

Chesapeake Executive Council

Submerged Aquatic Vegetation Policy for the Chesapeake Bay and Tidal Tributaries

U.S. Environmental Protection Agency
Ecological Education Resource
Center (JF-152)
301 Chestnut Street
Philadelphia, PA 19107

Chesapeake Bay Program

Agreement Commitment Report



Regional Center for Environmental Information
US EPA Region III
1650 Arch St.
Philadelphia, PA 19103

Submerged Aquatic Vegetation Policy for the Chesapeake Bay and Tidal Tributaries

An Agreement Commitment Report from
the Chesapeake Executive Council

U.S. Environmental Protection Agency
Region III Information Resource
Center (3PM52)
641 Chestnut Street
Philadelphia, PA 19107

Annapolis, Maryland
July 1989

ADOPTION STATEMENT

We, the undersigned, adopt the **Submerged Aquatic Vegetation Policy** for the Chesapeake Bay and Tidal Tributaries, in fulfillment of Living Resources Commitment Number 3 of the 1987 Chesapeake Bay Agreement:

"...to adopt a schedule for the development of Bay-wide resource management strategies for commercially, recreationally, and selected ecologically valuable species."

We agree to work together to implement the major focus areas of the Policy:

- 1) Resource Assessment
- 2) Protection of Existing Resources
- 3) Restoration
- 4) Education and Research

We recognize the need to commit long-term, stable financial support and human resources to the task of conserving, protecting, and enhancing submerged aquatic vegetation. In addition, we direct the Living Resources Subcommittee to prepare reports addressing the progress attained in implementing the Policy's recommendations.

Date

July 31, 1989

For the Commonwealth of Virginia

James L. Balile

For the State of Maryland

William Donald Sawyer

For the Commonwealth of Pennsylvania

Robert P. Casey

For the United States of America

William F. Kelly

For the District of Columbia

Mr. [Signature]

For the Chesapeake Bay Commission

James E. McClellan

**SUBMERGED AQUATIC VEGETATION POLICY
FOR THE CHESAPEAKE BAY
AND TIDAL TRIBUTARIES**

Philosophy

Submerged aquatic vegetation are underwater vascular plants sometimes referred to as bay grasses. They occur in the shallow areas of the Chesapeake Bay and its tidal tributaries. There are 13 principal species distributed around the Bay according to their individual salinity requirements. Submerged aquatic vegetation serves several important ecological functions. It provides shelter and nursery areas for small fish and shellfish as well as a structural habitat in the water column for various invertebrates and epiphytes. Submerged aquatic vegetation has long been recognized as an essential food source for certain waterfowl. In addition to these roles, it also performs such processes as removing nutrients and heavy metals from the water and sediments. Submerged aquatic vegetation also helps to remove suspended sediments and bind substrates while dense plant beds dissipate wave energy which can protect shorelines from erosion.

Submerged aquatic vegetation is not only important as a habitat, but also because it acts as an indicator of the condition of the Chesapeake Bay. The successful growth and reproduction of submerged aquatic vegetation can be used as a measure of the progress of the Chesapeake Bay restoration and protection program because its environmental requirements include good water quality that is low in suspended sediments, dissolved nutrients and phytoplankton. Further definition of the relationships between water quality conditions and submerged aquatic vegetation abundance is necessary. This will be essential information for Bay managers responsible for insuring the long-term viability of the Bay and its living resources.

The abundance of submerged aquatic vegetation in the Bay and its tidal tributaries declined sharply in the early 1970s. This accelerated an earlier downward trend observed since the 1960s, when an estimated 100,000 acres of one species alone, Eurasian watermilfoil, were present. Aerial photography and mapping of all submerged aquatic vegetation throughout the tidal Bay in 1984, documented a total of 38,000 acres for all species. Some improvement occurred in 1985-1986, when just over 47,000 acres were estimated to be present, and in 1987 an estimated 50,000 acres were documented. Despite this slight increase, submerged aquatic vegetation is still missing from large areas of its former distribution.

Based on evidence of the declines noted above, a survey program was developed to assess the problem within the tidal portion of the Bay. This program has generally continued on an annual basis since the initial survey in 1984. The fact that this survey does not presently include the freshwater, non-tidal portions of the Basin should not be construed to mean that submerged aquatic vegetation in these areas has less resource value. The current annual survey will remain in the tidal portions of the Bay unless research demonstrates a need to survey the non-tidal areas.

Submerged aquatic vegetation is a key living resource component of the Chesapeake Bay and its tidal tributaries, justifying continued research, monitoring, protection and restoration activities.

PROTECTION AND RESTORATION POLICY

It is the intent of the Chesapeake Executive Council to set forth this policy to guide the protection and restoration of all submerged aquatic vegetation within the Chesapeake Bay and its tidal tributaries.

For the purpose of this policy, the following definition will be used:

Submerged aquatic vegetation are vascular plants that, except for some flowering structures, live and grow below the water surface. Because of their requirements for sufficient sunlight, they are found in the shallow areas of the Chesapeake Bay and its tidal tributaries.

The goal of the Submerged Aquatic Vegetation Policy is to achieve a net gain in submerged aquatic vegetation distribution, abundance, and species diversity in the Chesapeake Bay and its tidal tributaries over present populations by:

1. protecting existing submerged aquatic vegetation beds from further losses due to increased degradation of water quality, physical damage to the plants, or disruption to the local sedimentary environment;
2. setting and achieving regional water and habitat quality objectives that will result in restoration of submerged aquatic vegetation through natural revegetation; and,
3. setting regional submerged aquatic vegetation restoration goals in terms of acreage, abundance, and species diversity considering historical distribution records and estimates of potential habitat.

The policy places emphasis on four components key to the future restoration and protection of submerged aquatic vegetation: 1) assessment of historical, current and future distribution and abundance; 2) protection of existing populations; 3) restoration of former populations; and 4) increasing our knowledge of the resource through research and continued education of the public.

Within each of these four components, specific policy statements have been defined. Action items designed to implement the policy statements are provided to successfully achieve the goal of a net resource gain. The signatories, as appropriate, are committed to seeking the necessary authority, funding and personnel resources to carry out these actions, including the enactment of adequate legislation and regulations to protect and restore submerged aquatic vegetation.

A submerged aquatic vegetation resource implementation plan will be developed and adopted by July 1990.

I. ASSESSING THE RESOURCE

Progress towards the goal of a net resource gain in submerged aquatic vegetation distribution, abundance, and species diversity, can only be measured through an established, consistent and regular survey of populations over time. Effective protection of the existing resource and planning for future habitat restoration initiatives depends on the timely availability of information regarding current status and historical trends. Accessibility to such an informational data base is critical to guide resource protection and restoration actions and to support education and research initiatives.

Policy:

- o The signatories, as appropriate, shall collectively fund, design and institute a submerged aquatic vegetation resource assessment and monitoring strategy which will provide for a continuing quantitative evaluation of submerged aquatic vegetation distribution and abundance and the quality of their supporting habitats. This strategy shall be consistent with the recommendations for submerged aquatic vegetation addressed in the Chesapeake Bay Program's Living Resources Monitoring Plan, as adopted by the Chesapeake Executive Council in July, 1988.

Action:

Develop and execute a comprehensive assessment and monitoring plan which includes, but is not limited to, the following actions:

- o Conduct an annual survey of the distribution and abundance of submerged aquatic vegetation throughout the Chesapeake Bay and its tidal tributaries using aerial photography and appropriate groundtruthing.
- o Conduct an annual analysis of the above survey. This analysis shall include photointerpretation, mapping of submerged aquatic vegetation beds, computer digitization and storage of acreage and location data, and a report on the current distribution, abundance and trends.
- o Develop composite maps of all known historical to present submerged aquatic vegetation distributions in the Chesapeake Bay and its tidal tributaries using Geographic Information System capabilities. These maps shall be at scales appropriate for intended management use.

- o Develop new remote sensing techniques (e.g. satellite imagery and computerized image processing systems) which can improve data quality, and reduce the time and expense of data collection and processing requirements.
- o Implement a monitoring program for shallow water habitat. The data collected from this program will be used to define the habitat criteria necessary for successful revegetation and propagation of submerged aquatic vegetation in all salinity regimes present in the Chesapeake Bay and its tidal tributaries.
- o Maintain a centralized data base, accessible to all agencies and institutions, that includes both point and digital data from historical, ongoing, and future submerged aquatic vegetation survey programs. The data base will be updated annually.

II. PROTECTION OF EXISTING SUBMERGED AQUATIC VEGETATION

Before a net gain in submerged aquatic vegetation distribution and abundance can be realized, a concerted effort must be made to protect those areas where submerged aquatic vegetation currently exists. Impacts which result in losses of submerged aquatic vegetation must be curtailed. Impacts may result from direct alterations to a vegetated area, indirect actions within a watershed, or from natural causes. Given the limited success of submerged aquatic vegetation transplanting based on past research studies, transplanting is not an acceptable means of mitigation for losses. Because submerged aquatic vegetation habitat requirements are similar to those of many living resources, controlling the type, extent, intensity and duration of impacts which damage submerged aquatic vegetation will further other efforts to restore and protect the Chesapeake Bay and its living resources.

Policy:

- o The signatories, as appropriate, will use existing regulatory and resource management programs, and develop new programs, to limit permanent and irreversible, direct and indirect impacts to submerged aquatic vegetation and their habitats. Only in rare circumstances will losses of submerged aquatic vegetation be considered justifiable.

Action:

- o Review and evaluate the effectiveness of existing regulatory and resource management programs for protection of existing submerged aquatic vegetation and their habitats.
- o Develop consistent guidelines between the signatories and involved agencies for implementation of this Submerged Aquatic Vegetation Policy. These guidelines would include methods of addressing:
 - proposed activities including, but not limited to, shallow water and shoreline alterations for their impact on potential submerged aquatic vegetation habitat (e.g. areas with known historical submerged aquatic vegetation presence);
 - the rare circumstances where damage to submerged aquatic vegetation beds may be allowed and the appropriate mitigation procedures that will be required;

- protection of areas with documented historical submerged aquatic vegetation presence;
- proposed dredging windows during the submerged aquatic vegetation growing season; and,
- conditions pertaining to harvesting of submerged aquatic vegetation by use of mechanical means.

III. RESTORATION OF SUBMERGED AQUATIC VEGETATION

A net gain in submerged aquatic vegetation distribution and abundance will not be attained by protecting existing vegetation. Efforts must be made to restore submerged aquatic vegetation to former levels by improving the habitat conditions necessary for natural revegetation.

Policy:

- o In recognition of the valuable role of submerged aquatic vegetation in the Chesapeake Bay and its tidal tributaries, the water quality and habitat quality needs of this resource will be established as regional goals for strategies to reduce influx of nutrients, toxics and conventional pollutants to the Chesapeake Bay. The signatories, as appropriate, will implement regulatory initiatives and management practices designed to achieve the established regional habitat quality goals and provide an environment suitable for natural revegetation and propagation.

Action:

- o Establish regional ambient habitat requirements for submerged aquatic vegetation.
- o Meet the regional habitat requirements for submerged aquatic vegetation by implementing nutrient, toxics and conventional pollutant reduction actions on those watersheds which exceed the established regional habitat requirements. Monitor the progress towards achieving the regional submerged aquatic vegetation habitat restoration requirements.
- o Set regional restoration goals for submerged aquatic vegetation acreage, abundance and species diversity considering historical records of abundance and distributions and estimates of potential habitat. Monitor the progress towards reaching these resource restoration goals.
- o Review the Nutrient Reduction Strategy during the 1991 reevaluation and periodically thereafter, to determine its effectiveness towards attaining the submerged aquatic vegetation habitat requirements. For example, mainstream nutrient reduction levels may not be adequate for submerged aquatic vegetation in shallow water habitats in the Chesapeake Bay and its tidal tributaries.

- o Develop a management plan for the restoration of submerged aquatic vegetation based on a watershed approach within the Chesapeake Bay and its tidal tributaries. Both the individual species requirements and the Chesapeake Bay Program's regional living resource habitat quality goals shall be considered.
- o Implement best land management practices that will promote the necessary improvements in submerged aquatic vegetation habitat quality.
- o Investigate the utility of establishing water quality standards that would, when achieved, result in conditions that would allow the natural revegetation of submerged aquatic vegetation in the Chesapeake Bay and its tidal tributaries.

IV. EDUCATION AND SCIENTIFIC RESEARCH

A comprehensive policy to protect and restore submerged aquatic vegetation would not be complete without provisions for education and scientific research. Education is important to increase public awareness of this valuable resource. An informed public will provide a firm foundation of support for protection and restoration efforts. Through scientific research, we will improve our knowledge and understanding of submerged aquatic vegetation to ensure that efforts to protect and restore this resource will be effective.

Education

The Chesapeake Executive Council recognizes that protection and restoration of submerged aquatic vegetation depends upon public awareness of this valuable resource. Sufficient information must be made available to resource managers responsible for implementing specific protection and restoration practices for submerged aquatic vegetation.

Policy:

The signatories, as appropriate, will develop and maintain education materials and activities that will improve public understanding of the value, habitat requirements, status, and trends of submerged aquatic vegetation.

Action:

- o Through the mechanisms described in the Chesapeake Bay Program's Communications Strategy, develop and distribute public awareness materials such as brochures, posters, factsheets and reports emphasizing the values of, and need for, protection and restoration of submerged aquatic vegetation. These materials will be targeted towards specific audiences in the Bay governmental, research and public community.
- o Support special promotions involving citizens' activities such as groundtruthing of remotely sensed and mapped submerged aquatic vegetation locations.

Scientific Research

Apparent gaps in knowledge of submerged aquatic vegetation still remain. Further information on growth, physiology, reproduction, life cycles, transplanting, and environmental requirements is needed to effectively protect and restore submerged aquatic vegetation.

Policy:

- o The signatories will promote and support those research projects which will improve our knowledge of submerged aquatic vegetation to refine and enhance protection and restoration activities.

Action:

- o The Living Resources Subcommittee will provide the Research Planning Committee with research recommendations. At a minimum, these recommendations should include the following items:
 - research on the relationships between submerged aquatic vegetation in, and the environmental quality of, the Chesapeake Bay and its tidal tributaries. This would include the development of specific habitat requirements for submerged aquatic vegetation taking into consideration the different species and different regions of the Chesapeake Bay and its tidal tributaries.
 - research into transplanting submerged aquatic vegetation to a) improve methodologies, b) define specific habitat requirements of submerged aquatic vegetation, and c) determine the ecological functioning of transplanted vs. naturally vegetated areas.
 - research to improve our understanding of the relationships between submerged aquatic vegetation and important Chesapeake Bay species (e.g. waterfowl, fish, and shellfish).
 - research on the effects of eutrophication, sediment loading, toxics, and natural perturbations on growth and survival of submerged aquatic vegetation.
 - research on the relationships between non-tidal submerged aquatic vegetation and environmental quality.