



## ***Marine Fisheries* Shellfish Advisory Panel Meeting Summary**

April 17, 2014

Duxbury Bay Maritime School, Duxbury, MA

### **Attendance**

Panel Members: Allen Rencurrel (surf clam vessel owner and fisherman), Gail Hart (proxy for Richard Kraus, Aquaculture Research Corp.), Ron Bergstrom (shellfisherman), Monte Rome (surf clam vessel owner and shellfish dealer), Bob Stanley (Master digger and shellfish processor), Paul Bagnall (Edgartown Shellfish Constable, president of MA Shellfish Officers Association), Mike Trupiano (Ipswich Shellfish Company), Alex Hay (Mac's Seafood and Wellfleet Shellfish Co.), Dave Sargent (Gloucester Shellfish Constable), Skip Bennett (Island Creek Oysters), Bob Wallace (aquaculturist, president of MA Aquaculture Association), Jon Kachmar (The Nature Conservancy), Diane Murphy (Cape Cod Cooperative Extension and Woods Hole SeaGrant). Absent were: Chris Southwood (Dennis Shellfish Constable), Richard Kraus (Aquaculture Research Corp.).

Marine Fisheries Staff: Paul Diodati, Dan McKiernan, Michael Hickey, Tom Shields, Jeff Kennedy, Tom Hoopes, Kathryn Ford, Mike Armstrong, Kevin Creighton, Story Reed, Nichola Meserve, Elaine Brewer, Devon Winkler, Chris Schillaci, Diane Regan, Jack Schwartz, Terry O'Neil, Greg Sawyer, Kelly Kleister, John Mendes

Other: Department of Fish and Game Commissioner Mary Griffin, Sean Bowen (Department of Agricultural Resources), Neil Malick (Master Digger), and several other members of the public.

### **Poster Session**

The inaugural meeting of the special Shellfish Advisory Panel began with a 30-minute poster session of the Division of Marine Fisheries (*Marine Fisheries*) Shellfish Program activities, as well as other program activities with overlapping interests (e.g., harvester and dealer data collection, eel grass restoration).

### **Call to Order**

*Marine Fisheries* Director Paul Diodati called the meeting to order at 10am. He welcomed and thanked the panel members for coming. He invited Commission Mary Griffin to introduce herself. She also welcomed the panel members and described the structure of the Department of Fish and Game and its divisions, including *Marine Fisheries*.

Paul had the Panel members introduce themselves. He commented that the breadth of panelists provided a wide representation of the shellfish fishery and associated constituencies. Next he had his staff and any other members of the audience introduce themselves. He noted that roughly 1/3 of the

Division's staff resources are in the Shellfish Program. This dedicated staff leverages partnerships with the industry, shellfish constables, researchers and others to get their extensive responsibilities completed.

Paul continued with an introduction of the Division, including its overall budget and staffing level. He discussed the economic value, importance, and status of the Commonwealth's commercial and recreational fisheries. He outlined the Division's programmatic structure. Regarding policy and management development, he explained the role of the Marine Fisheries Advisory Commission (MFAC), and also how this body has limited involvement with shellfish due to the local nature of the shellfisheries, hence the need for the Shellfish Advisory Panel to provide input to the Division. He noted the potential need for more resources to further grow the Shellfish Program in the future. He asked the panel members to be thinking about future goals for the program, noting that the Division has seven goals in its 2010-2014 Strategic Plan. The Division will be developing a new Strategic Plan to cover the next five years, part of the reason for bringing the Shellfish Advisory Panel together.

He noted that each panel member was given a USB flash drive with copies of the following documents: the Division's 2010-2014 Strategic Plan, the Division's 2012 Annual Report, and a preliminary version of the Shellfish Program's 2013 Annual Report.

### **Shellfish Program Overview**

Paul then asked Mike Hickey, Shellfish Program Manager, to give his overview presentation of the Shellfish Program. See attached for a copy of this presentation. Paul asked if there were any questions regarding Mike's presentation.

Skip Bennett asked for clarification on which classifications of growing areas shellfish can be harvested from for depuration. Mike indicated that shellfish from areas other than Prohibited can be depurated. Skip inquired as to what type of permission is needed to harvest species like green crab, whelk, and horseshoe. Dan McKiernan answered that the Division issues letters of authorization to anyone with a commercial fishing permit looking to trap for green crabs, whereas whelk and horseshoe crab have limited-entry permit endorsement requirements. Lastly, he wondered whether the Division was seeing a decline in mussels. Mike Hickey noted that mussel disease can cause mass die off. This disease has been around for the 15-18 years he estimated, although not much is known about it. Just recently, there seems to be more concern about the disease. The exact cause of coastwide decline in mussel populations is not known, but this disease is most likely a significant factor. Ron Bergstrom commented that the mussel fishery tends to be boom or bust based on availability.

Paul Bagnall noted his experience with green crabs on Martha's Vineyard. Thousands of pounds can be removed from a single pond. He's seen more interest in trapping for green crabs for bait as horseshoe crabs have become harder to obtain. He hoped that green crabs as bait were not being shipped in from Canada, when they are readily available here to catch for bait and help reduce this invasive species.

A lunch break was taken at noon.

### **Panel Discussion**

The meeting resumed with a Panel discussion of matters of concern and emerging issues with relation to the shellfish resources, fisheries, and management.

Gail Hart expressed a desire for better communication between regulators and the industry, particularly information to growers when illness is implicated. She asked if the grower whose oysters were implicated in a vibrio illness report could get that information quickly. Mike Hickey stated that confidentiality matters can be problematic, regardless *Marine Fisheries* and the Department of Public Health (DPH) agree. Consequently, the two agencies have formed a working group that will be meeting every two weeks to discuss such issues and develop protocols. Regarding illnesses, the desire is to speed up all aspects of the process (e.g., trace-backs at the local level, re-calls if necessary). Vibrio has risen in priority at both *Marine Fisheries* and DPH.

Diane Murphy asked how groups researching shellfish could identify whether the studies they plan to undertake align with agency priorities, methods, and other standards to ensure their usefulness in management, and not be a duplication of other efforts. Mike Hickey replied that the previously mentioned working group would also be discussing research priorities soon, and he expected that DPH would be following up directly with Diane. He also agreed to send Diane appropriate contact information.

Jon Kachmar stated that after listening to Mike's presentation he had a new understanding of the many tasks and responsibilities the Division and its Shellfish Program must fulfill, and wondered whether these many mandates resulted in less emphasis on general survey work and understanding of the Commonwealth's shellfish resources. Both Paul and Mike Hickey replied that changing priorities and funding levels had resulted in less survey work. However, Paul indicated that the Division would be investigating "marine bio mapping" which would utilize existing data collected by various sources (e.g., NGOs, academics) to document species distribution, abundance, and other characteristics. Tom Hoopes also added that the Division did a shellfish suitability project about 10 years ago, the results of which (i.e., GIS datalayer) were available through Massachusetts Office of Geographic Information (MassGIS). Ron Bergstrom added that catch reports ought to provide a good indication of resource distribution and abundance, and that survey work might not be as informative as hoped because of the common fluctuations in shellfish availability in certain areas. Mike Hickey noted that work is still ongoing to get truly comprehensive data from the industry. For example, relatively recent distribution of mitigation monies based on harvest figures was not helpful to many harvesters because they under-reported harvest.

Alex Hay questioned whether the industry was represented at the bi-weekly *Marine Fisheries*-DPH working group meetings. If not, he thought such direct involvement would be beneficial. He noted that the industry was pleased with the level of engagement this year compared to past years (with regards to Vibrio management), but improvements could still be made to have the industry at the table through the entire process. Mike Hickey responded that the working group meetings were solely among agency personnel thus far in order to work out interagency protocols, and once those were determined, he expected that industry could be brought in. Paul noted that the MFAC often tasks a sub-group to work on challenging issues that arise, and that Vibrio might be one such issue for a sub-group of the Shellfish Advisory Panel to meet over.

Bob Stanley commented on the many areas between Boston and Merrimack closed to softshell clam harvesting, and asked whether the few remaining Conditionally Approved areas could have their restrictions relaxed at all (i.e., longer harvesting season or less stringent rainfall action levels). Jeff Kennedy responded that when those areas were surveyed and re-opened, the Division had been as liberal as possible. Because there had been no improvement in water quality, he didn't foresee any changes in the near-term. He commented on the careful balance that has to be reached between

providing harvester access and protecting public health and safety. Paul asked whether there were other species in the areas that could possibly be targeted. Mike Hickey reported that the Shellfish Program was investigating whether razor clams or European oysters could be harvested for depuration.

Paul Bagnall thanked *Marine Fisheries* for its participation at the quarterly meetings of the MA Shellfish Officers Association and for supporting the Martha's Vineyard Shellfish Group. He brought forth several issues related to Martha's Vineyard in particular. First, he requested the Division to consider backfilling the position left by Mike Syslo's passing, in order to have fulltime personnel on the island that could respond to the day-to-day issues. Second, he raised the issue of air-drying oysters as an anti-fouling method and whether it raises levels of vibrio and the risk of illness. He asked the Division to study and report on this relationship. Third, he questioned whether the time-of-year restrictions on dredging the island's navigational channels could be relaxed at all. Regarding this last issue, Paul Diodati suggested that Paul Bagnall have a one-on-one discussion with Kathryn Ford.

Skip Bennett asked whether industry and the public would be a part of the Division's strategic planning process for the next plan. Paul indicated yes, and that was part of the idea behind forming the Shellfish Advisory Panel. Skip further asked if the agency would take a stance on the growth of the aquaculture industry in the strategic plan. Paul pointed out the goal in the current strategic plan related to aquaculture, and expected that the next strategic plan would again address the Division's stance on aquaculture and how to support its growth in Massachusetts. Mary suggested that the strategic planning process could be the subject of a future presentation to the Advisory Panel.

Bob Wallace commented that Massachusetts enjoys one of the highest ex-vessel prices on shellfish along the seacoast and opined that this is partly because of the public's confidence in the product. Ron Bergstrom agreed that the reputation of MA's product is of utmost importance. In order to maintain that public confidence, Bob supported strict penalties for violations in the industry (e.g., denial/revocation of harvest and dealer permits for serious infractions). Paul noted that while the Office of Law Enforcement is within the same cabinet of the administration, it is not under *Marine Fisheries* supervision.

Monte Rome questioned whether shellfish constables or others could be "deputized" to collect samples for the Division to increase the number or frequency of samples taken. Mike Hickey responded that the Food and Drug Administration generally frowns upon using non-agency personnel to collect samples because of strict sampling and handling protocols. He noted that the bottleneck with Vibrio is not in collecting samples but with testing them in the lab.

Monte also questioned why the surf clam dredge fishery was being restricted in Provincetown. He didn't feel this was necessary. Dan McKiernan responded that while towns don't have authority to regulate fishing gear, Provincetown had put in these restrictions under wetlands provisions because of the term "dredge". He agreed this issue should be revisited.

Gail Hart hoped that town officials would refer to the Division's strategic plan with regards to supporting aquaculture development. Mike Hickey noted the clear legal authority of towns for aquaculture licensing, and thought it unlikely that regulations or goals relative to aquaculture would be uniform among towns. Skip commented it was unfortunate that aquaculture is managed at the town level (and often blocked because of a few land owners) despite the fact that benefits are at the state level. He suggested some consequences for those that block aquaculture, or wondered if there were other ways to incentivize towns to permit aquaculture (e.g., priority for certain funding sources). Jon Kachmar

supported a change in the public discourse of wild harvest and aquaculture fisheries as adversaries to how they can be mutually beneficial. Alex Hay agreed.

Paul Diodati invited the panel members to submit any other issues anonymously on paper. Issues collected by staff included: potential threat of losing the Aquaculture Research Corp. due to funding shortages (in need of \$500,000); concern of other toxic algal blooms (e.g., *Cochlodinium*); need for more transparency and industry involvement in management and policy-making; need for more shellfish seed distribution to municipalities, especially bay scallops; and longer dredging seasons for town projects.

### **Wrap-Up**

Paul Diodati stated that these issues, and any others submitted by the panel after the fact, would be included in the summary and addressed in more detail at the next meeting. He suggested that the Division would be looking for more funding in the future to support and grow the Shellfish Program. He noted that the legislature had been responsive to such needs lately.

Regarding future meetings, Paul anticipated that the panel would meet a couple more time this year, with the next meeting possibly in June. He concluded by once again thanking all the panel members for their interest and willingness to participate in the process.

The meeting concluded at 2:45pm.

# SHELLFISH PROGRAM OVERVIEW

**Marine Fisheries**  
Commonwealth of Massachusetts



## Shellfish Sanitation and Management Program

Two Primary Missions:

- 1) Public Health Protection
- 2) Direct and Indirect Management of Commonwealth's Molluscan Shellfish Resources



July 1, 2014

© 2014 Division of Marine Fisheries

Slide 2



## Public Health Protection

- Sanitary Classification of Shellfish Growing Waters (mandated by statute)
- Biotoxin Monitoring
- Program to Reduce Occurrence of *Vibrio parahaemolyticus*
- Evaluation of Human Health Impacts of Oil/Chemical Spills



July 1, 2014

© 2014 Division of Marine Fisheries

Slide 3



## Public Health Protection

- Evaluation of Events on Water Quality
  - Storms, Boat Sinkings, Fires, WWTP Failures
- Illness Outbreak Review
  - Noro-Virus – Chatham
  - Amnesic Shellfish Poisoning – NJ
  - VP
- National Pollution Discharge Elimination Permit (13)



July 1, 2014

© 2014 Division of Marine Fisheries

Slide 4



## Shellfish Management – Direct

- Commercial Surf Clam, Ocean Quahog, State Waters Quahog Dredge Boat Fisheries
- Contaminated Shellfish
  - Depuration
  - Relaying
- Size Limits
- Boston Harbor Soft Shell Clam Enhancement



July 1, 2014

© 2014 Division of Marine Fisheries

Slide 5



## Shellfish Management – Direct

- Maximum Harvest Limits
- Bay Scallop Season Extension
- Shellfish Aquaculture
- Recreational Statistics
- Shellfish Hatchery on Martha's Vineyard



July 1, 2014

© 2014 Division of Marine Fisheries

Slide 6





## Shellfish Management - Indirect

- Partnership with Coastal Municipalities
- Technical Assistance
- Consult on Management, Planning and Regulatory Decisions



July 1, 2014

© 2014 Division of Marine Fisheries

Slide 7



## Sanitary Surveys

- Shoreline Survey: Evaluation of all actual and potential pollution sources and impacts on water quality (12 year cycle)
- Evaluation of Environmental Factors: meteorological, hydrological, geographic
- Written Report Evaluating Data and Classifying Growing Waters
- Triennial Re-evaluation
- Annual Review



July 1, 2014

© 2014 Division of Marine Fisheries

Slide 8



## 2013 Classification Report

- Number of Notices: 405
- Annual Re-evaluation: 233
- Sanitary Surveys: 69
- Triennials: 49
- Conditional Area Management Plan Evaluations: 29



July 1, 2014

© 2014 Division of Marine Fisheries

Slide 9



## Sanitary Classification

- Completed written report is required for each survey and re-evaluation or area must be closed to harvest
- Annual FDA audit of program elements and file review with report to state and ISSC
- 303 Designated Shellfish Growing Areas
  - 1,500 miles of Coastline
  - 1,746,723 acres



July 1, 2014

© 2014 Division of Marine Fisheries

Slide 10



# Acreage

Classification	2012	2013	Change
Approved	1,444,355	1,444,829	474
Conditionally Approved	25,672	25,286	-386
Restricted	2,992	2,992	nc
Conditionally Restricted	4,783	5,086	303
Prohibited	266,997	266,606	-391



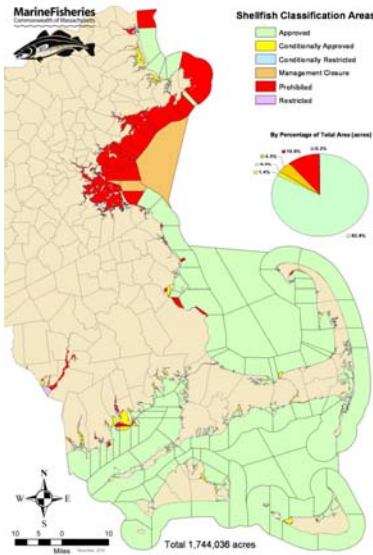
July 1, 2014

© 2014 Division of Marine Fisheries

Slide 11



# Shellfish Area Map Classification



July 1, 2014

© 2014 Division of Marine Fisheries

Slide 12



# Sanitary Classification

- Maintain List of Growing Areas Including:
  - Legal Description of Area
  - Map of Area Showing Classification(s) of Area or Subareas
  - Legal Description of Areas and Subareas



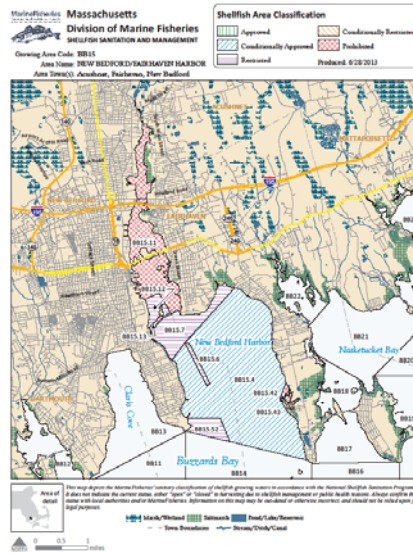
July 1, 2014

© 2014 Division of Marine Fisheries

Slide 13



# Classification Map New Bedford Harbor



July 1, 2014

© 2014 Division of Marine Fisheries

Slide 14



## Water Quality Monitoring

	Gloucester Lab	New Bedford Lab	Total
# of Water Samples	3,013	6,944	9,957
# of Shellfish Growing Areas Sampled	23	225	248
# of Classification Areas Sampled	112	391	503
# of Cities/Towns Sampled	22	40	62
# of Classification Station Samples	2,878	6,161	9,039
# of Pollution Sources Samples	110	233	343
# of Ad-Hoc Samples	25	50	75



July 1, 2014

© 2014 Division of Marine Fisheries

Slide 15



## Biotoxin Monitoring

- Weekly Sampling of Blue Mussels (Sentinel Species) at 15 Primary Stations along the Coast from Mid-March to Mid-November for Paralytic Shellfish Poison Toxin (PSP aka “Red Tide”)
- Weekly Phytoplankton Monitoring at Primary Shellfish Stations and Non Shellfish Stations
- Collaborate with WHOI, MWRA, FDA and Other States



July 1, 2014

© 2014 Division of Marine Fisheries

Slide 16



## Biotoxin Monitoring

- Increase Sampling Frequency, Number of Stations and Species as PSP Toxin Starts to Show and Levels Rise
- Sample for Other Toxins as Situation Warrants in Collaboration with FDA, DPH, WHOI
  - ASP – Domoic Acid
  - DSP – Okadaic Acid
- Maintain Database From 1972



July 1, 2014

© 2014 Division of Marine Fisheries

Slide 17



## 2013 PSP Total Samples

Species	Sample count
<b>STATE WATERS</b>	
BLUE MUSSEL	422
SOFTSHELL CLAM	3
NORTHERN QUAHOG	2
EASTERN OYSTER	1
<b>FEDERAL WATERS</b>	
SURF CLAM	48
OCEAN QUAHOG	16
<b>TOTAL</b>	<b>492</b>



July 1, 2014

© 2011 Division of Marine Fisheries

Slide 18



## Maximum Blue Mussel Counts by Area in 2013

Area	PSP	Date Occurred
OC3	627	05/05/2013
OC5	181	05/12/2013
OC6	385	05/05/2013



July 1, 2014

© 2014 Division of Marine Fisheries

Slide 19



## Duration of PSP Bloom in Days

Area	Level	Onset	Conclusion	Duration	Max Tox
OC3	Detection Limit	03/11/2013	05/27/2013	78	627
OC3	≥ 80 µg/100g	04/21/2013	05/19/2013	29	
OC5	Detection Limit	04/28/2013	05/26/2013	29	181
OC5	≥ 80 µg/100g	05/12/2013	05/12/2013	1	
OC6	Detection Limit	03/31/2013	06/02/2013	64	385
OC6	≥ 80 µg/100g	04/28/2013	05/26/2013	29	



July 1, 2014

© 2011 Division of Marine Fisheries

Slide 20



## *Vibrio parahaemolyticus (Vp)* Control/Reduction

- Emerging Bacterial Pathogen in MA
- Naturally Occurring, Not Pollution Related
- Most Often Associated with Raw and Undercooked Oysters in Warm Months
- Due to Vp Related Illnesses, MA Required to Implement a Vp Control Plan for Commercially Harvested Oysters in Eastern Cape Cod Bay in 2011 and for Entire State Since 2012



July 1, 2014

© 2014 Division of Marine Fisheries

Slide 21



## *Vibrio parahaemolyticus (Vp)* Control/Reduction

- Oysters Harvested During the Summer Months are Almost Exclusively Produced by Privately Licensed Aquaculturists
  - There is Little Summer Wild Harvest
- Annual Risk Evaluation
- Water and Air Temperature Monitoring



July 1, 2014

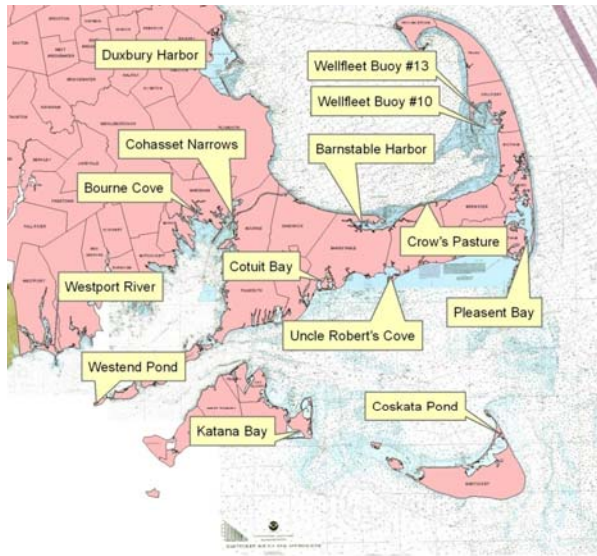
© 2014 Division of Marine Fisheries

Slide 22





# Water Temperature Stations



July 1, 2014

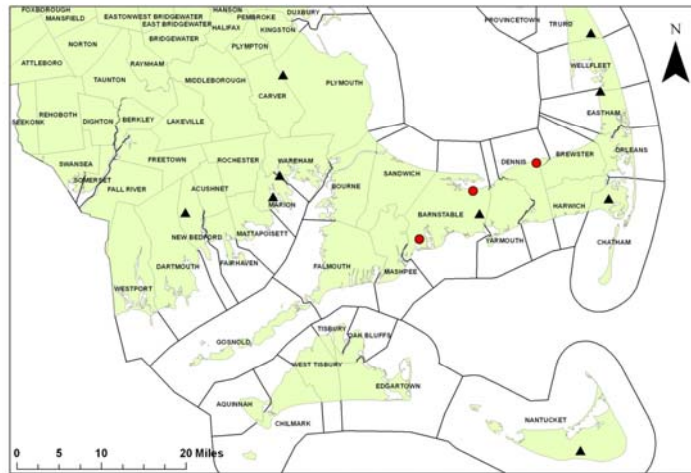
© 2014 Division of Marine Fisheries

Slide 23



# Air Temperature Stations

### Air Temperature Stations for the Summer of 2012 and 2013



Red Circles are DMF stations  
Black Triangles are Weather Underground stations



July 1, 2014

© 2014 Division of Marine Fisheries

Slide 24



## Annual Vp Control Plan

- FDA Evaluation and Approval
- Harvesters (growers/fishermen), Wholesale Dealers (primary buyers) – Education, Training
- Requires Coordination between State (DMF, DPH, OLE) and Local Authorities, Constables and BOH



July 1, 2014

© 2014 Division of Marine Fisheries

Slide 25



## Contaminated Relays

- Completed Under Strict NSSP Guidelines and in Consultation with DPH
- Prior to Relay, Shellfish Tested Annually for Metals, PCBs, and Shellfish Diseases
- Relayed Shellfish must be held for 90 Days Minimum or One Spawning Season
- Shellfish Relayed After June 15 Must be held until September 15 of Following Year



July 1, 2014

© 2014 Division of Marine Fisheries

Slide 26



## 2013 Contaminated Relays

- 15,117 bu. of Quahogs from Taunton River
- Seventeen Towns – 31 separate sites
- Three Dredge boats
- Oysters
  - Barnstable – 150 Bushels – Propagation
  - Chatham – 1,043 Bushels – Norovirus
  - Falmouth – 272 Bushels – N Study



July 1, 2014

© 2014 Division of Marine Fisheries

Slide 27



## Shellfish Purification Plant

- Newburyport, MA
- Depuration of Softshell Clams from Conditionally Restricted Growing Areas
  - Potential for the depuration of other species: Razor clams (study currently on-going), European oysters, Quahogs
- Potential for Depuration of *Vp* and MSC
  - Planning *Vp* depuration trials for 2014



July 1, 2014

© 2014 Division of Marine Fisheries

Slide 28



## Shellfish Purification Plant

- De-sanding and Wet Storage of all MA Commercial Shellfish Species
- Open to All MA Licensed Shellfish Dealers
  - Fees based on per rack basis
- Leasing of Tank Space for Commercial or Research Purposes



July 1, 2014

© 2014 Division of Marine Fisheries

Slide 29



## Aquaculture

- *Marine Fisheries* Manages and Regulates Shellfish Aquaculture 322 CMR 15.00 and Chapter 130, Sec 57-68
- Surveys and Certifies License Sites (Grants)
- Permits Aquaculturists to Obtain and Possess Seed
- Provides Assistance to Shellfish Growers with Permitting and Compliance



July 1, 2014

© 2014 Division of Marine Fisheries

Slide 30



# Aquaculture

- Assists Individuals Interested in Aquaculture
- Assists Municipalities with Local Regulation and Management of Aquaculture
- In 2013:
  - 341 Growers - Permits in 28 Towns - 1,011 Acres
  - 17 Proposed Sites Surveyed and Approved



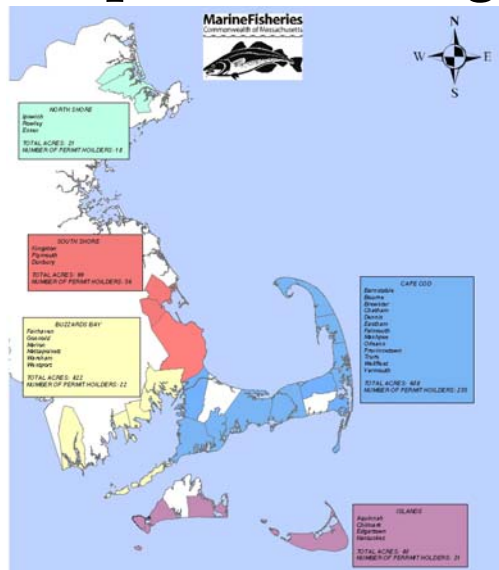
July 1, 2014

© 2014 Division of Marine Fisheries

Slide 31



## 2013 Aquaculture Regions



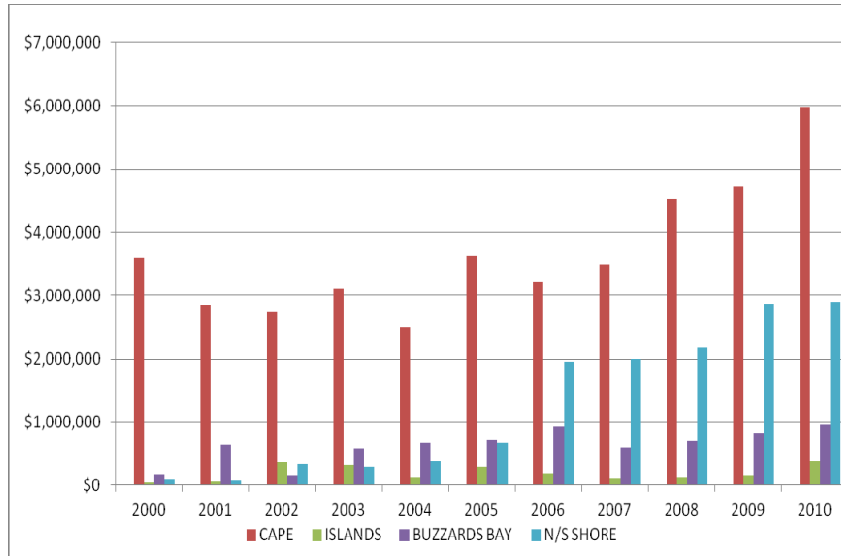
July 1, 2014

© 2014 Division of Marine Fisheries

Slide 32



### Dollar Value by Region for Shellfish Aquaculture, 2000-2010



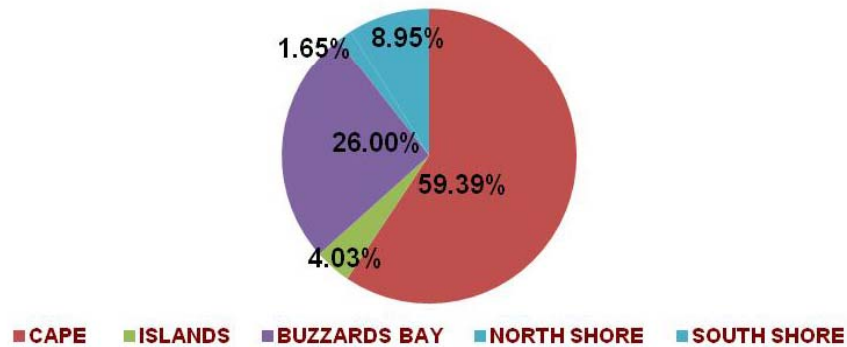
July 1, 2014

© 2014 Division of Marine Fisheries

Slide 33



### Percentage of the Total Aquaculture Growing Area for the State of Massachusetts, 2011



July 1, 2014

© 2014 Division of Marine Fisheries

Slide 34



# Hughes Hatchery & Research Station

Vineyard Haven, Martha's Vineyard

- **March 2012:** State Lobster Hatchery renamed after John T. Hughes
- **June 2011:** 3-yr License Agreement signed with MVSG to use hatchery for shellfish culture for distribution to 6 Island Townships to enhance public shellfish populations
- **December 2013 -** License Agreement extended to Dec. 2016
- MA Office of Law Enforcement also uses facility as base of operations on MV



July 1, 2014

© 2014 Division of Marine Fisheries

Slide 35



# Hatchery Renovations & Production

- Renovations (e.g.)
  - New seawater pumping, control, and distribution systems
  - New aeration system
  - Old greenhouse renovated
  - New greenhouse with seawater, aeration, ventilation & electrical systems
  - Two new seawater intake screens
- 2013 Shellfish Production
  - Quahogs: 5,703,350
  - Scallops: 138,000
  - Oysters: 2,000,000 eyed larvae = 146,000 spat on shell
- Future Production Plans
  - MVSG to expand production of juvenile quahogs, oysters, bay scallops.
  - MVSG to build capacity for larval culture in new greenhouse



July 1, 2014

© 2014 Division of Marine Fisheries

Slide 36



## Challenges

- Vibrio management plans
- NGO initiatives to establish oyster reefs for ecological services
- Shellfish restoration projects in response to oil spill mitigation
- Continued improvement of trip-level reporting
  - Wild harvesters began in 2010, aquaculturists in 2011
  - Transaction cards issued in 2014 to employees of aquaculturists and shellfish vessel captains



July 1, 2014

© 2014 Division of Marine Fisheries

Slide 37



## Challenges

- Open water aquaculture
  - Mussels in Vineyard Sound and possible upcoming in Nantucket Sound inside wind farm
  - P'town and Truro ADA and potential for protected species interactions
  - Future Gloucester ADA
  - Potential SSU Mussel Farm in EEZ off Gloucester
- Boston Harbor soft shell clam declines
- New wet storage potential at Purification Plant



July 1, 2014

© 2014 Division of Marine Fisheries

Slide 38





## Challenges

- Potential for other species to undergo depuration (ex. razor clams)
- Invasive spp. proliferation and public sentiment to deplete them to enhance shellfish survival (ex. green crabs)
- Management of other fisheries perceived to benefit or harm shellfish (ex. HSC, whelk)
- Public perception re: relays of quahogs from contaminated waters to clean beds



July 1, 2014

© 2014 Division of Marine Fisheries

Slide 39



## Challenges

- Repurposing the MV Lobster Hatchery to a shellfish hatchery
- Dock-side testing to allow a re-opening of Georges Bank surf clam fishery
- Waved Whelk fishery in EEZ and need to complete testing and continue to monitor for PSP to meet FDA Requirements
- Shellfish Mitigation for the New Bedford Marine Commerce Terminal



July 1, 2014

© 2014 Division of Marine Fisheries

Slide 40

