Exploring Alternatives For Fisheries Management in the Chesapeake Bay

A Workshop

April 10-11, 2001
Linthicum, Maryland

Workshop Conveners: D.W. Lipton, E.D. Houde, J. Freeman
Sponsored by the Scientific and Technical Advisory Committee, Chesapeake Bay Program
With Additional Support from: Virginia Sea Grant, Maryland Sea Grant

STAC Publication 01-002

About the Scientific and Technical Advisory Committee

The Scientific and Technical Advisory Committee (STAC) provides scientific and technical guidance to the Chesapeake Bay Program on measures to restore and protect the Chesapeake Bay. As an advisory committee, STAC reports quarterly to the Implementation Committee and annually to the Executive Council

STAC members come primarily from universities, research institutions, and federal agencies. Members are selected on the basis of their disciplines, perspectives, and information resources needed by the Chesapeake Bay Program.

STAC publications focus on issues of importance to the Chesapeake Bay Program. This publication was supported by the U.S. Environmental Protection Agency through cooperative grant agreement CB-993584-04 with the Chesapeake Research Consortium, Inc.

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Executive Summary

This workshop was structured to learn about alternative approaches to fisheries management that are being applied throughout the United States to determine what applicability, if any, they might have to Chesapeake Bay fisheries management. These approaches range from some form of assigned property rights to fisheries (e.g., Individual Transferable Quotas (ITQs), Territorial Use Rights For Fisheries (TURFs), Community Development Quotas (CDQs)) to management processes that share authority (Comanagement). Each alternative approach to management has unique characteristics that may contribute to success or failure when applied in a specific situation. Complexities of management in the Chesapeake Bay are magnified because the Bay has three jurisdictions, Maryland, Virginia and the Potomac, sharing management responsibilities for a variety of resources. In addition to single species management alternatives, there is great interest in the Chesapeake Bay to adopt ecosystem management approaches for Bay fisheries.

We learned from the presenters representing Maryland and Virginia that there are a variety of fishery management practices in our Bay, and that these still vary across the jurisdictions and from species to species. However, the general framework in which management decisions are made are similar. Scientists design surveys, model the data, and conduct data analysis, which form the stock assessments upon which management decisions are made. Each jurisdiction then has stakeholder advisory committees to help formulate management recommendations. Compliance with and enforcement of many of these regulations is problematic. Despite their role on advisory committees, stakeholders are not always supportive of management approaches or regulations.

In Florida, top-down development of a transferable trap program has led to numerous problems in the spiny lobster fishery that could have been avoided with greater industry involvement in its design. They are optimistic about a new program in the stone crab fishery that was designed at industry's request and includes a great deal of stakeholder input. Similarly, an industry-designed cooperative in the Alaska pollock fishery appears to be successful in bringing increased efficiency and profits to that unique sector of the fleet. The industry-developed system of lobster management zones in Maine, although not without its problems, appears to be achieving desired results. In all these cases, industry's stewardship of the resource, and its compliance with laws and regulations governing the fishery are much greater than they were in the management systems that they replaced.

The lesson from these experiences is not that one alternative management system is better than another (e.g., ITQs are better than transferable trap certificates), but that these alternative systems work when they are developed in a co-management process that is more prominent than what currently exists in the Chesapeake Bay. This concept of co-management must extend from the data collection on which management recommendations are based all the way to the regulation setting process. Research surveys, stock assessments and other data analysis are best conducted in consultation and sometimes, when appropriate, in collaboration with the

commercial, recreational and environmental stakeholder communities. It is not enough to simply disseminate information to these groups; they must be part of the design and conduct of the management process. The state agencies, Chesapeake Bay Program committees such as CBSAC, and Sea Grant Programs must be leaders in developing this type of cooperative approach. The fishing industry research grants program in Virginia is one vehicle to encourage cooperative research and Maryland should consider developing a similar program. Discussions between the National Marine Fisheries Service and Sea Grant regarding placement of Fisheries Agents in every Sea Grant Program should be pursued for the Chesapeake region.

Any of the alternative management strategies discussed at the workshop, as well as others not mentioned, could be considered for implementation to improve management of Chesapeake Bay fisheries. Issues of concern regarding any of the management approaches could be considered in a collaborative fishery management plan development process. For example, a major objection to adoption of ITQs is that they lead to consolidation of quota in the hands of a few powerful interests, thus eliminating small and family fishing businesses. However, it is not difficult to design an ITQ system that would prevent this type of consolidation. On the other hand, an ITQ system for a species like blue crab might be problematic if there is a limited capability to agree on an annual quota. Thus, the circumstances governing each fishery determine which management strategy makes sense, rather than blanket approval or dismissal of any particular approach.

One of the challenges in considering alternative management approaches for Chesapeake Bay fisheries will be to allow flexibility for multispecies and ecosystem management approaches to be designed into these systems. The cooperative approach and the CDQ programs for Alaskan groundfish have had to deal with multispecies issues because of the important role that bycatch plays in that fishery. In the Alaska case, the CDQ approach has led to innovative ways of dealing with bycatch interactions.

Workshop participants also recommended that current activities directed at measures to improve management of Chesapeake Bay blue crabs could be used as a focal point for initiating dialogue on alternative management concepts. Research that addresses major industry concerns such as predation on blue crab by other species should be designed with industry assistance. A working group should also be formed to support the recommendation of stakeholder driven long term management.

Introduction

In recent years in both domestic and international fisheries, innovative management practices have been employed that seek to improve the efficiency of the fishery while protecting the resource stock and resulting in higher net benefits from fishing to society. These newly applied management techniques that include individual fishery (or transferable) quotas (IFQ/ITQ), territorial use rights for fisheries (TURFs) and community development quotas (CDQs) are alternatives to more traditional command and control approaches. Additionally, in some fisheries there has been experimentation with varying degrees of comanagement (i.e., management power being shared between government regulators and some stakeholder groups). With a few exceptions, little of this innovation or discussion of it has emerged in Chesapeake Bay fisheries management. For the most part, Chesapeake Bay fisheries management includes the standard variety of input and output controls imposed by the responsible management jurisdiction, Maryland Department of Natural Resources (MD DNR), the Virginia Marine Resources Commission (VMRC) and the Potomac River Fisheries Commission (PRFC). Input controls include limited entry on the number of license holders in a fishery, limitations on the amount of gear to be employed, restrictions on where gear can be deployed, other gear restrictions such as mesh sizes, and limits on fishing dates. Output controls consist mainly of size limits and quotas.

One of the first applications anywhere in the world with ITQs was in the close-by mid-Atlantic surfclam fishery. Prior to implementation of the ITQs, this fishery was extremely over-capitalized requiring regulations that limited fishing to six, six hour days per quarter. Following the introduction of ITQs the fleet size was reduced from about 170 vessels to less than 50, and the boats could now be utilized efficiently. Another example of an ITQ fishery is for Pacific halibut. This fishery used to operate only 1-2 days per year, overwhelming the processing capability, reducing the quality of the catch and resulting in little fresh halibut being available to consumers. An ITQ in this fishery has resulted in a much longer fishing season with high value fresh halibut available over an extended period. An example that may be relevant for management of Chesapeake Bay blue crab is the transferable trap limit and buy back program that has been applied to the Florida spiny lobster fishery.

While there are many benefits from these alternative management techniques, there are concerns as well. In particular, the initial allocation of an ITQ can be a windfall for a few fishermen and create resentment among others. There may be other factors such as enforceability that make these alternatives less appealing when applied under certain circumstances. Some of the benefits and concerns of alternative management have been addressed in a National Research Council report: Sharing the Fish: Toward a National Policy on Individual Fishing Quotas, and a companion report on CDQs, The Community Development Quota Program in Alaska. Another NRC report, Sustaining Marine Fisheries also addresses the needs for alternative management, especially "rights-based management" as a way to reduce overcapacity, the major problem that the NRC report identified with respect to overfishing.

With this background, the Scientific and Technical Advisory Committee (STAC) of the Chesapeake Bay Program with the support of the Maryland and Virginia Sea Grant Programs decided to sponsor a workshop to learn more about these innovative approaches and their potential application to Chesapeake Bay Fisheries Management. The approach chosen was to have invited speakers present details of a few instances where innovative management has been tried. The purpose was not to select or endorse any particular approach for Chesapeake Bay fisheries, but rather to learn how such approaches were introduced and implemented in their respective fisheries. The workshop was also not intended to be a stakeholder forum on fisheries management approaches, but rather a precursor to the types of activities that require the involvement of fishermen, managers, conservation groups and others to come together to improve fisheries management in Chesapeake Bay.

This report follows the structure of the one and half day workshop. A brief summary of the presentations made at the workshop is given followed by summaries of two breakout sessions and the recommendations that resulted.

Goals and Objectives

The primary goal of the workshop was to educate the Chesapeake Bay fisheries management community on the potential and rationale for adopting alternative management approaches in Chesapeake Bay fisheries. Based on workshop recommendations, it is expected that STAC members on the Steering Committee will work with the Living Resources Subcommittee of the Chesapeake Bay Program to implement a process to explore possible adoption of alternative management techniques in Chesapeake Bay Fishery Management Plans.

The following workshop statement of purpose was included on the agenda and distributed beforehand to all participants:

> "The purpose of this workshop is to conduct a forum on alternative management approaches that will broaden understanding of fisheries managers and other interested individuals regarding their application. These methods, which include rights-based and other privileged-access approaches, are being implemented across the globe and may be applicable in Chesapeake Bay. Participants will learn about the advantages, disadvantages, successes and failures of alternative management options, as well as whether they can support the principles of multispecies and ecosystem management that are planned for Chesapeake Bay fisheries."

Workshop Structure

A plenary session was held on the first day where participants were briefed on current fisheries management practices in Chesapeake Bay. Following that, a series of panels were conducted with several representatives offering different perspectives on the genesis and implementation of alternative management practices in specific regions or fisheries. The first

case studies panel represented an overview of some innovative fisheries management practices occurring in West Coast fisheries. A panel representing the Maine lobster fishery followed this presentation. The next panel discussed both the Florida spiny lobster fishery as well as the stone crab fishery. The final panel discussed the history of the surfclam and ocean quahog fishery. On the following day, Dr. Lee Anderson of the University of Delaware presented a keynote address on why we need to explore new ways to improve fisheries management. The participants then broke into two separate discussion groups to develop specific recommendations for Chesapeake Bay. The meeting ended with reports and recommendations by rapporteurs from the two groups.

Presentation Summaries

Keynote Address

Why We Need to Keep Looking For Alternative Management Approaches to Management
Lee G. Anderson
College of Marine Studies
University of Delaware

Although we now have may years of experience managing fisheries we have to keep looking at alternative ways to manage in terms of the specific types of rules and regulations and the different processes by which the rules and regulations are designed, implemented, and enforced. We need to manage because left alone open access fisheries tend to reduce fish stocks to low levels and push levels of output and employment below what they could otherwise be. Additionally, open access fisheries tend to operate such that there is an inappropriate balance between fish consumption now and fish consumption in the future. These tendencies are evident when there is sufficient market demand and sufficient labor and capital available such that annual production is greater that stock growth at high stock sizes. However, even if such conditions do not exist currently, the decision to manage should be based on projected harvest levels not just current ones. It makes more sense to prevent stock and industry collapse than to wait until it occurs and then try to fix it. The need for management also depends on the nature of the participants. If the number of participants is so large, so dispersed, or so heterogeneous that they cannot mutually agree to match output with productivity of the stock, then management may be necessary. The participants cannot mutually agree to act as a steward in the absence of property rights. Where there is over-exploitation we need to manage so as to modify behavior of the participant either by imposing rules and restrictions or by providing the possibility for participants to mutually agree on rules and restrictions.

We have frequently not been successful in maintaining healthy stocks, profitable and stable fisheries, and a steady supply of quality products to the consumer as either food for the plate or recreational fishing experiences. In fact some would go further and say the current management system is broken. Input controls for managing are a game between manager and participant where the participant always has the last move. Often these are not biologically effective and always lead to higher cost of obtaining a given amount of harvest. Output controls

such as Total Allowable Catch (TACs) can be biologically effective if enforced, but almost always lead to shortened seasons and capital stuffing.

With both input and output controls intra- and inter-temporal distributional issues often overshadow conservation. The following issues arise:

1. Which inputs to restrict?
2. Which gear type or harvesting sector gets the largest assigned share of, or first crack at, the TAC? (In this case, TACs are often pushed to their limit to make allocation problems easier.)
3. In system where allocation effects can change over time, there is often a disconnect between who makes sacrifices in the present and who gets gains in future.

This is not to say that distribution issues are not important or that there will not be honest disagreements about what the appropriate distribution should be. The point is that current management systems often do not solve the distribution question once and for all and so participants are constantly fighting to maintain or increase their share. And this makes solving the conservation question all that more difficult.

The best way to manage a particular fishery will depend on a number of factors. It will depend on the biology of the resource in terms of its population dynamics, spatial and temporal distribution, and ecological linkages. The best way to manage will depend on the nature of the participants. For commercial fishermen the types of fish products produced, gear types used, whether they are part of an industrial fishery or small operator, the number of participants and other factors will enter into the types of management that will be effective. There may be similar variety among recreational fishermen as to the types of gear they use, whether they pursue the fish mainly as a gamefish or for meat, whether party or charter boats are involved, and the number of participants.

The unique political situation present in the fishery, whether it is the political issues between fishermen or between fishermen and other industries or the environmental community, will affect what is effective management. Our existing knowledge base and what we can learn about the fishery at additional cost will play a role in management. Some of the important components of that knowledge base include:

1. Biology of stocks.
2. Role of stock in entire ecological system.
3. Attitudes and beliefs of, and interactions, among participants.
4. Current activities of participants and how they will react to various regulations. (e.g., will there be changes in methods of fishing and/or markets served.

Ultimately, these factors of biology, participants, politics and knowledge interact to determine what the fishery system and its management are capable of achieving.

Once a management system is put in place, it and its components must be monitored and compared against some criteria regarding what constitutes successful management. In general, successful management might include:

1. Overall stability and sustainability of stocks in a stochastic world with less that perfect knowledge.
2. Acceptable risk of large shock to system from natural or manmade perturbations to the environment.
3. Quality and production efficiency of output for food or recreation.
4. "Quality of life" of participants.
5. Overall stability of employment/participation.
6. Number of "quality" jobs or participation opportunities.
7. Safety.
8. An ability to understand and comply with regulations.
9. Does it achieve the desired change in participant behavior?
10. Does it lead to better balance between fish consumption in the present and fish consumption in the future?

Taking these comments into account, we can learn a lot from looking at the alternative management schemes that are discussed in this workshop. In the first place, they do make a very large step in solving the distribution problem once and for all so people can focus on conservation issues. In the second place, they make a connection between who makes sacrifices today and who reaps the benefits tomorrow. These two attributes can lead to certain advantages:

1. Make it easier to adopt required cuts in harvests to allow stock to grow.
2. Increase willingness to share information and thus improve knowledge base and lower information costs.
3. Increase willingness to comply with regulations, which helps programs achieve their goals and lowers enforcement costs.
4. Reduces or eliminates the need for input controls and TAC driven race for fish which allows for improved quality and lower unit cost of harvest.

The community based lobster plans are especially interesting because they focus on a change in the institutional structure which allows participants to cooperatively determine rules that will eliminate open access behavior and provides monitoring assistance so participants can be assured that all will comply with the rules. It appears that this type of community-based system will work if:

1. There are a limited number of participants in the community or strict and mutually agreeable rules for entrance.
2. The members are relatively homogenous and trust each other.
3. The stock is relatively free of environmental interactions with other stocks.

Carefully designed adaptations to ITC and ITQ programs have the potential to be as successful as community-based systems. It is important to remember the answer to the question of what is the best type of management is it depends on a long list of items. If the examples we hear about today have been successful, they may provide hints as to how to change other programs.

Chesapeake Bay Fisheries

Eric Schwaab
Maryland Department of Natural Resources.

The current management system for Maryland fisheries consists of limited entry for commercial participants and open access for recreational fishermen. The license cap on numbers of commercial fishermen is intended to allow fishermen to make a reasonable living at their occupation. The allocation of licenses is based on historical participation with limited provision for sale or transfer when selling a business. A significant number of non-participants hold licenses. Although this has been raised as a concern about latent effort entering the blue crab fishery when trying to reduce mortality, it has not been an issue in the striped bass fishery where the current allowable quota has not been achieved in recent history.

In the striped bass fishery, Maryland's quota as determined by the Atlantic States Marine Fisheries Commission is allocated amongst recreational, commercial and charterboat fishermen The commercial quota is intensively monitored with each fish being weighed and checked in. In the yellow perch fishery there has been some discussion of considering an ITQ system, but this would be challenging and expensive to implement for such a short season. The Bi-State Blue Crab Advisory Committee has developed harvest targets and thresholds and has recommended a 15% reduction in landings to achieve the targets. Maryland has put new restrictions on commercial crabbers, but these tend to be traditional types of management restrictions such as days off and shorter hours, which may help in the short-run but may not solve the problem in the long run. The idea of an ITQ in the blue crab fishery was the topic of a meeting last spring and was soundly rejected by those members of the fishing industry that were present. Part of the problem with an ITQ for blue crabs is the limited predictive ability of stock assessment models for this fishery. Long-term management strategies need to be explored that identify social and economic goals and recognize that latent effort may effect short-run management actions.

Lewis Gellingham
Virginia Marine Resources Commission

In 1984 the Code of Virginia gave VMRC authority to use delayed entry, limited entry and ITQs in order to prevent overfishing while ensuring no user group was discriminated against. This lead to the development of Fishery Management Plans, a 2-year delayed entry for commercial licenses and mandatory daily reporting.

Currently, Virginia uses limited entry for various blue crab gear licenses, pound net licenses, hook-and-line licenses, the black drum, directed summer flounder fishing and horseshoe crabs. Quota management is used in flounder, black drum, black sea bass, bluefish, scup and several other fisheries. Spawning sanctuaries as a management tool are used for blue crabs, oysters and striped bass.

Virginia's striped bass fishery is now managed with an ITQ. In 1990 with a derby-style fishery, permits were exhausted in three days and when season opened fishermen were insured of getting low prices. This has changed with the ITQ system where anyone can buy or lease a share of the quota. The difficulties in adopting this system are determining the initial allocation and the administrative burden of documenting the quota trades. It takes about 4 years to get the system operating smoothly.

Derek Orner
NOAA, Chesapeake Bay Program Office.

The Chesapeake Bay Stock Assessment Committee (CBSAC) is intended to be an objective voice of science to aid in fisheries management in Chesapeake Bay and to fund stock assessments. Because the Chesapeake 2000 Agreement calls for the development of "ecosystem-based multi-species management plans for targeted species" by 2005 and to "revise and implement existing fisheries management plans..." by 2007, this has become a major focus of CBSAC and the NOAA Chesapeake Bay Program Office.

This mandate requires we understand the impacts of not only commercial and recreational harvests, but also their effects on predation by and of other species and their spawning stocks. To meet this need there will be greater data requirements, and more modeling, monitoring and research needed. To guide this effort of developing fishery ecosystem plans, there is a NMFS ecosystem approaches planning document published in 1999. Development of a fisheries ecosystem plan not only has to describe what impact the fishery has on the ecosystem, but also what impact the ecosystem has on the fishery.

CASE STUDIES

Groundfish and Shellfish Management: Some Pacific Fisheries

Jim Gilmore
At-Sea Processors Association

The Bering Sea pollock fishery in addition to being the largest fishery by volume in the United States (3 billion lbs. of pollock are landed annually) has a unique history and characteristics that have led to the formation of a cooperative. There is a comprehensive federal observer program with catcher/processors carrying two observers and catching vessels over 125 feet carrying one observer. In 1992-93, the fishery went from a year-round fishery to a 90-day fishery the result of overcapitalization in a race to catch the quota. This led to fierce allocation battles between different sectors of the fishery (e.g., inshore/offshore). Catcher/processors appeared to be losing the political battle for allocations so they heavily supported the idea of IFQs transferable rights and Cooperatives. The American Fisheries Act was the catalyst that accelerated the development of cooperatives in the pollock fishery. As a result, catcher vessel cooperatives have formed around each processing facility and cathcer/processor vessels have formed their own cooperative.

The Pollock Conservation Cooperative (PCC) is made up of the eight firms and 19 catcher/processor vessels in the fishery. The cooperative agreement is limited to harvesting activities where each firm is allocated a share of the total catcher/processor allocation. The PCC has contracted with a private company, SeaState Inc., to obtain harvest data from the NMFS observer records and inform individual companies of their remaining quota share.

Under the Cooperative, firms are using their most efficient vessels, with 14-16 of the 19 vessels being used to harvest the available quota. Capital stuffing to increase capacity in the race to fish has ceased. Yields and quality are increasing at all levels as fleets are able to prospect for larger fish, and catch fish in quantities that can be efficiently run through the processing equipment. Additionally, bycatch and discards are lowered under the Cooperative.

There are several legal and practical impediments to expansion of cooperatives into other fisheries. Perhaps the most major is the current moratorium on instituting new IFQ programs in federally managed fisheries. From a practical point of view, for a cooperative of this type to work, it is necessary that there be effective barriers to new entrants that would harvest the quota. It must be shown that cooperative fishing arrangements will lead to greater profitability to the fishermen who participate, and it helps if there is a relatively small number of participants or the participants have a strong common bond.

Jay Odell
Washington Department of Fish and Wildlife

The Geoduck clam fishery produces annual commercial landings worth approximately $50 million. The clams are found from the low intertidal to over 100 meters deep, but commercial harvest (a dive fishery) is only allowed at depths between 18-70 feet. Intertidal geoduck clams support a popular recreational fishery. It takes the clams 4-5 years to reach a harvestable size of 2 to 3 pounds, and they can live to be over 150 years old. Geoduck stock assessments have been conducted since 1967. The commercial biomass is 162 million pounds and the TAC is 4.4 million pounds. There is on-site monitoring for harvest and landings. This is a limited access fishery where harvest rights are auctioned to the highest bidder through an annual sealed bid auction. This auction provides $7 million/year to the state that is used to fund management and improve recreational access to aquatic resources.

The Red Sea Urchin reaches sexually maturity in 3-4 years and harvestable size in 4-5 years. There is a minimum and a maximum size limit. The minimum size helps to ensure reproduction and improve yield, and the maximum size protects larger urchins whose spine canopy shelters juvenile urchins from predators. From 1986-1988, the fleet size doubled each year. Limited entry was implemented in response, the first quotas were initiated in 1989, and then a rotational fishery was established with four out of five areas in Puget Sound closed to fishing each year. Individual vessel trip limits are used to provide fisheries that meet specific marketing objectives without exceeding quotas. The TACs were reduced by 15% in 1994 when annual stock assessment surveys were cancelled due to lack of funding. Additional reductions were implemented in 1995 after coastal sea otters migrated into the Strait of Juan de Fuca and decimated urchin populations. There is no recreational component to this fishery.

The halibut fishery is managed by the International Pacific Halibut Commission, which estimates the total allowable catch (TAC) based on extensive stock assessment surveys. The incidental catch from other fisheries and a recreational/charter boat allowance is subtracted and the adjusted TAC is then split between the U.S. and Canada. The halibut fishery in waters offshore CA, OR, and WA is open access with annual allocation negotiations to establish quotas for each user group. An ITQ system was implemented in 1995 for the Alaska fishery. A fisherman was eligible for quota shares based on the number of pounds landed during the best five years between 1984-1990. There are complex rules regarding quota blocks, transfers, etc. that are designed to prevent corporate consolidation of quota shares. There is a 1.5% cap on the amount of allowable quota shares held by any one entity. Quota shares cannot be transferred between different areas or boat types, and there are rules designed to minimize effort transfer to other fisheries. There are also community development quotas (CDQs) designed to help sustain local economies. Concerns with the ITQ program include the lengthy and controversial implementation, high administrative cost, high enforcement cost, and the impacts on the processing industry. Benefits include the elimination of the race for fish, much improved safety, and an extended season. The season is now 9 months long instead of a few days, the fishermen have more incentive to protect the resource, ex-vessel prices have increased, and consumers have better access to high quality fish.

The Dungeness crab fishery is managed with a variety of tools including minimum size limits, restriction on harvest of female crabs, closed seasons to reduce mortality to soft shell crabs, pot limits, and limited entry. When male crabs reach legal size (at about 4 years of age) they have had at least one opportunity to mate. There is a coastal fishery and a Puget Sound fishery with total combined landings. Beginning in 1988 there were several failed attempts to institute limited entry in the coastal fishery but efforts were eventually successful in 1995. The coastal fishery is currently very front loaded with the majority of annual harvest occurring during the first few weeks of the nine-month season. Legislation was passed to ensure progress towards an "even flow" of resource harvest in response to this market glut. The legislation allows the use of a variety of management tools including individual quotas, pot limits, etc. Pot limits were established for the first time in 2000 under a new system that granted fishers permits to fish using either 300 or 500 pots depending on landings made during a 3 year historical qualifying period. This change provided a small overall effort reduction and put bounds on growth but latent effort is still an issue. Attention is now focused on developing license stacking rules that could encourage additional reductions in the number of vessels and pots fished.

In Puget Sound, the state licensed commercial fishery has been limited to 250 vessels since 1984, but implementation of tribal fishing rights in 1995 has led to a doubling of fishing effort. Management concerns and challenges include increased handling mortality in the race for crab, lack of stakeholder confidence in recreational catch estimates, and bitter allocation disputes between commercial, recreational and tribal fishers. There is uncertainty regarding the sustainability of the current management regime. A federal court order requires strict 50/50 catch sharing between state licensed fishers and treaty tribes. Since 1995, managers have struggled to achieve 50/50 state-tribal sharing while not knowing total catch until season's end. A new precautionary quota system is being implemented for the 2001 season. Pre-season quotas are established based on historical landings and adjusted in-season based on fishery dependant catch per unit effort data. Extensive outreach activities with commercial and recreational fishers are being conducted to allow fishers to identify and choose their preferred regulatory structure (seasons and pot limits) within allocation and conservation constraints outlined by managers.

A recreational catch record card system is being implemented (500,000 will be issued this year) to provide a more precise estimate and will help evaluate progress towards new regional allocation policy goals. State and tribal fishery managers and fishers recognize that pot limits are nearly impossible to enforce without buoy tags and are working together to implement buoy-tagging programs for the coastal and Puget Sound fisheries.

Community-Based Management - Maine Lobster Councils

Robin Alden
Stonington Fisheries Association

In 1995, the Maine legislature established a set of zones in the Gulf of Maine with entry and trap limits. Entry is controlled through a required apprenticeship program, thus it is tied to

experience and commitment to the fishery. Zone boundaries were based on ecological and socioeconomic status, with each zone containing approximately 1,000 fishermen. Within each zone are 8-14 voting districts with approximately 100 fishermen in each. An official is elected from each zone who then sits on an overall board of officials. The local zones decide on the number of traps, how the traps are used, the time and day of fishing, and they set the ration of entry to exit of fishermen. The state has authority for factors beyond local control. Put in the Chesapeake Bay context, the similarities would be that there is a strong sense of place, a sense of community and permanence, these are small-scale fisheries, there exists multidisciplinary science in the region, and there is complex governance. Take home messages from Maine's experience would be that this system shifts responsibility to those that are directly impacted, there is usually civil debate that breeds tough decisions, it eases the load at the higher level of governance, and it has been a worthwhile investment to develop these civil institutions.

Jim Wilson
University of Maine

The lobster conservation strategy is a system of getting incentives right through democratic governance. The objectives of this form of governance are to better facilitate agreements for fishery restraint, be able to work at the different scales (large and small) of lobster biology and human interaction in a complex and multi-scale environment. The authority is divided among the governance levels, and the new local scale institutions are designed to complement, not replace, existing state and Federal fishery management institutions.. By designing the system in this way, the costs and benefits of the policies occur at the same scale and locality. The basic rules of the strategy are easy, credible, and enforceable. The minimum allowable size of lobsters is 3.25 inches and the maximum allowable size is 5 inches on the carapace. This size limitation is pertinent out as far as 40 miles in the Gulf of Maine. The landing of V-notched lobsters is also prohibited. Fishing with traps is the only method that is permitted.

Terry Stockwell
Maine Department of Marine Resources

The co-management example is contentious and time consuming, but there are benefits. The councils that were formed in the different zones, built bridges between individuals and developed relationships that are more cooperative. The councils serve as a common link between the Department of Marine Resources and the fisherman, and they also provide advice and assistance to the fisherman with the backing of scientific programs. Councils provide general advice to the Commissioner of the Department of Marine Resources on matters that are of interest to the fishery. This type of management system is time and labor intensive, the state must dedicate sufficient resources to its implementation and operations, all partners must have the necessary skill and technical resources to effectively carry-out their roles and responsibilities, and the fishermen must make the fundamental changes in their attitudes and assumptions. The future of this system depends on communication; its biggest strength and liability. Issues that are

continually present are the legislative limits on zone authority, time constraints on the rule-making process, cohesion among fishermen, problems of fairness, and threats and lawsuits from outside influences.

Ted Hoskins
Maine Sea Coast Missionary Society

People need to be placed at the top of the value list in managing our fisheries. Families, fishermen, and communities are not to be forgotten in the management debates. The resource should not be privatized because it is then being given away without consideration to the people that it impacts. Community-based management energizes its participants when they realize that they can share in the conservation of their resource. Community stewardship needs to be stressed because if members feel responsible for the resource, they will take it more seriously. Community interaction with scientists is essential so they have access to the knowledge base on which management actions are based. If they have a hand in making the rules, enforcement will be easier. Participation gives the community ownership. The communities need to be educated so that they can make effective decisions. Management decisions should be made at the most local level possible. Community members also need to have access to different types of fisheries so there are options for them if one fishery collapses. All of this takes time and resources to make it work.

Transferable Trap Limits - Florida Spiny Lobster and Stone Crab

Doug Gregory
Florida Sea Grant Extension

The Florida spiny lobster trap certificate program was implemented in 1993 with the introduction of transferable individual trap certificates. This particular management action seemed to be an effective means to reduce trap related navigation hazards, undersize lobster mortality, habitat impacts and to reverse two decades of excessively low levels of catch per trap. The overall goal was to stabilize the fishery by reducing the total numbers of traps without reducing total harvest--expected increases in catch per trap were expected to maintain or even increase landings. The initial program was implemented by the state legislature, who maintains authority over all revenue generating components, but the Florida Fish and Wildlife Conservation Commission (FWC) is responsible for all other aspects of management, including the rate of trap reductions to be imposed on the fishery, up to a maximum of 10% per year. Traps have been reduced 10% across the board four times since program implementation. Overall, because of appeals and reissue of unclaimed tags, approximately a 30% reduction in traps has occurred to date. Although nominal fishery-wide catch per trap has increased due to the combined effect of effort reductions along with slightly increasing landings, the individual fisherman claims that his catch rates have not increased. This apparent absence of increases in individual catch rates simply could be a misperception or could be due to increased rates of theft,

use of untagged traps, a developing commercial non-trap dive fishery, or an increase in recreational lobster harvest. Also, participation in the fishery has decreased by 42% during this period. Currently there are 525,000 legal traps in the fishery, but according to current economic analyses, the fishery will not reach the economic optimum level of harvest until traps are reduced to 200,000. The FWC modified the program in 2001 to effect an overall 4% trap reduction annually and established a goal of reducing trap effort to 400,000 traps. Fishermen generally have opposed the trap certificate program because it was forced onto the fishery by the state agency as an alternative to other more onerous management proposals and because the active reductions are perceived as direct threats to continued profitability. Other effort reductions programs, such as a trap certificate buyback should be considered, as well as effort limitation on the non-trap harvesters. In addition, enforcement of the trap-tag requirement needs to be increased and the co-management philosophy should be encouraged to make both industry and the government more accountable.

Greg DiDomenico
Monroe County Commercial Fishermen

The spiny lobster fishery is Florida's most valuable fishery and the Florida Keys represent 90% of the harvest. Industry became involved in Transferable Trap Certificate Program due to the direct threat that it would be regulated to require escape gaps in traps. These escape gaps would release undersized lobsters which act as attractants to larger lobsters to the traps. The trap-tag program that was adopted had numerous initial allocation problems due to inaccuracies in reporting of historical landings and due to regional and other differences in efficiency of fishermen. Currently, the industry feels that the annual 10% reductions are disruptive. There are also concerns that the individual CPUE has not increased and there is a loss of confidence in the system because of it. Also, replacement tags for traps are expensive. The initial active trap retirement program has been replaced by a more favorable passive retirement system. A goal of 400,000 traps was established under the passive system, a reduction from the 525,000 traps now being fished. The industry feels that things could have been done differently such as including all user groups in effort limitation, the setting of measurable management objectives, establishing monitoring and research priorities, and establishing enforcement priorities, particularly for untagged traps and theft.

Roy Williams
Florida Fish and Wildlife

The inequities in the spiny lobster program discussed above made those involved with the stone crab do things differently. The problems that exist in the fishery are that: fishermen are in an arms (gear) race with more effort not producing any new yield; excess traps created a conflict with shrimp trawling and were impediments to navigation; there were problems with trap debris accumulating on the shoreline; some damage to sea grass beds; and entanglement of turtles and marine mammals.

The maximum sustainable yield of the stone crab is 3.0-3.2 million lbs. claws. In 1990-1991, there were roughly 600,000 traps harvesting 3.1 million lbs. claws. In 1999, there were 1.4 million traps harvesting the same 3.1 million lbs. Overfishing does not seem to be a problem, the spawners per recruit are healthy, and the females are not harvested until their second year.

In 1995 there was a moratorium on further entrants to the fishery and in 1996 the industry came to the Commission for help designing the trap certificate program, which took 2 years to develop. The stone crab trap certificate program will go into effect in October 2001. It was designed mostly by the industry in reaction to the problems/injustices of the lobster certificate program. Each trap has a certificate and must have an annual tag from the Commission, which costs $0.50 and will raise approximately $700,000 in revenue for the program. Additional elements of the program that were designed by industry are, (1) had to have a current stone crab license in order to participate, (2) had to have landed 300 lbs. of claws in one of the qualifying years, (3) initial allocation based on highest number of traps listed on your application in the years 1995-1998 or your annual claw landings divided by 2. The trap certificates are to be freely marketable with the goal that the traps will be reduced from 1.47 million down to 600,000 by a passive reduction system. Passive reduction occurs when the certificates are sold with the amount of traps retired varying on a sliding scale (10-25%) depending on the number of outstanding certificates. Only natural persons may own certificates, not corporations, and leasing of certificates is prohibited. There is an Appeals Board that is comprised of 8 certificate holders and one community member. It will probably take 30 years to get to optimum level. In addition to the tag costs, it costs $125 to get an annual stone crab license that generates $150,000 and there is a $25 bycatch permit (allowance to land stone crabs while lobstering or shrimping) that generates an additional $25,000. All totaled, this program should generate over $800,000 annually.

Surfclam/Ocean Quahogs - An ITQ Close to Home

Tom Hoff
Mid-Atlantic Fisheries Management Council (MAFMC) Staff

The surfclam and the ocean quahog represent the first ITQ in the United States. There were seven amendments to the Surfclam and Ocean Quahog Fishery Management Plan from 1977-1990. In 1981, Amendment #3 was designed to rebuild the surfclam harvest to 50 million lbs., and to keep the processing plants open year round. Regulations included an annual quota, quarterly quotas, vessel moratorium, logbook reporting, effort limitation, size limitation, etc. Although successful in preventing overfishing, these methods proved inefficient. The number of allowed fishing hours were regulated down from 1800 hours per year in 1978 to 144 hours per year in 1985. This translated into 6 hrs/day for 6 days/quarter. The distribution of the catch was not uniform among vessels prior to the ITQ. From 1979-1987, the catches were evaluated to show that 20% of the vessels caught 50% of the surfclams and 12% of the vessels caught 50% of the ocean quahogs. Amendment #8 called for the conservation and rebuilding of the surfclam

and ocean quahog industry by stabilizing the annual harvest rate, simplifying the registration requirements, allowing the industry to operate efficiently, and management to operate efficiently. Individual allocations were based on an historical performance component, and a vessel size component in an 80:20 composite ratio. By 1992, there was half the number of boats registered, declining from 128 when the ITQ was put into place (1990) to about 59. The industry got to use its capital more efficiently as boats took more trips and the fleet tonnage was reduced by one-third. In 1990, a typical boat took 34 trips per year, but in 1999 that had increased to 76 trips. Individual surfclam vessels doubled their production from 48K to 75K, but the number of boats per owner has declined. The industry is not more concentrated as a result of the ITQ, the number of boats per owner has declined. There are administrative savings with this program in the form of time spent on management. For example, in 1984 there were 28 Federal Register notices having to do with surfclams, but in 1999 there were only 4 notices. Mandatory logbook data from the processors and the vessels were critically important. The ITQ in this fishery is dependent on the prevention of overfishing, extensive council/industry/NMFS cooperation, a vertically integrated and limited fishery, minimal bycatch and excellent data.

Rick Savage
Ocean Clam Industry and MAFMC Member

As a clam fisherman, Rick Savage provided perspective from the fisherman's point of view. In order to catch the quota, the number of allowable fishing hours per week was decreased from 96 hours down to 6 hours/week. This was strung out throughout the year to keep the processors employed. The price of the clam went from $1.70 a bushel to $12 a bushel, and this attracted a lot of people into the fishery. After the boom, many of these people went back to their regular occupation. Big corporations did not buy up all the ITQs, nor did banks which are simply holding the ITQs for the owner. The idea of sunsetting ITQs after 5 years is a bad idea, as it impacts the sales of the quota share.

BREAKOUTS

Charge: Consider the different alternative management concepts and put them through a Chesapeake Bay filter. The systems are: co-management (ME Lobster), cooperatives (Alaska Pollock), Community Development Quotas (Alaska Pollock), rotational and protected areas/sanctuaries, ITQs/ITTs. What are the ecosystem management issues? What are the inter-jurisdictional issues? Please form recommendations and examples of how to initiate an alternative management process.

Group I:

This group mainly focused its discussions on blue crab management. The group felt that there was a strong need to obtain stakeholder involvement beyond the listening sessions that were held as part of the current process. The process needs to be a stakeholder driven process

over the long-term. It was suggested that this process should begin on a small scale. One experiment at the community level is to develop strategies such as reducing the number of crab pots in a small region of the Bay and to monitor changes in catch and catch per unit of effort. Management would have to agree to subsidize the experiment to ensure watermen of their livelihoods if their revenues should fall as a consequence of the experiment. If the experiment was successful in reducing effort while maintaining catch, then management could depend on local advocates to recommend expansion of the program. Advocates could be expected to develop community organizations to support compliance, enforcement and management of the strategies. To succeed, there is a strong need for communication, education, and partnerships within the communities. A sense of trust must be developed between the involved groups. Community involvement must be sustained. In Maine, there is an annual lobster forum for scientists, watermen, and managers to refresh commitments. This community-based idea needs further exploration by Chesapeake Bay managers. In Maryland, there already are county oyster committees that contribute to management at the local level. This is an existing structure that can be built upon. This group felt that the oyster industry serves as an example of a fishery for which co-management might work well.

Group II:

The second breakout group discussed the need for a major reduction in the number of crab pots currently being fished. This group also felt that management solutions could be devolved to the local levels. Currently, the crab industry is managed from the top down, and the group felt that this tendency needs to be reversed. The group stressed the need for more trust in local initiatives. The fishermen need to trust stock assessments generated by scientists and managers need to modify their approach if they want fishermen to comply with and support management measures.

There is a deep concern about the development of ecosystem approaches for fisheries management in Chesapeake Bay. Will the costs outweigh the benefits? In order to begin this new process, communications must be established between the fishermen, scientists and managers. Recreational fishermen, in addition to commercial interests need to be included. This group felt that zoning with local controls of fisheries management is a strategy worth considering for Chesapeake Bay. Such an idea must be discussed at the local level

RECOMMENDATIONS

There has recently been a major shift in thinking regarding Chesapeake Bay Fisheries Management away from single-species management and towards multi-species and ecosystem approaches to management.

- *We recommend that there be a similar shift in thinking regarding management of fishermen, away from command and control input regulation and towards community-*

based management and market-based management instruments. The evidence from fisheries where these new approaches have been applied, although limited, indicates that carefully designed alternative management programs can be significantly more effective in reaching social goals than traditional approaches.

- *We recommend that the next Chesapeake Bay Agreement require consideration of alternative management approaches for Baywide Fisheries Management Plans.* The fishery management agencies, partnering with commercial and recreational fishing groups, environmental groups and academic institutions develop the capacity within the region to develop and evaluate alternative management approaches for Baywide fisheries management.

- *We recommend expansion of cooperative science projects between watermen and scientists.* Virginia has a Fisheries Grant Program run through their Sea Grant Program (as does North Carolina) with funds directed at watermen, but in most cases, with little involvement of scientists. Some of these funds could be used to deal more directly with resolution of management issues and to be truly cooperative science projects. Maryland has no such program but should consider initiating one, particularly focused on partnerships between scientists and watermen.

- *We recommend that STAC and other Bay Program partners support the concept of a NMFS/Sea Grant Fisheries Outreach Specialist.* Sea Grant Programs have played an important role in facilitating discussions and implementation of alternative management in several of the case studies discussed. Discussions are currently underway between NMFS and Sea Grant to appoint fisheries outreach personnel in most of the Sea Grant Programs (MD has no commercial fisheries specialist, but VA does)

- *We recommend expansion of seminars at the Mid-Atlantic Watermen's Expo and similar conferences to increase dialogue and communication of ideas between the fishing community, managers and scientists*.

- *We recommend that a working group be formed to develop a pilot plan for obtaining greater input at the local level for management of the blue crab fishery.* The working group should include recreational and environmental interests in addition to commercial fishermen. A change in the underlying management philosophy for fisheries in the Chesapeake Bay will be beneficial. More input has to be obtained at the local level and greater stewardship and responsibility for fisheries management needs to be transferred to this level. The ongoing concern regarding baywide management of the Chesapeake Bay blue crab is a good forum to begin instituting some of these practices.

Appendices

A. Agenda
B. List of Participants

APPENDIX A

AGENDA

(**Morning, April 10**)
8:00 - 8:30 Continental Breakfast

8:30 - 8:45 Welcome, Introductions, Charge to Participants
Doug Lipton (STAC and University of Maryland)

8:45 - 9:30 Keynote Address - Dr. Lee Anderson (College of Marine Studies, University of Delaware)

9:30 - 10:30 Status and Future of Fisheries Management in Chesapeake Bay (Panel)
- Eric Schwaab (MD Department of Natural Resources)
- Lewis Gellingham (Virginia Marine Resources Commission)
- A.C. Carpenter (Potomac River Fisheries Commission Rep)
- Derek Orner (NOAA Chesapeake Bay Office)

10:30 - 10:45 Coffee Break

CASE STUDIES
10:45 - 12:00 Groundfish and Shellfish Management - Some Pacific Fisheries
- Jim Gilmore (At-Sea Processors Association)
- Jay Odell (Washington State Dept. of Fish & Wildlife)
12:00 - 1:00 Lunch

(**Afternoon, April 10)**
CASE STUDIES (cont.)
1:00 - 2:00 Community Based Management - Maine Lobster Councils
Robin Alden (Stonington Fisheries Alliance)
Jim Wilson (University of Maine)
Ted Hoskins (Maine Sea Coast Missionary Society)
Terry Stockwell (Maine Department of Marine Resources)

2:00 - 3:00 Transferable Trap Limits - Florida Spiny Lobster and Stone Crab
Doug Gregory (FL Sea Grant)
Roy Williams (FL Fish & Wildlife and Conservation Commission)
Greg DiDomenico (Monroe County Commercial Fishermen)
Jerry Sansom (Organized Fishermen of Florida)

3:00 - 3:15 Coffee Break

3:15 - 4:00 Surfclam/Ocean Quahogs - An ITQ close to home
Tom Hoff (Mid-Atlantic Fisheries Mangaement Council Staff)
Rick Savage (Clam Industry and MAFMC Member)

4:00 - 5:00 Workgroups Convene

(**Morning, April 11**)
8:30 - 10:30 Workgroups Reconvene

10:30 - 10:45 Coffee Break

10:45 - 11:30 Workgroup Reports and Recommendations

11:30 - 12:00 Final Comments and Recommendations (Steering Committee)

12:00 Adjourn

APPENDIX B

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