MARYLAND OYSTER ROUNDTABLE ACTION PLAN

DECEMBER 1993

Maryland Oyster Roundtable

Action Plan

I. PREFACE

In the summer of 1993 the State of Maryland convened the Oyster Roundtable to address major concerns about how to bring oyster stocks in Maryland's Chesapeake Bay back to economically and ecologically healthy levels. The Department of Natural Resources felt that it is time to bring all interested parties together because the oyster parasites MSX and Dermo, habitat losses, inadequate water quality, effects of harvesting and other factors have had significant impacts, for example approximately 80% of the public oyster bars in Maryland waters are unharvestable.

The 40 members of the Roundtable represent those interested in Maryland's oyster management. The Roundtable's members include fishermen, aquaculturists, environmentalists, legislators, scientists and senior staff from the Maryland Departments of Natural Resources (DNR), Agriculture, and Environment, and the Governor's office.

The goal of the Roundtable has been to develop sound, broadly supported recommendations on how to revive oyster populations in Chesapeake Bay.

More specifically, the objectives are to:

- Maximize and enhance the ecological benefits of oysters

- Maximize and enhance the economic benefits derived from harvesting in the public and private oyster fisheries

- Maximize the ability of government to respond effectively to the magnitude of the problem

The committee met 5 times over 5 months with frequent subcommittee meetings and negotiations going on throughout the process.

The recommendations herein reflect the diversity of perspectives and willingness of each of us to try and find a means to significantly change oyster management in Chesapeake Bay in order to return the stocks to economically and ecologically productive levels.

The Roundtable members believe that developing these recommendations is only the first step in bringing oyster populations back. There will need to be intensive and active followup involving all perspectives to make certain that the recommendations are successfully implemented.

Efforts should be vigorously pursued to obtain sufficient funding for all aspects of the program recommended in this report. Within this framework, priority for allocation of funds should go to activities carried out in support of Oyster Recovery Areas and other new initiatives.

The Roundtable included the following members (members are listed with their affiliation):

Will Baker
Chesapeake Bay Foundation

Dr. Donald Boesch
University of Maryland

Dr. Torrey C. Brown
Maryland Dept. of Natural Resources

Tucker Brown
Waterman

Michelle P. Cummins
P. Cummins Oyster Co.

Peter deFur
Environmental Defense Fund

Russell Dize
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Mike Eckhart
United Power Systems, Inc.

Sen. Bernie Fowler
Senate of Maryland

Bill Goldsborough
Chesapeake Bay Foundation

Del. Ronald A. Guns
Maryland House of Delegates

Mike Haire
Maryland Dept. of the Environment

Capt. Buddy Harrison
Seafood Industry

Verna Harrison
Maryland Dept. of Natural Resources

Dr. Tom Hopkins
Maryland Aquaculture Association

Del. Samuel Q. Johnson, III
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Dr. Vic Kennedy
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Maryland Executive Department

Dr. Don Meritt
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Richard Pelz
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Dr. Ivar Strand
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Dr. M. Gordon Wolman
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Pete Jensen
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Dr. Roger Newell
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Del. Marsha Perry
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Billy Rice
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Jackie Russell
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Larry Simns
Maryland Watermen's Association

Sen. J. Lowell Stoltzfus
Senate of Maryland

Sen. Gerald Winegrad
Senate of Maryland

Bill Woodfield
Seafood Industry

II. SIGNIFICANT ISSUES DISCUSSED BY THE ROUNDTABLE THAT NEED TO BE ADDRESSED

A. MSX and Dermo: Under present conditions, MSX and Dermo are the major impediments to restoring oyster stocks to the level of abundance of recent decades.

B. Habitat/Water Quality: Oyster habitat has declined since the turn of the century, limiting the level of oyster stocks achievable, as a result of MSX and Dermo, harvesting methods, sedimentation, and other water quality factors, such as anoxia of bottom waters.

C. Production/Management: To increase oyster stocks, good production and management techniques are essential and innovative techniques, including aquaculture (i.e. husbandry), need to be developed.

D. Institutional Barriers: Review of current statutes, regulations and the existing institutional structure will need to be undertaken to achieve the objectives.

E. Funding: Current levels of funding are not adequate to provide for solutions to the problems mentioned above.

III. RECOMMENDED ACTIONS

The actions recommended below are divided into two sections. The first section describes actions that are Baywide. A number of management programs are recommended, appropriate to various parts of the Bay, which should be taken Baywide to address all of the issues listed in Section II above and accomplish the objectives of maximizing the ecological and economic benefits of oysters.

The second section describes one specific intensive cooperative management program. Due to the dominating impact of MSX and Dermo on Chesapeake oyster stocks, recommendations are made regarding the designation of geographic areas, termed "Oyster Recovery Areas" ('ORA') in which efforts would be concentrated to:

1) limit transplantation activities which would serve to perpetuate MSX and Dermo in a region.

2) evaluate different methods to rehabilitate, rebuild, plant and otherwise restore oyster populations in these areas. Areas should initially be selected in the lower salinity reaches of the Bay and its tributaries, where MSX and Dermo are apparently less viable.

Some of the intensified efforts to be conducted in these Oyster Recovery Areas actions are discussed in section B below.

A. Actions That Apply Throughout Maryland's Portion of the Bay

1. MSX and Dermo

a. Monitor the prevalence and intensity of MSX and Dermo in the Bay

Recommended Action Items:

1. Continue an enhanced annual disease survey

b. DNR management programs should minimize the possibility of spreading MSX and Dermo through the repletion program

Rationale: It is agreed that the state repletion program should continue for the time being, even though this may result in the movement of material that harbors MSX and Dermo, either in the seed oysters themselves or in other organisms in the cultch. However, since it is important to minimize the movement of MSX and Dermo, as soon as enough seed which can be certified

as being free from MSX and Dermo can be produced, the movement of seed which cannot be certified should be discontinued.

Recommended Action Items:

1. Continue to rotate seed areas utilized to avoid transporting older year classes of oysters, which may have higher levels of MSX and Dermo, with the seed oysters

2. Explore new approaches such as moving seed oysters in the Fall rather than waiting until the following Spring

3. Routinely examine all oyster seed being transplanted for the presence of MSX and Dermo

4. Utilize information on the patterns of MSX and Dermo to determine the best plan for planting seed and shell

c. DNR and the University of Maryland, in conjunction with other regional, especially neighboring State and Federal agencies, should implement a coordinated, multi-year, stably funded, goal-oriented research program aimed at specific methods to identify, understand, prevent and control MSX and Dermo and other potential pathogens

Recommended Action Item:

1. Initiate the first five-year phase of a multi-year research program with a goal to answer specific questions related to the detection, prevention and control of MSX and Dermo. See Section III.A.5. below for more details on the research program.

2. Initiate pilot field programs to plant strains of the eastern oyster not native to Chesapeake Bay in higher salinity areas of the Bay and its tributaries.

d. Establish criteria and rationale for certifying oysters, including seed oysters, as having zero prevalence and intensity of MSX and Dermo (as well as any other pathogen which is found to significantly impact the oyster) at time of

planting as determined by current technology.[1]

Recommended Action Item:

1. Develop such criteria and rationale for certifying oysters. These criteria should be at the lowest detection levels using currently available thioglycolate assays and histological analysis.

e. Conduct an environmental impact assessment of the introduction of non-native species of oysters as a contingency

Rationale: The recommendations contained in this document constitute major actions to overcome the impacts of MSX and Dermo. However, the possibility exists that they might not lead to the objectives of the Roundtable being satisfactorily achieved within an acceptable time period. That being the case, it is prudent to evaluate contingency measures which could be instituted if desirable. One possibility is to consider introducing another species of oyster IF this would result in a net benefit AND there would not be other adverse effects on the ecology of Chesapeake Bay.

Recommended Action Items:

1. Conduct an environmental impact assessment of the potential introduction of non-native species of oyster into Maryland's portion of the Chesapeake Bay, including consideration of issues specified by the Oyster Roundtable. Alternatives considered shall include further restrictions on harvest for a specified length of time (e.g. five years) prior to introducing a non-native species of oyster.

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[1]Hereafter in this document, the terms "certified seed" or "certified oyster" mean seed oysters or oysters having zero prevalence and intensity of MSX and Dermo (as well as any other pathogen which is found to significantly impact the oyster) at time of planting as determined by current technology.

2. Habitat/Water Quality

a. Conduct a phased program to evaluate and implement projects to restore physical oyster habitat

Recommended Action Items:

1. Conduct projects for restoring physical oyster habitat, such as cleaning bottom, rebuilding oyster bars and reconstructing buried oyster bars in the ORA's

2. Continue existing programs and their evaluation, until the results of ORA studies are available

3. Redefine sanctuaries with adequate geographic extent and distinctiveness

4. In order to maintain broodstock levels, oysters that are currently unharvestable by virtue of being in polluted waters will be managed for broodstock value. The State should undertake all feasible enforcement and management measures for eliminating the source of such water quality degradation.

5. Evaluate innovative techniques for restoring physical oyster habitat, including those being used by Virginia and elsewhere

6. Evaluate optimal physical structures of an oyster reef and alternative materials that best foster oyster reproduction and health

b. Ensure that Bay water quality is maintained at levels necessary to support healthy oyster populations

Rationale: Adequate water quality is essential for oysters to reproduce, grow, and remain healthy. Of greatest concern baywide are the effects of excess nutrients, which contribute through eutrophication to low dissolved oxygen levels, and sedimentation, which smothers oysters and impedes the setting of spat. Also of concern, but on a more site specific basis, are the impacts of toxic materials.

Recommended Action Items:

1. Current programs, such as those established under the Chesapeake Bay Program, should maintain or increase the emphasis on reducing pollutant sources that produce poor water quality which adversely affects oyster stocks.

2. Programs to improve water quality, such as the Chesapeake Bay Program's Tributaries Strategy, should incorporate specific measures oriented at protecting oyster stocks from adverse water quality.

3. Local, state, and federal agencies should utilize their permitting and environmental review programs to ensure that oyster habitat is not adversely affected by the discharge of pollutants, dredging, and other human activities.

4. The ORA advisory committees should assess the potential impact of activities which may cause water quality adverse to oysters in ORAs and provide recommendations to the appropriate agencies for prevention and restoration.

3. Increase Production/Management

a. Increase the hatchery production of oyster larvae and seed oysters

Rationale: Current levels of production of certified oyster larvae and seed oysters will not meet the needs of stocking the ORA's and providing for private aquaculture and community association projects

Recommended Action Items:

1. Maximize the production of the current Horn Point hatchery

2. Consider establishing one or more additional state production oyster hatcheries, for example at the Deal Island and/or Piney Point facilities, possibly in conjunction with the NPCV discussed in Section III.B.1.a. below.

3. Establish remote setting sites for setting eyed-larvae purchased from public or private hatcheries, in appropriate locations with low levels of MSX and Dermo.

4. Investigate potential alternative sources of cultch to guarantee sufficient supply for increased hatchery production.

5. Encourage private companies to develop oyster hatcheries. Such encouragement will include competitively bid contracts to provide oyster larvae and seed for the ORA's.

b. Prepare a comprehensive analysis of past and current oyster culture techniques and management approaches. Utilize existing expertise and experience in the National Marine Fisheries Service and elsewhere

Rationale: This document would help to focus effort and finances into projects with the best chances of success

Recommended Action Items:

1. Prepare a comprehensive analysis of past and current oyster culture techniques in Chesapeake Bay and other relevant areas

c. Maintain and adapt the current state repletion program

Rationale: The repletion program is the major source for harvestable oysters at this time. It should be adapted as appropriate based on results of the initiatives discussed in this report.

Recommended Action Items:

1. Continue the current state repletion program for the time being pending results from the initiatives discussed in this report, which may lead to modifications in the state repletion program in the future

2. Evaluate the approach of moving seed oysters in the Fall, rather than the Spring

3. Maintain the state repletion program as funds are available at a level of at least 2 million bushels of shell and 500,000 bushels of seed, as available at low levels of MSX and Dermo, per year

4. Evaluate and adjust the repletion program by monitoring production in the

planted and seeded areas

d. Provide for fresh shell to be used by the state hatchery and for community groups for ecological enhancement

Recommended Action Items:

1. Provide fresh shell to the hatchery efforts on a priority basis

2. Develop a policy on minimum desiccation period to prevent spread of MSX and Dermo with fresh shell.

3. Provide access to fresh shell to community groups for ecological enhancement

e. Evaluate the potential advantages and disadvantages of a 'slot limit' with a minimum size for harvesting of 2.5" and a maximum size of 4"

Rationale: Lowering the minimum size to 2.5" would provide for a harvest before the oysters succumb to disease. The 4" maximum size would protect larger oysters which have demonstrated a potentially greater resistance to MSX and Dermo by surviving to that size. At present there are questions about these issues that need to be explored before instituting a slot limit, such as the impact of a 2.5" minimum size on spawning stocks and the availability of a market for smaller oysters.

Recommended Action Items:

1. Evaluate the impacts of a 2.5" - 4" slot limit on oyster populations, including the possibility that a 2.5" minimum expands the potential acreage for seed planting to support harvest

2. Evaluate the market potential for the smaller oysters

f. Strengthen the assessment of oyster stocks

Recommended Action Items:

1. Continue to collect quantitative data on oyster stocks, habitat and diseases and make the information available in an annual report

2. Initiate an annual larvae survey to guide shell placement and advise private aquaculture

g. Encourage innovation by private industry by offering grants for the development of restoration, culture and production techniques

Rationale: New technology is needed in all three areas and private sector development is the most efficient method.

Recommended Action Items:

1. The State should initiate a grant program, with matching funds provided by private industry, to stimulate the development of innovative techniques for oyster restoration, culture and production. (It should be pointed out that in order to do some innovative techniques (e.g. floating raft culture), institutional barriers would need to be removed as discussed in Section 4 following.)

4. Institutional Barriers

a. DNR should establish a pilot permitting program for oyster aquaculture demonstration projects

Rationale: To allow progress toward opportinities for reasonable private aquaculture ventures, there must be opportunity for a limited number of aquaculture demonstration projects to be permitted under DNR's review and monitoring.

Recommended Action Items:

1. DNR should establish a pilot permitting program (similar to the one

established for finfish aquaculture by DNR in consultation with the Environmental Matters Committee)

2. The pilot permitting program will include the following aspects:

- A five-year duration for the permits, subject to review and renewal

- A limit of 20 permits, unless this limit is subsequently amended as a recommendation of the Oyster Roundtable

- Permits are limited to 5 acres per individual; however, two or more persons may join together on a single permit which may not exceed 10 acres

- The total area covered under a single permit may include more than one location

- Permittees shall annually prepare and submit to DNR a report summarizing their activities on the permit area, including information on what restoration activities were undertaken, the production techniques utilized, and amount of oysters planted and harvested

- If a permittee fails to submit the annual report mentioned above, or if the report indicates that no activities were undertaken under the permit, DNR may revoke the permit

- The purpose of the projects permitted will be to demonstrate feasibility of various oyster production techniques. The data collected will be incorporated into the public education program described below

b. DNR should establish an aquaculture permit clearinghouse service for applicants

<u>Rationale:</u> Applicants for oyster aquaculture projects must comply with a number of regulatory requirements. To help meet the objectives of the Roundtable with regard to private oyster harvesting, DNR can provide assistance to applicants.

<u>Recommended Action Items:</u>

1. DNR should designate a single point of contact for questions related to the regulatory requirements for aquaculture and how a potential applicant should

proceed in the permitting and fulfilling of regulatory obligations, for tracking permit applications, and for coordinating state agency permitting activities related to aquaculture permits.

2. DNR should coordinate the preparation of a permitting handbook that can be made available to potential applicants for aquaculture permits. The handbook should describe the requirements of various agencies in layman's terms, annotated with references to applicable regulations and statutes.

c. Define the acreage available for leasing oyster bottom

Recommended Action Items:

1. DNR should identify areas to be characterized as Aquaculture Zones of sufficient size to encourage the development of aquaculture in areas which could be productive and can be adequately protected. Such zones might be newly designated or constructed by consolidating current leases.

d. Compliance/enforcement and aquaculture projects

Rationale: There will be difficulty in enforcing property rights relevant to private oyster aquaculture in the Bay without significant social change.

Recommended Action Items:

1. Incorporate this issue as an essential item in the public education program described in Section IV.B. below, with the clear message that these ventures are in the public interest.

2. Site identification should be, within reason, an option left to the owners, with the understanding that without identification, property rights will be difficult to enforce.

5. Research

a. DNR and the University of Maryland, in conjunction with other state and Federal agencies, academic institutions and private research organization, should initiate a multi-year, stably funded, goal-oriented research program on topics which will lead to the ability to detect, prevent and control MSX and Dermo

Rationale: Until we know considerably more about MSX and Dermo, the ways they affect oysters, and the oyster's lack of defenses against them, management efforts to restore the economic and ecological benefits of oysters to the Bay will be significantly hampered. Such a program must be multi-year in nature in order to provide substantial results. Furthermore, in order to provide a sufficiently high likelihood that such a program will succeed, stable and carefully targeted funding must be provided over a multi-year period.

The research and management programs related to oyster diseases will be critically evaluated after five years to determine the effectiveness in reversing declines in oyster populations and progress in scientific understanding leading to the control of MSX and Dermo. At that point, decisions will be made whether to: 1) continue or enhance the research program because it is providing answers that are contributing to restoration of the eastern oyster; 2) reduce the priority of disease research because it does not show prospects for contributing to oyster restoration; or, 3) refocus the program on a new or revised set of specific problems and questions.

Recommended Action Items:

1. Initiate the first five-year phase of a multi-year research program aimed at improving our ability to detect, prevent and control MSX and Dermo. Include topics such as the following:

- Improve methods for detection of MSX and Dermo, especially in early life stages of oysters

- Understand the life cycle of MSX and Dermo, including their environmental requirements and identification of alternate hosts

- Identify existing information and intensify research regarding the physiological aspects of MSX and Dermo, including immune system function, which ultimately lead to the death of the oyster

- Conduct comparative studies to determine why some oyster species are not susceptible to either MSX or Dermo while others are vulnerable to both diseases

- Utilize the recently developed ability to culture the cells which cause Dermo to learn what the cells require to survive and how they might be "eradicated" using chemical approaches

- Conduct "mesocosm scale" experiments to understand the effects of cold temperatures and low salinity on parasites in oysters to validate the current theories regarding Dermo and its future prevalence given various management scenarios

- Test intraspecific populations of C. virginica from other regions in Chesapeake Bay and evaluate their performance when challenged with MSX and/or Dermo in the field

B. Actions for Oyster Recovery Areas (ORA) only

1. Implementation

a. Establish mechanisms whereby interested parties can efficiently and cooperatively carry out the following activities in the ORA's:

Recommended Action Items:

1. DNR, with advice from the Oyster Roundtable and a local advisory committee to be appointed by DNR for each ORA, will administer activities in an ORA such as the following:

- Evaluating the concept of "quarantining," whereby an area is designated to have only certified seed oysters transplanted into it, starting in the lower salinity regions of the system. The purpose is to see how low the levels of MSX and Dermo can be reduced if transplantation activities which might serve to perpetuate MSX and Dermo in a region are limited. An effective quarantine process could then enable the planting of certified seed to revitalize a fishery or the

restoration of naturally reproducing populations of oysters.

- Determining the best methods for rebuilding a natural oyster population

- Preparing and rehabilitating natural bars to maximize natural set

- Determining the best methods to plant and maintain productive oyster beds

- Planting certified seed on natural bars and prepared bottom

- Determining oyster production techniques to be evaluated, including movement of oysters among different salinity zones

- Comparing the productivity and economic feasibility of leased bottom, water column-utilizing and floating tray culture systems with both hatchery reared and naturally set seed

- Determining methods to improve enforcement

- Implementing methods to maximize the opportunities for watermen to participate in management activities such as planting and monitoring, as well as participation in private culture and public harvesting where those activities are appropriate in the ORA

- Evaluating areas of bottom to be made available for leasing, outside of Zone A's

- Determining areas to be set aside as sanctuaries for ecological purposes

- Identifying water quality problems that could affect the health of oysters

- Encouraging the establishment of a non-profit co-venture (NPCV) of commercial fishermen, aquaculture and environmental interests which may conduct activities in the ORA, such as those listed above, with approval of DNR. This organization will be authorized to raise funds from state, federal and private sources and to execute contracts, including multi-year contracts.

In its implementation of activities within each Oyster Recovery Area, DNR will be guided by an advisory committee. Each ORA advisory committee will be

constituted by DNR and will include representatives of the following organizations and interests: watermen; aquaculture; environmentalists; scientists; Departments of Natural Resources, Agriculture, and Environment. The ORA advisory committees will meet as necessary, but at least twice a year, to review activities related to the ORA and advise the management agencies with responsibilities over those activities

2. Establish a technical committee of scientists to determine the experimental design and oversee the monitoring and evaluation of the scientific aspects of rehabilitating, planting and maintaining oyster populations in the ORA's. The technical committee may designate subcommittees to address issues specific to individual ORA's.

2. Activities to Be Conducted in Oyster Recovery Areas

Each ORA will be comprised of from one to three zones and must include a Zone A and/or a Zone B. Activities in these zones would be conducted as follows:

a. Zone A - In this zone, which would be comprised of the lowest suitable salinity in the ORA, shellfish harvesting would be temporarily suspended, only certified seed would be planted, and a variety of projects would be undertaken to evaluate methods for oyster restoration, culture and production

Recommended Action Items:

1. Shellfish harvesting (clam and oyster) will be temporarily suspended for five years. After five years harvesting will reopen consistent with management objectives. Some sections will be managed as ecological/brood stock sanctuaries by DNR, utilizing appropriate criteria such as sufficient geographic extent and distinctness.

2. Pilot and experimental sites, including off bottom culture techniques, will be established using annual plantings of certified seed, set on cultch planted on prepared bottom. A portion of this bottom will be set aside for monitoring purposes only. Other portions of the plots will be actively managed for test purposes with techniques similar to those which could be used in a commercial fishery. Distinct sections would be transferred to higher salinity growout areas

after 1, 2 and 3 years of growout at low salinity. Parallel growout experiments would be conducted in the immediate area using the water column and floating raft culture. Permits for these projects should be obtained under the pilot aquaculture permitting program described in Section III.A.4.a. above.

3. Natural bars within the areas will be rehabilitated to maximize the chances of natural set.

4. A portion of the plantings will be permanently set aside for ecological/brood stock sanctuaries.

5. Only certified seed may be brought into this zone.

6. Intensive monitoring for MSX and Dermo would be conducted.

b. Zone B - This would be the zone immediately downstream of Zone A or, it could be established separately in a river without a Zone A. In it, shellfish harvesting would still be allowed, but only certified seed could be planted. Again, a variety of pilot and demonstration projects would be undertaken.

Recommended Action Items:

1. Shellfish harvesting will be allowed, consistent with management objectives

2. Only certified seed may be brought into this zone

3. Experimental seeding with certified seed will be carried out

4. Natural bars will be rehabilitated.

5. Intensive monitoring for MSX and Dermo will be conducted.

c. Zone C - In a large zone generally downstream from Zone B, shellfish harvesting would be allowed, consistent with management objectives, and natural seed could be imported until it could be replaced by certified seed, with the ultimate objective of a whole tributary or other large, autonomous zone free of any planting of natural seed. Some experimental seeding would occur in these areas and some natural bars within the areas would also be rehabilitated to maximize the chances of new set. In addition, intensive monitoring for MSX and Dermo would occur within Zone C. Within Zone C, one or more

sanctuaries will be established to allow the testing of practical techniques for rebuilding and rehabilitating oyster populations.

3. Designation of Initial Oyster Recovery Areas

a. General

Rationale: The Oyster Roundtable endorses the concept of Oyster Recovery Areas. In an ORA, either or both of two major types of activities will be conducted:

- Carry out and evaluate different methods to rehabilitate, rebuild, plant and otherwise restore oyster populations

- Evaluate the effectiveness of the 'quarantine' concept, whereby transplantation activities which might serve to perpetuate MSX and Dermo are limited

Recommended Action Items:

1. The Chester, Choptank, Magothy, Nanticoke, Patuxent and Severn Rivers are designated as initial river systems to include ORA'S. Other ORA's will be designated as appropriate under Section III.B.4.a. below.

2. A subcommittee of the Oyster Roundtable shall be constituted to define the criteria determining where the boundaries of ORA'S in these rivers should be identified and submit them with recommended boundaries to DNR by December 1, 1993.

3. By January 1, 1994, DNR shall initiate the regulatory process to establish the above-determined ORA'S.

4. DNR with the assistance of other members of the Oyster Roundtable will vigorously pursue State, Federal and private funding to implement oyster recovery programs in the ORA'S.

b. Chester and Choptank Rivers

Rationale: The ORA's in the Chester and Choptank Rivers are designed to test the 'quarantine' concept discussed above and should be large enough to accomplish this purpose. Although it is currently unknown how low the levels of MSX and Dermo can be reduced, there is evidence to support the belief that in order for the program to have a chance at succeeding, the proposed restoration efforts must be isolated from oysters which are infected by MSX and Dermo. In addition, at least some of the selected areas should have the potential for average natural spatfall over the initial five-year management period. This is not necessary for all areas because some management techniques employing certified seed oysters will be tested. Finally, the areas must have a demonstrated potential for growing oysters to market size and must span a range of salinities.

The initial ORA's described below in the Chester and Choptank Rivers are located in two of the most important producing areas for the commercial oyster fishery. Delineation of the size of the areas represents a compromise between the criteria described in the preceding paragraph, which some believe would have led to the designation of very large areas, and concerns of the watermen over the effects which the designation of large areas would have on an already diminished harvest area, especially in view of the potential lack of funds to obtain large quantities of certified seed oysters. Although our present understanding of MSX and Dermo suggests that the 'experimental' areas in Zone A are far enough away from areas where MSX and Dermo currently occur, we cannot be sure that this is the case. Nonetheless, designation of these areas represents a significant first step. Review of results from the initial areas will allow the expansion of the ORA's if desirable at a time appropriate to meeting management objectives.

It should be noted that the rationales for establishing these two ORA's are different. In the Chester the purpose is to plant certified seed to revitalize a fishery. In the Choptank the purpose is to restore naturally-reproducing populations of oysters.

Recommended Action Items:

1. No additional oyster leasing or raft culture will occur in either the Chester or Choptank ORA'S under this program; whereas, leasing or raft culture will be encouraged in other ORA's.

2. The following Oyster Recovery Area is initially identified in the Upper Chester River. Prior to the Chester River ORA being finalized, the

subcommittee of the Oyster Roundtable which is addressing ORA boundaries will establish an additional boundary in the Chester River which divides the ORA into areas in which commercial clamming can take place and areas in which commercial clamming cannot take place.

Zone A: Upstream from a line which runs south south east from Deep Pt. to the other side of the river east of Spaniard Pt. The following natural oyster bars are within this area: Northwest, Melton Pt., Booker Wharf, Hollyday, Haddaway, Shippen Creek, Mummy's Cove, Deep Point, and Sheep (according to University of Maryland Special Report No. 7).

Zone B: Upstream from a line connecting Spaniard Pt. with the other side of the river in a northwest direction, up to the boundary of Zone A. This region encompasses two oyster bars (Commegy's Bight and Emory Hollow) which have been seeded within the last few years.

3. The following Oyster Recovery Area is identified in the Upper Choptank River:

Zone A: Upstream from just south of Jamaica Pt across to the southern edge of the mouth of the Warwick River. The following natural oyster bars are within this area: Drum Point, Cabin Creek Entrance, Cabin Creek, Spar Buoy, Tanners Patch, and Jamaica Point.

Zone B: Downstream approximately 4000 yards from the boundary of Zone A. The following natural oysters are within this area: Dixon, Mill Dam, Goose Point, British Harbour, Oyster Shell Point, and Chancellor's Point. The downstream boundary of Zone B will be gradually moved downstream to the mouth of the Choptank River as the availability of certified seed is increased. The timetable for the movement of this boundary will generally be such that the amount of certified seed available to be planted in the Choptank River is equivalent to the amount of natural seed which was planted in that area in the most recent planting season by the State repletion program. The timetable will be reviewed by DNR in two years, with advice from the Oyster Roundtable Steering Committee and with full consideration of biological criteria.

When the lower boundary of Zone B is moved to the mouth of the Choptank River, only certified seed may be brought into the entire Choptank system, including its associated sub-tributaries, and vigorous natural bar rehabilitation efforts will begin to maximize set in the natural setting regions.

Zone C: Downstream from the lower boundary of Zone B to the mouth of the Choptank River.

4. Designation of Additional Oyster Recovery Areas

a. Other ORA's should be designated as appropriate

Recommended Action Items:

1. The Oyster Roundtable should review the progress of activities in the initial Oyster Recovery Areas and other relevant information and recommend the designation of additional Oyster Recovery Areas if so warranted, with a long-range objective of restoring and rebuilding all natural bars.

IV. IMPLEMENTATION STRATEGY

A. Continuation of the Roundtable

The Oyster Roundtable will continue to meet periodically, at the call of the Steering Committee or at the written request of more than 50% of the Roundtable members. A new Steering Committee will be established to monitor progress in implementing these recommendations and to coordinate efforts to improve implementation. The Steering Committee may also form work groups to pursue particular issues. Staff support will be provided by DNR with the assistance of other state agencies. Members of the Steering Committee will represent the cross-section of interested parties currently on the Roundtable including commercial fishermen, aquaculture interests, environmentalists, scientists and the State Departments of Natural Resources, Environment and Agriculture. The Steering Committee will oversee preparation of a report every

5 years which documents progress in implementing the recommendations and achieving the objectives stated in this report.

B. EDUCATION

The Oyster Roundtable should establish an Education Work Group to develop a broadly based public education program which would inform the public about the ecological benefits of oysters and the economic benefits derived from harvesting in the public and private oyster fisheries. The education program should include:

- The preparation of fact sheets, resource material for teachers, and a speakers bureau.

- Special emphasis on educating the public about the recommendations of the Oyster Roundtable and why they should be implemented.

- Targeted efforts to reach interest groups such as boaters, shoreline property owners, and others who may have questions and concerns about the recommendations. Feedback from these sessions will be used to inform legislators, community leaders and others about the opinions of these interest groups.

- An extension service component to train persons interested in aquaculture and commercial fishing in techniques for oyster production and harvesting

- The results of demonstration programs and research conducted under the Roundtable's recommendations, such as the programs in the ORA's and the aquaculture demonstration projects mentioned in Section III.A.4.a. above

C. Commitment

The Roundtable agreed to operate by consensus. Therefore, only those recommendations that all Roundtable members could live with were included.

The program outlined here is considered to constitute only the first phase of a long-range program. Additional actions should be considered in the future pending results of the initial recommendations.

The Roundtable conducted its discussions in an open, candid and constructive manner. Wide ranges of opinions were presented. Disagreements were voiced and debated, sometimes intensely. A wide range of possible actions was considered, including all proposals which were advanced by any member of the Roundtable. Consequently, the members agree that their views received a fair hearing, even if they were not ultimately adopted.

Under these circumstances, the members of the Roundtable agree that the recommendations outlined above constitute the best initial program to meet the Roundtable's objectives.

These recommendations are bold, comprehensive, and potentially controversial. They are expected to arouse significant interest and discussion among the public. In order for the public discussion about these recommendations to be informed, and to enhance the likelihood that the recommendations will be implemented, it is imperative that the members of the Roundtable actively participate in informing the public about the recommendations and encouraging their adoption.

---------- **Agreement** ----------

The undersigned agree to commit themselves to a sustained, cooperative effort to ensure that the recommendations of the Roundtable are implemented. Specifically, each party whose signature appears below agrees to:

- Support implementation of the recommendations herein
- Explain the recommendations to all constituents and encourage their support

- Participate in formal and informal meetings with interest groups and others to mutually promote the recommendations

- Take any differences we might have about implementation of the recommendations to other members of the Roundtable and, if disagreement cannot be resolved, to request that the Steering Committee call a meeting of the Roundtable to pursue agreement

- Vigorously pursue, both individually and collectively, every avenue to obtaining adequate funding for the total program

Signed:

Will Baker

Donald Boesch

Torrey C. Brown

Tucker Brown

Michelle Cummins

Peter Defur

Russell Dize

Mike Eckhart

Sen. Bernie Fowler

Bill Goldsborough

Del. Ronald Guns

Mike Haire

Buddy Harrison

Verna Harrison

Tom Hopkins

Pete Jensen

Del. C. Johnson

Steve Jordan

Vic Kennedy

Fred Maddox

Cecil Majerus

Paul Massicot

Don Meritt

Roger Newell

Ken Paynter

Jim Peck

Richard Pelz

Del. Marsha Perry

Brad Powers

Billy Rice

Brian Rothschild

Jackie Russell

Sam Shriver

Larry Simns

Del. John Slade

Sen. L. Stolzfus

Ivar Strand

Sen. Gerald Winegrad

M. Gordon Wolman

Bill Woodfield