

Shallow-water boaters, and fishermen using SAV impacting gears, can willingly avoid SAV beds. Responsible boaters and fishermen should educate themselves about those locations. Local towns often have maps or charts depicting SAV locations. Also, they can inform others about the benefits of SAV, the vital role it plays in the productivity of fisheries and wildlife, and how they too can reduce negative impacts.

For further information about marine SAV and fisheries productivity contact:

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# Submerged Aquatic Vegetation

## Essential Fish Habitat

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## What is SAV?

The term Submerged Aquatic Vegetation (SAV) describes vascular plants that grow in fresh, brackish, or marine waters. These plants are rooted in the bottom and almost all of their structure is submerged. In Massachusetts there are only two marine species, eelgrass (*Zostera marina*) and widgeon grass (*Ruppia maritima*).

Eelgrass is found in the more shallow saline protected waters of our coastline. Widgeon grass is found in calmer, more brackish waters. Most of the information in this brochure relates to the more common eelgrass.

## The Role of SAV in Fisheries Productivity

SAV plays a vital functional role in the life histories of many commercially and recreationally important finfish and shellfish by providing food and shelter for them and their prey. SAV also plays a significant role in oxygen and nutrient cycling in the water column, and for physical stabilization of the substrate. Some local species whose biological needs are related to eelgrass are striped bass, bluefish, black sea bass, tautog, cod, bay scallops, quahogs, blue crab, and lobster. SAV abundance has also been closely associated with the abundance of some wildlife species, such as the Atlantic brant, whose numbers dropped dramatically in the 1930's when eelgrass beds suffered coast-wide declines.

## The Biology of SAV

Eelgrass has several important biological features that make it susceptible to human impacts.

To thrive, eelgrass requires at least 20% of available light reaching the

water surface. Reductions in water clarity from sediment suspension or increased algae growth can impair plant photosynthesis and vigor. Shading from structures can have similar effects.

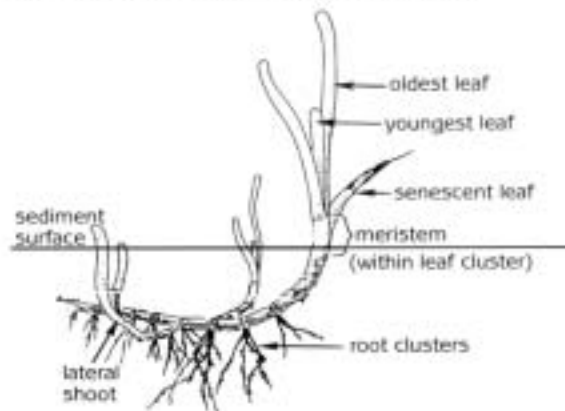


Illustration by Mary S. Fonseca, Ph.D., NOAA

Reproduction of eelgrass plants not associated with seed dispersal, i.e. new plants coming from root stock, is locally very important. The growing tips, or *meristems*, located on the roots and stems are the areas of active vegetative growth. Root meristems are somewhat resistant to physical damage because they are protected from impacts that do not reach below the sediment surface. Conversely, stem meristems, plant leaves, and flowering structures, are easily damaged from disturbances in the water column. Loss of flowers leads to a decline in the seed base for sexual reproduction. While water column impacts may not be problematic if they occur at the end of the growing season, chronic impacts during that season may act in concert with other stressors to weaken or destroy plants.

## Man's Impact on SAV

Massachusetts is currently losing its valuable eelgrass resources. The decline is largely attributed to the deterioration in water quality from nutrient loaded groundwater or polluted rain runoff.

These inputs to coastal waters trigger blooms of nuisance algae species that out-compete eelgrass and lead to a decrease in available light. Other water quality issues thought to contribute to eelgrass declines are herbicide runoff from agriculture and home turf care.

Additional losses of SAV may occur from dredging for creation or maintenance of navigation channels and mooring areas.

Shallow water operation of motor boats and jet skis has also been implicated in eelgrass destruction. Prop-shearing of leaves, flowering structures, and growing tips; wake erosion of eelgrass bed edges and increased turbidity from resuspension of soft sediments can all occur from inappropriate boating practices.

Towed fishing gears, such as shellfish dredges and otter trawls, have been documented to cause leaf and flower shearing and root damage to eelgrass plants. Vessel anchors and mooring chains can similarly contribute to eelgrass plant destruction. Fixed fishing gear, such as lobster pots, can cause plant loss over time if repeatedly set in the same spot.

While hand gears, like shellfish rakes or tongs, can cause some of the same types of damage as heavier gears, the extent of impacts is not likely to be as significant due to the scales of operation.

## Boaters and Fishermen Can Protect SAV

Clearly, fishermen are some of the first users of the marine environment to suffer when eelgrass resources decline, because eelgrass loss negatively affects the fisheries resources dependent on it. However, fishermen and boaters can positively influence the health of those same resources.