2021 Coastal Habitat Protection Plan:
Priority Habitat Issue – Protecting SAV with a Focus on Water Quality

DEPARTMENT OF ENVIRONMENTAL QUALITY

Trish Murphey | CHPP Steering Committee | May 11, 2020
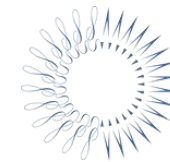
Clean Waters and SAV: Making the Connection

A technical workshop to develop water quality strategies to protect and restore submerged aquatic vegetation

March 4, 2020
NC Museum of Natural Sciences, Raleigh

Submerged Aquatic Vegetation
Habitat Protection and Restoration

- Issue
- Origination
- Background
- Authority
- Discussion
- Proposed Implementation Actions

Photo credit: Martha's Vineyard Gazette

Submerged Aquatic Vegetation (SAV) habitat is critical for:

- healthy fisheries

- valuable ecosystem benefits

Water quality and clarity

- most significant factor limiting SAV survival and expansion.

- Data indicate that water quality is having an adverse impact on SAV

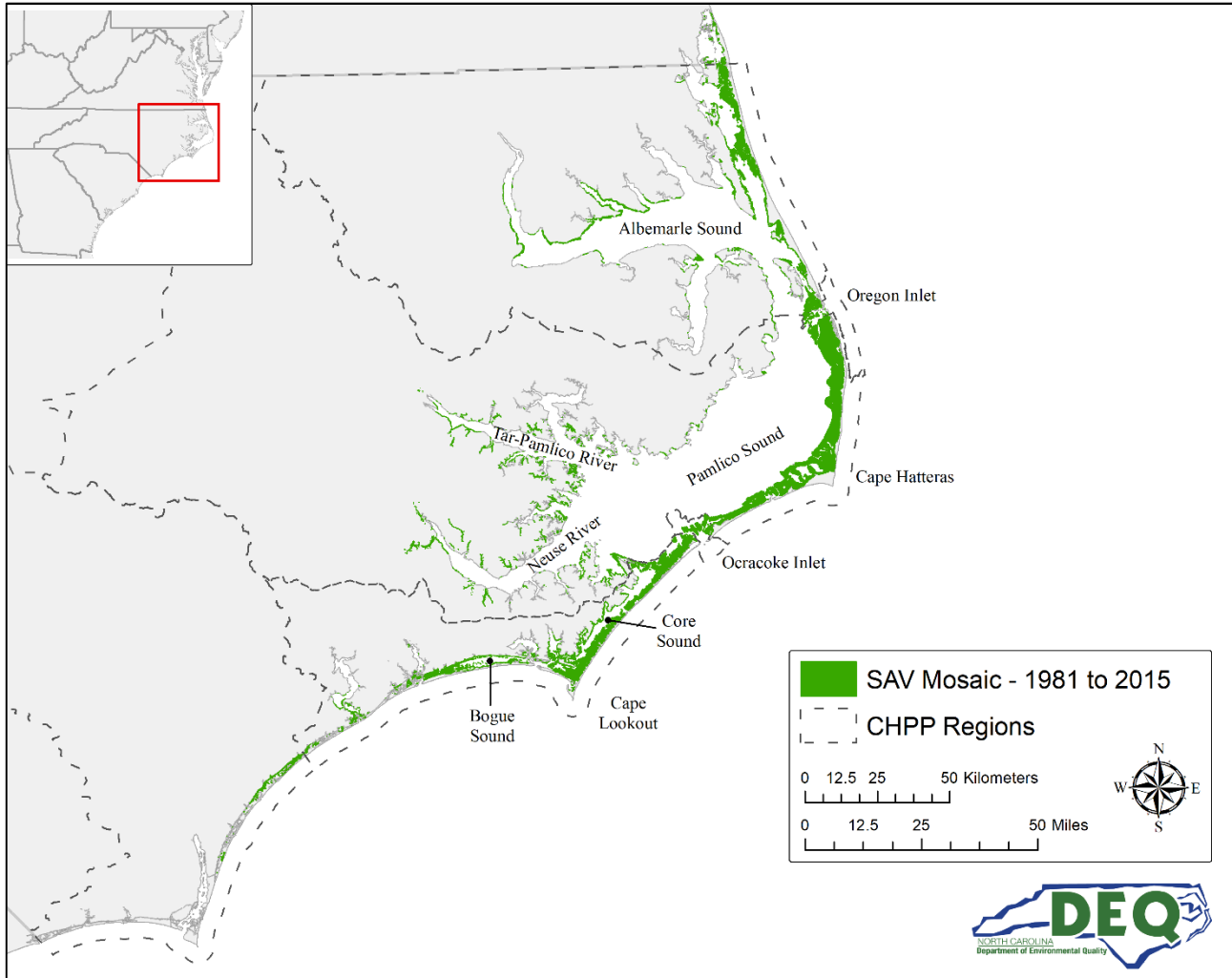**SAV the perfect indicator** of water quality and other issues within the estuarine system

Photo credit: APNEP

Submerged Aquatic Vegetation
Background


- Biodiverse SAV resource
- Second largest on the Atlantic coast
- Two SAV Ecosystems:
  - Low Salinity - Freshwater to low salinity (<10 ppt)
  - High Salinity - Moderate to high salinity (>10 ppt)
- Eel grass is a temperate species at the southern limit
- Shoal grass is a tropical species that reaches its northernmost extent in the state.
- Widgeon grass grows best in moderate salinity

APNEP Indicator Report: Extent of Submerged Aquatic Vegetation, High-Salinity Estuarine Waters

SAV Monitoring & Assessment Team

NORTH ZONE   - 5.9%

CENTRAL ZONE   - 2.67%

SOUTH ZONE   - 10.38%
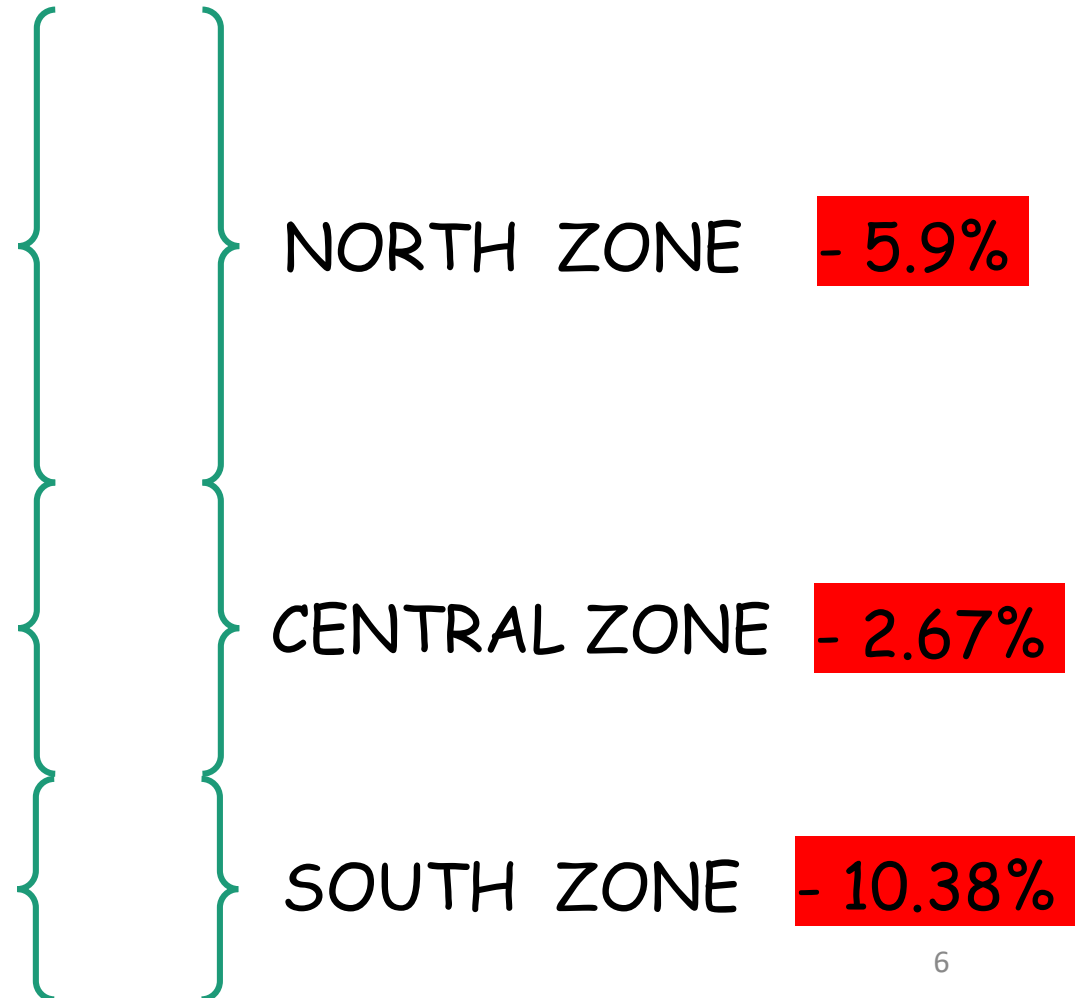
Submerged Aquatic Vegetation
Background

## Change in Linear Extent of SAV in Low Salinity

Estuary	Historical SAV LE (m)	2014-2017 SAV LE (m)	No Change in SAV LE from Historical (m)	Change in SAV LE (GAIN?)	Change in SAV LE (LOSS ?)	% change in SAV LE (LOSS?)
Albemarle Sound	117,778	90,565	56,457	+34,108	-61,321	-52.06
Pamlico River	29,223	6,036	756	+5,280	-28,467	-97.41
Neuse River	10,512	9,519	2,827	+6,692	-7,685	-73.11
TOTAL	**157,513**	**106,120**	**60,040**	**+46,080**	**-97,473**	**-61.88**

Water Quality Impacts
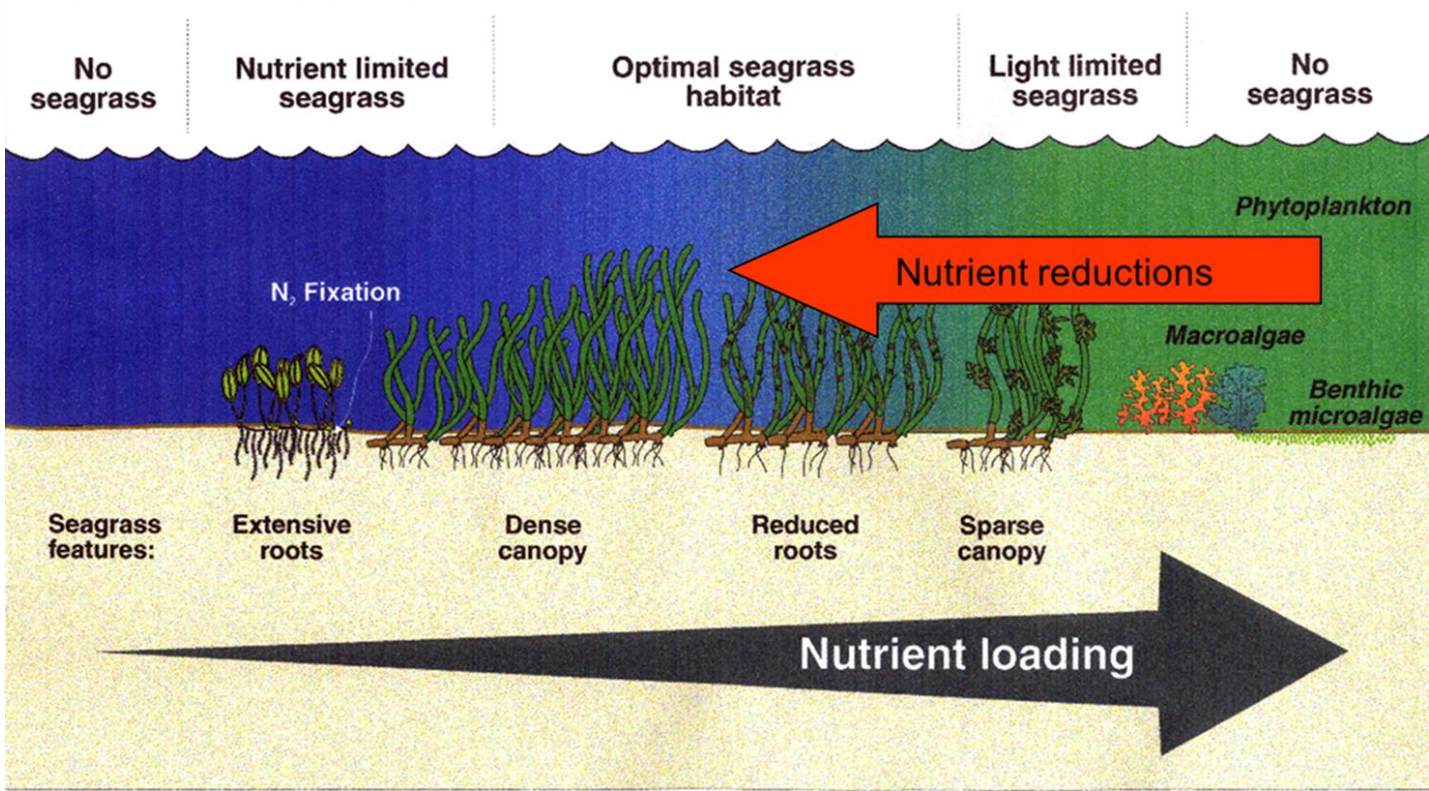
- Historical SAV Extent

- Water Clarity Criteria
  - Minimal Light requirements
    - High Salinity – 20% light availability
    - Low Salinity – 13% light availability

- Collaboration
  - Scientists
  - Managers
  - Public

Photo credit: Rich Batiuk

Photo credit: Tampa Bay Estuary Program

- Based on acreage in the 1950s
- Light requirements for SAV
- Nutrient Management
  - Chlorophyll-a targets
  - Nitrogen loading targets
- Public-Private Partnership
  - Local Governments
  - Regulators
  - Industry

Submerged Aquatic Vegetation
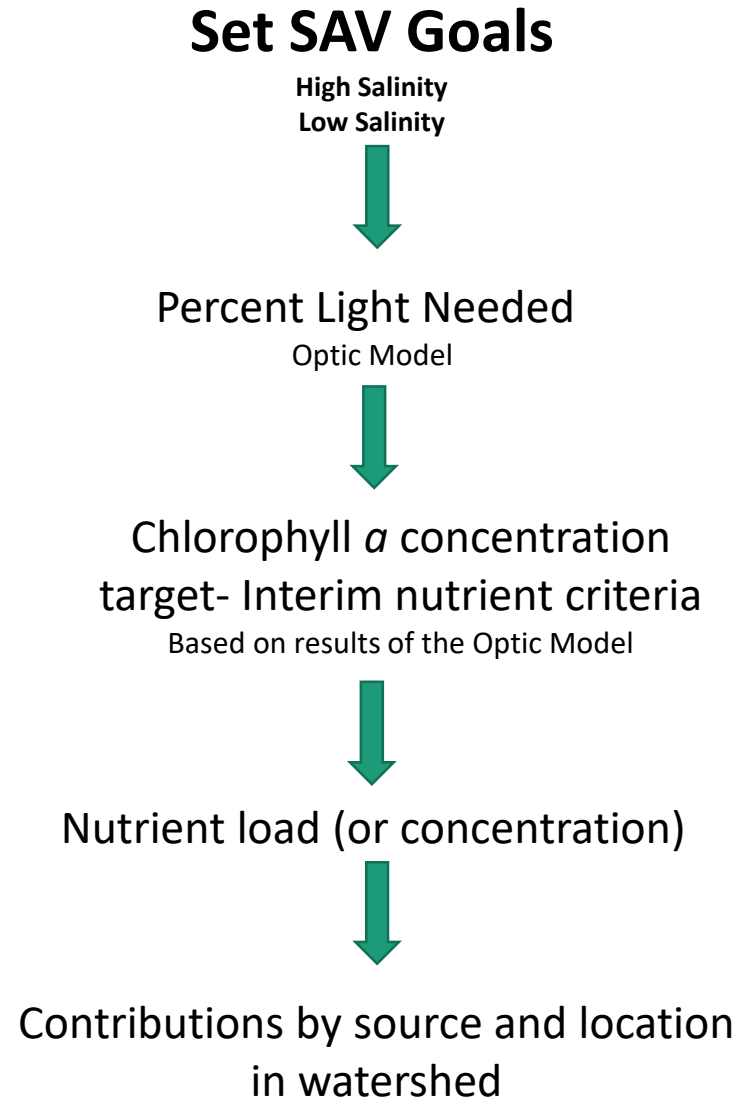### Albemarle Sound and Chowan River

Photo credit: NC DEQ

- Increased Algal Blooms

- Health Advisories

- Nutrient Strategies
  - Algal Blooms
  - Fish Kills

- Nutrient Criteria Development Plan

- Endpoints

Set SAV Goals

High Salinity
Low Salinity

↓

Percent Light Needed

Optic Model

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Chlorophyll *a* concentration

target- Interim nutrient criteria

Based on results of the Optic Model

↓

Nutrient load (or concentration)

↓

Contributions by source and location
in watershed

- Climate Change

- Pathogens

- Physical Disturbance
  - Bottom disturbance
  - Aquaculture
  - Docks and Piers

- Chemical Control

Photo credit: FL FWCC.

Photo credit: APNEP

Authority – lists who and what authority the issue can be addressed through NC General Statues and NCAC Rules

Discussion – how to address the issues? Provides a discussion of pros and cons of potential management options

Proposed Implementation Actions – list of potential actions for ways to resolve the issue

Questions?

Trish.Murphey@ncdenr.gov