Market Development to Diversify Shellfish Aquaculture Products in Massachusetts

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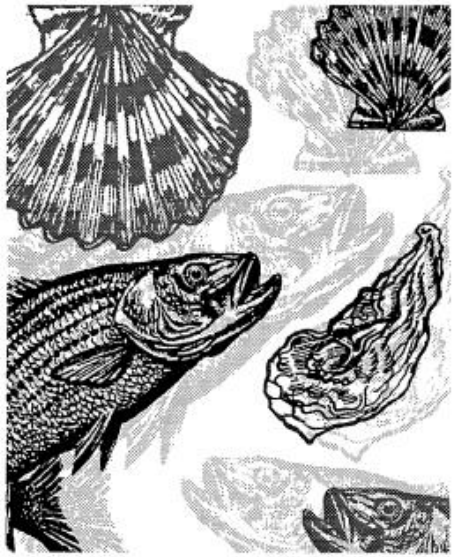
Shellfish Aquaculture in Massachusetts in 2018

- 390 Growers
- 1,202.7 acres under cultivation
- Oyster Aquaculture Landings
  49,361,732 individual oysters
- Oyster Aquaculture Landings Value
  $27,015,107
- Total Aquaculture Quahogs
  3,770,347 at value of $961,966
- Economic Multiplier – 1.79 **769** direct jobs in 2013 **140** indirect

Top 5 Massachusetts Fisheries

Species	Landing (lbs)	Value ($)
Sea Scallop	179,224,746	$264,941,229
American Lobster	16,446,931	$78,275,162
Eastern Oyster	8,042,964	$22,735,092
Atlantic Surf Clam	100,857,487	$17,570,869
Haddock	11,479,792	$12,049,006

Aquaculture White Paper & Strategic Plan



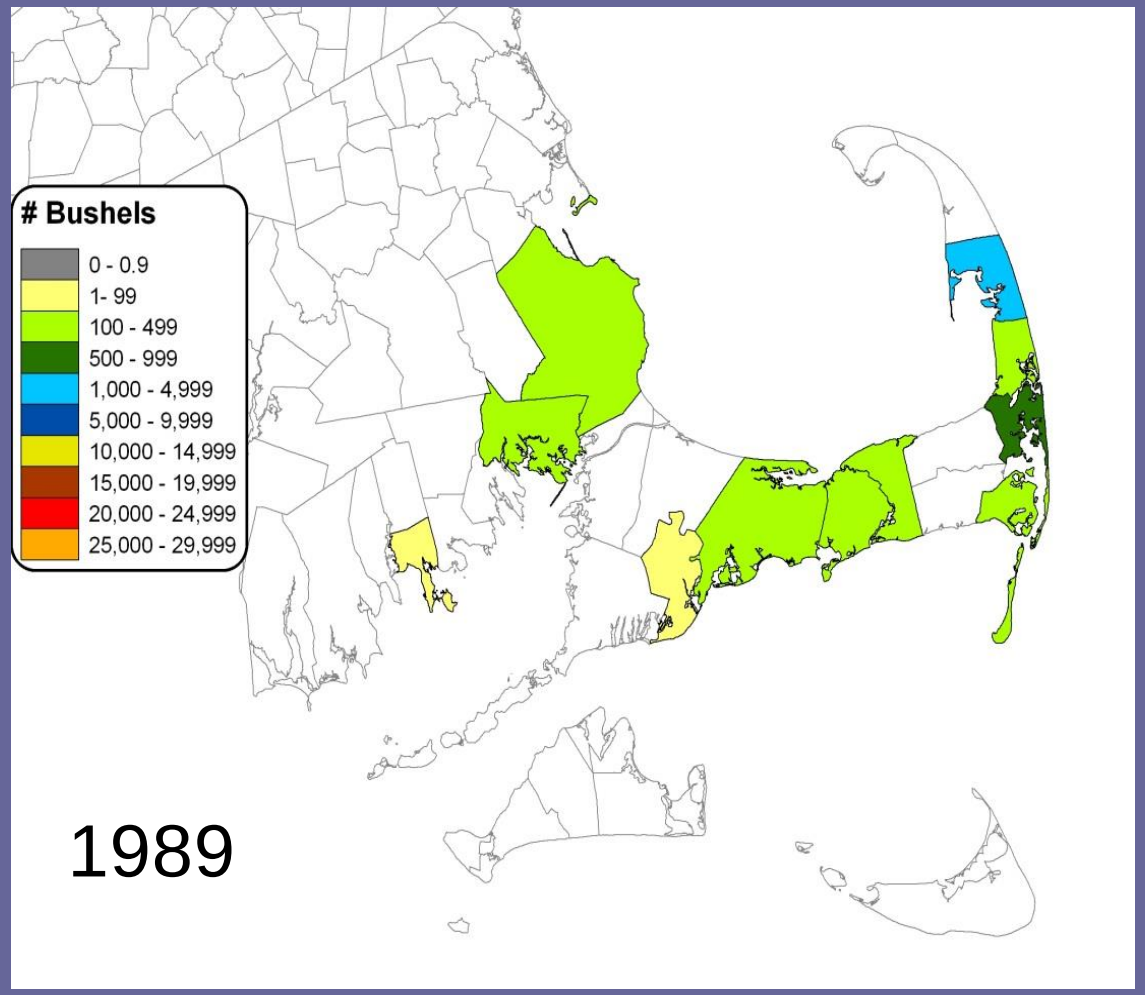
September 1995

Aquaculture Strategic Plan

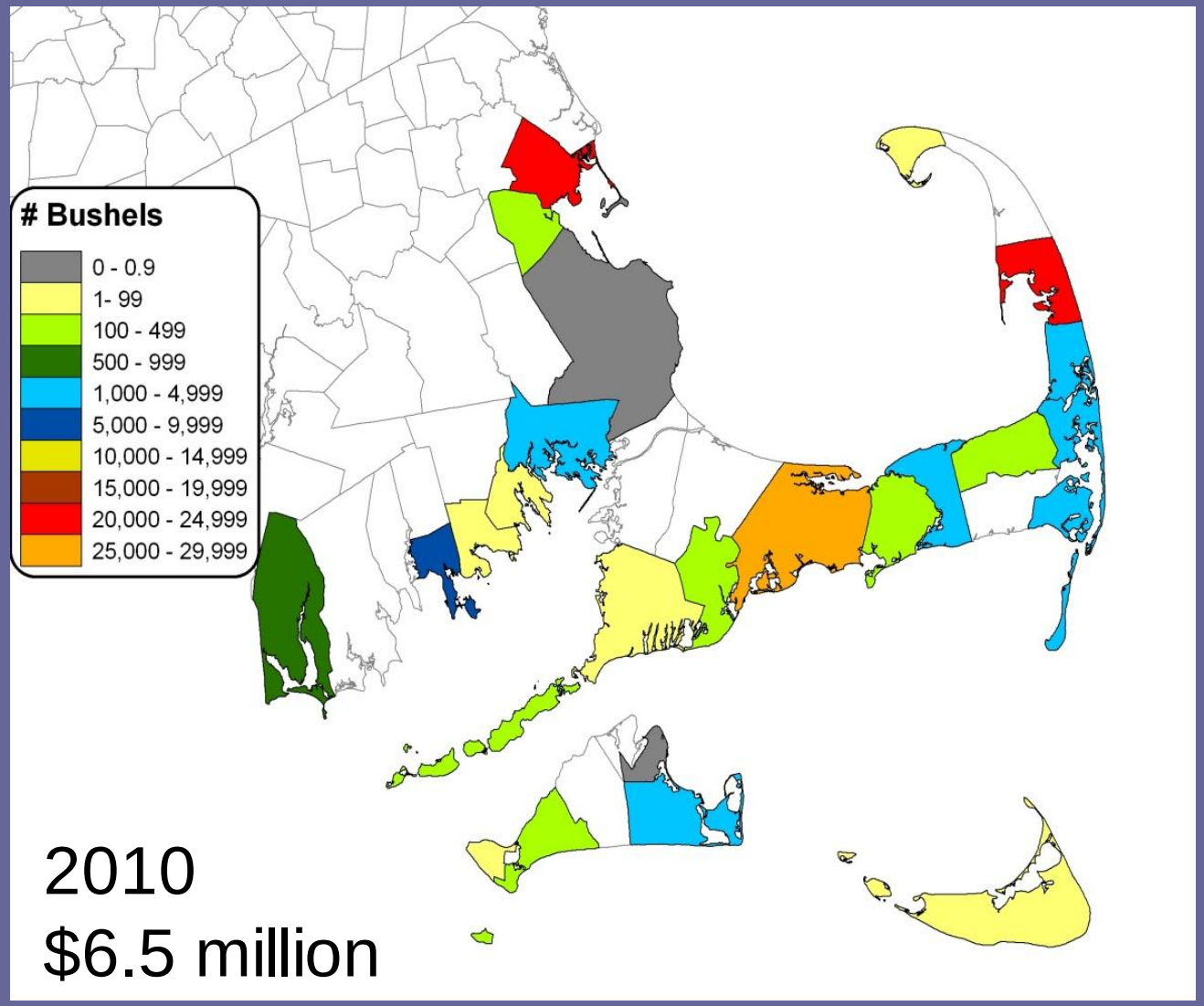
EXECUTIVE SUMMARY

Why Develop a Plan for Aquaculture in Massachusetts?

Aquaculture offers tremendous opportunities for the Commonwealth of Massachusetts, especially during a time when the state's fishing industry has been so hard hit by reductions in groundfish stocks. This growth industry can provide jobs that are much needed in the seafood sector of the economy. In addition, aquaculture represents a sustainable economic use of our coastal resources -- which means that aquaculture activities can be continued into the future, providing economic opportunity without depleting non-renewable resources.

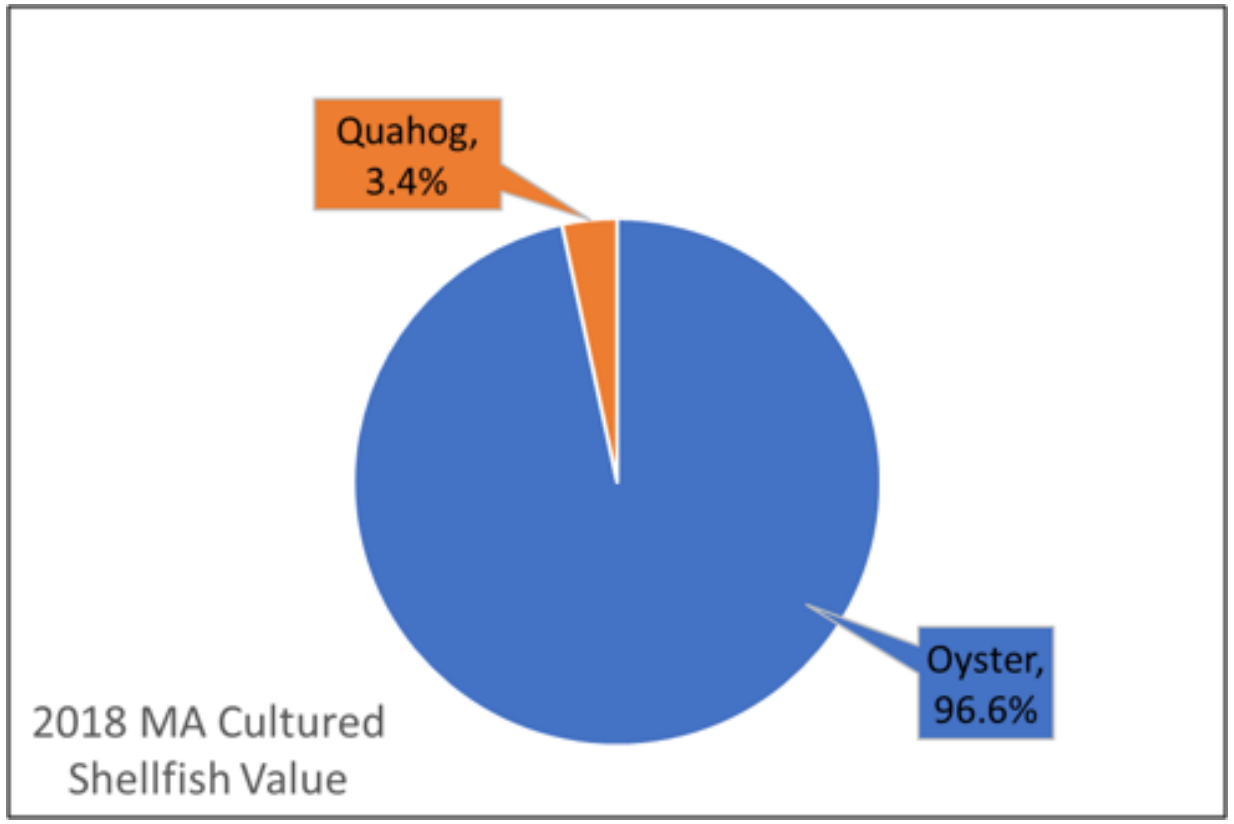


1989



2010

$6.5 million


Quahog,
3.4%
Oyster,
96.6%
2018 MA Cultured
Shellfish Value


MA Total $Value >$27 Million
in 2018

So What's the Problem?

Monoculture

Vulnerable to disease outbreak, market downturns

Fall glut leads to lower prices for growers

What is a Possible Solution?

Diversify species grown

Diversify oyster products

Assist businesses with becoming resilient to change

Alternative Shellfish Species Research Study

Prepared for:

Cape Cod Cooperative Extension

Presented By:
The University of Massachusetts Dartmouth
Charlton College of Business
Center for Marketing Research

In Collaboration With:
Dr. Nora Barnes
Director, Center for Marketing Research

Conducted By:
Cain Bochter
Andrew Boucher
Eric Karstunen
Alyssa Olson
Bailey Rice

With Support From:
Cape Cod Cooperative Extension
Woods Hole Sea Grant
SouthEastern Massachusetts Aquaculture Center

Fall 2014

Research Objective

RESEARCH OBJECTIVE:
To research the demand for alternative species of shellfish among wholesalers throughout Massachusetts.

This research attempts to provide insights into the following:

- Are wholesalers aware of the 6 proposed species?
- Would wholesalers be interested in selling or have they sold these species with success?
- What is the perceived demand for alternative species?
- Is demand driven by customer request or consistent availability?

Shellfish Wholesaler Survey Results

Anadara ovalis

15% think their customers would be very interested in purchasing Blood Arks

22% somewhat interested

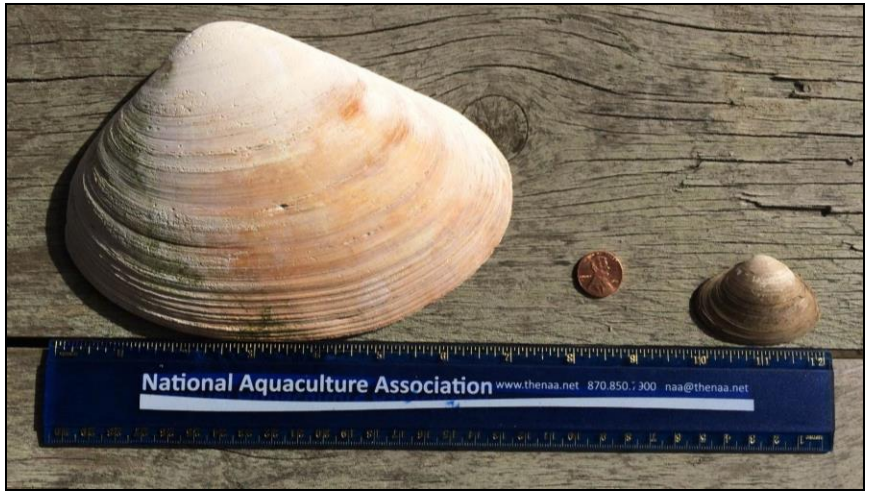
63% not interested

15% said they would be interested in selling Blood Arks ***if they were grown locally and reliable in supply***

17% somewhat interested

68% not interested

Shellfish Wholesaler Survey Results



Spisula solidissima

17% think their customers would be very interested in purchasing Juvenile Surf Clams

30% think customers somewhat interested

53% think customers would not be interested.

17% would be interested in selling Juvenile Surf Clams *if they were grown locally and reliable in supply*

26% somewhat interested

57% not interested

Discussions with Oyster Growers

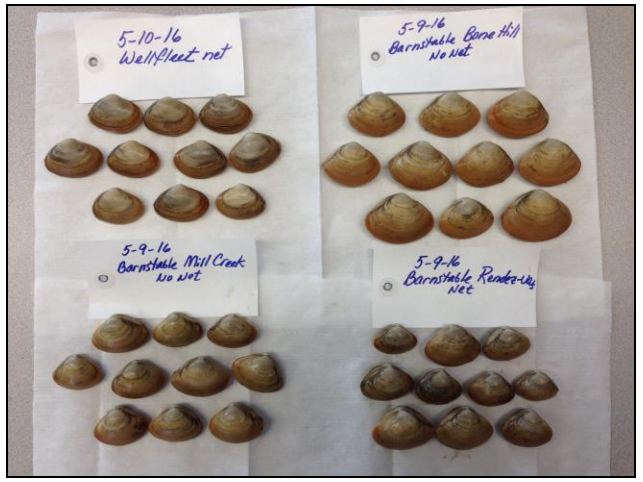
Is there potential for a local shucked oyster market?

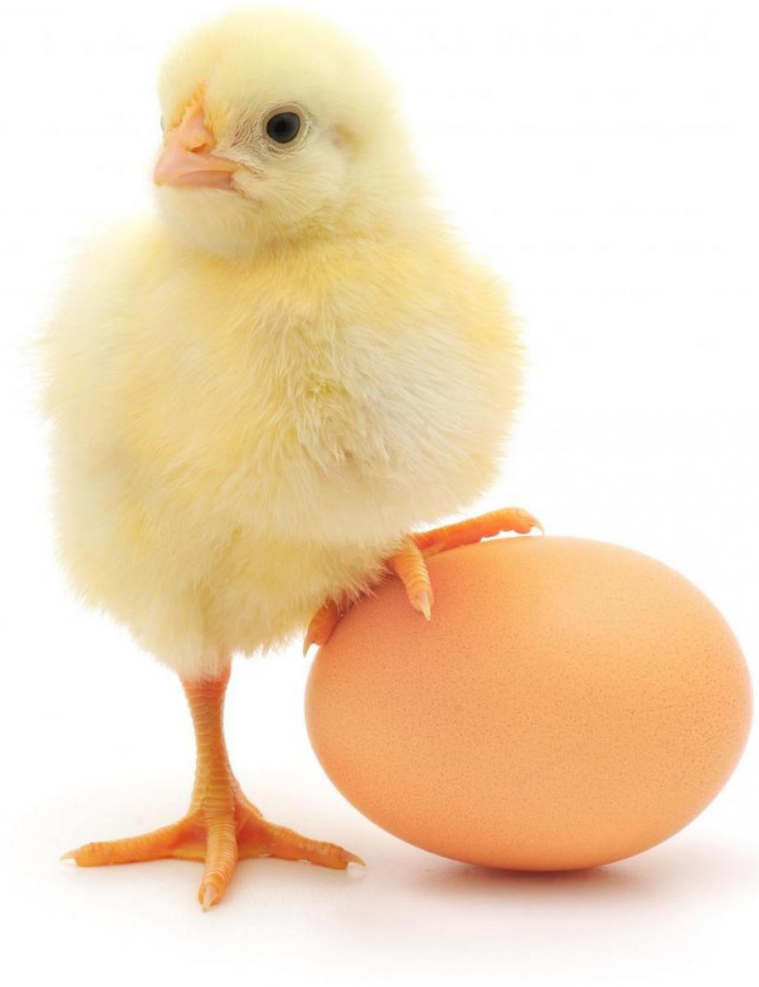
How consistent would the supply need to be?

Could a local product compete with containers from the Chesapeake and Gulf of Mexico?

Would people pay more for local?

Research Farm Network Projects – Alternative Species





Seafood Buyer: If I buy them, can I sell them to restaurants at a profit? I don't want to invest in marketing and cultivate regular customers until the growers can provide me with a steady supply.

Grower: If I grow them, can I sell them at a profit? I don't want to invest in gear and seed unless I know I can make $

Restaurant Owner/Chef: If we try these and our customers like them, and the dish is at a workable price point, can we get a consistent supply from our wholesaler?

Where to start?

Where are the sticking points? What info can move us forward?

- What challenges have growers and wholesalers experienced as they tried to buy/sell blood arks, petite surf clams (butter clams) and shucked oysters? (Advisory Committee)

- 19 Questions to a consultant to produce a market research assessment (Pentallect)

  -What are current wholesale values for blood clams and butter clams locally (New England) and nationally?
  -What are current retail values for blood clams and butter clams locally and nationally?
  -What are current wholesale and retail prices for shucked oyster product?
  -What value added products such as smoked or pickled oysters are on the market?
  -What are the most important factors in purchasing decisions for oysters and what makes one region have more value than another (shape, size, availability, flavor, name, etc.)?

- Develop financial assessments for growing butter clams and blood arks, including initial production cost estimates, enterprise budgets, and minimum sale price (Spreadsheets)

- Assess the infrastructure needed to develop a shucked oyster product

Funding Opportunity Title: NOAA Sea Grant 2017 Aquaculture Initiative: Addressing Impediments to Aquaculture Opportunities
Funding Opportunity #: NOAA-OAR-SG-2017-2005177

PENTALLECT™
Thought leadership. Pragmatic advice.

Aquaculture Market Assessment Report

The Status of Existing and Potential Markets for Massachusetts Blood Clams, Butter Clams and Shucked Oyster Products

Prepared exclusively for:

Cape Cod Cooperative Extension
And Affiliates

August 2018

Executive Summary – Interim Findings

There are opportunities and challenges associated with expansion of each of the three species: Blood Clams, Butter Clams and value-added Oysters

- Blood Clams: Greatest short-term opportunity given the existence of a proven ethnic market, yet price-driven and demand is largely outside of New England
- Butter Clams: Greatest long-term market potential; requires marketing investment to build awareness and create restaurant demand
- Value-added Oysters: Challenging economic model unless MA harvesters are willing to significantly reduce pricing for value-added inventory and identify / invest in further processing capabilities

Species	Est. Annual MA-Sourced Revenue Potential
Blood Clams	$0.2 - $0.5 million
Butter Clams	$1.1 - $2.8 million
Value-Added Oysters	---
Total MA-Sourced	**$1.3 - $3.3 million**

Source: Pentallect research; preliminary estimates

PENTALLECT
Thought leadership. Pragmatic advice.

Lessons Learned & Next Steps for Blood Arcs

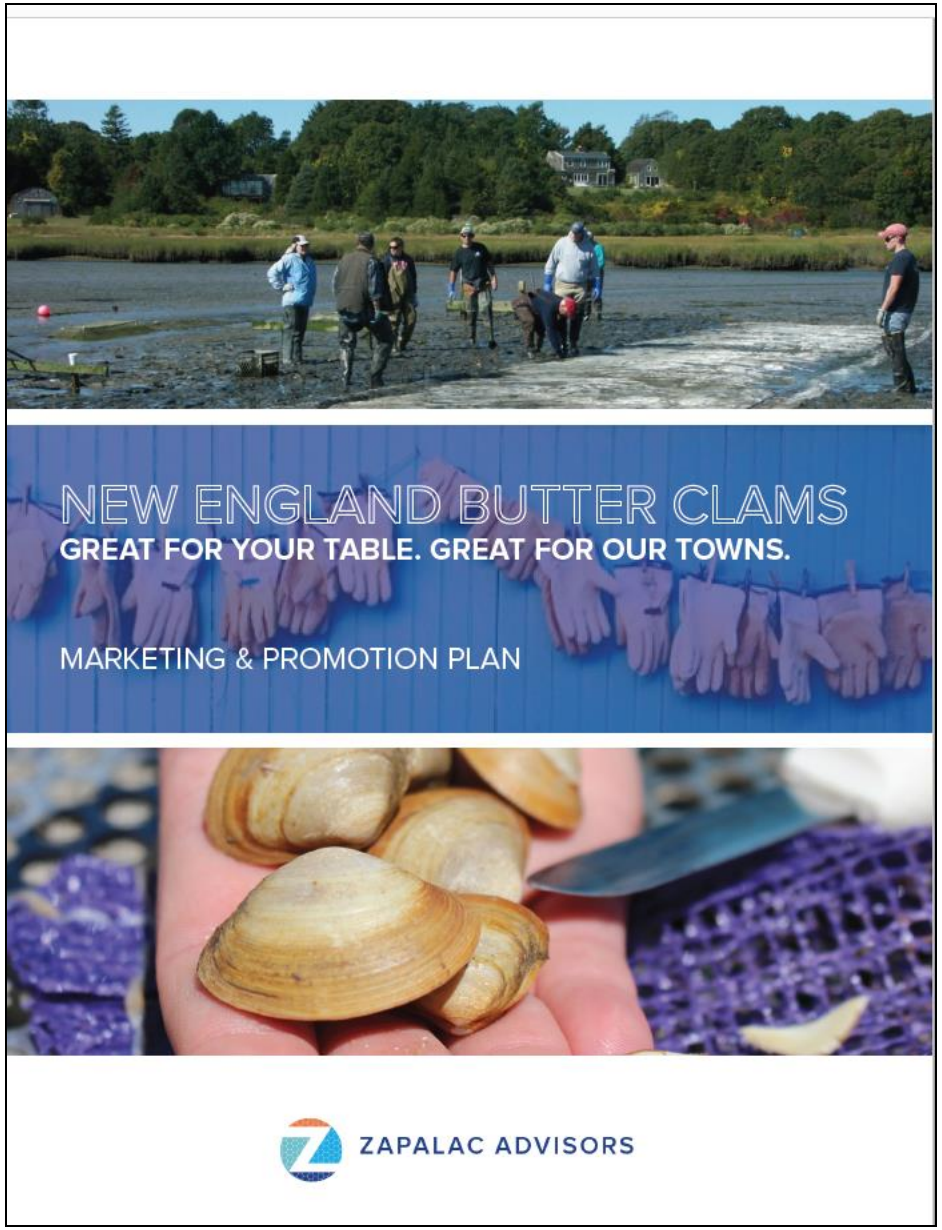
Delicious!

Town concerns about wild harvest

There is potential!

Need to focus efforts on nursery culture

Next Steps for Juvenile Surf Clams aka Butter Clams



Just Need Product!

Tender, delicious, sweet, subtle, delicate, fresh, clean, light

Monterey Bay Aquarium® Seafood Watch®

The Monterey Bay Aquarium Seafood Watch program creates science-based recommendations that help consumers and businesses make ocean-friendly seafood choices. Carry this guide with you and share it with others to help spread the word.

BEST CHOICES

Barramundi (US & Vietnam farmed)
Bass (US hooks and lines, farmed)
Bluefish (US handlines)
Catfish (US)
Clams, Cockles, Mussels
Crab: Blue (MD trotline)
Crab: King, Snow & Tanner (AK)
Croaker: Atlantic (beach seines)
Lionfish (US)
Mahi Mahi (US handlines)
Oysters (farmed & Canada)
Prawn (Canada & US)
Salmon (New Zealand)
Scallops (farmed)
Seaweed (farmed)
Shrimp (US farmed)
Squid (US)
Swordfish (Canada & US buoy, handlines, harpoons)
Tilapia (Canada, Ecuador, Peru & US)
Trout (US farmed)
Tuna: Albacore (trolls, pole and lines)
Tuna: Skipjack (Pacific trolls, pole and lines)

GOOD ALTERNATIVES

Bluefish (US gillnets and trawls)
Branzino (Mediterranean farmed)
Cod: Atlantic (handlines, pole and lines)
Crab: Atlantic Rock (Canada & MA)
Crab: Blue (AL, DE, MD & NJ pots)
Haddock
Hake (US)
Monkfish (US)
Oysters (US wild)
Pollock (Canada longlines, gillnets & US)
Salmon: Atlantic (BC & ME farmed)
Salmon (CA, OR & WA)
Shrimp (Canada & US wild, Ecuador & Honduras farmed)
Tilapia (Colombia, Honduras, Indonesia, Mexico & Taiwan)
Trout (Canada & Chile farmed)
Tuna: Albacore (US longlines)
Tuna: Skipjack (free school, imported trolls, pole and lines, US longlines)
Tuna: Yellowfin (free school, troll, pole and lines, US longlines)

AVOID

Cod: Atlantic (gillnet, longline, trawl)
Crab (Argentina, Asia & Russia)
Crab: Atlantic Rock (US, except MA)
Crab: Blue (FL, GA, LA, MS, NC, SC, TX & VA)
Halibut: Atlantic (wild)
Mahi Mahi (imported)
Orange Roughy
Pollock (Canada trawls & Russia)
Salmon (Canada Atlantic, Chile, Norway & Scotland)
Sharks
Shrimp (other imported sources)
Squid (Argentina, China, India & Thailand)
Swordfish (imported longlines)
Tilapia (China)
Tuna: Albacore (imported except trolls, pole and lines)
Tuna: Bluefin
Tuna: Skipjack (imported purse seines)
Tuna: Yellowfin (longlines except US)

How to Use This Guide

Most of our recommendations, including all eco-certifications, aren't on this guide. Be sure to check out SeafoodWatch.org for the full list.

Best Choices

Buy first; they're well managed and caught or farmed responsibly.

Good Alternatives

Buy, but be aware there are concerns with how they're caught, farmed or managed.

Avoid

Take a pass on these for now; they're overfished, lack strong management or are caught or farmed in ways that harm other marine life or the environment.

Nutritional Value of Shellfish

Type of shellfish:		Quahog	Oyster	Mussel	Soft-shell Clams	Bay Scallops
What's in a 100g serving (roughly)		10-12	6-8	14-18	12-16	8-16
Nutrition Facts	**Unit**	**Amount Per 100g (3.5oz.) Serving**				
Calories	Calorie	63.6	69.1	60.5	58.5	85.5
Protein	g	11.1	8.3	11.2	11.9	15.0
Carbohydrates	g	3.9	5.5	1.9	1.5	5.5
Fat	g	0.4	1.5	0.9	0.5	0.4
Cholesterol	mg	41.4	48.7	62.6	46.5	46.7
Total Omega-3	mg	107.5	401.5	215.4	97.1	138.9
Saturated fats	mg	58.8	275.2	107.2	50.5	78.9
Minerals						
Calcium	mg	147.5	48.9	69.3	84.0	16.4
Phosphorus	mg	113.4	99.9	151.7	121.6	212.7
Magnesium	mg	77.1	70.5	83.5	87.6	38.3
Manganese	mg	0.7	0.2	0.2	0.2	3.3
Iron	mg	3.7	2.4	5.3	13.1	1.0
Zinc	mg	1.4	26.2	1.7	1.4	2.7
Potassium	mg	243.5	228.3	242.3	246.7	413.7
Iodine	ug	55.4	32.7	84.8	89.4	trace
Selenium	ug	35.9	30.2	49.1	35.8	20.1
Vitamins						
Vitamin A	IU	71.9	77.3	379.9	152.5	trace
Riboflavin	mg	0.7	0.7	0.5	0.7	0.2
Vitamin C	mg	8.8	7.1	5.3	6.8	4.2
Niacin (B3)	mg	1.9	1.9	1.6	1.9	2.3
Pantothenic Acid (B5)	mg	0.2	0.2	0.1	0.1	0.1
Choline	mg	3.8	2.3	3.1	1.9	2.8
Folic Acid	ug	23.6	19.2	31.6	13.3	10.5
Cyanocobalamine (B12)	ug	33.4	8.9	22.4	40.9	3.1