

SAV Monitoring Plan for RI: An Overview

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Eelgrass (*Zostera marina* L.) is a submerged aquatic vegetation (SAV) that has been recognized as a critical marine resource and is currently protected by both Federal (Clean Water Act; 33 U.S.C. 26 section 1251 et seq.) and State legislation (RI Coastal Resource Management Plan, Section 300.18). Eelgrass is a vital resource for an abundance of marine life, including economically important finfish and shellfish. The health and vitality of eelgrass beds is a direct indicator of estuarine productivity and function. The RI Coastal Resources Management Council (CRMC) is the Rhode Island coastal zone management agency charged with implementing the Coastal Resources Management Plan. The goals of the CRMC are to preserve, protect and where possible, restore SAV habitat (CRMP 300.18.C.1). Even with this federal and state legislation in place, Rhode Island currently, does not have a long-term monitoring program for SAV. Routine monitoring and mapping of Rhode Island's SAV habitat will be essential to coastal managers and researchers by making it possible to follow trends in health and aerial extent of the local populations. It will also be essential to document the success of the significant restoration efforts in the state to determine whether the success or failure of a restoration site is due to natural variability. Furthermore, many CRMC assents, given to private landowners to erect dock/pier structures over eelgrass populations, stipulate that vegetative monitoring be conducted by applicants. However, no program is in place to compare data obtained for eelgrass dock, pier monitoring and unimpacted reference sites. These trends linked with other monitoring programs such as water quality and fisheries yield will help to build clear picture of the status of Rhode Island's coastal marine habitats.

Below is a suggested long-term monitoring protocol for Rhode Island SAV habitat.

Field monitoring of SAV health (twice annually):

Annual monitoring of SAV will be used to document the year to year variability in the existing populations. Trends in this data such as loss of biomass or a shallowing of the deep water edge can be an early indicator of ecosystem trouble. Yearly monitoring will make it possible to assess the overall health of our existing SAV beds.

The annual monitoring will be developed so as to be compatible with the internationally accepted Seagrassnet protocol (www.seagrassnet.org). Monitoring under this protocol will allow data on SAV habitat in Rhode Island to be incorporated into a worldwide database. Four eelgrass beds would be chosen to be monitored on an annual basis to determine the health of the plants at each site. The sites would be chosen so as to be representative of the range of environments in which eelgrass grows. One site would be located in the poorly flushed northern section of Narragansett Bay, a second mid-way down the estuary, a third in the more pristine southern reaches of the Bay and a fourth in the coastal ponds along the RI southern shore. At each site, three permanent 50 meter

long transects will be established. The transects will be setup parallel to shore with one set along the shallow edge of the bed, one along the deep edge, and one located in the middle of the bed. Along each transect 12 sampling locations are selected at random. The permanent transects would be monitored by divers twice each year during times of peak biomass. The following parameters will be sampled: maximum depth limit, minimum depth limit, percent of bottom cover, above/below ground biomass, canopy height, shoot density, epiphyte cover, sediment organic content, and sediment grain size.

Aerial / satellite total SAV habitat area. (Every 5 years)

Currently, the State of Rhode Island has conducted only one statewide survey of eelgrass populations. This was done for Narragansett Bay in 1995 and the south shore in 1999. In order to assess trends in the overall gain or loss of this habitat, it is necessary to repeat the mapping on a regular basis. Currently, there are no funds available to re-map SAV. Other estuaries, such as Chesapeake Bay, conduct mapping of SAV from orthophotography on an annual basis. They use this annual mapping to guide fishery and coastal construction permitting.

We suggest that the Rhode Island SAV mapping be conducted every five years to document large-scale changes (losses or gains) in SAV habitat. In accordance with NOAA Coastal Change Analysis Protocol (C-CAP) we suggest that this mapping should be conducted using 1:5000 true color aerial photography or high resolution true color satellite imagery (i.e. quick bird 2 or Spot). The imagery would be acquired under the following specifications: during peak biomass (June or July), around a spring low tide, and at times when wind speeds are less than 10 mph. Due to differences in collection protocols, it is impossible to use aerial photography, collected for terrestrial land use mapping, to map SAV habitat.