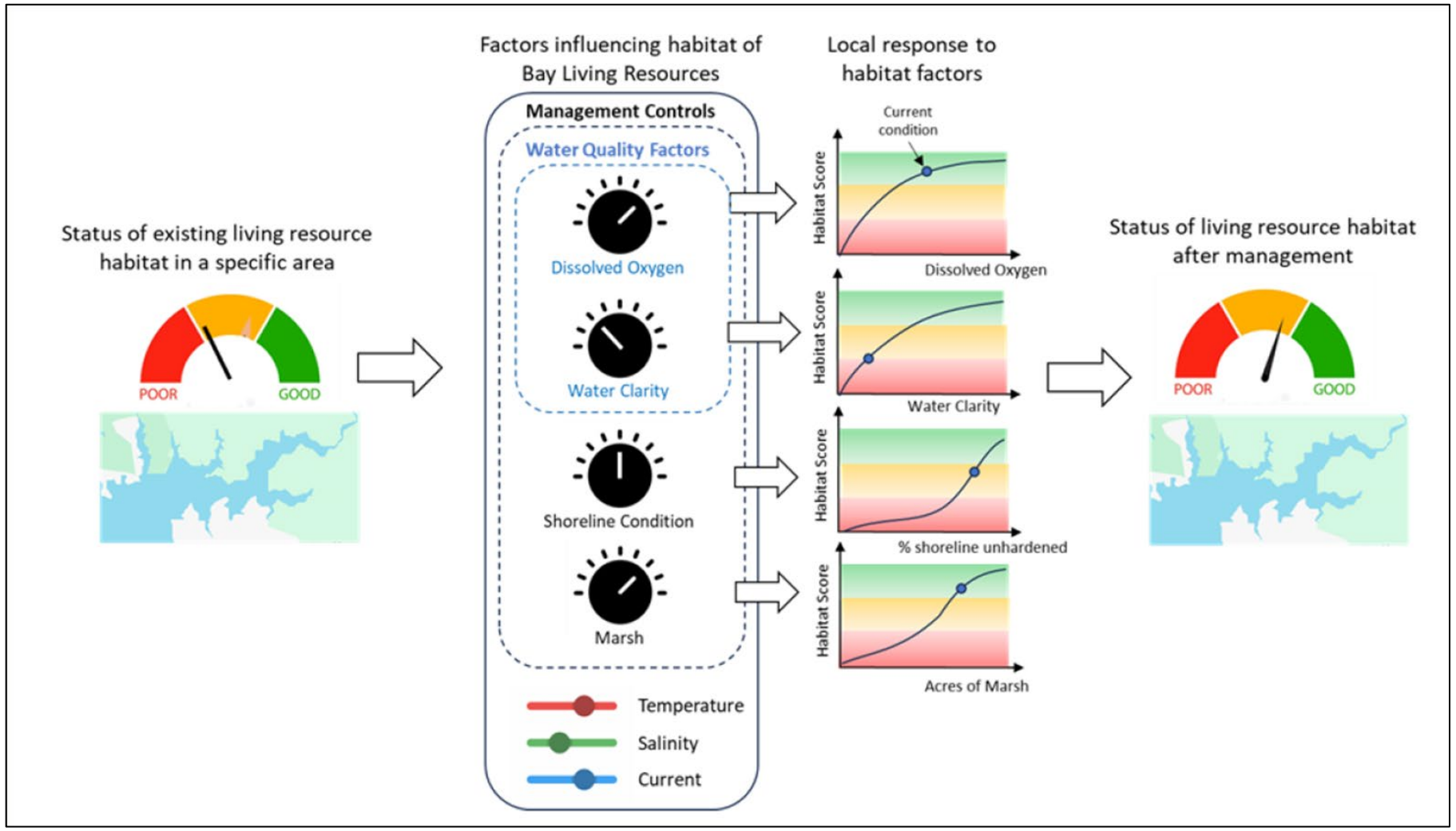
But most impactful living resource habitats are elsewhere



Living resource habitat factors that matter



Opportunities In Shallow Waters



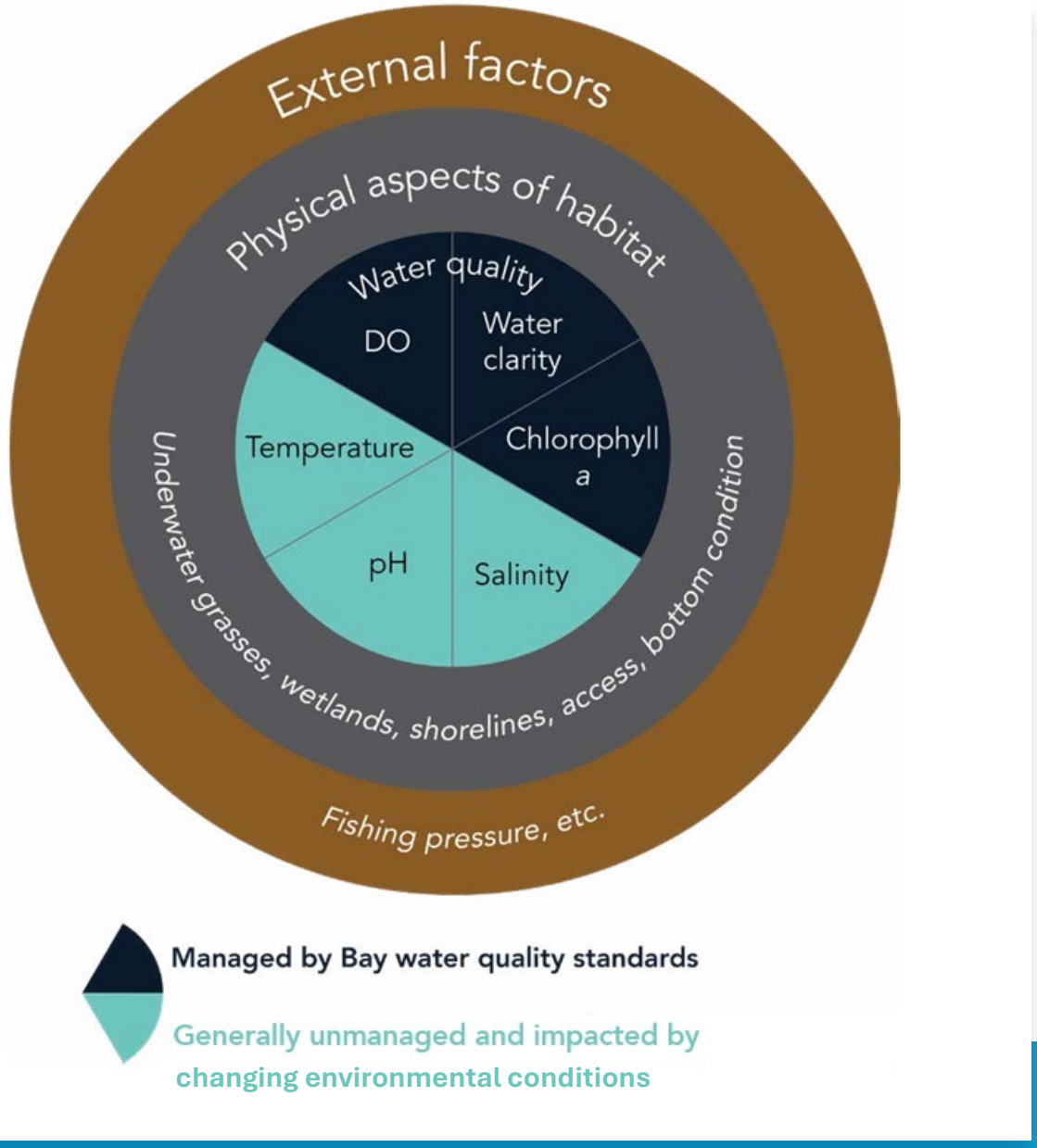
Tiered Implementation Prospectus

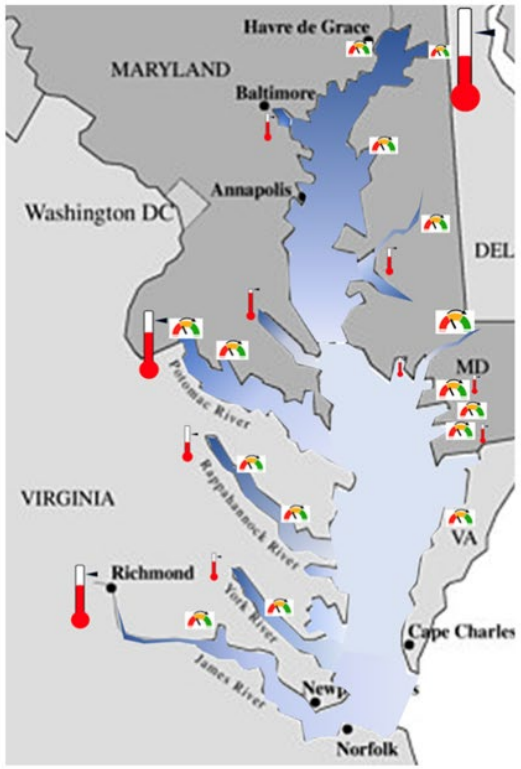
1. Conduct habitat suitability analysis
2. Assess living resource habitat improvement potential of various segment/habitat combinations (dials) (local conditions to response to stressors reductions)
3. Identify relative contribution of upstream and estuarine N, P and sediment on segment-habitat nutrient levels
4. Set interim N, P, and S targets based on 1-3 (policy decision).
5. A future WIP planning process that includes consideration of other factors that impact living resource habitat and that includes incentives to adapt to observable outcomes (stressor-response)

Tiered Implementation is an Opportunity to Link

1. Water quality management decisions

2. Potential improvements in tidal living resource responses





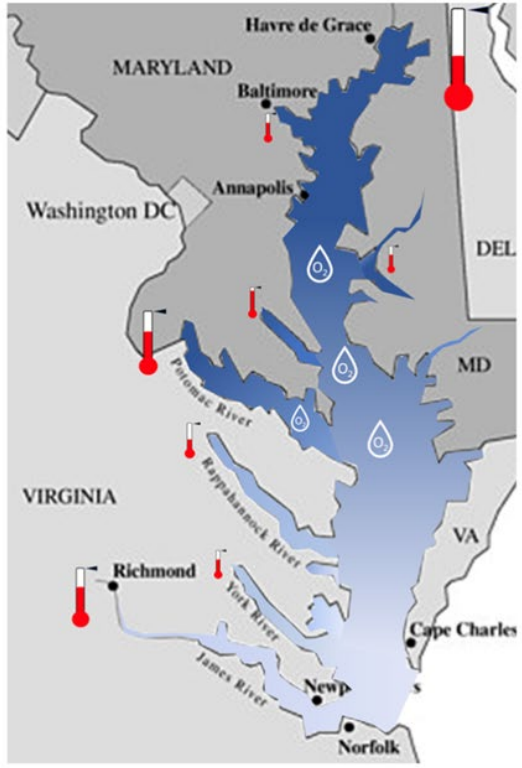
Panel A: Tiered Implementation of Bay TMDL

Identify areas where water quality (DO, water clarity) improvements can improve high priority living resource habitats

Identity influence of upstream N, P or sediment on local water quality

Final TMDL target
Interim target
Reductions achieved to date

Set interim nutrient & sediment targets to achieve water quality improvements in priority areas. Interim limits are also progress toward final targets (Panel B).



Panel A: Conventional Implementation of Bay TMDL

Identify areas that will be necessary for full attainment of water quality criteria (DO in deep water habitats in main channel)

Identify influence of upstream N, P or sediment on main channel deep water dissolved oxygen

Final TMDL target
Reductions achieved to date

Set nutrient & sediment targets that fully attain water quality standards.

Incorporating fish habitat information and tiered targeting tie in with the Revised Agreement

Tiered Approach Requires Different Approaches to Planning *and* Scientific/Technical Analysis

Big Picture View:

Habitat Suitability Analysis

- Fast track to complete a habitat suitability index (HSI) for the 92 tidal segments of the Chesapeake Bay
- This project is a priority of the CBP
- Analysis is a step to:
  1. Implement recommendations of the CESR report
  2. Identify target areas for tiered implementation/targeting
  3. First step to implementing the Fish Habitat Outcome under the revised Bay Agreement

Remember:

Outcomes need to have the most potential for CBP partnership implementation *and be feasible*

Ability to meet management objectives, resources required, data availability, achievable within timeline, reproducible to track changes over time, includes factors CBP can control

May 2025 Charette: Formed Teams and Workplan

Project Management

Bruce Vogt (NOAA), Kaylyn Gootman (EPA)

Teams

1) Management Relevancy Team (NOAA, EPA)

2) Analysis Team (VIMS, UMCES, NOAA, EPA)

Workplan

Gantt chart in upcoming slides

Objective

Determine the approach to target and track linked responses of living resources, structural habitat, and water quality while considering known constraints, including ability of approach to meet objectives at zero cost, and generate a workplan, including a timeline and who is contributing to this effort.

Data Sets

Water Quality Data

Initially from Fish Data

Then, VIMS model

(Later, Phase 7)

Habitat Data

Substrate

Tidal Wetlands

SAV

Bathymetry

Oysters

Shoreline

Others

Fish Data

Juvenile Striped Bass

Bay Anchovy

Croaker

MD fish data are ready

Delay in VA fish data

Project Support

Chespaeake Bay Program

- Members on the Project Oversight Committee

Scientific and Technical Advisory Committee (STAC)

- Members on the Project Analysis and Implementation Team and Prjoect Oversight Committee
- Members coordinate external review

Virginia Institute of Marine Science (VIMS)

- Project Analysis and Implementation Team
- Disseration Committee will review Colin's work

Chesapeake Research Consortium (CRC)

- Coordinate the merit review
- Help with communications
- Coordinate the hybrid meeting of the do-ers (October or November 2025)
- Technical editing of merit review
- Potential infographics support via Greenfin

Chesapeake Bay Program Data Center

- As needed consult

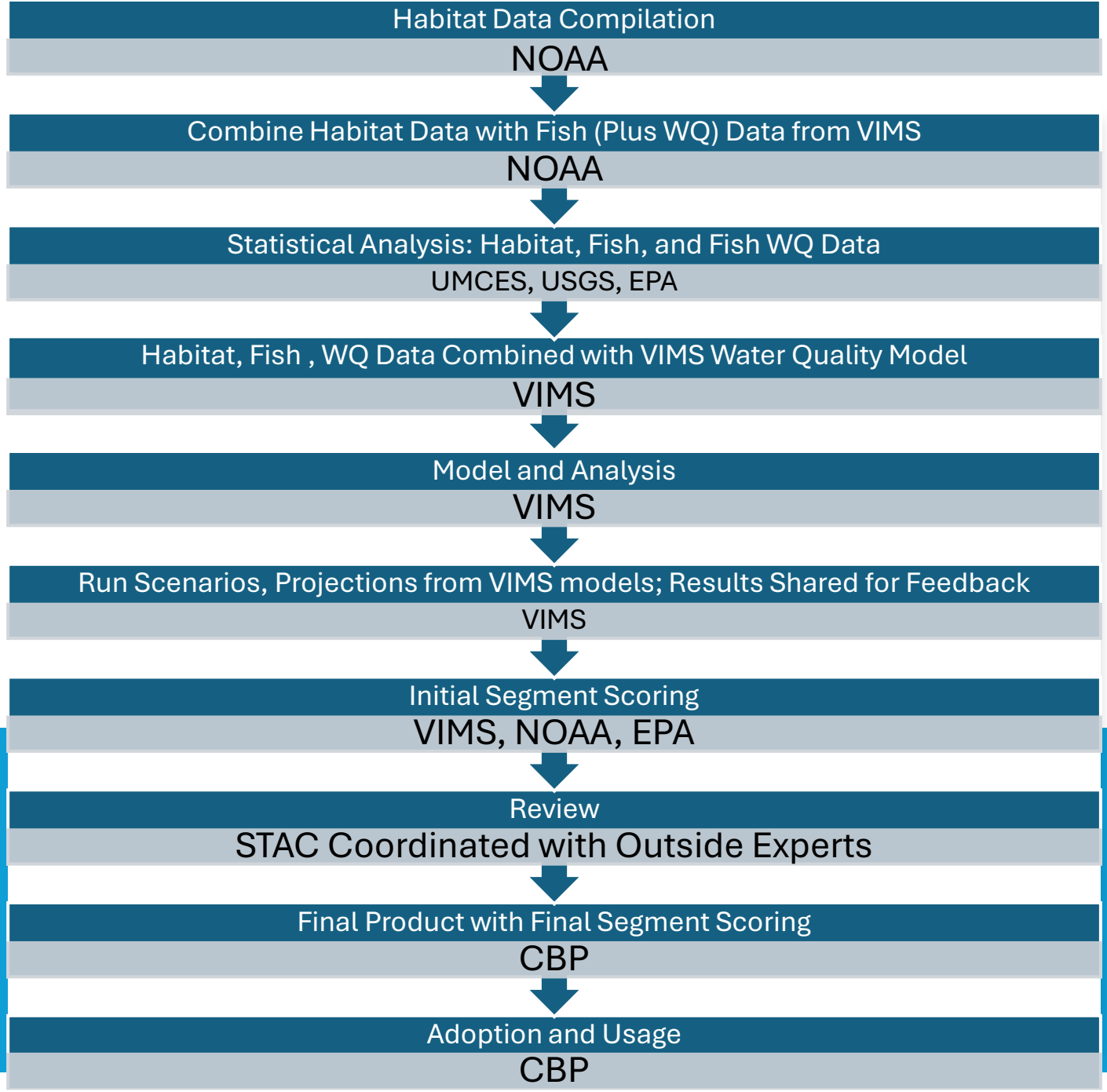
Chesapeake Bay Program Geospatial Analysis Team (GSAT)

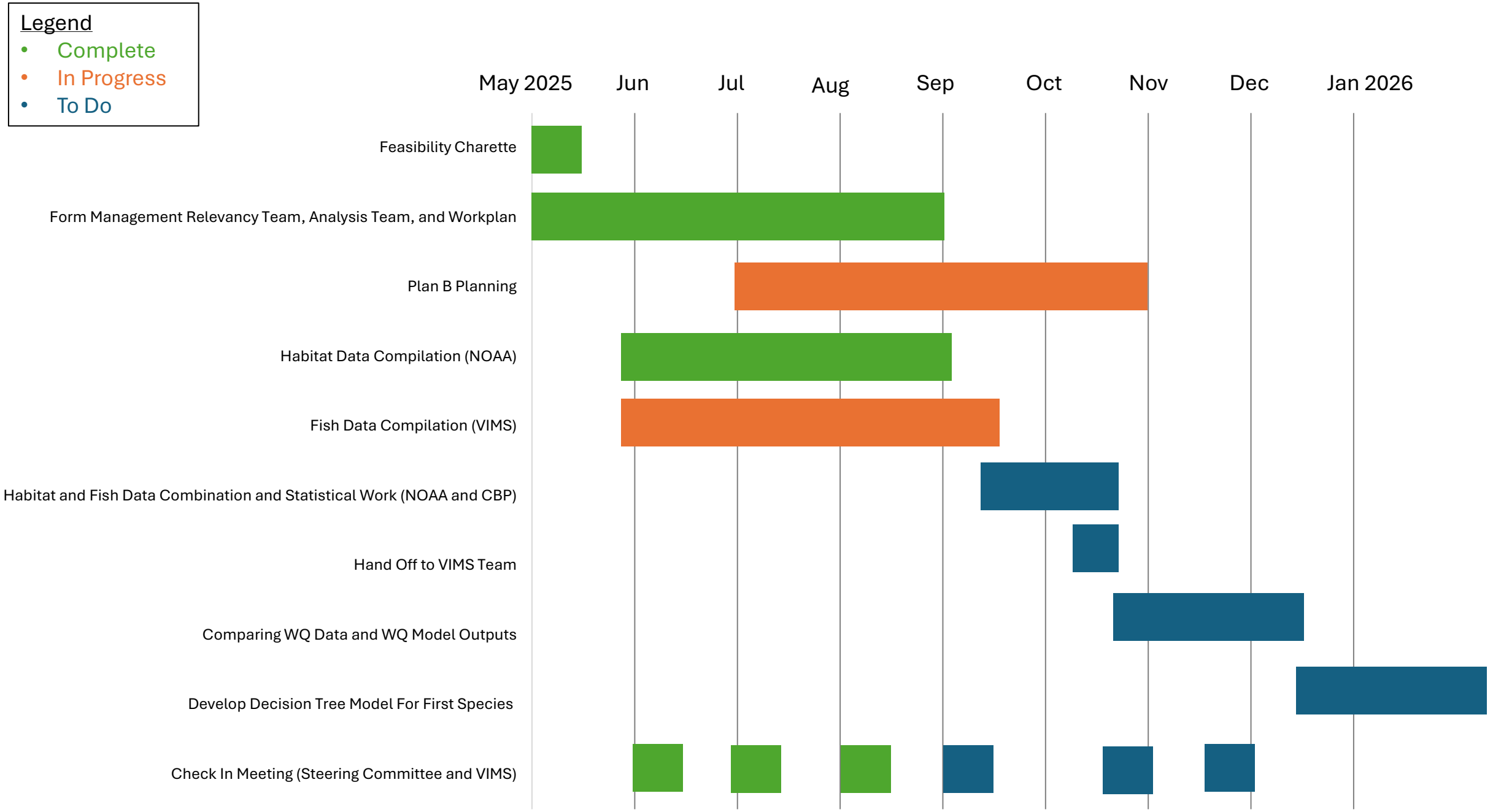
- Public facing viewer/tool
- Potential Plan B doers

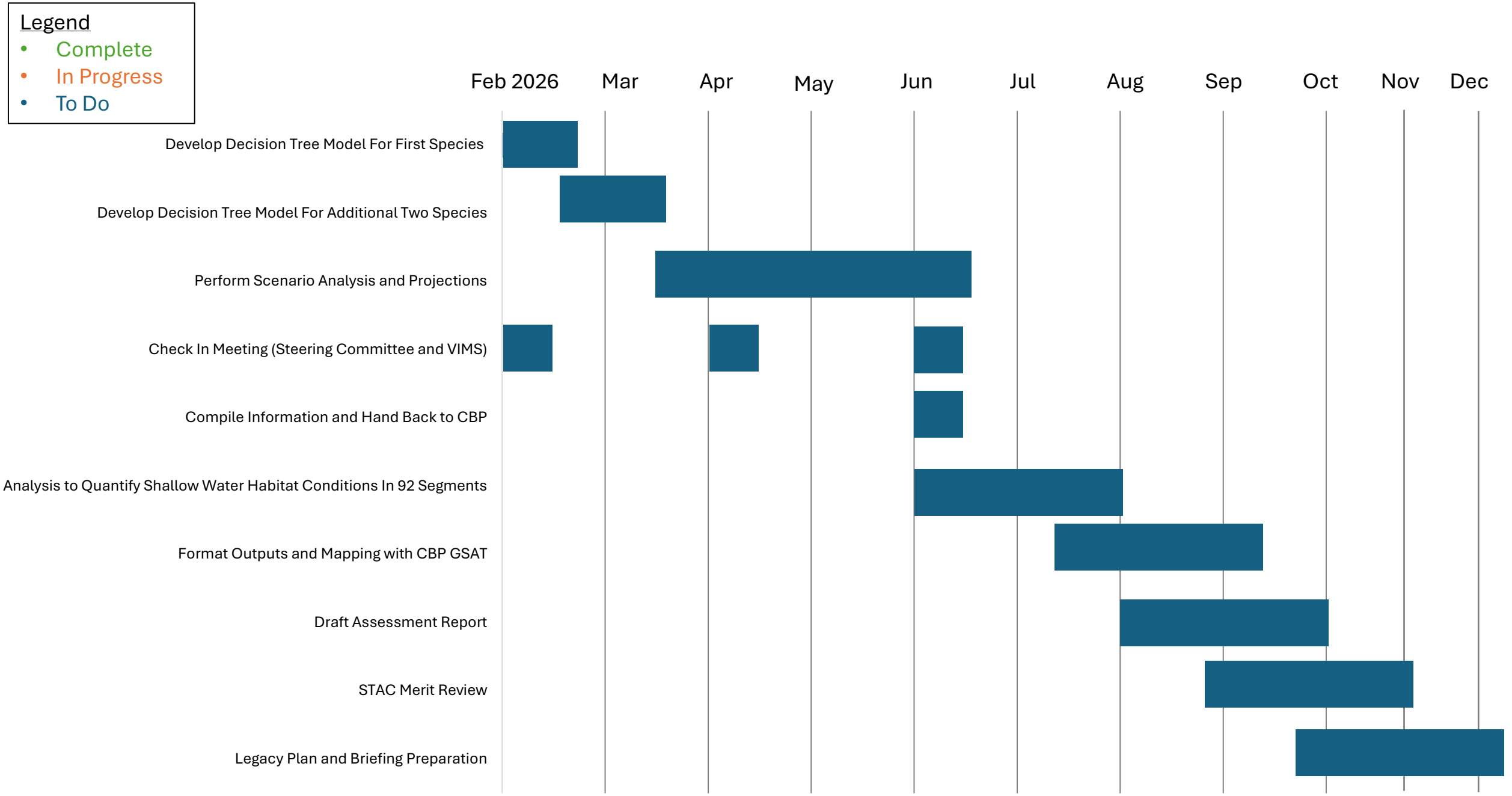
Chesapeake Bay Program Communications Team

- Develop communication pieces, webinars

Plan A Workflow




Legend
Complete
In Progress
To Do
May 2025
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan 2026
Feasibility Charette
Form Management Relevancy Team, Analysis Team, and Workplan
Plan B Planning
Habitat Data Compilation (NOAA)
Fish Data Compilation (VIMS)
Habitat and Fish Data Combination and Statistical Work (NOAA and CBP)
Hand Off to VIMS Team
Comparing WQ Data and WQ Model Outputs
Develop Decision Tree Model For First Species
Check In Meeting (Steering Committee and VIMS)


Legend
Complete
In Progress
To Do
Feb 2026
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Develop Decision Tree Model For First Species
Develop Decision Tree Model For Additional Two Species
Perform Scenario Analysis and Projections
Check In Meeting (Steering Committee and VIMS)
Compile Information and Hand Back to CBP
Analysis to Quantify Shallow Water Habitat Conditions In 92 Segments
Format Outputs and Mapping with CBP GSAT
Draft Assessment Report
STAC Merit Review
Legacy Plan and Briefing Preparation

Plan B

We are hopeful that this approach to score 92 tidal segments will work

- Uncertainty with it working with the fish data, as there will be many places with zeros/no data/no fish information

However, we must meet our objective

- Objective: places to target for tiered targeting

Potential Plan B

- Score individual habitat variables (e.g., SAV, DO, shoreline condition) and develop a composite score for each segment
- Derived from geospatial habitat and water quality data
- Provides a common, transparent, and scientifically-backed framework that allows all partners to work from a shared understanding of the Bay's health

Connection to SW Sentinel Site Program

With a Shallow Water Sentinel Site Program, the partnership can

- Dig into the functional ecology of different habitats
- Make sure they are functioning properly
- Identify opportunities for fixing it

Habitat suitability work can help identify

- Opportune/priority locations to move from “poor” to “good” condition
- Identify places the partnership has data gaps in tidal waters

SW Sentinel Site Opportunities

- Inventory existing temporal and spatial coverage of habitat and fish data by segment to id gaps
- Improve concomitant fish and habitat data collection
- Revisit previous recommendations to inform sampling locations and design (Fish stock monitoring and Fish Habitat Inventory)

*Table 6-3: Datasets acquired for the Choptank River system, with number of stations by Bay Segment, years, and types of data included. *Geospatial data for SAV, shoreline, and wetlands are available throughout the system, not for individual stations.*

Survey	Number of Stations by Bay Segment				Total	Years	Data Types									
	CHOMH1	CHOMH2	CHOOH	CHOTF			Fish	Water Quality	Habitat	Oyster	Crab	Benthos	SAV*	Clam	Shoreline*	Wetland*
MDDNR_FHEP_Trawl	266	0	0	0	*266*	2012-2015	x	x	x							
Oxford_TA_Trawl	200	0	0	0	*200*	2015-2017	x	x								
Oxford_TA_Seine	141	0	0	0	*141*	2015-2017	x	x								
MDDNR_FallOysSurvey	46	24	0	0	*70*	2010-2018		x		x						
CBL_UMCES_SeineCruises	4	22	23	0	*49*	2011-2013	x									
MDDNR_FHEP_Seine	45	0	0	0	*45*	2012-2015	x	x	x							
CBP_Benthic	12	20	8	0	*40*	2008-2013		x				x				
VERSAR_Oyster	32	0	0	0	*32*	2012	x	x	x	x	x					
CBL_UMCES_seine_vs_trawl	0	5	3	2	*10*	2006-2013	x	x								
ChesMMAP	7	0	0	0	*7*	2002-2013	x									
MDDNR_BC_Trawl	6	0	0	0	*6*	1989-2017	x	x			x					
MDDNR_SB_Seine	0	4	0	1	*5*	1999-2018	x	x	x				x			
CBP_WQ	1	1	1	0	*3*	2005-2019		x								
TIES_CHESFIMS_PAXFIMS	1	0	0	0	*1*	1995-2000	x									
Total	*761*	*76*	*35*	*3*	***875***		*11*	*11*	*4*	*2*	*2*	*1*	*1*	*0*	*0*	*0*

Potential End Product

- Visualization of habitat assessment for each of the 92 segments
- Inform targeting needs to
  - Implement tiered targeting
  - Prioritize areas for habitat restoration
- Repeated at future intervals with updated data