OYSTER CULTURE IN MARYLAND '79

A Conference Proceedings

January 9, 1979
Annapolis, Maryland

OYSTER CULTURE IN MARYLAND '79

A Conference Proceedings

January 9, 1979
Annapolis, Maryland

Sponsored by

University of Maryland Cooperative Extension Service
in cooperation with
University of Maryland Sea Grant Program
and
Maryland Department of Natural Resources

Technical Editor: Donald Webster, Marine Advisory Agent
Copy Editor: Halcyon Ahearn

UM-SG-AS-80-01

Cover photo: Skip Brown

The publication of this technical report is made possible by grant #NA79AA-D-00058, awarded by the National Oceanic and Atmospheric Administration to the University of Maryland Sea Grant Program.

Additional copies of this publication may be obtained by writing: Marine Advisory Service, Maryland Sea Grant Program, 1224 H. J. Patterson Hall, College Park, Maryland 20742.

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914 in connection with the U.S. Department of Agriculture, University of Maryland and local governments. John M. Curtis, Director of Cooperative Extension Service, University of Maryland.

Contents

Acknowledgements

Many persons contributed to the success of this conference, but the editor wishes to thank the following without whose support this program would not have been possible:

Mrs. Virginia Smith, Department of Agricultural and Resource Economics, who compiled the mailing list which provided contact with the industry for this conference;

Ms. Margaret Rocheleau, Department of Natural Resources, who spent many hours on conference details and registration;

Mr. F. William Sieling III, Department of Natural Resources, program co-chairman, whose ideas, contacts, and advice were invaluable in planning and conducting the program;

Mr. Frank Wilde, commercial oyster culturist, whose idea provided the spark for this conference;

Dr. George Krantz, Center for Environmental and Estaurine Studies, whose research into hatchery technology provided many of the ideas for this effort;

Mrs. Janet Kelly, Cooperative Extension Service, who was instrumental in the preparation of the conference and this document.

Special thanks are offered to the many agencies, institutions and organizations whose participation and support made this conference a success, especially

the sponsoring organizations--the University of Maryland Cooperative Extension Service, the University of Maryland Sea Grant Program, and the Maryland Department of Natural Resources.

Foreword

There have been many books written about the Chesapeake Bay and its seafood industries. One such book, The Oyster, was written by Dr. William Brooks of the Johns Hopkins University. It provided many interesting details about the problems of the oyster industry and looked at various methods of culture. The book also brought forth a series of recommendations, some of the more provocative being that oystermen should form associations, form cooperatives and farm the Bay to maximize the potential of this industry. Dr. Brooks's book was published in the year 1891.

Dr. Brooks's work initiated many changes in the oyster industry of Maryland. It led to the first surveys of the Bay bottom which charted the natural oyster bars for protection and prompted such laws as those calling for culling of the catch and replacement of small oysters and shells back on the bars from which they had been taken.

Early enforcement of conservation laws was provided by the formation of the Maryland Oyster Navy which has, over the years, become the Marine Division of the Natural Resources Police--the largest force of its type in this nation.

The leasing of barren or non-productive portions of the Bay bottom was carried out in later years but

never reached the proportions in Maryland that it did in Virginia,where about 30 percent of the productive bottom is held by private planters. In Maryland the amount in private control amounts to about 3.5 percent.

During 1939 scientists at the Chesapeake Biological Laboratory in Solomons, Maryland, began surveying the oyster bars for spat set and recruitment. This survey, later taken over by the Maryland Department of Natural Resources, has shown spat set to be highly erratic on an annual basis but with a general downward trend since the late 1960s. Some of the low spat production figures can be attributed to occurrences such as the MSX oyster disease epidemic of the mid-1960s and Tropical Storm Agnes in 1972, but others in 1976 and 1978 remain inexplicably low.

Repletion activities have been conducted by the Department of Natural Resources for many years to build up the oyster harvest on natural bars. These activities include setting aside areas of traditionally good spat set as seed areas; moving these oysters after one year's growth to good growing areas; dredging, washing, and depositing shell from old nonproductive bars in the Upper Bay onto seed areas and natural bars to induce spat set on clean cultch; and removing oysters from polluted to clean waters for depuration and later harvest. Recent Sea Grant supported research has shown that these activities do have an effect and that human management makes a measurable difference in oyster harvest.

One of the major constraints at this time for both public and private sectors of the oyster industry is a lack of seed oysters. The future of the fishery may well depend upon new and continuous sources of economical juveniles. Several persons have been pursuing the idea of using oyster hatcheries to help provide this seed source. At the University of Maryland's Horn Point Environmental Lab, Dr. George Krantz has been working for several years with a production-

size facility to develop techniques and economic and manpower data needed to make decisions regarding the feasibility of such projects in the future.

Realizing the opportunities available to an expanded oyster industry, the Maryland legislature recently requested a report from the Maryland Oyster Resource Expansion (MORE) Task Force. This group of industry, agency, and institutional leaders outlined nine ways in which the state could assist the faltering oyster industry. Several of these addressed the real need for increased spat production.

Members of the Maryland Watermen's Association have worked on several projects over the years to increase spat production. The most recent involves the growout of hatchery-produced spat in crab shedding tanks in connection with a commercial oyster culturist who has long been an active advocate of hatcheries, genetic manipulation, and controlled growout of the product.

With the increases in activity in these areas, it became increasingly apparent that methods to transfer this expanding technology to members of the industry were needed. Large numbers of requests for aquacultural information were being received by extension personnel both at the University of Maryland's Sea Grant Program and at the Department of Natural Resources. A conference was necessary to bring this technology before the public and to discuss the problems of the individuals involved. With the support of the University and DNR, this conference was held on a cold January day in Annapolis. That 160 oystermen attended attests to the real interest which exists in the industry concerning culture techniques.

Speakers for the program were drawn from several states and from many walks of life. Scientists, businessmen, economic developers, law enforcement officers, financiers, watermen, and processors--all played important parts in this conference. These proceedings contain their thoughts, problems, and much

information useful to those who want to see Maryland's oyster industry grow and prosper.

Donald Webster
Marine Advisory Agent
University of Maryland
Sea Grant Program

Welcoming Remarks

Donald Webster
Marine Advisory Service

I would like to welcome all of you to this conference on oyster culture in Maryland on behalf of the sponsoring organizations, the University of Maryland Sea Grant Program, the Maryland Department of Natural Resources, and the University's Cooperative Extension Service. I am one of the two Marine Advisory agents with the University's Sea Grant Program. I would also like to introduce the program co-chairman, Mr. Bill Sieling, who is the Fisheries Extension agent with DNR.

The University's Marine Advisory Program has been in existence for more than four years now, initially concentrating on providing information and educational programs to watermen in the areas of business management, vessel finance, hydraulics, and electrical systems. We have expanded our program efforts in recent times to include marina operators and youth programs.

This conference marks the beginning of a new program area directed at aquacultural development here in the state of Maryland. We've been very fortunate during the years to have had the support and the help of many of the federal and state agencies and industry groups in developing and carrying out our programs. This support, coming from such departments as Natural Resources, Economic and Community Develop-

ment, Health and Mental Hygiene, and such organizations as the Chesapeake Bay Seafood Industries Association and the Maryland Watermen's Association, is apparent in this conference today.

The oyster industry is a very important segment of Maryland's seafood industry. Hopefully this conference will contribute to increasing the economic potential of this industry for the state with implications for: increased harvests, improved processing techniques, expanded markets and, most importantly, increased employment. We will be handing out some questionnaires later in the program. This will give us information we need to develop and expand our programs.

We have some very fine speakers, and we are very pleased at the fine turnout. I hope that you will take advantage of the opportunity to learn from all the speakers who will be making presentations here today.

Overview of the Oyster Industry

George Krantz
Center for Environmental and Estuarine Studies

The first speaker on the program is Dr. George Krantz, who will provide an oveview of the oyster industry. Dr. Krantz is a graduate of Western Maryland College and Penn State University. He worked with the Oxford Biological Laboratory of the National Marine Fisheries Service, in private industry, and with the University of Miami before returning to Maryland to take charge of the University of Maryland's shellfish research lab, located at Horn Point outside of Cambridge. It is largely through his efforts that this conference is taking place today.

I'd like to welcome all of you and point out to you that this should be an informal presentation and an informal conference. The primary purpose of our being here together is to exchange information, not for me or other speakers to lecture to you. Through your questions we can learn some of the things that you want to know and some of your needs. The other thing that I hope evolves from today's meeting is something that you as a group will have to initiate. I hope you will develop an organization of leaseholders or of persons in Maryland who are interested in aquaculture.

Researchers at the University of Maryland and the Sea Grant Advisory Service personnel here today have a problem. In the past decade there have been a tremendous number of changes in technology involved in the culture of oysters. Additionally, there have been changes in the legal status of aquaculture in this country. On a national level, aquaculture is receiving a tremendous amount of attention in the Congress and money is forthcoming. Most importantly, there is money available right now to assist you. But the problem we have is that we have no one to relay this information to. It is extremely hard to talk to you as individuals. If we had a forum or an organization--someone to whom we could address our findings--our lines of communication would be much sharper, and we could get the information to you more quickly. Today is an example of our efforts to get information to you, but I'm sure it has shortcomings.

Through today's meeting and through the exchange of information, I hope we can stress to you a need for cooperation. In other words, get your group thinking of helping one another, rather than competing with one another. I know business is competitive. If you don't catch it and sell it, somebody else will. But I think there is a tremendous need to evolve a cooperative effort in Maryland, maybe even to the extent of developing an organized oyster farmer's cooperative. I would like to see this meeting be the first of the steps that would ultimately result in a cooperative of oyster farmers.

Another element that should be considered in today's meeting is the leaseholders. Those of you who have attended this meeting today attest to the interest in aquaculture of individuals within the state of Maryland. I think that you should have a voice in legislative matters. You can't do much as individuals. You are not very effective going through your local representatives because there are so few of you per county. I think a formal

organization or cooperative could function very efficiently and do as good a job of lobbying as the Maryland Watermen's Association, the Watermen's Protective Association, and the Maryland Clammers' Association. These groups are instrumental in communicating their needs and wishes to the legislative bodies, the Department of Natural Resources,and to the University of Maryland. An organized lobbying effort would help you be a more progressive group and get your job done more efficiently.

And I hope that the organization, or even the group attending this meeting, would assist in describing--not just for the scientific community, but for the legislators, governor, and the Department of Natural Resources--who the Maryland oyster culturists are. How many are out there, where are you, what's your net worth, what's your potential, what do you need? We, standing up here in front of the room, really don't know the answers to those basic questions. In fact, when we tried to get this meeting together, we found that there were roughly 590 individual zip code addresses. There are more individuals who hold leases, because some of these addresses are for families having more than one leaseholder. The total number of leaseholders is something in excess of 600, but I don't know the exact number yet. The acres controlled by Maryland leaseholders are in excess of 7,000 to 8,000. I think 8,000 is probably the maximum. We can tabulate the records, but I don't think they are as accurate as they should be.

The contribution that the Maryland leaseholders make to the Chesapeake Bay oyster fishery is shown in Figure 1. The clear area is the Maryland public fishery. The Maryland private fishery, or leaseholders, contributes a very small percentage, probably less than 6 percent of the total landing in any given year, but you contribute about 8 to 9 percent to the value of the fishery. This is in contrast to the Virginia fishery where a large percentage of the

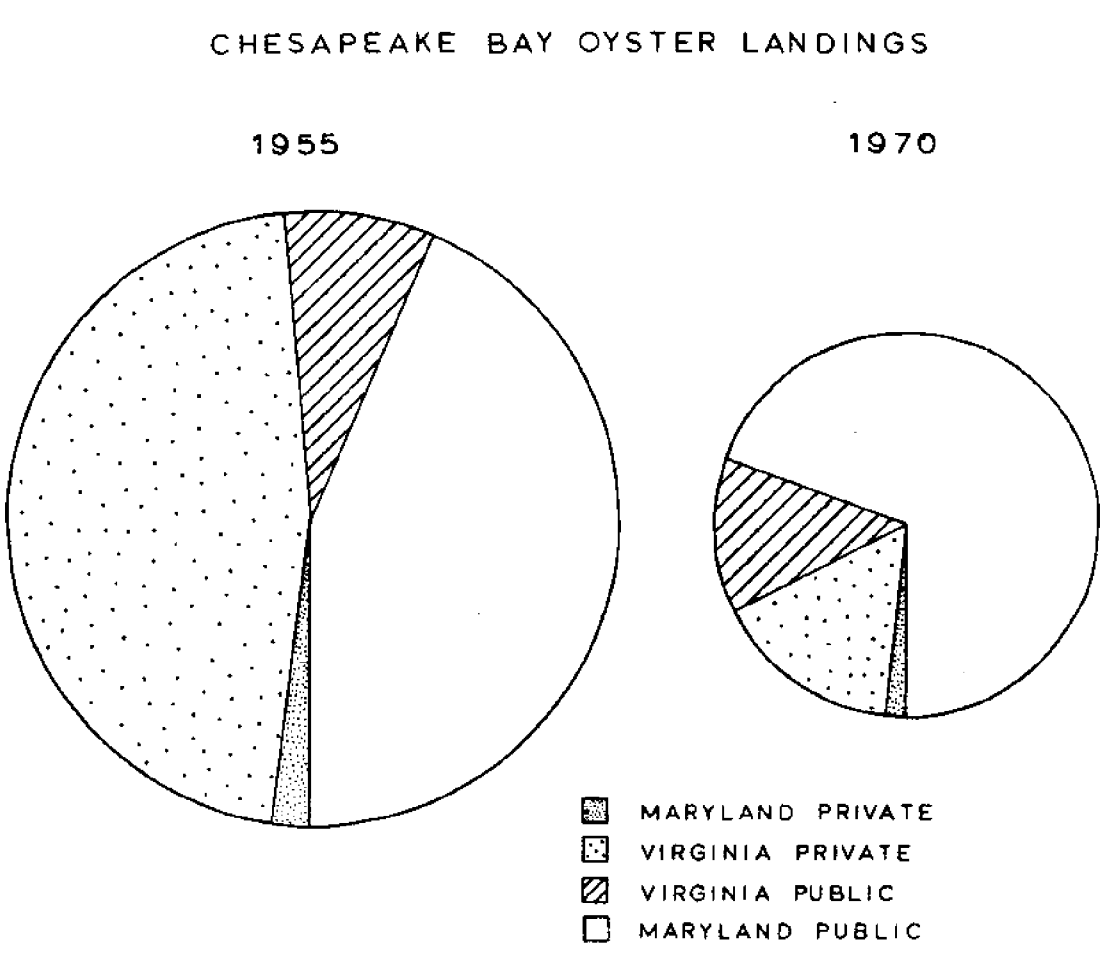


Figure 1. Relative size of oyster harvest in 1955 and 1970 with relationship of Maryland and Virginia public and private catches.

fishery is based on private acreage and a smaller percentage is based on public fishery.

The reduced oyster production from the Bay is one of the reasons that we're having this meeting today. Since 1955 there has been a dramatic drop in the total landings and a change in the relationship between Maryland and Virginia landings. The Maryland public fishery has expanded to absorb a greater percentage of the Chesapeake Bay output. I am sure the Maryland packers are happy with this. They've lost competition from the private individuals in Virginia. Presently the private and public fishery in Virginia harvest about the same. I think that's all the comment I will make, because Dexter Haven from Virginia Institute of Marine Science is here to address the subject of Virginia. The primary point I wanted to make is that, still, Maryland's private sector is a very small percentage of the Bay's output. I really think that we can do something about that and we can increase the amount of oysters produced on private leases in Maryland.

The Maryland oyster packers have expressed a need, through various agencies, for more oysters and over a longer period of time. In Maryland, about the only place that you can legally get more oysters during the "off-season" is from the leaseholders. I think that a continuous year-round supply of oysters to the packers could help a critical employment problem for the packers. With a year-round supply of oysters the shuckers would be employed year round. The industry would then be eligible for federal and even state financial assistance. At the present time the temporary labor situation is causing problems in developing funds for the industry. Later in the session there will be an expansion of this subject when we hear an address concerning some of the findings of the MORE Task Force.

Another way of viewing the Maryland oyster industry is its long-term historical status. (Figure 2)

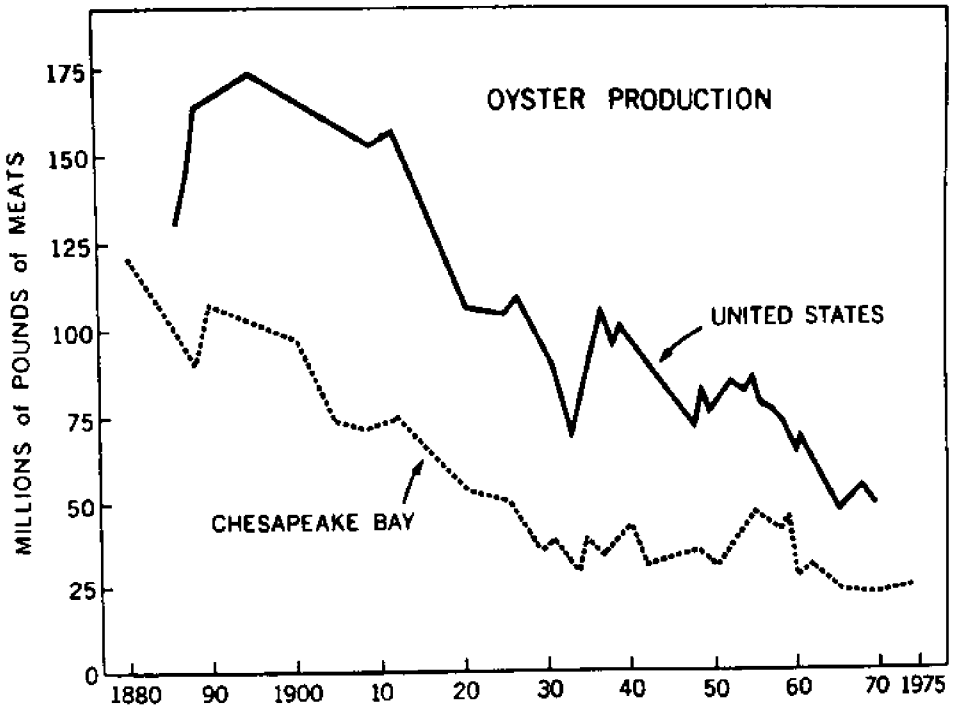


Figure 2. Production of oysters (*Crassostrea virginica*) in Chesapeake Bay and in the United States, 1880 to 1975.

Essentially there has been a general overall decline in national landings of shellfish and in Chesapeake Bay landings. During the 1955 period you saw that Maryland and Virginia contributed about equal amounts to the Chesapeake Bay landings. In the past decade, Maryland comprised 70 to 80 percent of the landings in the Chesapeake Bay. Maryland has now reached a plateau and, during the past twenty years, it has vacillated from lows of 1.5 million bushels a year in 1950, with a high of about 3 million bushels in 1970, to 1.8 million in 1976.

If you were an industrial financier looking at that curve, I'm sure that you would be upset. As the productivity of oysters goes down, the inflation rate in the United States, the cost of goods, services,and fuel are rapidly increasing. By what mechanism, then, could the oyster industry stay abreast of the rising costs? There is only one way, and that is to produce more product to gain greater income. But the industry needs raw material. One of the things that we are trying to do here today is to assist you in producing more raw material--oysters.

I would also like to point out that the Maryland oyster industry will be facing marketing competition from other geographical areas of the United States. The West Coast has a large and rapidly growing oyster industry. In the next decade, I think that they will gain at least two to three times the amount of production that they now have. Most of this gain in production will be made by private leaseholders and by the use of oyster hatcheries. We are here today to talk about that technology. I do not think that today is too early to consider it.

In New England, especially in Maine and Massachusetts, there are hatcheries operating right now, and private investors grow their oysters in trays. Last month there was a symposium in Massachusetts to assess the need for a state-operated oyster hatchery to supply seed to townships that control the local oyster beds.

In foreign areas hatchery technology, leaseholding, and collecting seed from natural sources is the way oyster culture is going. Japan has doubled production of oysters in the past decade by these techniques. In fact, last year the number of Japanese oysters imported into the United States equaled the Chesapeake Bay's production. Foreign imports have put the level of consumption of oysters in the United States about 35 percent higher than shown in Figure 2. The Chesapeake Bay industry could double its production and it would barely meet the total needs of the United States consumer. When we have an import problem like this, we have a deficit of payments problem at the federal level. Perhaps that is what has attracted the attention of federal legislators.

How are we going to increase our oyster production? It is a complicated process, but we in Maryland could do this by learning to use our leased bottom more efficiently. Let us look at the oyster production from the public fishery, for instance, in 1970 when about three million bushels of oysters were harvested. These oysters came from 215,000 acres of bottom--or 11 bushels per acre per year. That's roughly a tenth of an oyster per square foot. We already know that in Maryland several of the operating leases are producing roughly 250 bushels per acre per year and some leases are producing more than that. The production efficiency of the leases is greater than our natural public beds. The primary reason leases do not contribute more to the economy of the oyster industry is that the area under cultivation is very small, and only a small percentage of the leases are being used efficiently. What we feel will correct this problem is an organization by which we can transfer oyster culture technology to you and assist you in development of your leases. Hopefully this meeting will be the basis for that transfer.

I would like to see this group become a champion for increasing oyster productivity. I think the rest

of the speakers on the panel in today's session will address different topics that will assist you in understanding how you can do it.

I think that there is a great deal of communication needed between those of you sitting in the audience and those of us who are up here speaking. I know we can learn from hearing both sides. So I ask you, don't feel embarrassed, come forward and speak, ask questions, because you never know who is going to give a key to solving a problem that may help you. I thank you very much for attending today.

Seed Sources, Growout and Survival: Panel Discussion

Maryland's State Seed Program

William Outten
Department of Natural Resources

Our first session will be a panel discussion on seed sources, growout, and survival. The first speaker is Mr. William Outten, who is a shellfish biologist, and the Shellfish Project Manager with the Fisheries Administration of the Maryland Department of Natural Resources.

I've been asked to review the state's program, so I'm going to discuss the program and the activities that we do. This will also give you some idea of what it costs the state to carry out the shellfish program. I want to keep this talk informal, so please feel free to stop me and ask questions at any time.

A few years ago the State of Maryland took a long hard look at the oyster industry and decided it was time to start putting more effort, and effort in this case equals money, and money means cultch material, into the state's oyster industry. And as a result of this program the Department of Natural Resources and its predecessor agencies--the Department of Chesapeake Affairs and the Department of Tidewater Fisheries--planted about 120 million bushels of dredge shell, fresh shell, and seed. This program has cost about $24 million, which sounds like a lot of money, but that's equal to only about 1 1/2 to 2 years of

the dockside value of the oysters today. So I think that Maryland has had quite a successful program and one that we hope to continue.

This conference is directed toward private aquaculture, so I think the state program is the point from which to launch the rest of the day's discussion.

The major activities have consisted primarily of three types of planting. The first is fresh shells, which are shells that we purchase from shucking houses, transport, and plant on the bottom in selected areas. The second is dredge shells, which are often called fossil shells, old buried shell, or reef shells. These are provided to the state by long-term contract with a private contractor stationed in Baltimore. And finally, a seed program, in which we put shells overboard in state-reserved seed areas. After they've been overboard a year, and hopefully had a good set of oysters, we transplant them to better growing grounds.

Last year the fresh shell program cost an average of thirty-six cents a bushel. In terms of cost per acre, which might be more meaningful, we're talking in the neighborhood of $550 to $650 per acre to plant this type of material.

If we look at the dredge shell operation and go through the cost breakdown, we come up with something like seventeen to eighteen cents a bushel to plant dredge shells. Overall, the dredge shell program comes out to an average cost of $675 to $700 an acre.

Our seed cost took a big jump last year, primarily to cover the increased cost of hiring the watermen to catch, transport and plant the material. This operation jumped from fifty cents a bushel to about sixty-eight cents a bushel. The total translates to around $300 an acre. Again, these are average figures based on a statewide operation and you have to keep in mind that planting rates per acre per day vary.

Question: Pardon me, you said that seed was sixty-eight cents per bushel. Wouldn't that be higher then than $300 per acre?

Outten: Well, it depends on your planting rate, in bushels per acre.

Question: But it would cost more than dredging, wouldn't it?

Outten: Oh, yes. Seed is the most expensive operation per bushel of material. And if you want to really get down to the cost of moving the seed, you have to add the cost of putting the shell there in the first place for the spat to set on. Therefore, the cost escalates whether you've using fresh shells or dredge shells. We primarily use dredge shells on seed areas.

Statewide, the dredge shell program has been the most cost effective, based on the number of small oysters attached to the shells that over the years we have surveyed and counted. We tend to get a better set on dredge shells than we do on fresh shells.

The problem there, of course, is that the dredge shell supply is limited. Conservative estimates are that we may have a five- or perhaps a ten-year supply in the areas where we're now getting our dredge shells. We are going to take a long hard look at the real needs of the industry and determine if it would be environmentally and politically feasible to move our dredging operations to other areas of the state. This is quite a thorny question, but it's coming and it's something that all of us in the industry are going to have to take a long, hard look at.

The state has done primarily two types of planting. We have our permanent plantings which are really bar improvements or buildups, where we put shells on natural bars in growing areas for the sole purpose of improving

the bottom. This cultch is then available for natural set. It's not going to be transplanted to other areas of the state.

The other type of planting I call nonpermanent because these are plantings made in seed areas to be available for a good spat set. We plant them so that we can transplant the seed oysters a year later. These seed areas are selected from areas of the state that have historically shown a good setting tendency. Obviously all of these areas are not equally effective, and some have become very ineffective in the last few years. We think this is related more to salinity patterns than anything else because the lower salinity seed areas tend to be the ones where we get less set. The trend is that the southern Bay areas, and particularly Tangier Sound, are where we've been getting heavier sets. The only drastic difference we see is salinity patterns.

Perhaps we're really at a time when, in addition to taking a long hard look at dredge-shell availability, we've got to take a second look at relocating, re-establishing and rebuilding state seed areas. We have to set those areas of the state where we can get some good seed. So I really suspect you'll be hearing a lot more about that in the future, particularly those of you who have heavy involvements with the public industry.

We have experimented with alternate methods of bottom improvement and types of cultch. We've put slag overboard for cultch. I heard someone at a meeting last night say that they were oystering last week and caught some oysters that were still attached to a slag planting that was made several years ago. So slag works, but it has problems. It's very heavy, and it's very expensive. But it's available, and it may be a feasible alternative in the future. We've used bagless dredging to try to clean or improve the shells. This helps sometimes, in that cleaner shells are more likely to receive spat.

We've tried hard clam shells which work fairly well. The problem is there are not many hard clam shells available close enough to the Chesapeake Bay. There is a logistics problem in trying to go and get the shells and bring them back to plant. Tire chips and hanging tires have been tried on an experimental basis with varying degrees of success. Almost anything that has a good, smooth, firm surface and will lay on the bottom will work. The problem is how feasible and how practical is it to remove the oysters from them once we get a good spat set?

We've tried off-bottom culture such as filling wire bags with shells and hanging the shells from rafts on an experimental basis. Any time shells are off the bottom it seems they get better spat set and better growth. This is probably because there's more water movement and less predation.

It probably would be appropriate to give a quick rundown on where the seed and shell money comes from. Fifty-five to sixty percent of this money comes from oyster taxes and from the sale of oyster licenses. Another substantial amount comes from the royalties on dredge shells. This is paid to the state by the contractor in order to dredge shells for his own use. This money helps offset the overall program and accounts for a very large share of the program.

Lease fees, which are very inexpensive in Maryland ($2/acre), contribute to the program. We also get some support from special fund reserves that make up the fisheries research and development fund. Recently the General Assembly has provided general fund money; however, this year I think it's being trimmed down somewhat.

Question: Do you have to take your research findings and funds out of the same operating funds?

Outten: Generally we do unless we're in a program where Sea Grant or a federal agency is willing to

enter into a cost-sharing program, say 75/25 percent, with us. Ordinarily most of the experiments or alternative management trials that we make periodically do come out of our operating budget.

The cost proportion of what the state spends on their operation varies from year to year. The seed cultch and seed oysters run in the neighborhood of about 40 percent, permanent cultch plantings average about 60 percent.

The program is under the supervision of the Secretary of Natural Resources and is administered and carried out by the Fisheries Administration. The oyster program leader and the shellfish program people work very closely with the watermen from each county, with the primary contacts being elected oystermen's committees. The idea here is that these people work the oyster bars every day in their area and they know a lot more about them than we do. We try to coordinate our shell and seed planting with these committees. I think that this has been a highly successful way to do things.

These committees are elected every four years by the approximately 4,000 licensed oystermen in the state. The oystermen's committees assist us in ways other than going to a meeting and telling us where they would like to have their materials put in their county. They take a very active part in staking off areas and helping us survey bottom. They will even be out there to supervise the planting, making sure that when the material is brought to their area it is put where they want it. This is a big help to us; we really appreciate it and we hope that we can continue to operate in this way.

We have a responsibility to all the fisheries in Maryland, whether public or private, and certainly we want to see both prosper.

Question: Has there ever been a time when the state has actually helped anybody toward planting or helped

them develop any leased area?

Outten: We are available if our help and advice is requested. We've put some shells and seed overboard in Chinocoteaque Bay this year. If there's something you think that we can offer then ask.

Question: Has anybody ever asked you that yet?

Outten: Yes, we've been asked to do these things. There are several supportive programs that are going on. One that is very important to this group is the Bay Bottom Survey. I think that this is going to be discussed in greater detail later on today, so I won't say any more about it. At Oxford, we have a small but well-equipped and capable laboratory where two technicians spend their time pinpointing and looking at almost anything in the way of finfish or shellfish that you want to take them. If you want to know if there's a disease problem, how healthy it is, or just how it looks, these people are there and will be glad to assist in any way they can. Don't hesitate to call on them. They've been there since the MSX crisis that we had a few years back and they do a good job. Sally Otto and Janet Hammed are sitting over here in the corner. If you've never met them, introduce yourself and put them to work.

In the back of the room is a display that George Krantz brought over from Horn Point which gives a pictorial, self-guided tour of what they're trying to do at this facility. This display includes some comments about the Deal Island growout facility. The Deal Island facility used to be an oyster packing house that belonged to the late Mr. Richard Webster. The state bought the property and the building with the idea of using it for a hatchery setup. At the present time,it's being utilized as a work center and during warm wearther when George has adequate spat he

takes them down there for growout. We are finding that we get fantastic growth of George's oysters when held at Deal Island. For instance, we are getting plus 4 inches growth in two years in a lot of cases, which is at least a year and a half ahead of growth on natural bars.

The facility is limited by size and needs a lot of money and work to operate at an efficiency that is adequate for a commercial operation. We estimate it has a capacity of 2 1/2 to 3 million spat, which is a big number, but if you think of that in terms of a spat planting of 500 bushels per acre at an average count of 400 spat per bushel, you've only talking about a fifteen- to twenty-acre planting. But it's a start and it's something that in time can be improved upon and possibly honed into a very useful tool.

Question: Is your Department in favor of or against the private culture of oysters in the state of Maryland?

Outten: I would have to think that we're in favor of it. We have legislation and programs to support it. We're doing a Bay-bottom survey that should clearly distinguish available bottom. For instance, we've been working with you to see what can be developed over in Chincoteaque Bay.

George mentioned some general items about leasing in Maryland. Actually, I think some of his figures were a little low. There are about 1,090 leases--that doesn't reflect the number of people but the number of tracts of land or bottoms that are leased in the state. Approximately 9,200 acres are leased, and this compares to about 270,000 acres of public bar, so there is room for both. The moratorium against new leasing is still in effect and I suspect that this will be one of the topics that will be included in the luncheon discussion.

I should also point out that in the State of Maryland there are six tidewater counties that have statutes that prohibit leasing. So this again may be viewed as a severe restriction against a private fishery, but the statutes are on the books, so I think you should be aware of them. There's also a statute that provides for the state to sell seed to private growers only after it's moved a million bushels for itself. It's been a long time since the state has moved a million bushels for itself. It's been a long time since the state has moved a million bushels of seed. Maybe only once or twice in the last fifteen or twenty years have they ever been able to sell to the private planters.

In summary, the ultimate key to the success or failure of the state program is the whim of Mother Nature. We are solely dependent on nature. A good general set throughout the Bay will sustain the fishery for a number of years. Otherwise we depend on enough set in the seed areas to round out the peaks and valleys. Overall, I think the state program has been effective. It's recognized nationally as one of the better management attempts at maintaining a public fishery.

One of the things that we have to look at in the future is this cultch problem--where are we going to get adequate cultch when the dredge shell supply starts to get low? Dredge shells are an exhaustible resource. The statutes may have to be changed to allow the state a better opportunity to obtain fresh shells for cultch. As you know, there are no provisions that require a packer to sell shells back to the state. The state simply has to bid for the shell product along with anybody else who wants them. It's strictly a business decision for the packer whether he wishes to sell shells back to the state, or not.

We have to look at some new techniques in shellfish management. We may have to get away from some of the traditional ways that have worked in the past. There have to be other ways that will also work.

Maybe we're going to have to get into these in the future.

Last, but not least, the industry itself has an obligation to really get involved in processing and marketing problems. There will be comments addressing this later on in the day. This is certainly a serious problem which has to be addressed.

Virginia Seed Sources

Dexter Haven
Virginia Institute of Marine Science

Our next speaker will be Mr. Dexter Haven, who has been kind enough to travel all the way from Virginia. Mr. Haven is the head of the Department of Applied Biology at the Virginia Institute of Marine Science. He was the developer of a unique oyster harvester which operates in conjunction with a hydraulic clam dredge. Most recently he authored an extensive publication concerning the history and future of the Virginia oyster industry.

A reliable supply of high-quality, low-cost seed is the key to successful oyster culture in areas where the natural set is low or unreliable. Seed is, therefore, still the key to oyster production in many areas of Virginia. To understand this, we will review Virginia's dual system of oyster culture. It is composed of two sectors: public and private bottoms.

In 1894 Virginia set aside about 243,000 acres of its naturally productive bottoms for public use. At the same time, it allowed leasing of the largely nonproductive bottoms outside these areas. Today, about 110,000 acres are leased. Most of the leases must be planted with seed if they are to produce oysters.

Up to about 1960, the leased bottoms accounted for most of Virginia's production. An important point, however, is that from 75 to 90 percent of the seed oysters needed to plant the leases came from the public bottoms (seed areas) in the James River.

To understand the present seed oyster situation in Virginia, it is necessary to review Virginia's oyster production over the past years. In the decade prior to 1960, oyster production from leased bottoms averaged about 2.8 million bushels annually. Production from the public bottoms during the same period averaged about 400,000 bushels. In 1960 MSX entered Chesapeake Bay. Production fell very sharply on leased bottoms and to a lesser degree on Baylor bottoms (Figure 1).

Today's production from Baylor bottoms is slightly higher than for any recent period. Production from the leases has reached an all time low and during the 1977-78 season it was less than 350,000 bushels. The question is asked, "Why are the leases not producing?" MSX caused the initial drop, but today's low production results from the fact that growers are simply not planting seed because of unfavorable economic conditions within the industry. If the margin of profit in growing oysters were increased, production could be stimulated. Since seed is a major cost in growing oysters, a reduction in its cost would help to stimulate production.

A study by VIMS of the seed oyster situation has shown that over the years one bushel of James River seed will return on average one bushel of market oysters two years later. Therefore, the curve showing production of market oysters from leased bottoms (Figure 3) is almost an exact replica (two years later) of the volume of seed oysters purchased in Virginia by private planters. It is evident that today few seed oysters are being harvested from the James River seed area. While the demand for James River seed is far below that experienced prior to 1960, there are other

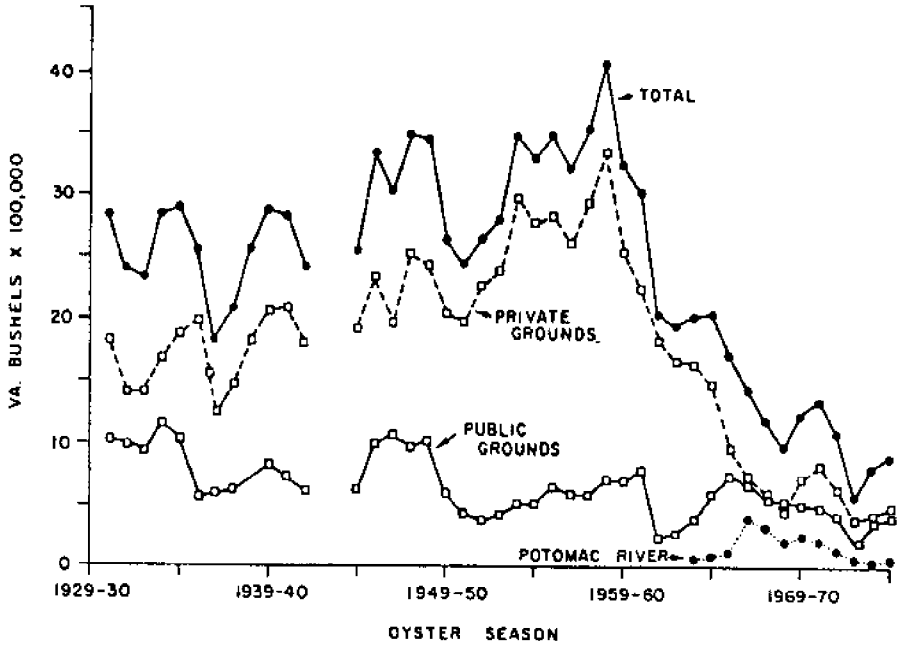


Figure 1. Virginia catch of market oysters 1930-1 through 1974-5. Data for Total, Public, and Private through 1971-2 from Fish. Stat. U.S. NMFS; other data from VMRC. The Potomac River curve shows the quantity which was taken from that river, where the PRFC has jurisdiction, and was credited to Virginia by NMFS.

factors involved which relate to the availability of seed. When MSX came into the Bay in 1960, it did not kill oysters in the James River seed area. Beginning in 1960, however, there was a 90 percent reduction in spatfall on bottom cultch in the lower James; in the upper half of the seed area there was about a 50 percent reduction.

The reason for this decline in setting has never been wholly explained. Lack of brood stock in the lower James may be partially responsible, but pollution and changing environmental conditions have certainly played an important part. A similar but less drastic decline has been noted in other Virginia estuaries. Maryland has suffered a similar decline in set.

Coincident with the decline in setting, economic conditions previously mentioned had their impact. The leaseholders were no longer making a profit in growing oysters. Therefore, they did not buy (plant) seed oysters. Thus, the demand for James River seed has declined. Today, the James River harvest is less than 350,000 bushels annually.

The study's author believes that today the James River can easily supply the present demand for oysters and can probably stand a limited increase in harvest rate.

A recent publication by the Virginia Institute of Marine Science states that the present rate of setting (and the subsequent growth and survival of seed) in the James River is now in equilibrium with the low demand. If demand were to increase to levels approaching those existing prior to 1960, the supply would probably not equal the demand if the setting rate continues to be as low as it has been since 1960.

The James River, however, is still a viable system. It could produce more seed than it now does, under an accelerated repletion program. Suggested methods for increasing production include increasing shell plantings

in the lower river and the use of more efficient technology in harvesting.

Seed may be exported from Virginia provided certain regulations are followed and the following taxes paid: Export Tax: Para. 28-1-89, 25¢; Inspection Tax: Para. 28-1-87, 3¢; Replenishment Tax: Para. 28-1-93, 10¢; Total, 38¢.

An important aspect relating to exporting seed is the following regulation quoted from the Code of Virginia.

> ...it shall be the duty of the Commissioner to grant such a permit (to export seed) unless, after examination of the seed areas, it shall ascertain that it will injure or deplete the seed areas to grant such permits, and that the supply of seed oysters is sufficient to meet the demand for seed oysters by planters in the State of Virginia; and provided that the Commission shall have power to cease granting of such permits when it shall ascertain that the seed areas are becoming depleted, and to continue granting such permits would seriously injure the same.

Virginia has two other estuaries whose public bottoms have produced considerable volumes of seed oysters. These are the Great Wicomico and the Piankatank Rivers. At one time they produced up to 20 to 25 percent of Virginia's seed supply. Since about 1972, however, the supply of seed from public bottoms in these systems has been almost zero.

The Institute, with the cooperation of the Virginia Marine Resources Commission, maintains shell-string stations at about ninety locations in the state to monitor annual levels of set. In addition to monitoring setting levels, VIMS conducts annual surveys of the public oyster bars and places bags of shells on the bottom in various locations. Using these data, we have classified our estuaries into low, moderate,

and high set areas. On the basis of these data, we have arrived at the conclusion that many private leaseholders, if they wished to, could grow their own seed, which would decrease their dependence on public bottoms. Among those areas where private leaseholders might expect a set of commercial size would be areas in the lower James, the Piankatank, the Corrotoman, and the North River (a tributary of Mobjack Bay).

Studies have been made in using seed from other areas outside Chesapeake Bay with only limited success. For example, on Virginia's seaside of the Eastern Shore, shells frequently obtain a heavy set. However, interviews with commercial growers and studies by VIMS indidate that when this seed is planted in low salinity areas, mortalities may be as high as 74 percent in two years.

Francis Beaven in 1949 studied the growth of seed from other areas at Solomon's Island, Maryland. His study showed that Long Island oysters from a high salinity area showed high mortalities. Oysters from the James River, New Jersey, and Eastern Bay, Maryland, had a second year mortality rate ranging from 13 to 23 percent. Seed from an up-Bay low-salinity area showed only a 5 percent mortality when planted in Chesapeake Bay.

South Carolina seed did poorly in the vicinity of Solomon's Island, Maryland, but did well in the lower Bay and in Chincoteaque. Further studies at the Virginia Institute of Marine Science at Gloucester Point, Virginia, showed that South Carolina seed showed poorer than average survival during cold winters.

A good supply of seed is the essential key to growing oysters on bottoms having a low natural set. In Virginia, the demand for seed is now low, but if demand were to return to the pre-1960 level, the present natural supply from public bottoms would probably not meet the demand. However, additional supplies may be generated by increasing the supply from public bottoms through repletion activities, and increasing seed production on leased bottoms.

Commercial Hatchery and Growout

Frank Wilde
Owner, commercial hatchery

Our next speaker I met a couple of years ago during the big freeze of '77. Mr. Frank Wilde has a private oyster hatchery in the Shady Side, Maryland, area. We sort of sat on his porch that day after looking at some oysters and one of the things we talked about was the idea of having a conference such as this. Mr. Wilde is involved in a program with the Community Enterprise Development Association and the Maryland Watermen's Association concerning the grow-out of oyster spat in crab shedding tanks.

My work to develop a high quality oyster for the half-shell market began in 1968. My total effort has been towards that goal. A large restaurant in Biloxi, Mississippi, which caters to the half-shell market, found out about my work and wanted to know if it were possible for me to grow them a topless oyster. While I have been very successful in growing an oyster with a much thinner shell, I have not as yet been able to eliminate the top shell. But, we're working on it!

For the past ten years I've been selectively breeding stock from the fastest growing and the best-shaped oysters of my whole group. This is the reverse of what happens in nature because the fastest growing oysters and the best-shaped oysters are usually

harvested in the early part of the season and the runts are left to be used as brood stock. Once my oysters are spawned, the eggs are hatched and the larvae are grown in 30-gallon plastic trash cans.

In each one of those containers I grow approximately one million larvae. Each day the larvae are screened off and new Bay water is added to feed them. I do not use any supplemental feeding because it's extremely expensive and too complicated for a one-man operation. The screens are made of Nytex. The frames are plastic sewer pipes. I prefer to grow the oysters in this kind of location (Figure 1), and I developed a type of tray and a boat to take care of them which minimizes the amount of labor involved.

At this location there is extremely rich water for the oysters to feed on, because of the marshy area, and a good strong tide going both ways that automatically feeds the oysters. The trays hold the little cultchless baby oysters. As they grow, of course, you have to keep thinning them out and increasing the screen size on the bottom and the sides of the tray. The tray was developed with the battens across the top so that the styrofoam float could go in and would lock itself in place. And then when it is put up on the boat, the float comes out so that the oysters are exposed for cleaning.

The oysters continue to grow in a nice uniform shape and size. Again, you have to keep thinning them down until you get to the final growth stage. This oyster will produce better than twice the meat of an oyster grown in the wild in the Bay. But as I said before, I still have not been able to eliminate the top shell.

There was another type of tray that I experimented with, and I thought I had the answer to all my problems. I thought I could put the oysters in this tray with a net top and throw it overboard and forget it until the oysters were big enough. But what happened was that blue crabs would go in there when they were

Figure 1. Preferred growout location.

small enough to go through 3/4 inch mesh. The habitat was so rich in there that the crabs outgrew the net and began eating all the oysters. That was a complete failure.

Another experiment which failed was one where I brought my trays to the shore and washed them down, cleaned the sides off, and graded the oysters. In this system I was using styrofoam on the sides, which left the trays open in the center. This did not work because thre was too much sunlight and too much fouling and the tray was exposed to ducks and gulls that got in there and ate the oysters.

I then designed a boat to take the cleaning platform to the trays. A cutaway deck allows me to go into the trays and line the boat up with them and pick them up on this cutaway deck. It takes very little effort to do this because the deck, with the man in the boat, is down in the water. The float has dropped down to the bottom and you just pick it up on an angle and it slides out and the oysters are exposed for cleaning. How often they have to be cleaned depends on the area you're in. Each area has a different amount of fouling and algae problems that occur.

In my location in the West River, once a month is ample cleaning for the oysters. We place them very thickly in the floats and yet they still grow in a nice uniform shape. We have also tried growing them over in Chincoteaque, Virginia, but found we were able to take our tiny seed into the high salinity of Chincoteaque only during the cool months of early spring and late fall. If we attempted to move them during the summer, we had very high mortality. We grew very excellent oysters over there, however. Over there you can grow an oyster to market size in 14 months--extremely fast growth.

There is a disease problem that exists over in the seaside area. In Chincoteaque we found that if you did not get your oysters out of that water within an

eight-month period you were in trouble with SSO and dermocystidium and probably MSX. Over there we would position the trays so that the tide would work against the side of the trays and force water through so the oysters would have ample food.

In the West River area where I'm now dumping my oysters for planting, we have found that crabs will not bother them too much if you plant them in the fall. They have a little more time to grow and they'll still have some early growth in the spring before the crabs come out. We place about two bushels of seed in each tray.

One of my big problems with oysters is shallow water and ice. In the West River my trays with seed oysters are ten inches deep and the ice has gotten nine inches deep. The winter before last, the ice and snow completely covered the trays and I didn't know what was going to happen. From that experience we decided to get together with PEPCO and we began a project with CEDA and the Maryland Watermen's Association to put our seed in the power plant canal in the winter. It never freezes unless the two power units both go off at the same time. One unit is off at this particular time, but up until two weeks ago, these oysters were still growing.

Now there's been some comment about what to do about chlorine. We don't put the oysters in the canal until the power plant has stopped using chlorine during the cooler months. When the power plant begins to use chlorine during the spring, we have to get the oysters out.

Our project with CEDA and the Maryland Watermen's Association this past year has been to grow the tiny seed in crab shedding boxes (Figure 2). This is one that we experimented with early last year before the project got going. We used different types of trays, experimenting to see how they were going to work, and we found that exposing tiny little oysters in the crab

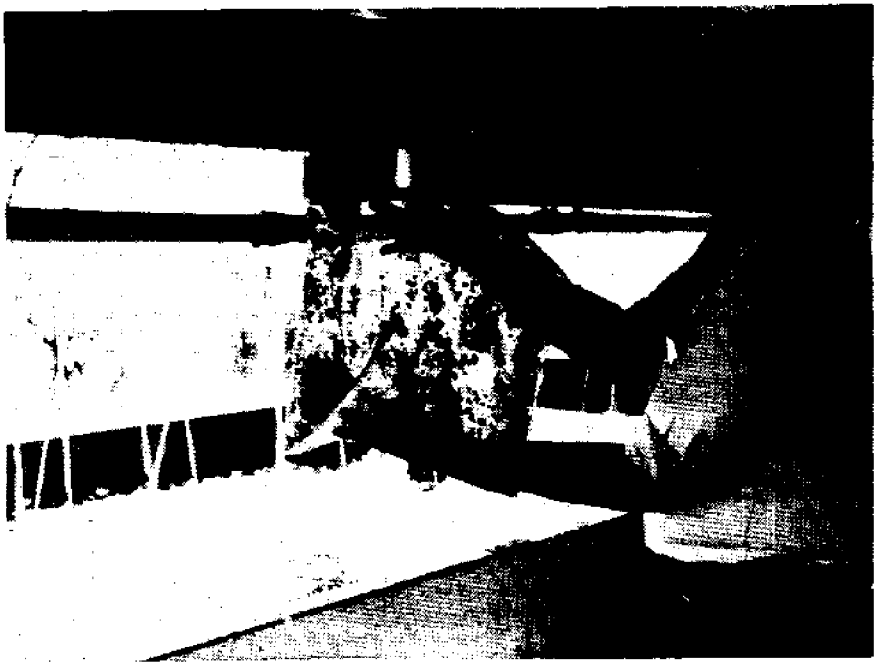


Figure 2. Mesh envelopes with hatchery spat grown out in crab shedding tanks.

floats was not workable, even though they say crabs don't feed when they're shedding. We did find tiny oysters in the soft crabs after they had shed. This is something we still haven't figured out: How could soft crabs get those tiny little oysters inside their gullets?

Horn Point Shellfish Research Lab

George Krantz
Center for Environmental and Estuarine Studies

The last speaker on this part of the program will be Dr. George Krantz from Horn Point, in charge of the shellfish research laboratory.

I believe the speakers who have preceded me have touched on the major problems facing oyster culture in Maryland. I waited to speak last so I could say "amen" to most of the points discussed and add a little bit of what the University of Maryland Center for Environmental and Estuarine Studies is doing in oyster culture research.

Throughout all the presentations this morning you have seen one key to oyster culture and that is a source of seed. The total industry, both public and private, seems to depend on getting more seed. We have a program at the University of Maryland to investigate the biological and economic factors involved in producing seed oysters using hatchery technology.

At Horn Point, near Cambridge, we have a hatchery building that covers 5,600 square feet. It is totally devoted to pilot studies of producing seed oysters. At the present time our efforts are supported in part by the Department of Natural Resources Fisheries Administration and University of Maryland Sea

Grant, but mostly by our own university funds. We're trying to find out whether or not a facility of this size is capable of consistently producing seed, how much the operation costs, and what problems are associated with hatcheries in Maryland.

Mr. Wilde pointed out several of the problems he encountered in his hatchery. I think he should be complimented because he is spending his own dollars to try to solve problems that are applicable to all hatcheries. We hope to contribute to the solution of some of these problems, too. We share all of our findings with Mr. Wilde. In fact, we share information with anyone who comes to us with a question. I would like to make an open invitation to all of you to visit our hatchery. If there's anything you need to know, come and ask and we'll try to give you an answer.

This HPEL hatchery building now has the potential to produce about 10 million plantable seed oysters a year. That's essentially 10,000 bushels of thousand-count seed. Our present goal is to figure out how to improve the system and reach the full potential of the building space, which might produce 150 million plantable seed per year.

We're using 1000-liter conical fiberglass tanks. These are much larger than Frank Wilde's garbage cans, but Frank's system works well on a small scale. We're trying to determine whether the economics of enlarging the culture tanks allows us to gain in efficiency. We've looked into the cost effectiveness of this system. As you can see in Figure 1, we have three years of activity shown. In 1976 we had a small-scale hatchery that produced about four and a half million plantable spat at a cost of about 4¢ per spat.

In 1977, our first year of operating the large hatchery, we had a fairly good year. At the end of that season, we had about 50 million spat, ranging in size from a pinpoint up to an inch and a half. During the winter of '77, the ice conditions that hurt Frank

HATCHERY PRODUCTION COSTS
UNIVERSITY OF MARYLAND FACILITIES

	1976 Lab Scale	1977 Pilot	1978 Pilot
Ambient Salinity (ppt)	8-12	8-12	6-8.5
Production ($\times 10^6$)			
Eggs	120	1000	2000
Eyed Pediveligers	10	220	130
Planted Spat	4.5	50	$\pm$15
Cost per Planted Spat	$0.004	$0.0014	$0.0047

Figure 1. Hatchery production costs.

Wilde also hurt us, and we lost all of the oysters smaller than one inch. In 1977 our production cost was about 14¢ per spat, for spat planted in the fall.

In 1978 our cost has risen, primarily because the salinity in the Choptank was low. All biological efficiencies in the hatchery process declined; therefore our production cost increased. We are establishing a "track record" on some of the problems that may occur in an oyster hatchery located in Maryland waters. The reliability of the hatchery process is what we are illustrating in Figure 1. All of the hatchery costs are being retrieved by a computer program and, within a year, we will advise the Department of Natural Resources on the economic feasibility of hatchery technology in Maryland.

One of the things we discovered was very expensive and labor-intensive was the modern hatchery technology used to raise spat from set to plantable size indoors in flat trays. This state-of-the-art technology costs $87 to construct a square foot of floor space. Outside the hatchery, through a Sea Grant-funded project (Figure 2), we produced a growout system that grows the same number of spat at a construction cost of $3.50 a square foot. Costs of flowing water are about the same, but we also reduced our labor cost to clean the spat by approximately 70 percent.

You can see that capitalization for an oyster growout system can be very expensive. We named this the oyster raceway after a trout raceway. The raceways can be dug into the ground or built above ground. A very inexpensive liner--rubber, polyethylene or other synthetic material--can be used to hold the water. Oysters can be grown to market size by a system that is a little bit different from what Frank Wilde showed you. The advantage of the raceways is that they can be located on shore, next to a packing house, in a waterman's backyard, alongside a pier, and the head pressure of the pump supplying water to the system is very low.

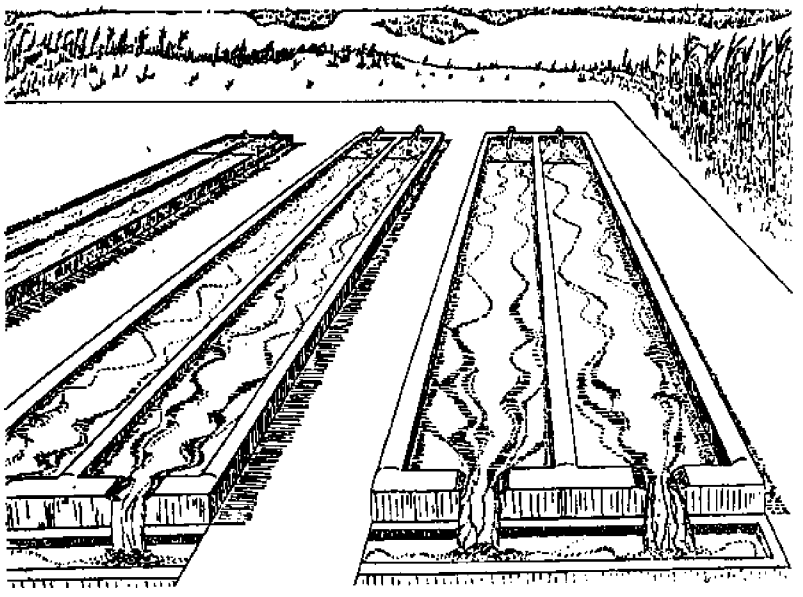


Figure 2. Artist's conception of oyster raceway.

The raceways are also acceptable to most zoning commissions, if presented as a form of agriculture. The raceways are considered temporary construction and you won't run into much resistance with building permits. Whereas, if you built a hatchery building like we have at Horn Point, you would be unable to locate the facility on waterfront property except in a few counties in Maryland. The raceway system is designed to be placed in the hands of lay operators, oystermen, and packers. The only components you need are the newly set spat. The hatchery at Horn Point is capable of producing many, many millions. One of the largest costs of rearing plantable spat is caring for them until they're planted.

Another technique for growing spat is the one that Frank Wilde and the Maryland Watermen's Association are using--crab floats. We've used the old fashioned floats that are placed overboard as indoor floats. We have placed the spat in various types of containers to protect them from the crabs. To date, the most efficient seems to be the Nestier trays, covered by a wire mesh. The primary reason for this is that a single crab float operator can pick the whole tray up and move it. We tried lining the whole bottom of the crab tank and several other techniques.

Mr. Fishering is present in the room. He raised oyster spat in his crab tanks by placing a layer of Vexar screen over the whole bottom of the tanks. The exact same group of progeny were raised at Horn Point too. Growth of Mr. Fishering's spat was 30 to 40 percent greater than growth at Horn Point. Various locations within the state get accelerated growth from the same oysters we raise at Horn Point.

One of the major thrusts of the Horn Point program is to investigate the potential of genetic selection in oysters. As Frank Wilde has shown you, there are tremendous gains in growth, shell shape, and meat quality that can occur here. The oysters that you see in Figure 3 are all siblings, or brother and sisters.

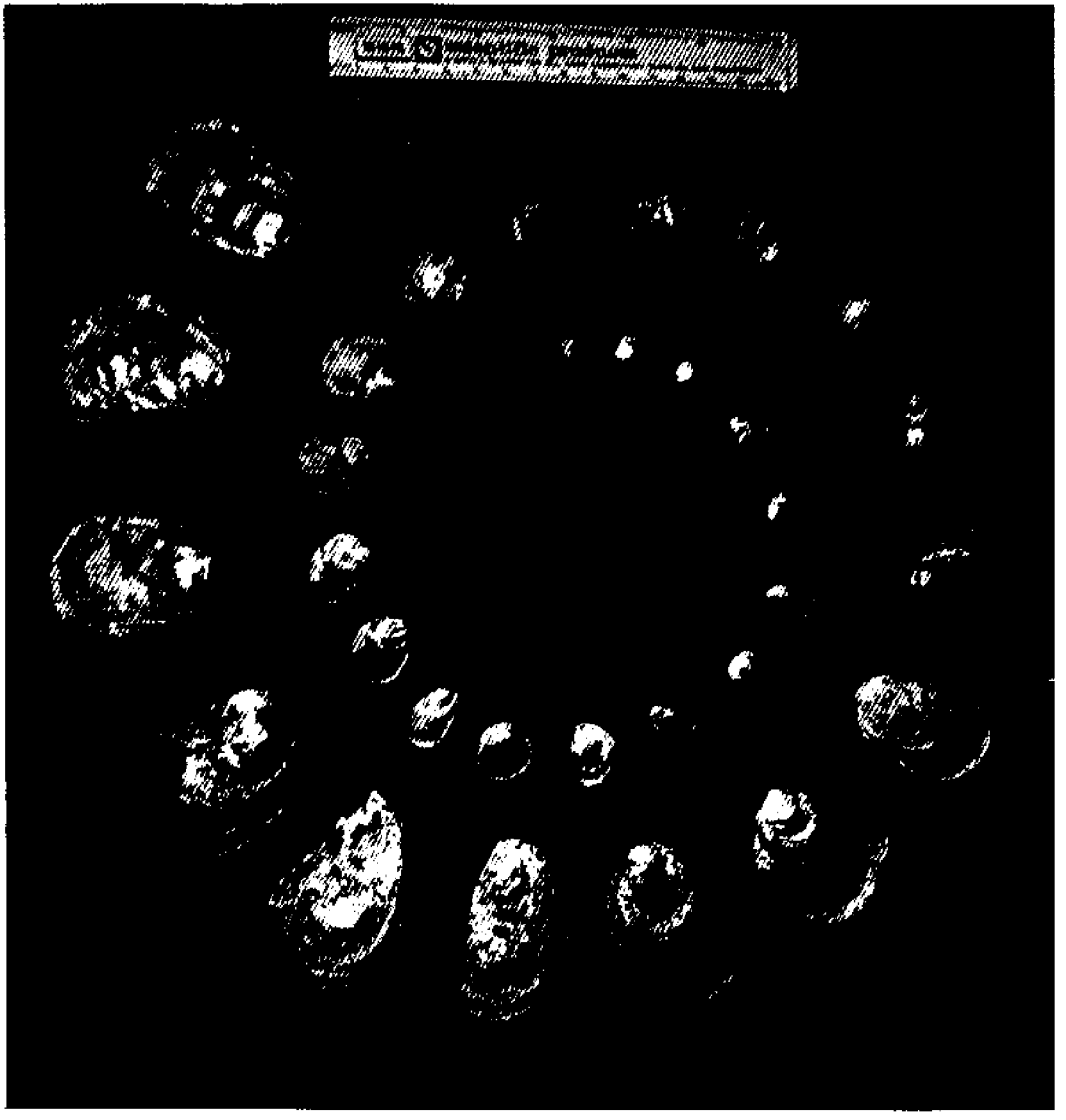


Figure 3. Variation in growth rates of siblings.

All were raised in the same container, under the same environmental conditions. This Figure shows the variation in the growth after one season--from 3 inches in shell length to as small as 1/8 inch. We are trying to select the fast-growing individuals to use as brood stock to see if we can increase the growth rate of oysters as much as Frank Wilde has shown you. I think that we could contribute something to improvement of oyster stocks in individual river systems by using these oysters in our planting studies. Of course, while we are doing this, we contribute to basic scientific knowledge about oysters.

Most any waterman or packer knows that there are stocks of oysters in various parts of the Bay that grow fast and stocks that grow slowly. In this slide the oysters at the top came from one of the state seed areas and are about the same age as the oysters in the lower part of the slide. The oysters in the lower part of the slide were taken from a natural bar that is about five miles from the seed area. Both groups should have set in the exact same year, yet one group is twice the length of the other. The difference is not just environmental, but hereditary. There are races of oysters. Perhaps we can select them to provide superior hatchery stocks.

In the coming year, the University of Maryland program will be investigating techniques to capture seed from the natural environment. At the present time there is legislation planned to permit individuals to have oyster culture operations on their own piers. I think a loose interpretation of the planned law would include floats tied to piers. These techniques and methodology for spat collection are well known in Japan. They were demonstrated to the Maryland watermen by Bill Shaw when he was employed at National Marine Fisheries Service, Oxford Biological Laboratory. We're repeating the demonstration this coming year, but we are also looking at a new spat collector

developed in France. This collector is very cost effective and easy to use. Most of the collectors we use in Maryland are shell bags that have the problem of very heavy fouling by algae and sediment. Shell bag collectors are difficult to handle and very expensive to make. The French collector circumvents some of these things. We see that the natural sources of seed could be greatly developed, especially by the private sector, which could have its own source of seed.

Another use for the oysters we raise at Horn Point is to develop planting recommendations for various locations in the Bay. The column on the left of Figure 4 lists various types of Bay bottom--oyster shell, rock gravel, muddy oyster bar, clay, and unaltered mud bottom. The mud bottom is the marginal type of bottom that may or may not be planted by the state oyster management program.

The second column is the mean size of the spat that we planted in each type of bottom. The last two columns are the ranges of survival observed. These data represent about thirty individual sites which we planted with over 18 million spat. You will notice that the rock and gravel plantings have 75 to 90 percent survival, whereas plantings on muddy oyster bars, with small oysters, had virtually no survival after a two-year period. Larger spat placed on the muddy oyster bar seemed to have about 15 to 20 percent survival. Clay bottom gave slightly better survival than mud. Muddy Bay bottom, as most watermen and most planters know, is a very poor substrate, but that is what comprises most of the Bay bottom.

The data that we've presented here and all of our techniques and methodology are available to any of you. We are criticized at Horn Point for helping one individual. I don't think there would be any criticism at all if you came as part of an organized group, such as the Maryland Leaseholders Association. However, even without the organization title we would be very happy to give you assistance.

SURVIVAL OF HATCHERY-PRODUCED OYSTER SPAT IN MARYLAND

Bottom Type	Mean Spat Size (mm)	Percent Survival	
		One Year	Two Years
Oyster Shell	25	20-50	20-30
Rock-Gravel	10	75-90	-
Muddy	10	0-10	0
Oyster	15	10	0
Bar	25	15	20
Clay	40	30	-
Mud	10	0-20	0-30
	15	0	0
	25	0	0
	35	0-30	30-40

Figure 4. Comparison of bottom types in survival of hatchery-produced oyster spat in Maryland.

During the past two years, we've had about ten individual people working in our hatchery to learn our techniques. These included Max Chambers, state management personnel from Delaware, and even private citizens from Virginia. At the present time, I know of four individuals in the state of Maryland who are interested in starting a hatchery. Their major problem is venture capital and loan insurance assurances. This afternoon some of our financial people can address these questions for them. Several persons interested in hatcheries are here today and we look forward to working with them in the future to help them make better financial decisions.

Panel Discussion

Question: Mr. Haven, does Virginia have a hatchery program at all or are they considering a hatchery program to solve their seed problem?

Haven: Dr. DePuy at our Institute has a pilot hatchery going, an experimental hatchery. Dr. Andrews over the past fifteen years has developed oysters that are genetically resistant to MSX. He has maintained stock through cultures of the MSX resistant oysters in the Bay. Dr. DePuy, on a small scale, keeps these stocks going. Also he has done some work now with Dr. Andrews in producing fast-growing oysters, oysters with a very deep cup and a concave top shell for example. It's not topless yet, but they are trying! Also Mr. Constagna, at the Wachapreague Lab, has a facility that hatches oysters, clams and scallops. Mr. Constagna's laboratory utilizes the natural water, supplemented by a green house. Dr. DePuy at the laboratory believes in the culture system and he grows cultures under a UV light and everything else. One's a little bit cheaper than the other.

Most of those people would be glad to talk to anybody that came down there. It is on a small scale right now. I understand that there may be some plans for a hatchery, but those plans have not been developed yet. The idea is more or less floating around. But

we do have two hatcheries in operation down in Virginia.

Question: They are research hatcheries then?

Haven: They are research hatcheries, yes.

Question: Dr. Krantz. Just a question. There was quite a wave of interest in aquaculture about fifteen years ago, and a lot of private money was spent on projects connected quite often with shellfish firms. Has there been any historical review of why many of them fell out of existence so that those problems are reviewed before we start again?

Krantz: I think the most comprehensive review is still in a review format. George Matheson, I imagine it is, in Massachusetts, has done a contract job for NMFS in Milford, Connecticut, analyzing most of the hatcheries that he could get information from and their financial backgrounds. I think that maybe Mr. Pate will refer to an effort here in Maryland to look into the financial backgrounds of these individuals, just as you requested. I think the problem has been the reluctance of those people, especially the ones who failed, to express why they failed. In the Maryland effort, the way we have written it, I think we would not be disclosing who they were. We are trying to make it a nondescript survey; plus, we would be dangling a carrot a little bit, because I think there are elements in the state that would be receptive to supporting private hatcheries if they knew exactly why they failed financially. I think that is one of the things that we have to put our finger on.

In the program that we're developing at the University of Maryland, we have a computer model of the hatchery that has sales and all the economic indicators as part of the model. And that model does not show a tremendous profit, even when it's vertically

integrated. I think within the next two to three years there'll be some very detailed analyses of the economic performance of oyster hatcheries. At the present time, it doesn't look all that promising.

Question: Just what does a bushel of hatchery seed cost?

Krantz: From Horn Point? A bushel of seed, based on a thousand spat per bushel, would cost you between $2.40 and $3.50 from the Horn Point Hatchery. That is our production cost--no profit. That's competitive with the James River seed, but there is some profit with the James River seed.

Question: What size is that?

Krantz: That would be half inch to one inch. Our output is limited by the amount of growout space and the number of raceways we have. We are also limited by another constraint--we are research, so we produce each month. If we did it all at one time like a production operation would, I think it would be cheaper.

Question: If you were operating commercially, you'd be operating at a loss?

Krantz: We would be operating at the bare margin and breaking even. If you paid $2.40 to $2.50 for the seed and only got four or five dollars back, you would be just on the margin of taking a loss. If you can get $10 or $24, as I see in the green sheets coming out of New York, there would be no problem at all. It depends upon where your market is.

Question: Dr. Krantz, you said that the cost at Horn Point was 2¢ and Dr. Haven says that he doesn't have to furnish algae to feed them in Virginia, whereas you do. Would this decrease your cost? Is the figure

for feeding algae to your larvae a large part of the cost?

Krantz: The algal component of the larval culture is 30 percent.

Question: If this were done on the Chincoteague Bay, you wouldn't have to grow algae, and there the finished product is three times as large as that of the Chesapeake Bay. How would this make your investment?

Krantz: It would drop the seed cost to $2 a bushel and your return on a bushel of Chincoteague oysters is $30. I believe that's enough--a 10 to 1 markup on seed costs--to make money on. I'm saying that in a joking manner, but I really believe it.

Question: The answer to the question about what is going on now at Horn Point relative to what could happen in Chincoteague Bay is like talking about two different worlds.

Krantz: That's correct. Site location, the organization of your corporate venture, where you're getting the venture capital from and what they are going to take back for it are all very important factors that a biologist doesn't usually address.

Question: If this is economically more feasible on Chinocoteague Bay, and Maryland has more of Chincoteague Bay than Virginia does, does the state have any program to try oyster seed culture on Chincoteague Bay in Maryland?

Krantz: Just this past year, the state placed shell bags in Chincoteague Bay and collected spat sets. Some of those sets were well in excess of 1,000-count per bushel. These shells have been distributed at

various locations to look into the disease problem that Frank ran into. Miss Otto has gotten samples to test to see the efficiency of the operation down there. And I think with the interest that's been shown in this conference and with your questions about how feasible it is, we anticipate having a conference right down at Chincoteague, because in it is an area that looks very promising to me.

Question: Mr. Wilde touched upon it, but could the learned gentleman tell us about the effects of chlorine on oyster culture?

Wilde: I can't tell you too much about the effects of chlorine except that it turns them an awful looking color--they're blue-green. I don't think they would have a flavor that anyone would want to consume. But we do not put our oysters in the canal when they use chlorine. We only put them there in the fall, when chlorine is not in use. We take the seed out in the early spring before they start using chlorine; they only use chlorine to clean the condensers when the water is at a certain temperature that allows algae to form and foul those condensers.

Question: I know that Cran Morgan always talks about chlorine from a mortality angle. Maybe Mr. Dexter Haven could tell us?

Haven: We've done some studies at the Institute on the effect of chlorine in the laboratory on oysters, the larvae, and we find that.005 parts per million chlorine is lethal to larvae. The problem is to go out into the estuary and test for those concentrations. Apparently there is no good test to detect these levels in nature. You can say theoretically there should be some out there, but somebody will say, well, go ahead and prove that you've got .005 out there and you can throw up your hands. I'm not a chemist, but I understand that's a

problem. But in the laboratory, chlorine introduced in the water at .005 parts per million does kill the larvae.

Question: The excessive use of chlorine, then, at sewage treatment plants throughout the Chesapeake Bay could have an effect?

Haven: It theoretically could, and Commissioner Douglas down our way is working with state officials to reduce the loading within safe limits.

Krantz: In the hatchery procedure. we don't like chlorine even in the building. It is very toxic.

Question: I'd like to ask Mr. Wilde what kind of growth rates he experiences in that canal and what kind of salinity and temperature readings he has gotten?

Wilde: The canal is at the Morgantown Pepco Power Plant. The salinity is like that at West River where I have the hatchery. It is disastrous at times, and I expect after these rains that we've just had that the salinity at the power plant now is probably down to around the five range. And when it gets down to that point, the oysters are going to stop growing. But up until this last rain, we had good growth and the salinity was running around about 10 points.

Webster: Time for one more question.

Question: Mr. Dexter Haven, what are the effects of Kepone on the oysters in the James?

Haven: The Bureau of Shellfish Sanitation and the State Water Control Board has been monitoring Kepone in the James River ever since it was detected. They do have an amount that fluctuates monthly. It has not shown any decline since we first noted it. It's still

up there between .1 and .2 parts per million. It is below the action level. As far as causing any mortality to the adult oyster, I haven't seen it. I can't comment and I really don't know about the effects of Kepone on the larvae. I do know only one thing--that our trouble with reduced setting in the James started after 1960 and when Kepone came along, the only thing you could say is, set was poor. So we have a low strike in the James River and that's not the best place to evaluate the effect of any additional problem. I can't answer the one on larvae.

Question: I'd like to quote Mr. Cran Morgan. He says that's when the two sewage treatment plants started up, about that same time.

MORE Task Force Recommendations

William Pate
Department of Economic and Community Development

Mr. William Pate is the Deputy Secretary of the Maryland Department of Economic and Community Development. He was the chairman of the MORE Task Force, (Maryland Oyster Resource Expansion Task Force). His report will be going to the legislature very shortly.

What I'm going to do is read the recommendations that came out of the MORE Task Force and pretty much leave it at that, leave it up for questions. I want to make a couple of comments first, however. I am the Deputy Secretary of the Maryland Department of Economic and Community Development and the reason I became Chairman of the MORE Task Force is that I knew less about oysters and seafood than anybody else in the Department, which you will recognize immediately if you ask any questions. I think the aim at that time was to make sure that I would be impartial because I was too ignorant to be otherwise.

The legislature assigned to our department the task of pursuing the recommendations in the seafood industry study, which we did in 1975-76. That assignment was made in May of 1976 after we had turned in the previous report from our department. That report contained many recommendations about the seafood industry,

one of which was that we should, or that a task force should, be convened to look at the oyster industry and see what sorts of recommendations, program actions, et cetera, could be arrived at. We formed a task force in response to that May 1976 directive of the legislature called the MORE (Maryland Oyster Resource Expansion) Task Force and I was named chairman, under circumstances I've described.

The task force has had about eight meetings stretching out over a year or so. The meetings have been very long. I think we've discussed every possible subject having to do with oysters in the state of Maryland at one time or another. We had a very difficult time arriving at a set of agreed recommendations. The report that we have turned in this week, on which a hearing will be held next week, is not definitive by any stretch of the imagination. It is merely the best set of agreed recommendations for further actions and further investigation that could be arrived at by that group.

I want to publicly, here again, thank the members of that task force, most of whom are in this room, for their dedication, for their understanding and in a certain way for their tenacity. They stuck to their points of view and I think we did in the final analysis illustrate that if you keep sitting down around a table and hacking at something, you can finally agree that there are certain actions that should be pursued.

I'll run over very quickly the members of that task force so that you'll know who to yell at for some of these things. We had Tucker Brown, Mark Bundy of Coastal Zone Management, Russell Dize, Mary Jo Garreis of the Department of Mental Health and Hygiene, Gordon Hallock of our Department, Bill Harris of Harris Seafood, Nancy Kelly of the Chesapeake Foundation, Mr. Kennerly of his own company, Dr. Krantz, Ronald Nelson of the Department of Mental Health and Hygiene, Bill Outten of the DNR, myself, Bob Prier, Dr. Aaron

Rosenfield, Larry Simns and Al Woodfield. And there were several staff people and support people.

I want to point out that this report at the moment has no official status because it's just been submitted to the legislature. They have not held a hearing on it; they have not accepted it; they have done nothing with it. I have discussed this meeting with Delegate John Hargreaves and he said to go ahead and tell you what we recommended, but what will come out of it is something that'll have to be decided in the future. As I said, there will be a hearing on the 16th before Chairman Hargreaves' House Appropriations Committee in the House Committee Room in the House Building in Annapolis, 2:00 in the afternoon. If anyone is interested, I'm sure that you'd be very welcome. It is a public meeting, of course, and if any of these recommendations grab you or incense you, please come.

As I say, in transmitting these recommendations, while acknowledging that not all task force members were equally enthusiastic about each of the recommendations, the task force agrees generally that their implementation would have a positive effect on the industry as a whole. The order in which the recommendations are presented is not intended to give any indication of priority as several of them are interrelated and many are of equal importance.

First recommendation. The funding of the Horn Point hatchery should be increased; specifically, $262,000 is required to bring the research and production capacity to optimal levels as detailed in the attached proposal which is Appendix A to the report. This should eventually help augment the natural seed supply by up to 10 percent and provide data on the economic and biological feasibility of Chesapeake Bay hatcheries.

Recommendation Two. Additional information relating to the feasibility of public and private hatcheries must be obtained in order for the task force to make

further program recommendations. An $8,000 to $10,000 study, described in Appendix B, would provide the required information.

Recommendation Three. Early completion of the Chesapeake Bay-bottom survey is strongly encouraged. Active funding, personnel and physical resources should be made available and target dates established.

Recommendation Four. In anticipation of the finished Bay-bottom survey, research on likely gains and/or losses, under various alternative leasing arrangements, should presently begin. See particularly the Kennerly proposal, Attachment C and the Simns proposal, Attachment D.

Recommendation Five. To provide essential information regarding enhancement of oyster recruitment, growth and survival, utilizing natural environments, the feasibility of various off-bottom and other aquacultural techniques must be tried. These farming techniques would include the use of racks, long lines, rafts, French-type spat collectors, etc. Certain brood stock and growout areas should be set aside and funds, personnel, and physical resources should be provided for testing and comparing these methods with cost and production efficiencies of public bars and hatcheries.

Number Six. Methods to discourage commercial participants who only sporadically harvest oysters should be investigated.

Number Seven. Authorize the Department of Natural Resources to adjust beyond current limits the season during which oysters can be harvested from public bars.

Number Eight. Funds should be made available to foster and encourage (this would be things like matching grants, subsidies or low interest loans) the development of more efficient processing machinery, specifically including shucking machines and steam and shake processing.

Number Nine and the last recommendation. The development of new products made from oysters, specifically convenience foods, should be encouraged by making funds available to the Crisfield Seafood Laboratory and other appropriate entities. In tandem, funding should be increased to the Seafood Marketing Authority to effectively promote and market these new products.

Just to summarize, and this is sort of a personal observation, and I will say it from the impartial viewpoint of the ignorance I bring to this subject (however, I am not ignorant, I hope not immodestly, as an economic developer; I've been in that many years)--it seems to me that the oyster industry in Maryland (and this is the third round of reports that we, from our department, have been in on the subject) is in a sort of round-robin, Chinese stand-off situation. Everyone agrees that the oyster industry in Maryland has vast economic, income and job potential. But it has never realized that potential. What I mean by the round-robin, Chinese stand-off syndrome, is that every segment of the industry seems to say, well we could do better if somebody else would do better. The processors say, well we can't invest additional money because we can't have an assured supply. The harvesters say, well, we can't catch more of them until we have better seasons, and our other problems are solved. The marketers say, well, we can't sell more of them until we have an assured steady supply of oysters, and so forth, and it goes around and around.

I think it is time that someone in a high level of state government took this problem seriously and provided the funds and the resources and assigned some agency of government, hopefully with the participation of representatives from the industry, to design and implement a program to really come up with a breakthrough on the oyster industry's problems. I think that we have done enough of the kind of studying and talking and calling task forces that could have been

done. Hopefully these recommendations will lead to some decision like that.

This report, incidentally, is an interim report. It is not the final report. As you can see, it is very sketchy, but we did it on a shoestring. We did it more or less on our own time, and at least in our department, we did it in addition to our other duties. In my opinion we need, again, to take this problem seriously and to devote the resources to it to come to some thoroughly analyzed and researched and thoroughly understood kind of approach to solving the problems of the oyster industry on a comprehensive basis so that we can realize the job and income potential that is inherent in this field. If there are questions, either I can answer them or a member of the task force that is here can try to answer them.

Question: Can copies of the report be obtained before the hearing?

Pate: Well, we have a few extra copies. If the demand is not too great, you can get in touch with me, or if I'm not available, with Bob Prier. I think we have enough to satisfy a limited demand, yes.

Bay Bottom Survey And DNR Reorganization

Louis N. Phipps, Jr.
Department of Natural Resources

Our luncheon speaker today is Mr. Louis Phipps, a man who I am sure is well known to all members of the seafood industry. In 1965 he became Director of the Department of Chesapeake Bay Affairs and held that office until 1969 when the Department of Natural Resources was formed. He was then designated as the Assistant Secretary in Charge of Capital Programs. In 1974 he was appointed Deputy Secretary of the Department of Natural Resources and holds that position today. Mr. Phipps is very knowledgeable about all aspects of the seafood industry in Maryland and it is with a great deal of pleasure that I would like to introduce to you Mr. Louis N. Phipps, Jr., Deputy Director of the Department of Natural Resources.

It is a pleasure to be here today on behalf of Secretary Coulter. Quite literally, we are happy to be here. I'd like to brief you for a few moments on the redirection of the Fisheries Administration and the formation of the new Chesapeake Bay unit or Tidewater Administration. Secretary Coulter feels that the Bay is such an important resource of Maryland that it should receive greater emphasis and greater interest from all the management agencies in the state and he feels a Chesapeake Bay unit will achieve

this and help to solve many of the Bay's problems.

First, let me tell you about the redirection of Fisheries. I'm sure you're all aware that Bob Rubelmann is sick and has been off from work for the last two months. However, he is doing fine and is expected back sometime in the near future. We have selected Mason Shehan of Easton, formerly of Tidewater Fisheries, to redirect the Fisheries Administration, and he has been assigned there to the day-to-day operations in the last thirty days.

I guess the most important thing that you gentlemen would like to hear about today is the status of our Bay-bottom survey. I got a sheet of paper this morning from Jim Willett--I didn't read the complete figures--but it's in big letters, so I can read it very plainly. I was disturbed to see that it is going to take 4.4 years to complete the Bay-bottom survey. Well, we've already spent three years on it--I think that we have to build a better mousetrap in order to complete the Bay-bottom survey! So we will attempt to survey the areas of highest priority and try to designate what we think is barren bottom that could be available for leasing. You are all aware that the General Assembly has passed a resolution citing a moratorium on leasing. We heard Bill Pate this morning give a brief statement on the MORE report, which will be considered by the General Assembly, I believe on January 16, so I think some of the discussions on the status of the Bay-bottom survey will be brought out at that time.

It is our hope, as I said, that we will be able to survey the areas of the highest priority. We have reclassifed a few areas of Chesapeake Bay. We've reclassified Swan Point in the upper part of the Bay, near Rockhall, from oyster ground to clam ground. It was a completely barren bottom and was just recently reclassified to clam grounds.

One other thing I'd like to cover: I think that we, Fisheries and the Department of Natural Resources,

and the packers, the planters and the watermen, have to enter into a partnership, a dialogue of understanding, which will enable us to consider the many opportunities that are before us. I won't say problems because they are opportunities. This is a great industry, and I think together we can work out any problems that we do have. I am particularly interested in talking with the industry about the prospects of providing some matching fund grants to help with developing an oyster shucking machine. There's one on the West Coast, I believe in Washington, that some of the industry have seen, and it seems to be working and can be a successful operation. You all probably remember Sterling Harris. His son still has the machine that he developed years ago and it's down in Bufort, South Carolina, or somewhere in Carolina, in mothballs. He is interested in getting that machine out. So the state would be interested in working with the industry, and sharing the cost in some way, to help get this machine to where it can be in your plants shucking oysters.

Secretary Coulter is very impressed with George Krantz's oyster hatchery at Horn Point. I visited it several times with Mason Shehan and I think it has real possibilities. Pete Wagner has a meeting this Friday with George. I believe they're coming in to talk with Secretary Coulter and the people in Fisheries with regard to how the department is helping in this endeavor.

I really didn't realize that I was supposed to give a speech today or talk at a luncheon. Mason just grabbed me and said come on over to Busch's for lunch and meet some of the people in the oyster industry. I said, you know, that would be great. So I really don't have any prepared comments except a few things that I jotted down while having lunch. If you have some questions you want to ask of us, I'd be available later to answer any questions you have. But the most important thing I want to emphasize is that

I think the new direction that Secretary Coulter wants to move in is one of "sell and not tell." We really want to work with you, we want to work with the watermen, the industry, and solve our mutual problems.

That is the message I really want to leave. I really want to have a partnership with the industry so we can move forward. I'm sure that Mason accepts this concept. In fact, we have a meeting Friday night with the Eastern Shore watermen to discuss some things that they have on their minds. We met last night down in Calvert County, and I was very pleased with the reception that we got from the watermen. We had about thirty watermen there, and we discussed, well I guess mostly we listened. We listened to their problems and they had some good thoughts and good ideas which we took home and which we certainly will try to implement.

I must say that I have the highest regard for Larry Simns and the Watermen's Committee and the cooperation that they have given the department in the past, and I'm sure in the future cooperation will even be greater. I say the same thing to Bob Prier. He's working very well with the department. But I think we have to bring this partner relationship together. I think we have to go hand in hand together to make this one of the greatest industries in the world. I think we'll try and we'll work with you. So with that, I will be glad, if you have the time, to answer questions, or I will be available later.

Question: Were you saying that it would take a total of 4.4 years to complete the survey, or 4.4 more years?

Phipps: Well, it looks like it says to me that we have a total acreage in the Bay of 1.5 million and I think that's what the bottom line says, 4.4 years, but, to us this is totally unacceptable. We'll have to move and to go to priority areas. I want to solicit the cooperation of the watermen, try to get them

involved. I promise you that we'll move forward.

Question: I still don't understand whether it is 4.4 from now or from the time you started.

Phipps: I think we mean from now. I was talking last night with Larry Simns and he said that we would need help in this area. I think that his people can give us some help. I think we need practical people involved. We've had lots of problems. We are going about it in a very sophisticated way, with sophisticated equipment. And I guess we'll have to go back to the 1908 survey when Slepps and Earle, I think, did it in three years with a couple boats and a canoe and dragging a chain. But I can promise you that although we have not done a good job in the past, we will move forward and do priority areas so we can have a decision on leasing which I am sure you are all interested in. Thank you very much gentlemen, a pleasure to be here.

Marking and Protecting Lease Ground

Harvey Cook
Department of Natural Resources

Many problems arise concerning the legal aspects of oyster planting. Exactly how do you obtain a lease? How do you mark your bottom? What are the rights and responsibilities that you have as an oyster planter? Our speaker on this section is Major Harvey Cook, the supervisor of the Eastern Shore District of the Maryland Natural Resources Police-Marine Division. I'm sure you'll enjoy his presentation.

Indeed it's a pleasure for me to be asked to appear on the program today. I hope I can enlighten you as to some of the problems that we run into from the enforcement aspect of protecting oysters on leased bottom.

Several things that I will mention briefly will be expanded on later this evening by Mr. Hoericks. These concern the authority of the department to control leased bottom, how to apply for a lease, the amount of acreage that can be leased, applications for a lease, the costs involved, etc. Since he will touch on this in greater detail, I'm going to start with the marking of leased land.

Simply speaking, the law provides that a lessee shall designate the area leased by marking it with at least four stakes, buoys, or monuments bearing the

initials of the lessee. Any requests for resurveys to position these markers in the proper place is also the responsibility of the lessee. Resurveying, or redepositing your marker stakes or monuments or buoys, costs $5 for each stake to be relocated. But you, as the lessee, are responsible for requesting these resurveys.

You, as the lessee, must exercise reasonable diligence in maintaining your buoys, stakes or monuments. This is all spelled out in the law. However, temporary loss or destruction of your markers shall not give any unauthorized person permit to trespass, or to remove, destroy or disturb oysters on your leased bottom. In any court action involving an alleged trespasser, the court shall not impose a penalty unless the trespass was intentional, and with knowledge that the leased area exists.

There is another section which some of you are probably familiar with and that is a section of the law which says that the department must inspect all imported oysters for planting between May 1 and September 30. This inspection is supposed to be for the purpose of detecting the presence of oyster drills, screw borers or their eggs which may be contained in oysters coming from outside the state. This is the reason that it is necessary to obtain permits for planting, showing where the oysters came from, where they are to be planted and the number of bushels to be planted. Then our officers will contact you and pick up the various permits for however many bushels you apply for.

We have a section in the law which says a person may not catch, destroy or transfer any oysters from leased bottom without permission. We have another section that prohibits people from removing, altering or destroying any stake, buoy or monument on any leased oyster bottom. Now, very simply, anyone can go out there and tie a boat to the majority of the stakes or monuments or buoys; they can drag off of the

bottom, or totally destroy the markers. We, as an enforcement agency, do not have enough people to patrol these leased bottoms, or to continuously watch them. It is impossible. We just do not have the people to do it. We do make periodic patrols across the bottoms, but we operate mainly on complaints. When we receive a complaint, we stake the area out and we try to catch the people who are stealing. And that is what it amounts to--it is stealing from you, the lessee.

Someone poaching your oysters is no different from someone coming to your house and stealing. The monetary value is there, and the same principle is involved. It is theft regardless of how you cut it. The type of larceny that the defendant would be charged with would depend upon the amount of oysters that he allegedly takes--whether it would be grand larceny or petty larceny. And we, as an enforcement agency, certainly have to elicit your help. We have to form the partnership with you, the planters, that Mr. Phipps was talking about. We cannot operate and do an effective job of enforcement if we do not have the help of every person in this room. When the violations occur, you must notify us. You are in the best position to watch your ground. You have contacts. You know what is taking place. You know when someone is stealing from you in the majority of the cases. And then you must give us as much information as possible--date, time, occurrence, a description of the boat, or if the violator is known, the violator's name. Then we will take some action and attempt to catch the individual.

I had several complaints this fall from planters, some of whom are in this room, who alleged that people were stealing oysters. And my first question was, "Is the ground marked?" At that time, the ground was not marked. In each complaint that I received that was the number one hurdle. We got the grounds marked and in most cases, we have not had a complaint since.

I talked to one packer today and he said that to his knowledge, since he put the markers up and properly marked his bottom, he has not received any word that people have taken any oysters off his grounds. Prior to that it was a weekly occurrence. So the markers help to protect you and it is to your benefit to get them up. It is also for our benefit, to help us know where your ground is and to help us in prosecuting these people.

And you, as a packer, will definitely have to be involved in the prosecution. If we arrest a person, or catch a person on your bottom, you have to be willing to go to court and testify that you did not give that man permission. Now there are some areas in the state where written permission is required in the hands of the individual at the time he is taking the oysters off leased bottom. In those areas the officer can charge the man. But in areas where this is not required, it is up to the planter or lessee of that ground to go to court and testify that in fact he did not give this individual permission. We must have your help and you must stand behind us on prosecution.

If anyone has any questions, I will be glad to answer them.

Question: Would you mind relating to the licensing part? What type of gear can you use to harvest on these bottoms, power dredge or hand tongs, and what permits are required?

Cook: Briefly, there are some areas in the state where oysters can only be taken from leased bottom by shaft tongs. There are other areas where you can use a hand scrape or a power dredge. In the areas where you can use a dredge, it is incumbent upon the lessee or the person who is taking the oysters to obtain a special $15 dredge license which is good for that ground. There are other areas in the state that

require the people using shaft tongs to be properly licensed. There are other areas in the state where non-residents can come in and work your leased bottom if they obtain a special non-resident license. That's on the lower part of the Eastern Shore.

I'm sure most of you are basically familiar with what you need in your area. If you are not, please contact any officer in the area, or the department in Annapolis prior to taking any oysters and they will try to steer you in the right direction. It is also incumbent upon the lessee to have his ground properly marked before he sends anyone to take oysters on that ground. It must be marked before you can move them. If that ground is not marked, the people you send out can be arrested.

Question: Major Cook, what is the procedure for removing oysters from polluted bottom?

Cook: From polluted bottom? I see Mrs. Mary J. Garreis in here. Perhaps we should leave that up to her to answer.

Question: We moved some a couple years ago. We had a permit to move from polluted bottom to good bottom from the Health Department and the officers of the Marine Police said we couldn't move them until after the seed program was over. The law seems to say different things.

Cook: I would have to research that for you and check on it. I'm not familiar with the particular incident and I don't know just what occurred. There are certain things you have to do. Once you have obtained a permit to move, the area you're moving them from has to be specifically marked with a yellow flag. The vessels and vehicles moving them have to be marked with a yellow flag. And the area they're going overboard on has to be marked. Like I say, I don't know what your

problem was, but there are certain....

Question: I think the Marine Police were the problem....

Cook: Well, what occurred? What happened?

Question: There were a couple of people who lived nearby and they called up the Marine Police, and just generally raised hell. After that the Marine Police came to us and asked if we had permission and we did. Had all the permits we thought we needed. Then they came back and told us again that we couldn't take them up until after oyster seeding, because there was a law against it. But in the lessee thing, it says you can take the oysters up anytime--sunup to sunset.

Cook: With the exception of Sunday.

Question: Right, six days a week. That is what we were doing. And under the supervision of the Marine Police which we were also doing, but they made us stop until after April 15.

Cook: O.K., after we finish here I'll check the law for you and we'll see if there is a particular stipulation in Talbot County.

Garreis: That was an Attorney General's opinion. He should have a copy of it. But in that particular instance, the Attorney General ruled that it was in the best interest of the state to have the transplant of polluted oysters take place outside of the regular oyster season, and be restricted from April 15 to September 1. There is an Attorney General's opinion on it.

Question: You said that the leasing was for oystering. It used to read shellfish. Is it only for oysters now?

Cook: I believe, now, it is for the purpose of planting oysters only.

Question: Could you use it to raise clams also?

Cook: I couldn't tell you, but I'll check that for you too in a few minutes.

Question: We have heard that there is a moratorium against leasing bottom in a number of the counties and that only a few counties allow leasing. Could you tell me which counties are those that allow leasing?

Cook: As of today? None.

Question: Well yes, because of the moratorium on all of them, but I mean, there are some counties which have leaseholders, right?

Cook: Well, there are a lot of counties which have leaseholders. But as of today, no one can lease any bottom anywhere in the state. No new leases.

Question: I understand that, but are there particular counties which have a moratorium on their books against leasing and if the state lifts the ban they still cannot lease bottom?

Cook: Yes, there are. DNR cannot lease any new tracts of land in Charles, Dorchester, Kent, Queen Anne, Somerset or Talbot counties. This is a legislative law. This section does not affect any existing lease in effect prior to the passing of that law.

Question: If someone did willfully pull up your stakes and work on your oyster bottom, could the lessee take him to court?

Cook: Yes sir. If you could identify the individual, knew who it was, you could go down and swear out a warrant as a lessee, as a citizen, the same as our charging the individual. And we would be glad to serve the warrant, pick him up and bring him in for you.

Question: This new law prohibits the leasing in any of the counties--let's assume that some time that is going to be changed. Will that change the regulations in those counties you read, like Talbot, Dorchester?

Cook: No. That legislative law was passed prior to the moratorium by the legislature. It's a legislative law, but is separate from the moratorium. The moratorium, the way I understand it, is in effect until such time as the Bay-bottom survey is completed. But, if anyone wants to change the law concerning those counties, that would have to be done in the legislature--totally separate from any other law.

Question: This is not exactly a question about leasing, but if someone goes to court and is found not guilty, I understand that your organization still considers it a first offense against his license.

Cook: That is not correct. If it is a not guilty verdict, then there is no offense against the individual.

Changes in Lease Regulations

George Hoerichs
Department of Natural Resources

We had not anticipated when we planned this conference that some new changes would go into effect tomorrow concerning certain aspects of leaseholding. This next session becomes, then, even more timely. Mr. George Hoerichs is a surveyor with the Capital Programs Administration of the Maryland Department of Natural Resources and he will address the application and marking procedures for leases in greater detail than we have thus far presented.

We have heard many points raised concerning leasing laws today. However, I am going to talk in a little bit more detail than you see on the schedule here because we've had quite a few questions raised about the Senate Joint Resolution that prohibits the Deparment of Natural Resources from leasing ground now, and I thought maybe we might clarify that and one or two other points. So, let me begin by talking about the present status resulting from this Senate Joint Resolution 44 which was signed by the Governor in May of 1974.

A Senate joint resolution, or any type of resolution, does not hold the same power as a regular law passed by the legislature. It is a request by the legislature, through the governor, asking a particular

organization to do something or not do something. And what this resolution requested the department to do is to decline leasing new areas. It does not affect leases now held; it just means that no one else can apply for any new ground. And the resolution has been written to stand until the Bay-bottom survey is completed, or until another resolution or a law is passed by the legislature.

Now we also have Senate Joint Resolution #39 that was signed by the acting governor on May 2, 1978, which opened Worcester County, over on the seaside area, back up to leasing, since that area is not going to be affected directly by this Bay-bottom survey. Although this resolution was signed, there is still a little bit of technical work by DNR going on, but eventually Worcester County will open back up. So, we have got these two resolutions that the department is going by and, of course, they directly affect the leasing program.

Now, what would happen if tomorrow this Senate Joint Resolution #44 were to be lifted? That would mean that most the counties within the state of Maryland would be automatically opened back up for leasing. Harvey Cook read you the counties that are closed. So, instead of repeating that, I'm going to tell you in what counties leasing would be allowed if Senate Joint Resolution #44 is rescinded. They would be Wicomico and Worcester on the Eastern Shore, Anne Arundel, Calvert, Baltimore, Harford and St. Mary's County on the Western Shore. Those would be the only counties in which we could accept applications for lease if this resolution were rescinded. Right now, the Department of Natural Resources is accepting applications for lease ground. We cannot process them, but we will accept them. There is a normal $25 application fee that must be paid when the application comes in to DNR. However, because of this moratorium we have waived that $25 fee; we will hold your applica-

tion until such time as leasing is allowed, and then we will get in touch with you. The department will contact you and request that that fee be paid. Then we would begin to process the lease application.

You may be interested in the steps that we go through. We receive the application; we receive the money with the application--that is if everything is operating correctly--and then we contact you, the person that made the application, setting up a time that representatives from the department can meet with you to stake off the ground. You have an idea of about where you want to take the ground up. So we come and help you to stake the ground. I don't mean that we would come and stick in the stakes, but in a lot of instances, almost all, there is ground that is leased around where you want to apply, and so to keep you from sticking your stakes on somebody else's property, we come and show you where the stakes should go. At the same time, the Fisheries Administration sends somebody along to sample the bottom, to make sure that we are not leasing bottom to private individuals that could be considered public oyster ground--bottom that has so many oysters on it that the public could make a living off of it. After this is completed, we would then assemble the information that we'd gotten from the survey, and if the Fisheries Administration decided that this was leasable, then we would advertise in a local newspaper for a four-week period. We would advertise where you want to lease the ground, who you are, and how much ground you want to lease. At the end of that four-week period there is a period of time, 30 days to be exact, when three people who make their living on the water could protest your application to the Circuit Court in the county in which you are applying for the lease. They could say that the ground was such that they had made a day's living catching oysters or shellfish off of it. Then it would have to go to court and a trial would be held to let

the court determine whether it was leaseable or not leaseable.

Taking the case where the ground is found to be leaseable, we would then draw up your lease. You would receive a bill for the rent, for the survey fee, and for the recording fee. As soon as you paid the fee, the ground would become yours to work as it applies under the law.

We also have a clause in the law which allows you to have your rent waived, if your ground is in an area that the Health Department has closed. You must request in writing; you can't leave it up to the department to say this ground is in a health department restricted area--but you must request it, and the department will waive the rent for that particular rental time.

The best way to do this is to write across the bottom of your rent bill when you receive it, "Please waive this rent, the ground is closed by the health department," or for some other reason. And send it back. That way, we can check on it, and if it is correct, we will waive the rent. If not, we will let you know. You don't have to worry about that.

Billing and fees. That's a big item. As you know, or maybe you don't know, the rent on each acre of ground (and that's how it is leased, by the acre) is $2 per acre, per year. Not very expensive. And as of Wednesday, January 10, 1979, the Department of Natural Resources accounting section, or fiscal services section, is taking over the billing. You will no longer receive your bills from downstairs in the Licensing & Consumer Services Section. The man in fiscal services you want to talk to is Mr. Steve Powell. His telephone number is 269-2245. If you have any questions about rent, about any fees that you owe, he is the man to talk to. It doesn't do much good to call somebody else, because he will only have to go to Steve anyhow. So if you have any questions, the best place to go is

to the horse's mouth, and Mr. Powell is the horse's mouth.

Renewal of your existing lease. The department takes care of all renewals and all billing. You are not left to guess when your rent is due, or when your lease expires. The department sends all of that information out to you, and you don't have to worry about it. All you have to do is sign where necessary and send your fees in.

The lease period on a new lease is twenty years and the renewal at the end of that twenty year period, as long as you keep your rent up and pay the fees that are necessary, is for a five-year period. It used to be twenty years, and a twenty-year renewal. Now it is twenty years on the original lease and a five-year renewal.

We've run into some problems where upon receiving the renewal notices back from the lessees we show the ground leased to John Smith, but the notice comes back signed by Mary Jones. We cannot accept a renewal unless it is signed by the lessee. Maybe John Smith has died, and Mary Jones has signed the lease because of course John can't sign anymore. The only way we handle this is to have the executor of the lessee's estate sign the renewal. In addition to signing the renewal, the executor must also send us a copy of the legal papers that say he is the executor. In addition to that, the ground must be transferred to someone living. We can't have John Smith's name on the ground. Sometimes that slips by us and it takes awhile before we catch it. But if you get something back, there is a reason behind that. We are not just shuffling papers. So be sure that if you are in the lease business, and you are taking care of the paperwork for somebody, make sure that the proper names are on the forms so that we do not have to keep sending them back.

Every time the lease on the ground is renewed, there is a $5 recording fee, and of course, you must pay the $2 an acre rent. We cannot renew the lease if you are in arrears on your rent. All the bills have to be paid before we can proceed any farther than that.

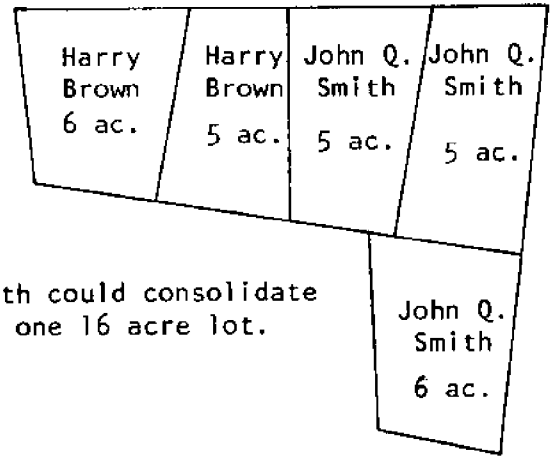
Transfers. I touched on that just a little bit. Again, all the fees must be paid prior to transferring ground. Now we have some problems there too because the regional offices don't have all the records at their fingertips. For all the records of leases the regional office manager will have to check with Annapolis to make sure that you can transfer, rather than have you go through the process and have all the papers sent back. It gets rid of a lot of hassle. The signature must be the lessee's on the transfer too. Nobody else can transfer the ground. Otherwise, I might transfer some of Mr. Kennerly's ground to my brother-in-law. He would love to have it, but Mr. Kennerly might not think so much of it. So the transfer has to show the name of the person who holds the ground, who is doing the transferring. It can't show anybody else's name. And again, if the person is deceased and the ground is transferred, letters of administration must come in so that we know that what we're doing is not going to adversely affect the heirs or give the ground away to somebody else.

Consolidation. We have started a program and it has been in effect now almost two years. The department is making it possible now for you to consolidate oyster ground adjoining other oyster ground that is in your name, or in the name of somebody in your family, from say two leases into one larger lease. What does that do? Well, that keeps you from receiving two rent bills, from having to keep two lease papers in a box or wherever you keep your lease papers. It also helps us out because we can reduce the amount of filing and paperwork that we have to go through. There are some items that have to be present before we can consolidate the leases. Most important of these is that the ground must adjoin on one side. Not just one little corner, but one whole side. One of the pieces must be up for its renewal. In the process of renewing that piece we can then combine the two--and make one nine-acre lot instead of one four-acre and one five-acre lot. Again, all the fees must be paid. Any back rent, any fees have to be paid.

When the renewal is made, Mr. Smith's five-acre piece may have been leased in December of '73 and renewed in January of '79. The entire nine-acre piece will date from January of '79. The '73 date will drop completely out of the picture and the renewed piece will determine the date of the entire lease. You will note on the consolidation forms that there is a $5 recording fee. That is a mistake. You are already paying your $5 recording fee for your lease renewal. So you can disregard that. If you pay your $5 for the renewal of your lease, that $5 counts for your consolidation. Have you any questions on that?

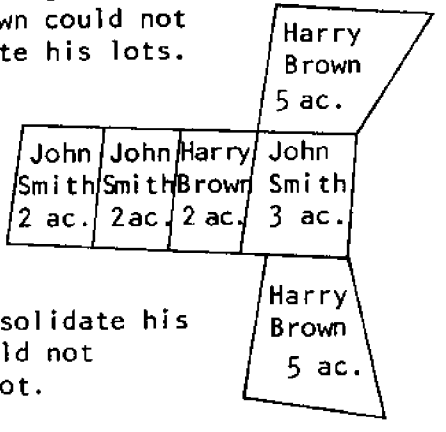
Question: If all of that chain of leased bottom you have illustrated there (see Figures 1 and 2) were in one name,why can't you consolidate the whole group?

Figure 1. Adjoining lots. Harry Brown could consolidate and have one 11 acre lot.



John Smith could consolidate and have one 16 acre lot.

Figure 2. Not adjoining lots. Harry Brown could not consolidate his lots.



John Smith could consolidate his 2 acre lots, but could not include his 3 acre lot.

Hoerichs: If these were all Smiths, then we could consolidate this entire block. The only reason I showed Brown (see Figure 2) up here was to show that these Smiths could not be combined with this Smith because they do not adjoin.

Question: On transfers, you didn't mention fees.

Hoerichs: There is a $5 transfer fee.

Question: If you transfer ground is there a resurvey fee?

Hoerichs: It is not necessary to have the piece of ground that you transfer resurveyed. But I must caution you that if what I sell you is not what the department has originally leased, you can get into a sticky situation. So I would say, if you are not 100 percent certain of what you are leasing, the $20 fee for resurveying is well worth a day in court. You are saving money, I think.

Size limitations. At one time you were limited to thirty acres per name. There has been a recent interpretation of this with regard to consolidation. As long as you don't exceed the specific acreage allotment for a particular area, for instance county waters, you can lease from one to thirty acres. As long as you don't exceed that thirty-acre limit in one lot, you can have four or five thirty-acre leases. That's a bit of a change from what it used to be but it is strictly an interpretation that has been rendered by the department's assistant attorney general. That does not say that it is a correct interpretation. It could be challenged in court and found to be extremely wrong, as far as the court is concerned. But that is the interpretation at the present time. Until it is tried in the court, that is what we go on. So if you

wanted to lease six thirty-acre lots in the Rhode River, that would be fine with the department. Just as long as each lot did not exceed the thirty-acre limit.

Question: What if you consolidate some bottom and it throws you over the thirty-acre limit?

Hoerichs: OK. Say for instance this consolidation was all in one name and we came up with more than thirty acres. Say it amounted to thirty-five acres. What we would do, with your consent as the lessee, is combine the thirty acres and then leave the additional five as a separate lease. In other words, instead of having four leases you would only have two. One would total thirty, and the other one whatever remained. And we have done that. The only thing we can't do is give you more acreage than you had before because that would be the same as instituting a new lease.

All this raises the question about specific allotments in particular areas. In county waters--that's waters within the rivers, the tributaries--you can lease a minimum of one acre, a maximum of thirty, in one lot. In Worcester County, that is the seaside area, the minimum is one, the maximum is fifty acres. In the Tangier Sound, the minimum is one, the maximum is one hundred. Of course, you can fall anywhere in between. In the Bay waters themselves, five is the minimum, five hundred is the maximum.

Resurveys of private oyster ground. The law specifically states that the department is the only one authorized to replace missing stakes. You cannot go to McCrone Surveyors and say I want my ground restaked. You cannot go to any private surveyor and get your corners restaked. I shouldn't say you can't. You can. But if it goes to court, you are in trouble, because the law says the DNR is the only one

that can do this.

Question: What if you're wrong?

Hoerichs: We try to keep our mistakes to a minimum. We have had a lot of experience at the practice of surveying lease ground, and we try to make as few errors as possible. We are always open to suggestions when it comes to staking off the ground. If it doesn't look right, then I make sure that what I'm doing is correct. I don't just say "Ump" and go away. I take many, many more angles than would normally be necessary just to make sure that what I'm doing is correct. And I might also add that there is a feeling around town--and I have heard it not so much from lessees, but some of the other watermen--that we really don't go for accuracy. Well, let me put that to rest. We are as accurate as you can be in sticking a stake in water, and if we can't come within three to five feet of being back where that corner belongs, then we should be out of the business--especially on some of these charts which have a scale of one to five thousand. If you can't come any closer than that, then you don't belong in the business. So let me put it to rest--what we do is as accurate as is humanly possible. And I have some people sitting here that I think will back me up when I say that on several occasions when we backed up to get to that spot where I have pointed out about where the stake ought to go, we ran over the old stake that was broken off under the water. So, you know, we come fairly close to being right. If somebody tells you that we don't do a good job, don't pay any attention.

These resurveys--we charge $5 a corner, but we can't charge any more than $20 a lot. If you want to look on this chart up here you will see some of the grounds have seven, eight, nine corners. If we resurvey that kind of a piece of ground, we can only

charge you a maximum of $20, because the law kind of says that it should be a rectangular or square shape. That means four corners. Sometimes our squares, particularly down around the Potomac River, have seven, eight, nine corners. You really get your money's worth out of that.

Charts. We have available to all of the lessees copies of charts showing your leased ground. As a matter of fact, with some fairly recent renewals we have now been sending out a little 8 1/2 by 11 sheet that shows your plot with the surrounding plots or whatever is around it. So you can see who you are near, and so on. These maps that we send out are for looking at only. Let me make that very clear. They are for looking at only. They are not for surveying purposes. The charts that we use in the surveys are a little bit different. The copies are not accurate enough for this survey work. So, if you have your own sextant and you take one of these charts and you don't come back on the spot where I stuck the stake, I don't want to hear you say, "Aha, you didn't know what you were doing!" I will say "Aha, that chart is no good!" We have an answer for every question.

Riparian property owners versus the lessee. What is the status there? The riparian owner is of course the person who owns the shore, and you happen to have a lease that adjoins his property. Again, this is an attorney general's opinion, it does not have the effect of law. A court test might turn his theory upside down. But as of right now, the riparian property owner has the right to erect a pier over any leased oyster ground. If you held that ground since 1762 and the man owns the shore where your ground is, he can build a pier out over your leased ground. He must apply for the proper permits. Now, if he doesn't apply to the Corps of Engineers and to the Water Resources and so forth, then he is in trouble. But as long as he has followed the proper procedures, he can build this pier out over your land.

On the other hand, he cannot dredge or destroy the bottom around his pier without the permission of the lessee. In other words, if he builds the pier and then finds out that he can't get his 75 foot sailboat up there because there's only three feet of water, and he wants to dredge a 60-foot wide channel 20 feet deep through your oyster ground, he cannot do that according to the interpretation. He must get your permission. Now I'm sure that you are all going to run right up and give him your permission. But, he can't do that. He can't get his permit to do that without your permission.

Question: Suppose your ground comes up around somebody's pier and his pilings or mooring piles rot or are torn up by ice. Can he replace them without any permission from the lessee?

Hoerichs: If they were there?

Question: Yes, when you applied for your ground his pier was there.

Hoerichs: I wouldn't even attempt to answer that. That would be a legal question, and you know, you would have to go to somebody a lot smarter than I am in that kind of stuff.

Question: Can he put mooring piles in too, or just a wharf?

Hoerichs: It hasn't been defined that closely. I would suppose that it would probably mean mooring piles too. I really don't know. This particular situation arose in Calvert County, and I don't know all the ramifications. All I received was a copy of the attorney general's opinion.

The Health Department. The Health Department is the organization to contact about any problems you have with the closure, and Mary Jo Garreis is the lady in charge of that section. Again, if you want to talk to the horse's mouth, that is the place to go. If you go around and get it from two or three different sources, you get a different story from everybody you talk to. So, call the Health Department. They have the latest information.

We don't receive closure and opening notices immediately. The notices have to filter down to us, although that has gotten much better. It used to be they would open an area and we would get the notice a month and a half later. Now we know in advance, but I would say to you, if you have any questions about it, contact the Health Department. You'll get the latest information first hand.

Question: Are there any provisions in the law requiring that the lease be active? Can you lease bottom and then do nothing with it?

Hoerichs: There was a stipulation down in Charles County, or one of those counties, that you had to do something with the ground within three years. That has been removed from the law and there is no stipulation that the ground must be used, no. You can hold it as an investment if you care to.

Question: Do you have to be a county resident of the county that the lease is taken up in?

Hoerichs: No, if you want, you can lease ground over in Somerset County; you don't have to be a resident.

Question: What about the state?

Hoerichs: You have to be a resident of the state of

Maryland, yes. That's the only requirement.

Question: Can you be a corporation?

Hoerichs: You cannot be a corporation. The department cannot lease to a corporation, and it specifically spells that out in the law. No corporation can hold ground. It has to be an individual name.

Question: Does that include fishermen's cooperatives?

Hoerichs: Prior to my coming with the department, there was a Smith Island cooperative that did lease ground. Now I don't know whether that was a special exception. As I say, that was before my time and I really am not sure. But I would think that a cooperative program probably--well, I don't know. That again would be a legal thing that would have to be looked into.

Question: You say that a new lease would have to be checked by the department to see if there are oysters there, if it is a natural oyster bar. How many oysters constitute a natural oyster bar?

Hoerichs: That is a question which must be answered by the Fisheries Administration, and, you know, I won't get into that because that is not my bailiwick. All I do is see that the stakes are in the right place. I don't have anything to do with that.

Financial Assistance Sources: Panel Discussion

Federal Land Bank

John Crowgey
Federal Land Bank

Our first speaker will be Mr. John R. Crowgey, Jr. from The Farm Credit Banks of Baltimore. Mr. Crowgey is a native of Wythe County, Virginia, and a graduate of Virginia Polytechnic Institute and State University. Since joining Farm Credit in 1970, John has served as General Manager of the Southern Maryland Production Credit Association/Federal Land Bank Association of Hughesville, Maryland, and has held numerous positions in the credit division of the Farm Credit Banks headquartered in Baltimore and serving Maryland, Virginia, Delaware, Pennsylvania, West Virginia, and Puerto Rico. His present position is that of Assistant Vice President in the Credit Administration Department.

For those of you not knowing where Wythe County is, it is located in the southwestern mountains of Virginia. So my early familiarity with oysters was with "mountain oysters."

My comments today are designed to leave with you some thoughts on the way the Farm Credit System can finance your operation. When you hear the term "Farm Credit" or "Farm Credit System," you should think of three separate institutions, each with its own particular type of financing job:

1. Production Credit Associations exist to provide operating capital, credit for boats and equipment (such as the bottom markers mentioned by our previous speaker), financing for accounts receivable, funds to pay labor and fuel bills, and other credit needs of a similar nature. Any needs of the family may be financed--home furnishings, cars, school tuition for children, etc. The repayment terms for production credit money would be limited by the purpose for which the money is utilized. It can run as much as fifteen years at the outside. Now the fifteen-year limit is new. Many of you may have heard of the seven year limit or the ten-year limit. We recently have been given authority to extend repayment plans to fifteen years in a few specified situations.

2. Bank for Cooperatives: This arm of the Farm Credit System would function if a group of watermen were to form a cooperative for producing or marketing oysters (or any other product for that matter). We would be willing to extend financing to construct facilities, to provide marketing capability by carrying accounts receivable, funding the cost of advertising, and other operating costs. One of the limitations on Bank for Cooperatives financing is that to borrow, a true agricultural cooperative must exist, the cooperative principles being (a) one man, one vote and (b) the benefits accrue to the individuals proportionate to their patronage of the institution.

3. Federal Land Bank System: The objective of this arm of the System is to provide long-term mortgage credit for your homes or the adjacent properties you might be using in your business. Repayment plans run from a minimum of five years to a maximum of forty years.

As far as the constitution of the Farm Credit System--we are not an agency of the Federal Government. We are a cooperative owned and controlled by the farmers and watermen who borrow from us. Money is obtained through the money markets in New York at the prevailing commercial interest rates. Shortly before Christmas, 1978, the Farm Credit Bond issue was traded at the highest price we have ever had to pay for money. Hopefully that will be coming down! Soon! But the rates right now are doing nothing but going up.

Because we are obligated to institutional investors for repayment of the Farm Credit Bonds, credit extended by various institutions within the system must meet sound credit principles. Very briefly, those principles are:

1. Equity: The borrower must have sufficient net worth or equity to cushion himself and his lender in the event unforeseen adversity arises.
2. Management Ability/Repayment Capacity: There must exist, or be projected, an adequate earnings capacity to repay the loan as scheduled. Thus, the borrower must have demonstrated sound management ability. This is a difficult situation when evaluating a new man trying to establish a business. Then the history of management that we look for is: What has he been doing in the past? Has he worked for a waterman? Has he worked for a

farmer (if he happens to be a farm boy)? What is his historically demonstrated ability? How can we project into the future with that? The key factor is that we try to relate the level of credit to management ability. Obviously, if there is no knowledge of that ability, we (or any other lender) are not willing to provide large sums of money, say half a million dollars, as credit to that untried individual.

3. Financial Trend: There should be a sound financial trend over time. If somebody's been an oysterman for thirty years and has two nickels to rub together, he obviously has not been generating, and retaining, a profit in his business. Now he may have been generating a profit, but he's been living it up, and consequently nothing of his own has been retained in the business.
4. Loan Purpose: Are the loan funds to be used for needs--fuel, boat, nets, pots, bottom markers; wants--new car, vacation; or desires--swimming pool, trip around the world? The lender is concerned as to whether the proposed loan adds to the borrower's earning capacity. If not, are other factors, such as equity and present earnings, sufficiently strong to assure orderly repayment of this requested loan?
5. Collateral: It may have surprised all of you, but I saved collateral until the very last. Collateral is relied upon (by a lender) when all other sources of loan repayment fail. No lender is interested in collecting a loan from the sale of collateral. Much of the time our loans are secured, although unsecured

lending is permitted. An exception is Federal Land Bank financing; this requires a first lien on real estate.

Credit judgments are rendered not on absolutes, but on an evaluation of the interrelated strengths and weaknesses of the above factors.

The upper dollar limits on Farm Credit financing are very high; we have loans that run up into the millions. Such loans are not to watermen at this time, but I can see that day coming. However, the fundamental point will remain--such loans must meet the credit standards of the Farm Credit System.

In addition to the basic credit standards, there are certain eligibility criteria which must be met by Farm Credit borrowers. Sometimes the water or oystering part of your business might be so small as to deem you ineligible for Farm Credit financing unless the rest of your business happens to be farming of some type. Then yes, you might be eligible to borrow. One of the bad features of our aquatic financing, our watermen financing, is that charter boat operations do not qualify. That question has come up before and I might as well address it head on.

Employees of watermen do not qualify for our financing solely by virtue of that employment. If you are running an oyster business, have a packing house, and one of your employees wishes to borrow from us, and his employment by you is his only tie to agriculture or aquaculture, then he would not be eligible to borrow. He is not standing a part of the production risk. Production risk is one of the key factors in determining eligibility.

That is a very, very brief overview of the Farm Credit System. I have handouts that list the offices serving the various counties bordering the water in Maryland, Virginia, and Delaware, plus directions for contacting the Bank for Cooperatives should there be interest in forming a cooperative.

Are there any questions?

Question: What interest rate do you charge?

Crowgey: The interest rate is a variable interest rate. That means it can go up or down even after the loan is closed depending on prevailing economic conditions. Right now the mortgage (Federal Land Bank System) rate is 9 percent. It recently was increased from 8 1/2 percent. The short term (Production Credit Associations) rates are ranging from 10 to 10 3/4 percent. The production credit interest rate is set by each local office. The land bank rate is set by the bank in Baltimore and covers a five-state district. The bank for cooperatives' rates: the long term rate is 9 3/4, the short term rate is 10 1/4 percent. Today is one of the few times in history that the short term rate has been higher than the long term rate in the Bank for Cooperatives.

Question: If a man is working for you and receiving a share based on the catch, he would have some risk in the business. Would he be eligible for your financing?

Crowgey: He is receiving a part of the gross income, if I understood the question correctly. This would not constitute eligibility, because he is not standing the expense of running the boat, of maintaining the operation, and thus sharing in the net income. I'm not saying that a partnership could not be formed that might make him eligible. These eligibility questions are very difficult in a general meeting like this. It's a lot easier to discuss a specific case. Any of our offices would be happy to discuss specific cases, or I will be happy to try after the meeting.

Question: Do you want to touch on the stock requirements?

Crowgey: Don reminded me of one thing that I did overlook. Being a cooperative, the Farm Credit System requires that each borrower invest in us. This is what we call a "stock requirement." The borrower (farmer, waterman, cooperative, etc.) then becomes a voting stockholder. The Production Credit Associations and the Federal Land Bank System require no less than a 5 percent and no more than a 10 percent stock purchase. That's a percentage of the gross loan. At a 5 percent requirement (which is the present requirement of all PCA's bordering the water), if you borrow $100,000, the net to you would be $95,000. The stock is your investment--it can, but it is not guaranteed to, pay dividends; but in any event it is returned to you, at par value, when your loans are paid in full.

In the Bank for Cooperatives, the stock requirement is a little different. At the present time, loans under a million dollars require a one-hundred dollar stock investment; while loans in excess of a million require a 5 percent stock investment. So, if a group of watermen were to attempt to structure a cooperative, likely their initial borrowings would be under a million dollars and they would be required to put up only a hundred dollar investment.

Question: Would a young man coming out of high school qualify for a loan?

Crowgey: A young man right out of high school would quality from an eligibility standpoint. The hurdle would be one of credit worthiness or meeting the sound credit principles. For example, does he have the wherewithal to borrow $40,000? Now, if he has been saving through high school and has accumulated $10,000 or $15,000 in just cash, probably he would. I realize that remark is a bit humorous, but quite frankly, it's not impossible. I have personally seen two cases just like that. Two young men who were seniors in high school accumulated $15,000 in cash--

one was 15, the other 18--and they wanted to buy a boat. So it can be done.

A way to overcome the hurdle of credit worthiness is to look for other parties who might assist in providing financial strength--a parent, grandparent, friend, or neighbor. Somebody that would endorse his loan and guarantee to the lending institution that the payments would be made. Quite frankly, the biggest headache we have seen is that young man who comes out of high school, his eyes just starry bright, and wants to borrow a quarter of a million dollars and get into something! And he might have his '51 Ford paid for. So, it's tough. We recognize that. But there are ways of doing it, and a guarantor is one of the best--somebody who will guarantee to the lender that the loan will be paid as scheduled. One of the big reasons that our loans have to meet what we call normal credit standards is we charge a competitive rate, an open market rate, and we pay the open market price for our money. We do not have government subsidies. We don't have that luxury. Commercial banks are the same way. They fit pretty much the same mold we do.

Question: Commercial banks charge a higher rate, don't they?

Crowgey: I wasn't going to say that, but yes, they frequently do.

Question: How is your interest computed?

Crowgey: The interest charge is computed on a daily basis. We do not have add-on or discount interest principles in Farm Credit. The rate is simple interest based on the stated billing rate. Now if the rate changes month to month, because our costs are going higher, then a borrower will pay the increased

rate for the next month. Is that clear? If the rate was 8 percent in December, a borrower would pay 8 percent (on a daily basis) which factors to a decimal about nine digits long! But he would pay the 8 percent for December. If the rate then went to 10 percent in January, for the month of January each borrower would pay 10 percent. Again, the rate is factored on a daily basis, not 10 percent per day.

Question: What happens when the rate goes down?

Crowgey: Your rate goes down. One of the best ways to characterize the Farm Credit System is a very brief statement that comes from the objectives in our charter: "It is our objective to provide sound constructive credit to farmers, watermen, and their cooperatives, at the lowest cost possible, consistent with sound business practices in the prevailing economic conditions." If the rate goes up, you've got to go with us; if it comes down, we're coming down as fast as we can.

Farmers Home Administration

William Whalmsley
Farmers Home Administration

Our next speaker is Mr. William Whalmsley from the Farmers Home Administration. I had occasion to deal with FmHA during the freeze up in the winter of '77, looking for some loans for oyster planters who had been hurt during the freeze. One of the problems that we did run into at that time was that we did not have the type of information that we asked you for on those forms today. We had no profile of the oyster planter in the state of Maryland. Mr. Whalmsley has asked that when we make a compilation that we give him a copy, and I'd be more than happy to provide that. I am going to turn the program over to Mr. William B. Whalmsley who is a program specialist with the Farmers Home Administration.

Thank you for the opportunity to come and speak to you today. Heretofore, the Farmer's Home Administration has not been involved with oyster loans, except during tropical storm Agnes when we did make some emergency loans. Personally, I have never had any involvement with them. However, when Don asked me to speak, I went through a file in our state office that is about three inches thick, and I found a letter from the Administrator with some new procedures adopted about a month ago. All of it seemed

to come together and is very timely for this meeting today.

We can now help oyster planters, people who have leases, with operating-type credit. To be eligible, one of the main things is you have to be unable to get credit elsewhere at rates and terms you can afford for similar purposes and periods of time. For example, if you can't get any credit from the Federal Land Bank, if Mr. Crowgey won't make you a loan, then you come see me. I might not do it either, but it's worth a try. You've got to be a citizen and you have to have managerial experience. We have kicked this around a little bit, and we feel that if you're oyster planting, you are going to have to have some oyster planting experience. In other words, maybe you work for somebody, maybe you worked with your daddy or something like that. I'm not saying you have to work for your daddy; you might work better for somebody else. But you have to have some practical experience. And you would have to show that you can pay the loan back. We're the government, but these are loans--they are not grants.

Okay, the rates and the terms. The rate is 8 1/2 percent and the term can be up to seven years. Depending on the situation, maybe we'll even go seven more, but we'll cross that bridge when we come to it. On this oyster planting, I talked with a young man this morning and he told me it takes a couple years to get things started. We can set up your repayment schedule so that maybe you would only have interest coming back the first year and then the following year you would have some money coming back.

Who can we help? You are going to have to lease the beds--own or lease the beds. I think in the state of Maryland this means lease, because you can't own any of the bottom as far as I know. And you're going to have to farm these beds. That means you are going to have to plant them, you are going to have to cultivate them, and you are going to have to harvest

them. Okay, you can't lease this ground and then get John Smith to go out there and do the work for you. You're going to have to do it yourself, just like the farmer plants his corn and combines it. This is what we're looking at. If you are involved in a packing house situation, we probably will not be able to help you with our operating loans because we're talking about a guy who is farming--you might say farming the Bay, or farming the river, or farming that acreage under the water.

The packer is a businessman; we have a program that can help him. It is called our Business and Industry Guaranteed Loan Program. I'm not in that division, but a packer can get a guarantee for a bank loan from this particular division of the FmHA. I am not going into that today. I am going into what we are involved in today. If a person owns or leases these beds and he needs money to buy a boat, pay for the lease, put the spat or the oyster shells down, cultivate his oysters, interest, refinancing debts, anything like this--and he is the operator--then this is what we can get involved with.

Our offices are located in every county seat on the Eastern Shore with the exception of Talbot County, where you would have to go to Denton. If you are in Southern Maryland, they are in Leonardtown, LaPlata and Prince Frederick. Anne Arundel county is handled out of Prince Frederick. I think that covers about all the Bay and all the rivers. If there is some place I missed, please bring it to my attention and I'll tell you where you can go to get help.

We still have the emergency loan program, such as we had back during Agnes, and if there were another natural disaster, this program would come into effect. But right now, we have a direct loan program for operating purposes, production purposes. It charges 8 1/2 percent interest, with a limit up to $100,000. We will help young people get started; we'll help

limited resource people get started. But they are going to have to have a little bit of experience and they are going to have to show that their plan is feasible and will provide them with enough to pay off the loan and give them a decent standard of living.

I think the best thing I can do now is open up for some questions.

Question: That sounds like a unique position among this group! Have you people ever heard of an oyster hatchery?

Whalmsley: Have we heard of an oyster hatchery? I think we have. I am not familiar with it. I have heard some rumors.

Question: You are the only one in the organization that I've ever found that has. Please tell the rest of them, we do exist and sometimes we need money too.

Whalmsley: Well, if you have an oyster hatchery and this is recognized as a system of farming, then we could help you in our division. If it's recognized as a business, then you would have to contact our B & I Division and possibly get a guaranteed bank loan, sir.

Question: Up to now have oyster hatcheries been recognized as anything to anybody?

Whalmsley: Well, as soon as you get recognized, you come see me. I'll give you a little insight on that. At the FmHA, we're not against getting involved in new things--in the state of Delaware, about twelve months ago, we made two young men loans for worm farms--wormiculture is the fancy word. Well, right now we have two bags of worms, because we can't sell them. But we will try to get involved and help people out. If it's a feasible plan and we don't know anything about

it on a local level, we'll go to Washington to the powers that be and see what they have to say about it. If you have some questions, ask us. If the people in the local county offices cannot answer your questions, please ask them to contact the state offices and we'll look into it. We are here to help you out of your financial problems, if we can. Sometimes you get so far in, we can't help you out.

We are here to help people get started in some systems of farming, and aquaculture is a system of farming--as long as the waters are controlled. This is what you've got to remember. You have to lease the land and it has to be controlled. Any other questions?

Question: I haven't heard you mention collateral yet.

Whalmsley: Okay. Let's say you lease some beds out here and we make a loan for a boat. Say the boat costs $5,000--I don't know what a boat costs. Then that boat would have to be the collateral for the loan. In other words, I am not going to make you a loan on just your signature; you're going to have to have something to back it up. If we made a loan to a guy just to buy a lease, then we would look at the lease as collateral. In some cases of farming, we can make a loan to buy seed and the fertilizer and look to the crop as collateral. Theoretically, we could make a loan for a guy to buy, I think it is called spat, or oyster shells, and look to the crop as collateral. I hope we don't get into too many of those situations, because I don't know anything about scuba diving or tonging. But theoretically we could do it. And I see that this may be a coming thing, and we can get involved. The law was just passed a couple of months ago so we can get involved.

I have made a couple of jokes up here, but we are taking this thing seriously. I'm not trying to make

light of it, because it is a serious situation. We would like to get involved in a serious frame of mind.

Small Business Administration

Vernon Barford
Small Business Administration

The next gentleman on the program has been on many of the programs we've run around the Bay in the past. Mr. Vernon Barford is a senior loan officer with the U.S. Small Business Administration, located in Towson.

After hearing the previous two gentlemen talk about the vast services they offer, I wonder why Don Webster invited the poor little Small Business Administration here. In any event, basically, the factors that these previous two speakers covered apply to the Small Business Administration. For those who are not aware, let me just give you a few statistics on SBA. It is an independent federal agency, which I understand some people in Congress are trying to abolish or merge with some other agency. It's been in existence for twenty-five odd years.

SBA has regional offices in each state, and of course more than one in the larger states. The SBA office in Maryland is in Baltimore County, in Towson. We serve businesses throughout the state. I might mention, first of all, that the Small Business Administration for the past ten or twelve years has been deemphasizing direct lending, unlike the programs outlined by the prior two individuals. The emphasis

over the past ten years has been toward the so-called "bank participation program," meaning that if the local bank in your area is willing to sponsor the loan, but it does not meet the bank's guidelines, or state or national banking guidelines, but is still an acceptable loan, the bank can then ask SBA to guarantee the loan.

So, in most of the loans over the past few years, SBA has just been the third party--the guarantor of the loan. This has been very successful. Last fiscal year there were over 30 million dollars issued in guarantees throughout the state. I'll mention collateral, as I have heard one or two questions about this. SBA's position on collateral is that what is available is expected to be pledged. These are business loans--to a proprietor, a partnership, or a corporation. They must be organized to make a profit, however. We are looking for the same things that any bank loan officer would look for: reasonable repayment of loans, apparent good management ability, and probably the next important factor is that the owner or owners must have a reasonable amount at stake in the business--another way of saying that there is no 100 percent financing.

I noticed Mr. Whalmsley mentioned the fact that he didn't know anything about the oyster business. Nor do I. I am on the financial end. What I need to know I'll find out when the occasion arises. At this point, before I get too far off base, let me see if there's any interest--does anyone have any observations or questions at this point?

Question: What is the maximum bank rate that you guarantee?

Barford: That's a good point. In the bank participation program it varies upon the money market, or more precisely, the so-called New York prime rate. I

noticed in the Wall Street Journal the other day that the New York prime rate is 11 3/4 percent. So 11 1/4 percent is high. That is what money costs today. If SBA attempted to peg it at a lower rate, saying, okay, we'll guarantee it Mr. Banker, but you can't charge more than 8 percent, there would be no loans made with SBA's guarantee. So SBA's maximum allowable interest that the bank can charge does float with whatever the money market is, and it's been going up for the past number of months.

Maturities on the SBA guaranteed loans can be ten years. In the case of purchase of real property or construction, they can go to twenty years. Normally, working capital loans are for five to six years and, once again, the bank makes the determination as to the maturity of the loan. Of course, there are always exceptions. SBA's policy, credit policy, is much more liberal than the bank's would be. If the borrower has a marginal type credit, but the SBA feels that the loan can be successful, it guarantees the loan for the benefit of the banks. This is the typical situation that SBA gets in.

Question: How about SBA direct loans? Why don't they have direct loans now?

Barford: Well, this is not really in our control. It is alloted yearly in the federal budget. For the past number of years it's been pretty well pegged at 40 million a year. So 40-odd million a year in direct loans for the entire country doesn't amount to much. So, with this limitation, successive administrations have urged use of the bank participation programs using the bank's money, with the federal guarantee on the loans to stimulate the banks to make loans.

The SBA is not in competition with banks. That was never Congress's intent--it was intended only to make those loans that the bank wouldn't make because

the collateral was real thin or the business was showing minimal profits over the past few years. SBA is really just to bolster the bank's making loans that they would ordinarily turn away. That is not to say that there are no direct loans made. SBA has been making direct loans over the past few years--during the past two successive Bay freeze-ups and after tropical storm Agnes--so-called disaster loans. This comes out of a different appropriation authorized by Congress. So there are many so-called direct disaster loans on our books.

Processing and Marketing

Processing Modernization

Robert Prier
Chesapeake Bay Seafood Industries Association

The next segment of our program today will deal with processing and marketing of the product. The first speaker is, I'm sure, familiar to all of you. Mr. Bob Prier has had a long involvement with the food industries and is today the Executive Director of the Chesapeake Bay Seafood Industries Association.

Every year I hear packers say this will probably be their last year in business because of the high prices that they have to pay for everything they use, and the more or less stable price they receive for their finished product. Yet next year they are generally back at the stand, giving it one final year. Yes, I do have mixed emotions when I hear and see these things, and I have said the industry must mechanize to survive.

If only to be the devil's advocate, I shall go on saying the oyster industry must mechanize and modernize--at least a part of the industry must. When I say a part of the industry must modernize, I want to make it perfectly clear that never in my wildest dreams did I ever foresee every small shucking house suddenly changing--because there will always be a need for that small processor and his delicious fresh product.

But as we look around us today in the year of 1979, we see a few seafood processors who have grown by leaps and bounds because they are producing a product that fits in with the 1979 mode of living. These companies produce products that the younger generation is attuned to, without having been influenced by the product in its natural state. More than likely, they have never even seen it in its natural form, much less eaten it that way.

We have around 230 million people in the United States and the total production of oysters for 1977 was 46 million pounds--an average per capita of 3.2 ounces. We have another 19 million pounds imported, which amounts to about 1.25 ounces per capita. Well, the grand total per capita is 4.5 ounces. Compare this to 180 pounds per capita for beef and pork, 70 pounds for poultry, and 12 pounds for fish. Obviously, there are a lot of Americans who do not eat oysters. Therefore it seems that out there lies a tremendous potential, if we have the right product, if we promote it properly, and if it's really wanted. This brings me back to the title of this little address: "Proccessing Modernization." It seems to me if some of our industry is to modernize, change products to forms that seem to please the palate of the 1979 eater, then why not start at ground zero, and try to find equipment that will ease the shucking problem, even if the semi-processed product varies slightly from the fresh product we see coming from the shucker's knife.

In my world of make-believe this product is going to be processed further anyway. Therefore, the completely fresh stage isn't necessary. To begin to accomplish this drean then, we have to start with the potential right here in the state of Maryland--without shucker restraints, with good management practices and improved techniques--to process whatever Mother Nature can cause to grow in Maryland waters.

Yes, this is a change from the way we do business today.

Yes, some few people may have to adjust. Some may proceed as if nothing had happened--hopefully so, anyway. But to be able to process, package and market that which is grown and harvested in our waters could mean an additional $15 million a year to the state's economy--a figure almost equal to the landed value of all Maryland oysters for a year.

As I have mentioned previously, there are those who forecast doom and gloom for the oyster industry of Maryland. I see just the opposite, if we really want it to happen. I see better management of our public beds, better use of barren bottoms, new growing methods, genetically improved seed, predator control, environment improvement, an enlightened industry, a better industry-agency relationship--all totaling a justification for modernization.

I see modern methods in some processing plants that take an oyster from the harvester, wash it, remove the meat from the shell, send the meat to a sanitizing station, to a further processing station into a package, and into storage on a continuous basis--fresh from the water, only hours old, to a state of preservation that will retain that freshness for the consumer.

No, this is not an impossible dream. Other products are handled this way daily--some as difficult as the oyster. Milk is taken from the cow, pasteurized, and packaged, never having been touched by human hands. Surf clams are processed on a continuous basis. Peas and beans are planted, harvested, shelled, processed, and packaged without being touched by human hands. On the other hand--and this is why I said in the beginning I am confused about predicting the future of the oyster industry--if we do not find better ways to recruit new spat set, improve breeding, ways to

increase oyster population in general, and to improve processing, packaging and marketing methods, then in my opinion modernization is not warranted.

So there you have it. Given an average spat set, good management practices, new techniques, continued water quality improvement, a new focus on processing, packaging and marketing, then modernization is warranted. Given a continued decline in natural spat set, no new techniques, water quality degradation, no effort to change current practices in both growing and processing, then again, in my opinion modernization is not warranted. Therefore, to warrant modernization--expansion and economic improvement according to my criteria--the industry and the state must have faith that there is indeed a better future for the oyster industry.

The industry must invest its time, energy and above all, its money, together with the state, with the state's knowledge and economic assistance, to bring about the reaping of the tremendous potential the waters of Maryland are capable of producing. To do less, in my opinion, is to allow one of the greatest natural assets that this state and the country has ever been blessed with to idle in mediocrity when it could speed forward into greatness.

Today, more than ever before, we are blessed not only with this great natural resource, but also with a great pool of talented people who could bring forth the greatness I have envisioned for our oyster industry, if they could be fused into a single channel of creativity. I have faith that this will happen. Therefore, my faith in the future of the oyster industry shines on untarnished. Without a positive view toward greatly expanded potential for processing and marketing, all other efforts would go for naught. So let's get on with the task at hand and bring the future into the present.

Future Processing

Jarvis Cain
Department of Agricultural and Resource Economics

Next speaker on our program is a resource economist from the University of Maryland, Department of Agricultural and Resource Economics, and I present him too as my friend.

I have two things in mind with my time and they are, first of all, to get you to look outside and second of all, to get you to look ahead a little bit, because George Allen notwithstanding, the future is not now, the future is coming. It is coming very rapidly. You are planning to make some very large investments in time, technology, people and facilities. Yet, if you consider now, you are considering only one very simple aspect of the problem. If you plan to build a facility that will last for thirty years, based on some semblance of now, you have to remember that some of you may not even be here in thirty years, let alone in a few years.

This is practicing a word called empathy. Empathy. What is empathy, he said rhetorically? Empathy is standing in the other person's shoes, trying to see from the other person's point of view. That's what I want you to do for a minute. You have been looking from your own point of view for some considerable years, it seems. Now what I want you to do is look

at your industry, at yourself, at your product from the point of view of this person and/or persons who consume those products. I'm the guy who always runs down to the other end of the pipe and looks in. Everybody looks at one end, guess who's down at the other end--number one, right here. I want you to come with me and do that, if you will, for a few minutes.

Now, we have talked about a lot today, and we have heard learned discussions regarding survival of the industry. Will the Chesapeake Bay oyster industry survive? There are a series of technological, economic, legal, bureaucratic, and other problems that one must survive to allow any industry to perpetuate itself over a series of years. Let me ask another question, and I'll spend the rest of the time on this particular question--should the Chesapeake Bay oyster industry survive?

What is the justification for the survival of such industries? Now, before you get mad (I'm glad they took away the beer bottles, so you won't throw them at me), think about this for a minute--what utilities, as an economist talks about, are you providing to your customer, the consumers of your product? Think about that for a few minutes. We've always had oystering and we always will, right? They are good for you, and boy, you better eat them. Right?

Audience: They are tasty.

Sure they are; so are a lot of other things. Right? Aha. I still love you, but let's talk about it. At times it is useful, if not even kind of fun for a person to imagine a world without whatever it is that he is trying to think about. What would the world be like, pray tell, or perish the thought, if there were no oysters? Seriously, think with me for a moment. What would the world be like without our treasured oyster? What would we be missing?

I'm looking at the boss--he's saying that's good, that's good, you're right. I'm not sure whether he is shaking his head, wondering why the hell did I hire that guy in the first place, or maybe it's a reasonable question. What is the essence of an oyster? What do you tell him? You ever think about that? Gosh, I got your attention anyway, didn't I. Yeah, you're selling what? Think about this. I'm very serious.

You are selling some protein, aren't you? So do cow fellows, so do hog fellows, so do chicken fellows. Right? So do the egg fellows, so do the soybean fellows, so are a lot of other people. What else are you selling? A shell? What else?

Audience: A way of life?

Yeah, you give me that and a quarter and I'll buy you a cup of coffee. I don't give a damn about your way of life. I am a consumer.

Audience: Love longer.

Ahhh. Bless your heart. I knew somebody'd get around to that. Can't be all bad.

Audience: Taste.

Surely, the man said taste.

Audience: It's cheaper than meat.

Gosh, I haven't got my home economist here. Where is my home economist? Is that true? No damn way. Pound for pound? Are you sure?

Audience: Buying it from the catcher.

Ahh. I don't buy it from the catcher, madam, I buy it from the supermarket, thank you very much. And they do a hell of a lousy job with your product, by the way. How many have bought oysters in the supermarket in the last six months? Huh? Am I right?

Audience: Three dollars and something in a pint?

Where did you find them? In a back room, underneath of somewhere in a little bucket of ice? Sure.

Audience: Enough for three.

Enough for me--one. I like the things. Don't argue with me. I'm just trying to get you to think about something.

What else have we got in this oyster that we're trying to sell to somebody? We've got some protein. We've got some flavor, a way of life, some love making, what else? Water? What percent of an oyster is water? About 90 some percent. Yeah, we are about equal, aren't we? You're not selling lettuce, that's 99.4, right? What else are you selling?

Audience: Calories. Low calories.

If we get all the sauce and all the goodies to go with it, then it is not so low calorie, is it? The only problem, when I sit down with a plate of oysters, is I've got to have at least one pitcher of beer.

Audience: No wonder you don't enjoy the oysters.

No, I enjoy them very much, thank you. Beer helps them. It enhances the flavor.

One of the things that most production groups, in fact I should say all production groups, tend to do is presume that what it is that they are growing,

harvesting, dredging up from the bottom or whatever, is of inestimable value and somebody is standing in line to buy the damn stuff. No disrespect intended. I love your product very much. However, one of the things that I see when I review data on trends in the industry (which I have done in a very limited way) is decline in production in this area. Decline in production--I'm using the wrong word, you will excuse me. Decline in production, nationally. I see a very large increase in imports.

And I see that consumption is essentially a static figure over the last seventeen years or so of data that I looked at. What does that say? Well, I'm not sure what it says to you, but I know what it says to me. It says, first of all, there is a demand. A fairly constant demand. For one of a number of reasons, it also says that certain areas of the country are not meeting that demand. Maybe it is because they cannot; maybe it is because they will not. I don't know the answer to that. I'm not sure that you do. There may be many reasons why one area increases and one area decreases.

In looking through some of these statistics, I noted that last year we imported 9 million pounds of oysters from Korea. I spent eight months there recently.

Audience: Theirs aren't as good as ours.

Oh no, they're delicious. What am I saying? What's your competition? What are they doing? Why are they coming in here so fast?

Audience: Cheaper to buy, I guess.

Oh, yeah. You see, I don't really care about your way of life that is getting so awfully expensive in Maryland. The average daily wage in Korea happens to be somewhere in the neighborhood of about 5,000 won which sounds like a lot of money, but that is about

$10. And that is up an awful lot from the last five years. These beggars are aggressive, and they are hungry. To me that says they are taking advantage of something. They are sending the product here. What is the answer to that? Obvious! Legislate. Tariff barriers. Keep them all out. That'll solve the problem. Right? Ah...of course not.

Question: Why not tariffs?

That is one approach. Historically, unfortunately, it has been unsuccessful in all commodity situations. I would much rather have us spend the energy that one might spend developing prohibitive legislation on some constructive efforts to rebuild and/or reconstruct an industry so that it can better meet the needs and desires of its customers, as opposed to perpetuating the bureaucracy and the institutions that we have which are essentially not doing the job, it seems. Huh? If these statistics are true--and why NOAA (the National Oceanic and Atmospheric Administration) would lie to us I don't know--then is it not true that somebody is doing the job better than we are? I don't know. Especially at three o'clock in the afternoon, after a nice lunch. But think about that.

"Course it's obviously not me that is the problem, but somebody else. It's the other guy." We've been arguing about this this morning too, haven't we? Oh, yeah. As Pogo once said, "We have seen the enemy and he is us." Now. I've got some of you mad, and some of you interested, and some of you I'm not sure whether you are bored or disinterested.

But let's go one more step here. Let's stretch this thing out just a little bit. A few years. Let's try to figure out what it is that this market is going to want. Let's pick a nice comfortable year, in the year 2000--that's a very sexy one. There is all kinds

of stuff written about that these days. Everybody and his brother wants to project our life in the year 2000. Let's try to do two things. Let's try to think about what this market might want, and let's try to think specifically what place, if any, the oyster might have in this particular market in the year 2000. Isn't that what you all will be thinking about.

Let's think about it. What is happening, what has been happening, and what will happen regarding the way that we as a country feed ourselves over the very short course of the next twenty-two years? And what place, if any, will the oyster have in that particular scheme of things? What are we? We are a society on wheels, are we not? Are we going to be on wheels twenty-two years from now? Humph? Are we going to be on the same wheels?

Audience: Smaller.

Yes. We're going to need to dig up a lot of something to propel us.

Audience: Solar power.

Yes. You know the size of a solar collector? You're going to put that on your car? Oh, technology will solve everything. That is why we've got all the problems we have today. Goodness knows. Infinite faith in technology.

Yes. What else? What are you going to be eating in the year 2000? Besides oysters. And don't tell me that. Same stuff? Same basic nutritional elements, are we not? But if we eat the same fried stuff for thirty years, we are going to have hardening of the arteries so bad no one is going to be able to move, right? Hun? What about it? It is my understanding that a great portion of the oysters that are harvested

in this particular area are sold in what I would call a fresh market. You may call it whatever you choose to call it--but on the half-shell, which I dearly love. Now talk to me about shipment of oysters, oyster shells, ice, bags, cartons over long distances when petroleum is $2 a gallon. Talk to me about that.

Audience: Who would have thought that gasoline would be 70¢ a gallon when it used to be only 9¢.

Are you willing to pay that cost? I don't know. One of my weaknesses, or one of my strengths I suppose, is that I love embarrassing questions; and one of my weaknesses is, I don't have answers for most of them. But I keep asking. Maybe someday I will find the answers to these particular questions. Yes. I don't intend to stop, thank you very much. It is my stock and trade--asking those kinds of questions.

I note that suggestion number nine of the MORE Task Force is that what we should do is have somebody get up more convenience foods that have oysters in them. Is that correct? Did I hear that? Somewhere? Yes. What about that? Is that OK? What does that do? It does one very simple thing, doesn't it. It is burdening the future with the past. Oh, gosh. We're taking what it is that we are eating today that we call convenience foods and we're saying to the people of the future, what you have to do is have more of what we've got. Now, please note, I did not say that we should not experiment in new uses for this particular product which we all know and love. I did not say that. Quite the contrary. What I did say was, don't burden me twenty-two years from now with what it is I already have. I may want something else. And don't get all geared up with a huge business organization of facilities and people and technologies to produce something that I am not going to want twenty-

two years from now? Right? I don't know. I'll be quite frank with you. Nobody knows. But what I want you to do is think--look before you leap. Be certain of most of the consequences. Find out all the implications you can of a decision before you make it.

If, as some people think, in this never-never land of 2000 we are to feed ourselves not as we do now, not in terms of picking up a bunch of commodities and putting them together, but by use of some kind of a meal arrangement where we have instant meals, then that is a hell of a leap, isn't it, from where we are now to where we might be? Just look in your average supermarket. How many combinations exist there? There are infinite possibilities for this industry as well as all the others you compete with. Your future can be as varied as your imagination. Just put it to work.

Appendices

APPENDIX I

QUESTIONNAIRE RESULTS

Profile of Current Operations:

1. Number of acres of bottom you lease or control by contract:

Acres	Percent
1-5	15.6
10-25	28.1
25-50	15.6
50-100	34.4
100	6.3

2. Number of years you have farmed your lease:

Years	Percent
1-5	39.4
6-10	18.2
11-15	6.1
15	36.4

3. Bottom type?

	Percent
Soft mud	29.8
Shell over mud	38.6
Clay	5.3
Hard sand	24.6
Oyster rock	1.8

4. a. Do you need to plant shell to support seed oysters?

	Percent
Yes	85.7
No	14.3

b. Approximate bushels of shell per acre:

	Percent
100-400	33.3
500-900	18.5

1000-1500	22.2
1500	25.9

5. Amount of seed (in bushels) you have planted per acre (assume 1000 spat/bushel):

	Percent
100	4.8
100-250	19.0
250-500	23.8
500-750	14.3
750-1000	23.8
1000-1500	9.5
1500	4.8

6. Production (bushels) from an acre at harvest:

	Percent
50	16.7
50-100	33.3
100-500	37.5
500-1000	4.2
1000-1500	4.2
1500	4.2

7. Number years from seed planting to harvest:

	Percent
1	0.0
2	16.7
3	50.0
4	23.3
5	10.0
5	0.0

8. a. How do you harvest the lease?

	Percent
self	54.5
hired	45.5

b. Gear type?

	Percent
tongs	51.4
patent tongs	2.7
hydraulic clam dredge	5.4
power dredge (landscape)	40.5
sell on bottom to other	0.0

9. How do you market?

	Percent
own company	29.4
packer/processor	44.1
buyer	23.5
direct sale to public	2.9

10. What has been the frequency of natural spat fall on your lease in the past 10 years?

	Percent
none	22.2
1-2	18.5
3-5	29.6
5-7	18.5
every year	11.1

11. What are the major constraints encountered in the operation of your lease?

	Percent
seed source	27.1
poaching	17.6
capital	16.5
pollution	12.9
mortality	10.6
bottom type	9.4
poor growth	3.5
market price	2.4
market availability	0.0

Future Development:

12. Assume you will operate your lease continuously starting next year.

    a. How many bushels of seed (1000 spat/bushel) would you plant next year?

RANGE	0-50,000 bu.
MEAN	6,217.86
DEVIATION	10,933.83
TOTAL	174,100.00

    b. Each following year

RANGE	0-50,000
MEAN	6,445.24
DEVIATION	11,601.46
TOTAL	135,350.00

13. If financial assistance was made available to support your aquaculture efforts, how much financial support would you need?

	Percent
$1,000	10.7
1-5,000	10.7
5-10,000	25.0
20-50,000	39.3
50-100,000	14.3

14. If legislative action permitted acquisition of more leased bottom, how much new bottom would you wish to acquire?

RANGE	0-600
MEAN	64.41
DEVIATION	106.50
TOTAL	1739.00

15. Would you be financially able to farm this lease if shell was available at $.60/bushel and 1000-count seed at $3.50/bushel?

	Percent
Yes	81.5
No	18.5

16. Assume that annual oyster lease rates are to be increased to assist with the development of the industry, what is the maximum that you would be able to pay per acre for your present lease?

	Percent
$4	66.7
$10	25.0
$20	8.3
$50	0.0
$100	0.0
$200	0.0
$500	0.0

17. Is your lease in waters closed to shellfish harvest?

	Percent
Yes	36.4
No	63.6

If so, do you have a lease in "clean" waters for depuration prior to marketing?

	Percent
Yes	85.7
No	14.3

Future Programs:

18. Would you attend future programs on acquaculture?

	Percent
Yes	100
No	0

19. What topics would you be interested in?

	Percent
hatchery operations	21.4
water quality	17.9
business management	14.5
harvesting	14.5
marketing	13.7
diseases	12.8
law enforcement	2.6
bottom preparation	.9
legislation	.9
venture capital	.9

20. Should future programs be located

	Percent
centrally	65.5
locally	34.5
Anne Arundel	33.3
Dorchester	22.2
Wicomico	22.2
Somerset	11.1
Tidewater	11.1

21. Would you attend a "field day" including hatchery tour, spat growout and planting techniques, and demonstration growout plots?

	Percent
Yes	96.6
No	3.4

22. What would be the best time(s) of the year for you to attend future programs?

	Percent
Anytime	12.7
January	20.0
February	14.5
March	12.7
April	10.9
May	7.3
June	9.1
July	3.6
August	3.6
September	0.0
October	0.0
November	1.8
December	3.6

23. Any additional comments you might have would be appreciated:

"Would like to see shellfish test for oysters instead of general water conditions to determine marketability when lease is held in polluted waters."

"Help to open a small packing house from the state for a small businessman."

"Help to open the St. Mary's River to buy seed oysters."

"Need information for bottom preparation and sources of seeds and shells. Also the

number of bushels of shells per acre needed to support seed."

"How to get ample police protection on privately leased oyster grounds."

"How to get a small supply or adequate supply of shells and seed oysters privately or from the state of Maryland."

"A lease has no value if you cannot protect it and if the state offers no protection. I think that is the main reason leaseholders are producing less."

"The state governor signed SHJR #39, May '78 for leasing in Worcester County, Md. Why has it not been released for applications?"

"Listen to (Economic Development Deputy Secretary) Pate. Have a high level official (help develop the industry with) watermen and industry participation."

"I believe the main problem confronting a leaseholder is pollution. With the Health Department steadily closing ground, we will soon be out of business if something isn't done."

"Good program today. How is (the Bay) bottom survey being conducted?"

"This meeting was very informative (and) much needed."

FINANCIAL ASSISTANCE ORGANIZATIONS

I. Bank for Cooperatives

For those watermen interested in forming an aquatic cooperative for handling, processing, and marketing of aquatic products, the Baltimore Bank for Cooperatives will be pleased to provide advice and direction in establishing and financing an aquatic cooperative. The address is:

Baltimore Bank for Cooperatives
P. O. Box 1555
Baltimore, MD 21203
Telephone: (301) 235-9100
Richard A. Chaffinch, Vice President
John R. Crowgey, Jr., Assistant Vice President
Dallas O. Adams, Assistant Vice President

The Baltimore Bank for Cooperatives services the five state area of Maryland, Virginia, Delaware, West Virginia and Pennsylvania.

II. Regional Federal Land Bank (FLBA)/Production Credit Associations (PCA)

FLBA of Bel Air/Towson PCA (Headquarters)
P. O. Box 648
730 Belair Road
Bel Air, MD 21014
Telephone: 301-879-2550
General Manager: Paul A. Newcomer

Counties Servicing:

Baltimore
Cecil
Harford
Howard

FLBA/PCA of Denton (Headquarters) Box 279 301 Randolph & 3rd Streets Denton, MD 21629 Telephone: 301-479-2323 General Manager: J. B. Jarrell, Jr.	Caroline Dorchester Queen Anne's Talbot
Chestertown (Branch Office) P. O. Box 251 High Street Chestertown, MD 21620 Telephone: 301-778-0757 Asst. Mgr.: Stephen L. Hollenbeck	Kent Northern portion of Queen Anne's
FLBA of Salisbury/Marva PCA (Headquarters) P. O. Box 1658 540 Snow Hill Road Salisbury, MD 21801 Telephone: 301-742-7191 General Manager: Charles W. Nelson, Jr.	Somerset Wicomico Worcester
Exmore (Branch Office) P. O. Box 607 Bank Street Exmore, VA 23350 Telephone: 804-442-6001 Assoc. Mgr.: Joel A. Boren	Accomack, VA Northampton, VA
Southern Maryland FLBA/PCA of Hughesville (Headquarters) Box 97, Route 5 Hughesville, MD 20637 Telephone: 301-274-3167 General Manager: J. Maguire Mattingly, Jr.	Calvert Charles St. Mary's

Upper Marlboro (Branch Office) Box 157 14713 Claggett Bldg. Upper Marlboro, MD 20870 Telephone: 301-627-3595	Anne Arundel Prince George's
FLBA/PCA of Richmond (Headquarters) Box 27485 1417 Brook Road Richmond, Virginia 23261 Telephone: 804-644-2979 General Manager: H. Earl Longest	Charles City Chesterfield Fluvanna Goochland Hanover Henrico James City King William Louisa New Kent City of Newport News Powhatan York
Tappahannock (Branch Office) Farm Credit Building Queen Street Tappahannock, VA 22560 Telephone: 804-443-3351 Asst. Mgr: Maurice E. Carpenter	Caroline Essex Gloucester King George King & Queen Lancaster, Mathews, Middlesex, Northumberland, Richmond Westmoreland
	Counties Served
FLBAPCA of Warrenton (Headquarters) Box 381 516 Fauquier Road Warrenton, Virginia 22186	Fauquier Prince William Rappahannock Spotsylvania

Telephone: 703-347-3344 General Mgr: Tim E. Tarr	Stafford
Leesburg (Branch Office) P. O. Box 1398 Route 15 Leesburg, VA 22075 Telephone: 703-777-3311 Asst. Mgr.: C. Carroll Laycock, Jr.	Fairfax Loudoun
Orange (Branch Office) P. O. Box 267 Main Street Orange, VA 22960 Telephone: 703-672-3644 Asst. Mgr.: Gordon D. Haines	Culpepper Greene Madison Orange
FLBA of Waverly/Southside Virginia PCA (Headquarters) Box 67 Bank Street Waverly, VA 23890 Telephone: 804-834-2274 General Manager: J. Brownley Cox, Jr.	City of Hopewell City of Petersburg Dinwiddie Prince George Surry Sussex
Courtland (Branch Office) P. O. Box 71 Main Street Courtland, VA 23837 Telephone: 804-653-2600 Asst. Mgr.: Robert E. Vinson	Greensville Southampton
Suffolk (Branch Office) 221 W. Constance Road Suffolk, VA 23434 Telephone: 804-539-5481 Asst. Mgr.: Richard A. Davis	City of Chesapeake City of Suffolk City of Va. Beach Isle of Wight

Delaware FLBA/PCA of Dover
(Headquarters) — Kent
P. O. Box 418 — New Castle
South State Street and
U. S. Route 13
Dover, Delaware 19901
Telephone: 302-734-7534
General Manager: J. Wayne Cooper

Georgetown (Branch Office) — Sussex
P. O. Box 570
U. S. Route 113
Georgetown, Delaware 19947
Telephone: 302-856-9081
Assoc. Mgr.: George G. Betton

Farmers Home Administration (FmHA):

Mr. William D. Whalmsley
Farmers Program Specialist
Farmers Home Administration
Rob Scott Building
151 East Chestnut Hill Road
Newark, Delaware 19713
Telephone: (302)-573-6694

U. S. Small Business Administration:

Mr. Vernon Barford
Senior Loan Officer
U. S. Small Business Administration
630 Oxford Building
8600 LaSalle Road
Towson, MD 21204
Telephone: (301) 962-2150

APPENDIX III

PRIVATE OYSTER CULTURE LESSEE RESPONSIBILITY

Natural Resources Article

Subsection

4-1108

(a) Gives D.N.R. authority to lease tracts of land to residents of the state. No corporation or joint stock company may lease or control leased bottom.

(b) D.N.R. cannot lease any new tracts of land in Charles, Dorchester, Kent, Queen Anne's, Somerset and Talbot counties. This section does not affect any existing lease.

(c) Lease may not be granted for any area classified as natural oyster or clam bar or within 150 feet of said bars in tributaries, or 600 ft. of said bars in the Chesapeake Bay.

(d) No lease may be granted for areas smaller or larger than:

Chesapeake Bay	5	acres	to 500	acres
Tangier Sound	1	"	" 100	"
Worcester County	1	"	" 50	"
All other counties	1	"	" 20	"

4-1109

(a) Application for lease must show area desired to lease with detailed description and applicant must mark the area in the river with at lease one stake bearing his name.

(b) $25.00 application fee to cover advertising. D.N.R. will advertise at least once a week for four successive weeks in a newspaper published in every county.

(c) Protest must be filed within 30 days after last advertisement by any 3 or more residents of the state, in the circuit court of the county in which area is located or in the county nearest to the area if area lies in more than one county.

(d) $5.00 recording fee and $20.00 survey fee must be paid before lease is issued.

4-1110

(a) Term of lease is 20 years at $2.00 per acre.

(b) Department may reduce rental fees if it determines that environmental factors are seriously destroying the culture and growth of oysters.

4-1111 - All funds derived from leased bottom goes to the Fisheries Research and Development Fund.

4-1112 - Assignment & transfer - $5.00 fee to transfer

(a) or assign interest.

(b) only to residents of the state. If transferred to a non-resident, the lease is null & void and reverts....

(c) back to the state. Also cannot exceed the maximum acreage allowed or transfer to a company.

4-1113 - Marking of leased land

(a) Lessee shall designate area leased by marking with at least four stakes, buoys or monuments bearing the initials of the lessee. Request for resurveys cost $5.00 for each stake located not to exceed $20.00.

(b) Lessee must exercise reasonable diligence in maintaining buoys, stakes or monuments.

(c) Temporary loss or destruction shall not give any unauthorized person permit to trespass on or remove, destroy or disturb oysters.

(d) In any court action involving an alleged trespasser, the court shall not impose a penalty unless the trespass was intentional and with knowledge that the leased area exists.

4-1114 - Rights of lessees

(a) Leased areas are only for the purpose of planting and cultivating oysters. Residents of the state may fish on all leased bottoms if they do not remove or destroy oysters.

(b) Lessee may take oysters from leased bottom at any time for private use.

(c) Wicomico & Somerset counties (exclusive of Manokin River)--any state resident may catch oysters on leased bottom if he obtains the written permission of the lessee and holds a valid tong license.

(d) Season for catching oysters from leased bottom shall be between sunrise and sunset of any day except Sunday throughout the year.

4-1115

(a) Oysters allowed to be planted--only that species known as *Crassostrea virginica*.

(b) D.N.R. must inspect all imported oysters for planting between May 1 and September 30 to detect the presence of oyster drills, screw borers or their eggs.

4-1116

(a) Lessee may remove oysters in any manner he deems proper if he complies with dredging and tonging laws.

Lessees in Dorchester, Charles (other than Patuxent River), Queen Anne's, Kent counties or in the Manokin River in Somerset County may use only tongs or patent tongs.

Dorchester County waters of Nanticoke River, a dredge may be used also on leased bottom.

(b) $15.00 dredge license required except in Worcester County.

(c) Lessee must keep records and report information to D.N.R. on planting and removal of oysters.

(d) Somerset County - Special license for non-resident for certain areas--$25.00 fee.

4-1117

(a) Power dredging is permitted on leased grounds in the Wicomico and Nanticoke Rivers in Wicomico County.

(b) $15.00 license fee per boat.

(c) Hours to dredge are 7:30 a.m. to 4 p.m. on any day except Sunday. Leaseholders adjoining shall be notified in writing.

(d) Area must be staked at each corner with stakes in between at 100 ft. intervals.

4-1118

(a) A person may not catch, destroy or transfer any oysters from leased bottom without permission.

(b) A person may not remove, alter, or destroy any stake, buoy or monument on any leased oyster bottom.

SENATE JOINT RESOLUTION No. 44

Introduced by: Senators Hall, Miller, Pascal and Bailey

SENATE JOINT RESOLUTION

A Senate Joint Resolution concerning

Submerged Lands - Leasing

FOR the purpose of suggesting the reexamination of laws and regulations relating to leasing of submerged lands under the waters of the State.

WHEREAS, A comprehensive survey of the lands submerged under waters of the State has not been undertaken since 1906; and

WHEREAS, Without extensive revision of existing charts, the exact location of natural bars and barren bottom cannot be determined; and

WHEREAS, ON the basis of the unreliable information contained in these charts, large tracts of submerged lands are leased; and

WHEREAS, The purpose of leasing submerged areas is to redeem barren bottom to create productive shellfish bars through careful management; and

WHEREAS, The leased areas frequently are not managed with the intention to restore the areas and instead the leasing privilege is abused; now, therefore, be it

RESOLVED BY THE GENERAL ASSEMBLY OF MARYLAND, That the Secretary of Natural Resources is requested to prohibit further leasing of submerged areas until a comprehensive survey of the submerged lands can be made to determine the exact location of distinctive natural bars and barren bottom; and be it further

RESOLVED, That the Secretary of Natural Resources is urged to reexamine the existing law under which submerged land is leased and to consider placing upon the applicant a burden of demonstrating the area included is barren bottom and therefore eligible for lease.

APPENDIX V

SENATE JOINT RESOLUTION No. 39

Introduced by: Senator White

SENATE JOINT RESOLUTION

A Senate Joint Resolution concerning

Submerged Lands - Leasing

FOR the purpose of providing an exception to the Secretary of Natural Resources ban on leasing submerged lands in the ocean and coastal bays of Worcester County.

WHEREAS, Resolution No. 44 of the 1974 General Assembly requested the Secretary of Natural Resources to prohibit further leasing of submerged areas until a comprehensive survey of the submerged lands could be made to determine the exact location of distinctive natural bars and barren bottom; and

WHEREAS, The Secretary of Natural Resources implemented that request by prohibiting further leasing; and

WHEREAS, The submerged areas in the Atlantic coastal waters of Worcester County have not had any significant production from natural oyster bars for many years; and

WHEREAS, The private culture of oysters on these submerged bottoms does not conflict with a fishery of the natural oyster bars in those areas as it would in the Chesapeake Bay; now, therefore, be it

RESOLVED BY THE GENERAL ASSEMBLY OF MARYLAND, That the Secretary of Natural Resources is requested to amend his order prohibiting the leasing of submerged areas so that appropriate barren bottoms may be leased for the culture of oysters in the coastal waters of Worcester County.

APPENDIX VI APPLICATION FOR A LEASE

TO THE FISH AND WILDLIFE ADMINISTRATION OF THE STATE OF MARYLAND

THIS APPLICATION MUST BE ACCOMPANIED BY APPLICATION FEE OF $25.00

The application of .....
(Please print full first, middle and last name)

a resident of ....., in the State of Maryland, respectfully shows:
(give complete address)

1st. That this applicant is a resident of Maryland.

2nd. That in accordance with the law, he intends to use the grounds hereinafter described only for the purpose of planting and cultivating oysters or other shellfish.

3rd. That he is the minimum age of eighteen or over.

4th. That he will accept lease subject to all the provisions of Chapter 711, of the Acts of 1906, and amendments thereto, as well as the specific provision that he will release and forever discharge the United States, the State of Maryland, or any political sub-division of the State, its agents, contractors, and assigns from any and all manner of actions and damage, whatsoever, whether in law or in equity, which he, as lessee, hereafter can, shall or may have, or which his heirs, assigns, executors or administrators hereafter can, shall or may have against the United States, the State of Maryland or any political sub-division of the State, its agents, contractors and assigns for, or by reason of, any damage to the oyster bed described below that may be caused, directly or indirectly, from dredging, mining, or any public improvement project as well as subsequent maintenance thereof.

The undersigned, therefore, request hereby, that said Administration lease to ..... in the name and on behalf of the State of Maryland, ... acres of ground, located under the waters of the State of Maryland, which ground is more particularly described as follows, and which I have marked by placing not less than four stakes, one of which bears my name.

to wit:

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

Dated at ....., Maryland, this .....

of ....., in the year one thousand nine hundred and .....

.....
Signature of Applicant - must be same as above

APPENDIX VII

DNR-19:

STATE OF MARYLAND
DEPARTMENT OF NATURAL RESOURCES
TAWES STATE OFFICE BUILDING
ANNAPOLIS, MARYLAND 21401

Recording Fee: $ 5.00

Transfer of Leased Land

PART I

(To be completed by Assignor)

For value received, I hereby ASSIGN AND TRANSFER

to _____ of _____
Maryland, all my right, title, claim, interest and estate in the within lease and of the oyster lot therein mentioned to wit:

_____

_____

_____

_____

Recorded in Liber_____ Folio _____
Witness my hand and seal this _____ day of _____ _____in the year 19_____

_____ _____
(Witness) (Signature of Lessee)

_____ _____

PART II

(To be completed by Assignee)

The undersigned hereby accepts the above mentioned Lease, subject to all provisions of Chapter 711 of the Acts of 1906 and the amendments thereto, as well as the specific provision that he will release and forever discharge the United States, the State of Maryland, or any political sub-division of the State, its agents, contractors, and assigns from any and all manner of actions and damage, whatsoever, whether in law or in equity, which he, as lessee, hereafter can, shall or may have, or which his heirs, assigns, executors, or administrators hereafter can, shall or may have against the United States, the State of Maryland or any political sub-division of the State, its agents, contractors and assigns for, or by reason of, any damage to the oyster bed described below that may be caused, directly or indirectly, from dredging, mining, or any public improvement project as well as subsequent maintenance thereof. And, in accordance with the opinion of the Attorney General that a minor must be of minimum age of eighteen to obtain valid title to oyster ground lease, I hereby swear that as of this date I am eighteen years of age or over.

_____
Signature - full first, middle and last name.

Date: _____19 _____

This assignment form must be completed in duplicate and forwarded to the Department of Natural Resources, together with the old lease and recording fee of $5.00, for recording in order for such transfer to become valid.

STATE OF MARYLAND
DEPARTMENT OF NATURAL RESOURCES

PRIVATE OYSTER GROUND CONSOLIDATION FORM

I/WE _____ of

_____ Maryland _____ do herewith release

to the State of Maryland, Department of Natural Resources, the following

described private oyster lease which is located in _____,
(water body)

_____, and consists of _____ acres and further is
(county)

identified by the Department of Natural Resources identification number _____

for the purpose of consolidating this lease into a larger lease.

This existing lease being retired and combined for renewal under

the name/s of _____,

_____,
(mailing address & zip code)

and containing _____ acres to be combined as required by the Department of

Natural Resources.

It is requested that the above described lease be combined with

the lease of _____ acres and further identified by the Department of

Natural Resources number _____ to form a new lease of _____ (total) acres.

_____ _____
Signature/s of Consolidated Lessee Date

_____ _____
Signature/s of Original Lessee Date

Fees: Recording $5.00
Resurvey $20.00 (when requested)