

Shellfish Harvest, Handling & *Vibrio* Control



**DIVISION OF MARINE FISHERIES
MASSACHUSETTS DEPARTMENT OF FISH & GAME**

National Shellfish Sanitation Program (NSSP)

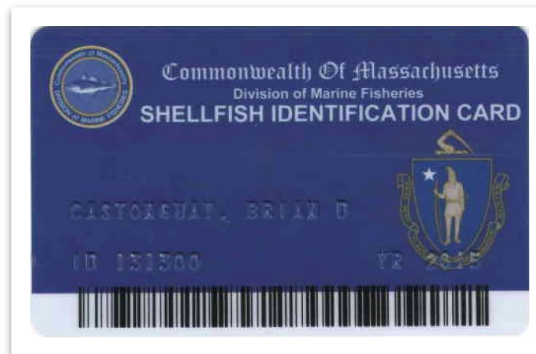
Guide for the Control of Molluscan Shellfish 2019 Revision



Model Ordinance or **MO** means that part of the most recent version of the NSSP Guide for the Control of Molluscan Shellfish that sets forth the requirements that states have agreed to enforce through their participation in the Interstate Shellfish Sanitation Conference (ISSC), which are minimally necessary for the sanitary control of shellfish produced from that state to ensure that it is safe for human consumption.

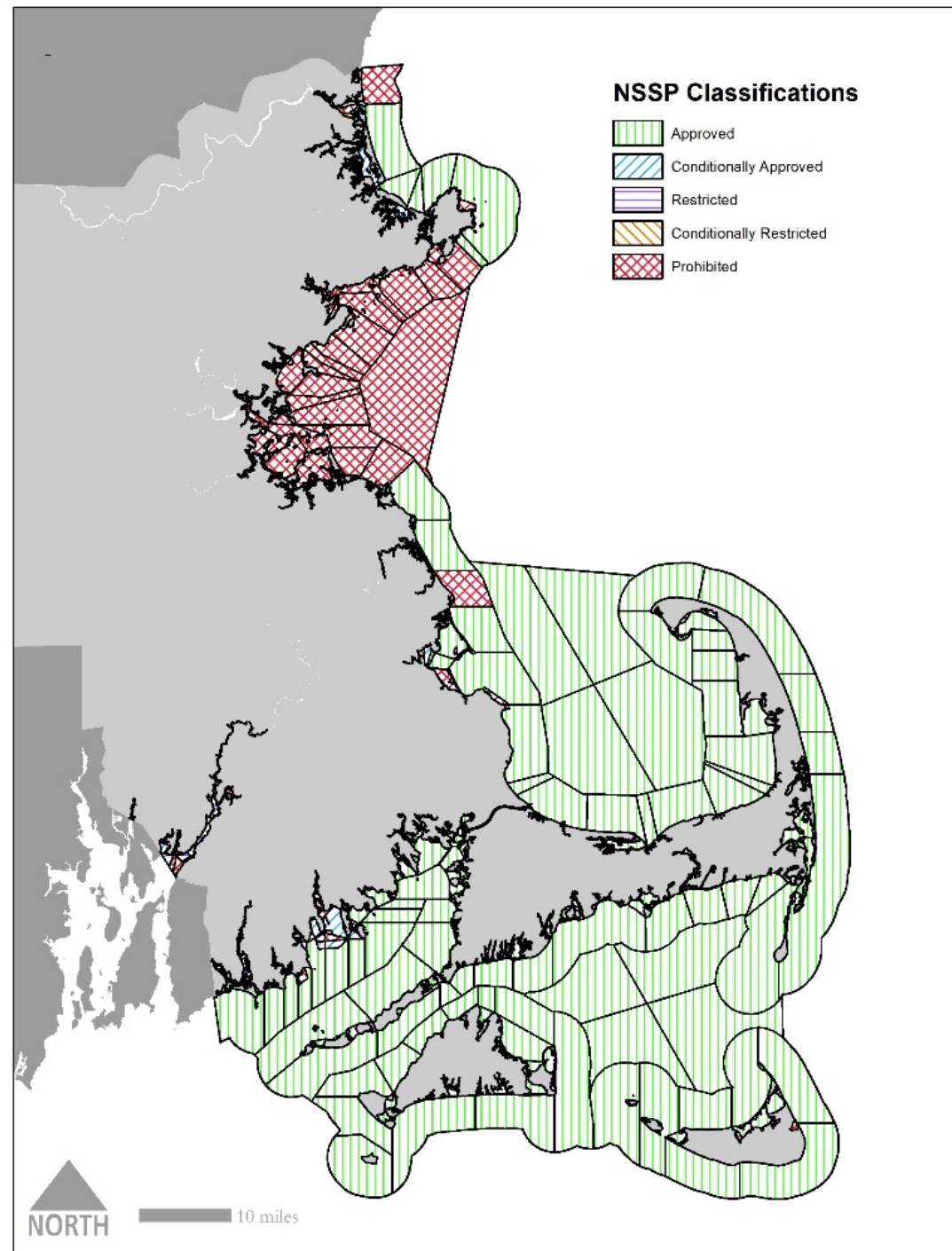
Basic Harvest and Handling

- 322 CMR 6.00: REGULATION OF CATCHES: gear restrictions, market size, no more than 5% below market size, aquaculture reared minimum sizes, etc.
- HARVEST: Individuals commercially harvesting shellfish must have a state commercial fishing permit endorsed for commercial shellfish harvesting and the companion Shellfish Transaction Card
- Shellfish for direct marketing may only be harvested from waters classified as Approved or Conditionally Approved by DMF and in the “open status”.
 - Harvesters should consult with local shellfish authorities or DMF to determine those areas that are open and safe for harvesting
 - Information on shellfish growing area classifications can be found by searching “DSGA” on DMF’s website



Shellfish Growing Area Classifications

[https://www.mass.gov/service-
details/shellfish-classification-areas](https://www.mass.gov/service-details/shellfish-classification-areas)



Basic Harvest and Handling

- **HANDLING:** Harvesters shall ensure shellfish are harvested, handled, and transported in a manner to prevent contamination and deterioration. All containers used to hold shellfish shall be clean, free of debris, and fabricated using safe, easily cleanable materials (smooth surface). Shellfish shall be covered or in a closed vehicle during transport to prevent exposure to direct sunlight and contaminants.



Basic Harvest and Handling Checklist

- Boats used in harvesting must be kept clean.
 - Shellfish shall be stored on raised areas to prevent contact with bilge water and away from fuel, oil and other chemicals.
 - Shellfish shall be covered to prevent exposure to hot sun and birds. Each harvest boat must have a sanitation device or container with a tight-fitting cover and be secured and placed to prevent contamination of shellstock by spillage or leakage.
 - Each container must be indelibly labeled "Human Waste" in contrasting letters at least three (3) inches in height.
 - Containers should be emptied only into a sewage disposal system and cleaned. The overboard discharge of human waste is prohibited in Massachusetts.
 - Dogs, cats and other animals are not allowed on harvest vessels



Basic Harvest and Handling

- All containers of shellfish must be **individually** tagged.
 - The tag shall contain:
 - The full name of the harvester,
 - DMF Commercial Shellfish Permit ID number,
 - Date and **time** of harvest (time of exposure of first shellfish harvested),
 - The type and quantity of shellstock,
 - The initials MA, the shellfish area name and number, and if applicable the aquaculture site number.
 - The following statement shall be written in bold capitalized type “ THIS TAG IS REQUIRED TO BE ATTACHED UNTIL CONTAINER IS EMPTY OR IS RETAGGED AND THEREAFTER KEPT ON FILE FOR 90 DAYS” (322 CMR 16.05).

*Tags on containers of cultured “petite” oysters, quahogs and surf clams must include the statement "aquaculture reared" or "farm raised"

HARVESTER TAG

NAME: John Smith

HARVESTER PERMIT #: 111-111

HARVEST DATE: 7/7/15 TIME: 12:05

HARVEST AREA: MA CCB-11 701 1:35

TYPE OF SHELLFISH: Oyster

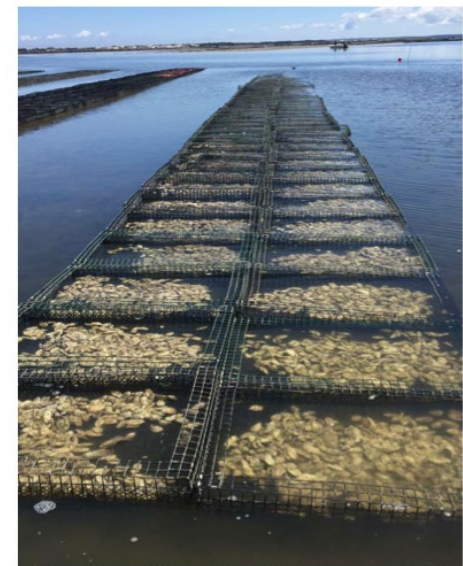
QUANTITY OF SHELLFISH: 100

THIS TAG IS REQUIRED TO BE ATTACHED UNTIL CONTAINER IS EMPTY OR IS RETAGGED AND THEREAFTER KEPT ON FILE FOR 90 DAYS.

Bulk Tagging for Culling and Overwintering (Aquaculturists Only)

If a permit is endorsed for **off-site culling** or **off-site overwintering**, the permit holder may bulk tag individual lots of shellfish during transport to and from the aquaculture license site and the off-site location.

A single **green waterproof tag** may be used indicating the permit holders name, Shellfish Aquaculture Permit number, date of removal, and location of the licensed site (town and water body), number of containers in the lot with the following statement: *All shellfish containers in this lot have the same removal date and are from the same licensed site.*



BULK TAG BACK

☐	AQUACULTURALLY REARED TO BE CULLED/OVERWINTERED
☐	AQUACULTURALLY REARED CULLED/OVERWINTERED FOR RETURN TO LICENSE SITE

BULK TAG FACE

	NAME: _____
	Aquaculture PERMIT #: _____
	REMOVAL DATE: _____ RETURN DATE: _____
	HARVEST AREA: _____
	AQUACULTURE SITE#: _____
	TYPE OF SHELLFISH: ☐ OYSTER ☐ HARD CLAM
	"Number of containers in this lot" _____ Lot# _____
	ALL SHELLFISH CONTAINERS IN THIS LOT HAVE THE SAME REMOVAL DATE AND RETURN DATE ARE FROM THE SAME LICENSED SITE.

5 1/4"

2 5/8"

Additionally, one of the following statements must be on the tag:

1. **Aquaculturally Reared** :To be culled or overwintered.
2. **Aquaculturally Reared** :Culled or overwintered, for return License Site

No direct marketing of shellfish is allowed from any type of land-based overwintering location. All market-sized oysters overwintered out of water must be re-submerged (**re-conditioned**) for a **minimum of 14 days** prior to harvest for human consumption.



Basic Harvest and Handling

- TRANSPORT: All species of shellfish, regardless of the time of year, should be transported directly to a permitted wholesale dealer with a primary buyer endorsement for shellfish as soon as possible to be placed under refrigeration.
- Shellfish may also be sold to a wholesale dealer at the landing site.
- Shellfish bound for market shall not be stored at any unpermitted facility prior to delivery to a permitted wholesale dealer.



Basic Harvest and Handling

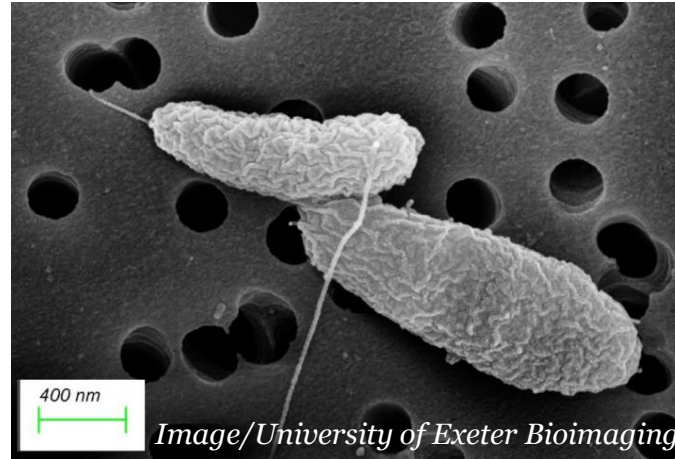
The NSSP, DPH and DMF have maximum timelines for delivery of shellfish to a permitted wholesale dealer by the harvester after harvest or exposure.

- Shellfish must be delivered to the dealer on the same day of harvest.



- May through October shellfish must be delivered to the dealer on the same day of harvest in less than 18 hours from time of harvest or exposure.
 - Only Surf Clams and Ocean Quahogs intended for thermal processing are exempt from these standards.
- Additional requirements apply to oysters during the V.p. Control season May 19th through October 19th (322 CMR 16.07).
- Shellfish may be harvested for personal consumption

What are *Vibrio* bacteria?



- *Vibrio* is a diverse genus of bacteria that exist free-living or associated with human/animal hosts
- Naturally occurring in marine and coastal waters
 - Halophilic (can grow/thrive in high salt concentrations)
 - Present in higher concentrations during summer/High growth rates in warm temperatures
- **One of the fastest growth rates of all known bacteria**
- About a dozen *Vibrio* species can cause human illness, known as vibriosis
 - **Pathogenic strains small percentage of the total *V.p.* in marine waters**
- Can be concentrated in oyster tissue up to 100X higher than in water column

VIBRIO BACTERIA WARNING



Eating raw shellfish from this beach
can make you SICK.



Image Source: Shutterstock

- Vibriosis causes ~80,000 illnesses (~45,000 from consumption of *Vp* contaminated food), 500 hospitalizations and 100 deaths/yr in the US
- *V. parahaemolyticus* leading cause of seafood borne illness (87% require no medical care)
 - Diarrhea, often accompanied by abdominal cramping, nausea, vomiting, fever, and chills. Symptoms occur within 24 hours of ingestion and last about 3 days.
 - Severe illness is rare and typically occurs in people with a weakened immune system.
- Associated with consumption of raw/undercooked seafood, particularly raw oysters
- Confirmed illnesses have increased in last 2 decades and is an ongoing public health challenge



An illness outbreak (two or more illnesses epidemiologically linked to oysters harvested at the same time from same area) triggers a *Vibrio* Control Plan for the area under NSSP standards.



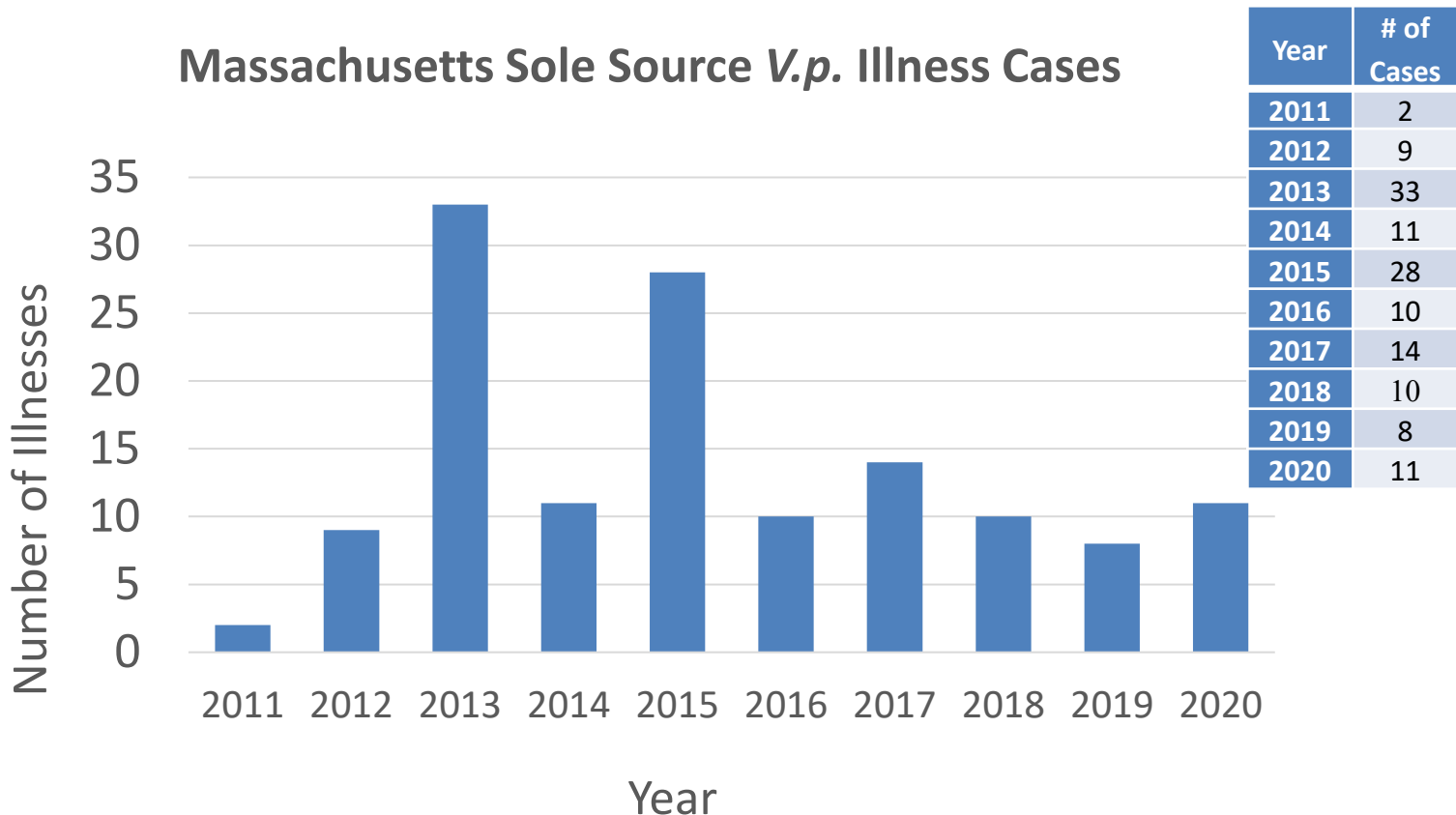
First MA *Vibrio* Control Plan implemented in 2012 for eastern Cape Cod Bay only



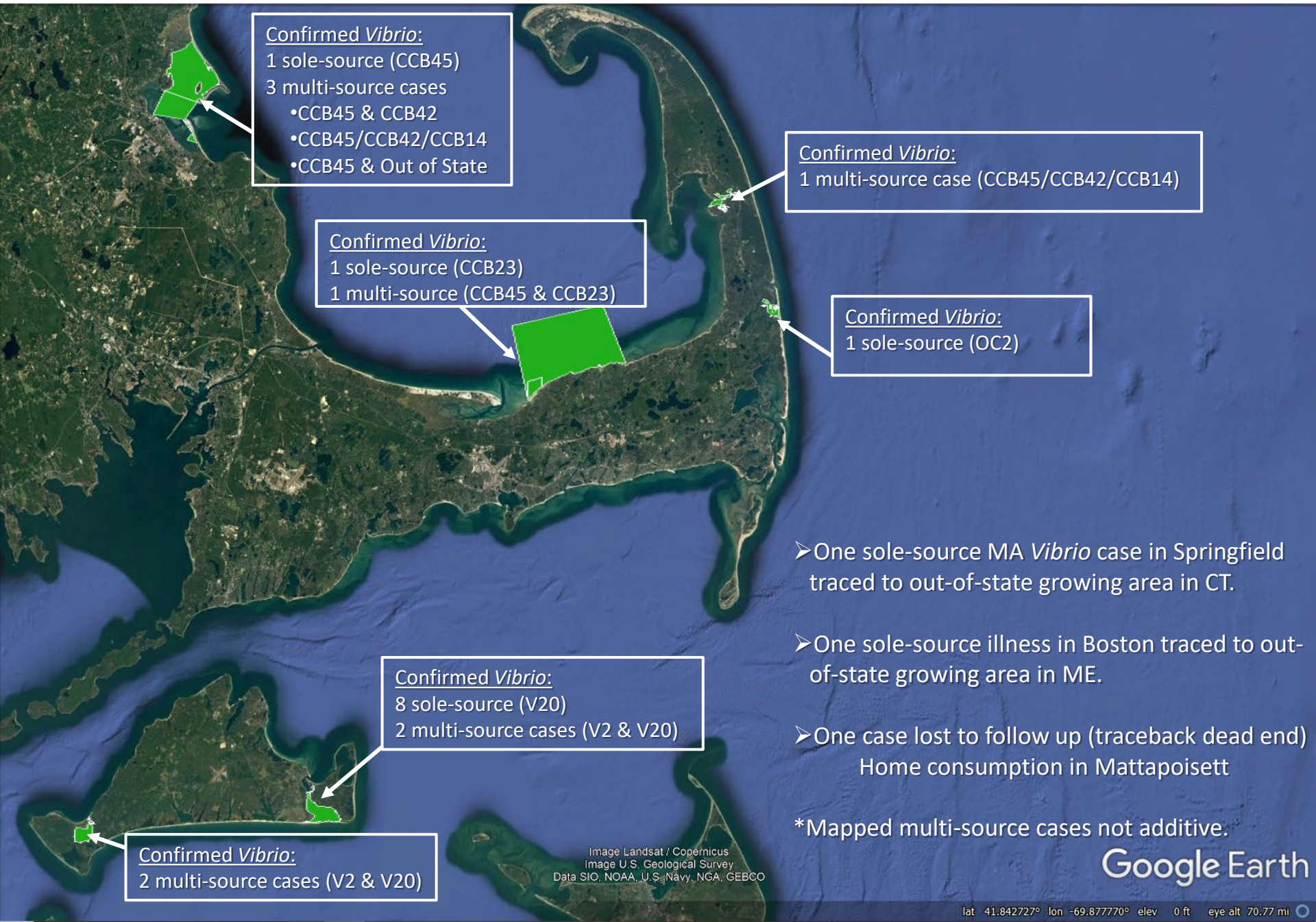
2011 was the first time two illnesses had been traced back to the same Massachusetts source.



No outbreaks linked to the consumption of commercially harvested hard clams from Massachusetts harvest areas.



2020 *Vibrio* Control Season: 19 Illnesses



***Vibrio* Control Plan
And
Implementing Regulations at 322 CMR 16.07**

**Division of Marine Fisheries
Department of Public Health
Office of Law Enforcement
Local Boards of Health**

***V.p.* Season May 19 - October 19**

Applies to all oysters ≥ 2.5 "

<https://www.mass.gov/service-details/review-the-vibrio-control-plan>

V.p. Compliance Monitoring at Harvest: General Tagging Requirements

C Shellfish Tagging:

- | | | | |
|---|--|-----|----|
| 1 | Are All Containers Properly Tagged? | Yes | No |
| 2 | Do the Tags Include the Following Information? | | |
| a | Time of Harvest: | Yes | No |
| b | Time of Icing | Yes | No |
| c | Harvest Date: | Yes | No |
| d | Harvest Area: | Yes | No |
| e | Harvester ID | Yes | No |

HARVESTER TAG

NAME: John Smith

HARVESTER PERMIT #: 111-111

HARVEST DATE: 7/7/15 TIME: 12:05

HARVEST AREA: MA CCB-11

TYPE OF SHELLFISH: Oyster

QUANTITY OF SHELLFISH: 100

THIS TAG IS REQUIRED TO BE ATTACHED UNTIL CONTAINER IS EMPTY OR IS RETAGGED AND THEREAFTER KEPT ON FILE FOR 90 DAYS.

All containers of shellfish in transit, wild harvested or removed from an aquaculture license site, seed or market sized, intended for market or not, must bear a tag:

Tagging Requirement. A tag with the features and harvest information specified in 322 CMR 16.05(1)(a) **must be attached** to all containers of shellfish shellstock before reaching the landing site.

V.p. Compliance Monitoring at Harvest: **Time of Harvest**

All commercial fisherman or aquaculturists must accurately record the time of harvest for each **harvester lot** of **market bound oysters**

322 CMR 16.02 General Definitions:

Harvester Lot means containers of oysters identified by the harvest tag as having the **same time of harvest** and consisting of oysters from a **single defined growing area** gathered by a **single commercial fisherman or aquaculturist**.

Market Bound Oysters means oysters removed from a shellfish growing area by a commercial fisherman or aquaculturist intended for commercial purposes on that calendar day.

Time of Harvest for **sub-tidal areas** means the time when the **first oyster** in a harvester lot is **taken from the water** on a calendar day and for **intertidal areas** means the time when the **first oyster** in a harvester lot is **exposed during a single low tide cycle** or when the first oyster in a harvester lot is taken from the water, whichever occurs first.

-Harvesters must accurately record when oysters are exposed by tide at the time of exposure

***In intertidal areas time of harvest may only occur on the ebb tide during the V.p. Control Season**



V.p. Compliance Monitoring at Harvest: Shading Requirements

E Shellfish Handling:

- | | | | |
|---|--------------------------------|-----|----|
| 1 | Are Oysters Adequately Iced? | Yes | No |
| 2 | Are Oysters Adequately Shaded? | Yes | No |

322 CMR 16.07 (2) Adequately Shaded means the measures required to be taken to protect oysters from direct exposures to sunlight.

322 CMR 16.07 (3)(b) Shading requirement. All commercial fishermen and aquaculturists shall adequately shade oysters **immediately following harvest and until oysters are adequately iced**.

Materials in direct contact with oysters or bags of oysters must be smooth, easily cleanable and impervious to water to avoid cross contamination with bacteria.

Harvesters are encouraged to avoid placing shading materials in direct contact with oysters to allow adequate air flow between oysters and shading materials.

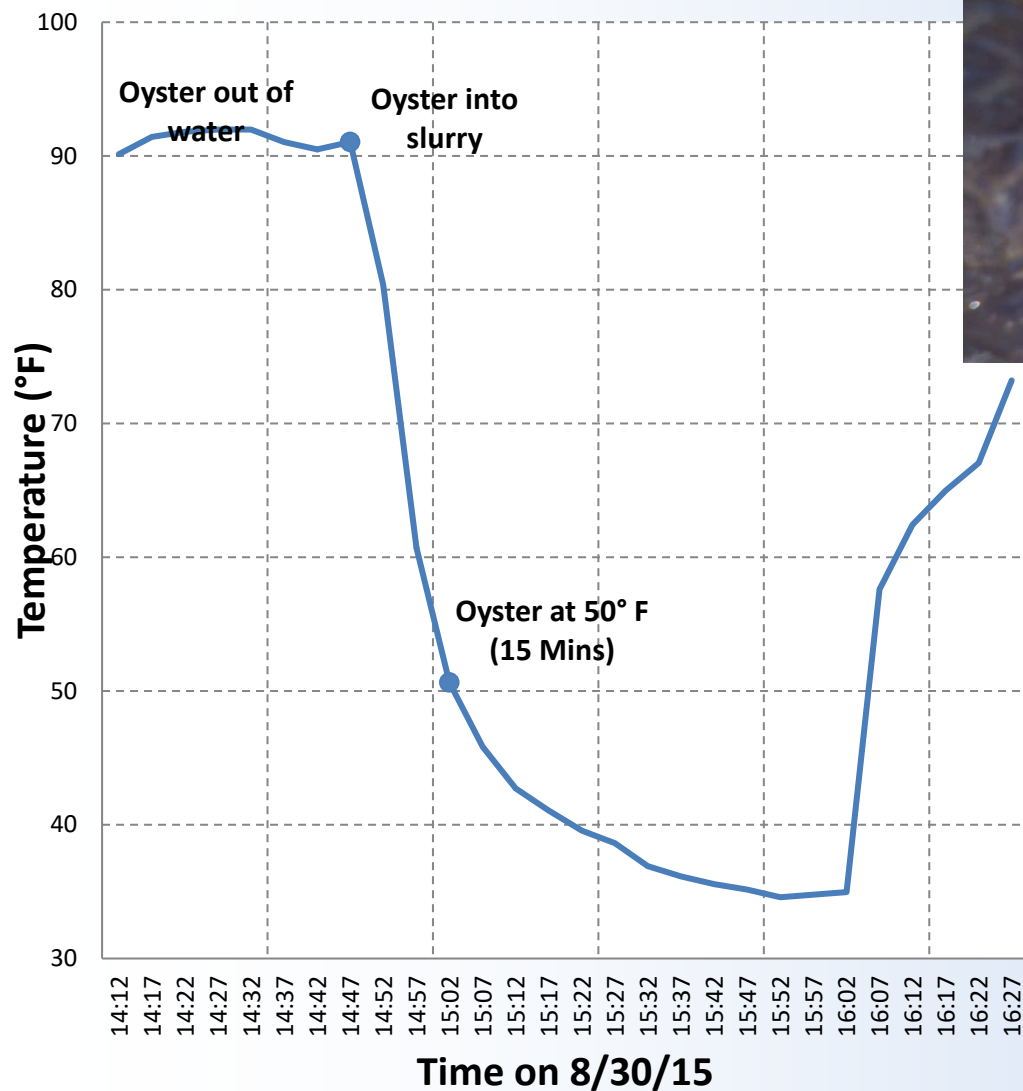


Rapid Cooling (Icing)

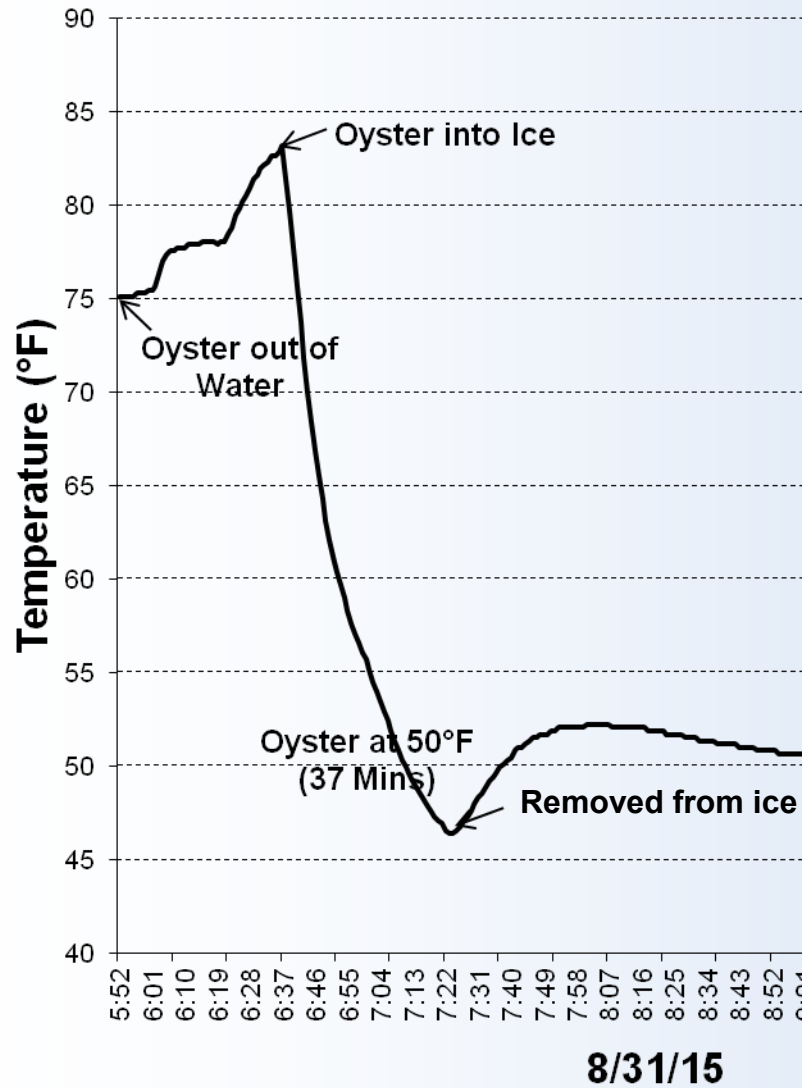


Oyster Temp (° F)	Growth Rate (logs/hr)	Doubling Time (hours)
50	0.008	35.8
70	0.100	3.01
90	0.292	1.03
100	0.426	0.71

Ice Slurry Cooling Time



Direct Ice Cooling Time



V.p. Compliance Monitoring at Harvest: Icing Requirement

322 CMR 16.07 (2) **Adequately iced** means the amount and application methods of ice described in 322 CMR 16.07(3)(a)

322 CMR 16.07 (3)(a) **Icing Requirement** All commercial fishermen and aquaculturists shall adequately ice oysters **within two (2) hours of time of harvest or exposure or prior to leaving the point of landing, whichever occurs first.**

Seasonal Time to Icing Requirements for Certain Growing Areas. **From July 1 – September 15,** all commercial fishermen and aquaculturists who are harvesting oysters in shellfish growing areas CCB-42, CCB-43, CCB-45, CCB-46, CCB-47 and V-20, shall adequately ice oysters **within 1 hour of time of harvest or exposure, or prior to leaving the point of landing, whichever occurs first.**

***Oysters must remain adequately iced until received by a wholesale dealer.**



V.p. Compliance Monitoring at Harvest: Icing Requirements

322 CMR16.07 (3)(a) Oysters must remain adequately iced until received by the wholesale dealer. To accomplish this, commercial fishermen and aquaculturists must place oysters and ice into a shellfish icing container using one of the following methods:

1. Mesh bags containing oysters must be completely surrounded by ice, with at least two inches of ice between the bags and the bottom and sides of the shellfish icing container, and at least three inches of ice on top of the mesh bags;
2. Loose oysters placed into a shellfish icing container must be completely surrounded by ice, with at least two (2) inches of ice at the bottom and sides of the shellfish icing container, and at least three (3) inches of ice on top of the loose oysters;
3. Oysters held in an ice and water mixture (e.g., ice slurry or cold water dip) must be fully submerged and the ice and water mixture must be at or below 45°F to inhibit growth and proliferation of bacteria.

V.p. Compliance Monitoring at Harvest: Time of Icing

Time of Icing means the time when the last oyster or bag of oysters in a harvester lot is placed in a shellfish icing container and is adequately iced in accordance with the procedure at 322 CMR 16.07(3).

322 CMR 16.07 (3)(c) **Shellfish Icing Tag Requirement**: “...Commercial fishermen and aquaculturists shall record the time of icing on all harvester tags affixed to containers of oysters or record the time of icing on a single harvester tag attached to a shellfish icing container.”

A single harvester icing tag for the purpose of meeting the shellfish icing tag requirements may be used in instances when:

1. All oysters in the shellfish icing container are from a single harvester lot;
2. The shellfish icing tag is attached to the shellfish icing container at the time of icing and remains attached to the shellfish icing container until received by the primary buyer;
3. The shellfish icing tag also includes the time of harvest, harvest date, harvest area, harvester identification and quantity of oysters harvested.

The use of a single harvester tag for the purpose of meeting this shellfish icing tag requirements does not exempt commercial fishermen and aquaculturists from attaching harvester tags, as specified at 322 CMR 16.05, to all individual containers of market bound shellfish.

V.p. Compliance Monitoring at Harvest: Transport Requirements

F Shellfish Delivery:

1 Name of Wholesale Dealer: _____

2 Quantity of Oysters: _____

3 Oysters Received at (circle one):

Truck

Dealer's Facility

322 CMR 16.07 (3)(e) **Restrictions on Transport of Market Bound Oysters to the Primary Buyer** All market bound oysters shall be transported by the commercial fishermen, or aquaculturist or his or her licensed employee, **directly to the primary buyer's physical facility or received by the primary buyer at the landing site**. Commercial fishermen and aquaculturists are prohibited from **handling and/or holding** market bound oysters at any unlicensed facility prior to receipt by the primary buyer.

All oysters must be received by the primary buyer and checked to be <45°F within 10 hours of the Time of Harvest (TOH) to be in compliance with Hazard Analysis Critical Control Point (HACCP) Plan

- No off-site culling of market-bound product prior to delivery
- No holding overnight for AM delivery when harvesting on late tides

All oyster transactions must be completed by the harvester and an employee of the original dealer.

- No unattended drop-offs at dealer facilities

V.p. Compliance Monitoring at Harvest: Logbook Requirements

D Harvest Log Book:

- 1 Is the Log Book Present? Yes No
- 2 Is the Following Information Provided?
 - a Time of Harvest: Yes No
 - b Time of Icing: Yes No
 - c Date: Yes No
 - d Quantity of Oysters : Yes No

2014 Massachusetts V.p. Control Plan
Landings of Oysters

Date	Harvest Area	Quantity (Pieces)
6/10/14	CC-B31	200

Bound For Market

Time of Harvest	Time of Icing	Original Dealer	Quantity
6:00	0815	ASC Smiths	

Re-submergence

Date	Out	Harvest Area	Quantity (Pieces)
6/10/14	7/1/14	CC-B31	100

of Oysters

Type	Number	Category	Notes
Oysters	2	2	Longest in row out of 100

*Re-submergence Categories: (1) Air drying for antifouling; (2) Culling activities; (3) Non-compliance at original dealer; (4) Recall

322 CMR 16.07 (3)(d) **Logbook Requirement.** When landing oysters, all commercial fishermen and aquaculturists must have in their possession the Division of Marine Fisheries issued V.p. logbook. The commercial fishermen, aquaculturist **or his or her licensed employee** shall record in **indelible ink** the date, shellfish growing area, time of harvest, time of icing, quantity harvested (in pieces or bushels) and the dealer who received the product. The V.p. logbook shall be filled out by the permit holder, or his or her licensed employee, at the time of landing before the day's harvest is placed in transit or leaves the landing site except that the primary buyer information may be completed upon receipt of the market bound oysters by the primary buyer.

Licensed employees are individuals with DMF issued employee transaction cards linking them to the primary license holder's commercial permit identified on the harvester tags and logbook.

Commonwealth of Massachusetts

Division of Marine Fisheries



Oyster Harvest Logbook

Vibrio parahaemolyticus (Vp)

Harvester Name:

Harvest Year:

MA Comm. Shellfish Permit ID:

Effective Dates: May 19 – October 19

This Logbook must be turned in to the Massachusetts Division of Marine Fisheries by the end of the calendar year.

706 South Rodney French Blvd. New Bedford, MA 02744

Massachusetts Vp Control Plan

Vibrio parahaemolyticus (Vp) Harvest Logbook

Landing of Oysters Bound for... ..Market or Direct Human Consumption

Date	Harvest Area	Quantity		Time of Harvest- First Exposure	Time of Icing	Original Dealer: (Write "PC" if Personal Consumption)
6/29/2021	CCB42	1500 pcs		10:00 am	11:00 am	Yummy Oyster Co.
7/8/2021	CCB42	2000 pcs		2:00 pm	3:30 pm	ABC Seafood
7/30/2021	CCB42	1000 pcs		8:15 am	9:15 am	Yummy Oyster Co.

Re-submergence of... ..Cultured Oysters

Date		Harvest Area	Quantity		Containers		Category	Notes
Removed from Site	Re-submerged				Type	Number		
7/30/21	8/1/21	CCB42	1000 pcs		bags	10	1, 2	Market size/ Sponge fouling

*Re-submergence Categories (1) Air drying for anti-fouling;

(2) Culling activities; (3) Non-compliance at original dealer; (4) Recall

Culling, Sorting, Air Drying and Re-submergence



Restrictions that Apply to Aquaculturists Only: Oyster Culture Activities

Oyster culture activities means activities conducted by some aquaculturists that require the removal of oysters from the waters of the license site (grant) for the purposes of sorting, culling, grading, pitting, over-wintering and/or the removal of fouling organisms to enhance oyster marketability.

Market-sized oysters may be brought onboard barges, boats and other floating structures for the purpose of oyster culture activities, provided:

1. All oyster culture activity that is not conducted on the license site is conducted within the same designated shellfish growing area as the license site;
2. **When oyster culture activities exceed two (2) hours from the time of harvest or time of first exposure**, all oysters subject to such activities must be returned to the license site, segregated and re-submerged for at least 10-days prior to being harvested for commercial sale...
3. **When oyster culture activities do not exceed two (2) hours from the time of harvest or first exposure**, all oysters subject to such activities may either be properly tagged and harvested during that calendar day, in accordance with the procedures set forth at 322 CMR 16.00, **or returned to the original license site and harvested not before the next calendar day (need to document how long the activity did take)**

Restrictions that Apply to Aquaculturists Only: Off-site culling

322 CMR 16.07 (4)(a) Re-submergence Requirements for Off-site Culling Practices.

Market-sized oysters may be removed from the original license site for the purpose of off-site culling, provided:

1. All removed oysters are returned to and segregated on the license site for at least 10-days prior to being harvested for commercial purposes;
2. Off-site culling activities are subject to Aquaculture Propagation Permit conditions
3. Prior to the removal of any shellstock from a license site, harvesters are required to notify the local municipal shellfish authority.

-If oysters are removed from the license site for purposes other than marketing on the same calendar day they are required to be re-submerged for 10 days prior to sale.

-In Intertidal areas harvesters may cull oysters on their license sites during low tide without requirement for re-submergence. Oysters not iced within 2 hours of tidal exposure may not be harvested until the following tide.

-Use a stopwatch or mark the time oysters are removed from water when conducting activities that take <2hrs

Re-Submergence of Non-Compliant Oysters

322 CMR 160.07 (5)(b) Re-Submergence of Non-Compliant Oysters: In the event of a recall resulting from the closure of a harvest area due to illness, **only those oysters received from harvesters and stored at a primary buyer's facility may be re-submerged.**

322 CMR 16.07 (4)(d) Re-submergence of oysters **may only be conducted by the permitted aquaculturists on the license site where the oysters originated**, unless otherwise approved in advance in writing by the Division.

-No holding of wild oysters on aquaculture sites

In the event that DMF or the Department of Public Health determines **that a primary buyer is in possession** of noncompliant oysters, such oysters may be returned to the aquaculturists, re-submerged and segregated on the license site where they originated for 10 days **under the supervision of the local Shellfish Constable.**

Restrictions that Apply to Aquaculturists Only: Re-submergence tagging and Logbook requirements

1. Logbook Requirements. Aquaculturists shall maintain a record in their V.p. logbook of all market-sized oysters returned to the license site after off-site culling or oyster culture activities requiring re-submergence.

The V.p. logbook shall be filled out by the permit holder, or his or her licensed employee, when removing product from the license site and **at the time of re-submergence** when the last market-sized oyster is returned to the license site.



2014 Massachusetts Vp Control Plan			
Landings of Oysters			
Date	Harvest Area	Quantity (Pieces)	
6/20/14	CCB31	200	

Re-submergence			
Date		Harvest Area	Quantity (Pieces)
In	Out		
6/20/14	7/4/14	CCB31	100

*Re-submergence Categories: (1) Air drying for antifouling;

Vibrio parahaemolyticus (Vp) Harvest Logbook			
Bound For Market			
Time of Harvest - First Exposure	Time of Tying	Original Dealer (Complete following transfer at Dealer's Facility)	
0700	0815	ABC Shellfish	

of Oysters			
Containers		Category*	Notes
Type	Number		
Cages	2	2	Segregated on east end of lease

(2) Culling activities; (3) Non-compliance at original dealer; (4) Recall

Disposition and Handling of Non-Compliant Oysters and Recalled Oysters

322 CMR 16.07 (5)(a) **Destruction of Non-Compliant Oysters**: In the event that DMF, the local Shellfish Constable or the Office of Law Enforcement determines that a commercial fisherman or aquaculturist is in possession of oysters that are out of compliance with the tagging, icing or other requirements set forth at 322 CMR 16.00, such oysters shall be destroyed.

In the event that oysters distributed into commerce are recalled in the case of illness, such oysters shall be destroyed.

Why destruction?

-One harvester's poor actions can result in potentially life-threatening illness, the closure of multiple growing areas, and loss of income for many individuals

Critical Violations

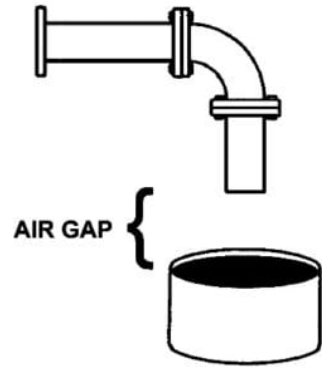
-Incomplete tagging or lack of tags results in destruction because suitability of oysters for human consumption cannot be guaranteed.

-Improper icing or lack of ice results in destruction as *V.p.* growth following harvest degrades the suitability of oysters for human consumption



NEW & Emerging Issues

- Ice Machines
 - NSSP requirements pertaining to the source of water to make ice and the sanitation of ice machines
(system already established for ice from retail and wholesale sources)
 - Water testing for wells, cleaning logs, plumbing, maintenance
 - Inspection?
- Transplant/ “Wet Storage”
 - Wet storage a “post-harvest” activity conducted by dealers
- Bird Management Plans for Floating Gear



NSSP Model Ordinance

Chapter VIII. Control of Shellfish Harvesting

.02 Shellstock Harvesting and Handling

H. Ice production: (1) Any ice used in the storage or cooling of shellfish during harvest shall:

- (a) Be made from a potable water source or from a growing area in the approved classification or in the open status of the conditionally approved classification; or
- (b) Come from a facility approved by the Authority or the appropriate regulatory agency; and
- (c) Be protected from contamination



322 CMR 16.04 The Sanitary Harvest, Handling and Transportation of Market Bound Shellfish

1. Potable Water Source.
 - a. Municipal Drinking Water Sources.
 - b. Non-municipal Water Sources. Compliance with drinking water quality standards at 310 CMR 22.00: Drinking Water shall be documented by proof of water quality testing completed within the previous six months by a laboratory certified by the MADEP or the U.S.EPA
2. Ice Machines and Ice Makers.
 - a. Schematics for ice machines or makers shall be maintained that demonstrate adequate protection from backflow or back-siphonage; adequate air gaps in all drain pipes; food grade fittings and hosing; and adequate protection from water supply reservoirs.
 - b. Ice machines and ice makers, including all bins, nozzles and enclosed components, shall be cleaned at the frequency specified by the manufacturer, or absent manufacturer specifications, at a frequency necessary to preclude the accumulation of soil or mold.
 - c. A sanitation log shall be maintained that includes information on the dates and times the ice machine or ice maker was cleaned

Grower Harvest and Handling Training



<https://www.mass.gov/service-details/watch-vibrio-training-videos>

NOAA Ecological Forecasting Tools

NCCOS Vibrio Guidance Models

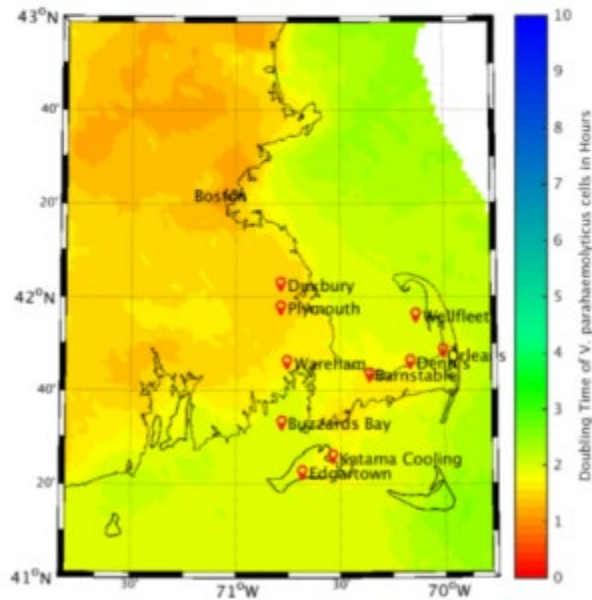
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Massachusetts Forecasts

Best Harvest Window Graphs

Click on a town name on the map to see a graph of Vp doublings in a growing area over the next 40 hours.

The Vp doublings given different cooling strategies are shown for growing areas in Massachusetts. These graphs allow users to determine where and a doubling times will occur in advance to plan harvest and cooling strategies.

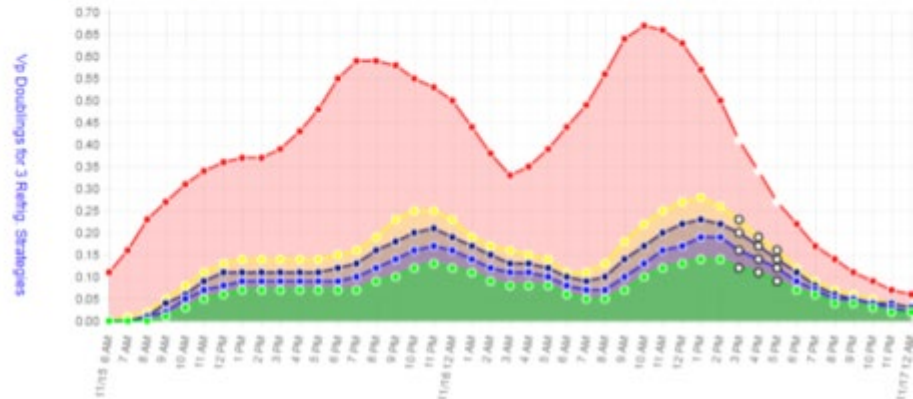


NCCOS Vibrio Guidance Models

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Best Harvesting Windows

Duxbury, MA



- Rapid Cooling (Ice Slurry w/in 1 hour)
- Rapid Cooling (Direct Ice w/in 1 hour)
- Rapid Cooling (Ice Slurry w/in 2 hours)
- Rapid Cooling (Direct Ice w/in 2 hours)
- 5 hours to refrigeration

<https://products.coastalscience.noaa.gov/vibrioforecast/northeast/default.aspx#MS>



Don't Forget to Report Landings!!

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 [Department of Fish & Game](#) >
 [Marine Fisheries](#) >
 [Seafood & Bait Dealers](#) > Dealer Compliance

Dealer Compliance

Compliance Status	Marker
On Time: Reports Received	X
Late: Reports Received	X
Late: Reports Not Received	
Exempt: Reports Not Received	
Unavailable: Incomplete Processing	
Not Due: Weeks' Reports Not Due	

¹Missing report(s) are exempted from this period's compliance monitoring, but are still required to be submitted according to DMF [Dealer Reporting Guidelines](#).

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> Catch Reports > Harvester Compliance

Harvester Compliance

Compliance Status	Marker
On Time: Reports Received	X
Late: Reports Received	X
Late: Reports Not Received	
Exempt: Reports Not Received	
Compliance Monitored by NMFS	
Not Due: Months' Reports Not Due	

¹Missing report(s) are exempted from this period's compliance monitoring, but are still required to be submitted according to DMF [Trip-Level Reporting Guidelines](#).

First Letter of the Last Name: **A B C D E F G H I J K L M N O P Q R S T U V W X Y Z**

Permit Holder	Permit	Report Method	Permit Type	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
AALTO, ROGER C.	93965	ETL	BT59	X	X	X	X	X	X	X	X	X			
AARSHEIM, KNUTE	7405	FRV	ON												
AARSHEIM, KNUTE	148903	FRV	ON												
ABATE, LOUIS L.	153806	PTL	RR	X	X	X	X	X	X	X					
ABBADESSA, THEODORE	131836	PTL	BT59	X	X	X	X	X	X	X					
ABDOW, CHRISTOPHER A.	163354	PTL	RR												
ABDOW, DAVID A.	142542	ETL	BT59	X	X	X	X	X	X						
ABDOW, DENNIS A.	110672	PTL	BT59	X	X	X	X	X	X	X	X				
ABDOW, MICHAEL G.	62392	PTL	BT59	X	X	X	X	X	X	X	X				
ABDOW, STEVEN D.	854	ETL	BT59	X	X	X	X	X	X	X	X				
ABDUL-QUDDOOS, MARK S.	171698	PTL	BT59												
ABELE, RICHARD W.	108485	PTL	BT59	X	X	X	X	X	X	X	X				
ABELLI, PETER J.	160988	ETL	BT59	X	X	X	X	X	X	X	X				
ABERNATHY, RICHARD E.	147567	PTL	SR	X	X										
ABRAHAMSON, BRYAN T.	138848	PTL	BT59	X	X	X	X	X	X	X	X				
ABREU, ROBERT C.	171811	ETL	RR	X	X	X	X	X	X	X	X				

NOTE: Compliance only displayed for months that are due. Scroll right to view compliance for other months. Table refreshed nightly.

Thank You

Questions may be directed to

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or

Gabriel Lundgren: gabriel.lundgren@mass.gov

