MarineFisheries Shellfish Advisory Panel
Meeting Summary

November 19, 2015
Hanover Public Library

Attendance
Panel Members: Paul Bagnall, Ron Bergstrom, Gail Hart (proxy for Richard Kraus), Alex Hay, Jon Kachmar, Diane Murphy, Allen Rencurrel, Monte Rome, Dave Sargent, Chris Sherman, Chris Southwood, Mike Trupiano, Bob Stanley, Bob Wallace. Absent: Jonathan Johnsen.

MarineFisheries Staff: David Pierce, Dan McKiernan, Michael Hickey, Tom Shields, Jeff Kennedy, Chris Schillaci, Nichola Meserve, Glenn Casey, Ryan Joyce, Dave Roach, Devon Winkler, Jim Rosignol, John Mendes, Terry O'Neil, Kate Kotfila, Gabe Lundgren, Kevin Creighton, Story Reed, Jack Schwartz, Diane Regan, Greg Sawyer, Kelly Kleister, Tom Hoopes

Other: Sean Bowen (Department of Agricultural Resources), Julian Cyr (Department of Public Health), and roughly 15 members of the public, primarily commercial industry members.

Call to Order and Introductions
Deputy Director Dan McKiernan called the meeting to order. He introduced the Division's new Director, David Pierce. David noted that his involvement with shellfish since joining the Division in 1972 was primarily related to federally managed species, and that he was in attendance to get up to speed with the other shellfish issues of importance to the Division and Advisory Panel. Dan noted that this was the fourth meeting of the Panel, whose members were selected due to their broad experience and expertise in the Commonwealth's shellfish fisheries. He then invited the Panel, Division staff, and other attendees to introduce themselves.

The draft agenda was approved with three additions: Gail Hart added discussion involving undersized, aquaculture-reared surf clams; Ron Bergstrom added discussion of the Monomoy National Wildlife Refuge Comprehensive Conservation Plan (Monomoy CCP); and Paul Bagnall added discussion of an issue with dredging and the time-of-year restrictions.

2015 ISSC Meeting Outcomes
Dan introduced the agenda item, noting that the Interstate Shellfish Sanitation Conference (ISSC) meets every two years, and the Panel's meeting date was selected largely so that key topics from the 2015 Biennial Meeting could be brought before the Panel. He turned it over to the Division's Shellfish Program Manager, Mike Hickey.

Mike indicated that the Biennial Meeting had occurred in late October, with a total of 82 proposals to make changes to the National Shellfish Sanitation Program (NSSP) or the operation of the ISSC. He explained that proposals are submitted by any member entity, and are routed to three deliberative

bodies (called Task Forces) to make recommendations for consideration by the General Assembly. He drew the Panel's attention to his briefing memo for the Panel, and advised that full reports from each Task Force were on the ISSC website. He explained how the ISSC has 60 days following action of the General Assembly to send the Summary of Actions to the U.S. Food and Drug Administration (FDA), and FDA in turn has 60 days to notify the ISSC of any conflicts with federal law, regulations, or policy. NSSP changes with which FDA concurs are effective upon posting on the FDA website, otherwise there is a procedure in place through which the ISSC can accept the non-concurrence or take the issue back to the Executive Board for interim action (in place until next Biennial Meeting). He noted that there are past incidences of the FDA not concurring.

Mike went on to highlight certain important proposals, as a full review of all proposals would take days. He explained that each Task Force votes on all proposals together, unless any are removed for a separate vote. Before Task Force I were 32 proposals: 15 new and 17 old (the latter of which are generally proposals that were sent to committee for further review and development at a prior biennial meeting). Two proposals were pulled out for separate votes. The first was a proposal from Massachusetts, which replaced two prior proposals, regarding the use of Male Specific Coliphage (MSC) as an indicator for viruses, the benefit being that it survives better in cold weather than fecal coliform bacteria. There had been much negotiation, and in the end Massachusetts had gotten most of what it wanted (e.g., optional method rather than required). Importantly, the workgroup that wrote the language of the proposal would be reconvened to write an accompanying policy, so that FDA assesses each state program consistently and in the way envisioned by the workgroup.

Task Force I had also looked at numerous new lab method proposals. One proposal of note produced the first approved method to enumerate *trh* for *Vibrio parahaemolyticus (Vp)* presence testing.

Two other interesting proposals concerned aquaculture. The first charged the ISSC's aquaculture committee to update the Model Ordinance's aquaculture chapter to reflect current practices and methods. The second mandates that states define shellfish seed for purposes of the NSSP (which MA already does) and require that seed from Prohibited areas be cultured for a minimum of six months in Approved waters.

Mike moved on to the proposals before Task Force II, which numbered 37 in total: 27 new and 10 old. One proposal would have resulted in a new definition for Reduced Oxygen Packaging and new shipping temperature and time-to-temperature requirement to prevent *Botulism* (sometimes linked to shucked product in plastic containers), but the Task Force recommended no action and the General Assembly sent it back to committee for further study. Another proposal of note will require inspection of land-based and floating aquaculture facilities at-least annually, with each facility required to have an operational plan. Upon question, Mike guessed that this mandate could go into effect January 2017.

Another ten proposals before Task Force II dealt with *Vp*. No action was taken on four of them. One proposal submitted by FDA to combine and increase the requirements for *Vp* and *Vibrio vulnificus* control plans was deferred until studies that are underway have been reported on. Two more proposals, including one on resubmergence of shellstock, were referred to committee for further study. The Conference adopted the recommended action of its Vibrio Management Committee to 1) develop a process for using local data, including regional or state illness and landings information, to more accurately reflect risk in a region or state; 2) determine how best to estimate consumption patterns, including collection of data regarding the number of shellfish consumed per serving; and 3) form a workgroup to: evaluate the effectiveness of existing NSSP regulations to reduce risk of *Vp* illnesses caused by improper handling, storing, or transportation of shellstock; identify areas within the NSSP needing

improvement; and make recommendations to the ISSC. The workgroup will consist of FDA, state and industry representatives.

The last *Vp* proposal resulted in adoption of a new two tiered closure system. Another proposal changed the harvester training requirements from every two years to "at an interval to be determined by the authority." Mike noted that the prior requirement is what lead to the controversial affidavit. Another proposal from Maryland was adopted to require containers used for human sewerage to be marked as such.

Mike and Dan decided to skip the proposals that were before Task Force III, because they were more administrative in nature; instead referring the Panel to Mike's memo.

Dan asked how the approved proposals were expected to impact the Division's lab staff, particularly the use of MSC. Jeff Kennedy, Regional Shellfish Supervisor for the North Shore, responded that there were no immediate impacts as the lab is ready for samples, but he had some concern that moving away from the existing water quality based program using fecal coliform has the potential for the state to lose some acreage open to shellfishing.

Diane Murphy asked how to distinguish the old from the new proposals. Mike replied that the two-digit prefix in a proposal's number indicates the year brought to the Biennial Meeting, so anything starting with "15" was new.

Monte Rome inquired whether the Biennial Meeting had resulted in any methods for PSP testing which dealers or processors might be able to use. Mike replied that there was one test kit that was more user-friendly and not cost-prohibitive. He recommended that he and Monte talk about this afterwards.

Mike concluded by referring the Panel to the Task Force reports and the anticipated Summary of Actions document, and welcomed any calls to him for further information. Dan added that a benefit of this discussion would hopefully be in avoiding surprising the industry with any new requirements.

Vibrio Update for 2015–2016

Dan McKiernan introduced some of the topics Chris Schillaci would be covering, including the years' reported *Vp* cases, ongoing and planned research, and the schedule for meetings with industry. He noted that today's meeting was not designed to accept public input, and that Chris would be giving a similar presentation at the industry meetings, followed by discussion and comment.

Chris started with the schedule of industry meetings through which the Division and DPH would gather important feedback before drafting the 2016 *Vp* Control Plan. He noted how industry meetings had led to several revisions to the 2015 plan that reduced industry burden. The meetings will include: Duxbury on December 10 (10:30am); Martha's Vineyard on December 4 (10:30am); and two lower Cape venues on December 11. He expected formal announcements to be issued soon.

Chris moved on to his presentation. He noted he'd be skipping most of the history of *Vp* in Massachusetts, but he could provide any background information upon request. He pointed out the recent success of the aquaculture industry (as indicated by the growth in oyster landings to 34 million pieces in 2014, of which about 95% were farmed), but how this had come with challenges, namely an increase in *Vp* cases. He summarized the production by area, and economic value of the fishery, including a $45million value (using a multiplier) of the farmed oyster industry. He noted that the state was not under *Vp* management

for hardshell clams, just oyster, but that industry should be aware that it would only take two cases on a single day to bring it about.

With regards to the number of cases, 2015 had 27, an increase from 2014 that occurred despite strict time-to-temperature management measures. The 2015 landings were expected to increase from 2014, and generally 60% or more of the harvest is landed during the Vibrio season. He acknowledged that this shift in consumption practices, along with increased air and water temperatures, are impacting the prevalence of Vibrio, but equally important is that we're dealing with an invasive species, a Pacific Northwest strain that was introduced around 2010 or 2011 to Long Island Sound. Washington State has around 100 cases a year; despite dealing with it for 15 years, the state hasn't been able to achieve time-to-temperature rules. These controls are well documented as effective; for example, Connecticut achieved a 95% reduction in cases by going to 1-hour to ice.

Chris noted that 2013 had the highest case load for *Vp* (n=33), when management was less restrictive (5 hours to ice), which resulted in closures and recalls. 65% of the cases were the Pacific Northwest strain. In 2014, *Vp* cases decreased to 14, when the rules were 2-hours to ice. Of the 27 cases in 2015, 10 were linked to Duxbury/Plymouth/Kingston, 10 to Katama Bay, and 4 to Barnstable. 80% tested thus far were the Pacific Northwest strain. The Division works with DPH and UNH to collects samples and identify the strain associated with illnesses. He noted that there are two endemic strains of *Vp* as well. Working with academic partners, the Division is trying to develop tools to identify the strains in the water and establish risk indicators. Using cutting edge molecular studies, we've established that the Pacific Northwest strain is a recent introduction because it evolves rapidly in new environments and has changed little. He noted that lab tests look not just for presence of Vibrio but also whether it's pathogenic.

Chris then depicted the water and air temperatures associated with MA's *Vp* case history. The data are instructive to control plan measures and suggest that illnesses now have more to do with environmental factors than post-harvest handling. One challenging result is that *Vp* in MA has wide thermal preference (water between 65 and 80°), making it harder to manage. He showed the harvest dates associated with all cases since 2011, with all but one occurring between mid-June and mid-September. Of note was that the *Vp* cases in 2015 came late in the season compared to prior years. This past August and September's sea surface temperatures were above the ten-year average.

Chris summarized MA's response to *Vp* illnesses to date. A control plan was first enacted statewide in 2013. Based on NSSP guidance, our *Vp* season is from May to October. The plan includes icing and shading control measures (that have become increasingly more stringent) to limit post harvest growth of *Vp*. Currently the rule is 2 hrs to ice, with three options for appropriate icing methods. Research shows at least a doubling of *Vp* growth between icing within 2 and 4 hours, indicating the necessity of our 2 hr rule. Massachusetts has the NSSP minimum standard for dealer's time-to-temperature control (<50°F in <10hrs). Additional harvester and dealer reporting requirements were also implemented. The Division also increased its collection of data on background *Vp* levels, and has increased its compliance monitoring.

Chris began his report on some of the Division's research activities this past year. DMF studied the effect of tidal exposure on *Vp* growth. While the data are preliminary and need to be replicated for confidence in the results, the study suggests that *Vp* growth during low tide is mitigated by resubmergence at high tide, and *Vp* growth at two-hours after tidal exposure is negligible. Chris cautioned that the study occurred at a max temp of 76°F and on a large tidal cycle, so you could get different results during a warm spell or smaller tidal cycle.

Chris moved on to sub-tidal oyster harvest, noting that the control plan effects these harvesters differently, because while under the 2-hrs to ice rule, harvest opportunity is not limited by the tide. Surprisingly, almost 80% of *Vp* cases in 2011–2015 were from sub-tidal oyster harvest. Preliminary data shows higher prevalence of *trh* and *tdh* (pathogenic indicator genes) relative to total *Vp* in certain sub-tidal areas than intertidal areas, which could be a factor.

The control plan also had to address some pre-harvest culture practices (air drying, offsite culling), and implemented a 14-day re-submergence period. Because there's been a lot of industry opposition to this length, DMF began research this year to assess how common culture practices and subsequent re-submergence effect *Vp* growth. Preliminary data collected at Duxbury and Katama Bay sites suggest that four days of re-submergence after 48-hours of air drying brings *Vp* back to ambient levels. Chris cautioned that the data were limited and needed replication (planned for 2016).

Chris noted that DMF had also started to collect a significant amount of data on background levels of *Vp* to assess whether risk indicators could be developed. The work was ongoing, but suggested that *trh* and *tdh* prevalence were weak risk indicators.

Chris showed that there was roughly a two-week lag between consumption and report of illness in 2015. This presents challenges when managing closures. He then talked about the two areas most impacted by Vibrio closures thus far: Katama Bay and Duxbury Bay.

Katama Bay has 12 growers and accounts for about 2.5 million oyster per year. The average length of time from harvest to report of illness in 2015 was roughly 11 days (although the max was 32 days). This meant that the 7-day closure that was prompted by four illnesses in 30 days didn't go into effect until two weeks after the fourth illness. The closure was extended because an additional two cases were reported hitting the NSSP trigger of 5 illnesses in 30 days for a 14-day closure. Unfortunately, upon re-opening the area had another three illnesses reported from harvest before the closure period.

Chris Sherman asked how the 30-day period is defined. Chris Schillaci clarified that it is a sliding scale. Chris Sherman thought it unreasonable to assume there couldn't be illnesses after a closure. Chris Schillaci agreed but asserted there should be an acceptable level of risk per serving, although that had yet to be defined.

Bob Wallace asked about the last three illnesses, and if they promoted a closure. Chris clarified that they, along with the illness preceding them, would have prompted a closure if not for the period of Vibrio risk having been passed.

Paul Bagnall asked if illnesses from recreationally harvest oysters were included in the assessment for closures. Chris indicated they were not, largely because we have no idea of the handling practices being employed by recreational harvesters.

Chris summarized the Vibrio season for Duxbury Bay. There were a scattering of illnesses in different places that didn't prompt any management, but then from 8/31–9/5 there was a case almost every day. These came from different areas/growers/restaurants, which suggested an environmental issue rather than a harvest/handling practice issue. There was no evidence of abuse of time-to-temperature rules. With the delay in reporting, this resulted in a late season 14-day closure.

Bob Wallace asked whether the FDA inquiry into illnesses includes a question about the number of oysters eaten. Chris replied that it does, but responding is optional and people don't always want to. A

member of the audience asked if FDA questions whether lobster and shrimp were also eaten. Chris explained that FDA inquires about all consumption in the 72 hours preceding illness. Another audience member questioned whether air temperature, sun exposure and other conditions are taken into consideration. Chris indicates they were.

Alex Hay wondered if the research on risk assessment was geared towards developing proactive closures. Chris replied that Washington State had implemented some proactive closures despite significant industry opposition, and they hadn't yet proven to be effective control measures. He noted that if Massachusetts were to go this route, DMF would want the industry's support first. Chris planned to review various possible measures (proactive and reactive) at the upcoming industry meetings.

An audience member asked for clarification on the towns included in the Duxbury Bay slide. Chris replied that the slide reflects harvest from all three Bay towns' waters (Kingston, Duxbury, and Plymouth). He noted that pooling the harvest and illness data for the three towns is actually helpful for avoiding closures.

Ron Bergstrom asked whether DMF had considered establishing its own aquaculture areas so as to control for different harvest and handling methods. Chris indicated that he had set up such sites for some of the past summer's research, in addition to working with partners in the industry. He also welcomed any input from harvesters that suspected they had methods to reduce the risk of *Vp* illnesses.

Paul Bagnall hoped the industry realized that the Division and other researchers were doing extensive research, although he noted that the associated costs meant prioritizing what could be done immediately. Chris Schillaci noted that while the Division's budget had been stagnant, staff was putting in extra time and effort to address the challenge of *Vp*.

A member of the audience asked for the number of aquaculture farms that had never had a trace-back and whether DMF was trying to learn from them. Chris replied that most had not and that he is in the field or on the phone very frequently to talk to the industry.

A member of the audience thought restaurants and retail stores should also be subject to handling requirements to reduce the risk of *Vp* illness. Mike Hickey noted that the ISSC was sending a letter to multiple retail representatives to ask them to follow best practices and have traceability. Chris noted that most *Vp* cases are linked to restaurants rather than retail store sales. Mike spoke to the need for local boards of health to be more standardized, noting that DPH is trying to bring about uniformity.

Chris Sherman commented on the industry's interest in creating practical proactive controls. He commended the Division for the re-submergence research and expressed his disappointment that a reduction in the 14-day minimum is unlikely for 2016 despite the new data and an FDA re-submergence study from a few years ago. Chris Schillaci said he hoped to make progress after another year of study.

There were no more questions from the Panel. Dan asked that further audience questions be postponed until the upcoming industry meetings.

Swipe Card Pilot Project

Tom Hoopes, the former Program Manager for the Division's Statistics Program prior to his retirement, gave a demonstration of the Swipe Card Pilot Project. He noted that he'd introduced the idea to the Panel over a year ago after many years of concept development, and was pleased to now have a product to

test. Getting to this stage had required securing grant funding and some revisions to the project as other states joined in and had specific needs for the design.

Tom explained how the harvester-issued swipe card is used to start the sales transaction with a dealer that has a credit card-type reader attached to a device loaded with the swipe card software. The application links directly with the SAFIS database resulting in transactions being entered at the time of sale, meaning no additional data entry for dealers. The swipe of the card verifies and enters the harvester name and vessel, and then the dealer adds all the normal data specific to a transaction (species, pounds, price, market grade, etc.). Harvester data (such as gear) could potentially be entered during the process as well, meaning the harvester also wouldn't have to do his own separate monthly reporting. The software is designed to run on three different platforms.

Tom then demonstrated a transaction using the swipe card (working in the test environment), checking the SAFIS database at the end to see that it was successfully entered. His demonstration included using a small card reader attached to a Windows laptop, but the app could also run on an Android or Apple smart phone or tablet using a similar card reader. He noted that Maine is looking to use a swipe machine with integrated print function to monitor its elver fishery. Of special note was that the entry of an oyster transaction includes fields for: time of harvest, time of icing, and product temperature at receiving. Upon completion of the transaction, a receipt is immediately available that can be emailed or printed.

Dave Sargent sought clarification about the harvester's reporting requirement in the pilot program. Tom replied that harvesters still have to report monthly at current, but the hope is to have the application also collect harvester data in the future so that additional harvester reporting is not required.

Chris Schillaci inquired about the units for reporting landings. Tom indicated that the dealer would select pieces or pounds, as appropriate.

Mike Trupiano asked about the SAFIS data that would be available for review by the dealer. Tom clarified that the dealer can only see the data they have entered, no one else's. In the future, the harvester could possibly see the transaction too if he has a SAFIS account.

Ron Bergstrom expressed concern about high-volume dealers keeping up with the data entry at the time of the purchase. Tom responded that introduction of the swipe card was being conducted very slowly, with multiple checks along the way, in recognition of the various business practices employed. The pilot program is entirely voluntary and it will take some time before the swipe card is even considered as a mandatory reporting tool. Chris Sherman informed the group that he has some drivers that are testing the application in the field now with phones and tablets and are finding it quick and easy to use. They find benefit in not having to upload data files upon return. While pleased to hear this, Ross stressed that it would need to be user-friendly to be widely adopted.

Alex Hay remarked that a key benefit of reducing paperwork would be in the elimination of data entry mistakes. Tom agreed, and noted that while no data needs to be entered later by dealers, they can download and/or print an end-of-day log of all transactions. Chris Schillaci noted that DPH was fully onboard with using the tool. Tom noted that a number of other states are interested in the product including Connecticut, Rhode Island, and Maine, and he expected it would catch on if the pilot program goes well. He recognized that the states will need to work with the federal government to expand the application to other fisheries so as dovetail with federal reporting requirements.

Monte Rome asked when the application would be available. Tom expected that the pilot program would begin early next year with a handful of willing shellfish dealers pointing their transactions to the SAFIS production database.

Devon Winkler asked about the timeframe for editing an entry. Tom replied that the application allows for rules regarding data modification; after so many days (e.g., 15 or 30) records will be locked, at which time the dealer would have to contact the state to amend the record. Devon further inquired about the application's ability to generate reports to show discrepancies in reporting. Tom expected that this capability could be included. He suggested that seafood traceability could also be a long term benefit of the swipe card application, which could present as a marketing tool.

Bulk Tagging Pilot Program for Grower-Wholesale Dealers

Dan introduced Julian Cyr, Director of Policy & Regulatory Affairs for DPH's Bureau of Environmental Health. Julian and Mike Hickey introduced the pilot program for bulk tagging for growers that are also wholesale dealers. Julian noted that the pilot program is being implemented because of industry request. He also commended the industry for its participation in tackling the challenges presented by Vibrio.

Julian explained that bulk tagging is allowed under ISSC and NSSP, but that it hasn't been allowed under state DPH rules thus far. Due to industry comments on the burden of individual lot tagging, which lengthens the time of product exposure to ambient air temperatures, DMF, DPH and OLE had met to develop the pilot program. The plan is to run the pilot program for six months, collect feedback, and develop the program from there.

Mike Hickey introduced the draft program included in the Panel's briefing materials. He stated that the participation would be voluntary, and achieved through conditioning of DMF-issued permits. The program would essentially allow a grower that is also wholesale dealer to bulk tag a "lot" of shellstock during transport from the harvest area to his dealer facility.

Under the draft program, the shellstock tagged as a "lot" must be harvested from one harvest area on a single day by a single private shellfish aquaculture site licensee in order for multiple containers to be combined in a bulk container and tagged with a single tag. This Unit Tag would include the standard tag information, plus a statement that reads "All shellstock containers in this lot have the same harvest date and area of harvest," and a count of the number of individual containers in the unit or an estimate of total weight, volume or count. A record of the number of containers in the lot would be recorded in ink in a bound log book. Only shellfish grown by the grower-dealer can be bulk tagged.

When individual shellstock containers in a lot are removed from the original Bulk Tagged bulk container, the dealer would be required to keep the harvester Bulk Tag for ninety days; keep track of the growing area and harvest date for each individual container; and maintain the lot identity of all shellstock during any intermediate stage of processing of shellfish prior to final tagging of each individual container in a lot with the wholesale dealer tag prior to shipping. A grower-wholesale dealer would have to register with DPH to receive Bulk Tagged lots of shellstock. It would be a requirement to retag individual containers with a wholesale dealer tag prior to receiving additional Bulk Tagged harvester lots. Lastly, bulk tagging of shellstock between dealers would not be allowed.

Mike Hickey concluded by saying the pilot program was a good beginning. Julian highlighted the pilot program's benefit from a food safety perspective. He asked Mike how the pilot program would be announced. Mike suggested the best approach would be a direct email to all eligible individuals to advise

them of the optional program and how to opt in, such that those interested would receive the endorsement on their permit as part of the permit renewal process.

Mike Trupiano stated his appreciation for the pilot program's development, and asked if the Division/DPH thought it would be expanded (beyond harvester-wholesale dealers) soon. Mike Hickey indicated that was the goal. Alex Hay asked whether the idea was to expand the bulk tagging option to all growers. Mike Hickey replied yes, but that should not be the expectation for immediately following the 6-month pilot program. Monte Rome hoped that bulk tagging of pallets of surf clams would become possible. Mike Hickey said he expected that would be an appropriate application.

In closing, Julian Cyr reiterated the importance of industry participation at the upcoming Vibrio meetings.

Shellfish Propagation Permit Discussion

Mike Hickey reminded the Panel members that at their last meeting in March, they had talked about updates to the shellfish propagation permit conditions. After that meeting, DMF was able to follow through on a number of the discussed revisions. He indicated that there was nothing in the permit 2015/2016 permit conditions that they hadn't discussed, but that there were several things discussed that couldn't be included. There were no questions or comments from the Panel.

Chris Sherman was called upon to discuss winter-time off-site culling. He spoke of the industry's frustration with and opposition to the sudden restriction on common practices under the Affidavit. He explained that processing product on the water in winter is a safety hazard, and many harvesters don't have access to a DPH-approved facility for culling, meanwhile re-submergence for a day or two in the middle of winter is ineffective and a major inconvenience. He could understand DPH's concern about product being in an uninspected facility for longer periods of time. He noted that he'd talked with DPH's Eric Hickey about finding an alternative, such as using a facility that had been certified by a local board of health. He hoped some sort of middle ground could be established for this winter.

Julian Cyr expressed concern with relegating food production standards to the local level rather than the state level, due to the range of standards and expertise among local boards of health. He suggested that harvesters could bring product to a dealer facility for culling and then immediate sale. Chris Sherman said this would not be helpful to industry as few wholesale dealers meet the space requirements for harvester culling processes. Many primary sales also happen away from brick and mortar dealer facilities (e.g., dealer trucks).

Paul Bagnall agreed with the safety issue with not allowing offsite culling and the need to find a solution. He raised the variance granted to certain towns for off-site scallop shucking. Mike Hickey reminded him that these scallops were not under NSSP control, so that example couldn't be compared to aquaculture off-site culling. Sean Bowen stated he did see some similarity because the Nantucket scallop allowance came through after a HACCP plan.

A member of the audience commented on the large economic burden associated with prohibiting the common industry practices, and frustration with different state and local standards for refrigerated trucks. Mike Hickey spoke to the interest of DPH's Food Protection Program finding a solution. Julian committed DPH to working further on the issue to find a workable compromise. He planned to follow up with Chris Sherman in early December, and involve DMF.

The discussion moved on to the in-state sale of petite oyster and clams. Chris Sherman stated that the Massachusetts Aquaculture Association (MAA) had recently voted to support the legalization of farm-

raised oysters and clams below the existing minimum size of 3" and 2", respectively. Dan McKiernan raised the issue of distinguishing wild-caught and farm-raised product, particularly from those individuals that participate in both sectors. Chris noted that there were few people involved in both, and he didn't think it fair that the majority of t he aquaculture industry be held back from selling the shellstock that they bought and grew when it made most economic sense to them.

Mike Hickey commented that many cities and towns have not been supportive of allowing petite sales, and that the Office of Law Enforcement had expressed concerns about compliance and enforcement. He advised Chris that the best route for the MAA was to petition DMF for a rule-change to come before the Marine Fisheries Advisory Commission. Mike Trupiano asked whether a smaller size limit would open up the importation of undersized oyster and clams from other states. Mike Hickey confirmed that it would.

Ron Bergstrom spoke in opposition of allowing petite sales, due to concern that undersized product would reduce the price paid to wild harvesters. Mike Hickey noted that this had been a concern the last time this issue was considered, specifically that smaller product from other states would flood the market. Chris Sherman noted that MAA wasn't proposing an elimination of the size limit for farm-raised product, but a smaller limit for "petites". From a market standpoint, he didn't think out-of-state product would depress the market.

Mike Trupiano opined that there would be a big economic advantage for growers from as little as a quarter inch reduction in the size limit, as more product would reach that size. Alex Hay further explained that a smaller size limit would mean being able to sell market-sized product before some of dies during over-wintering. He remarked that the size limit was adopted for wild shellfish based on biological parameters, and that should not be a factor for product that is bought and planted. Ron remarked that aquaculturists knew what the minimum size rules were when they entered the business.

Ron, Chris Sherman and Gail commented on what drives the price of quahogs. Ron thought aquaculture product and its smaller size cheapened the value for wild harvesters. Chris Sherman suggested that intermittent supply (winter decline) devalued it. Gail observed that the price is driven by the national market and that there are not enough quahogs on the Cape to fill the local market. Bob Wallace noted that he hadn't sold any petites this year because they grew too fast. Dan McKiernan suggested that additional discussion be reserved for an eventual public hearing on the matter, should the MAA successfully petition the Division as recommended. He suggested that he and Chris Sherman discuss the petition prior to submission. Mike Trupiano indicated interest in being involved in the petition.

Gail raised the issue that she'd asked to add to the agenda. She noted that Aquaculture Research Corp. is trying to diversify the species for the aquaculture fishery and is now focusing on surf clam propagation. Once the grow out technology is successfully established, ARC will want an exemption to the minimum size for aquaculturally-reared surf clams. Mike Hickey responded that this is something that could be allowed by permit condition.

Shellfish Restoration & Mitigation Activities in Buzzards Bay

Tom Shields provided a summary of shellfish restoration and mitigation activities currently being conducted by the Division's South Coast Shellfish Program, both in Buzzards Bay. Much more detail is available in the Panel's briefing material on the topic.

Tom explained that the New Bedford Marine Commerce Terminal Quahog Mitigation Project is a 10-12 year program designed to restore over 9.8 million quahogs that were removed or are scheduled to be removed as a result of construction of the new terminal and association dredging within New Bedford

waters. Under the Final Mitigation Plan, the Division is to plant 2.5 quahog seeds (in the 20–25 mm size range) per 1 quahog impacted by the development, for a total of roughly 24.5 million seed quahog. Beginning in 2014, the Division would plant 2 million seed per year through a rotation of 10 mitigation areas.

Tom described the plan as being a little slow to start. DMF had gone out to bid and selected two growers to provide the required seed. However, a number of problems with the growers (e.g., property dispute, disease, winter die-off) resulted in no planting in 2014 and about one-quarter of the annual goal planted in Area 6 in 2015. Staff were working on plans to improve the supply of disease-free product for annual planting moving forward. Considerable staff time was also invested in determining where to plant, as well as post-planting surveys. Monitoring methods were still being perfected. For 2016, additional growers have been contracted and the Division plans to plant smaller seed, as well as plant them later in the year to avoid crab predation.

Diane Murphy asked if the seed was being planted in raceways. Tom responded that seed was being broadcast so as to put more of the budget into seed purchase rather than planting.

Tom moved on to summarize the B-120 Buzzards Bay Shellfish Restoration Project, which is a five-year project to enhance quahog, oyster, and bay scallop populations within the areas of Buzzards Bay impacted by the April 2003 Bouchard Barge-120 oil spill that affected more than 98 miles of shoreline and nearby coastal waters. In February 2014, the B-120 Trustees released its final plan to address restoration of shoreline and aquatic resource injuries and lost public recreational uses (general coastal access, recreational shellfishing, and recreational boating).

DMF designed a collaborative program with the nine Bay coastal communities, the Trustees and other organizations including the Nature Conservancy and Buzzards Bay Coalition to restore shellfish resources and benefit public recreational shellfishing through: 1) quahog relays and transplants; 2) quahog upwellers and seed releases; 3) single oyster purchases and out-planting; and 4) additional oyster placement and caged bay scallop spawner populations by TNC with DMF technical and monitoring services. Work began in fall 2015, with DMF administering the relay of 2,500 bushels of contaminated quahogs from the Taunton River to four Bay communities.

John Kachmar noted that TNC was planning to initiate planting/placement for its oyster and bay scallop restoration activities in spring 2016. They were looking at Cuttyhunk as the area for the cage experiment. As an aside, John also noted that he/TNC had had preliminary talks with some towns about extending shellfish closures beyond three years (as relevant to prior Panel discussions about the Shellfish Planting Guidelines). Dan remarked that the regulatory mechanism that was established for pursuing an extended closure was not mean to be a hurdle, but allow for the public process.

Open Water Aquaculture Issues

Dan McKiernan introduced the next topic by commenting that it was on the agenda to bring the Panel's attention to the challenges presented by the movement towards open-water aquaculture. While the statutes establish laws for sub-tidal aquaculture in municipal waters near shore, there is insufficient guidance for aquaculture activities in open water. Open water presents new difficulties including gear conflict and impacts of the gear. He remarked that the Division needs to create a process with more public involvement for authorizing open water aquaculture activities.

Tom Shields added that it was not unexpected that the Division would be receiving more requests for open water aquaculture permits, because the near shore space is limited and running out. DMF has a

number of concerns to address, the most pressing has been potential impacts of vertical lines in entangling endangered and threatened species.

Ron Bergstrom remarked that this was an issue dear to Chatham, adding that several weir grants just off the Town had been proposed for shifting to mussel aquaculture. Tom Shields noted that the most common interest in open water aquaculture had been for mussels, and he pointed out that the briefing memo included a map of licensed fish weir areas. Lastly, Tom noted that the Massachusetts Ocean Plan instructs the Executive Office of Energy and Environmental Affairs (DMF's Secretariat) to make decisions about how to site aquaculture, so DMF would continue to be involved.

Razor Clam Harvest Methods Discussion

Dan McKiernan segued the conversation to Jeff Kennedy's presentation, noting that a Rowley shellfish constable's use of sprayed bleach to harvest razor clams (which resulted in severe legal repercussions) had raised questions about the clarity of guidance for permissible harvest methods.

Jeff began his presentation by explaining that there is no explicit prohibition about using bleach in DMF's statutes, so a combination of three different statutes had been used in the Rowley case. Other hand harvest methods include a clam fork or "digger" (used by most north shore harvesters), a clam gun or plunger (popular on the West Coast), and a sprayer with high salinity water (which a number of Panel members confirmed are used in a number of MA communities and other states). Jeff referenced a WPI study into whether the salt damages the animal, finding that high concentrations do cause irreparable tissue damage; hence if razor clams are sprayed but not harvested they will nonetheless die. There are no state regulations about the level of concentration.

Jeff noted that it was the recent growth in fishery that was bringing our attention to razor clams. The price per pound has increased from $1.25 in 2006 to $4.12 in 2015, and the individual price can be as high as $5 or $6 per pound. As Jeff displayed some landings and pricing information, there was discussion about the scale of demand (local, national, etc.) that is driving the price. Regarding product size, Jeff noted there is no minimum size at the state level, but some towns regulate at the local level. Diane Murphy mentioned that she had surveyed towns for regulations for an MSOA workshop, finding a very high variety, including a good number of towns without any regulations. Diane agreed to share these survey results with DMF.

Ron Bergstrom questioned whether salt spraying is damaging to other species. Jeff responded that the WPI study suggested there is no long-term detriment to the benthic community. Ron and Mike Trupiano remained skeptical, with Mike expressing concern about damage of high salinity to softshell clams in particular. Diane Murphy remarked that a review of the literature would be the best way to come to a conclusion, and all agreed that more work needs to be done.

Paul Bagnall noted that on Martha's Vineyard whenever the green crabs were present or there was a lack of softshell clam set, it seemed to favor the razor clam population. Jeff commented that DMF staff has observed that razors are working their way up the intertidal zone, though whether razor clams were displacing softshells was uncertain.

Jeff continued his presentation with razor clam landings and value data relative to other shellfish species, which showed that razors are a growing but still smaller component. The ranked 29th compared to all species in 2015 (partial year). Tom Hoopes pointed out that these data were likely incomplete for ocean quahog and surf clam harvest because the SAFIS database excludes federal reports for these species. Jeff provided razor clam landings by region the last five years, noting the steady rise in north shore landings

and that South of Cape landings in 2013 were unusually high. He also noted that there is another species, the Stout Razor Clam, that is available in some areas in MA, but for which there is little demand.

Dan McKiernan wrapped up the presentation by remarking that the Attorney General's Office had urged DMF to establish clearer regulations on the bleach issue, and DMF would likely be considering if additional rules are warranted. He noted that the Division's ability to enact regulations is currently very limited due to an executive order, but hopefully this will clear up soon. This led into the next topic.

Surf Clam Updates

Dan continued with a regulatory update for surf clams. The Division had gone to hearing and the Marine Fisheries Commission approved a statewide maximum dredge width, as recommended by the Panel. However, the final regulation is awaiting approval at the executive level. Similarly, the Division's intention to bring to public hearing a proposal to allow the possession of non-conforming surf clam from out of state while being processed in MA (based on a constituent request) had been held up. In the meantime, the Division had issued a letter of authorization to the interested company.

Regarding the ongoing issue in Provincetown, Dan informed the Panel that the Department's lawyers were not getting involved in the litigation unless the AGO provided that instruction. He reminded the Panel that the Division had a strong history of supporting the surf clam fishery there, based in part on concerns that the Town's stance could "balkanize" surf clam management if uncontested. Monte Rome spoke in favor of the AGO getting involved if the harvesters weren't doing anything wrong by fishing there, noting concern for implications on other issues of sovereignty. Ron Bergstrom also worried about implications for the Conservation Committee being allowed to extend its jurisdiction of authority. Monte asked if DMF could do any more, to which Dan and David Pierce responded they had done all they could to get the AGO involved. Dan noted that it was not under a fishery rule but under a Wetlands rule that the ConCom was stating its authority. Monte questioned the application of "wetland" to this situation. One audience member revealed he was a defendant in the case and remarked that the Wetlands legislation exempts activities regulated under Chapter 130, and that the state sovereignty issue would also be a factor with the Monomoy issue. Another audience member asked that if fishing is allowed in the area, that the Division issue an annual letter stating it.

Other Business/Adjourn

Monomoy Refuge CCP: Ron Bergstrom remarked that Chatham and FWS had been able to find areas of compromise for the Final CCP, with the exception of regulating all shellfish activities below the mean high tide line on the western side of Monomoy. He said Chatham was planning to contest it, and asked for DMF's position. Dan replied that the Division had submitted comment on the fishing issues in the Draft CCP, but had deferred to the AGO on jurisdiction. Mike Hickey reviewed local versus state regulatory authority with regards to shellfish.

Time-of-Year Restrictions: Paul Bagnall explained that Edgartown is trying to dredge a channel in Eel Pond, but has run into problems with the TOY restrictions for such activity. Specifically, they can't start until November and can't go beyond January 15, and DMF's three-day extension option is inadequate (need more like 30 days for working with the small hydrodredge). He was concerned about the long-term implications for communities with these dredging needs, and said it is difficult to find qualified operators for such short seasons. David Pierce asked Paul to send him an email explaining the issue and he would talk to Habitat Program staff.

Other: John Kachmar noted that there is a bill before the legislature about oyster restoration (4257). He put it on record that TNC has not been involved in its development nor would they be supporting it.

Dan McKiernan concluded the meeting, setting a tentative date for the next meeting in late April.

Meeting Documents & Presentations

- November 19, 2015 Shellfish Advisory Panel Draft Agenda
- ISSC 2015 Meeting Outcomes Memorandum (by J.M. Hickey)
- Massachusetts Vibrio Management Presentation (by C. Schillaci)
- Aquaculture Permit Conditions Memorandum (by J.M. Hickey)
- Bulk Tagging Pilot Program Memorandum (by J.M. Hickey)
- Shellfish Restoration and Mitigation Activities in Buzzards Bay Memorandum (by T. Shields)
- Open Water Aquaculture Issues Memorandum (by T. Shields)
- Razor Clam Presentation (by J. Kennedy)