

## **Section 300.18 Submerged Aquatic Vegetation and Aquatic Habitats of Particular Concern**

### **A. Definitions**

1. Submerged Aquatic Vegetation (SAV) refers to rooted, vascular, flowering plants that, except for some flowering structures, live and grow below the water surface in coastal and estuarine waters in large meadows or small disjunct beds. SAV species of concern to CRMC for regulatory purposes include eelgrass (*Zostera marina*) and widgeon grass (*Ruppia maritima*).

2. Eelgrass, is a marine vascular plant, capable of both vegetative and sexual growth. Eelgrass can occur in salinity ranges averaging 10 to 30 parts per thousand and depths of less than one meter to 8 meters at MLW, depending on water clarity.

3. Widgeon grass, is a rooted, submerged aquatic plant which is capable of both vegetative and sexual growth. Widgeon grass exists in saline and brackish waters, rarely tidal fresh waters, salt ponds and pools within salt marshes, inland saline waters and rarely fresh waters.

4. SAV habitat is the sediment and water column, and the physical, chemical and biological processes that are necessary to support SAV. SAV habitat occurs in continuously vegetated beds and in intermittent vegetated beds, including unvegetated areas between vegetated beds.

5. SAV benefits are defined to include, but are not limited to, the following: SAV provide support for large numbers of organisms, both plant and animal, and produce large quantities of organic material, which is important as a base to an active food cycle; the root structures bind sediments while the leaves baffle waves and currents, thereby trapping water column-borne material and retarding the resuspension of fine particles while enhancing sediment stability; nutrient uptake occurs through both the leaves and the root system as well as by associated algae; SAV roots and leaves provide varied food resources and physical support for large numbers of fauna; SAV also provides nursery habitat for finfish and shellfish.

6. Adverse impacts to SAV and SAV habitat include mechanical, chemical and physical damage of SAV, that may result from boat propellers, dredging and filling, bottom-disturbing fish harvesting techniques (i.e., scallop dredging, clam dredging and toothed rakes), and shading/light attenuation to levels greater than 75% light levels at the surface of the water caused by physical structures over beds (e.g. docks, piers) and /or excess nutrients, particularly nitrogen, causing excess algal bloom levels and high turbidity.

### **B. Findings**

1. Eelgrass roots and rhizomes inhabit sediments ranging from soft mud to coarse sand and exist in an aquatic environment subject to wave and tidal action and shifting sediment. Eelgrass ranges in size from individual plants, (<one square yard) to many acres. Eelgrass has thin, green strap-like leaves ranging from six inches to over a yard long. There is an annual and perennial form of eelgrass. The annual form grows from seed in June and July and the plants are not connected by rhizome. The peak biomass period for eelgrass in Narragansett Bay is between July and August and the period of rapid vegetative growth occurs in late June. The peak biomass in the salt ponds on the south shore occurs during July.

2. Widgeon grass flowers during the summer and the fruiting period is from July to October. Widgeon grass can be found growing on soft, muddy sediments and sandy substrates.

3. Historically, SAV existed in Narragansett Bay in shallow water embayments and areas that were poorly flushed by tidal currents. Review of historical information has shown that eelgrass beds were once widespread in Narragansett Bay, and that as late as the 1860s, extensive eelgrass beds were present even in the Providence River at the head of the bay. The eelgrass decline during the 1930s has been attributed to the advent of a disease (“wasting disease”), which caused a 90% destruction of all eelgrass beds in the Atlantic range. Healthy populations were generally re-established by the 1960s.

4. Today, eelgrass beds cover less than 100 of the 96,000 acres that comprise Narragansett Bay. Scientific evidence suggests that the most important factor contributing to the continuing

decline of eelgrass has most likely been the introduction of increasing amounts of anthropogenic nitrogen to Narragansett Bay particularly since the 1950s, as the year-round population near the water substantially increased both around Narragansett Bay and in the Salt Pond Region. In the salt ponds, nitrate-nitrogen loading from septic systems has contributed to a 41% decline in eelgrass beds over a 32 year period. Historical trends of widgeon grass in Rhode Island waters have not been studied comprehensively in Narragansett Bay, on the south shore, or other coastal embayments.

5. Many species of fish and wildlife are directly dependent upon SAV for refuge, attachment, spawning, and food. SAV provide a source of attachment and/or protection for the bay scallop (Argopectin irradians) and hard clam (Mercenaria mercenaria). Tautog (Tautoga onitis) and other fish lay their eggs on the surface of eelgrass leaves, and juvenile and larval stage starfish, snails, mussels, and other creatures attach themselves to eelgrass leaves. Scientific evidence also indicates that blue crabs (Callinectes sapidus) and lobster (Homarus americanus) have a strong reliance on SAV. Studies in New England have documented the occurrence of 40 species of fishes and 9 species of invertebrates in eelgrass beds.

6. Water quality and, in particular light intensity reaching the leaves is considered the most critical factor in the maintenance of healthy SAV habitats. Light availability controls the depth of SAV because SAV is dependent on photosynthesis. SAV generally require light intensities of 15-25% of the surface light. Factors that can act to reduce light levels include shading due to physical structures such as floating docks and water column clarity due to the excess of suspended solids, and nutrient enriched phytoplankton growth.

7. Many activities under the Council's jurisdiction have the potential to adversely impact SAV and its habitat. These activities include but are not limited to Residential, Commercial, Industrial, and Public Recreational Structures (Section 300.3), Recreational Boating Facilities (Section 300.4), Sewage Treatment and Stormwater (Section 300.6), Dredging and Dredged Materials Disposal (Section 300.9), Filling in Tidal Waters (Section 300.10), Aquaculture (Section 300.11), and activities

undertaken in accordance with municipal harbor regulations (Section 300.15).

8. Fishery harvesting techniques can adversely impact eelgrass beds. Scallop dredging can significantly reduce biomass and surface area as well as shoot density of eelgrass. Toothed rakes used for shellfishing can uproot eelgrass. Boat propellers and prop scarring of the marine bottom can destroy SAV by slicing and uprooting shoots. Aquaculture operations which utilize floating racks and bottom culture techniques can shade SAV. Turbulence, wave generation and propeller scouring by boats mooring alongside a dock may cause the permanent loss of SAV.

9. Research in Waquoit Bay, Massachusetts indicates that the height of a dock over the marine bottom is clearly the most important variable for predicting the relative light reaching eelgrass and for predicting eelgrass bed quality under docks. Docks with a north-south orientation admit more light and can better support eelgrass. Docks and their associated floats and boats placed over eelgrass beds can cause severe local impacts to eelgrass. Population-level impacts occur through shading from docks as well as boats, and prop dredging by boat motors, leading to the elimination of eelgrass under and around many docks. Research at Waquoit Bay indicated that impacts under floating docks generally resulted in complete loss of eelgrass. Research indicates that 30% is a desirable minimum light level for support of eelgrass under docks (Short et al 1995). Based on the model developed by Burdick and Short (1995) to achieve a 30% minimum light level, dock widths need to be a maximum of 1 m (3.281 feet) wide and 3.0 meters (9.843 feet) high above the marine bottom.

10. Several recent national and regional efforts support the need for protection and management of Rhode Island SAV resources. The Atlantic States Marine Fisheries Commission (ASMFC) developed a submerged aquatic vegetation policy in 1997 to communicate the need for conservation of coastal SAV resources for the protection of ASMFC managed species, and to highlight state and ASMFC coastal SAV conservation and enhancement efforts. The National Marine Fisheries Service and the New England Fishery Management Council are currently designating essential fish habitat (EFH)

under the requirements of the 1996 Magnuson-Stevens Fishery Conservation and Management Act. NMFS review of permits will incorporate conservation and enhancement measures to protect EFH and other federal agencies will be required to document the presence and impacts to EFH for activities under their jurisdiction. Because of its fisheries habitat value, SAV will be a major habitat protected under the EFH provisions of the Magnuson-Stevens Act.

### **C. Policies**

1. The Council's goal is to preserve, protect and where possible, restore SAV habitat.
2. Activities under CRMC jurisdiction, including Residential, Commercial, Industrial, and Public Recreational Structures (Section 300.3), Recreational Boating Facilities (Section 300.4), Sewage Treatment and Stormwater (Section 300.6), Dredging and Dredged Materials Disposal (Section 300.9), Filling in Tidal Waters (Section 300.10), Aquaculture (Section 300.11), and activities undertaken in accordance with municipal harbor regulations (Section 300.15), should avoid and minimize impacts to SAV habitat.
3. The Council supports cooperative efforts to determine the current status and identify trends in the health and abundance of SAV species in Rhode Island.
4. The Council shall assess the potential impacts to SAV and its habitat from proposed activities on a case-by-case basis. Such impacts may include, but shall not be limited to the introduction of excess nutrients, sedimentation, shading, and/or disruption of SAV and SAV habitats.
5. All impacts to SAV and SAV habitat shall be avoided where possible and minimized to the extent practicable
6. SAV habitats designated for preservation within the boundaries of the Narragansett Bay National Estuarine Reserve are identified on the *SAV Habitats Designated for Preservation in Narragansett Bay* maps (January 13, 2000), available for inspection at the Council's offices. The Narragansett Bay National Estuarine Research Reserve includes waters extending to the 18-foot depth contour around Patience Island, the northern half of Prudence Island,

portions of the southern half of Prudence Island and Hoe Island. In areas within the NBNERR which are designated for preservation on the *SAV Habitats Designated for Preservation in Narragansett Bay* maps, alterations and activities which impact the health and abundance of the SAV habitat are prohibited. The *SAV Habitats Designated for Preservation in Narragansett Bay* maps serve to identify individual SAV habitats, and are for general reference only; in all cases precise boundaries shall be determined through a CRMC staff field inspection when proposals that could impact these features are being considered.

### **D. Prerequisites**

1. Applicants proposing activities in tidal waters under Sections 300.3, 300.4, 300.6, 300.9, 300.10, 300.11, and 300.15, shall include a detailed inventory of the SAV resources present. The detailed inventory should utilize the best available data, such as aerial photography and geographic information system maps, and include the species of SAV present, the depth of the SAV habitat at mean low water, and the aerial extent of the SAV habitat.

### **E. Prohibitions**

1. The Narragansett Bay National Estuarine Research Reserve includes waters extending to the 18-foot depth contour around Patience Island, the northern half of Prudence Island, portions of the southern half of Prudence Island and Hope Island. In areas within the NBNERR which are designated for preservation on the *SAV Habitats Designated for Preservation in Narragansett Bay* maps, alterations and activities which impact the health and abundance of the SAV habitat are prohibited.