Underwater Grasses: Chesapeake Bay’s Underappreciated Habitat

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VIMS
What Are Underwater Grasses?

• **Rooted, vascular plants**
  - “SAV” or “Seagrasses”
  - does not include marsh grasses or algae

• **Completely submerged**

• **Flowers and seeds**

• **17 common species (26 total) in Chesapeake Bay**

• **Grow in shallow, tidal waters, usually <2 meters deep, in fresh and salt water**
Another great moment in evolution
Underwater Grasses Evolution

Phytoplankton

Growth algae

Brown algae

Red algae

Hard substrate

Land plants

Mangroves

Seagrasses

Silurian

Evolution of land plants

Cretaceous

Evolution of marine angiosperms

Precambrian

First plant life

Evolutionary time
Flowering and pollination

Freshwater SAV surface pollinate

Note surface pollen

Saltwater seagrasses pollinate underwater
Chesapeake Bay Underwater Grass Communities

- FRESHWATER
- POTAMOGETON
- RUPPIA
- ZOSTERA
Seagrass Meadow in York River
Eelgrass (*Zostera marina*)
Widgeon Grass (*Ruppia maritima*)
Wild Celery (*Vallisneria americana*)
“Freshwater Eelgrass”
Redhead Grass (*Potamogeton perfoliatus*)
Potomac River *Hydrilla*
What do seagrasses do?

As underwater grasses naturally die-off, their decomposing matter helps form a critical food chain in bay sediment.
Seagrass Important in Life Cycle of Many Bay Species
Juvenile Crab Density

Declining blue crab population and seagrass abundance

- Juvenile crab density in areas with underwater grasses: 30 crabs per sq meter
- Juvenile crab density in areas without underwater grasses: 1 crab per sq meter
Decline of Seagrasses

Chesapeake Bay has only 12% of historical acreage of seagrasses.
Changing seagrass distribution in the Chesapeake Bay over the past 60 years.
Nitrogen & Phosphorus → Suspended Solids → Algae → Available Light → Aquatic Ecosystem

- Wave Energy
- Seed Source
- Grazers
- Sediment Quality
Controlling inputs of sediments and nutrients will be a long-term process.
Direct Removal by Dredging
Propeller scars

Ocean City, Maryland
Clam Dredging Increases Local Turbidity
Hydraulic clam dredging scars
Cownose Ray Foraging