SHELLFISH CULTURE FORUM: INDUSTRY ISSUES

An Annual Evaluation

March 10, 2003

Nassawadox, Virginia

Virginia Sea Grant Marine Advisory Program
Virginia Institute of Marine Science
College of William and Mary
Gloucester Point, Virginia

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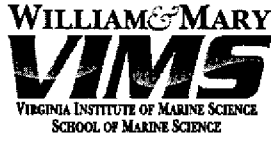

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On Monday, March 10, 2003, approximately 40 shellfish growers gathered in Nassawadox on Virginia's Eastern Shore for a Shellfish Culture Forum. Sponsored by the Virginia Institute of Marine Science (VIMS) and the Virginia Sea Grant College Program (VSGCP), the forum was intended to provide shellfish culturists updates on a wide range of issues that could impact their industry. Additionally, the forum provides a means for shellfish culturists to express their opinions and exchange their views with others in the industry, as well as propose other topics for future discussion or research.

Virginia's finest designation for cultured clams

Mr. Butch Nottingham from the Virginia Department of Agriculture and Consumer Services (VDACS) began the evening's discussions with an explanation of the Virginia's Finest trademark program. The Virginia's Finest trademark program provides a marketing opportunity for Virginia's agricultural producers, processors and associated industries. The program's purpose is to identify, differentiate and promote top quality Virginia products, with a stated goal to maximize the economic return to Virginia producers. The strength of the program is based on credibility and assurance of consistent quality products in the marketplace.

Mr. Nottingham further explained that the program is request driven and that any quality standards developed are done so with direct input from the representative industry. Such a request was made to VDACS by members of the hard clam culture industry to develop a Virginia's Finest designation for aquaculture clams. Over the past year or so, VDACS has worked with clam farmers and academia to develop a set of quality standards for hard clams. These standards have been accepted into the Virginia's Finest program and hard clam farmers can now make application to VDACS to utilize the trademark in their marketing programs. Copies of the quality standards were distributed to those in attendance. Any questions concerning the Virginia's Finest Quality Standards of Aquaculture Clams or how to participate in the program should be directed to: Director, Division of Marketing, VDACS, P.O. Box 1163, Richmond, VA 23218 (804-786-3530).

Hard clam breeding project

Dr. Mark Camara of the Aquaculture Genetics and Breeding Technology Center (ABC) at VIMS described the ongoing hard clam breeding project. The breeding project was initiated in 1998 and could be described as a three-phase effort. The first phase was a descriptive period in which current breeding efforts by the industry were characterized and evaluations were made about future directions. The second (current) phase is the genetic period, when different crosses are being made between various lines of clams in an attempt to identify those "strains" that are best suited for Virginia growing conditions, to assess the genetic resources available for selective breeding, and to determine the extent to which genetic correlations and genotype by environment interactions complicate breeding efforts. The third phase, just initiated, includes activities leading to the development of molecular markers to further identify various lines of clams and to optimize selective breeding strategies.

Further describing the genetic phase of the project, Dr. Camara explained the results of a "5 by 5" line-crossing experiment. This project addressed clam stock (line or strain) and environment interactions, while also investigating the potential for developing hybrid vigor through selective breeding programs. Hybrid vigor (heterosis) is the response shown by organisms that are mated to distantly related individuals of the same species. This is known as outcrossing or outbreeding, and hopefully will lead to improvements in performance (faster growth, increased survival, etc.). In the "5 by 5" experiment, 5 widely-cultured strains of clams were crossed in all possible combinations, with the resulting seed being grown at 5 different sites to account for local environmental variables. These test animals were monitored for growth, survival, and disease conditions. There were some interesting results from this project.

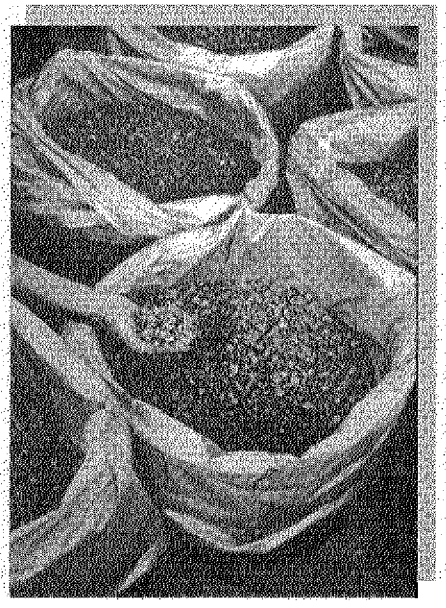
First, it appears that there is no correlation overall between early growth stages and final grow-out results. There were some line differences during the hatchery/nursery stage, with some doing better in the hatchery than in the nursery, others performing reasonably in the hatchery and better in the nursery, and, finally, a line that did well in both hatchery and nursery. At the field grow-out level, there were no differences in survival between the different crosses. There were, however, site interactions with growth. General conclusions from this experiment indicated that there is plenty of genetic variation available for continued genetic "improvement" and that selection of appropriate lines must occur in the field (at grow-out level) because there was no correlation between hatchery/nursery performance and grow-out performance. There also exists substantial potential for developing hybrid vigor. While there were some genotype by environment interactions, there were no negative correlations across the sites. In other words, selection procedures should work to develop superior clam lines without the need to develop specialized lines for different environments.

Dr. Camara then explained a project that is just beginning, focusing more on the third aspect of the overall program: development of molecular markers for use in selective breeding efforts. The project hopes to accomplish several goals: utilize more genetically rigorous procedures that incorporate molecular techniques to optimize the selection program; conduct field evaluations of different clam families under representative commercial conditions; and, finally, facilitate the distribution to industry members of selected animals for brood stock use. Industry partners are being solicited to participate in this expanded breeding selection project. Those interested in participating should contact Mr. Nate Geyerhahn, ABC-VIMS, P.O. Box 1346, Gloucester Point, VA 23062 (804-684-7864).

Cultured clam insurance program

The insurance program for cultured hard clams is still in the "pilot" phase. The program is currently entering its fourth year. As a pilot program, normally after three years of data have been accumulated the program is evaluated and either discontinued or converted to a regular program that is eligible for expansion into other areas. However, this rarely happens in actual practice. An example provided by the Risk Management Agency (RMA) at the US Department of Agriculture (the controlling agency), explained that a blueberry pilot insurance plan has been in effect since 1996, although modifications to that program have occurred. It was additionally noted that RMA has received inquiries about expanding the pilot clam program to other states, including New Jersey, Connecticut and North Carolina, as well as the western shore of Chesapeake Bay. Currently, Massachusetts, the Eastern Shore of Virginia (Northampton and Accomac counties), South Carolina and Florida are the only participants in the pilot clam insurance program.

In data distributed to the attendees, Florida still is the greatest beneficiary of the pilot clam crop insurance program. During 2002, Florida had 416 policies sold with a total of $1,390,757 paid in premiums; 142 units had qualifying losses, with claims of $3,193,413 paid out, for a loss ratio of 2.30 (claims paid, divided by premiums paid).



Massachusetts and South Carolina did not have any reported losses for 2002. The levels of insurance in these two states were much smaller than either Florida or Virginia. For 2002, Virginia had 88 policies sold with $667,956 paid in premiums. There were 3 qualifying losses, with claims of $96,311, representing a loss ratio of only 0.14. Thus far, 2003 has seen some changes in the numbers of policies sold and levels of coverage in all states, and no reported losses. For information regarding the pilot clam insurance program, interested individuals are directed to the following web address: http://www.rma.fcic.usda.gov .

Legislative activities

The 2003 Virginia legislative session focused on statewide budgetary issues, without much legislation directed at the shellfish culture industry. There was, however, one piece of legislation that should be of interest. House Joint Resolution 633 (HJR 633) directs the Virginia delegation to the Chesapeake Bay Commission (CBC) to study the collection of rents and royalties for the use of state-owned bottomlands. Members of

the Virginia delegation to the Chesapeake Bay Commission can be found at the CBC web address: http://www.chesbay.state.va.us/home.htm . Virginia has had a moratorium on the collection of royalties for use and encroachment in, on, or over public bottomlands since the 1980s. Within HJR 633, the growth of aquaculture is recognized as potentially placing additional demands on the use of state-owned bottoms. The resolution also points to various efforts by the Virginia Marine Resources Commission (VMRC) to develop criteria for the leasing of water columns and the development by VIMS of shallow water management plans. The resolution directs the Virginia delegation to evaluate three items: the current moratorium on the collection of rents and royalties; the establishment of a regulatory framework that is specific to on- and off-bottom intensive aquaculture (note the specific inclusion of on-bottom aquaculture); and, proposals by VIMS regarding shallow water management. This must be completed prior to the next legislative session.

HJR 633 may have both negative and positive impacts on the shellfish culture industry. On the negative side, there could be increased fees for leasing or royalty payments to the state for using the bottoms. This could also create more bureaucracy for oversight and paperwork for industry members. Positive aspects could include more control of access over or across leases, a mechanism for water-column leasing, and perhaps relief from submerged aquatic vegetation encroachment issues. Regardless, industry members should become involved in the evaluation process by contacting members of the Virginia delegation to the CBC and expressing their opinions or volunteering to actively participate in the deliberations. The full text for HJR 633 can be found at: http://leg1.state.va.us/cgi-bin/legp504.exe?031+ful+HJ633H1 .

Shellfish disease status

Lisa Calvo from VIMS provided the latest information regarding shellfish diseases MSX, Dermo and QPX. Unfortunately, Lisa was unable to attend the forum and Mike Oesterling (VIMS, Department of Advisory Services) conveyed the information to attendees. Questions regarding shellfish diseases and diagnostic services, or to participate in any of the VIMS Shellfish Pathology projects, should be directed to Ms. Lisa Calvo (804-684-7339).

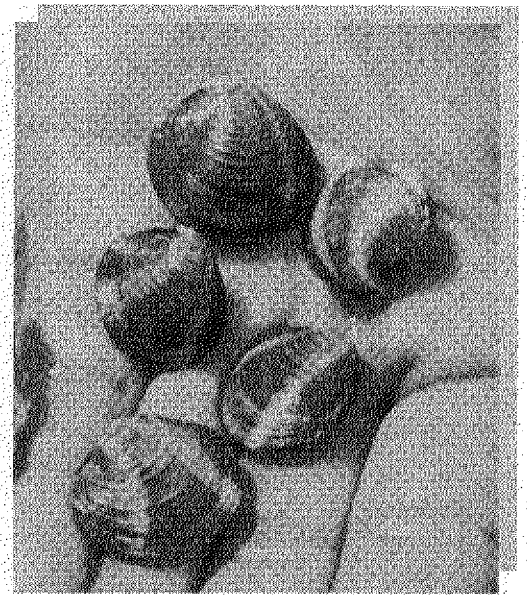
Oysters during 2002 experienced heavy disease pressures as a result of the warm winter of 2001/2002 and continuing drought conditions that caused elevated salinities throughout Virginia waters. Current rainfall conditions are viewed as beneficial. However, MSX was seen in upriver areas of the James and Rappahannock rivers where previously it had never been observed. This means that every naturally-producing oyster rock in the main rivers of Virginia has now been exposed to MSX. Dermo continues to be a major problem within Virginia waters, and was found in all areas sampled, with high prevalence (exceeding 88%) at most stations. The annual report on the status of oyster diseases in Virginia is available at the VIMS Shellfish Pathology Program web site at http://www.vims.edu/env/research/shellfish/monitoring_rept02.pdf .

The hard clam disease, QPX, continues to be a focal point for research in Virginia and elsewhere along the eastern seaboard. In 2002, VIMS released a report highlighting the results of a recent study, which indicated that hard clam susceptibility to QPX varies with host origin. The investigation found that clams produced from South Carolina and Florida brood stocks were more susceptible to QPX and exhibited significantly higher mortality than clams produced from Massachusetts, New Jersey, and Virginia brood stocks. These results prompted the VMRC to revise clam seed importation regulations (see below). The VIMS report can be viewed at: http://www.vims.edu/newsmedia/pdfs/clam.pdf . The report was part of a larger federally-funded project, which included New Jersey and Massachusetts scientists and grow-out locations. The New Jersey results were not available at the time of the VIMS report, but have now been released. In New Jersey, as in Virginia, clams originating from Massachusetts and New Jersey brood stocks exhibited significantly lower QPX prevalences and significantly higher survival than clams originating from South Carolina and Florida brood stocks. Clams from Virginia stock overall exhibited lower QPX prevalences and higher survival than the South Carolina and Florida stocks, but these differences were not significant. A more thorough report of the study will be available in late spring.

VIMS will be continuing QPX investigations during 2003. In all likelihood, a QPX survey will be initiated. Industry members are encouraged to participate by providing clam samples if contacted. Research topics for this year are expected to include salinity tolerance studies, investigations to further establish the size at which clams become infected by QPX, and distribution studies to identify just where QPX occurs within the environment (sediments, other animals, etc.).

In an effort to expand our understanding of QPX, industry members are encouraged to contact Lisa Calvo if they suspect that they have experienced any clam mortalities that could potentially have been caused by the disease. At this time, VIMS still performs shellfish disease analysis on Virginia clams free of charge.

A couple of general guidelines were provided to lessen the impact of QPX on cultured clams. First and foremost is to avoid moving any clams that are suspected to be infected with QPX. Growers should also be aware of the brood stock source of any seed they purchase. If a grower intends to move any clam from beds on the Seaside of the Eastern Shore to beds on the Bayside, the clams should be tested for QPX prior to any movement. QPX has still not been found within Chesapeake Bay proper.



VMRC activities

In the late summer and fall of 2002, the importation of hard clam seed into Virginia occupied discussions at the VMRC. Regulations were already in effect; however, they were generally ignored by both the industry and VMRC. At the request of industry members, and using information provided by VIMS scientists, the VMRC established new regulations governing the importation of hard clam seed into Virginia. The current regulations can be viewed at: http://www.mrc.state.va.us/fr754.htm .

As a direct result of the clam seed importation issue, the VMRC established a Hard Clam Aquaculture Task Force to address emerging issues affecting clam culture. Its first task was to make suggestions regarding the seed importation situation. It must be remembered, however, that the task force has no regulatory authority and can only provide input to the VMRC regarding issues of concern or make suggestions for regulatory consideration.

During its last meeting on December 16, 2002, the task force addressed six different issues facing the hard clam culture industry.

1. *Overwintering of Virginia-produced seed clams in southern states and importation back to Virginia, relative to disease-free certification.* The overall feeling of the task force was that the disease-free certification requirement should apply to any seed imported, regardless of the original source of the seed.

2. *Importation of seed clams produced in Hawaii from Virginia brood stock.* This issue elicited extended debate within the task force. Ultimately, in a split-vote, a majority of task force members opposed any importation of Hawaiian-produced seed clams. The current requirements for seed importation were enacted through the regulatory authority of the VMRC. However, the Code of Virginia, Section 28.2-825, still permits individual requests to the Commissioner of Marine Resources for approval to import any fish, shellfish, or crustacean for introduction into the waters of the Commonwealth. These requests are addressed on a case-by-case basis.

3. *Importation of clams from southern states for relaying purposes, relative to disease-free certification.* It was the consensus of the task force that these animals also required disease-free certification.

4. *Exemption of seed clams raised in the Maryland portion of Chincoteague Bay from the disease-free certification requirement.* Again, there was consensus from the task force members that these clams should not be required to have disease-free certification, due to the contiguous nature of the waters of Chincoteague Bay, Virginia and Maryland portions.

5. *Transplantation of clams from Seaside of the Eastern Shore to the Bayside, in light of potential movement of QPX infections.* VIMS scientists expressed great concern over the potential for moving QPX from Seaside to Bayside. QPX has not been found in any samples taken within Chesapeake Bay. Unlike the

previous two issues, this one created extended discussion and some confusion. The confusion surrounded the distinction between "replants" (sub-market size) and "seed." Discussions centered upon information that was available on when (at what size) and how clams become infected with QPX. VIMS scientists stated that evidence indicates that hatchery-produced seed are not the source of infections and that clams smaller than 20mm have not been found with QPX infections. This issue was debated heavily by task force members. Ultimately, the group reached consensus that any clams over 20mm should be tested for QPX infections prior to moving them from Seaside to Bayside.

6. *The need for a Virginia aquaculture permit.* Without a great deal of discussion there was general consensus that a permit would be valuable, but that implementation needed to be further discussed. It was pointed out by VMRC personnel that under current provisions, the VMRC could initiate but could not charge for a permit, and that the information gathered via the permitting process would be very valuable to the Commission. Individual task force members were charged with providing input regarding a permit at their next meeting.

Aquaculture permit

The foregoing discussion of the VMRC Hard Clam Aquaculture Task Force led to an open discussion among forum attendees regarding an aquaculture permit. One of the first discussion points revolved around the wording within the Code of Virginia as it relates to aquacultural practices; the Code of Virginia sections all refer to "oysters." Since all applicable sections were written well before the evolution of the modern clam or oyster culture industry, a total re-write of those sections is in order, reflecting how the shellfish culture industry currently operates. Separate sections should be developed that address clam culture, and include appropriate rules and regulations.

Throughout the discussions over the need or desire for an aquaculture permit, one theme kept resurfacing. There needs to be significant industry oversight and involvement in the development of any permit structure. Concerns were raised over the authority given to bureaucrats to develop a permit and how the permits potentially would be used by regulatory agencies. Both positive and negative aspects of permits were discussed, and thoughts ranged from a permit conferring more protection to the grower to it becoming a means to increase regulatory pressure. There appeared to be more support for a permit than opposition.

Environmental Codes of Practice/ Shellfish Grower Association

Mike Peirson, from Cherrystone AquaFarms, led a discussion that began by focusing on a draft Environmental Codes of Practice and evolved into a discussion about the need for a statewide shellfish growers association. The Environmental Codes of Practice outlines a broad consensus within the industry regarding practices designed to ensure that this valuable food production industry protects and enhances the coastal environment of Virginia. The Codes will serve to illustrate the good stewardship practices of shellfish aquaculture and the desire of the shellfish culture industry to maintain and improve water quality. Discussions continued that the next major issues to confront the shellfish culture industry will indeed be environmental concerns raised primarily by new residents moving to coastal Virginia. The shellfish culture industry must take charge of the situation and be proactive before environmental/regulatory issues become a problem. Future issues will not be driven by regulatory agencies, but by the general public. Mr. Peirson explained how the Pacific Coast Shellfish Growers Association had successfully adopted codes of practice and used them to their advantage to help head-off regulation. Mr. Peirson asked that attendees review the draft Environmental Codes of Practice that were distributed and provide him with comments. However, in order for the Codes to be effective, there needs to be an association or organization to adopt them.

The ensuing discussion focused on the need to re-establish a shellfish culture association after the demise of the Virginia Shellfish Growers Association. One suggestion was to arrange for a representative from the Pacific Coast Shellfish Growers Association to address a meeting of Virginia shellfish growers about that association, how it works, and why it was needed. VIMS personnel indicated that such a meeting was already being planned and would be announced when scheduling is complete. There was general confirmation that a Virginia association of shellfish growers is needed, in addition to the recently formed East Coast Shellfish Growers Association (ECSGA). While further discussion on the formation of a statewide association did not continue during the forum, individuals separately indicated that efforts would be made to form a new shellfish grower association.

The ECSGA is a fledgling organization that is attempting to bring together shellfish growers along the eastern seaboard for political purposes. More information about the ECSGA can be found at their web site: http://www.ecsga.org .

Fishery Resource Grant Program

It was announced that the Virginia Fishery Resource Grant Program (FRGP) would continue. A basic underpinning of the FRGP is the belief that people within the industry often have valid ideas to enhance and protect fisheries/aquaculture, but may lack the financial resources to experiment with such innovations. The program invests in ideas generated by industry members through a fair and competitive grants process. A new call for proposals will be issued shortly, with all culturists eligible to compete for funding.

Future topics

In an effort to provide future educational programming for shellfish growers, suggestions were solicited for topics of interest. Following some of the above discussions, it was suggested that programs addressing environmental issues facing the shellfish culture industry would be beneficial. Along those same lines, the political aspects of shellfish culture could be tied into environmental issues. A similar topic was suggested that would focus on proposed coastal zoning issues. Others suggested that more detailed information regarding the clam disease QPX would be helpful. To suggest other educational events or training programs, industry members are encouraged to contact Mike Oesterling at VIMS, Department of Advisory Services, P.O. Box 1346, Gloucester Point, VA 23062 (804-684-7165; mike@vims.edu).