

# The History & Future of Shucked Oysters

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# Introduction

Prior to the COVID-19 pandemic, over 90% of the oysters in Massachusetts were eaten raw in the half shell at restaurants. When restaurants closed during the pandemic, oyster growers in Massachusetts did not have any alternative markets for their whole unsold oysters while Washington and Louisiana could push product to their shucked oyster market. While federal PPP loans, food security grant programs, and Rapid Response Funds from Woods Hole SeaGrant and the Cape Cod Cooperative Extension kept the Massachusetts oyster industry alive, history suggests the oyster industry will likely face other market disruptions in the future. Massachusetts is ready to use history to inform and create diversified resilient markets for local oysters.

This four-part report details the history of oysters and provides suggestions on how the Massachusetts oyster industry could diversify markets and be more resilient in the future. In the first section of this report, a timeline details how oysters played key roles in society and culture, the environment, advances in food technology, and even international relations. The oyster timeline begins 200 million years ago with the oldest known oyster in Siberia and extends to the present. While the timeline focuses primarily on the U.S., oysters are found worldwide; therefore, the timeline includes viewpoints and history outside the U.S. The second section of this report summarizes six conversations with individuals who speak about the history and/or future of oysters in Massachusetts. These individuals vary in terms of age, background, experience, and viewpoint. They discuss the COVID-19 pandemic, pollutants, access to healthy oysters, collaborations, marketing, concerns about the future of oysters, lost cultural traditions, and more. Takeaways from the interviews were combined with marketing reports in the third section of this report to create a portfolio of specific value-added products, marketing approaches, and growing product categories to help the industry envision new markets for shucked oysters. The fourth section of this report covers oyster recipes—both new and old. This section links to an online recipe database created specifically for this project and shares recipes and experiences from two creative cooks who specialize in seafood.

Overall, this report is meant to identify the key aspects of oyster history and culture that we should celebrate, recreate, and avoid to ensure oysters are enjoyed well into the future.



# A Brief History on Oysters

Did you know entire human civilizations have thrived off this small, tasty bivalve? Massive piles of oyster shells (e.g., middens) have been found on every large landmass on Earth, and evidence of oyster consumption has been dated to almost two hundred million years ago.

Oysters have played a prominent role in human history. Depending on the period, if and how a person ate oysters revealed a lot about their social status, health, and way of life. For example, a midden with shucked shells dating hundreds of thousands of years old showed how an ancient tribe could survive on oysters for their main protein source and stay in one place instead of following herds of wild animals for protein. How someone ate oysters during the 17th and 18th century could have signaled if a person was part of high society or they were poor, they were healthy and strong or weak and sick.

Oysters—and those who harvest oysters—have both created issues and overcome significant obstacles throughout history. The following timeline shows how this simple yet perfect food has a complex history. These historical events are lessons. This timeline should not only be shared and celebrated, but also used as a tool to assess risks and strategize future growth opportunities. By studying the history of oysters through time and across countries, we can learn what marketplace, environmental, political, and social factors are needed to encourage a healthy level of oyster production, harvest, and consumption in the future.

# Oyster History Timeline

- **200 million years ago** - The oldest fossilized oyster dates over 200 million years ago during the Triassic Period and was found in what is now far eastern Siberia and Ellesmere Island in Arctic Canada. Some form of fossilized oyster has been found on every major landmass on Earth.
- **164,000 years ago** - The oldest evidence of oyster consumption dates back to 164,000 years ago in Mossel Bay South Africa, now known as "The Point of Human Origins". Oyster farming continues in Mossel Bay today.
- **60,000 years ago** - Archaeologists can identify communities and areas that have consumed oysters by using middens, or fossilized oyster beds. Middens dated 40,000-60,000 years old exist in areas inhabited by the aboriginal peoples in Australia.
- **12,000 years ago** - Native Americans inhabit much of North, Central, and South America. Indigenous tribes, such as the Wampanoag Tribe, inhabit coastal areas in North America and regularly harvest oysters.
- **7,000 years ago** - Middens dating 7000 BC to throughout the 1800s associated with the Ngaro aborigines of coastal Queensland. When archaeologists do not find any mammal bones in the areas with massive middens, they assert that oysters were the community's main protein source.
- **2000 BC** - Other early examples of oysters playing an important role in ancient civilizations include oysters found during the 1876 excavation of Hissarlick (currently Turkey but thought to be ancient site of Troy) and the excavation of the Egyptian Middle Kingdom (2000 BC - 1750 BC)
- **475 BC** - Fan Li publishes Yang Yu Ching (Treatise on Fish Breeding) - the earliest known Chinese document on aquaculture. Oyster farming continues to be documented during the Han dynasty (206 BC - 220 AD).
- **1st century AD** - Romans are regularly given credit for oyster aquaculture. Roman Scientist Pliny the Elder in his book, Natural History "Sergius Orata" is credited as the first man to invent oyster ponds on the Gulf of Baia in the time of the orator L. Crassus. The passage translates to "his motive was not gluttony but avarice, and he earned great income for his cleverness" (Book IX, 168). Ancient Romans construct dams and channels to create a gentle environment, place sticks around mature spawning oysters to catch spat, and transfer spat to new oyster beds.
  - There is evidence that the European flat was being consumed in eastern midlands of the UK.

- **3rd - 5th century** - Oysters are mentioned in ancient Roman and Greek cookbooks. Romans embraced oysters when the Pyrrhic and Punic wars brought the Roman armies down the Italian Peninsula. They also adopted the European oyster when they conquered cities along coastal England and France. Excavations at inland guard stations in present Germany and Switzerland suggest armies packed oysters in snow and hauled them to distant areas. Romans incorporated oysters into their art (see Populonia Bottle) which depicts oyster cultivation. When the Roman Empire falls in the 5th century, there is very little written about oysters in Europe until the Middle Ages.
- **7th - 10th century** - Chinese aristocracy prize oysters and force the poorer populations to collect oysters, a practice that led to many deaths. During the 7th century, eating oysters in Scandinavia was considered unmanly or unworthy of a true Viking. Oysters are prized by monarchs throughout England and France from 10th - 18th century.
- **14th century** - Oyster is first mentioned in the English language during the 14th century as "ostre" deriving from the greek or latin word for "bone". Oysters are mentioned in the cookbook "The Forme of Cury" (1390) in sweet and savory recipes such as boiling shucked oysters in wine and oysters with sugar, spices, herbs and onions.
  - In China, the poor were forced to burn oyster shells to make lime and there is documentation stating that farmed beds were exploited and new beds had to be created 300 miles away west of Hong Kong. Traditional Chinese medicine use ground oyster shells for kidney and liver health and insomnia.
  - The first oyster festival, St. Denys Fair in Colchester, was established by King Edward II of England to coincide with the beginning of oyster season at the end of the October and it continues to this day every year.
- **15th century** - Europeans colonize areas with high oyster populations such as present New Brunswick, New England, and Australia.
- **16th century** - Alongside manila clams, Japan starts cultivating oysters using a hanging culture method.
  - The publication "Dyets Dry Dinner" lists 8 food courses, including oysters, along with suitable conversation for each course with the suggestion to not consume oysters during months that do not end in "r".
  - Evidence of governance and harvesting of oysters in England (dredging at the mouth of Medway river was prohibited from mid April - August).
  - 1533 - German cookbook Das Kochbuch der Sabina Welserin (Sabina Welserin's cookbook) suggests grilling oysters with butter
  - 1560's - 1570's - Italian cookbooks show platters of raw in the half shell oysters.
- **17th century** - British diarist Samuel Pepys notes how oysters were everyday dining fair, inexpensive, and readily available. Oysters are available by street vendors, at taverns, or a barrel can be delivered for at-home dining. Barrels of oysters are available pickled or fresh, cost 2 - 3 shillings per barrel, and contain about 20 - 30 oysters. When dining, eating large oysters demonstrates a higher social status since larger oyster generally had to be shipped into England and therefore were more expensive.
  - The indigenous Lenape population teaches the incoming Dutch colonists how to use small skiffs and tongs to collect oysters during high tide.

- **17th century (continued)** -
  - By mid 1600's, east coast territories are widely colonized by Europeans and oysters are a key part of their diet. Recipes from this century detail how to use oysters raw, in pies, stews, pottages, "pyes", loaves and turkey stuffing.
  - 1602 - Delights for Ladies cookbook shows how to barrel up oysters to extend their shelf life for several months.
  - 1604 - First oyster pie recipe in French Overture de cuisine by Master Lancelot de Castea
  
- **18th Century** - In 1791, Great Britain passes an ordinance against pilfering oysters with a punishment not to exceed 3 calendar months.
  - Oyster stuffing is documented as regularly paired with roasted capon or duck.
  - Charles Dickens writes that "Poverty and oysters always seem to go together" and in 1852 his wife publishes a cookbook called "What shall we have for dinner?" as Lady Maria Chatterbuck with several oyster recipes including oyster stuffed roasted lamb leg. In her book, she details bills of fare (e.g. menus) that largely include at least one oyster dish such as oyster sauce and oyster patties.
  - Francis Louis Michel from Switzerland wrote this of the Chesapeake oysters " The abundance of oysters is incredible. There are whole banks of them so that the ships must avoid them. They are four times as large. I often cut them in two before I could put them into my mouth".
  - Oysters begin to be exported from North America as pickled oysters.
  - 1796 - Federal government issues Seamen's Protection Certificates which offer Black boatmen protections and freedoms "by sea and land".
  
- **19th Century**
  - 1803 - 1812 - Alexandre-Balthazar Laurent Gimod de La Reynier writes how oysters are the usual opening to a winter breakfast in his eight volume Almanach des Gourmands.
  - 1819 - New York City opens its first fish cannery. Oysters were initially packed in glass bottles. Tin plated cans were used in 1839. Until then, many consumers would shuck their own or buy them from a street vendor.
  - 1820 - Thomas Downing (1791-1866), a child of Virginia slaves, is registered as an oysterman in New York City. Downing begins building his oyster empire by creating upscale oyster parlors that welcomed accompanied wives, rather than just men.
  - 1825 - Wild oyster populations are noticeably depleted. Oysters from Chesapeake are brought to other estuaries in Narragansett Bay, Delaware Bay, and Long Island Sound.
  - 1830 - Congress and President Andrew Jackson pass the Indian Removal Act, beginning the forced relocation of thousands of Native Americans to west of the Mississippi. 1830 is also the beginning of the "Oyster Wars" between Maryland and Virginia. In Maryland, oysters can only be harvested by Maryland residents with permits and dredging is banned. Meanwhile, Virginia allowed dredging until 1879.
  - 1835 - Downing expands into new locations, catering, take out, and international mail orders. Downing shipped fried, pickled, and live oysters to Europe, to Queen Victoria, and to the West Indies. His businesses are part of the Underground Railroad.
  - 1850 - The California gold rush increases the demand for canned oysters because they traveled well. Close to 2 million migrants arrive in America.

- **19th century (continued)**

- 1854 - The New York cholera epidemic is named the “oyster pandemic”. Death from cholera -- a bacterial disease -- is quick, usually within a few days. Cholera outbreaks occur when drinking water or food is contaminated with fecal matter. Cholera outbreaks begin in India and travel throughout Europe during the early 1800s, killing 13,000 Parisians in 1832. Typhoid fever is also contracted through drinking or eating contaminated food and is also associated with oysters, especially since it is not uncommon for growers to place harvested oysters in baskets and then store them at sewage outtakes in the 1800s.
- 1861 - Start of the Civil War
- 1865 - End of the Civil War. The 13th Amendment abolishes slavery in the U.S. Freed Black men flock to the oyster industry for opportunity as sailors, boat-builders, harvesters, processors, and boat captains.
- 1866 - The Civil Rights Act declares all male persons born in the United States as citizens “without distinction of race or color, or previous condition of slavery or involuntary servitude.” Thomas Downing dies one day after the Civil Rights Act is passed. New Zealand Oyster Fisheries Act is passed to protect dwindling oyster beds.
- 1869 - The first transcontinental railroad brings the first shipment of Baltimore and New York oysters to California in October
- 1874 - There are more than 850 oyster houses and taverns in the States.
- 1875 - Oyster sauce is mentioned in the China Review. Making oyster sauce is complex. Hundreds of pounds of raw oysters are salted, washed, boiled, drained, strained, and the process is repeated by adding more fresh oysters. The process is repeated until it reaches proper consistency. It is then cooled, strained into pottery jars, sealed, and aged for at least one year. The oysters strained out of the mixture throughout the process are then dried and sold as “cooked oysters”.
- 1880 - After sending loads of oysters to California during the gold rush, Olympia oysters from Shoalwater Bay in Washington are overharvested. Black oystermen outnumber White oystermen by four to one in the Chesapeake Bay.
- 1888- Australia imports rock oyster spat from New Zealand. The U.S. oyster industry employs almost 53,000 people harvesting over 700 million oysters per year. Fulton Street Market is selling ~50,000 oysters per day. Peak production from 1880 - 1910 producing ~160 million pounds of oyster meat per year.
- 1890 - Oysters are the second most valuable fishery product in California behind whalebone
- 1891 - John R. Philpots writes *Oysters, and All About Them* and says “It was estimated in 1864 that seven hundred millions of oysters were consumed annually in London, and considerably more than that number in the provinces”.
- 1894 - The cookbook *The Epicurian* lists over 30 oyster recipes from stewed, curried, Viennese, and Philadelphia style.
- Specialty dinnerware is created specifically for oysters including oyster openers, hand painted oyster plates (ceramic oysters or indents so diners wouldn’t have to pick up shells), oyster serving spoons, stew spoons, and forks.



- **20th century**

- 1900 - Headhunters are hired to bring Polish men and families to the South to work in oyster houses, often under false pretenses. African Americans make up a significant portion of the workforce in the oyster industry.
- Child labor and women make up the vast majority of oyster shuckers in canneries. Older boys and men work on the oyster boats. Each child shucks an average of 65 quarts of oysters per day and receives 2.5 cents per quart. Shells are burned to make lime and/or crushed to use as poultry feed.
- Up until the early 20th century, oysters are inexpensive and very accessible.
- Oyster beds on America's east and west coast suffer from disease, pollution, and overexploitation.
- 1902 - Pacific farms are dependent on shipments of seed from the east coast and Japan. Different types of oyster seeds are shipped from Japan to Puget Sound, Samish Bay, Willapa Bay and British Columbia. The Pacific oyster (*Crassostrea gigas*) revitalized the dwindling oyster populations. Seed shipments paused during WWII.
- How one ate their oysters in the 1900s said much about their wealth and status. The poor ate oysters with brown bread and beer. The wealthy consumed oysters with caviar and champagne. Expensive dinner service at restaurants transitions from the French style where every item is brought to the table at once, to a Russian style where every course arrives on its own to the table with its own utensils. Russian style dinners always started with oysters and/or caviar.
- 1903 - London chef Escoffier writes "Though oysters are best raw, there are so many culinary preparations of which they form the lead ingredient". Doctors throughout the Victorian and Edwardian era tout the curative benefits of oysters such as aiding, depression, exhaustion, "female ailments", nausea. In the Victorian era, doctors recommend a tea made of oysters, beef broth, and arrowroot for depression and "pulmonary complaints". People were encouraged to eat oysters (and drink water) with lemon juice with the narrative being that lemon juiced killed the bacteria that caused typhoid.
- 1906 - "The Pure Food Law" and The Federal Meat Inspection Act establish regulations for the handling, packing, and shipping of oysters.
- 1914 - World War I. Rationing became normalized. Extravagant oysters were no longer used to display wealth/status.
- 1920 - 1923 - Prohibition. Significantly fewer oyster saloons and taverns.
- 1924 - 1,500 people were sick and 150 died from typhoid throughout New York, Washington DC, and Chicago by eating oysters that were being "plumped" by a sewage outtake in New York. Oyster demand fell 50 - 80% because of these public health events.
- 1927 - The last New York oyster fishery shuts down. New England oysters are shipped to New York for consumers.
- 1932 - British Columbia has its first major spawning of the Pacific oyster with seed provided by Japan.
- Oysters become specialty foods while chicken and beef become the new household staples.
- 1939 - WWII begins. Seed from Japan stops. Pre-packaged meals become popular as women join the workforce and war effort. Frozen oyster stew from Campbells was popular until 1972, which was then turned into a condensed soup. The soup was discontinued in 2011 when pollution in oysters from Korea halted production forever.

- **20th century (continued)**

- 1945 - France's oyster beds are still productive after WWII and they embrace the rack and bag cultivation method. 80,000 boxes of seed were requested from the Japanese government. Japan also shipped 30 boxes of Kumamotos which were not popular in Japan because they did not grow as large (~2 inches) and took several years to grow to size. From 1945 - 1970's, 100,000 cases of seed were shipped per year to supplement the decimated oyster beds.
- 1950 - 1970 - Parasites MSX and Dermo decimate oysters throughout the Northeast and Gulf of Mexico. About 90-95% of oysters die in Delaware Bay. Denman Island disease kills 30% of oysters in British Columbia. Oysters grown on the West coast (from disease resistant Japanese seed) survive.
- 1960 - Japan also saves France's oyster populations along Brittany and Normandy. France cultivated the Portuguese oyster (*C. angulata*) and European flat oyster (*O. edulis*). When a gill disease destroyed most of the Portuguese population in the 1960's, Japan sent Pacific (*C. gigas*) seed to revitalize the areas. Ten years later, the same area suffered a parasite outbreak that compromised the European flat populations. This is when British Columbia, who revitalized their oyster populations thanks to Japan, were able to send *C.gigas* spat that they grew from Japan's seed shipments. Today, Chinese and Japanese oysters account for 80% of the world's total output. In the early 1900's, the United States was the largest producer of oysters.
- 1970s - Other countries get involved with oyster seed production and science. Tasmania becomes a top producer of breeding stock for Australia. A natural stock develops in Argentina that continues to produce valuable seed. India creates a pearl culture industry and develops a new oyster strain, the Indian backwater oyster (*Crassostrea bilineata*).
- 1970 - 1990s - Oyster populations plummet in the Chesapeake Bay due to pollution and "dead zones". Organizations, institutions, and businesses voice concerns about oyster populations at the Oyster Roundtable. The Oyster Recovery Partnership is created in 1994.
- 1995 - Oysters are third in overall U.S. bivalve landings behind surfclams and ocean quahogs. Louisiana led in oyster production in volume, Connecticut led in oyster value.

- **21st century**

- 2009 - Oyster farming on leased water bottom is legalized in Maryland
- 2010 - Maryland passes the Oyster Restoration and Aquaculture Development Plan - 24% of oyster habitat in the bay is off limits.
- 2013 - The first harvest of Maryland-farmed oysters are available to market.
- 2020 - 386 aquaculture growers cultivated 1304.5 acres of shellfish area in Massachusetts. The COVID-19 pandemic begins. The value of the MA oyster industry drops 40% to \$17 million due to the effects of the Covid-19 pandemic.
- 2021 - Funds from Cape Cod Cooperative Extension and Woods Hole SeaGrant allow 76 growers in Massachusetts to sell 1,000 oysters to a food security shucking program. More than 1,750 pounds of shucked oysters are donated to the Greater Boston Food Bank, Family Pantry of Cape Cod, and the Falmouth Service Center.



# Interviews

Six individuals were interviewed for this project. They were chosen because of their diverse personal and professional experiences, backgrounds, and views. Two tribal elders from the Wampanoag tribe were interviewed because none of the history texts reviewed at the beginning of this research project documented oyster experiences from Native Americans. Two professionals within the oyster industry – a grower and a shucker/packer-- were specifically chosen for an interview because the oyster industry is different than most other food specialties and food marketing forecast reports do not consider current or past issues professionals encounter in the oyster industry. A maritime historian was interviewed to learn more about how the oyster industry can change landscapes and lifestyles. And a marketing specialist was interviewed because of her specialized experience in getting consumers and markets to reimagine how a seafood item – kelp – can be a part of their everyday life just like oysters use to be in the early 20th century. Despite their differences in backgrounds and occupations, five out of the six interviewees voiced the same concerns for the future of oysters -- shellfish diseases and water pollution. Climate change was also frequently mentioned. Interviews have been summarized for this report. The following summaries document experiences, viewpoints, and concerns that can help strategize a healthier environment, industry, and marketplace. Each summary includes a link to the full interview transcript

*Kristina Hook is a Wampanoag elder and vice president of the Aquinnah Cultural Center. She was born on the island, moved to Sandwich when she was a child then later to Pennsylvania where she worked for Reading Railroad for 20 years. Kristina returned to Aquinnah in 2000. She leads foraging walks offered through the Aquinnah Cultural Council and Sustainable Martha's Vineyard. She also leads the Lonely Hearts Supper Club where everyone is invited for a home cooked meal because no one should eat alone. A recording device was not available during our conversation.*

Key topics within our conversation included:

- Preparing Oysters
- Using Oyster Shells
- Concerns about Pollution and Waste Water
- And Unsafe times to Harvest and Forage



## **How do you remember eating oysters when you were younger?**

My mother made an oyster stew. She used raw milk, the top milk, and potatoes. Raw oysters were added last. I still make it now. We would also build fires on the beach and use a hot rock to grill the oysters right there. We would dice up salt pork, onion, and put it on top of shucked oyster and then put them in the oven. Oysters would get added to a fish stew with a fish head and cheeks. And we would share everything with others.

## **What are some of your fondest memories with oysters or shellfish?**

I ate a lot of raw oysters. I have a picture of me opening scallops at 6 years old. We would go bay scalloping late in the fall and early in the winter in Menemsha Pond. Each adult had a limit. I would go with my grandfather.

## **Were the oyster shells used for anything?**

Well, Aquinnah was the last town in Massachusetts to receive electricity. There was no electricity until 1951. Oyster shells turn white and they crunch under your feet. We create paths to the outhouses with oyster shells - you could see them at night and hear them under your feet if you were heading in the right direction. Oyster shells were also used with clay from the cliffs at Gay Head to make bricks. The bricks of the Gay Head light house have oyster shells in them. Oyster shells have to be ground up and handled properly with the clay to create bricks and pottery. There's a special technique to working with oysters shells with clay.

## What are your concerns about the oysters or oyster industry?

I'm concerned about the amount of fertilizer people are allowed to use, the building up around ponds that has been permitted, and how it all impacts the water quality. I read the paper and count the number of variances properties receive. There is a treatment plant for 38 houses, the rest have their own cesspools. The waste in the cesspools leaks into the soil and into the marsh and water. There's cyanobacteria in the marsh. Phosphates are leaching right into the brooks. And foreign bacteria are being introduced into the environment. These contaminants have impacted water quality and killed eelgrass. Spat needs eelgrass. The tribe and town has to reseed Menemsha Pond. Wetlands are an integral part of our water system, and they are being polluted. Waste water pollution is a big problem for the environment and for the tribe. Sometimes the shellfish is not safe to eat.

## What else would you like me to know?

Oysters are a sustenance food and the people of Mashpee and Aquinnah have been harvesting oysters by hand for over 10,000 years. I used to forage and harvest all year. I forage and harvest blueberries, huckleberries, wine berries, chicken of the woods, rosemary, mint, sage, spring onion, sassafras. But now, I go further into the woods because of the pollution. I won't harvest near the roads. And with seafood, I feel the only safe time to harvest now is early spring and late fall. Also, there's less and less purple wampum in the quahog shells. Maybe it's the temperature, because the waters are staying warmer longer throughout the year. Wampum is really important in my culture and it's becoming harder to find.

[Link to "Foraging in Aquinnah" with Kristina Hook.](#)

# David Two Arrows Vanderhoop

*David Nees Kóuhquodtash Two Arrows Vanderhoop is a Wampanoag elder in Aquinna. He co-founded Sassafras Earth Education with his wife, Saskia. David was interviewed for this project because very little is documented about how tribes have used, and continue to use, oysters. Between 1999 and 2006, he and his brother Matthew ran the Wampanoag Aquinnah shellfish hatchery. He is passionate about caring for and respecting the environment.*

A transcript of our conversation can be found [here](#).

Key topics within our conversation included:

- Learning about Shellfish and the Environment
- How He Prepares Oysters
- Sharing Abundance
- Concerns about Pollution (Fertilizers and PFAS), Climate Change, and Water Quality
- Stolen Access and Culture



The following are excerpts from our conversation.

## **Who introduced you to oysters and shellfish?**

Well, I guess I'll have to start with my family. My mom and dad and there were seven of us, well six. One young child died early, but they were six of us in the household and my dad was a fisherman way back in the day from when I can first remember being able to go downstairs in the basement. And he would go scalloping first of all and he'd put the piles and push the scallops up on the bench and I can still hear the knives and the clicking of the shells and everything like that just like it was yesterday. And I started with the scallops and for many, many years it was like that. And then as soon as I was able to go down to the waters edge and I learned how to swim at, I don't know, four or five years old. My bigger brother just took me out, threw me in the water and said, "You have to go to swim. You got to swim over there. It's over your head. Swim to shore." Yeah, I basically swam to shore.

And then we were taught how to dig quahogs with our feet. And so that's what we did. And then every once in a while we'd get oysters from someone. And I don't quite remember who it was, but they harvest oysters from the great ponds. We had a few up here in Aquinnah but they were very small and they came out of Herring Creek and the creek that ran both ways in coming tide bring salt water and the outgoing tide bring in fresh water. They lived in the creek and we'd snatch them off of the rocks and bring those home and make oyster stew out of those. They were quite small. They weren't big enough to really have one half shell so we'd have to gather enough of them up and make oyster stew with them. And it was all about the adventure of gathering them really.

## Who introduced you to oysters and shellfish? *(continued)*

The Herring Creek was my favorite place to go from when I was just a little child. And before I had a bicycle, I'd walk down there about six or seven years old. I was about two miles from my house and I just walked down there and I was just fascinated with the area. And so I got to know everything about it where everything was the clams, the quahogs, the oysters, the crabs, the herring at the right time of year, the old men that I used to see there. Most of the time George Cook, he'd be there smoking his indigenous pipe that he had made out of clay. It was big, long pipe. It was beautiful. And he'd have a couple boats down there, but he'd only pick them up every once in a while because he was really old by the time I knew him. And that was my introduction to shellfish in Menemsha Pond.

## Are there still oysters in the ponds you visited as a child?

Yeah, there's still oysters at Herring Creek and there's a few in the Great Ponds, absolutely. And now there's growers that grow in Menemsha Pond. They cultivate oysters and have them in cages and they're able to grow really, really good and they're so tasty. The ones that come from Menemsha Pond, I don't know what it is, but I do know what it is of course. It's the pure waters and the nutrients that come in and go. Yeah, there's a couple of businesses that still grow oysters there, but for some reason they do not spawn in that type of salinity, I don't think and they don't take right in the pond. But they do still take in Squibnocket and in the creek.

I also ran the Wampanoag shellfish hatchery project back for a few years. We grew oysters there too at Menemsha Pond and had some real success with that. And I still go to visit the Great Ponds every once in a while and pick up a few over there and I have a few people that drop the oysters by every so often during the winter time, which I'm really grateful for because I haven't had time to myself to do that in recent years with Sassafras Earth Education. I'm all for people to take care of me.

## How would you and your family prepare oysters?

At that time, we didn't have a whole lot of money and also we all had to chip in and supplement food, and any leftovers we'd bring to elders in the tribe and so on and so forth. We'd go dig quahogs with our feet or soft shell clams on the beach and just gather them up, and bring them home and eat those. Right out of the shell is my favorite. And if there's abundance I will make an oyster stew and if there's abundance I'll make a lot and I'll freeze some. And I do have a smoker and I would smoke a few as well indeed. I don't do the brine and I haven't tested how long they would last, but I do jar them up in a technique that they're preserved at least for a couple months. I have dried oysters twice. The first time was not successful, but the second time I got a good 20 of them dried nicely and I did use brine and I just brined them and naturally tried them as my people did. I just wanted to try it, see if I could do it and it did work and they were very tasty.

## **Who taught you how to smoke seafood? Is it something that you taught yourself or did your friends or family teach you how to smoke?**

I taught myself. Nothing really lasted long enough in my household. No food lasted long enough in my household when I was growing up. My mom and dad were so into working so hard to keep food on the table that they didn't have time to process a whole lot besides the berries that we picked and all the hunting and the meats and the fowl that we got from hunting always just went on the table or into the freezer for a little while if we had abundance for later. I taught myself how to smoke and I learned a lot from some ... I went to college in the Northwest and they did a lot of smoking. I used to have some friends that smoked salmon and smoked oysters out there and I used to hang out in smoke houses and I learned a lot from that.

## **Do you have any concerns or any hopes for the future of oysters?**

Yeah. Well I guess first and foremost, because we're having some issues here on Noepe. The pollution of the groundwaters with fertilizers and the pollutants from PFAS [ per- and polyfluoroalkyl substances] are looming over our head right now because there's a coalition that is trying to change the natural football field to artificial turf and it's right directly over the aquifer that leaches into the great ponds and everybody else's drinking water. It was rejected by some of the boards. Well, one of the boards that it directly affects, which is Oak Bluffs, and a committee is suing the town to put it in. And it just doesn't make any sense what so ever. And hopefully that will just go away. There's pollution from the fertilizers by people trying to keep their lawns green during the droughts - these rich people that live around the Great Ponds are known for - we need to get a handle on what they're putting into the ground because of course it's affecting all of the life in the ponds, especially filter feeders, the oysters. And so now they're monitoring these ponds and there's certain times of the year that you can't go get oysters. That needs to be corrected. That's one of my main concerns, especially with the oysters because it has been such a gift to my people, the Wampanoag people for thousands of years beyond the last 500 years that we've been invaded. There are shellfish heaps that are in certain areas. One being right here at the Herring Creek where the scallops and quahogs and oyster shells were found as well as bear claws and wolf teeth and pottery that dates back, I think it's like 12,000 years or beyond.

Those pieces of history I think are so important number one, to understand why it's so important to maintain our cleanliness out here in the middle of the ocean on this island so that my people can continue their practices that they've done for thousands of years,



## Do you have any concerns or any hopes for the future of oysters?

*(continued)*

Then there's the no trespassing we've had to go through in the past like 200 years where they have just divided the land up and said, "No, you can't go here anymore. You can't gather your shellfish or your plants or your medicines in this area anymore because we have guns, and we have this and that to keep you away from it. And if you don't want to get killed, you're going to need to stay on your side of the line." All of those practices and especially around shellfish, especially around the Great Ponds where we are not allowed to hunt or fish or gather anymore, it's really detrimental to the culture that we have had here for thousands and thousands and thousands of years.

We used to have runners that would go from village to village to village and bring messages and gifts and foods and distribution centers around the different parts of each village where one village would have more than enough and they'd send it off to the other village on the other side of the island with young people that would carry and walk the 20 miles to walk and run the 20 miles depending on how urgent the message was to make those deliveries. All of that has been stolen from us and now with climate change, as well as the pollutants, we're right on the verge of losing even more than that. And with that said, being the actual shellfish that live in the once pristine waters around this island Noepe that I so cherish. I hunt and I fish and I go wherever I want to go. I don't give a shit if somebody gets up in my face and says, "Well, you're trespassing." I've had that happen once and I just very calmly just say, "Listen, I'm hunting." I was in a place looking for a certain herb and they said, "Well you can't be here." I said, "Well, if you feel threatened, if you feel like you want to call the police on me, you just go right ahead. I'm going to continue. I'm going to look for what I'm looking for here. And you do what you got to do. I'm Wampanoag and I have a right to be here on my own goddamn land." I told them and I walked away and the police didn't come. That's how I am with everywhere I go here on this island. I am not upset. I just very calmly remind them that they live on a stolen land. Simple as that.

*During the COVID-19 pandemic, Jamie Bassett and his business partners found themselves coincidentally being the only business with a shellfish shucker packers license in Cape Cod. This license and facility - originally meant to process green crabs - allowed them to shuck and pack hundreds of thousands of locally grown oysters from October 2020 - March 2021 as part of a Woods Hole SeaGrant and Cape Cod Cooperative Extension COVID relief program for oyster growers. Thousands of pounds of shucked oysters were donated to the Greater Boston Food Bank, Family Pantry of Cape Cod, and the Falmouth Service Center.*

A transcript of our conversation can be found [here](#).

Key topics within our conversation included:

- Time and Effort for Shucking
- The Importance of Collaborations
- Oyster Health and Food Safety
- Economic Feasibility
- Future Directions for Shucked Oysters



The following are excerpts from our conversation:

## **What were the general logistics of shucking the oysters with the shucking machine during the relief program?**

The process is labor intensive. You've seen bench grinders? Where you sharpen a knife. So that's really essentially what it is. But on the end where the grinder would be, there's three blades. And you hit the on switch and it's like murder on a wheel.

We would get in a whole bunch of oysters, a thousand oysters from a grower because they were super happy to dump their oysters. We would receive them, do all the paperwork, and then we would determine when we were going to start the shucking. You cut a piece of the shell off and then you're able to put the knife into the oyster very quickly and move forward with shucking it. And so that allowed us to move really quickly and shuck a lot of oysters per day, thousands of oysters.

We'd start at 4 o'clock in the morning and we would finish at 7, 8, 9, 10 o'clock at night. You have three hours to shuck a certain batch. The whole process has to be done within three hours. You have to note the time that it comes out of refrigeration. You need to make a note of that. You need to note the time that you start. You need to note the time that it goes into the ice bath. Everything possible you need. Because it is all a matter of public safety and public health

## Is it economically feasible to shuck oysters?

The issue here on Cape Cod is that there were no shucked oysters before we did it, before a couple other shucker packages, before a couple years ago, all were really going to the half shell market. And at the half shell market the prices, and this is important, we would just for regular half shell, pay a premium to the oyster person for their oyster. More than anybody actually. I was a shell fisherman and I was like, "All right, we want to make sure this is worthwhile. Not going to pay you 35 cents when we can pay you 55 to 60 cents. And then we can still charge 30 cents." We still charge 90 cents to a restaurant. And so we're making 30 cents per oyster.

It never really doesn't work out that way after all the expenses and everything. But we wanted to make sure that we paid a good price to the oyster harvester so that they could make money. If they're making money, they're happy, we're making money, the restaurant is making money. So the restaurant would charge \$3 a restaurant. This past year we even gave more for the oyster, I think they went up for 65 cents. Unheard of. Nobody's paying that amount.

The economics weren't there. And here's why. Because an oyster grower is not going to come and sell. In order to really make money, you have to purchase an oyster from between 5 cents per oyster to probably maximum 18 cents. And that is never going to happen because on Cape Cod no business woman or business man is going to be like, "Oh yeah, I have my 500,000 oysters. Why don't I sell them to you to shuck for 5 cents a piece? They're beautiful oysters. What would really have to happen is the oysters would have to be grown in specific areas, massive quantities where they're dredged up and they are brought in by the truckloads, and rinsed off, processed. And you have an entire production line that does oyster shucking. Otherwise you have to carve out a real niche market for shucked oysters.

## Who helped during this process?

Steve Rice is the seafood inspector who helped us get going and do the right thing and get all of our pieces together. "Here's what you have to do. Do not take any shortcuts." And he knows all the regulations. We really wanted to make sure everything was done correctly. And he helped us along. But at that time, nobody had shucked oysters, but people were shucking clams and sea clams, but no oysters. So he worked with us and we followed the same protocols as if we were shucking soft-shell clams, which is an entire protocol.

Scott Soares is a great guy. Scott was able to get a grant somehow and re-produce this oyster program in a larger scale with a ton of more money to include many more oyster growers. I think there might have been 165,000 oyster shucked. He took the program, the small program, and just really expanded upon it to offer it to a broad range of growers in the association. We worked with Scott on a weekly basis and he coordinated what growers were coming to us. And it was a major success because of him. So I think we were his largest shucker. So he was directing an orchestra and he just did an awesome job.

## What were some of your biggest challenges during this experience?

Besides the labor intensive time that it took to do this? I was dreaming about oysters and I was shucking oysters in my sleep.

It seems crazy. But the biggest thing was all oysters are not created equally. They are different from area to area, grower to grower, seed to seed. So when this program came about, the intent was to have you bringing a nice oyster that is a quality oyster, that is a healthy oyster. Initially, everybody intended to bring the best oyster, but human nature comes into play. What happened was, and what we saw, and this came into focus with the numbers, we would get 1,000 oysters from one grower, then a thousand oysters from another grower, and we might get a 96% yield from one grower, then a 35% to 45% yield from another grower. Some growers brought in a quality product with hard shell oysters and some other growers brought shells that would crumble. A crumbled shell's not necessarily a bad thing, but when you get an oyster that actually has no juice in it, right, which is a dry oyster, which has the membrane is sticking against the shell, it's a sick oyster. Right? We took oysters that were given to us... We didn't ask any questions. Then, as we're shucking them, we're like, "What's going on in this oyster that has no juice in it, that looks, actually, dead?" That was a problem.

Oyster shucking is high risk. We were the first line of defense to determine if an oyster that we shucked could actually go in that pint. We're not going to include this oyster in a pint, because what little kid might eat this from the food bank? We had a zero tolerance policy for any oyster that did not look healthy, but bear in mind, we're not biologists. Unfortunately we had to throw out a lot of oysters, but these oyster growers still got their money. We didn't charge for those, but we made it clear to both the county program and to Scott, that, "Hey, this is happening." Nobody expected that. Nobody expected to get crappy oysters. We're going through all of this and we're learning as we go, but really at the end of the day, we realize this specific thing is a really high risk affair. Somebody gets sick, they're coming to us, and we can be sued for everything. Somebody gets Vibrio, and super high risk in that sense. Volatile supply, a supply that couldn't be sustained at those low prices when the market came back.

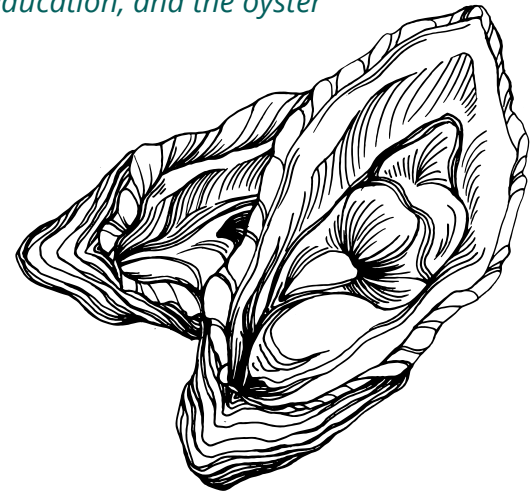
*Dale Leavitt is an oyster grower and co-owner of Blue Stream Aquaculture. While he is new to Blue Stream Aquaculture, he is not new to the oyster industry. Dale grew up digging shellfish in Maine, has led programs for Woods Hole SeaGrant, Cape Cod Cooperative Extension, and recently retired from being a professor for aquaculture courses at Roger Williams University. Dale was interviewed because of his extensive interdisciplinary experience in aquaculture science, higher education, and the oyster industry.*

A transcript of our conversation can be found [here](#).

Key topics within our conversation included:

- Buying an Oyster Farm During the Pandemic
- Value-added Products & Marketing Oysters
- Concerns About the Future of Oysters
- Importance of Technology to Scale Oyster Farms

The following are excerpts from our conversation:



## **You became a farm owner during the pandemic. What was that experience like?**

So although anybody that you talk to says that the period of the pandemic was really a hardship for everybody, I sit on the board of trustees for the State Aquaculture Association and about a year ago - and it's mostly industry people obviously that are on the board- the executive director said, "How many of you guys actually didn't make any money last year?" And every single shellfish person on that board said, "I did okay last year. I sold all of my oysters." So I'm not convinced that it was really a hardship for anybody in the shellfish business.

Amanda:

Interesting. Is there anyone who you think it was a hardship for based on either how they grow, where they grow or how they market?

Dale:

Not to my knowledge, but nobody went out of business during that two year period. So you can take it from there. But at the same time there were a number of programs that were implemented to help them, like the PPP. A lot of people took advantage of that. TNC Nature Conservancy was buying big ugly oysters from people and planting them out on their reefs so they were picking up any surplus oysters that people weren't able to sell. And so between all of those programs, I think everybody came out just fine.

Amanda:

Without those programs, what do you think things would've been like?

Dale:

There probably would've been some hardship.

## What's difficult about running an oyster farm?

When we took over this farm, it was pretty dysfunctional. So we've been basically trying over the last year to try to get it up as a functioning farm. The people management is tough. It's very tough. And in our case, we had people that were not handling the oysters properly and getting a lot of mortality because they weren't doing things the way they should have been done. We have an excellent team of people right now, but it's taken us a year to get it.

## Besides the right people, what else do you think is important for running a successful oyster farm in the future?

The technology, it's pretty straightforward. It's not rocket science by any stretch of the imagination. I mean, to be innovative... You'll see when I give you the tour. But there's been some engineering, some technical stuff that Jim's done that has really streamlined our operation. And I think that's the future of oyster farms. We're going to have to get a lot more efficient than we are now. When Jim first got into the business, his response was that they were using medieval technology.

Amanda:

So what are some of the medieval approaches?

Dale:

Handling. These guys were handling every single oyster and handling it to the point where they'd pick it up, inspect it, scrape it, and then put it in a bucket and then somebody else would take the bucket and they'd go and they'd count them and they'd put them in a bag and then somebody else would take the bag and then they would deliver it. And so it was just, it's very inefficient handling and there's technology now that's available that streamlines a lot of that stuff, which we're trying to implement. And we've been doing a pretty good job. So I mean that's sort of the future, in my opinion, of oyster farming. And right now the predominant industry is small, very small businesses. Two or three people, a couple of acres. I'm not sure they're going to make it in the long term because right now we're in a boom period for oyster consumption. I hope it sustains

## Why are we in a boom period?

The demand is crazy. The number of farms that are producing oysters has been growing at a geometric rate for the last 10 years. And everybody's selling all their oysters. That's going to level out and maybe it's going to drop a little bit.

Amanda: And would you say that most of the oysters are destined for the raw market?

Dale: Oh yeah. That's where the money is. I mean at least on the east coast.

## Why do you think our east coast market hasn't been as diversified as the Pacific Coast?

Because they haven't had to. The demand is still there. We're going to have to be thinking about value added and then modified product at some point. As soon as we saturate that raw bar market, people are either going to not be able to afford to sell oysters because once we saturate that market, people are getting 60, 70, 80, 90 buck oyster off the farm. We're okay with our price. Of course we would like more. And we're working towards that. A lot of that has to do with branding and setting up an identity that goes with the oyster to really stop asking for premium prices. And we're not there yet, but we're working on it. But once that market's saturated, then you're going to see a 65 cent oyster become a 35 cent oyster. And that's why I say the little guys, the two acre farms, are not going to be able to make enough money selling a 35 cent oyster to make it worth their while. Whereas if you can streamline, increase your efficiency and so project that type of a market may be coming down the road. So looking towards that, then you can run your business so that you can survive on a 35 cent oyster.

## In all of your history has there been a value added seafood product or oyster product that you feel like should be on the market or should be explored?

From a national level, the shuck market I think has potential. Eating a cooked oyster product, I think if we can advance that, there'll be a lot more consumers. Not everybody likes raw oysters. As a matter of fact, there's a very large subset of people that refuse to eat raw oysters. [Eating a raw oyster] is very weird. You're eating this live slimy animal... But a cooked oyster, you got oyster stew, you got grilled oysters, you got Rockefeller, you got all kinds of stuffings you can do with it. You can smoke them. Just a thousand things you can do with oysters. And so eventually I think we'll see that market evolve here

## **Is there anything about oyster marketing that you think should happen or you think we should move away from?**

### **What do you hope oyster marketing looks like?**

Branding is a big deal in oysters right now. At least for the raw bar market. It's not a big deal for the shuck market. An oyster's an oyster when it's shucked. But this whole concept of merroir and the uniqueness of individual locations for growing oysters is really what's driving the system now. It's by individual farm.

They talk about the farmer, they talk about the flavor profile for the oyster and they really do a very strong job of branding that farm and the oyster that comes out of that farm. The story, at least for the raw bar oyster, that is definitely a critical factor.

### **So in your experience, do you feel like no one would really buy the story for a value added product?**

I don't think so. I think a shucked oyster is a shucked oyster. And there may be some flavor differences. No one's really explored that that I'm aware of. So if you go into Stop and Shop and they'll have little plain plastic bins of shucked oysters. Most of them coming from Washington state or from the Gulf, but they just market it as shucked oysters and with no branding at all on them. Whereas if you go into an oyster bar or raw bar, it's like 10 different varieties of oysters that they're featuring.

### **What are your concerns about the future of oysters? What are you worried about?**

Well obviously I'm worried about market saturation and potential dropping of our wholesale price on them...There's all kinds of risks. It's a high risk business. We got diseases. We have good days and bad days with disease. There's always the risk that there's going to be something more contagious, more pathogenic coming down the line that we've seen a little bit of diseases jumping over from oysters species to oyster species. And so that's always a threat. And that's probably one of the biggest factors that we have to deal with is disease loss. So that's a risk. We are always worried about weather, not so much climate change because we're on the northern edge of the oysters normal range. So if our waters warm up, the oyster's are going to flourish. But from a production standpoint, climate change is not a big deal, at least in my mind. There are a lot of people that would kill me for saying that. So yeah, it's primarily production. Production risks, weather, heavy storms. We get beat up on the northeastern like you wouldn't believe. We have to be particularly diligent about watching out for northeast storms, which means all winter long we're on tender hooks waiting to see when the next big storm's . going to come through. 'Cause with our west island farm, everything's floating inside the surface. We sink some of it, but we don't sink all of it. And so that's a huge risk. Because that's our whole product right out there sitting exposed. We got beat up two weeks ago with that northeast storm. So we have an upweller, a nursery system that got the crap beat out of it. Brand new system we just built and it just tore it apart. We recovered all of the seed that was in it, but we still sustained some damage to the actual structure itself. So that's probably our biggest concern and keeping our outboards running. Mechanical issues are driving us crazy for sure.



# Michael Chiarappa

*Michael Chiarappa is an environmental historian who specializes in mariculture and the oyster industry in the Chesapeake and Delaware Bay. Michael was interviewed for this project because of his deep knowledge and interest in the rise and fall of oystering on the east coast.*

A transcript of our conversation can be found [here](#).

Key topics within our conversation included:

- Early Oystering Policies
- Shucked Oysters in Chesapeake vs. Delaware Bay
- Stark Changes in the Oyster Industry
- Opportunities in the Future

The following are excerpts from our conversation:



## Can you tell me about your interest in the oyster industry?

My interest in the oyster industry really is an outgrowth of my larger interest in the maritime world as a combined maritime/environmental historian. I grew up in Southern New Jersey, where I had the Delaware River, Delaware Bay, and Atlantic Ocean surrounding me. My father had a truck route where he delivered meat and seafood. When I'm not doing research on commercial fishing industries, my other interest is landscape transformation, the cultural landscape. So I'm interested in the infrastructure that gets created to facilitate interaction with water environments - whether it's port facilities, the commingling of terrestrial architecture and naval architecture, all the things that sort of come into play that create the milieu that we know of as a marine and cultural environment. And of course, that corresponded with my interest in studying the oyster industry, which of course at that point, by the late 1980s early 1990s, was pretty much down on its luck ever since the late 1950s with the onset of MSX and later Dermocystidium. But I was interested in the whole enterprise, both culturally and environmentally, of how that industry developed on the Delaware Bay.

## What has changed in the oyster industry?

Since the late 1950s, and the diminishment of the industry, and now the reconfiguration of that, the industry was really devastated when you have 90% mortality of the crop you're harvesting. And the industry hung in there throughout the '60s, and '70s, and into the early '80s. This is where the history really does you well, because people from the region will go down there and say, "Wow, it looks like the old days down there." I said, "No. What you see down there now is economic decline. That place was much more vibrant when the oysters were thriving." And so now, when I started doing research, you really had a gap that was pretty stark in terms of what had transpired between the 19th and 20th centuries up until say, the 1950s and what's happened after that. The whole memory of oystering in that community has really changed a great deal. So most of my research is focused on up until the 1960s, although I need to sort of do a little more on the more contemporary scene that unfolded when the oystermen were trying to hang in there. And some did. But if you had witnessed this place and saw what happened, it was really dramatic. And I think anybody who can comprehend that level of oyster mortality would say, "Oh, yeah. That's pretty severe."

## What do you find interesting about the history of the Delaware and Chesapeake Bay?

The thing that's always been interesting to me about the Delaware Bay oyster industry is, very early on, they adopted an oyster planning system. Transplanting seed oysters from natural beds to planted grounds. They were encouraging that in the 1840s and 1850s. And then after the Civil War, the exponential growth of that process really picked up. And there were problems and challenges with that. But on the Delaware Bay what you had was a situation where the natural beds are in the northern areas of the bay. And the leased bay bottom, where there was no natural growth, that's further down when you're getting closer to Cape May County, much further down the bay. And you would work with a marine surveyor. They would map out your grounds. And you would plant your oysters there. And really, that's what New Jersey did in general. You could harvest directly from the natural beds if you were a tonger. The logic being, of course, they're not going to take as many oysters. But if you ran a dredge boat, or a schooner, or a sloop with a dredge, you could only take that seed stock from the natural beds during April, May, and early June, and later May and June. That was the only time you could do that. And then, the rest of the year you tended your cultivated grounds. And to me, that was always interesting because that differed very much from the Chesapeake region and New England, who had both had different approaches to handling the resource.

The Chesapeake Bay never embraced oyster planning, because they felt it opened the industry up too much to highly capitalized ventures. And it would really ultimately display smaller operators, which it does have that tendency to do. If you have the resources to cultivate more bay bottom and with bigger boats possibly, it does have... And if you limit the natural beds just to a few months of the year where you're taking your seed stock for your planted grounds, that's not going to afford you a lot of opportunity. Whereas on the Chesapeake Bay, they went right to the natural beds. It was a free open fishery - kind of a free for all. Maybe you read Christine Keiner's book, *The Oyster Question*. She gets into that debate. And in New England, they actually allowed privatization of natural beds like on Long Island Sound to Connecticut. There were oyster operators there who actually owned natural growth areas

## In your research, have you come across how oysters were shucked or were they mostly consumed raw?

You had major shucking operations, and canning operations, and packaging operations in Baltimore. It takes a while for the shucking industry to get to the other big area, which I consider to be the Delaware Bay. They tried initially. Oh, I think there was one token attempt in the late 19th century, but it really never took. And then, it wasn't until the late 1920s that a shucking house opened up on the Delaware Bay. And a lot of what drove that was sanitation. The Pure Food and Drug Act, when that kicked in, brought a lot of these oyster operations a lot of scrutiny from the federal government, particularly from typhoid fever and areas where they didn't have very good sewage treatment facilities. All these things kick in. And shucking becomes a part of that. It provides greater versatility from a marketing standpoint, but it also helps ensure the purity of the product a bit more as well. So that's what happens in South Jersey. But of course, Connecticut had major processing operations as well...

## In your research, have you come across how oysters were shucked or were they mostly consumed raw? *(continued)*

... Large infrastructures where the oysters are being processed, shucked, and then either put in cans, or in jars, and so forth.

Amanda :

I want to make sure I get my timelines right, because we're talking about history. So are you saying prior to the 1920s, most oysters that were harvested were actually sold in shell and raw to consumers? Or there wasn't very much packaging and processing?

Michael:

It varied. On the Delaware Bay prior to 1920, 1919, 1921, that range, all the oysters that were coming out of there were being shipped in burlap bags and that were sometimes placed in large barrels, hogsheads with ice. After that, you do get some trade in the shell. But clearly, the new move now is towards shucked oysters in cans, whether in pint size, quart size, or half gallon sizes. So that's a bit later though. Again, on the Chesapeake, they get into the shucking business earlier there.

Amanda:

And why do you think they got into the shucking business earlier than in other regions?

Michael:

I'm not entirely clear about that, to tell you the truth. Baltimore is such an entryport to the Midwest and also to the Northeast. I wonder if it was an issue of marketing and transportation. Simply the volume of oysters that were coming out of the Chesapeake Bay was so large. It may have been that there was more money to invest in the infrastructure needed to do the actual shucking. But they're shucking oysters early. I mean, you'll see these 1870s and 1880s stereograph views, stereo views of women, African Americans, men, whites shucking oysters in stalls, that typical historical image we're used to seeing. And so, that's early. Now, this is where when you get into certain amateur historians, these people who collect oyster cans. And this is the kind of thing they get into.

Amanda:

Those people exist?

Michael:

Oh, do they exist? It's obscene. The prices they'll pay for some of these oyster cans. I mean, will knock your socks off!

## Have you come across some interesting marketing approaches during your research?

That's one of the reasons why oyster cans, I think, are such a popular collector's item. And this gets us into a whole different field that's sort of out of my specialty, marketing. Oyster cans are fascinating, because some of them, the artwork is fascinating. I'm not a historian of marketing. But when you've got so much of a product out there, how do you distinguish yourself? It kind of intrigues me today, these boutique-ish oyster bars, because oysters used to be such a proletarian food. Now, you go in, and it's like, "Oh, we've got Prince Edward Island oysters here." But even going back to the late 19th and early 20th centuries, whether you were from the Chesapeake, New Jersey, Delaware Bay area, and Long Island Sound, and into a few areas of New England - those are the big areas where the richest tasting, the best tasting oysters are coming from. And the marketing that goes on, you'll notice that people begin to discern that oysters from different areas taste different. And so, if you ever look at some of the marketing, you'll notice that like the Delaware Bay, it's Morris River Cove. The cove is the area where all the planted oyster grounds are. And the purveyors, the oystermen, the shippers as they're called, who actually sell the oysters, that's how they promote them. So you'll notice that a lot of the marketing is really geared towards a certain geographic area. And I guess consumers pick up on that. Now, I've never eaten enough oysters to sort of be that discerning in my palate but people back then, people were clearly trying to make an attachment between the body of water the oysters are coming from, and the taste. That, to me, is fascinating. There were a lot of gimmicks. I mean-

Amanda:

I would love to hear about any gimmicks that you've come across.

Michael:

Oh, yeah. Little pop culture, tchotchkes types of things, calendars. People that are collectors get into all this stuff.

Amanda:

They make calendars? They would send people calendars?

Michael:

Oh, yeah! At the Bayshore Center, we actually have a great calendar. It's one of those oversized circa 1915, 1910 calendars. They're really cool. And you look at the stationary. I'm always fascinated by the lengths to which certain operations will go in terms of decorating their stationary. And a lot of times, it's almost as though they're trying to convey to the consumer, like you say, what's the word? From farm to fork, that kind of thing. They're trying to really dial you into the whole process. And with oysters, over time, it became an issue of taste. Was it a fresher taste, a saltier taste? The issue of purity becomes a big deal. They really go to great lengths to emphasize the purity, the handling of the product.

## Do you know what happened to the shells during these time periods? Were they sold?

Well, that's a good point. Early on, you could grind it up for poultry feed. You could use it for fertilizer. Sometimes it was mixed with mortar for building trades and bricklaying. But what's interesting is oystering science, particularly William Keith Brooks, W.K. Brooks, who worked at Johns Hopkins, who becomes a big advocate actually of privatizing oyster grounds. See, the scientists were into privatizing oyster grounds, because their logic was, if you privatized oyster grounds, there'd be more incentive to keep them profitable, to take better care of them. That was their logic. It wouldn't create this tragedy of the common scenario. If you own a natural oyster bed, by golly, you're going to take care of it and manage it better. That was their logic.

Of course, there was incredible pushback, because of the fear of corporatization. But to the issue of those shells, as oystering science becomes more refined in the late 1890s, 1900, 1910, and it even takes a little longer, gradually what happens, of course, is the cull law set in. And the culling laws stipulate that you can only have so much shell in your vessel at any one time. The logic being, get the shell back on the ground, so that there is that substrate, the clutch, for the oysters to adhere to.

So the idea is you're going to cull the oysters, of course, while you're on the deck of your skiff or on your oyster dredge boat, get that shell matter back onto the bed, so it can be used for the next spat for propagation purposes. And over time, as the shucking operations, there becomes these shelling programs where the state pays oystermen to go out, and simply take these large amounts of oyster shell, and put them back on oyster ground, so that there is the requisite substrate to provide a place for the spat to adhere to.

*Atlantic Sea Farms is the first large-scale commercial domestic kelp production in the United States. Their product portfolio is diverse and ever growing. Zoe Croft, the Director of Sales at Atlantic Sea Farms, was interviewed for this project because of her experience finding and growing markets for value-added seafood products and witnessing the issues within the complicated seafood industry.*

A transcript of our conversation can be found [here](#).

Key topics within our conversation included:

- Initial Hurdles for Marketing Domestic Kelp
- Public and Industry Pushback
- The Power of Storytelling
- The Role of Partnerships
- The Value of Liasons + Letting People Do What They Do Best
- Shifting Views on the Concept of "Sustainability"

The following are excerpts from our conversation:

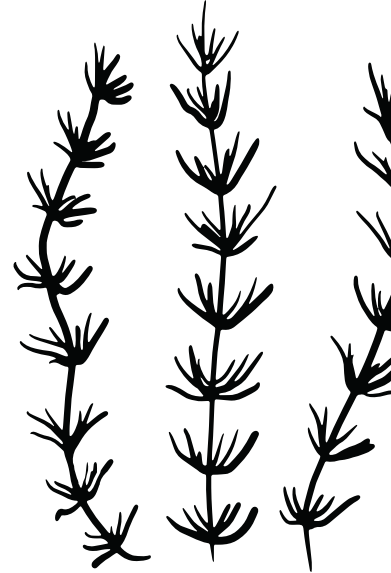
## **What were some of the initial hurdles kelp had to overcome in the marketplace?**

So 98% of the seaweed that we eat here in the United States is all imported. Typically, it's imported dried, and then rehydrated and dyed with the same colorings as Mountain Dew. It's why it's such a vibrant, bright green color. That's not natural. So one of the initial hurdles was just trying to change the perception of what seaweed should even look like because Atlantic Sea Farms offers a fresh domestic alternative and so it looks different. It's not as bright. It's fermented versus being paired with vinegars, specifically talking about our seaweed salad. So initially it was just changing people's idea of what seaweed looks like and how it tastes and what the price point should be.

I think that when you think about seaweed, you think about it in really basic forms. I think you think of it in sushi as a Nori sheet and as those seaweed snacks that are salty and extremely addicting, and you don't think of it through a culinary lens. You don't think of it as a condiment. You don't think of it as something in your smoothie or as a veggie burger and so I think that the pushback was that the public and consumers kept on wanting us to create something that was already in the market. They wanted us to make dried seaweed snacks or Nori sheets. And that's a really specific and different type of seaweed than what we're growing, which is kelp. So it just handles itself differently when it's processed and dried. There was a lot of education -- and there continues to be a lot of education -- on how to eat something.

And it's funny to me that a majority of the population is familiar with sauerkraut, kimchi, and pickled vegetables, but the second you put kelp in there, they're like, "Well, how do I eat it?" And it's like, "What?"

What I have to remind people is it's your favorite kimchi with kelp in it. It's your favorite veggie burger with kelp in it. I think kelp and the products that we have are on a similar trajectory as maybe acai had or maybe kale even, where it was kind of crazy.



## What advice do you have for anyone who wants to enter today's seafood value-added product world?

I think being transparent is really important. Being able to visually storytell what your process is will allow you to be more identifiable and also help meet the market's own pressures. I find in a lot of my interactions with buyers and retailers, they have their own sustainability measures that corporate has put on them or that is a goal for them as a department. And I always speak to how Atlantic Sea Farms can help reach their goal, whether that's from a climate impact story, whether that's from a diversity in suppliers or woman run companies. There's a lot of ways that you can figure out how to make sure that you are the first to mind. A lot of times that's how you can get that, by really making sure that your product and your story are compelling in more than just one way.

## Have people experienced any permitting issues for folks to be able to grow kelp?

One of the great things about Atlantic Sea Farms is our really dynamic team. We have our sales and marketing arm of the company that works with a lot of our finished goods. We deal with everything from seed to plate. We have our cultivation team, which is propagating and incubating all of our kelp seeds. We have our logistics team, our processing team. But the two rock stars are Liz and Aurora on our supply chain team. They work with our partner farmers directly.

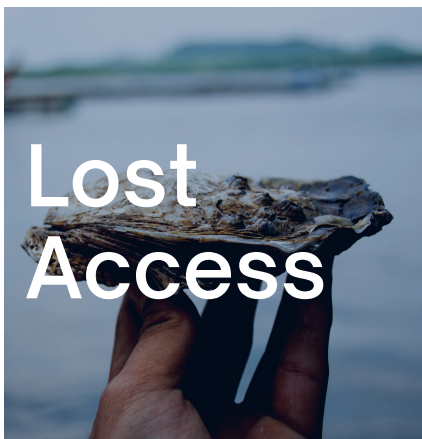
One of the benefits of being an Atlantic Sea Farms partner farmer is the access and the networking that comes along with that. So Liz and Aurora work very closely with our Department of Marine Resources. They're helping our partner farmers with lease applications. They're assisting them through that whole process because a lot of time it is these partner farmers' first time getting into aquaculture and there are a lot of nuances. There are a lot of lease application questions- questions that can be challenging. There are really specific areas that we are looking to grow kelp. So they really act as an amazing resource. This whole process doesn't happen without some of those complications along the way, whether that's riparian land, owners or seasonal people on the water that have issues, whether that's a visual issue or just accessibility issue where they will not be for the kelp farming or aquaculture industry...We are looking to be a diversification strategy for people that are working on the water, and that the best way to do that is through kelp aquaculture or oyster farming or mussel farming. It's just that kelp, you can start being profitable from it in its first year. Unlike oysters, which take a couple years

## You know how Ben and Jerry's has a graveyard for their flavors that just never worked out? Is there anything in the kelp graveyard that you all have tried but it's just not going to work?

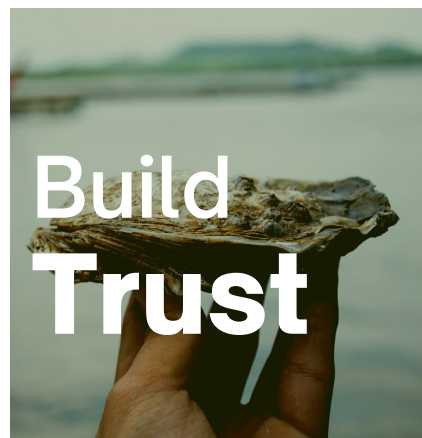
Too many. There's so many. We are a bunch of innovators, dreamers, creatives, hardworking individuals that are really excited for the future of seaweed, for the future of regenerative aquaculture and for making change. So that means that we have tried a lot of things that have and have not worked. One of our earliest products was a bunch of shredded vegetables and kelp, and I believe we tried to freeze it and then you could defrost it, but it was just a little sad. And it wasn't for lack of trying. But the market wasn't asking for it, and we knew it wasn't the right fit pretty early on. So we didn't know how to pull it back. And I think that there's a really big strength in saying, "This isn't working, how can we pivot?" And a great way to pivot is to already have a replacement product ready to go. And I think that people, places, retailers, any kind of sales outlet, even a restaurant appreciates that and says, "Hey, here's a product that we've been selling. We've been able to make improvements on it, and we think that your experience is actually going to improve with these changes that we've made." And sometimes it's even a completely different product. Atlantic Sea Farms has a very robust ingredient arm of our business where we allow other people to play with kelp and figure out what's working and what's not. So whether that's partners with nutraceuticals or cosmetics or dry grocery, I'm sure they have a lot of great successes and a couple of horror stories.



Shared Concerns  
From Interviewees



Agreement  
From Interviewees



# Future of Shucked Oysters



The following section provides a portfolio of suggestions on how Massachusetts could expand and diversify the marketplace for local oysters.

This portfolio was created using takeaways from the oyster history timeline, interviews, observations in food trends, food marketing reports, and sought-after seafood products.

The conversation with Jamie Bassett suggests that a shucked oyster market may only be profitable if it supports new value-added oyster products. The portfolio includes a table with potential new value-added oyster products. The products are coupled with a short descriptions, the retail value of similar products, and a link to similar products. Since Massachusetts is a seasonal place, a chart highlights which value-added products could experience seasonal vs. year long sales.

The portfolio also includes two infographics that summarize forecasted seafood trend reports and growing food market reports.

# POTENTIAL [FUTURE] SHUCKED OYSTER PRODUCTS

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Product	Description	Retail Value	Link to Related Product
<b>Oyster Cocktail Tincture</b>	Tinctures allow bartenders to use a small amount of liquid to make a drink more vibrant	~\$20 for 4oz. tincture	<a href="#"><u><i>Mu-Li Extract</i></u></a>
<b>Oyster Infused Spirits</b>	Infused spirits can elevate specialty cocktails that are familiar to customers - like martinis	~\$37 - \$170 for 700ml bottle	<a href="#"><u><i>Oyster Shell Vermouth</i></u></a> <a href="#"><u><i>Oyster Vodka</i></u></a>
<b>Oyster Infused Mocktail Beverage</b>	Infused non-alcoholic (NA) spirits can craft special mocktails for a growing demographic	~\$37 for 700ml bottle	<a href="#"><u><i>Pentire NA Gin</i></u></a>
<b>Oyster Butter</b>	Compound butters offer rich flavors, attractive appearances, and versatility for professional and home cooks.	\$10 - \$14 for 8 oz	<a href="#"><u><i>Specialty Compound Butter</i></u></a>
<b>Oyster Brine / Juice</b>	Enhances soups, sauces, and dressings. Can be refrigerated or shelf-stable.	\$5 - \$8 for 8 oz of clam juice	<a href="#"><u><i>Bar Harbor Clam Juice</i></u></a>

Product	Description	Retail Value	Link to Related Product
<b>Colatura di “Oyster”</b>	A way to reimagine the prized, flavorful Italian Colatura di Alici with oysters	\$48 for 100 ml of Colatura di Alici	<a href="#"><u><b>Colatura di Alici</b></u></a>
<b>Oyster Powder</b> <i>(for food)</i>	Could enhance a variety of dishes & condiments. Can be refrigerated or shelf-stable.	\$45 / kilogram	<a href="#"><u><b>Oyster Extract</b></u></a>
<b>Local Oyster Sauce</b>	Most oyster sauces are imported. This pantry staple could be produced in the U.S.	\$4 - \$18+ per bottle	<a href="#"><u><b>Megashefu Oyster Sauce</b></u></a>  <a href="#"><u><b>Making Oyster Sauce</b></u></a>
<b>Oyster Broth</b>	Was not found online or in stores, but it should be available to consumers and cooks	\$3 - \$10 for 24 oz for other shelf-stable animal broths.	<a href="#"><u><b>Korean Oyster Broth Soup (Gulguk)</b></u></a>
<b>Oyster Escabeche</b>	Escabeche marries vinegars, oils, and vegetables to create a delicious and addictive dish	\$8 - \$24 for tinned mussels escabeche	<a href="#"><u><b>See Recipe Section</b></u></a>  <a href="#"><u><b>Tinned Mussels Escabeche</b></u></a>
<b>Smoked Oyster Dip</b>	A flavorful and freezer-friendly dip that can be marketed to a diverse set of customers	\$11 - \$19 per container	<a href="#"><u><b>Ekone Smoked Oyster Dip</b></u></a>

Product	Description	Retail Value	Link to Related Product
<b>Oyster Pie</b>	A classic recipe that boasts being flavorful, filling, and freezer-friendly	~\$50 - \$80 for frozen seafood pie	<a href="#"><u><b>Chesapeake Blue Crab Pie</b></u></a>
<b>Any Tinned Oyster</b>	Most tinned oysters are imported. This pantry staple could be produced in the U.S.	\$2 - \$12 per tin	<a href="#"><u><b>Ekone Tinned Oysters</b></u></a>
<b>Oyster Stew</b>	A classic preparation that boasts being flavorful, filling, and meets many current diet trends (e.g. keto, paleo, GF)	\$4 - 7 per 15 oz. can	<a href="#"><u><b>Chincoteague Oyster Stew</b></u></a>
<b>Oyster Burgers</b>	A classic preparation that boasts being flavorful, filling, and meets many current diet trends (e.g. keto, paleo, GF)	\$2.75 - \$8.00 per burger (vegetable or animal)	<a href="#"><u><b>Crabber's Choice Crab Cake</b></u></a>

Product	Description	Retail Value	Link to Related Product
<p><b>Oyster Powder</b> <i>(for supplements)</i></p>	<p>Advertised as “a natural source of zinc, protein, essential fatty acids, vitamins, minerals and amino acids, in particular, taurine, which supports nerve function and energy.”</p> <p>In traditional Chinese medicine, oyster extract has been used for centuries to benefit the liver and kidneys.</p>	<p>\$13 - \$29 for 60 capsules</p>	<p><u><a href="#">Oyster Extract Supplements</a></u></p> <p><u><a href="#">Australian Oyster Supplements</a></u></p>
<p><b>Crushed Oyster Feed</b></p>	<p>An approach to increase hardness of chicken eggs and decorate aquarium trade</p>	<p>\$2.50 / lb</p>	<p><u><a href="#">Flaked Oyster Shell Supplement</a></u></p>
<p><b>Crushed Oyster Fertilizer</b></p>	<p>A greener, more natural way to fertilize lawns and plants</p>	<p>\$6-\$11 / lb</p>	<p><u><a href="#">Oyster Fertilizer</a></u></p>

# SEASONALITY OF [FUTURE] SHUCKED OYSTER PRODUCTS

SPECIALTY	Fall	Winter	Spring	Summer
Beverages	Cocktail Tincture and Infused Spirits			
Pantry	Oyster Butter *			
	Oyster Brine			
	Oyster Powder			
Snacks	Colatura di "oyster"			
	Local Oyster Sauce			
	Oyster Broth			
			Oyster Escabeche*	
	Smoked Oyster Dip*			
Mains	Any Local Tinned Oyster Product			
	Oyster Pie*			
	Oyster Stew*			
	Oyster Burgers*			
Health	Oyster Sauce			
	Oyster Powder Supplements			
Home	Crushed Oyster Shell Animal Feed			
	Crushed Oyster Shell Fertilizer			

"\*" indicates a food product that can be stored frozen



### **Innovative + Versatile + Convenient**

Pre-seasoned, pre-cooked, pre-portioned products such as pates and poke bowl kits are all examples of innovative, versatile, and convenient products.



### **Highlight Nutrients**

Oysters are low fat, high protein, full of essential vitamins, and Omega 3,6, and 9 fatty acids. Highlighting these nutrients are important on shelf-stable products



### **Provide Chef - Inspired Recipes**

Customers respond to foods with descriptions of "premium", "select", "choice", and coupled with chef-inspired recipes



### **Tout Sustainability Efforts**

Detail how product supports sustainable growing & harvesting practices



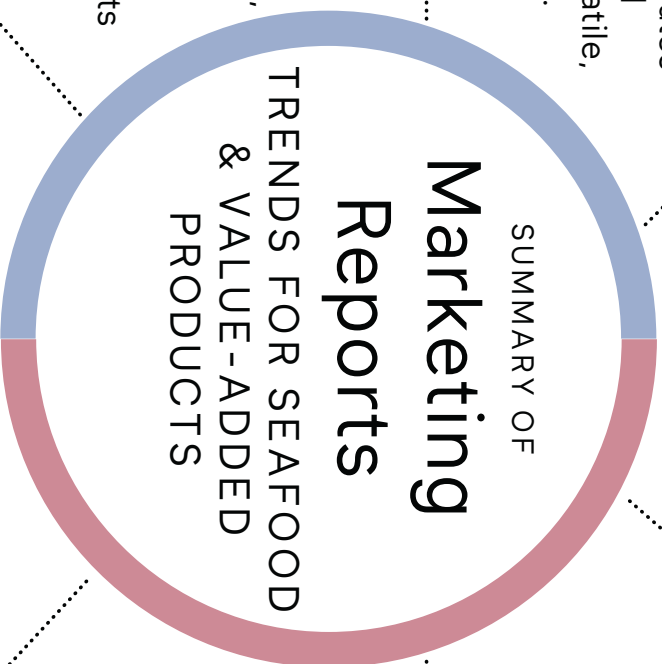
### **Enhanced Packaging**

Examples are recyclable, reusable, unbreakable, reduced or no plastic, includes recycled product, multipacks of single servings, or compostable



### **Collaborative Partnerships**

Partnering with an established brand to form a new product can boost visibility and new customers.



*National marketing reports from 2020 - 2022 were reviewed and summarized. Due to copyright restrictions, full marketing reports can not be shared in this report.*





**Keto, Paleo, and  
Gluten-free  
Products**



**Adding  
Adaptogens,  
Botanicals,  
Probiotics and  
Nootropics**

**Cognitive Support  
for Seniors**



**High Protein  
Powders**



**Immunity  
Boosting  
Supplements for  
Maternity and  
Infants**



*National marketing reports from 2020 - 2022 were reviewed and summarized. Due to copyright restrictions, full marketing reports can not be shared in this report.*

The background of the entire page is a close-up photograph of several oysters. Some are in their shells, showing the dark, iridescent exterior, while others are shucked, revealing the pale, glistening oyster meat. The lighting is dramatic, highlighting the textures of the shells and the moist surface of the oysters.

# Old & New Recipes

Old oyster recipes and “bills of fare” (e.g., restaurant menus) give readers a glimpse into how food – and life --used to look. These recipes (beginning in the 1700’s) from cookbooks, newspapers, history books, and menus are coupled with more recent recipes in an online oyster database. Together, they showcase how oysters used to be prepared and highlight preparations that are still common today. This database – along with the oyster preparations listed in the Oyster History Timeline-- could help the industry identify new opportunities for oysters in the human diet that did not exist during other points in history. The online database should be considered a “living document” since it can grow with the oyster industry and with any new collaborators.

New oyster recipes were developed specifically for this project, too. Bekah Angoff and Ryan Ghent, two cooks with a passion for seafood, each used this opportunity to test classic oyster dishes, incorporate oysters into seasonal dishes to reflect eating with Massachusetts seasons, and show how oyster texture and appearance can change with different preparations.

# Recipe Database

A sample of oyster recipes from 1788 - present day are compiled into a database. A Google Sheet lists the recipe name, cookbook or source, author, and year of publication. The recipe name is then linked to either the online recipe or to a Google Folder that stores images from the cookbook. Over 120 recipes are currently in the database. This database allows readers to:

- 1) see common preparations throughout time
- 2) identify common flavor pairings
- 3) compare historic and present recipes
- 4) be inspired by a diversity of flavors and preparations
- 5) add new recipes to the "living document" framework

## Recipe Database

Sample of Dishes	Year & Region	Description
Carpet Bag a la Colchester	1910 Australia	A beef filet stuffed with either fried or minced oysters
Pickled Oysters	1913 The Boston Fish Pier Seafood Recipe Cookbook	Oysters marinated in vinegar, pepper, salt cloves, and mace
Oyster Loaf	1903 Australia	A hollowed out bread loaf filled with spiced oysters, cream, eggs, and breadcrumbs

*Additional recipes and preparations can also be found in the Oyster History Timeline*

### Classic

### Combinations

- eggs
- cream
- bread
- pork fat
- vinegar
- wine

*These ingredients were often paired with oysters because they were filling, rich in calories, accessible, affordable, and the heavy flavors could mask any less than fresh tasting oysters*



New Recipes



# OYSTER POWDER

YIELD: 417 GRAMS    PREPPING TIME: 5 MIN    COOKING TIME: 25 HOURS

---

## INGREDIENTS

- 50 Shucked Oysters  
(~420 grams)

## DIRECTIONS

1. Strain oysters of all liquor (reserve liquor for another recipe)
2. Pat down oysters to remove any remaining moisture
3. Place oysters in a dehydrator in a single layer.
4. Let oysters dehydrate for 25 hours at 145 degrees
5. Grind oysters into a powder using either a coffee grinder or pulse setting on a mixer



## ROASTED LEEK & CRIMINI *Soup with Oyster Powder*

SERVINGS: 3

PREPPING TIME: 10 MIN

COOKING TIME: 45 MIN

### INGREDIENTS

- 1.5 c. Sliced Leeks
- 1.5 c. Sliced Crimini  
Mushrooms
- 1/2 c. Shallots
- 1 c. Diced Yellow Potatoes
- 1 c. Heavy Cream
- 1 Tsp Oyster Powder
- 2 Tsp Thyme
- 3 Bay Leaves
- 1 Tbs Butter
- Kosher salt
- Black pepper
- Vegetable oil

### DIRECTIONS

1. Toss sliced leeks and crimini mushrooms in 1 tablespoon of vegetable oil. Roast mushrooms and leeks in a 375 degree oven for 30 minutes
2. In a pot, sauté shallots in butter. Season with salt & pepper. Add 3 bay leaves and let shallots sweat for 5 minutes on low heat.
3. Add roasted mushrooms and leeks to the shallots. Add 3 cups of water, diced potatoes, thyme, oyster powder, salt, and pepper.
4. Let stew on medium heat for 15 minutes or until potatoes are fully cooked through.
5. Turn heat down to low. Remove bay leaves. Add the cream.
6. Remove 1 cup of the stew and blend it until smooth. Add mixture back to the pot. Bring to a light simmer. Serve with warm crusty bread and butter.



## OYSTER & PEPPER *Escabeche*

SERVINGS: 2

PREPPING TIME: 10 MIN

COOKING TIME: 30 MIN

### INGREDIENTS

- 6 oz Shucked Oyster Meats
- 1 Spring Onion, halved and thinly sliced
- 2 Small Poblanos, halved and thinly sliced
- 1/2 Jalapeño, minced
- 1/4 c. Sherry Vinegar
- 1/4 c. Rice Wine Vinegar
- 1/2 c. Olive Oil
- 1/2 c. Oyster Liquor, from Shucked Oysters.
- 2 tsp Sugar
- 2 tsp Aleppo
- Salt

### DIRECTIONS

1. Heat a cast iron pan to medium-high heat and roast onions, poblanos, and jalapeños until lightly charred/caramelized
2. Remove from the pan and combine with rice wine vinegar, sherry vinegar, olive oil, Aleppo pepper, salt, sugar, and reserved oyster liquor
3. Add all ingredients back to a small sauce pot and bring to a gentle simmer, add oyster meats and cook until the edges begin to curl, no longer than 3 minutes.
4. Remove from heat and store the escabeche in a glass container overnight to allow the oysters to marinate.
5. Escabeche can be eaten cold, or gently warmed and eaten with bread, cooked grains or vegetables.



# OYSTER DASHI & *Ramen*

SERVINGS: 2

PREPPING TIME: 10 MIN

COOKING TIME: 30 MIN

## INGREDIENTS

### Dashi

- 2 Quarts Water
- 1/2 c. Dried Shitake Mushrooms
- 1 c. Bonito Flake (Katsuobushi)
- 1 6x6 Piece of Kombu
- 2 Tbs Fresh Ginger
- 1/2 c. Oyster Powder

## DIRECTIONS

### To make the dashi:

Combine all ingredients in a pot, bring to a light simmer for 15 minutes, cover and remove from heat and let stand for 10 minutes. Strain and season to desired taste additionally.





## OYSTER DASHI & *Ramen* (continued)

SERVINGS: 2

PREPPING TIME: 10 MIN

COOKING TIME: 30 MIN

### INGREDIENTS

#### Ramen

- 2 c. of prepared Oyster Dashi
- 1/2 head of baby bok choy, quickly blanched
- 1 portion of fresh ramen noodles
- 4 oz. shucked oyster meats.
- 1/2 c. Cilantro leaves
- 1/4 c. Thai Basil Leaves
- Any additional desired vegetables or seasonings

### DIRECTIONS

#### To make the ramen:

1. Bring a pot of water to a rolling boil
2. Add noodles and cook to desired texture (2-3 minutes)
3. While noodles are cooking, bring Oyster Dashi to a light simmer
4. Add oyster meats and cook until edges curl slightly, no more than 3 minutes.
5. Strain the ramen noodles and remove noodles to a small bowl.
6. Pour Oyster Dashi over the noodles with the poached oyster meats
7. Finished with blanched bok choy, cilantro, Thai basil, and any other desired garnish/seasoning.



# MUSHROOM TOAST

*with Soy Glazed Barnstable Oysters*

SERVINGS: 6

PREPPING TIME: 5 MIN

COOKING TIME: 10 MIN

## INGREDIENTS

- 12 shucked Barnstable oysters
- 1 c. sliced shitake mushrooms
- 1 c. chopped maitake mushrooms
- 1 large shallot, sliced into rounds
- 3 T dry sherry
- 1 lemon, juiced and zested
- 3 T soy sauce
- 3 T unsalted butter
- 2 T chopped chives
- bagette
- Chili flake (optional)

## DIRECTIONS

1. In a sauté pan over medium heat, cook the mushrooms in canola oil until they start to give off moisture.
2. Add the shallot and let it soften, about two minutes. Deglaze the pan with the sherry, and let it cook down by half.
3. Add in the soy, lemon juice, and butter and let it cook together for another two minutes.
4. Add in the oysters to warm them through, making sure they are coated in the mushroom sauce.
5. Slice the baguette into 6 pieces, on the bias. Toast the baguette slices.
6. Top the toasted baguette with the mushroom and oyster mix, garnishing with the chives and lemon zest. Add chili flake to kick up the heat.



## SUMAC BUTTER

# *Oyster Wrap*

SERVINGS: 4

PREPPING TIME: 10 MIN

COOKING TIME: 15 MIN

### INGREDIENTS

- 24 shucked Barnstable oysters and their liquor
- ¼ lb unsalted butter, cut into slices
- 2T water
- 1T sumac
- 4 ea whole wheat naan
- mixed greens
- shaved red onion
- sliced cherry tomatoes
- sliced cucumbers
- feta
- lemon juice
- chopped parsley

### DIRECTIONS

1. In a sauté pan, simmer the water over medium-low heat. Slowly whisk in the chunks of butter, making sure the mixture does not separate.
2. Add in the oysters, lemon juice, and sumac, gently swirling everything together. Once everything is mixed, take off the heat.
3. In a bowl, add the greens, onion, cherry tomatoes, cucumbers, feta, and parsley. Mix well.
4. Add the oysters and some of the butter mixture as a dressing. Mix well and fold into the naan. Serve immediately.

The background of the page is a collage of various food images. At the top left, there's a close-up of a dish with oysters, mushrooms, and other ingredients. To the right, a bowl of oyster powder is shown. Below that, a plate of oysters is visible. In the bottom left, a bowl of escabeche soup is featured. At the bottom center, there are pieces of bread. The text is overlaid on a semi-transparent dark blue background.

# Experiences

"Using oysters out of the shell allows for so much creativity. When we think about oysters, they are usually served on the half shell and raw. Having the meats at the ready, it's an added layer of intense umami and seasoning that can be added to elevate any dish. In the mushroom toast recipe, the oysters take the earthy mushrooms and make them seem lighter and sweeter thanks to the oceanic aromatics and added pop of salt. In the wrap, the oysters intensify the light salad and take it to the next level of flavor complexity, adding some fat to the raw vegetables and a gentle, chewy texture. For the stuffing, the oysters add to the decadence of the bacon and sweet cornbread, while adding another texture to the bread as the oysters 'pop' after baking." -- **Bekah Angoff**, Rocky Neck Fish Co.

" The oyster powder was super interesting. It finished with a very savory, but oddly sweet flavor. Very ocean fragrant, grassy and "kelpy". I'd be interested in exploring other uses for it as a seasoning - for soup, coating for fried foods, etc.

The dashi itself was delicious, but the oysters were not the most appealing visually, and could've been combined with something else texturally to make them more interesting to eat. As a poached cooking method, not the most interesting, but the dashi was super flavorful and didn't require any additional seasoning because of the oyster powder.

The escabeche came out really nice. The total amount of the prepared cooking base could've easily held more oyster meats, maybe even double what I used into the recipe, to provide a better oyster : vegetable ratio. This could easily be adjusted to suit different flavor profiles, seasoning preferences, etc. This was really pleasant and the oil is great way to store/preserve them for a bit in the fridge. But since this is a home meal, I am not recommending a storage life." -- **Ryan Ghent**, BerkShore Seafood and Blue Door Gatherings

# Key Conclusions

## For A More Diversified Oyster Industry



### **Protect & Improve Water Quality**

Clean water and wetlands are essential for a vibrant oyster industry. Entire oyster populations - and people - have died because of preventable water pollution events such as excessive nitrogen, phosphorus, and bacteria in untreated waste water and runoff. Regional and state water regulations should be regularly evaluated, adjusted, and enforced with oyster health in mind.



### **Share Resources & Expertise**

The seafood industry is complex with ever changing policies, markets, technology, and consumer preferences. A more diversified and resilient market could be attained quicker if the industry and policies encourage sharing resources and expertise with other individuals and businesses.



### **Share the Story**

Oysters - and those who work in the oyster industry - have amazing stories. These stories are about history, policies, people, connecting to the environment, and feeding communities healthy foods. These stories connect with consumers and markets. Share the stories.



### **The Industry Has Options**

One new value-added product will not make the industry diversified, but thankfully, the industry has a lot of options. Products can be made with the liquor, meat, and shell. The industry can pull inspiration from classic pairings and dishes, or look to products with pronounced flavor, or invent a completely new flavor, texture, and food item.

# An Abbreviated List of RESOURCES

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