REPORT OF
THE VIRGINIA DELEGATION OF THE CHESAPEAKE BAY COMMISSION ON

SUBMERGED AQUATIC VEGETATION RESTORATION IN VIRGINIA - AN ANALYSIS OF THE RESOURCE AND POTENTIAL CONFLICTS WITH FISHING AND AQUACULTURE ACTIVITIES

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA

HOUSE DOCUMENT NO. 66

COMMONWEALTH OF VIRGINIA
RICHMOND
1999

Chesapeake Bay Commission

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April, 1999

To the Governor and the General Assembly:

On behalf of the Virginia members of the Chesapeake Bay Commission, please accept this report prepared pursuant to House Joint Resolution 283 (1998).

It is clear from our research, that the restoration of submerged aquatic vegetation is critical to the health of the Chesapeake Bay. Likewise, the continued use of the Bay for fishing and aquaculture activities is critical to the economic health of our state. This report and the legislative initiatives that are recommended seek to achieve both ecological and economic goals. The Commission will continue to address these issues with a study to be conducted pursuant to House Joint Resolution 660 (1999).

With kind regards, I am,

Sincerely,

W. Tayloe Murphy, Jr.
Patron, HJR 283

PREFACE

This report was prepared pursuant to House Joint Resolution 293 (1998) by the Virginia Delegation of the Chesapeake Bay Commission.

Chesapeake Bay Commission Members:

Hon. Robert S. Bloxom, House of Delegates
Hon. Bill Bolling, Senate of Virginia
Hon. Joseph V. Gartlan, Jr., Senate of Virginia
Hon. Irvine B. Hill, Virginia Citizen Member
Hon. Jerrauld C. Jones, House of Delegates
Hon. W. Tayloe Murphy, Jr., House of Delegates
Hon. John Paul Woodley, Jr., Secretary of Natural Resources

Chesapeake Bay Commission Staff: Russell W. Baxter, Virginia Director

Special thanks to:

Mr. C. Chadwick Ballard, Jr., Cherrystone Aquafarms
Mr. Robert Grabb, Virginia Marine Resources Commission
Dr. Robert Orth, Virginia Institute of Marine Science
Mr. Michael Peirson, Cherrystone Aquafarms
Mr. Jack Travelstead, Virginia Marine Resources Commission

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INTRODUCTION

In 1998, the Virginia General Assembly adopted House Joint Resolution (HJR) 283 (see Appendix I) which directed the Virginia Delegation of the Chesapeake Bay Commission to study the restoration of submerged aquatic vegetation (SAV) and potential conflicts between SAV restoration and certain fishing and aquaculture practices. This paper presents information gathered during the course of the study and offers a series of findings and recommendations.

Part 1 offers a brief description of the SAV resource and its importance. Part 2 reviews the state of shellfish aquaculture in Virginia. Part 3 examines the present and historic status of the SAV resource. Part 4 reviews regional policy directives adopted by the Chesapeake Bay Program related to SAV. Part 5 analyzes the existing management framework in Virginia. Part 6 conducts an analysis of activities or conditions that affect SAV health and abundance, including human activities. Part 7 offers draft findings and recommendations. Also attached are copies of legislative initiatives which resulted from the recommendations contained in this report (see Appendix II - VII).

Requests for information about this study should be directed to Russell W. Baxter, Virginia Director, Chesapeake Bay Commission, P.O. Box 406, Richmond, VA 23218; 804-786-4849; rbaxter@leg.state.va.us.

PART 1: WHAT IS SUBMERGED AQUATIC VEGETATION AND WHY IS IT IMPORTANT?

Submerged aquatic vegetation are flowering vascular plants that live and grow below the water surface. Because they require sufficient light to photosynthesize and thrive, they are found in the shallow areas of the Chesapeake Bay and its tidal tributaries where sunlight can penetrate the water column (Chesapeake Bay Program, 1989). In Virginia's portion of the Chesapeake Bay, the predominate species are *Zostera marina* (eelgrass) and *Ruppia maritima* (widgeon grass) (Virginia Institute of Marine Science, 1998).

SAV provides food for waterfowl, shelter for fish, shellfish and invertebrates of varying ages, absorbs nutrients and adds oxygen to the water. It can also reduce wave energy, therefore protecting shoreline and bottoms from disruption and promoting the settling of sediments suspended in the water column (CBP, 1995).

SAV is particularly valued as refuge and nursery areas for blue crabs, the Chesapeake Bay's single most important fishery. The Bi-State Blue Crab Advisory Committee (BBCAC) adopted a policy statement in 1997 that reads in part: "[g]rowth, survival and densities of juvenile blue crabs are significantly and substantially higher in SAV than in

unvegetated habitats." The committee also recommended that "existing SAV beds be protected" (BBCAC, 1997). In addition, Virginia law requires that SAV issues be addressed in the development of the required blue crab fishery management plan.

SAV is also considered a primary indicator of water quality (Chesapeake Executive Council, 1993). The Chesapeake Bay Program has reported that "SAV tended to grow best where water clarity was high and nutrient, chlorophyl and suspended sediment levels were low" (Chesapeake Bay Program, 1995).

PART 2: AQUACULTURE IN VIRGINIA'S TIDAL WATERS

Aquaculture of shellfish species, particularly hard clams, is a growing industry in Virginia and represents an increasing percentage of the Commonwealth's seafood industry. In an era of declining harvests of wild species, aquaculture is expected to continue to expand to meet the growing demands for seafood products (VA Aquaculture Plan, 1995). The Commonwealth has promoted this industry through funding of research and outreach programs by the Virginia Institute of Marine Science (VIMS), legislative and budgetary actions and the ongoing oversight and promotional activities of responsible agencies.

Of the $22.7 million in sales of aquaculture products (both freshwater and saltwater) in Virginia in 1997, nearly $10 million were in cultured clams (Virginia Agricultural Statistics Service, 1997). If soft-shell crabs are deducted from the total sales figure above, clams account for over half of the value in sales of all aquaculture products in Virginia (Virginia Agriculture Statistics Service, 1997). Sales figures do not include economic multipliers which increase the economic impact of the industry, particularly on the Eastern Shore of Virginia, where the majority of the cultured clam industry is based.

In 1996, the General Assembly lessened statutory requirements on the industry in response to recommendations by the Virginia Delegation of the Chesapeake Bay Commission pursuant to House Joint Resolution 95 (1994). The General Assembly also directed additional studies by various agencies of the Commonwealth on issues of concern to the industry (House Document 56, 1995).

In sum, it has been the policy of the Commonwealth to promote aquaculture as an important component of its seafood economy and as a legitimate use of state-owned subaqueous lands (VA Aquaculture Plan, 1995).

PART 3: CURRENT AND HISTORICAL STATUS OF THE SAV RESOURCE

Submerged aquatic vegetation underwent an unprecedented Baywide decline in the 1970s that resulted in the lowest levels of abundance in recorded history. Previous declines generally affected one species and were localized. The 1970s decline affected all species throughout the Bay. Since that time, there has been a slow recovery; in 1997, 69,238 acres of SAV were found in the Chesapeake Bay and its tidal tributaries which is still a fraction of presumed historical abundance (Chesapeake Executive Council, 1992). Since 1984, annual surveys using aerial photography have shown levels of abundance increasing from 1984 through 1993, decreasing in both 1994 and 1995, and increasing in 1996 and 1997. In Virginia waters, areas of greatest SAV increase have been in those rivers or Bay sections where SAV persisted during the periods of greatest decline. SAV is still absent or rare in the major tributaries of the lower Bay, including the James, Rappahannock, upper York, and Piankatank Rivers. SAV is most abundant in the lower York River, Mobjack Bay, Poquoson Flats, shallow water areas at the mouths of all of the Bay-side creeks of the Eastern Shore, and shallow areas around Tangier and Smith Islands. SAV in the seaside coastal bays, which supported a large scallop fishery, declined in the 1930s and have never fully recovered except in Chincoteague Bay. The scallop fishery has not returned (Orth, 1998).

PART 4: CHESAPEAKE BAY PROGRAM SAV POLICY ACTIONS

The decline of SAV has been at the heart of regional efforts to restore the Chesapeake Bay for over two decades. With the adoption of the *1987 Chesapeake Bay Agreement*,

the Chesapeake Executive Council[1] formally committed to "restore, enhance, protect and manage submerged aquatic vegetation." In 1989, the Chesapeake Executive Council adopted the "Submerged Aquatic Vegetation Policy for the Chesapeake Bay and Tidal Tributaries" whose goal "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" (Executive Council, 1989). The policy proposed the following actions to achieve that goal:

- Protecting existing submerged aquatic vegetation beds from further losses due to

[1] The Chesapeake Executive Council is composed of the following: the governors of Maryland, Pennsylvania and Virginia, the chairman of the Chesapeake Bay Commission, the mayor of the District of Columbia and the administrator of the Environmental Protection Agency. The Council is the governing body for the multi-jurisdictional Chesapeake Bay Program.

increased degradation of water quality, physical damage to the plants or disruption to the local sedimentary environment.

- Setting and achieving regional water and habitat quality objectives that will result in restoration of submerged aquatic vegetation through natural revegetation.

- Setting regional submerged aquatic vegetation restoration goals in terms of acreage, abundance and species diversity considering historical distribution records and estimates of potential habitat.

In 1993, the Executive Council adopted the Submerged Aquatic Vegetation Directive which established a commitment to restore SAV to historic levels. This directive set an interim SAV restoration goal of 114,000 acres (so-called Tier I) by 2005. It also directed that a further target level be developed for the restoration of SAV to all shallow water areas delineated as existing or potential SAV habitat down to the 1 meter depth contour (Tier II). Finally, it directed the establishment of a goal for SAV habitat to the 2 meter level (Tier III) (Chesapeake Executive Council, 1993).

In 1995, "Guidance for Protecting Submerged Aquatic Vegetation in Chesapeake Bay from Physical Disruption" was adopted by the Chesapeake Bay Program. It recommended methods of protection and restoration of SAV and SAV habitat through the implementation of a tiered approach, giving highest priority to Tier I restoration. The following guidance was offered:

- Avoid dredging in Tier I and Tier II areas, except in a limited manner for public access, maintenance dredging and in some circumstances, erosion protection.

- Avoid dredging in Tier III areas. If disruption of these areas is unavoidable, it should be minimized.

- Avoid dredging, filling or construction activities that create additional turbidity sufficient to impact nearby SAV beds during the SAV growing season.

- Establish an appropriate undisturbed buffer around SAV beds to minimize the direct and indirect impacts on SAV from activities that significantly increase turbidity.

- Preserve natural shorelines. Stabilize shorelines, when needed, with marsh planting as a first alternative. Use structures that cause the smallest increase in local wave energy where planting vegetation is not feasible.

- Educate the public about the potential negative effects of recreational and commercial

boating on SAV and how to avoid or reduce them.

In 1997, the Chesapeake Bay Blue Crab Fishery Management Plan (Chesapeake Bay Program, 1997) delineated important SAV protection and restoration areas to promote improved post-larval settlement of blue crabs.

Finally, in 1998 the Implementation Committee of the Chesapeake Bay Program recommended that:

- Fisheries harvest activities that have the potential to uproot or kill SAV should not occur in SAV beds.
- No new aquaculture structures should be placed on stands of SAV.
- Areas where fisheries harvest activities have the potential to impede SAV restoration should be identified in order to define protective zones.

PART 5: THE CURRENT REGULATORY FRAMEWORK FOR SAV MANAGEMENT IN VIRGINIA

Federal Law

Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act are the controlling federal statutes with regard to SAV management. These statutes are administered by the U.S. Army Corps of Engineers through nationwide and regional permits. Under the Corps' nationwide permit program, activities are authorized, including shellfish seeding on bottoms, provided that the activity does not occur in wetlands or sites that support SAV (including sites where SAV is documented to exist, but may not be present in a given year).

Further, under the State Program Regional Permit 93-RP-19, in order to obtain authorization for any activities covered by the regional permit, the applicant must first obtain a permit from the Virginia Marine Resources Commission (VMRC) and/or a local wetlands board. The regional permit states: "no aquaculture activities shall occur within beds of submerged aquatic vegetation or saltmarsh, nor shall such vegetation be damaged or removed. Should an area become colonized by submerged aquatic vegetation or saltmarsh after an authorized aquaculture activity is installed, the activity shall be allowed to remain; however, no expansion into newly colonized areas is authorized by this regional permit."

State Law and Regulation

In Virginia, responsibility of direct management of SAV habitat is granted to the Virginia Marine Resources Commission the Code of Virginia, Section 28.2-1205. VMRC is specifically granted the authority to consider effects on submerged aquatic vegetation when deciding whether to grant or deny a permit.

Habitat Management

- VMRC's Subaqueous Guidance discourages dredging in areas of SAV, minimization of impacts from overboard disposal. In addition, SAV is considered as applications are received for dredging in particular areas (4VAC20-120-10).

- VMRC's Criteria for Siting Marine and Boat Mooring Facilities states that marinas should not be sited close to areas of very high natural resource value such as shellfish beds, sea grass communities and areas frequented by endangered species (4VAC20-360-60). In addition, the dredging of access channels should be limited to the minimum dimensions necessary for navigation and should avoid sensitive areas such as wetlands, shellfish and seagrass beds (4VAC20-360-70).

- Guidance directs that crossing of vegetated wetlands and seagrass areas for the purpose of constructing commercial piers and wharves should be limited to the minimum necessary for water access (4VAC20-360-60).

Oyster planting

- As a general rule, VMRC will not accept applications for assignment of leases for oyster-planting grounds that encompass significant areas of SAV (VMRC guidance).

Aquaculture

- The placement of structures used for aquaculture on existing stands of submerged aquatic vegetation is prohibited[2] (VAC20-335-30).

- In the general permit for "riparian shellfish gardening," proposed structures must

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[2] This does not prevent an individual wishing to disturb the public bottom from proceeding with an application for consideration by the Marine Resources Commission through their discretionary public interest review process.

be secured to a private pier or otherwise secured within the permittee's riparian area and must be located so as not to impact existing stands of submerged aquatic vegetation (VAC20-336-50).

Water Quality

- The Code of Virginia requires that the Chesapeake Bay Tributary Strategies include summaries of existing "programs, strategies, goals and commitments... [for] the enhancement of the amount of submerged aquatic vegetation" (VA Code 2.1-51.12:1).

Blue Crab Management

- The statute requiring the development of a blue crab management plan requires a review of current and proposed regulations that relate to SAV, among other things (VA Code, 28.2-203.1).

PART 6: FACTORS CONTROLLING SAV GROWTH AND DISTRIBUTION

Water Quality

SAV growth, distribution and abundance are controlled principally by water quality, although there are other factors that can affect SAV directly or indirectly. Because SAV requires light levels that are higher than most plants, light quantity is usually the major limiting factor, which in turn is influenced by sediments, solids and phytoplankton in the water column, and epiphytes (algae) on the plant surface. Nutrient levels in the water column affect the phytoplankton and epiphyte levels. Evidence suggests that habitat restoration of SAV is achievable, although not always successful, if water quality is adequate to support SAV growth. SAV has been successfully transplanted with whole plants and seeds using a variety of methodologies, given adequate water quality conditions. Current research suggests that because dispersal properties of some species of SAV are limited, especially eelgrass (Virginia's dominant species), planting may be the only way to restore SAV in areas where it is absent (Orth presentation, 1998).

In addition to water quality, a variety of other factors can influence growth and survival of SAV. Natural changes in climate, and singular events such as hurricanes, can have adverse effects (Short and Wylie-Echeverria, 1995). Animals, such as the cow nosed ray, can disturb bottom areas sufficiently to destroy grasses (Orth presentation, 1998).

Shellfish Culture (Aquaculture)

The impacts associated with aquaculture activities are shading or disturbance from floating racks or on-bottom nets and trays which can prevent SAV growth. While the theory has not undergone scientific review, there has been speculation that localized nutrient enrichment can occur from concentrated aquaculture operations (CBP Implementation Committee, 1997). While current operations in Virginia appear to have a minimal impact on SAV abundance in terms of total acreage affected, increasing competition for shallow water areas with good water quality could increase conflicts (CBC, 1998; Chesapeake Bay Program Implementation Committee, 1998).

Other than the direct impacts of structures on SAV or likely SAV growth, there is scientific uncertainty about any beneficial impacts of intensive culture operations on SAV. It is theorized that intensive culture, with its density of filter feeders, improves water quality sufficiently for SAV restoration. It is also speculated that because the bottom is stabilized by aquaculture structures, conditions are created that are more suitable for SAV growth (Peirson presentation to CBC, 1998). These matters have not yet undergone complete scientific investigation.

Other Water-based Activities

Other human activities, including fishing and boating, can affect SAV. The following summarizes those activities and addresses their potential impacts.

Clam Dredging

In the fall of 1997, destruction of SAV from clam dredging activities on the seaside of the Eastern Shore was reported to the Marine Resources Commission by scientists at the Virginia Institute of Marine Science. As a result of the evidence gathered from aerial photography and site analysis, an emergency regulation (4 VAC 20-1000-10 et.seq.) was passed to protect SAV beds in Chincoteague Bay. Similar protections were enacted in Maryland during the 1998 session of the Maryland General Assembly (CBC, 1998).

Haul Seines

The haul seine fishery is practiced in a number of traditional locations throughout the Chesapeake Bay. It is defined in the Virginia Code as "any net set from the shore or in shallow waters not exceeding eight feet in depth at mean low water." The net is set to encircle any fish in the particular area. It is generally set from a motor or rowboat and hauled to shore by hand or power winch. VMRC staff have observed effects on SAV primarily from the power winding of the net and from prop wash in shallow water (VMRC presentation, 1998). Haul seines are used in areas of SAV because fish tend to congregate in those areas. No specific regulation or statute governs the use of haul seines

in SAV, although a Maryland Department of Natural Resources study of haul seining in the Susquehanna Flats found no significant disruption to SAV beds from the nets themselves (MD DNR, 1996).

Crab Scrapes

The crab scrape season runs from April through October and is primarily practiced in larger SAV beds near Tangier Island, Poquoson Flats and Goodwin Islands. It is believed that the toothless dredge has little impact on SAV beds directly; some impact from prop wash has been observed. Because of the lighter dredge, the Virginia crab scrape fishery differs from the Maryland fishery which uses a heavier dredge that can be mechanically lifted (CBC, 1998).

Crab Dredge

While popularly presumed to harm SAV because of the weight and form of the dredge, evidence indicates that the crab dredge fishery, practiced in deeper waters during the winter months, does not affect SAV (VMRC, 1998).

Bottom-Disturbing Activities

Dredging and related activities can impact SAV through direct destruction or as a indirect result through turbidity created from dredging activities. Boat operation and storage can have an effect on SAV and its ability to spread, primarily through shading from docks and piers. SAV can also be damaged from boating, both from actual cutting of grasses by propellers as well as the dragging of boat hulls through vegetated areas, or affected by turbidity caused by boats or personal watercraft (Short and Wylie-Echeverria, 1995). Scarring from boat propellers has been identified in scientific literature for many years and has been observed in aerial photographs in the Chesapeake Bay primarily associated with commercial fishing activities, although some small localized impacts have been observed from recreational boating activities (Orth, pers. comm).

PART 7: FINDINGS AND RECOMMENDATIONS

Finding 1: If water quality conditions in the Chesapeake Bay and its tributaries improve, SAV will most likely continue to expand in areas adjacent or near to areas currently populated by SAV. According to the Chesapeake Bay Program, if projected load reductions of nutrients and sediments occur, habitat conditions necessary to support SAV growth would improve at both the one meter and two meter depths. Chesapeake Bay restoration efforts have focused on

reduction of nutrients; however, because of the light requirements of SAV, sediments and other solids suspended in the water column must also be reduced.

Recommendation 1: Continue aggressive efforts to improve water quality through nutrient reduction and formally incorporate sediment and other suspended solids reduction goals in Virginia's Chesapeake Bay Tributary Strategies. Similarly, the Virginia Water Quality Improvement Act should be amended to include sediment and suspended solids reduction as a criteria for application for grants from the Water Quality Improvement Fund, §10.1-2132.

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Finding 2: Virginia's process for leasing state-owned bottom open for assignment (those public bottoms not included in the Baylor survey) was designed for traditional oyster and clam growing practices rather than intensive culture operations.

Recommendation 2: The General Assembly should undertake a review of underlying statutes that govern leasing to determine what changes are necessary to accommodate intensive culture operations without disrupting current traditional uses of leased areas. The review should include a review of findings contained in House Document 15 (1996), *An Analysis of Organic Statutes and Regulations which Inhibit Shellfish Aquaculture Operation,* related to leasing issues.[3]

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Finding 3: Pressure for use of bottom or the water column for intensive culture

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[3] House Document 15 suggested the following issues for further examination: reduction in the size of individual lease; increasing the cost of lease for intensive culture operations; reduction in the duration of leases; establishing water-column leases; development of a lease classification system that is tailored to intended use (i.e., traditional use vs. intensive culture use); acknowledge in Code that shellfish culture is a legitimate right to which a general oyster planting ground assignment is subject; permit leasing for purposes including the growing, storing and harvesting of native or approved molluscan shellfish.

operations is likely to increase over time, particularly should additional species prove economically viable for culture. For example, should a strain of oyster be found that can be economically cultured, additional pressures will be placed on SAV as trays, floats and other structures are placed in waters, potentially shading or otherwise disrupting SAV growth.

Recommendation 3: To add a measure of certainty to the aquaculture industry, the General Assembly should direct the Virginia Marine Resources Commission to establish criteria for areas on state-owned bottom open for assignment (those public bottoms not included in the Baylor survey) where leases will be granted specifically for intensive culture operations.

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Finding 4: Boaters and fishermen are not made aware of the impact their activities may have on SAV. The Department of Game and Inland Fisheries, with respect to boaters, and the Marine Resources Commission, with respect to Chesapeake Bay recreational and commercial fishermen, have significant opportunities to offer targeted educational programs.

Recommendation 4a: Include SAV awareness and protection information in materials distributed with commercial fishing licenses by the Marine Resources Commission. VMRC should also evaluate, at a reasonable point in the future, the success of education efforts in reducing impacts from activities related to commercial fishing.

Recommendation 4b: Provide SAV awareness and protection information to owners of recreational boats. The Department of Game and Inland Fisheries should work with boat dealers, marinas and other facilities that come into contact with recreational boaters to distribute educational materials. At some reasonable point in the future, evaluate the success of these activities.

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Finding 5: SAV protection measures currently contained in Virginia Code and regulation

principally address existing stands of SAV. There is no systematic method of designating and protecting areas that are likely to regrow SAV, given proper growing conditions. A high potential for SAV restoration particularly exists in areas that were or have been known to support SAV prior to the 1972 Bay-wide decline.

Recommendation 5: Direct the Virginia Marine Resources Commission to establish criteria for the designation of SAV restoration areas on public bottom (not included in the Baylor survey). Consider requiring, as a condition of newly granted or renewed leases, that certain areas be reserved for SAV restoration based on maps that define historical areas of growth.

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Finding 6: The Virginia Institute of Marine Science has been involved in SAV restoration efforts since the mid-1980s, with current work being supported by the Virginia Saltwater Recreational Fishing License Fund. Long-term support from this source may not continue because of the recognition that the benefits of SAV restoration extend beyond recreational fishermen.

Recommendation 6: Explore possible long-term SAV research and restoration funding at an appropriate level through the General Fund or through another identified source.

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Finding 7: There is currently some uncertainly about what constitutes a "bed" of SAV. Determinations are made in a case-by-case manner without specific guidance written in law or regulation.

Recommendation 7: VMRC, in consultation with VIMS, should prepare guidance to assist in the determination of what constitutes an existing SAV bed as well as guidance for the recommendation above regarding determination of areas where SAV can most probably be restored.

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Finding 8: There remains scientific uncertainty about the environmental impact of

intensive culture operations including possible local water quality improvements due to the density of filter feeders in such operations.

Recommendation 8: The General Assembly should direct the Virginia Institute of Marine Science, in consultation with representatives of the aquaculture industry, to examine possible environmental benefits of intensive shellfish culture operations.

CONCLUSION

Virginia has, through laws, regulations and regional agreements, committed to the protection of the SAV resource. Likewise, the Commonwealth has promoted important economic activities, including aquaculture, that may impact SAV growth and survival. Issues remain as to how both goals will be accomplished given the real and potential conflicts in shallow water areas as water quality continues to improve. This report recognizes that mechanisms must be put in place to ensure that Virginia meets its protection and restoration goals without disrupting economic activities which also depend on clean water. This report is an attempt to examine the future of SAV in the context of the existing regulatory framework in order to assist in management decisions that will minimize conflict while maximizing economic and environmental goals.

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1998 SESSION **APPENDIX I**

ENROLLED

HOUSE JOINT RESOLUTION NO. 283

Requesting the Virginia delegation to the Chesapeake Bay Commission to study means for the protection of submerged aquatic vegetation.

Agreed to by the House of Delegates, March 12, 1998
Agreed to by the Senate, March 10, 1998

WHEREAS, submerged aquatic vegetation in Chesapeake Bay and its tributaries, as well as the Coastal Bays, has been increasingly recognized by fishery managers, scientists, the seafood industry, and the general public as one of the most important habitats for many species, especially the commercially and recreationally important blue crab; and

WHEREAS, present levels of submerged aquatic vegetation, in abundance of 65,000 acres, are approximately one-tenth the historic levels of over 600,000 acres; and

WHEREAS, submerged aquatic vegetation growth and survival depend on certain minimal water quality standards and act as indicators of good water quality; and

WHEREAS, the Chesapeake Bay Program has established restoration targets for submerged aquatic vegetation to water depths of two meters (at mean low water); and

WHEREAS, certain fishing activities, particularly power dredging of wild clams, have recently been shown to be extremely damaging to established submerged aquatic vegetation beds; and

WHEREAS, conflicts are arising between submerged aquatic vegetation restoration and molluscan aquaculture operations over competing uses of shallow water zones that are optimal areas for both activities; and

WHEREAS, molluscan aquaculture contributes to improved water clarity by increasing the number of filter feeders in the waters of the Commonwealth and this improved clarity may be conducive for growth of submerged aquatic vegetation; and

WHEREAS, current lease laws of the Commonwealth's submerged public bottoms, especially in shallow water less than two meters where submerged aquatic vegetation are found, could lead to further direct loss of submerged aquatic vegetation; and

WHEREAS, the amount of such submerged public bottoms utilized by molluscan aquaculture are a small fraction of the total; and

WHEREAS, it is in the interest of the Commonwealth to provide adequate protection for submerged aquatic vegetation while at the same time providing for continuation and expansion of molluscan aquaculture which is a growing sector of the seafood industry having a significant economic impact in Northampton and Accomack Counties; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the Virginia delegation to the Chesapeake Bay Commission be requested to study means for the protection of submerged aquatic vegetation. The delegation shall examine measures, including guidelines for aquaculture and fisheries operations, for the protection of submerged aquatic vegetation in all depths of water.

The delegation shall include in its deliberations members of the seafood industry and conservation communities. Technical assistance shall be provided to the delegation by the Virginia Marine Resources Commission, the Virginia Institute for Marine Science, the Virginia Department of Agriculture and Consumer Services, and the Division of Legislative Services. All agencies of the Commonwealth shall provide assistance to the delegation for this study, upon request.

The Virginia delegation to the Chesapeake Bay Commission shall complete its work in time to submit its findings and recommendations to the Governor and the 1999 Session of the General Assembly as provided in the procedures of the Division of Legislative Automated Systems for the processing of legislative documents.

APPENDIX II

992896376

HOUSE BILL NO. 2266

Offered January 21, 1999

A BILL to amend the Code of Virginia by adding a section numbered 28.2-1204.1, relating to submerged aquatic vegetation.

Patrons—Murphy, Bloxom and Jones, J.C.; Senators: Bolling and Gartlan

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Referred to Committee on Chesapeake and Its Tributaries

Be it enacted by the General Assembly of Virginia:

1. That the Code of Virginia is amended by adding a section numbered 28.2-1204.1 as follows:

§ 28.2-1204.1. Submerged aquatic vegetation.

A. The Commission shall, in consultation with the Virginia Institute of Marine Science, develop guidelines containing criteria for use in:

1. Defining existing beds of submerged aquatic vegetation;

2. Delineating areas where there is potential for submerged aquatic vegetation restoration; and

3. Designation of submerged aquatic vegetation restoration areas on public bottomlands, not including Baylor Grounds, based on historical areas of growth.

B. When granting new or renewed leases or permits for the use of bottomlands, the Commission shall protect for submerged aquatic vegetation restoration those areas designated as restoration areas pursuant to subsection A. This provision shall not be construed as restricting the Commission's authority to protect submerged aquatic vegetation in other areas.

992896376

HB2266

1/24/99 18:38

Official Use By Clerks			
Passed By The House of Delegates		**Passed By The Senate**	
without amendment	☐	without amendment	☐
with amendment	☐	with amendment	☐
substitute	☐	substitute	☐
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992895376

HOUSE BILL NO. 2267

Offered January 21, 1999

A BILL to amend and reenact §§ 2.1-51.12:1 and 2.1-51.12:2 of the Code of Virginia, relating to inclusion of sediments and suspended solids in tributary plans.

Patrons—Murphy, Bloxom and Jones, J.C.; Senators: Bolling and Gartlan

Referred to Committee on Chesapeake and Its Tributaries

Be it enacted by the General Assembly of Virginia:

1. That §§ 2.1-51.12:1 and 2.1-51.12:2 of the Code of Virginia are amended and reenacted as follows:

§ 2.1-51.12:1. Development of strategies to restore the water quality and living resources of the Chesapeake Bay and its tributaries.

The Secretary of Natural Resources shall coordinate the development of tributary plans designed to improve water quality and restore the living resources of the Chesapeake Bay and its tributaries. Such plans shall be tributary specific in nature and prepared for the Potomac, Rappahannock, York, and James River Basins as well as the western coastal basins (comprising the small rivers on the western Virginia mainland that drain to the Chesapeake Bay, not including the Potomac, Rappahannock, York and James Rivers) and the eastern coastal basin (encompassing the creeks and rivers of the Eastern Shore of Virginia that are west of U.S. Route 13 and drain to the Chesapeake Bay). Each plan shall address the reduction of ~~nutrient inputs to~~ *nutrients and suspended solids, including sediments, entering* the Chesapeake Bay and its tributaries. Each plan shall also summarize other existing programs, strategies, goals and commitments for reducing toxics; the preservation and protection of living resources; and the enhancement of the amount of submerged aquatic vegetation, for each tributary basin and the Bay. The plans shall be developed in consultation with affected stakeholders, including, but not limited to, local government officials; wastewater treatment operators; seafood industry representatives; commercial and recreational fishing interests; developers; farmers; local, regional and statewide conservation and environmental interests; the Virginia Chesapeake Bay Partnership Council; and the Virginia delegation to the Chesapeake Bay Commission.

§ 2.1-51.12:2. Tributary plan content; development timelines.

A. Each tributary plan developed pursuant to § 2.1-51.12:1 shall include the following:

1. Recommended specific strategies, goals, commitments and methods of implementation designed to achieve the nutrient goals of the 1987 Chesapeake Bay Agreement and the 1992 amendments to that agreement signed by the Governors of Virginia, Maryland, and Pennsylvania, the Mayor of the District of Columbia, the Administrator of the United States Environmental Protection Agency and the Chairman of the Chesapeake Bay Commission, collectively known as the Chesapeake Executive Council.

2. Recommended specific strategies, goals, commitments and methods of implementation to achieve sediment and suspended solids reductions from nonpoint sources sufficient to achieve living resource goals, particularly those related to habitat conditions necessary to support submerged aquatic vegetation.

~~2~~3. A report on progress made pursuant to the "Chesapeake Bay Basinwide Toxics Reduction and Prevention Strategy" signed by the Chesapeake Executive Council on October 14, 1994, that is applicable to the tributary for which the plan is prepared.

~~3~~4. A report on progress on the "Submerged Aquatic Vegetation Restoration Goals" signed by the Chesapeake Executive Council on September 15, 1993, that is applicable to the tributary for which the plan is prepared.

45. A report on progress related to the objectives of the "Local Government Partnership Initiative" signed by the Chesapeake Executive Council on November 30, 1995.

~~5~~6. Specifically identified recommended state, local and private responsibilities and actions, with associated timetables, for implementation of the plan, to include the (i) person, official, governmental unit, organization or other responsible body; (ii) specific programmatic and environmental benchmarks and indicators for tracking and evaluating implementation and progress; (iii) opportunities, if

appropriate, to achieve nutrient reduction goals through nutrient trading; (iv) estimated state and local benefits derived from implementation of the proposed alternatives in the plan; (v) state funding commitments and specifically identified sources of state funding as well as a method for considering alternative or additional funding mechanisms; (vi) state incentives for local and private bodies for assisting with implementation of the plans; and (vii) estimate and schedule of costs for the recommended alternatives in each plan.

~~6~~*7*. Scientific documentation to support the recommended actions in a plan and an analysis supporting the documentation if it differs from the conclusions used by the Chesapeake Bay Program.

~~7~~*8*. An analysis and explanation of how and when the plan is expected to achieve the elements of subdivisions 1, 2 and 3 of this subsection.

~~8~~*9*. A process for and schedule of adjustment of the plan if reevaluation concludes that the specific nutrient reduction goals will not be met.

~~9~~*10*. An analysis of the cost effectiveness and equity of the recommended nutrient reduction alternatives.

~~10~~*11*. An opportunity for public comment and a public education and information program that includes but is not limited to information on specific assignments of responsibility needed to execute the plan.

B. Tributary plans shall be developed by the following dates for the:

1. Potomac River Basin, January 1, 1997.
2. Rappahannock River Basin, January 1, 1999.
3. York River Basin, July 1, 1998.
4. James River Basin, July 1, 1998.
5. Eastern and western coastal basins, January 1, 1999.

C. In developing tributary plans, the Secretary shall consider, among other factors: (i) studies relevant to the establishment of nutrient, *sediment and suspended solids* reduction goals; (ii) the relative contributions and impacts of point and nonpoint sources of nutrients; (iii) the scientific relationship between nutrient, *sediment and suspended solids* controls and the attainment of water quality goals; and (iv) estimates of costs for each publicly owned treatment works affected by point source nutrient reduction goals and estimates of costs for nonpoint source nutrient *sediment and suspended solids* reduction goals.

D. In any tributary plan reevaluation, the Secretary shall consider, among other factors: (i) whether all publicly owned treatment works in the basin under consideration have either installed biological nutrient removal technology or achieved equivalent nutrient reduction by other means; (ii) total nutrient reductions achieved by nonpoint sources to the tributary; (iii) the need for additional nutrient controls for the attainment of water quality goals; (iv) a comparison between nutrient reductions achieved by point source controls and nonpoint source controls in order to equitably allocate any additional reductions; and (v) the cost effectiveness, including nutrient trading options, of any additional nutrient reduction controls.

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Passed By The House of Delegates		**Passed By The Senate**	
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APPENDIX IV

992894376

HOUSE BILL NO. 2268

Offered January 21, 1999

A BILL to amend and reenact § 10.1-2132 of the Code of Virginia, relating to Water Quality Improvement Act Grants for suspended solids.

Patrons—Murphy, Bloxom and Jones, J.C.; Senators: Bolling and Gartlan

Referred to Committee on Chesapeake and Its Tributaries

Be it enacted by the General Assembly of Virginia:

1. That § 10.1-2132 of the Code of Virginia is amended and reenacted as follows:

§ 10.1-2132. Nonpoint source pollution funding; conditions for approval.

A. The Department of Conservation and Recreation shall be the lead state agency for determining the appropriateness of any grant related to nonpoint source pollution to be made from the Fund to restore, protect and improve the quality of state waters.

B. The Director of the Department of Conservation and Recreation shall, subject to available funds and in coordination with the Director of the Department of Environmental Quality, direct the State Treasurer to make Water Quality Improvement Grants in accordance with the guidelines established pursuant to § 10.1-2129. The Director shall manage the allocation of grants from the Fund to ensure the full funding of executed grant agreements.

C. Grant funding may be made available to local governments, soil and water conservation districts and individuals who propose specific initiatives that are clearly demonstrated as likely to achieve reductions in nonpoint source pollution, including, *but not limited to,* excess nutrients *and suspended solids*, to improve the quality of state waters. Such projects may include, but are in no way limited to, the acquisition of conservation easements related to the protection of water quality and stream buffers; conservation planning and design assistance to develop nutrient management plans for agricultural operations; implementation of cost-effective nutrient reduction practices; and reimbursement to local governments for tax credits and other kinds of authorized local tax relief that provides incentives for water quality improvement. The Director shall give initial priority consideration to the distribution of grants from the Fund for the purposes of implementing the tributary plans required by Article 2 (§ 2.1-51.12:1 et seq.) of Chapter 5.1 of Title 2.1. Until such time as the tributary plans are developed and implemented, the Director shall distribute fifty percent of the nonpoint grant funding to their implementation and fifty percent to areas of the Commonwealth not to be covered by the tributary plans, unless otherwise provided in the general appropriation act.

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Clerk of the House of Delegates

Clerk of the Senate

999267376

HOUSE JOINT RESOLUTION NO. 660

Offered January 21, 1999

Requesting the Virginia Delegation to the Chesapeake Bay Commission to study issues relating to the uses of state-owned bottomlands and the water column, including leases for aquaculture operations and submerged aquatic vegetation restoration.

Patrons—Murphy, Bloxom and Jones, J.C.; Senators: Bolling and Gartlan

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Referred to Committee on Chesapeake and Its Tributaries

WHEREAS, in 1998, the Virginia Delegation to the Chesapeake Bay Commission undertook a study pursuant to House Joint Resolution 283 regarding potential impacts on submerged aquatic vegetation from certain fishing activities including aquaculture; and

WHEREAS, as a result of that study, issues surfaced regarding the use of state-owned bottomland and the adequacy of the leasing system of state-owned bottomland to accommodate intensive shellfish culture operation; and

WHEREAS, issues have been raised by the aquaculture industry and others regarding the adequacy of existing laws governing leases for the use of state-owned bottomland to address the particular needs of their industry; and

WHEREAS, a committee convened by the Marine Resources Commission pursuant to House Joint Resolution 449 (1995) and reporting in House Document 15 (1996) identified a series of issues related to leasing including, but not limited to, reducing the size of individual leases, increasing the annual rent, decreasing the duration of leases, strengthening the "proof of use" requirement, defining the necessity of a "water column" lease for certain types of activities, and developing a lease classification system that differentiates between intended uses; and

WHEREAS, traditional uses of leased areas should continue; and

WHEREAS, issues related to submerged aquatic vegetation restoration are linked to other on-bottomland uses in shallow-water areas with good water quality; and

WHEREAS, current Marine Resources Commission guidance for granting leases seeks to avoid impacts on submerged aquatic vegetation but does not address areas where submerged aquatic vegetation might be restored on leased grounds; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the Virginia Delegation to the Chesapeake Bay Commission be requested to examine issues relating to the uses of state-owned bottomlands and the water column, including leases for aquaculture operations and submerged aquatic vegetation restoration. The Virginia Delegation to the Chesapeake Bay Commission is requested to study the following issues:

1. Changes needed in the Code of Virginia to better accommodate leasing for intensive aquaculture operations after consideration of issues raised in House Document 15, among others;

2. Development of criteria which the Marine Resources Commission would use to identify areas on state-owned bottomland (not included in the Baylor survey) where leases would be granted for intensive aquaculture operations; and

3. Changes needed in the Code of Virginia to allow the Marine Resources Commission to designate submerged aquatic vegetation restoration areas as components of leases contingent on the development of criteria, including geographic criteria, to identify areas likely to support submerged aquatic vegetation re-growth and restoration.

The Virginia Delegation to the Chesapeake Bay Commission shall consult with representatives of the shellfish aquaculture industry, holders of leases, and other interested persons. The Virginia Marine Resources Commission, the Virginia Institute of Marine Science, the Office of the Attorney General, the Office of the Secretary of Natural Resources, the Department of Agriculture and Consumer Services and all other agencies of the Commonwealth, shall provide support for the work of the Commission as requested.

The Commission shall complete its work in time to submit its findings and recommendations to the Governor and the 2000 Session of the General Assembly as provided in the procedures of the Division of Legislative Automated Systems for the processing of legislative documents.

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Item 441 2c

Natural Resources
Marine Resources Commission Language

Language:
Page 338, after line 14, insert:
"C. The Commission shall include in its next annual mailing of renewals for Commercial Fisherman Registration educational information regarding the importance of submerged aquatic vegetation to fisheries stocks and the importance of avoiding impacts on submerged aquatic vegetation through activities related to fishing, including boat operation. The information shall be provided to the Commission by the Chesapeake Bay Commission."

Explanation:
(This amendment requires that the Marine Resources Commission provide educational information to commercial fishermen regarding aquatic vegetation, which shall be included when annual renewals for Commercial Fisherman Registration are mailed to the fishermen.)

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Item 439 1c

Natural Resources

Department Of Game And Inland Fisheries

Language

Language:

Page 337, after line 27, insert:

"In the next scheduled revision of the boater's guide, information provided by the Chesapeake Bay Commission regarding avoidance of impact by boats on submerged aquatic vegetation shall be incorporated in the Virginia Watercraft Owner's Guide."

Explanation:

(This amendment establishes a requirement for the Department of Game and Inland Fisheries to provide educational material in a cost-effective way to recreational boaters through a publication which is currently mailed to all registered boat owners, advising them of the impact boats can have on submerged aquatic vegetation.)