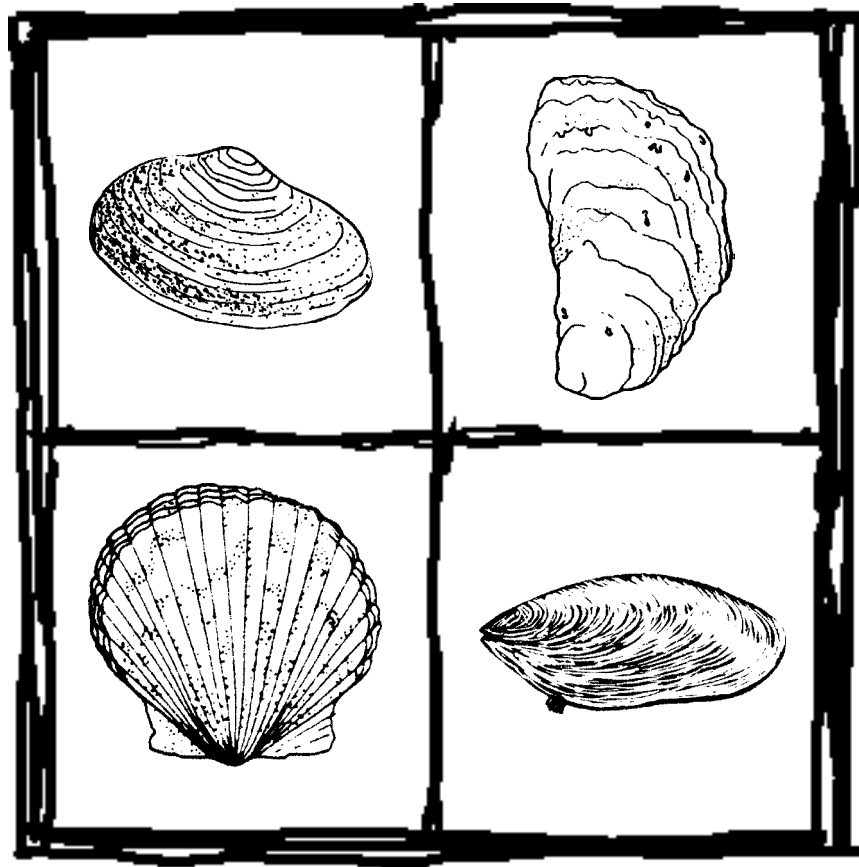


# *Shellfish Aquaculture in Maine*



*Priority Setting Meeting  
Proceedings  
January 6, 2000  
Waldoboro, Maine*



***Shellfish Aquaculture  
in Maine  
Priority Setting Meeting  
Proceedings***

*January 6, 2000  
Waldoboro, Maine*

**Undertaken by:  
Members of Maine's shellfish farming industry,  
Maine Aquaculture Association,  
Maine Department of Marine Resources**

**Sponsored by:  
ME/NH Sea Grant  
UMaine Cooperative Extension**

*Revised 5-22-00  
MSG-E-00-4  
NOAA Grant # NA96RG0102*



## THE MAINE AQUACULTURE ASSOCIATION

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Dear Reader;

August 5, 2000

We are pleased to send you a copy of the recently completed *Priorities for Maine Shellfish Growers: Research and Other Needs*. This document resulted from a meeting held January 6, 2000 in Waldoboro. Many members of the shellfish community attended, including members of the Maine Aquaculture Association; shellfish lease holders; the University of Maine; the Department of Marine Resources; and Sea Grant and Cooperative Extension personnel. Aquaculturists face many challenges and not all of these are technical in nature. We felt that there was a need to discuss and lend some prioritization to the research and other needs that face the shellfish industry.


We encourage everyone to use this document to support a research, legislative or other need. This document is dynamic. Our research and other needs are constantly changing and evolving and this document is only a snapshot, representing the situation as of January 2000. Further, it can only represent the views of those who participated. We expect that the document will be updated and further refined from time to time.

Participants in the meeting ranked the items in order of importance. Since approximately half of the participants were industry members, and the remainder were academic or governmental, we have noted the differences in priority by industry and non-industry ranking. You will find the items listed in the order of their industry ranking. The priority assigned by non-industry is noted in brackets, following the title of each item.

We strongly encourage you to send your comments to us along with your contact information. We would also like to know when you use this document, such as in a research proposal, planning, or other applications. A sheet has been included at the back of the document for this purpose. Your contact information will ensure that you are notified of future meetings to discuss these issues.

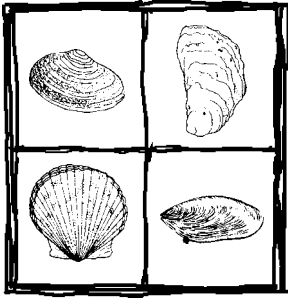
We would like to express our thanks to all those who took time out from their busy lives to participate in the January meeting and to those who acted as reviewers as this document was written.

Sincerely,

  
Lori A. Howell, President  
Maine Aquaculture Association



Dana L. Morse, Extension Assoc.  
ME Sea Grant / UMCE



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# *A Process to Identify and Prioritize the Needs and Issues Facing Maine's Shellfish Growers*

This meeting was facilitated in Waldoboro on 1/6/00 by Dana Morse, Paul Anderson and Sherman Hoyt of the University of Maine's Sea Grant/Cooperative Extension for Maine's shellfish growers.

We used the Institute of Cultural Affairs (ICA) **Technologies of Participation (ToP) Process**.

## *This workshop method is designed to:*

- Generate creativity and new energy in a short amount of time
- Stimulate participation - everyone is a resource
- Promote teamwork
- Promote planning and future action

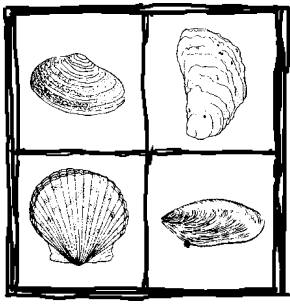
## *ToP Process Steps:*

- **Socializing and introductions**
- **Asking the question:** *What are the issues and needs facing Maine's shellfish aquaculture industry? (For your own business and for the industry statewide.)*
- **Brainstorming: generating and capturing new ideas**
  - 1) The participants were asked to write down their personal list of needs and issues.
  - 2) The large group then divided into five smaller groups for discussion.
  - 3) Each small group then wrote 5 - 7 issues on cards which were displayed on the wall to share with the whole group.
- **Organizing ideas**
  - 1) Issues were clustered.
  - 2) Clusters were named.
- **Prioritization**
  - 1) Voting was done following the suggestion to vote separately as industry and non-industry participants.
  - 2) Voting addressed whole clusters of issues rather than individual issues within the cluster.
- **Next Steps**

## *For more information contact:*

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# Priority 1

## Production Technologies

[Non-Industry #2]

### Goal

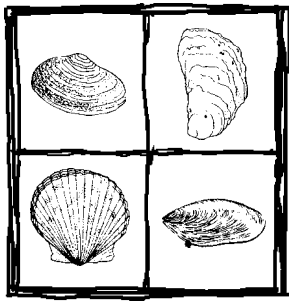
Improve existing methods, strategies, and equipment; and develop new equipment and approaches to increase efficiency and profitability of Maine's shellfish growers.

### Rationale

Recent advances in shellfish aquaculture have enabled growers to be more efficient, to succeed in a wider variety of sites, and to enjoy higher profitability. Further advancements are desired, especially those providing a competitive edge to Maine growers. Appropriate research infrastructure, a strong track record of industry/research collaboration, and the availability of financial support all help place the Maine industry in a position to make significant inroads towards increasing shellfish growth rates, reducing mortality, and reducing costs.

### Research Needs / Initiatives

1. Develop more efficient and effective upwellers, increase effectiveness of biofouling control (including biofouling control in upwellers), develop alternate growout gear and husbandry strategies.
2. Continue development and technology transfer of optimal microalgal feeds, and optimal microalgal production processes for hatchery use.
3. Develop/investigate *in situ* aeration units for salt water which satisfy noise and other issues, while preventing shellfish losses from oxygen depletion.
4. Increase understanding of the potential for effectively collecting wild seed; and of the optimal size, condition, and time of year for planting seed for such species as blue mussels, soft-shell clams, oysters, and sea scallops.
5. Develop better economic data regarding influence of husbandry practices on overall production costs.
6. Examine benefits/liabilities of open ocean vs nearshore shellfish culture, particularly for blue mussels and sea scallops.
7. Investigate potential for "clam pounding" (holding of shellfish for marketing).



# *Priority 2*

## *Public Relations*

### *[Non-Industry #1]*

### ***Goal***

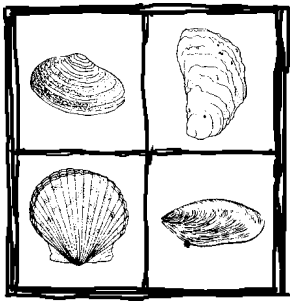
Increase the acceptance of aquaculture and improve support by the general public and users of marine resources.

### ***Rationale***

Aquaculture is a fairly new industry in Maine. The public has many concerns regarding conflicting uses and impacts, and these concerns must be addressed.

### ***Research Needs / Initiatives***

1. Develop public relations protocols so that industry speaks with one voice.
2. Develop and implement programs to educate the public about aquaculture.
3. Utilize existing educational curricula and provide support for K-12 field trips to aquaculture facilities.
4. Develop procedures or forums for resolving conflicts between user groups.
5. Develop recommendations and guidelines for industry use in working with community members, focusing on pre-lease application efforts.



# **Priority 3**

## **Shellfish Health**

**[Non-Industry #6]**

### **Goal:**

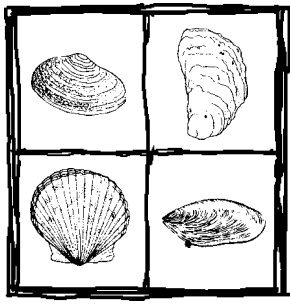
Develop a comprehensive shellfish health program that will incorporate strategies for disease diagnostics, disease management, and broodstock selection.

### **Rationale**

Recent events have shown that oyster diseases *Haplosporidium nelsoni* (MSX) and *Perkinsus marinus* (Dermo) are advancing northward. In addition, Maine has suffered oyster losses due to difficulties with Juvenile Oyster Disease. Research has largely focused on diagnostics and causation. Industry has recognized that such research also needs to be applied to the commercial realm, and that disease management may be increasingly important. Further, broodstock selection may be important in management strategies for working with disease issues.

### **Research Needs / Initiatives**

1. Develop rapid-response tests which are readily employable by the grower, and develop surveillance programs for early detection of disease outbreaks.
2. Investigate disease mitigation options that are more environmentally friendly than therapeutants which may have potential negative impacts.
3. Examine and develop disease-resistant stocks, and develop cold-water, fast-growing strains, perhaps including strains developed in other regions. Monitoring program similar to initiative 1.
4. Develop and implement management practices for transfers of live shellfish which will limit the spread of invasive species.
5. Promote protocols that ensure good animal health in the hatchery.



# ***Priority 4 Marketing [Non-Industry #8]***

## ***Goal***

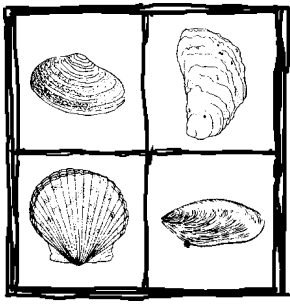
Greater recognition of Maine-grown shellfish as superior products in the marketplace, and an improved view of cultured shellfish.

## ***Rationale***

Marketing is critical in shellfish culture where products must receive premium prices to maintain profitability for the grower. Maine's shellfish products are currently well received by wholesalers, retailers, and consumers but few efforts have been made to distinguish cultured Maine products from competitors. Similarly, Maine shellfish growers would benefit from more detailed information about the marketplace, especially as production increases statewide.

## ***Research Needs / Initiatives***

1. Develop a "Grown in Maine" product identity for cultured shellfish, as well as organic labeling standards for use by industry.
2. Increase marketing which focuses on cultured products specifically and which will increase awareness and acceptance of cultured products.
3. Investigate the potential for development of an industry product promotion council to take on the tasks outlined in both initiatives above.



# ***Priority 5 Leasing Issues [Non-Industry #5]***

## ***Goal***

Continue efforts to make the leasing process effective, simple, and equitable, recognizing the need for co-existence with other marine constituents while helping the industry grow and advance.

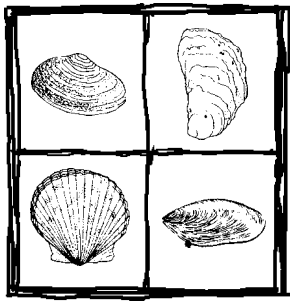
## ***Rationale***

Although the process for securing shellfish leases in state waters has improved recently — with experimental permits, a streamlined permit process, and significant effort in the “permit by rule” direction — problems and issues still exist. These issues will likely change with changing public sentiment and understanding, and with changing issues between competing user groups. A major impediment is public understanding and support for shellfish aquaculture, resulting in an overly contentious permit process. Education, free flow of information, ecological science, and facilitated discussions are among the tools viewed as useful in resolving these issues.

## ***Research Needs / Initiatives***

1. Increase scientific support for leaseholders, such as development of monitoring programs and collection of environmental data.
2. Reduce barriers to leasing by reducing intervenor concerns. Create opportunities for constructive dialogue between applicants and intervenors, and support applicants in developing positive relationships with other stakeholders.
3. Restructure leasing procedure to become less cumbersome and more responsive.
4. Address and investigate the limited number of nursery areas in the state.





# ***Priority 6***

## ***Aquaculture and the Environment***

### ***Sustainable Aquaculture***

***[Non-industry #3]***

#### ***Goal***

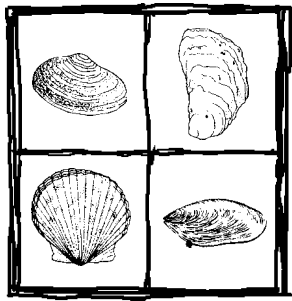
Increase understanding of the effects of shellfish aquaculture on the environment, and of how environmental conditions affect shellfish growth, survival, and distribution.

#### ***Rationale***

The two-way interactions between the environment and cultured shellfish are of great importance to culturists, fishermen, environmentalists, resource managers, and interested individuals. To fully understand these interactions will require long-term scientific study, with collaboration by industry and others.

#### ***Research Needs / Initiatives***

1. Improve relations with environmental groups by engaging them in discussions on the pertinent issues, including the identification of negative environmental impacts, to develop mitigation strategies.
2. Assist in the development, adoption, and implementation of Best Management Practices (BMPs) for the industry.
3. Support efforts to link shellfish growers with resources, programs, and agencies (e.g.: DMR, Shore Stewards Program) concerned with water quality, including Harmful Algal Blooms (HABs).
4. Develop a database of environmental parameters (D.O., pH, temp, etc.) to support industry-driven documentation of effects of aquaculture on the environment (see first initiative, this section).
5. Support research to identify interactions between aquaculture operations and submerged aquatic vegetation (SAV).



# ***Priority 7***

## ***Coastal Development***

***[Non-industry #10]***

### ***Goal***

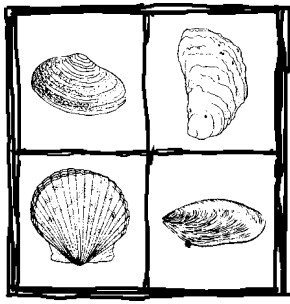
A social and regulatory environment which supports and values a healthy marine industry along the Maine coast, thereby retaining the traditional economic livelihood and culture of the region.

### ***Rationale***

The continued influx of individuals along the Maine coastline has sharpened the issue of how to retain Maine's working waterfronts. Traditional users of the waterfront are finding it increasingly difficult to maintain residences close to the coast, and new coastal residents often object to traditional activities such as commercial fishing. Maintaining shore access and these traditional activities is therefore an issue rising in profile and concern for many residents. Establishing rules and the social context for co-existence will be a critical issue in the future along the waterfront of the entire state.

### ***Research Needs / Initiatives***

Develop and implement efforts, or support existing efforts, which promote continued access to the waterfront for commercial use, including education and support of public forums where discussions can take place.



# ***Priority 8***

## ***New Species***

***[Non-industry #11]***

### ***Goal***

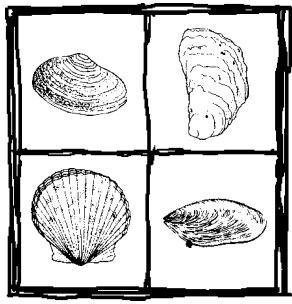
An aquaculture community in Maine that grows a diverse number of species, supported by appropriate technology, research, regulation, and financial infrastructure.

### ***Rationale***

Maine's marine aquaculture industry is dominated by three species: Atlantic salmon, blue mussel, and American oyster. It is generally accepted that diversification is beneficial, and is of heightened importance when considering the possibility of disease and/or predation outbreaks. Opportunities exist with other marine species, but require support from a variety of areas. Work has been conducted on some species, to varying degrees, and should continue to be supported.

### ***Research Needs / Initiatives***

Support development of culture techniques and markets for alternate shellfish species, recognizing that the suitability of species may be regionally dependent (e.g. sea scallops downeast).



# **Priority 9**

## **Genetics and Broodstock Development**

### **[Non-industry #13]**

#### **Goal**

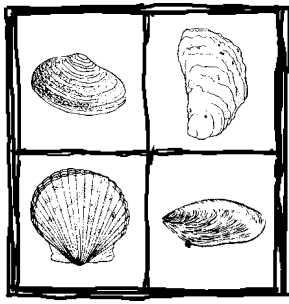
Develop cost-effective, rapid-growth, disease-resistant broodstock for commercial use.

#### **Rationale**

This research and development is key to the success of the Maine molluscan shellfish aquaculture industry. Shellfish growout periods are longer in Maine than in much of the nation, placing Maine growers at a disadvantage. Broodstock selected for rapid growth would aid Maine growers in producing shellstock in a more cost-effective manner. In addition, shellfish diseases *Haplosporidium nelsoni*, and *Perkinsus marinus* cause mortalities as the shellfish are reaching market size. These diseases are known to be present in Maine waters. Encroachment of these diseases from the south threatens industry viability. This research and development will aid Maine growers by allowing shellstock to reach market size before shellfish succumb to disease.

#### **Research Needs / Initiatives**

1. Continue to develop research programs for: improving disease resistance, growth rates, product quality and shelf life; identifying the genetic basis for desirable market traits; developing species specific markers; analyzing quantitative trait loci; and mapping genes.
2. Pursue a statewide policy of development to accommodate the desired traits listed above, while being sensitive to issues surrounding genetically modified organisms and the interactions between cultured and wild stocks.
3. Support partnerships between industry and the University of Maine.



# ***Priority 10***

## ***Industry Communications***

***[Non-industry #12]***

### ***Goal***

A mechanism which provides or allows for efficient transfer of information among industry members.

### ***Rationale***

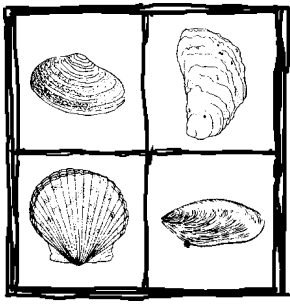
Communications can play a vital part in maintaining a cohesive group of shellfish growers in Maine. Information on diseases, technological advancements, legislative changes, support programs, etc. is beneficial to the industry and should be communicated efficiently and effectively. How Maine's shellfish growers communicate with one another and to other marine user groups is important, as all marine trades are challenged by change along the waterfront.

### ***Research Needs / Initiatives***

1. Improve communication within industry (i.e., electronic mail groups, web site development, and support.)

2. Improve communications outside the industry (refer primarily to Priority 2, Public Relations).

Identifying the most important groups to target is an important issue to address.



# ***Priority 11 Governmental Relations and Initiatives***

***[Non-industry #9]***

## ***Goal***

Support and enhance an effective voice for Maine aquaculture at the federal and state levels.

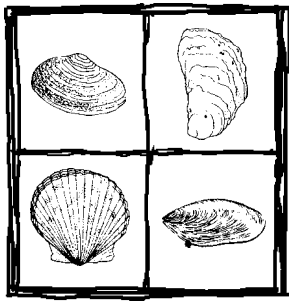
## ***Rationale***

As a relatively new industry, the regulatory issues facing the industry are new and rapidly changing. Needs under this heading will change as the regulatory and technological climate evolves.

## ***Research Needs / Initiatives***

1. Increase understanding of the Interstate Shellfish Sanitation Conference, and increase participation in making changes in regulations to improve conditions in the Northeast.
2. Support efforts for live sales of shellfish, such as for live, whole, and/or roe-on scallops (see Priority 3, Shellfish Health; and Priority 6, initiative 3).
3. Encourage development of a crop loss indemnity program for shellfish in Maine, similar to those available in other states.
4. Support policy which encourages strong leadership in aquaculture at the federal level.





# ***Priority 12***

## ***Funding***

***[Non-industry #7]***

### ***Goal***

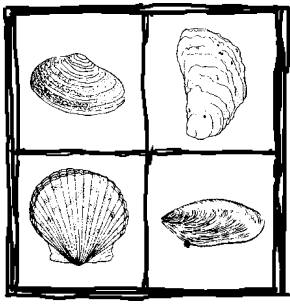
A well educated, diversified, and supportive financing community for aquaculture businesses in Maine.

### ***Rationale***

Every industry faces issues in financing for new and existing companies. Aquaculture faces issues such as long production schedules, and uncertainty due to environmental and biological questions. Financing institutions often need education on the aquaculture industry, and need to hear convincing arguments as to why their capital should be risked in an aquaculture business.

### ***Research Needs / Initiatives***

1. Encourage increased access to financing for new aquaculture businesses, and increase the awareness of existing programs.
2. Support efforts which increase the understanding of aquaculture by financing institutions.
3. Support increased funding for development “proof of concept” projects, especially to pre-commercial scale.



# ***Priority 13***

## ***Student and Work Force***

### ***Education***

***[Non-industry #4]***

#### ***Goal***

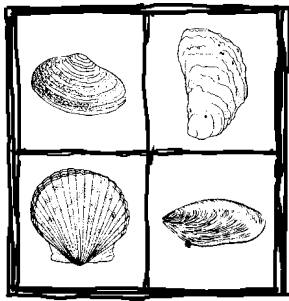
To increase the understanding of aquaculture among students of all ages in Maine, both to increase learning in traditional subjects and to prepare individuals to enter the industry. Second, to educate individuals and organizations in key areas, such as finance, to increase the acceptance of and support for aquaculture businesses.

#### ***Rationale***

Lack of knowledge and misunderstanding are obstacles faced by any emerging industry, and aquaculture is no exception. By increasing educational efforts on many levels, aquaculture will become more accepted and supported, and will also achieve a form which is acceptable to coastal communities in Maine. Further, since aquaculture involves aspects of many disciplines and subject areas, it is a powerful teaching tool, and has a special attraction for education since it involves living creatures. Educational efforts of all varieties could therefore have great benefit in the state, with some priorities for future work identified below.

#### ***Research Needs / Initiatives***

1. Continue to support educational programs at the University and technical college levels, and develop programs at the primary, secondary, and adult education levels.
2. Develop and implement aquaculture internship programs for student education, targeting families already involved in the marine trades.
3. Support increased funding for school-based aquaculture projects.
4. Increase the amount of information available on start-up requirements, and increase distribution and awareness of resources available to help new industry members.



# *Shellfish Aquaculture Industry Priorities Meeting*

*Jan 6, 2000*

*Waldoboro Town Offices*

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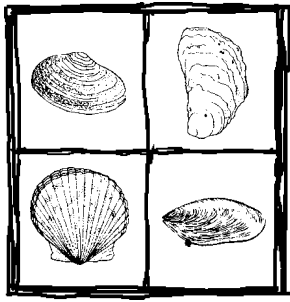
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# *Your Feedback is Needed!*

We would like to hear back from you on whether or not you found this document useful, what should have been added or deleted, how this process could be improved in the future, etc. Please take a few moments to consider the questions below, and feel free to send your comments, or contact us by phone or email. We would especially like to hear from you if you have used this document in a substantive way, such as in a planning procedure, research proposal, etc. **The return address is printed on the reverse of this sheet. Just cut out this sheet, fold into thirds, tape or staple shut, place a stamp, and mail.** The information will also be shared with the Maine Aquaculture Association. Thank you!

## *Use Evaluation:*

- Did you find this document useful, or will it have use for you in the future? If so, how?
- Did this document cover the issues that you felt were valid?
- Did it miss topics that you wish were included? If so, what were those topics, and why are they important to you?
- Did you attend the meeting on January 6<sup>th</sup>, 2000? If not, how could it have been more accessible to you?

## *Comments:*

Please submit your comments on this document, the prioritization process, or other relevant issues:

## *Optional*

Please list your contact information. By keeping in touch with you, we can better address your concerns!

Maine Sea Grant Program  
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Place  
Stamp  
Here





## *Notes*

## *Notes*