REPORT OF THE
VIRGINIA DELEGATION TO THE CHESAPEAKE BAY
COMMISSION ON

HOUSE JOINT RESOLUTION NO. 95 (1994) - A STRATEGIC PLAN FOR THE REVITALIZATION OF THE SHELLFISH INDUSTRY IN VIRGINIA

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA

HOUSE DOCUMENT NO. 56

COMMONWEALTH OF VIRGINIA
RICHMOND
1995

Chesapeake Bay Commission

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February 25, 1995

To the Governor and the General Assembly:

On behalf of the Virginia Delegation to the Chesapeake Bay Commission, please accept this report prepared pursuant to House Joint Resolution 95 (1994).

House Joint Resolution 95 continued a study begun under HJR 535 (1993) which directed the Virginia Delegation to the Chesapeake Bay Commission to examine the condition of the shellfish industry in Virginia. The members of the commission were assisted in this study by individuals from private industry, academic institutions and state agencies.

As this report demonstrates, for the shellfish industry in Virginia to be revitalized, progress must be made on a variety of fronts including water quality and habitat protection and restoration, scientific understanding of disease and survivability of various species, development of private aquaculture and fisheries management. This report contains a series of recommendations related to these issues. It is the hope of the members of the study committee that when fully implemented these recommendations will play an important role in the revitalization of the industry.

Attention to the needs of this industry will ultimately benefit the economy of Virginia and the ecology of our tidal waters. I urge that you carefully consider the findings and recommendations contained in this report.

With all good wishes, I am,

Sincerely,

W. Tayloe Murphy, Jr.
HJR 95 Committee Chair

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SHELLFISH INDUSTRY STUDY COMMITTEE - HJR 95 (1994)

Chesapeake Bay Commission Members
Senator Elmo G. Cross, Jr., Chesapeake Bay Commission Chairman
Delegate W. Tayloe Murphy, Jr., Study Committee Chairman
Delegate Robert S. Bloxom
Delegate Howard E. Copeland
Senator Joseph V. Gartlan, Jr.
Secretary of Natural Resources Becky Norton Dunlop
Mr. Irvine B. Hill

Seafood Packing Industry Representatives
Mr. Richard Daiger, Bevans Oyster Company
Mr. Tommy Shackelford, Shackelford Seafood Corp.
Mr. Lake Cowart, Jr., Cowart Seafood

Watermen
Mr. Kenneth Wayne Williams, Virginia Watermen's Association
Mr. A. Thomas Leggett, Jr., Working Watermen's Association

Aquaculture Industry
Mr. Chad Ballard, Jr., Ballard Fish and Oyster Co., Cherrystone AquaFarms

State Personnel
Dr. Dennis L. Taylor, Dean and Director, Virginia Institute of Marine Science, College of William and Mary (VIMS)
Dr. Robert E. Croonenberghs, Department of Health, Division of Shellfish Sanitation
Mr. William A. Pruitt, Commissioner of Marine Resources, Virginia Marine Resources Commission (VMRC)
Mr. Alan Pollock, Department of Environmental Quality, representing Peter W. Schmidt

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Ms. Mary Wright, Division of Shellfish Sanitation
Dr. William Hargis, VIMS
Dr. Roger Mann, VIMS
Dr. Eugene Burreson, VIMS
Mr. Scott Crafton, Chesapeake Bay Local Assistance Department
Mr. Jack Travelstead, VMRC
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COMMITTEE STAFF: Russell Baxter, Chesapeake Bay Commission
DIVISION OF LEGISLATIVE SERVICES COUNSEL: Shannon Varner, Nicole Beyer

I. INTRODUCTION

This plan was prepared pursuant to House Joint Resolutions 535(1993) and 95(1994) by the Virginia Delegation to the Chesapeake Bay Commission. The delegation was assisted by a committee of industry representatives, scientists and state government officials. This plan proposes a series of findings, goals, objectives and actions for the protection, enhancement and revitalization of the shellfish industry in Virginia.

II. COMMITTEE FINDINGS - CURRENT STATUS OF THE INDUSTRY AND THE RESOURCE

Finding 1: **For the purpose of this plan, the shellfish industry includes the wild harvest of clams, oysters and other commercially marketable mollusks, the culturing of those species and the processing of those species for wholesale or retail sale.**

Rationale: While the committee has spent a great deal of time examining the plight of the oyster industry specifically, it is not the only component of the shellfish industry in Virginia. The committee believes that a comprehensive strategy which encompasses all marketable and potentially marketable mollusks is in the best interest of a stable, economically viable industry and therefore presents recommendations applicable to a variety of species and methods of harvesting and culturing.

Finding 2: **The shellfish industry has been an important component of Virginia's economy but has seen declines in recent years.**

Rationale: The economic value of a revitalized shellfish industry will be substantial. Restored and enhanced fisheries will increase opportunities for harvesters, processors and marketers and will yield a significant return on public and private investment. Tables 1 - 4 below offer historical comparisons of related economic activity.

It is also important to recognize the non-harvest benefits of a revitalized fishery. For example, oyster reefs also provide habitat for species sought by recreational anglers. Recreational fishing, tourism and related industries should also benefit from a restored oyster fishery.

Table 1 VALUE OF OYSTER CATCH

YEAR	1958-59	1982-83	1992-93
DOCKSIDE VALUE OF CATCH	$13,374,000	$5,883,000	$2,060,000
ESTIMATED RETAIL VALUE OF CATCH	$66,735,000	$32,356,500	$11,330,000

Sources: Virginia Marine Resources Commission (VMRC), Marine Products Board

Table 2 VALUE OF CLAM CATCH

YEAR	1958-59	1982-83	1992-93
DOCKSIDE VALUE OF CATCH	$832,000	2,492,000	1,693,000
ESTIMATED RETAIL VALUE OF CATCH	$4,576,000	$13,706,000	$9,311,500

Sources: VMRC, Marine Products Board

Table 3 NUMBER OF SHELLFISH PROCESSING FACILITIES

YEAR	1958-59	1982-93	1992-93
NUMBER OF PROCESSING FACILITIES	>400 (est.)	250	157

Sources: VMRC, Marine Products Board, Division of Shellfish Sanitation

Table 4 NUMBER OF HARVESTERS OF CLAMS AND OYSTERS

YEAR	1958-59	1982-83	1992-93
NUMBER OF HARVESTERS	4540	2511	1663

Source: VMRC

Finding 3: **A revitalized industry will allow full use of Virginia's shellfish harvesting and processing facilities.**

Rationale: Virginia possesses a significant shellfish industry "infrastructure" including a large processing capacity, established transportation networks and facilities, a skilled workforce and an experienced fishing fleet. Currently, Virginia's processing and harvesting capacity is not being fully utilized and would benefit from a greater abundance of locally available product.

Finding 4. **Aquaculture has and will continue to be an important part of a comprehensive strategy to revitalize Virginia's shellfish industry.**

Rationale: Prior to the late 1970's, the private planting of oysters accounted for the vast majority of oyster harvests. Increasingly, other species, particularly clams, are being cultured through various methods. In fact, the value of culture clams now exceed the value of the wild harvest. A robust shellfish industry must have a strong private component.

Finding 5: **Shellfish play an important role in the ecology of Virginia's tidal waters. The restoration of populations is a component of habitat restoration, water quality protection and restoration of ecologic systems.**

Rationale: The ecologic role of filter feeding shellfish is increasingly well understood. Filtering action removes nutrients and other pollutants from the water column and the structure of reef communities offer important habitat which contribute to the biological diversity of the Chesapeake Bay ecosystem.

Finding 6: **Historic declines in harvest and total populations of oysters, are due to a variety of factors including harvest, the spread and intensification of dermo and MSX, water quality degradation, loss of habitat from encroachment of land-based uses, climatic events, predation, and loss of habitat from dredging and other subaqueous bottom modification.**

Rationale: It is the finding of the committee that the current depressed levels of the oyster has many causes, of which not all are fully understood. The committee recognizes that a variety of factors cited above, some of which are outside our control, have combined to decimate oyster populations.

Specifically, the intensification and spread of dermo and MSX coincided with a series of years of below average precipitation in the late 1980's. Precipitation in 1993, which is closer to historical averages, has led to some abatement of MSX in the upper reaches of the James River. However, dermo has proved to be less susceptible to changes in salinity and is present throughout the oyster's range in Virginia. Obviously, there is no firm method of determining whether future weather patterns will match historical averages and even if MSX abates due to a return to normal weather patterns, dermo may not abate.

Further, the committee remains concerned about the protection of water quality and the closure of shellfish areas due to activities that cause pollution. As of July 1, 1993, some 99,236 acres of productive or potentially productive shellfish growing areas are closed to direct harvesting. The Division of Shellfish Sanitation has been justifiably conservative in its closure policies in order to protect the public health and to ensure that Virginia can market its products in accordance with national standards. However, the committee believes that for the industry to reach its full potential sources of pollution must be corrected so that condemned areas can be reopened and new condemnations will end.

Finally, effective management and regulation is a vital component of a restoration strategy that needs to be implemented in the context of the ecological and economic value of individual species and communities of shellfish species.

WHAT ARE CONDEMNED SHELLFISH GROUNDS?

Areas are condemned when pollution levels, or potential pollution levels, are sufficient to threaten human health. Shellfish may not be directly marketed from such areas. However, in some cases shellfish may be moved ("relayed") to cleaner waters where they are able to cleanse themselves before being marketed. "Closed" areas are the same as condemned areas.

Finding 7. **Just as declines are attributable to a variety of factors, revitalization of the industry will come from progress on a variety of fronts including management, disease and immune system research, habitat protection, selective breeding, identification and development of species not currently being cultured or non-native species and market restoration and development.**

Rationale: This plan recognizes that a combination of strategies will be necessary for the revitalization of the industry, some of which are long term and some short term. Pollution control efforts, for example, have reduced the concentrations of nutrients and bacteria in many part of Chesapeake Bay. Over the long run, however, population growth and development that result in activities that cause pollution may reduce these gains and produce shellfish closures. A successful program will incorporate a number of approaches and the mix and emphasis will change with time.

Finding 8. **Not all components of the shellfish industry are in decline, however, the current depressed condition of the oyster industry is of greatest concern due to the historical importance of oysters to the economy of Virginia.**

Rationale: The news about the shellfish industry is not all bad. Clam harvests remain stable although there is some concern about increased fishing effort, and, as noted, there is optimism about the future of the aquaculture industry. However, the relative value of these components of the industry are small compared to the historical value of the oyster industry.

Finding 9. **MSX and Dermo will always be present in oyster populations and must be taken into consideration when undertaking research, habitat restoration and management.**

Rationale: There is little doubt that MSX and dermo will continue to effect the oyster resource. The portion of the shellfish industry that is based on the native oyster will always be impacted to a certain extent by dermo and MSX.

Finding 10. **While efforts are underway to reduce toxics and other pollutants, serious concern remains over the presence and impact of toxic and other pollutants on the survival, resistance to disease and reproduction of shellfish species.**

Rationale: Investigations conducted by scientists at the Virginia Institute of Marine Science have begun to establish a link between certain toxic pollutants and the ability of shellfish to resist disease, thrive and reproduce. While the amount of toxic materials released into Chesapeake Bay have decreased in recent years, there remains a good deal of scientific uncertainty amount the cumulative effects of certain toxic materials and combinations of toxics materials. Further investigations are required to fill these gaps in knowledge, but prudence dictates that further reductions and elimination of toxic discharges and their effects should be a goal. The committee does not presume that toxic pollutants are the only pollutants which may jeopardize shellfish resources; shellfish can suffer in low-oxygen conditions and be smothered by sediments.

III. A TWO-TRACK APPROACH

The goals, objectives and recommendations that follow are organized in the context of the following two-tracks, where both tracks are pursued simultaneously and both tracks are of equal importance.

Track 1: Identify and pursue the actions necessary to protect, enhance and where possible, restore currently cultured or harvested, marketable species.

Track 2: Pursue scientific and technical knowledge about the feasibility of culturing native species not currently being cultured commercially and conduct the research necessary to establish a policy for the introduction of non-native

species for commercial aquaculture and/or wild harvest.

Table 5: RELATIONSHIP OF PROPOSED OBJECTIVES TO TRACKS

TRACK 1	TRACK 2
OBJECTIVES: 1.1 1.2 1.3 1.4 1.5 1.6 1.7 2.1 3.1 3.2 3.4 3.5 4.1 4.2 4.3 4.4	OBJECTIVES: 2.1 2.2 2.3 2.4 2.5 3.2 3.3 3.4 3.5

IV. PLAN GOALS, OBJECTIVES AND RECOMMENDED ACTIONS

The committee has established the following goals to guide the proposed objectives and actions which follow. These goals are not listed in any order of priority. Under each goal, the committee proposes a series of objectives and recommended actions.

STRATEGIC PLAN GOALS

GOAL 1:	**Protect and restore habitat in productive and historically productive shellfish areas and maintain a healthy shellfish resource.**
GOAL 2:	**Promote oyster disease research, including immunity research, genetics research and breeding programs, as a high and consistent priority for the Commonwealth and commit the resources of the state to identify oysters that will support a viable oyster industry.**
GOAL 3:	**Increase the shellfish production potential of aquaculture by developing native shellfish species with market potential, developing new technologies for transfer to industry, and lowering legal, regulatory and financial barriers to aquaculture.**
GOAL 4:	**Enhance and support more effective management of all commercial shellfish species, revitalize the public fishery for the oyster and maintain the fishing fleet.**

GOAL 1: **Protect and restore habitat in productive and historically productive shellfish areas and maintain a healthy shellfish resource.**

Objective 1.1 Maintain water quality sufficient for direct harvesting of shellfish from waters which now meet direct harvesting standards and improve water quality in areas that do not meet direct harvesting standards.

Action 1(a) Continue examination of feasibility of establishing shellfish culture areas as recommended by the Shellfish Enhancement Task Force.
Recommendation: Chesapeake Bay Commission staff studies issue.

Action 1(b) Incorporate shellfish habitat protection as component of proposed Tributary Strategies currently under preparation pursuant to Chesapeake Bay Program initiative.
Recommendation: Convey recommendation to Secretary of Natural Resources.

Objective 1.2 Within standards currently in place, work to reopen productive or potentially productive shellfish areas that are currently closed to direct harvesting and prevent additional areas from being closed.

Action 1(c) When modifying septic standards, Health Department takes into account measures beneficial to shellfish resources.
Recommendation: Communicate plan element to Health Department.

Objective 1.3 End discharge of boat sewage.

Action 1(d) Appropriate agencies report to the General Assembly on Virginia's ability to meet EPA requirements for designating no-discharge zones surrounding shellfish growing waters.
Recommendation: Introduce Resolution to begin study in 1995 session.

Action 1(e) Increase public awareness of protection of shellfish habitat through public cooperative education programs between public and private sector.
Recommendation: Communicate action to appropriate agencies.

Objective 1.4 Create at 5000 additional acres of aquatic reef habitat

Action 1(f) Implement Virginia component of Baywide Aquatic Reef Habitat Plan.
Recommendation: VMRC implements strategy by year 2000.

Action 1(g) Investigate public/private partnerships and private sources of funding for habitat creation and restoration.
Recommendation: VMRC coordinates, where feasible, with private entities.

Objective 1.5 Reduce resource loss from channel modification activities

Action 1(h) Formalize notification between Corps of Engineers and VMRC to ensure that watermen, aquaculture operators or other affected individuals are aware of modification proposals and times.
Recommendation: VMRC establishes memorandum of agreement with Corps as soon as possible.

Objective 1.6 Secure additional funds for habitat restoration and replenishment activities.

Action 1(i) Increase VMRC appropriation for habitat restoration and replenishment activities and pursue other opportunities for funding.
Recommendation: Introduce amendment in 1995 session.

Objective 1.7 Reduce and ultimately eliminate effects of toxic pollution

Action 1(j) Encourage and Support implementation of the Chesapeake Bay Toxics Reduction and Prevention Strategy
Recommendation: Virginia Agencies fulfill strategy directives

GOAL 2: **Promote oyster disease research, including immunity research, genetics research and breeding programs, as a high and consistent priority for the Commonwealth and commit the resources of the state to identify oysters that will support a viable oyster industry.**

Objective 2.1 Focus research to meet industry and environmental needs based on scientific guidance and public input.

Objective 2.2 Determine survivability of non-native species having potential market value in areas most likely to support such species.

Objective 2.3 Determine disease resistance of non-native species having potential market value.

Objective 2.4 Determine disease resistance of different strains of native species

Action 2(a) Develop strategic plan for shellfish research and testing. Recommendation: Introduce into the General Assembly, a resolution and a $25,000 budget amendment, directing VIMS to develop a strategic plan for molluscan shellfish research over the next ten years to be presented to the 1996 session of the General Assembly. The plan shall take into account the views of industry and the interested public, compatible efforts in the Chesapeake Bay region and nationwide and shall include:

1. An assessment of recent research on shellfish stocks, diseases, habitat and other facets germane to shellfish culture.
2. Research on oyster disease including studies of immunity, genetics and breeding
3. Research necessary to identify suitable species for aquaculture activities and development of methods for culture of those species.
4. Studies on the economic viability of candidate aquaculture species.
5. Research on non-native species with respect to disease resistance and survivability in local waters.
6. An assessment of available funding vehicles and unmet needs to conduct the strategic research plan.
7. An analysis of existing laws and protocols and their applicability to 3. and 5. above as well as an analysis of whether or not such protocols present barriers to implementation of the proposed plan.

Objective 2.5 Begin actions necessary to comply with applicable protocols for in-water testing of candidate species

Action 2(b) Begin work necessary to meet existing protocols Recommendation: VIMS begins process and reports progress to the 1996 session of the General Assembly.

GOAL 3: **Increase the shellfish production potential of aquaculture by developing native shellfish species with market potential, developing new technologies for transfer to industry, and lowering legal, regulatory and financial barriers to aquaculture.**

Objective 3.1 Simplify permitting for aquaculture facilities.

Action 3(a) VMRC granted clear authority, if necessary, to permit use of water column.
Recommendation: VMRC examines necessity of Code revisions during 1995.

Action 3(b) VMRC adopts regulations for fishery permits for aquaculture operations meeting certain size and other criteria.
Recommendation: VMRC adopts necessary regulations in 1995.

Objective 3.2 Identify waters, states and species that are not otherwise prohibited from being placed in Virginia waters, which may be imported with the intent to place in the waters of the Commonwealth.

Action 3(c) VMRC and VIMS adopt list of approved states, waters, species and applicable conditions to such importation (pursuant to Section 28.2-825 of the Code of Virginia).
Recommendation: Adoption at earliest possible date.

Objective 3.3 Embark on research necessary to identify suitable species for culture activities and develop methods for culture of those species.

Action 3(d) See Action 2(a)3. above

Objective 3.4 Determine economic viability of candidate species

Action 3(e) See Action 2(a)4. above

Objective 3.5 Determine specific regulatory barriers to marine aquaculture

Action 3(f) VMRC directed by joint resolution to conduct regulatory and statutory analysis of applicable regulation and statutes and reports to 1996 of the General Assembly
Recommendation: Introduce resolution in 1995 session.

GOAL 4: **Enhance and support more effective management of all commercial shellfish species, revitalize the public fishery for the oyster and maintain the fishing fleet.**

Objective 4.1 Protect existing and future seed and broodstock areas.

Action 4(a) VMRC adopts broodstock protection measures in existing clam management areas.
Recommendation: VMRC adopts regulations in 1995

Action 4(b) VMRC establishes broodstock sanctuaries for oysters on designated grounds and on constructed reefs.
Recommendation: VMRC adopts necessary regulations in 1995

Objective 4.2 Limit harvests to sustainable levels

Action 4(c) VMRC conducts standing stock survey annually using, to the degree possible, commercial fishermen and sets sustainable harvest quotas.
Recommendation: VMRC conducts survey annually and adjusts quota.

Objective 4.3 Reduce transfer of diseased seed.

Action 4(d) VMRC employs repletion methods which minimize or eliminate transfer of diseased seed.
Recommendation: VMRC employs methods in repletion program.

Objective 4.5 Minimize predation on shellfish stocks

Action 4(e) Review feasibility of establishing fishery to control predation
Recommendation: VMRC review, in consultation with VIMS, establishment of a cownose ray fishery.

V. SELECTED REFERENCES

Blue Ribbon Oyster Panel, "Recommendations - The Holton Plan for Restoring Virginia's Oyster Industry", Richmond, VA, 1991.

Chesapeake Bay Commission, Virginia Delegation, "House Joint Resolution 535 (1993) - Interim Report", Virginia House of Delegates Document 87, 1994.

Chesapeake Bay Program, Living Resources Subcommittee, "Chesapeake Bay Oyster Fishery Management Plan, Annapolis, MD, 1994.

Chesapeake Bay Program, Living Resources Subcommittee, "Aquatic Reef Habitat Plan", Annapolis, MD, 1994.

Chesapeake Bay Program, Implementation Committee, "Recreational Boat Pollution and the Chesapeake Bay: A Report to the Chesapeake Executive Council", Annapolis, MD, January, 1991.

Maryland Oyster Roundtable, "Action Plan", Annapolis, MD, December, 1993.

Neilson, B., Wilson, N., Hershner, C., "Man Versus Mollusc", Shellfish Enhancement Task Force Report, Virginia Institute of Marine Science, December, 1991.

Task Force on Septic Regulations, "Report of the Task Force on Septic Regulations to the Secretaries of Natural Resources and Health and Human Services", Richmond, VA, July, 1991.

Taylor, D., "Restoration of the Virginia Oyster Fishery: The Alternative Species Strategy", Virginia Institute of Marine Science, Virginia Sea Grant Marine Resource Advisory, No. 52., 1994.

ACTS OF ASSEMBLY

HOUSE JOINT RESOLUTION NO. 535

Requesting the Chesapeake Bay Commission to study the condition of the shellfish industry in the Commonwealth.

Agreed to by the House of Delegates, February 7, 1993
Agreed to by the Senate, February 16, 1993

WHEREAS, the Commonwealth, with an estimated 240,000 acres of oyster growth, was the most important producer of the American oyster, *Crassostrea virginica,* in the nation through the first half of the twentieth century, with landings in the 1950s averaging 3.2 million bushels annually; and

WHEREAS, in the 1960s and 1970s, the average annual oyster landings declined to an average of 1.26 million bushels; and

WHEREAS, the decline in oyster landings continued to accelerate in the 1980s, with oyster landings falling from 1,177,313 bushels in the 1980-81 season to 111,992 bushels in the 1990-91 season; and

WHEREAS, oyster landings for the 1991-92 season fell to an all-time low of 82,367 bushels; and

WHEREAS, the decline in oyster landings has witnessed a corresponding decline in the number of watermen, as evidenced by the drop in the number of oyster licenses issued from a peak of 4,566 in 1960 to a low of 1090 in 1991; and

WHEREAS, the decline in oyster harvests since the 1950s has been attributed in part to extensive disease mortality from MSX (*Haplosporidium nelsoni*) and Dermo (*Perkinsus marinus*); and

WHEREAS, stresses from low oxygen and high levels of toxic chemicals in the Chesapeake Bay are believed to make oysters more vulnerable to disease; and

WHEREAS, many areas otherwise suitable for shellfish production are closed or lost due to contamination by pollutants and bacteria; and

WHEREAS, revenues from the sale of oyster meat harvested in the Commonwealth have declined from over $10 million in 1986 to less than $5 million in 1990; and

WHEREAS, a decline in the value of the shellfish industry reduces revenues earned by the Commonwealth through lease payments, taxes, license fees and other means; and

WHEREAS, a decline in the populations of oysters and clams threatens the quality of water in the Chesapeake Bay since mollusks filter pollution out of the water by straining it through their gills; and

WHEREAS, clam culturing has proven successful in the Commonwealth, accounting for nearly half of the market clams sold, and clam farmers are having difficulty finding uncontaminated grow-out areas; and

WHEREAS, remaining waters in the Commonwealth which can support shellfish are under pressure from other competing uses; and

WHEREAS, both a Blue Ribbon Panel on the Oyster Industry and the Shellfish Enhancement Task Force set up by the Commissioner of Marine Resources have recommended that programs be established to improve management of the oyster resources in the Commonwealth; and

WHEREAS, several of the options that have been suggested for revitalizing the shellfish industry in the Commonwealth include testing the suitability of the non-native species, *C. gigas,* introducing on-shore depuration of oysters taken from moderately polluted grounds, designating shellfish culture waters with measures to maintain water quality in those areas, and culturing shellfish off-bottom; and

WHEREAS, a failure of the Commonwealth to take remedial actions to preserve its oyster and clam industries could lead to the end of direct shellfish harvests from Virginia waters; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the Chesapeake Bay Commission be requested to study the condition of the shellfish industry in the Commonwealth. The Commission shall examine the (i) reasons for the decline in oyster harvests, including degradation of water quality and habitat, overharvesting, mismanagement, and disease; (ii) status of efforts to negate the impact of the diseases MSX and Dermo on oyster populations, including the introduction of disease-resistant varieties of oysters; (iii) options for providing financial and other forms of assistance to the shellfish industry during periods of low harvests; and (iv) development of policies to alleviate the problems facing the shellfish industry by restoring shellfish populations to historic levels, including testing of non-native shellfish species, developing depuration facilities, designating shellfish culture waters, and facilitating off-bottom oyster culturing.

The Commission shall complete its work in time to submit its findings and recommendations to the Governor and the 1994 Session of the General Assembly as provided in the procedures of the Division of Legislative Automated Systems for the processing of legislative documents.

GENERAL ASSEMBLY OF VIRGINIA -- 1994 SESSION

APPENDIX 2

HOUSE JOINT RESOLUTION NO. 95

Continuing the Chesapeake Bay Commission's study of the condition of the shellfish industry in the Commonwealth.

Agreed to by the House of Delegates, February 2, 1994

Agreed to by the Senate, March 8, 1994

WHEREAS, the 1993 Session of the General Assembly passed House Joint Resolution No. 535 requesting the Chesapeake Bay Commission to study the condition of the shellfish industry in Virginia; and

WHEREAS, the commission, assisted by a committee of individuals from private industry, state agencies and scientific institutions, has examined numerous issues related to the condition of the shellfish industry and its future prospects; and

WHEREAS, because of the quantity and complexity of the issues involved, the commission and the members of the HJR committee have agreed that another year of study is necessary to ensure that due consideration is given to these important issues; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the Chesapeake Bay Commission be requested to continue its study of the condition of the shellfish industry in the Commonwealth. The charge of the commission shall remain as set forth in House Joint Resolution No. 535 enacted by the 1993 Session of the General Assembly.

The Commission shall complete its work in time to submit its findings and recommendations to the Governor and the 1995 Session of the General Assembly as provided in the procedures for the Division of Legislative Automated Systems for the processing of legislative documents.

APPENDIX 3

LD5349376

HOUSE JOINT RESOLUTION NO. 448

Offered January 17, 1995

Requesting that the Department of Health study the feasibility of establishing no-discharge zones for boats.

Patrons—Murphy, Bloxom and Copeland; Senators: Cross and Gartlan

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Referred to Committee on Rules

WHEREAS, the shellfish resources of the Commonwealth are important to the economy of Virginia and the ecology of the Chesapeake Bay; and

WHEREAS, many sources of pollution have contributed to the general decline of water quality in the Chesapeake Bay watershed sometimes resulting in the closure of productive shellfish areas to direct harvest; and

WHEREAS, one threat to local water quality conditions and resident shellfish resources is the discharge of human waste from boats; and

WHEREAS, the discharge of human waste poses the greatest threat in areas heavily used by the boating public including marinas, boat ramps and areas where boats congregate which are often located in quiet, protected waters and which are common locations for shellfish grounds; and

WHEREAS, the 1987 Chesapeake Bay Agreement included as one of its objectives "to eliminate pollutant discharges from recreational boats"; and

WHEREAS, a 1991 report authorized by the Chesapeake Executive Council, recommended, among other things, the designation of "no-discharge zones" in sensitive waters and the establishment of a program to provide additional and adequate pump-out facilities for boats with sewage holding tanks; and

WHEREAS, the result of improved management of human waste from boats could reduce the closing of shellfish beds as well as protect the health of those who consume shellfish; and

WHEREAS, Water Control Board Regulation VR 680-14-05 includes a requirement for mandatory use of holding tanks in shellfish areas that is only effective following the establishment of no-discharge zones by the Commonwealth pursuant to U.S. Environmental Protection Agency requirements; and

WHEREAS, Department of Health regulations require that adequate onshore sanitary facilities, a dump station for portable toilets and pump-out facilities be provided at each marina or other place where boats are moored; and

WHEREAS, a recent analysis of boat pump-out facilities in Virginia's portion of the Chesapeake Bay estimated that facilities are operational at half of those locations required to have them; and

WHEREAS, the federal Clean Vessel Act provides grant moneys to states for pump-out facility installation, maintenance and education programs, and the Commonwealth has garnered about $390,000 of those moneys for its 750 marinas; and

WHEREAS, prior to determining whether it is in the interest of the Commonwealth to apply to the U.S. Environmental Protection Agency for the establishment of no-discharge zones, it is necessary to determine where the Commonwealth stands with respect to the availability of boat pump-out facilities and the vulnerability of sensitive waters; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the Department of Health be requested to study the ability of the Commonwealth to meet current U.S. EPA standards for the establishment of no-discharge zones by examining data regarding the extent of pollution loadings, the sensitivity of affected waters—particularly the existence of productive or potentially productive shellfish areas—and the availability of operational pump-out facilities. The Department shall also evaluate compliance with existing regulations and the feasibility of requesting additional federal moneys through the Clean Vessel Act. All agencies of the Commonwealth shall provide assistance to the Department, upon request.

The Department shall complete its work in time to submit its findings to the Governor and the 1996 Session of the General Assembly as provided in the procedures of the Division of Legislative Automated Systems for the processing of legislative documents.

APPENDIX 4

LD5348376

HOUSE JOINT RESOLUTION NO. 449

Offered January 17, 1995

Requesting the Virginia Marine Resources Commission to study its organic statutes and its regulations to identify those that may inhibit the development and operation of shellfish aquaculture facilities.

Patrons—Murphy, Bloxom, Copeland and Morgan; Senators: Cross and Gartlan

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Referred to Committee on Rules

WHEREAS, the culturing of shellfish is an increasingly important component of Virginia's seafood industry and increasingly contributes to the Commonwealth's economy; and

WHEREAS, some current statutory requirements and regulations regarding gear, times of operation and other aspects of culturing and harvest may be applicable only to the harvest of wild shellfish but may be applied to shellfish aquaculture operations; and

WHEREAS, some current statutory and regulatory requirements for aquaculture operations may be a burden to existing or potential aquaculture operators; and

WHEREAS, shellfish aquaculture is a growing industry nationwide; and

WHEREAS, it is in the interest of the Commonwealth to foster the growth of this industry in Virginia waters and to facilitate the permitting and regulation of aquaculture operations so that Virginia aquaculture operations are not placed at a disadvantage; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the Virginia Marine Resources Commission be requested to conduct an analysis of statutes and regulations affecting aquaculture operations to (i) identify ways to streamline and simplify existing requirements and (ii) remove unnecessary requirements. The Commission shall appoint an advisory committee of individuals engaged in or familiar with shellfish aquaculture operations in Virginia to assist it with this study.

Technical assistance shall be provided by Virginia Institute of Marine Science, the Division of Legislative Services, and the Office of the Attorney General as requested by the Commission. All agencies of the Commonwealth shall provide assistance to the Commission, upon request.

The Commission shall complete its work in time to submit its findings and recommendations to the Governor and the 1996 Session of the General Assembly as provided in the procedures of the Division of Legislative Automated Systems for processing legislative documents.

Official Use By Clerks

Passed By The House of Delegates		Passed By The Senate	
without amendment	☐	without amendment	☐
with amendment	☐	with amendment	☐
substitute	☐	substitute	☐
substitute w/amdt	☐	substitute w/amdt	☐

Date: _____ Date: _____

_____ _____

Clerk of the House of Delegates Clerk of the Senate

APPENDIX 5

LD5347376

HOUSE JOINT RESOLUTION NO. 450

Offered January 17, 1995

Requesting that the Virginia Institute of Marine Science develop a strategic plan for molluscan shellfish research and begin the process of seeking necessary approvals for in-water testing of non-native oyster species.

Patrons—Murphy, Bloxom and Copeland; Senators: Cross and Gartlan

---

Referred to Committee on Rules

WHEREAS, the management and productivity of shellfish populations in Virginia's waters depend on a vigorous program of scientific investigation and research; and

WHEREAS, a range of important issues facing the native oyster supply demands further research including studies on oyster diseases, immunity, genetics and breeding; and

WHEREAS, further research is necessary to determine the potential for cultivating species not currently being cultured in Virginia waters; and

WHEREAS, it is in the interest of the Commonwealth to determine whether species not native to Virginia waters could play a role in the shellfish industry; and

WHEREAS, all shellfish research conducted by the agencies of the Commonwealth should be done in a coordinated and strategic fashion; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the Virginia Institute of Marine Science be requested to (i) undertake the development of a strategic ten- year plan for molluscan shellfish research and (ii) begin the process of seeking approvals in conformance with state, federal and international laws and protocols for the in-water testing of oyster species not native to Virginia waters. The plan shall take into account the views of members of the shellfish industry and the interested public, related Chesapeake Bay regional, national and international initiatives, and shall, at a minimum, include: (i) an assessment of recent research on shellfish stocks, diseases, habitat and other facets germane to shellfish culture; (ii) research on oyster diseases, including studies of immunity, genetics and selective breeding for disease resistance; (iii) research necessary to identify suitable species for aquaculture and the development of methods for culture of those species; (iv) studies of the economic viability of candidate aquaculture species; (v) research on non-native species with respect to disease resistance and survivability in local waters; and (vi) an assessment of available funding vehicles and unmet needs to conduct the activities called for in the plan.

All agencies of the Commonwealth shall assist in the conduct of this study as requested by the Director of the Institute.

The Institute shall complete its work in time to submit its findings, including a report on the progress in seeking approvals for in-water testing of non-native oyster species, to the Governor and the 1996 Session of the General Assembly as provided in the procedures of the Division of Legislative Automated Systems for the processing of legislative documents.

Official Use By Clerks

Passed By The House of Delegates		**Passed By The Senate**	
without amendment	☐	without amendment	☐
with amendment	☐	with amendment	☐
substitute	☐	substitute	☐
substitute w/amdt	☐	substitute w/amdt	☐

Date: _____ Date: _____

_____ _____

Clerk of the House of Delegates Clerk of the Senate

HJR 95 - SHELLFISH INDUSTRY STUDY APPENDIX 6
COMMENTS ON PUBLIC REVIEW DRAFT

Attachment #	Comments by:
1	Summary of remarks made at public hearings
2	Dr. Peter DeFur, Environmental Defense Fund
3	Mr. James E. Plumhoff, III, Virginia Agribusiness Council
4	Mr. Chad Ballard, Chairman, Virginia Aquaculture Advisory Board
5	Drs. Bonnie Brown and Arthur Butt, Chesapeake Scientific Investigations Foundation, Inc.
6	Dr. William L. Rickards, Virginia Graduate Marine Science Consortium
7	Mr. J. Duke Boswell, Wesco Inc.
8	Dr. William D. DuPaul, Virginia Institute of Marine Science
9	Mr. Chip Petre, Virginia Shellfish Growers Association
10	Ms. Linda Crewe
11	Mr. John Johnson, Virginia Farm Bureau

PUBLIC HEARING SPEAKERS
Norfolk and Richmond

Mr. Chip Petre, Virginia Shellfish Growers Association, Poquoson: (Also see written comments attached)

- Believes that a fishery for the cow nosed ray should be established to help minimize predation.
- Advocates a study on clam density to determine whether populations are increasing or decreasing.
- Believes document should extrapolate on how constructed reefs might increase production and economic activity.
- Supports goals to reduce toxics.
- Does not support any change (ed. note: none is proposed) in condemnation standards.
- Supports objective regarding elimination of boat waste.
- Expressed concern about costs of reef program.
- Wants to include aquaculture facilities in notification process (action 1(h)).
- Don't introduce non-native species without other states concurrence.
- Keep in mind that aquaculture is an increasingly important component of the industry.
- Include hatcheries in shellfish culture areas.

Mr. Joe Hoggard, Seafood Restaurant Owner, Norfolk

- Believes that Virginia should follow France's example and introduce c. gigas which has given France a new industry. Virginia should ignore any political considerations and introduce c. gigas.

Mr. Sam Forrest, Richmond

- The oyster is a key component of the ecology of the Bay and both is affected by pollutants and cleanses water through filtering action.
- 1% of oyster populations remain therefore stop all harvest on public rocks and aggressively work to enforce existing anti-pollution laws.

Mr. Jack Booth, Burgess

- Concerned that disease is spread by the transplantation of oysters, therefore need to include provision in plan regarding movement of seed under the authority of VIMS.
- Need to strengthen water quality protection.
- Need to encourage private shellfish production by establishing 10 year leases on portions of the Baylor Grounds.
- Limit harvests of wild oysters.
- Need to better identify sources of pollution to determine sources of condemnation.
- Concern about the availability of labor to shuck oysters in the event a new species becomes productive.
- Does not believe that c. gigas will be accepted in the marketplace because of taste.

Mr. Tom Arnold, Hayes

- VMRC regulations need to be revised so that an aquaculture operator can move animals in floats from condemned creeks. The relay regulations are geared towards the wild harvest. Believes that VMRC relay regulations are to restrictive with respect to the design requirements of cages.

Dr. Bonnie Brown, Richmond (also see attached comments)

- Supports track of plan related to identifying native species that are not currently being cultured.
- Believes plan should include oyster recovery areas (ORAs) similar to those proposed in the Maryland Action Plan. Constructed reefs could serve as the basis for ORAs.
- Supports objectives related to the tributary strategies. Believes that shellfish populations can be managed for water quality purposes.
- Concerned that Chesapeake Bay Program policy on non-native species is being contravened by call for testing for introduction of non-native species.
- Research conducted by Dr. Brown has shown that North Carolina strains of the native oysters may be able to outgrow disease and therefore different strains, rather than different species could be the basis for the revitalization of the industry.
- Doesn't think VMRC should charge for aquaculture permits.
- Believes that non-native species will out-compete native species.

Dr. Arthur Butt, Richmond (also see attached written comments)

- Do not recommend the introduction of non-native species.
- Need to do a better job of determining the link between water quality, oysters and SAV. Such relationship need to be documented.

Mr. Duke Boswell, Richmond (also see attached letter)

- Believes that home sewage treatment systems, such as the one he sells, could help eliminate the negative effects of septic systems and should be included as an alternative technology.
- Concerned that proposed §28.2-655(B)(2)(iii) of Aquaculture and Shellfish Culture Protection Act means that no new development could take place
- Concerned that (iv) of the section above would affect permitted density of development.

Mr. Paul Applin, York

- Believes the future of the oyster is the native oyster not an exotic species, therefore track 2 is a mistake.
- Believes reefs are getting funding and aquaculture is not. Need additional money for

research and not rely only on general fund appropriations to William and Mary.

- Need to look at ways of supplying disease-free seed.

Dr. Peter Defur, Environmental Defense Fund (EDF) (See also attached written comments)

- EDF is opposed to introduction of non-native species.
- Need to do a full EIS prior to undertaking research for the purpose of introduction.
- Need to clearly separate the goals, objectives and actions that deal with non-native species.
- Need to add source of the 5000 acres of reef habitat.
- Need to add detail of economic benefits and short-term cost.

ENVIRONMENTAL
DEFENSE FUND

Capital Office
1875 Connecticut Ave., N.W.
Washington, DC 20009
(202) 387-3500
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20 December 1994

Mr. Russell W. Baxter
Shellfish Industry Study Committee
Chesapeake Bay Commission
629 E. Main St., Room 627
Richmond, VA 23219

Dear Russ:

These comments are submitted on behalf of the Environmental Defense Fund (EDF). EDF is a national advocacy organization with over 250,000 members nation-wide and more than 6,000 in Virginia. I appreciate the opportunity to provide comments on the Draft report of the Shellfish Industry Study Committee resulting from HJR 95 (1994). It is clear from the report that the committee has devoted considerable time and energy to this problem. I hope that my comments are useful to the Study Committee in completing its work.

EDF has participated in several efforts devoted to the problems of the shellfish industry in Virginia and the Chesapeake Bay, especially the oyster industry. We have commented on proposals to conduct research on disease resistance of Japanese oysters, Crassostrea gigas, and EDF staff have served on related advisory committees in Virginia and Maryland. I participated in the Maryland Oyster Roundtable during 1993, and continue on the Steering Committee of the Maryland Oyster Roundtable. I am thus familiar with the issues related to rejuvenating the shellfish industry generally, and the oyster industry specifically.

We recognize that multiple factors have contributed to the present unacceptable plight of the shellfish industry in Virginia and have cooperated in efforts to correct many of the problems. EDF has vigorously pursued the goal of cleaning up Virginia's waters from toxic chemicals and excess nutrients. EDF joined with other citizen groups in challenging state toxic chemical control measures as too lax and insufficient to protect aquatic life from toxic chemicals. We are familiar with numerous aspects of the scientific and regulatory aspects of the matters relating to the Virginia oyster industry, as well. EDF is committed to restoring the industry as an integral part of the Bay restoration program, and it is in that spirit that we submit these comments.

These comments are separated into general and specific comments.

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December 20, 1994
EDF
Shellfish Plan

General Comments

1) EDF strongly disagrees with the recommendations to proceed with experiments and development of plans to introduce non-native species of shellfish (specifically oysters) in the waters of Virginia. We have objected previously to such introductions in Virginia and in other states (see attachments). Our objections have been and continue to be based on policies, laws and scientific evidence. Many of the documents that articulate those objections are part of the administrative record with VMRC regarding proposed experiments and trials and thus will be found in attachments. To summarize:

- State law prohibits the introduction of non-native species;
- Agreements between and among the neighboring states preclude introductions of non-native species, especially unilaterally enacted introductions;
- ANY use of federal funds for activities related to or supportive of such introduction necessitates an EIS;
- there is no scientific support for the ability to introduce non-native species without the probability of establishing the species in the Bay;
- there is no evidence that an introduction would not produce severe, permanent adverse harm to the Bay ecosystem;
- unknown and unexpected outcomes are likely (e.g. reversion of triploids to diploids);
- neighboring states will likely exercise their responsibility to protect aquatic resources and ecosystems through litigation.

2) The balance of the plan includes recommendation that have been well considered and are supported by a range of interested parties, if not all parties familiar with and interested in this matter. The issues and recommendations wisely represent topics that are pertinent to the problems with the shellfish industry, including habitat restoration, water quality improvement, improved and updated regulatory and management capabilities.

Perhaps one of the most far reaching recommendations pertains to the legal and regulatory scheme by which the state exercises its responsibility to protect and restore the resource. Allowing more privatization of the industry has the advantage of investing the users of the resource in its protection, growth and well being. This approach has been adopted and used successfully in other states and Virginia can and should look to those states for strategies and approaches to use as well as to avoid.

3) The plan should identify background and research materials used in the preparation of the report, where available. Information on selection of the size of the area to be added, the research funds requested, etc. should be referenced generally or specifically so that the public may understand the bases for these factual and specific items.

4) We strongly recommend that the financial aspects of the plan receive some attention. The cost estimates and the expected returns for the shellfish industry are valuable components of the industry analysis that should be presented at the earliest time and in convenient form.

Specific Comments

II. Finding 1. "culturing" should be modified or defined to include activities in a hatchery and those in the water. The plan rightly recognizes "culture" means a great many activities and this should be noted.

Finding 2: Rationale: The Plan should refer to an economic study or some estimate in order to strengthen this point.

Finding 7: This finding includes MANY items, some of which are related, and some of which are controversial. These points should be separated at least. The recommendation to use alternative species should note whether native or non-native species are intended, and the non-native species should be dropped from consideration.

EDF is formally opposed to the introduction of non-native species, in agreement with other states, the Atlantic States Marine Fisheries Commission (ASMFC) and the International Council on the Exploration of the Seas (ICES). This recommendation is disingenuously included in a list of unrelated items and should be removed.

If the Study Committee continues to feel that some inclusion of non-native species is warranted, then all references, both explicit and implicit need to be clearly identified and placed in a single, separate recommendation.

Finding 9: Rationale: This finding and rationale recognize that the parasitic diseases are a real concern. The point is made in such a way as to provide only an argument for introduction of some species that would seem, on the surface, to not succumb as

readily to the diseases. Whether or not this is true remains a matter of some debate and discussion among scientific experts. At the least, this language should caveat the point on what is known now.

Finding 10: Rationale: The role of sediments as sources (or sinks) of toxic chemicals is an important one, especially for oysters, and should be noted here.

III. Strategic Plan Elements

Track 1: EDF fully agrees with this statement.

Track 2: The introduction of non-native species must be separated from the other elements. We urge the Study Committee to drop the issues related to non-native species from consideration. Recognizing that some members of the Committee may not agree to dropping the point, at the least, the issues related to non-native species must be separated into an entirely different Track, e.g. Track 3. Legally and procedurally, actions related to non-native species must receive a quite different consideration. If not removed, the entire suite of elements in Track 2 will be slowed by the non-native species provisions.

Goal 2: Again, EDF urges the Committee to drop from consideration the introduction of non-native species. Reasons for this position are cited above. Should the Committee feel obliged to retain the recommendation to introduce non-native species, this part of the goal must be separated from the other components of the goal.

Goal 3: We fully agree with this goal.

Goal 4: The language should be modified to note "native" shellfish species.

Objective 1.4 The Plan should refer to this basis for the 5,000 acre recommendation. Parties who are familiar with the industry may be aware of the basis and rationale for the 5,000 acres, but many readers will be unfamiliar and need additional explanation. Perhaps the Plan might also be modified to say "at least 5,000...".

Objective 1.5 This recommendation could be strengthened to urge the identification of areas that will not be disturbed by dredging, channel maintenance, etc because of the high value of oyster habitat. These areas would then be considered similar to

sanctuaries because of the high value as shellfish growing grounds. Regulatory procedures can be initiated to protect these valuable state public resources.

Objective 1.6 We fully agree that funding is needed to support this activity. We urge the Committee to suggest a funding source that will not be construed as simply another "drain on public funds". Recreational licenses for the use of estuarine and marine resources could be used to provide funding to set aside shellfish grounds. Economic development grants also should be used for restoring and protecting shellfish grounds, and the Study Committee could recommend designation of some portion of the budget funds for this purpose. The Committee may wish to consider recommending classification of oyster reefs as elements of pollution control plans, owing to the filtration capacity of the oysters. This recommendation would require some mechanism for insuring a growth in the total acreage of shellfish grounds and net increases in oyster reefs as ecological restoration not continually harvested.

Objective 1.7 We agree with this and suggest inclusion of contaminated sediments in the plan.

Goal 2 This entire goal needs to be separated into native and non-native species activities. The state should NOT be funding research to promote or encourage introduction of non-native species. Nor is state legislation the proper and appropriate vehicle for seeking research funding for a specific institution in such a fashion as to bypass normal scientific review and comment. EDF notes that VMRC once constituted a Japanese Oyster Review Committee for one of the purposes listed here; a reactivation of that committee should be considered.

As written, the objectives of this goal are to develop and implement introduction of non-native species, in opposition to VMRC policy, state law, ASMFC policy, ICES policy, public comment and scientific objections. We urge the Study Committee to delete the non-native species wording and replace it with "different strains of native species".

Any research on non-native species should be restricted to quarantine laboratory work that will elucidate mechanisms of disease resistance and action permitting more effective management of native species. VMRC has repeatedly stated its official policy opposing introductions of non-native species. EDF urges the Study Committee to make its recommendations consistent with that policy or provide the legal and scientific evidence to

support reconsidering VMRC policy.

Goal 3. We basically agree with this, and note that numerous safeguards need to be in place for increased aquaculture to succeed. The scientific journal, Estuaries, will publish in January 1995 an entire issue devoted to the topic of estuarine aquaculture; the Study Committee is referred to this journal for additional information on the issues regarding aquaculture.

Conclusions

The Plan is laudable in considering a wide range of issues that affect the health of the shellfish industry in Virginia. With the exception of the recommendations to proceed with introduction of non-native species, the Plan should yield significant positive results if implemented in a comprehensive fashion.

We urge the Committee to reconsider the provisions of the Plan that would promote the introduction of non-native species. As is clear in the administrative record, the introduction of non-native species has been contentious for at least the last 5 years. The scientific community generally is opposed to moving species into habitats where they are not indigenous. This opposition is evident in the report issued by the Office of Technology Assessment, and in the guidelines of the ASMFC and ICES. Both latter groups have strict guidelines related to introductions, based on the premise that introductions of non-native species have the potential to cause substantial irreversible damage.

EDF has consistently urged VMRC to proceed vigorously with several remediation and research efforts in support of the shellfish industry. The remediation efforts include physical habitat restoration, bacterial pollution elimination to re-open contaminated shellfish beds, establishing brood stock sanctuaries, and re-seeding viable oyster grounds. Research is needed to understand the causes of oyster declines more effectively. It is not clear if ambient conditions such as low oxygen cause greater susceptibility to Dermo and MSX. Toxic chemicals in both the water column and the sediments have the potential to reduce spat viability and thereby limit reproductive potential; the magnitude of this problem needs to elaborated. Laboratory research is needed to understand the underlying cellular and molecular basis for disease and disease resistance in shellfish species.

EDF has opposed research that was explicitly aimed at

introduction of non-native species, particularly prior to completion of an Environmental Impact Statement. Our position on this point has been made clear to the VMRC, as articulated in attached letters. We have a particular concern with research using non-native species. Research on non-native species must meet two basic criteria; it must be carried out under quarantine conditions and the intent (and research question) must be to elucidate mechanisms that further the protection of native species unless and until an EIS has been completed and introduction approved.

The attached documents are being sent to you under separate cover from the EDF office in Washington, DC. These comments are being sent via fax and by U.S. mail.

We appreciate the opportunity to comment on this Draft Plan and believes that, for the most part, it represents a starting point for restoring Virginia's oyster industry.

Sincerely,

Peter L deFur

Peter L. deFur, Ph.D.
Senior Scientist

Attachments: under separate cover
1990 comments of EDF re: Japanese oyster research
1992 EDF report: "Oyster Restoration - No Role for Japanese Oysters"
1993 EDF letters (2) to VMRC regarding proposed research

Virginia Agribusiness Council

The Organized Voice of Virginia's Industry of Agriculture

December 21, 1994

Mr. Russell W. Baxter
Chesapeake Bay Commission
629 E. Main Street
Room 627
Richmond, VA 23219

Dear Mr. Baxter:

I have reviewed the HJR 95 (1994) Public Review Document and would like to take this opportunity to make a couple of comments. I am commenting on behalf of the Virginia Agribusiness Council's members who are involved with the aquaculture and shellfish industries. I have also read the comments made by Dr. William D. DuPont of the Virginia Institute of Marine Science and I share some of his concerns.

I too have a certain level of discomfort associated with allowing localities to designate and regulate Shellfish Culture Areas (SCA). This may subject these designations to unintended local "mischief" or bias. Furthermore, it is inevitable that different localities will interpret and regulate these SCA's differently, creating a inconsistent framework for these designations.

In addition, I feel that many of the ideas in the proposed legislation are duplicative in nature. While I understand their intent, many of these strategies appear similar those outlined in the current Chesapeake Bay Preservation Act. The aquaculture and shellfish industries would be more receptive to a single, well-implemented program to accomplish revitalization; duplication of programs only increases the already complex and onerous regulatory burden which these industries face.

In light the above considerations, I feel that the aquaculture and shellfish industries might be better served if other approaches are considered. Thank you for your time and consideration.

Sincerely,

James E. Plumhoff, III
Director of Government Affairs

JEP/bbw

207 Heritage Building, 1001 East Main Street • P. O. Box 718, Richmond, Virginia 23206-0718 • (804) 643-3555

VIRGINIA AQUACULTURE
ADVISORY BOARD
P. O. Box 1163, Richmond, VA 23209

December 21. 1994

Mr. Russell W. Baxter, Virginia Director
Chesapeake Bay Commission
Virginia Office
629 East Main Street, Room 627
Richmond, Virginia 23219

Dear Russ:

Speaking on behalf of the Virginia Aquaculture Advisory Board (AAB), I wish to advise you that the AAB will look at and discuss the draft "Shellfish Industry Plan" at its next meeting.

Members of the AAB have expressed concern with creating culture areas. After our review of the document, comments from the AAB could be forthcoming.

Thank you for your consideration and I look forward to supplying further comment toward the development of this plan.

Sincerely,

C. Chadwick Ballard, Jr.
Chairman

c: Robins Buck, Board Secretary

TO: Mr. Russ Baxter
Chesapeake Bay Commission
629 E. Main Street
Richmond, VA 23240

DATE: December 21, 1994

FROM: Dr. Bonnie L. Brown
Center for Environmental Studies, Virginia Commonwealth University
P.O. Box 842012, Richmond, VA 23284-2012
(804) 828-1562

and

Dr. Arthur J. Butt
Chesapeake Scientific Investigations Foundation, Inc.
P. O. Box 4913, Richmond, VA 23220-8913
(804) 739-5349

SUBJECT: HJR 95 (1994) PUBLIC REVIEW DRAFT 12/5/94

The following is a summary of our comments presented before the Committee at the 14 December public hearing in Richmond, VA. Let us begin by endorsing the efforts of the Shellfish Industry Study Committee in development of a strategic plan (Plan) for the protection, enhancement and revitalization of Virginia's shellfish industry. We support the goals that are defined and outlined in the Plan. However, we oppose several specific elements recommended in the Plan and present here information that supports making substantial changes to the Plan before it is submitted to the General Assembly.

Section	Page	Comments/Corrections
II	2	**Finding 5: Rationale:** Reference is made to the ecological service provided by oysters as filter feeders; however, no mention is made of the essential contribution in terms of habitat that oyster reefs provide to the Bay's ecosystem.
II	3	**Finding 7:** The paragraph states that "...revitalization of the industry will only come from progress on a variety of fronts including...alternative species..." The inclusion of a recommendation that could be taken to advocate introduction of any exotic (non-indigenous) species to Chesapeake Bay is inappropriate and we recommend deleting any reference to "alternative species" if it is intended to refer to exotics. It is neither necessary (as we shall show below) nor advisable to introduce non-native species to Chesapeake Bay.
II	4	**Finding 8**: This section implies that commercial exploitation of oysters is the only benefit to the economy of Virginia. It also needs to be stressed that a resurgence of *C. virginica* will provide both ecological and economic benefits to the Commonwealth. Habitat restoration of this vital species should foster resurgence in other fishable marine species, particularly those associated with the food webs

II	4	**Finding 8**: con't. of oyster reef communities. This will in turn enhance other aspects of the Bay including increased tourism and the large amounts of revenues generated from all service areas directly and indirectly related to the Bay.
III	5	**Track 2:** The first half of this section is insightful and commendable. However, the second half of this section inappropriately addresses the supposed need for "... research necessary to establish a policy for the introduction of non-native species." Reference to introducing non-native shellfish, even for research reasons, should be deleted. Considerable evidence exists (see below) that non-native species can have detrimental, sometimes devastating, and virtually always unanticipated effects on host ecosystems. Furthermore, such introductions contradict a federal decree signed in 1974 and a Bay-wide policy entitled ***"Chesapeake Bay Policy for the Introduction of Non-Indigenous Aquatic Species"*** was signed and endorsed by the Executive Council for Chesapeake Bay in December, 1993 that specifically discourages such introductions.
IV	6	**Goals 1 & 2:** These goals need to acknowledge and integrate research linkage of oyster revitalization and habitat restoration. Such restoration is what will promote health of Chesapeake Bay and thus aid in maintaining shellfish resources. Particular wording addition should optimally include reference to the necessity for oyster recovery areas (ORAs) in the manner proposed by the recent Maryland Oyster Roundtable Group. This wording would be supported by the Action 1(b) already proposed on p. 7.
V	7	**Action 1(b):** We complement the Committee on including shellfish habitat protection as a component of the Tributary Strategies and urge that this section be enhanced by recognizing the ability of shellfish to "manage" water quality in a "top down" fashion. The utility of using "top-down" measures as a nutrient control along with the current "bottom-up" controls currently stressed by other agencies has only recently been recognized.
V	7	**Objective 1.4:** This is the most appropriate location for specific recommendation of ORAs; i.e., they should be specifically mentioned as one type of aquatic reef habitat among the proposed 5000 additional acres.
V	9 - 10	**Objectives 2.2 & 2.3:** Delete reference to in situ research on "non-native" species. There are viable native oyster strains about which we need to know more. Our own research since 1991 has indicated that several strains of the native Eastern oyster, *C. virginica* survive the disease rigors of Chesapeake Bay and exhibit excellent production qualities. While our data are still in the process of being officially published, we have appended to this letter a copy of a report presented to the State of North Carolina which illustrates the superior growth and survival of certain native oyster strains. Furthermore, several fledgling oyster culturists in Chesapeake Bay have had similar experiences to ours (i.e., excellent survival and harvest within 12-18 months of

deployment), often in direct relation to use of planting and harvesting strategies recommended by us, by VIMS, and by Maryland researchers. Much of the success has come with the acceptance that oysters *never* prospered in the deepest areas of Chesapeake Bay where periodic anoxic episodes have always occurred; rather they grow best in high flow high productivity waters such as along the surface of oyster reefs. Thus, when we employ culture methods that mimic the optimal conditions of high flow high productivity, our cultured oysters, like our businesses, prosper.

Of the many recorded instances of introduced non-indigenous aquatic species, we are aware of a few that had neutral impact, many that had negative and sometimes disastrous effects, and *none* that lead to exclusively positive effects. In the specific instance of *C. gigas*, Dr. Bob Sizemore of the State of Washington Shellfish Disease Lab informed us on a recent visit that there exist multiple shellfish parasites, diseases and pests associated with west coast, Asian and European oysters. Of particular concern are two species of oyster drill that do not presently occur on the US east coast, a disease known as NIX (nuclear inclusion X) that is known to infect clams and is suspected to infect all species of oyster, and several forms of PSP (paralytic shellfish poisoning) agents. None of these presently occur on the east coast and any importation of exogenous stocks could lead to infection of all Chesapeake Bay shellfish, not just oysters, with such pests. In fact, Washington prohibits importation of eastern oyster broodstock for the very same reasons we provide here, to avoid introducing exotic pests associated with the imported stocks that could potentially damage their shellfish industry! Thus, item 7. on p. 10 is also an inappropriate suggestion, if anything existing laws should be strengthened to conserve and enhance our native resources. We must stress that research with non-native shellfish species, if conducted, would violate existing laws and regulations and would in any case by cooperative agreement have to follow federal, state and Bay guidelines for study review, preparation of EIAs and notification of neighboring states (basically MA through FL) that could potentially be affected by such introductions.

Lastly, these two objectives are in direct conflict with Goal 4.

V 10 **Goal 3, Objective 3.1:** This section should recommend as an appropriate action the implementation of a means to track disease in oysters relayed from one place to another. Anthropogenic transmission of oyster diseases is detrimental not only to native (wild) shellfish but also to local producers who may be culturing oysters, clams, shedding crabs, etc.

V 10 **Action 3(a):** It is our understanding that VMRC proposes to charge for an aquaculture permit. *If* we can change the public perception of shellfish in general, and aquaculture is the most probable candidate to do this, then shellfish aquaculture has great potential to revitalize the industry. However, while a permit itself is not objectionable, any charges will tend to impede development of the industry.

V 11 **Objective 3.3:** This section should refer only to underutilized native species. Use

of the term "strain" instead of "species" may be a more appropriate term unless the distinction is specifically made.

V 11 **Objective 3.5:** There are numerous barriers that presently impede marine aquaculture and we heartily endorse this objective and Action 3(e).

V 12 **Goal 4:** One cannot protect existing and future seed and broodstock areas with the introduction of non-native species such as the Japanese oyster, *C. gigas*. *C. gigas* from the west coast is host to numerous parasitic diseases currently not found on the east coast. Introduction of this or any other exotic shellfish species could serve as a vector for the introduction of a multitude of unknown associated pathogens.

Proposed Legislation: The appended proposed "Aquaculture and Shellfish Culture Area Protection Act" omits reference to the items described above and we would not support presentation of the proposed legislation in its present form.

In conclusion, while we do not support either the Plan or the proposed legislation in their present forms, we do believe that substantial progress has been made by the Committee and encourage it to consider our comments along with all of the other comments made at the 14 December meeting.

Enclosure

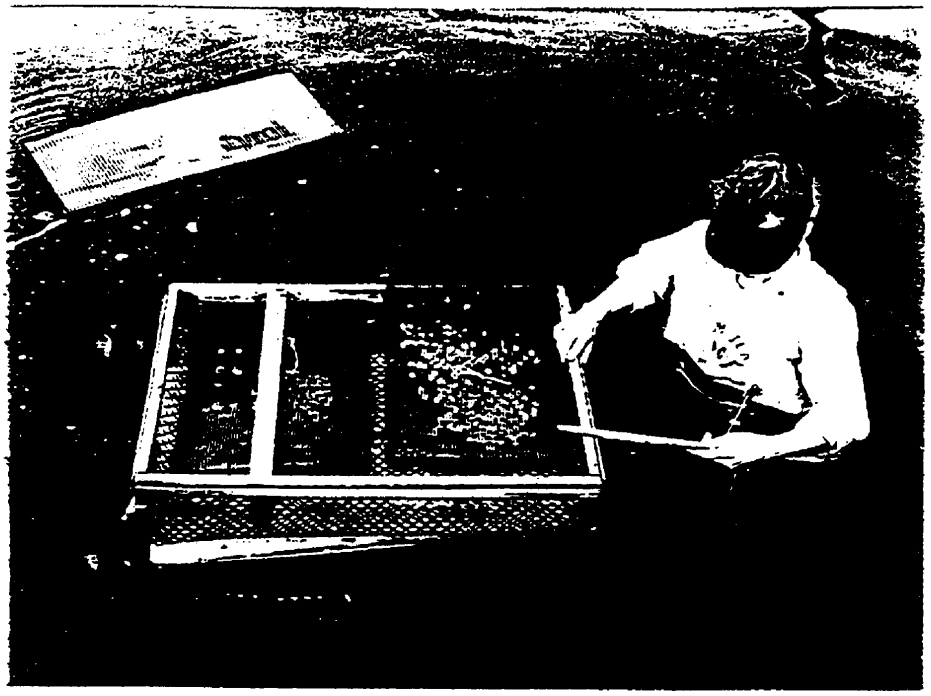
cc: V. Harrison, Chesapeake Bay Living Resources Subcommittee
C. Bisland, EPA Chesapeake Bay Program Office
B. Pruitt, VMRC
Chesapeake Bay Foundation

csif:shellfsh/12/21/94

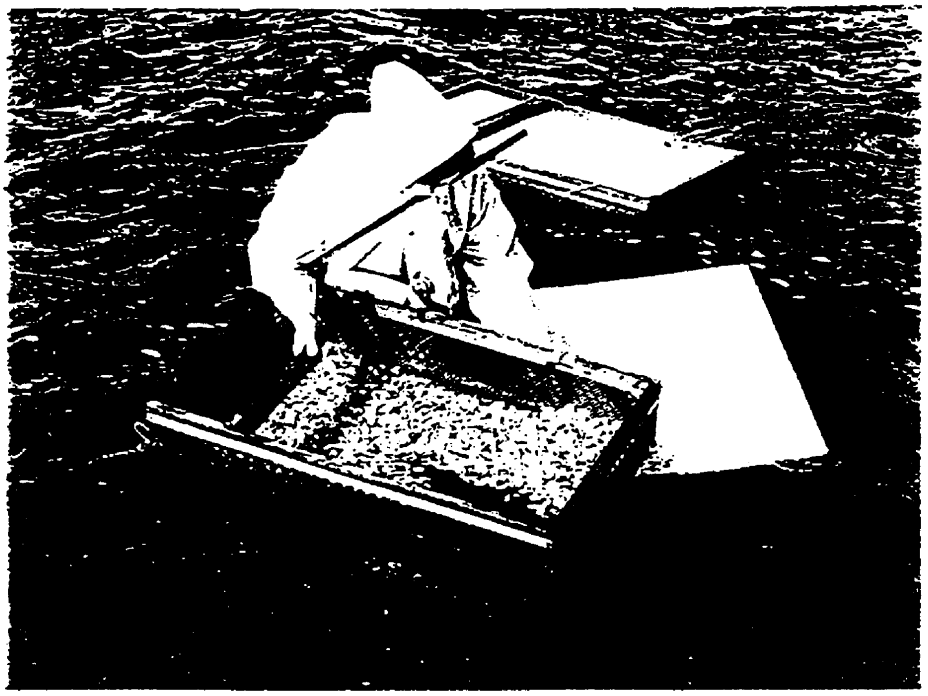
Pilot scale eastern oyster culture in North Carolina: 1991-1994

Bonnie L. Brown, Ph.D. and **Arthur J. Butt, Ph.D.**
Chesapeake Scientific Investigations Foundation, Inc.
P.O. Box 4913, Richmond, VA 23220
(804) 739-5349

Kennedy T. Paynter, Ph.D.
Univ. of Maryland, College Park
Dept. of Zoology, College Park, MD 20742



Oysters introduced at 10 mm in the Fall, are held in small mesh bags



Oysters are transferred into larger mesh containers during the 12-18 months required to grow to harvest size.

Harvest size oysters of 76 mm (3 inches).

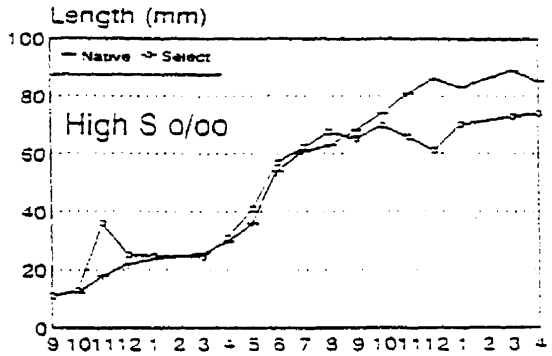
Executive Summary

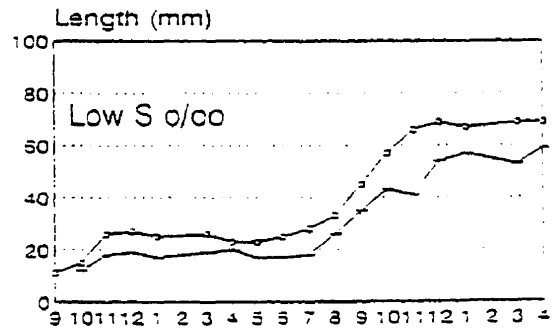
Studies have been performed during the past three years to evaluate the potential performance of selectively bred and naturally occurring strains of the eastern oyster, *Crassostrea virginica*, in North Carolina. At three pilot scale production sites in and around Pamlico Sound, oysters are cultivated in floating trays from small spat to harvest size. Results indicate that at high salinity sites, the native North Carolina oyster, afforded the optimal growth environment provided by the floating trays, performs best--reaching harvest size in 12-13 months with very low disease-related mortality. In low salinity areas, however, a strain selectively bred for rapid growth and tolerance of fresher water performs best. While mortality is negligible, oyster growth at low salinity sites is considerably slower, requiring at least two years to attain harvest size.

Technical data are given here to illustrate that successful commercial culture is possible with careful and informed selection of culture container, site and strain of oyster.

Growth, disease, and survival of native NC oysters were compared to a domestic strain of Chesapeake Bay oysters selectively bred for rapid growth. In one set of trials, spat of both oyster strains were introduced in September 1992 (10mm) and cultured side-by-side at two pilot sites selected on the basis of salinity (low: 10 o/oo and high: 32 o/oo), water quality, and accessibility. Through the fall, winter, and spring the selectively bred strain grew significantly faster than the native strain at both sites. In May 1993, *Perkinsus marinus* infection exceeded 80% (infection intensity greater than 0.5) in both strains held at high salinity at which time the domestic strain ceased to grow and began to experience accelerated mortality. Meanwhile, despite such high levels of infection, the native NC strain cultured at high salinity experienced < 20% mortality and continued to grow; exceeding harvest size of 76mm by October 1993. In contrast, at the low salinity site, while overall growth was lower and despite *P. marinus* infection, the domesticated oysters out-performed the native strain. Mortality of both strains when cultured at the low salinity facility was negligible (< 5%). The trend in growth for the two strains suggests that performance of oysters is related to genetic makeup, despite our inability to detect such differences, while the trend in mortality suggests a relationship to other factors such as acclimatization and pathogenicity of *P. marinus*.

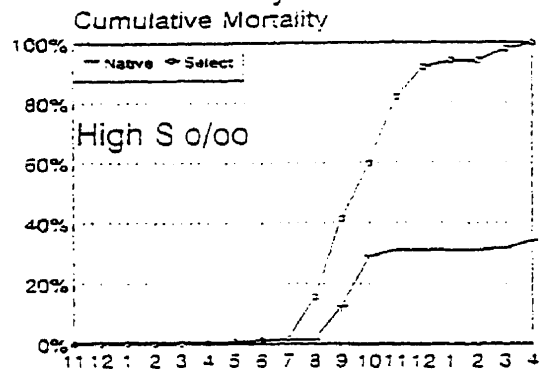
Shell Length

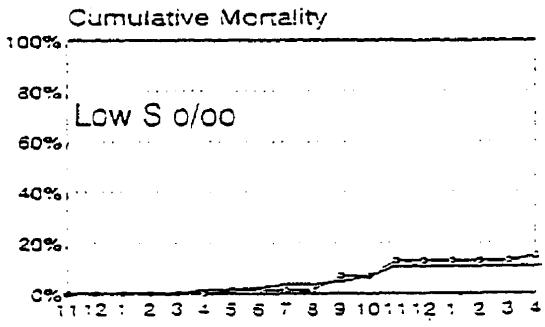




Sept 1992 - April 1994

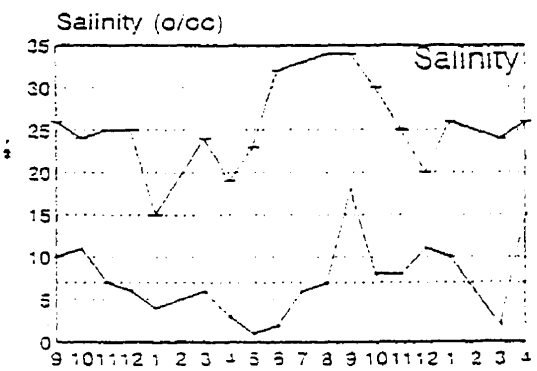
Mortality in NC

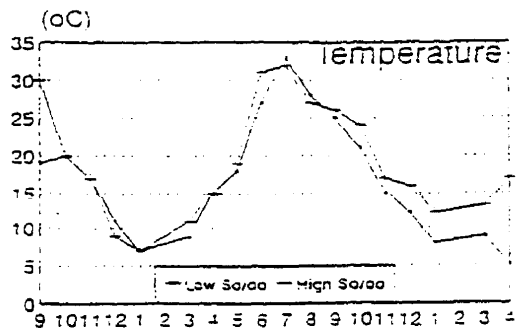




Nov 1992 - April 1994

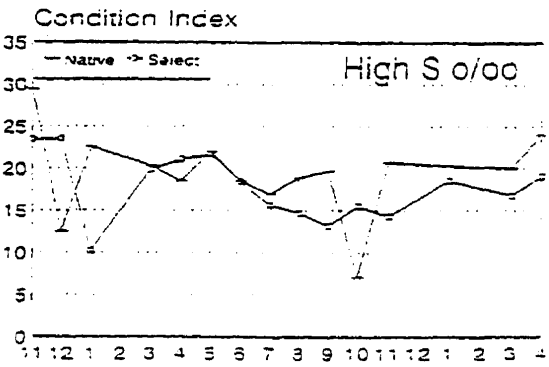
Physical Parameters

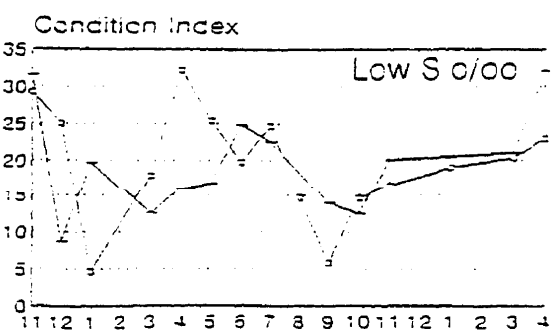




Sept 1992 - April 1994

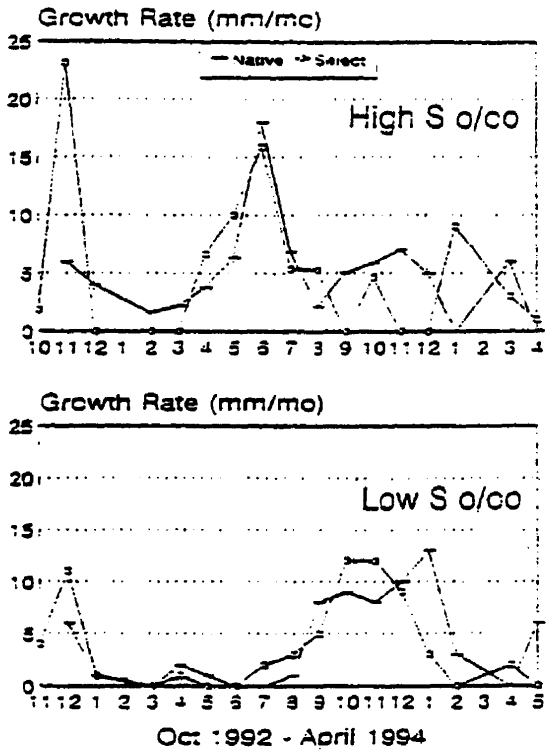
Condition Index



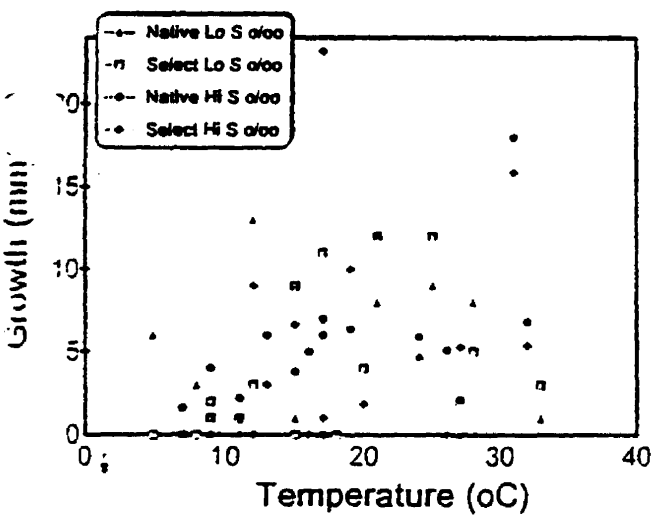


Nov 1992 - April 1994

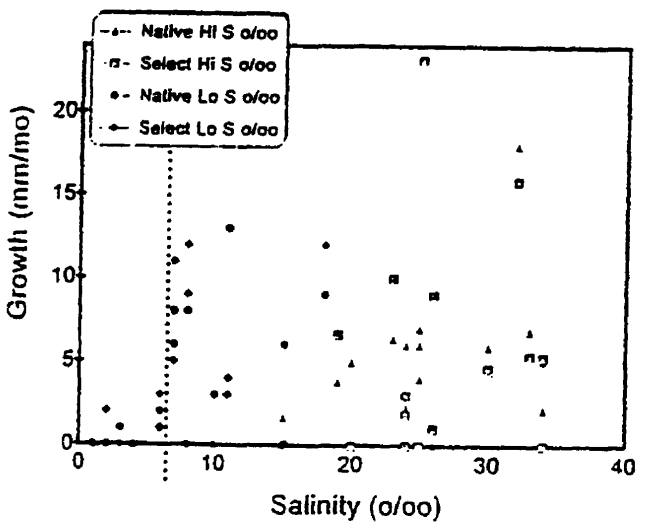
Growth Rate



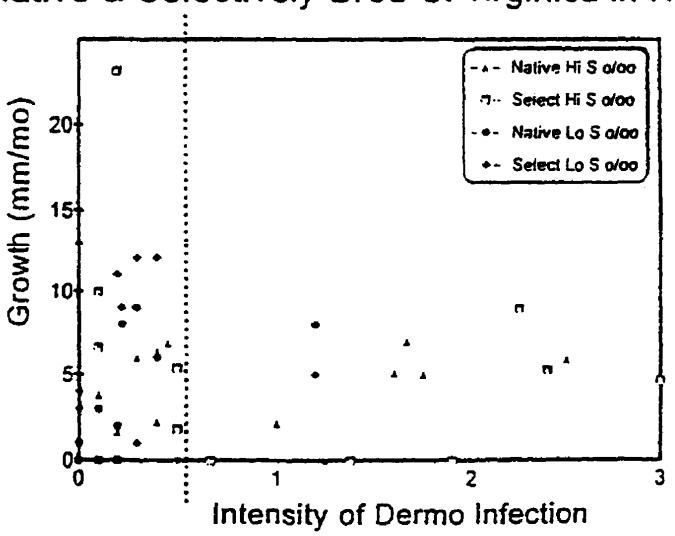
Native & Selectively Bred C. virginica in NC



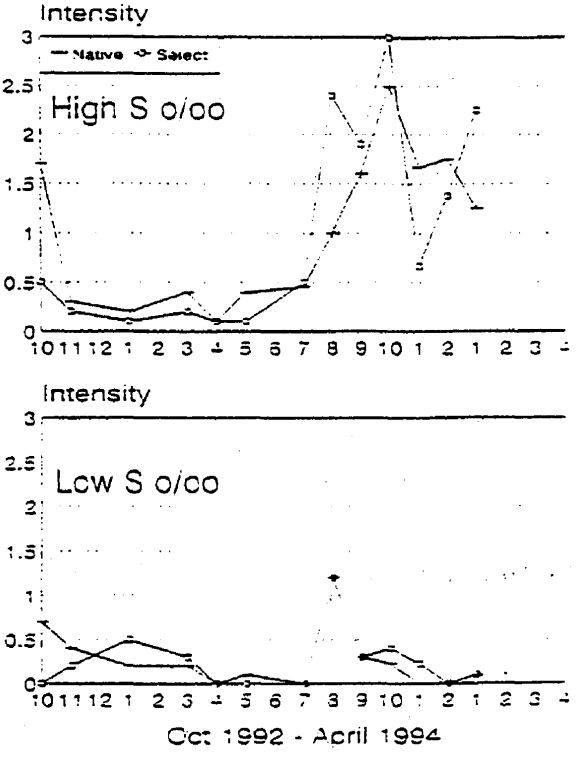
Native & Selectively Bred C. virginica in NC



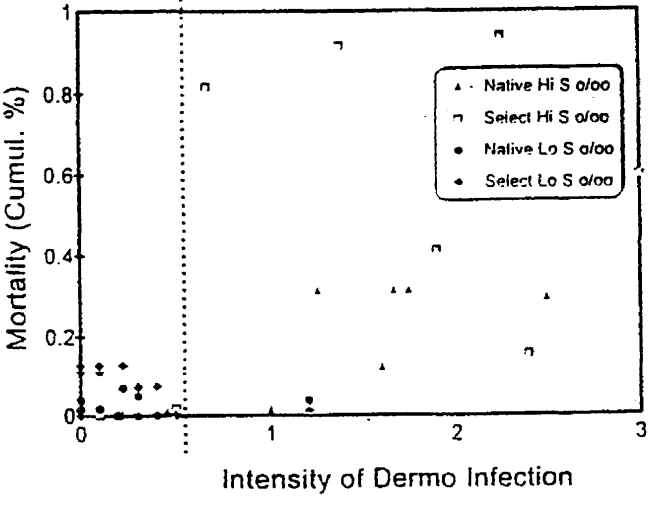
Native & Selectively Bred C. virginica in NC



Intensity of Dermo Infection



Native & Selectively Bred C. virginica in NC



VIRGINIA GRADUATE MARINE SCIENCE CONSORTIUM
Madison House 170 Rugby Road University of Virginia Charlottesville, VA 22903 (804) 924-5965 FAX (804) 982-3694

Mr. Russell W. Baxter
Chesapeake Bay Commission
629 E. Main St., Room 627
Richmond, VA 23219

15 December 1994

Dear Mr. Baxter:

I am writing in reference to House Joint Resolution 95(1994) with the intention of offering some constructive comments.

I was able to attend the 12/5/94 hearing in Norfolk, and I had intended to offer comments in Richmond at the 12/14/94 hearing but I was not able to do so because of a bout with the flu. Therefore, I am putting my thoughts on paper for you.

In 1994 the U.S. Congress appropriated $1.5 million within the budget of the National Sea Grant College Program, NOAA, for FY95 research related to oyster diseases. While the emphasis of this research is to be on those diseases which are impacting the mid-Atlantic oyster resource, the funds are not targeted exclusively to problems in this region.

Oyster disease research funds were first appropriated in 1991 and were administered through offices of the National Marine Fisheries Service. For FY95, Congress moved the appropriation to the Sea Grant budget for program management and oversight. Having these funds within the Sea Grant budget will allow researchers from throughout the nation to attack questions concerning MSX, Perkinsus, and juvenile oyster disease - with limited attention to oyster disease problems elsewhere along our coasts.

As Director of the Virginia Sea Grant College Program, I have been tasked by the National Sea Grant College Program to lead the development of an overall plan for this research program and the process whereby research proposals will be prepared and evaluated.

While reading HJR 95, I noted several mentions of oyster diseases and the need to address these problems. As noted above, this is precisely the intention of the FY95 Oyster Disease Research Program (ODRP) funding from Congress. I could not help but note that, because Virginia's oyster resource has been so severely impacted by MSX and Perkinsus, the Commonwealth ought to have considerable interest in the ODRP. In fact, I would encourage follow-on legislation to HJR 95 that ensures funding from Virginia to expedite research which will be conducted by researchers within Virginia's colleges and universities and

ensure the relevance of this research to problems which are unique to the Commonwealth. Such a Virginia appropriation would expectedly leverage considerable federal dollars toward this end since the federal funds require matching input from the recipient.

I might also point out that the Virginia Graduate Marine Science Consortium was established by the Virginia Legislature and is able to receive appropriated funds through the State Council of Higher Education. Federal funds currently administered by the Consortium are passed to researchers and marine advisory and extension personnel at several universities, including VIMS, ODU, UVA and Virginia Tech, on the basis of peer reviewed proposals. Thus, the administrative mechanism for handling an oyster disease appropriation from the Legislature is in place.

In closing, I should emphasize the leveraging aspect that a Virginia appropriation would produce. Based upon

past levels of oyster disease funds which have gone to Virginia researchers, I would estimate that Virginia researchers will receive approximately $300,000 to $400,000 of the FY95 funds. If these researchers could include the added support of state appropriated funds in their proposals, it would be reasonable to expect Virginia projects to be substantially more attractive to Sea Grant. Having increased funding would also speed the rate at which results addressing our oyster disease problems are generated, and hopefully provide some concrete ways through which these problems can be overcome in a shorter time than will be needed if only the federal funds are available. Since the matching requirement is equal to one-half the federal funds, I would suggest a Virginia appropriation of $150,000 to $200,000.

If you, or members of the Chesapeake Bay Commission, desire further information about the Marine Science Consortium or Virginia Sea Grant, or if you would like to discuss the idea of Virginia funding some aspects of the Oyster Disease Research Program, please do not hesitate to contact me.

Sincerely yours,

William L. Rickards

William L. Rickards
Director

file:i.proj.oyster.odr95.hjr95

WESCO INC.

DISTRIBUTOR FOR NORWECO

1306 DINWIDDIE AVENUE
RICHMOND, VIRGINIA 23229

(804) 282-5970

December 7, 1994

Mr. Russell Baxtor
Virginia Director
Chesapeake Bay Commission
P. O. Box 10009
Richmond, Virginia 23240

Dear Mr. Baxtor:

We are writing in response to an article which appeared in the Richmond Times Dispatch on November 29, 1994, entitled "Study Outlines New Policy to Save State Oyster Industry." After reading the article, we discovered that one of the major contributors to the destruction of the oyster industry is septic tank waste.

WESCO, Inc. is the Central Virginia distributor for NORWECO's individual home Singulair Bio-Kinetic wastewater treatment plants designed for residential and small commercial use. The systems have been certified Class "1" by NSF International and approved by State Health and Environmental Quality departments. The systems are regulated by the Bureau of Sewage and Water Services, Commonwealth of Virginia, Department of Health VR355-34-400 (Alternative Discharging Sewage Treatment System Regulations for Individual Single Family Dwellings).

Although we believe the systems are currently over regulated, many of the standards set forth are important to maintain and restore the ecology of the Chesapeake Bay. For example, the effluent from our wastewater treatment systems must be tested four times annually. Therefore, the state or counties can monitor the levels of the effluent being discharged into the soil and waterways. We also believe that individual counties should be able to set their own land-use standards to protect the water in shellfish areas as they are more familiar with the needs of their own communities.

The Singulair Bio-Kinetic wastewater treatment plant for individual homes not only enhances property value while protecting the environment, but also reduces all domestic wastewater to a clear, odorless liquid is just 24 hours, yielding a 10/10 mg/l BOD_5 and total suspended solids discharge. Although we realize our product may not be the "magic bullet" needed to save the oyster industry, we do know it is a possible means of regulating the septic tank waste into shellfish waters.

We would appreciate the opportunity to discuss our product with you prior to the hearing on December 14, 1994, in Richmond. Otherwise, we look forward to attending the hearing.

Again, our wastewater treatment systems reliable protect you, your family and the environment. Together, we can help restore the ecology of the Chesapeake Bay and other shellfish waters.

Yours very truly,

WESCO, Inc.

J. Duke Boswell
President

Enclosure

cc: The Honorable W. Tayloe Murphy, Jr.
Virginia House of Delegates
District 99

The Honorable George Allen
Governor of Virginia

The College Of
WILLIAM & MARY

Chartered 1693

Virginia Institute of Marine Science
School of Marine Science

P. O. Box 1346
Gloucester Point, Virginia 23062
804/642-7000, Fax 804/642-7097, Scats 842-7000

December 5, 1994

Mr. Russell Baxter
Chesapeake Bay Commission
629 East Main Street, Room 627
Richmond, Virginia 23219

Dear Russ:

I have reviewed the HJR 95 (1994) Public Review Document. I found most of the context in pages 1-12 quite reasonable and consistent with the objectives of the Committee. All was fine until I came upon the proposed Aquaculture and Shellfish Culture Area Protection Act. I understand the intent behind the proposed legislation and the objectives are quite admirable and worthwhile. However the concept of SCAs has, what I feel is a major flaw -- it does not recognize nor accommodate the current regulations and practices pertaining to leased shellfish growing areas.

Listed below are several concerns and comments pertaining to the proposed Aquaculture and Shellfish Culture Area Protection Act. They are not in any particular order nor are they prioritized but I thought it might be worthwhile to put them on paper for your review.

Concerns and Comments:

1. The Virginia Institute of Marine Science should be involved in the process of identifying shellfish culture areas (SCA). If such criteria include an estimate of the biological carrying capacity for aquaculture operations, then addressing the determinant parameters should involve the Institute in its capacity as a scientific advisory agency.

Much of the shellfish aquaculture industry is still in the research and development stage or has recently become economically viable and has significant opportunities for expansion. More basic and applied research with suitable demonstration projects are necessary for the future and continued development of an economically viable aquaculture industry. VIMS has a long history of research and development in shellfish aquaculture and there is no reason to suspect that the future will be different. Shellfish culture areas, if designated, must include biological, environmental and socio-economic implications pertaining to the future development of the aquaculture industry. Here again, VIMS has an important and necessary role to play.

2. Placing the initiation and responsibility for SCA designation on each locality (county, city) has the potential for creating tremendous bias both for and against aquaculture; it politicizes the entire process. There is no guidance for the make-up of a local Shellfish Culture Area Advisory Committee. Localities with a traditional wild fishery or a tourist-based economy may perceive aquaculture as an unwanted competitor or a hinderance to commercial development. In the most general concept, the creation of local Shellfish Culture Area Advisory Committees would potentially create a fragmented and inconsistent approach to the development of shellfish culture in Virginia. It is easy to see parallels where if one wants to inhibit or impede the development of a rational comprehensive and state-wide economic opportunity, then just give it to local control.

3. The creation of SCAs may well serve as a deterrent to future aquaculture development. It could very easily slow development outside of a designated SCA because of uncertainties regarding future water quality deterioration and upland development. In other words, areas outside a SCA could be perceived as "second rate" and thus more vulnerable to competitive and less desirable uses.

4. The development of SCAs does not take into consideration the current regulations, policies and practices of bottom leases for shellfish harvest. The leases held by individuals which are included in a SCA have now taken on a new value, whereas those leases outside a designated SCA have less protection and perceivably, less value. Consequently, individuals who hold leases outside a designated SCA would have little incentive to engage in shellfish culture. The complexity of current bottom lease regulations make the SCA concept unworkable.

5. The creation of a SCA does not take into consideration the future technological advances that will allow different species to be cultured; the parameters for favorable propagation and growth may be quite different for each cultured species. There is no provision for a sunset clause in the designation of a SCA; what may be a good SCA today may not be the same in a few years.

6. The creation of SCAs and the establishment of local control contradicts the efforts of the existing industry (the Virginia Shellfish Growers Association) in their attempt to work with VMRC and other agencies to establish culture activities within the existing regulatory framework or to establish a more accommodating regulatory strategy. In addition, the SCA concept does not interface with the activities of the Department of Agriculture and Consumer Services and the Aquaculture Advisory Board in the development of a comprehensive aquaculture plan, including shellfish, for Virginia.

7. If the designation of a SCA is indeed something out of the ordinary or is intended to designate an area where shellfish culture is to be prosecuted to a higher level of productivity, then in theory, an SCA designation should entail the development and use of more advanced technology for aquaculture. This could mean the use of three dimensional culture methods, the permitted use of mechanized harvesting devices, and the construction of shoreside hatchery facilities, for examples. The proposed SCA legislation is silent on all these issues that would be important to the businesses within a SCA.

If you have questions or would like to discuss any of the items mentioned here, I would appreciate a call from you. Thank you for your consideration.

Sincerely,

William D. DuPaul, Ph.D.
Associate Director for
Advisory Services

WDD:cht

cc: Dr. Dennis Taylor
Dr. Bob Byrne
Mr. Mike Oesterling

Virginia Shellfish Growers Association
C/O 421-B Messick Road
Poquoson, Virginia 23662

The following comments regarding HJR 95 are specific and address the findings, and where appropriate, the rationale or objectives rather than the draft legislation. Our comments are from the perspective of the marine aquaculture industry as it now exists. In general VSGA endorses this pro-aquaculture paper proposing "a strategic plan for the protection, enhancement & revitalization of the shellfish industry in Virginia". However, the draft legislation appears incomplete without inclusion of the Plan's goals and actions.

1) p.2, finding 6: Declines in harvest...due to a variety of factors including...predation.

   comment: The cownose ray population has increased and predation to shellfish has worsened since the VIMS 1979 report on the problems & management of cownose rays in the lower Chesapeake Bay.

   recommendation: Persue establishing a fishery to control the ray population.

2) p.4, finding 8: Clam harvests remaining stable and reference to historical value of oyster industry

   comment: No study since 1973 has been made to determine clam density. However, VMRC documented that the daily catch has dropped from as high as 11,000 clams per boat per day in 1965 to 1200-2200 clams per boat per day in 1991.

   recommendation: Place a dollar value on achieving goal 4 to conduct a standing stock survey of the wild clam population.

   comment: Reference to historical value of the oyster industry implies restoration methods will again achieve past harvests.

   recommendation: Based upon the outcome of the ongoing oyster reef repletion effort, extrapolate how that program might economically contribute to revitalization of the oyster industry.

3) p.4, finding 10: The amount of toxic materials released into Chesapeake Bay have decreased in recent years.

   comment: Aquaculture industry has noticed an increase in toxic algae blooms, resulting in poor larval & post set survival rate especially during the past two years of record fresh water run-off into the Bay.

   recommendation: Concur with goals to reduce and eliminate toxic

discharges.

4) p.7, objective 1.2: Reopen...shellfish areas that are currently closed...and prevent additional areas from being closed.

comment: The NSSP and the public health do not permit casual reopening of condemned shellfish waters. Virginia's standards and those of HAACP are a plus to our shellfish industry.

recommendation: If the intent of this objective means that if sources of pollution causing the condemnation are corrected and a resurvey of the water is warranted, then rephrase the objective.

5) p. 7, objective 1.3: End overboard discharge of boat sewage.

comment: Concur.

recommendation: Establish more pump-out stations and procure sewage boats to visit popular recreational boat anchorages to pump out boats at anchor.

6) p.7, objective 1.4: Create 5000 acres of aquatic reef habitat.

comment: The cost of this effort would be significant. The availability of disease free seed from private sources would probably not be sufficient to seed a fraction of this goal.

recommendation: Review the cost of the current repletion program and extrapolate actual costs. If the cost per animal is greater than the sale value it would be an expensive subsidy program.

7) p.8, objective 1.5: Reduce resource loss from channel modification activities.

comment: Concur with notification process.

recommendation: Include private marine aquaculture hatcheries, nurseries, and grow out areas in the notification process.

8) p.8, objective 1.6: Secure additional funds for habitat restoration and replenishment activities.

comment: Could be expensive.

recommendation: Wait and see if the oyster reef experiment is successful before appropriating funds.

9) p.8, objective 1.8:

comment: Include Bay education programs.

recommendation: Accelerate education of the public on cleaning up the Bay.

10) p.9, objective 2.2: Determine survivability of non-native species

having potential market value in areas most likely to support such species.

comment: Re-think introducing non-native species.

recommendation: More study needs to be done in cooperation with other East Coast states as to the advisability of such action.

11) p.10, objective 3.1: Simplify permitting for aquaculture facilities.

comment: Concur, although VIMS, Corps of Engineers, Shellfish Sanitation Division and others may be involved in this process as well as VMRC.

recommendation: Involve the marine aquaculture industry in this permitting process, bearing in mind that aquacultured products are not a public resource as is the wild harvest. Industry should also be involved with determining "certain size and other criteria".

12) p.11, objective 3.2: Identify waters, states & species...with the intent to place (shellfish) in the waters of the Commonwealth.

comment: The purpose of this is to keep out potential disease problems.

recommendation: Frequent updates of approved shellfish, waters, and states are needed to reflect changing conditions.

13: Appendix I: Shellfish culture area definition

comment: A shellfish culture area should include hatcheries, nurseries, and grow-out areas.

recommendation: To encourage the growth of the aquaculture industry, Virginia needs to release unused leased bottom.

Sincerely,

Chip Petre
President, VSGA

December 6, 1994

Russell W. Baxter, Virginia Director
Chesapeake Bay Commission
629 E. Main St. Room 627
Richmond, VA 23219

Dear Mr. Baxter,

This letter is a follow-up to our phone conversation this morning regarding the Public Review Draft which resulted from the Legislative Shellfish Study Committee. As you know, I serve as chairman of VMRC's Clam Study Committee and am very interested and concerned with restoration of the shellfish beds.

For the past two years, other watermen, as well as myself, have been smelling chlorine coming from various Sanitation Dept. discharge pipes in the York River, Ocean View and most recently, the Small Boat Harbor in Newport News. This is of great concern to those of us working on shellfish beds in those areas as we are well aware that chlorine kills shellfish larvae in the water. At times the odor of chlorine has been so great that it could be detected 7 miles from shore. I realize that the Sanitation Dept. can discharge lethal amounts of chlorine legally by permit from the State Water Control Board. It is our hope that legislative consideration will be given to the idea of halting this practice during the spawning season which runs approximately from June 1st to September 30th. Of special concern to us is the area by the Small Boat Harbor in Newport News. The Clam Study Committee has been allocated monies from the Commercial Fishing Advisory Board to create a broodstock sanctuary in the permanently condemned buffer zone which exists around the discharge pipe in that area. There is no sense spending money to create broodstock sanctuaries in the rivers, if the larvae from these areas are destroyed by chlorine from the discharge pipes. It would serve no useful purpose.

If we are to have any hope of restoring shellfish beds, we must make every effort to identify the various sources that are harmful to shellfish and take positive steps to deal with the problems. Myself, as well as many others feel that the discharge of chlorine plays a large factor in the disappearance of the once productive shellfish beds in our State. Until we deal effectively with identifiable sources of toxins and pollution, any effort to restore shellfish beds will be wasted effort.

Sincerely,

Linda Crewe

Linda Crewe
441 Jan Mar Drive
Newport News, VA 23606
(804)599-4269

FARM BUREAU VIRGINIA

VIRGINIA FARM BUREAU FEDERATION

12580 West Creek Parkway • P.O. Box 27552 • Richmond, Virginia 23261 • (804) 784-1234

December 21, 1994

The Chesapeake Bay Commission (Virginia Delegation)
629 E. Main Street
Richmond, VA 23219

Attention: Russell Baxter

Dear Russell:

The following are the comments of the Virginia Farm Bureau Federation on behalf of our 35,000 farmer members regarding the draft strategic plan for the revitalization of the shellfish industry pursuant to HJR 95 (1994). Our comments will focus specifically on the suggested legislation for a "Aquaculture and Shellfish Culture Area Protection Act" outlined in Appendix 1 of the draft plan.

First, we believe that the proposal to grant local governments authority to regulate nonpoint source pollution is outside the scope of the charge to the Commission in either HJR 95 (1994) or HJR 535 (1993). Before such a broad and sweeping change is suggested it would be appropriate to allow substantial input from all the stakeholders that would be impacted by this proposal.

The issues of water quality and nonpoint source pollution is an important one that needs to dealt with in a constructive framework of consensus building among stakeholders. This has not been done with this proposal. In fact, the agricultural community had no idea that the control of nonpoint source pollution was even being considered by this study given the charge outlined in HJR 535.

Second, most marine scientists agree that agricultural nonpoint source pollution is a very small part of the problem of the declining shellfish industry. There is little rationale for creating a whole new layer of regulatory bureaucracy for agriculture under the guise of protecting oysters while the disease problems of dermo and MSX remain unsolved.

Third, we believe that the Chesapeake Bay Act already grants sufficient authority to local governments to address water quality concerns.

In short, we will vigorously oppose any attempt to expand the regulatory reach of local government over agriculture.

Sincerely,

John Johnson
Assistant Director
Public Affairs

HJR 95 - MEETING DATES AND LOCATIONS **APPENDIX 7**

Meeting	Date	Location
Committee Meeting	July 18, 1994	Virginia Institute of Marine Science (VIMS)
Committee Meeting	August 29, 1994	VIMS
Committee Meeting	October 5, 1994	VIMS
Committee Meeting	November 9, 1994	VIMS
Public Hearing	December 5, 1994	Lake Wright Conference Center, Norfolk
Public Hearing	December 14, 1994	General Assembly Building, Richmond

For Further Information about this report contact:

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