TETRA TECH

Protecting Chesapeake Bay SAV Given Changing Hydrologic Conditions: Priority SAV Area Identification and Solutions Development

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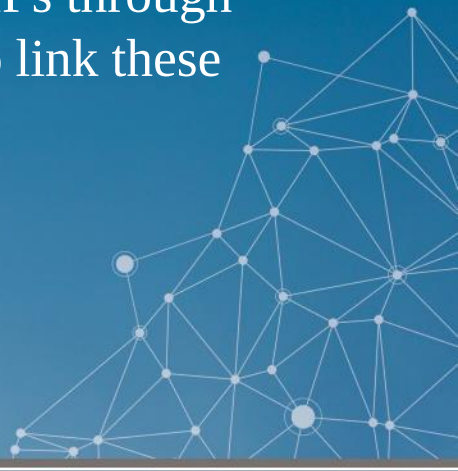
Goals

1. Utilizing an expanded set of criteria to evaluate and select high-priority SAV habitats

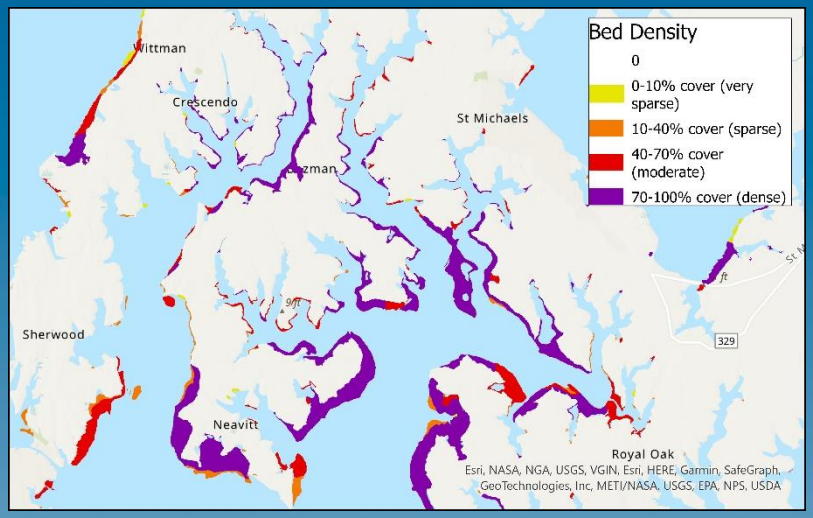
2. Data analyses to associate water quality, land use, possibly other environmental conditions, and existing best practice (BMP) effects to temporal and spatial responses of SAVs as a basis for recommending the most appropriate BMPs;

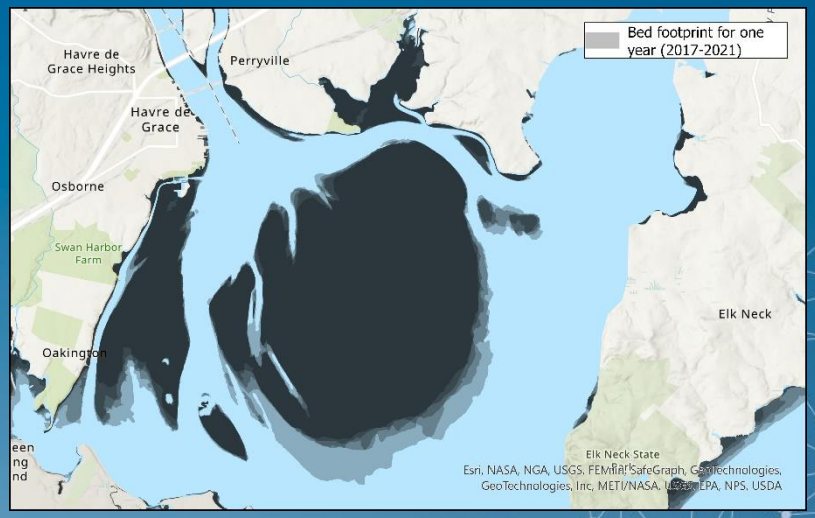
3. Assessment of the functioning and efficiency of various BMPs through both literature review and data analysis/modeling in order to link these to the conditions and needs of priority SAV areas.



Prioritization Criteria

Criteria	Data Source	Description
1. Bed Size and Density	VIMS	• Size calculated in GIS • Density is VIMS attribute
2. Bed Maturity	VIMS	• Use sequential years of VIMS to see overlapping footprint of beds over time (5, 10, 15, 20-years)





Prioritization Criteria

Criteria	Data Source	Description
3. Species Richness and Diversity	VIMS	• 14 VIMS segments have species observations in 2021 • 5.7 unique species on average • 11 unique species is most among all segments
4. Sensitive/Rare Species	VIMS	• Choose from the 17 Unique species in the 2021 VIMS data by segment

Unique Species

- Ceratophyllum demersum
- Egeria densa
- Elodea canadensis
- Heteranthera dubia
- Hydrilla verticillata
- Myriophyllum spicatum
- Najas
- Najas guadalupensis
- Najas minor
- Potamogeton crispus
- Potamogeton perfoliatus
- Potamogeton pusillus
- Ruppia maritima
- Stuckenia pectinata
- Vallisneria americana
- Zannichellia palustris
- Zostera marina

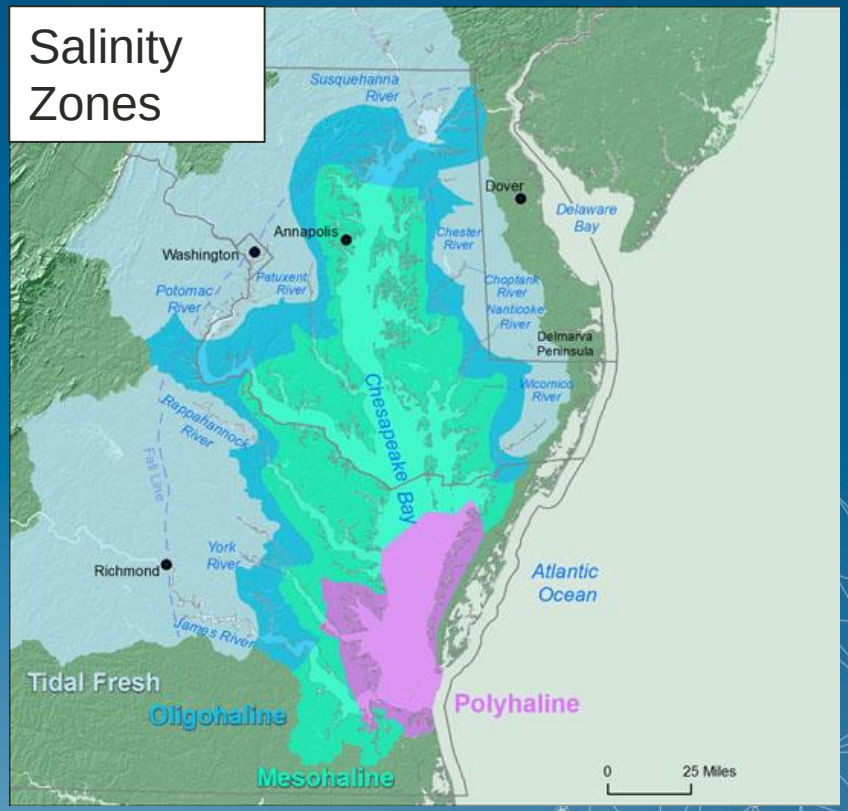
Prioritization Criteria

Criteria	Data Source	Description
5. Habitat Value	Maryland DRN; Many others	• Spot Weakfish Croaker Juvenile Habitat • Yellow Perch Spawning Habitat • White Perch Juvenile Habitat • White Perch Spawning Habitat • Herring Juvenile Habitat • Herring Spawning Habitat • Fishing Grounds • Sea Scallop Relative Abundance • Blue crabs Etc....



Prioritization Criteria

Criteria	Data Source	Description
6. Distribution	VIMS	• 4 Salinity Zones • 4 Geographic Zones
7. Representativeness	Chesapeake Bay Watershed Model Phase 6 Map Viewer	• Regional Conservation Opportunity Areas • Index of Ecological Integrity (https://gis.chesapeakebay.net/mpa/scenarioviewer/)



Bed Prioritization- Decision Tree

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Criteria (Weight)	Index Score
Bed size (10%)	Bed size >= 5 acres: 1.0 Bed size < 5 acres: 0.5
Bed density (15%)	Bed density 70-100%: 1.0 Bed density 40-70%: 0.75 Bed density 10-40%: 0.5 Bed density 0-10%: 0.25
Species richness/ diversity (15%)	# species in bed >5: 1.0 # species in bed 1-5: 0.5 # species in bed = 0 (no observations): 0
Maturity (15%)	Bed maturity >10 years: 1.0 Bed maturity 5-10 years: 0.75 Bed maturity <= 5 years: 0.25
Habitat value (15%)	Bed overlaps with spawning or habitat: 1.0 Bed does not overlay with spawning or habitat: 0.0
Sensitive/rare species (15%)	Bed contains >4 select species: 1.0 Bed contains 1-3 select species: 0.5 Bed contains 0 select species: 0.0
Representativeness (15%)	Bed overlaps conservation opportunity area or ecological integrity area: 1.0 Bed does not overlap: 0.0

If the sum of all criteria weight * Index score > 0.8 then…

Preliminary Bed

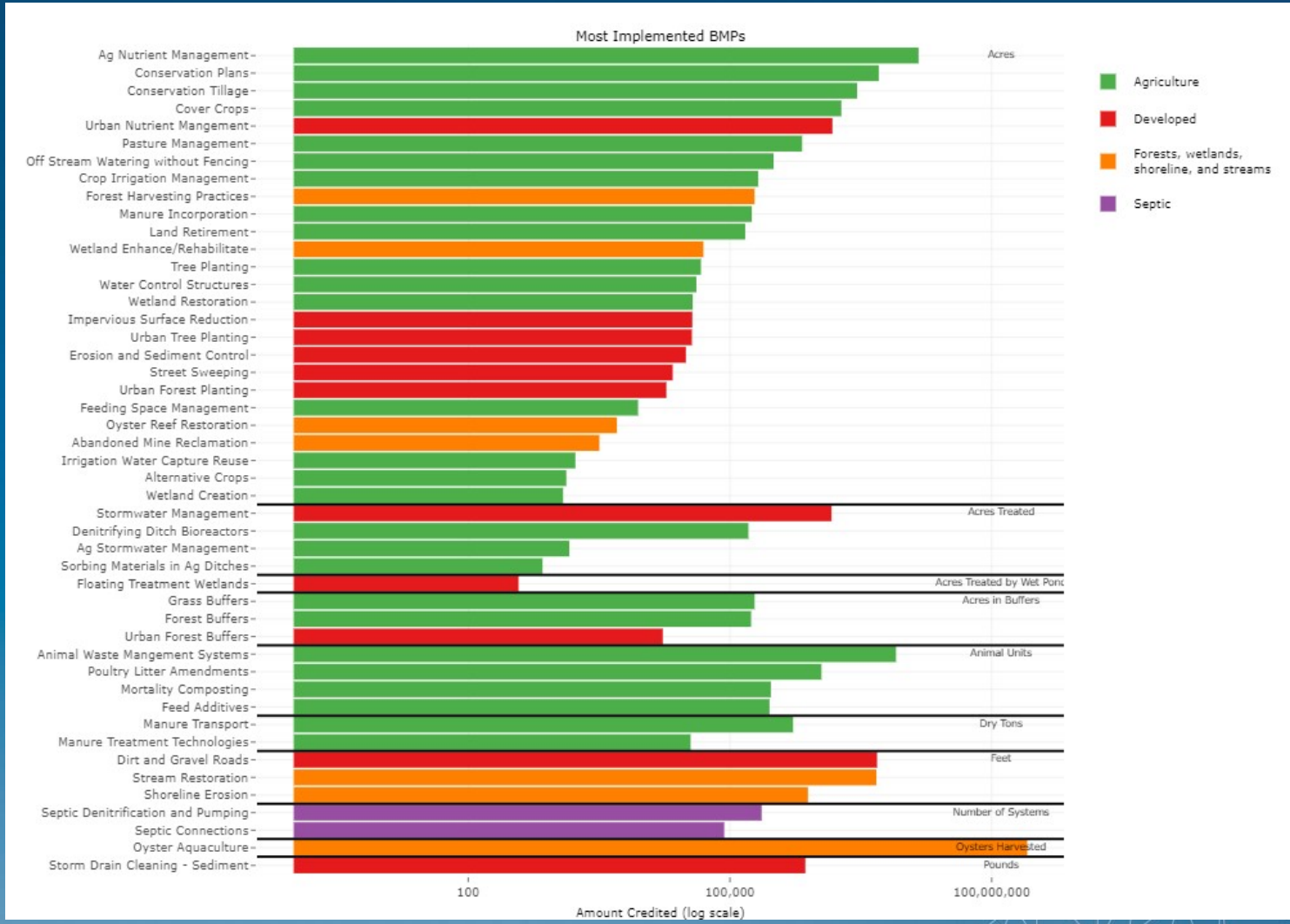
Distribution Consider Salinity and Geographic Zones of preliminary beds to make final selection

PRIORITY BED

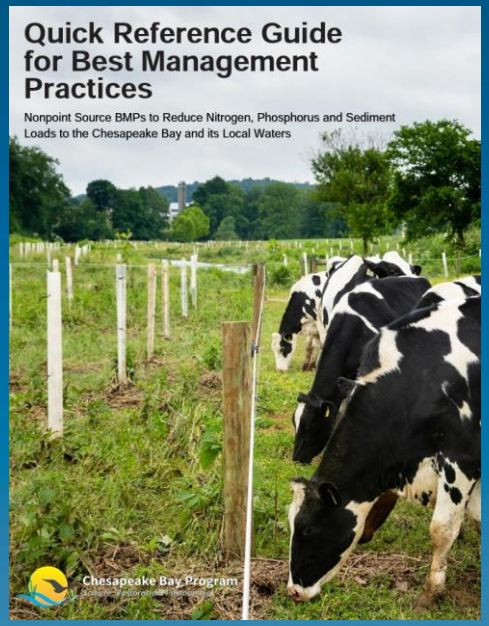
Priority Beds → BMP Effectiveness

BMPs

BMPs implemented in the Chesapeake Bay Watershed (https://cast.chesapeakebay.net/Documentation/wipbmpcharts)

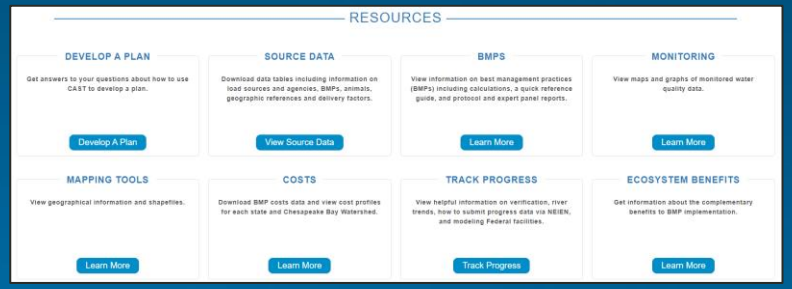


BMP data sources



https://cast.chesapeakebay.net/Documentation/BMPs

https://bit.ly/BMP-CC-synth



https://cast.chesapeakebay.net/

Questions