

ICE AND OYSTERS

From Glaciers to the Raw Bar

“Every oyster is a tide pool in miniature, a poem built of salt water and phytoplankton that nods to whatever motes of meaning shaped it. It is the sea made solid. The bay gone sentient.”

— ROWAN JACOBSEN, famed oyster aficionado, in his latest book *The Essential Oyster*

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An oyster may seem like a simple food; plucked straight from the water, it can be enjoyed on the spot, without any extra ingredients or cooking necessary. While its preparation may seem simple, its consumption reveals a complex story of glaciers and environment. The layers of flavor conveyed through an oyster divulge the ultimate connection to place. Oysters taste like the sea but not just any generic oceanic flavor; they taste of the exact body of water they were raised in and tell the story of the geologic history and biology of the area.

The unique characteristics of the place an oyster was grown are what gives each oyster its distinctive flavor. This is referred to as *meroir*, the ocean equivalent to *terroir* in wine, and a term coined by Bob Rheault, executive director of the East Coast Shellfish Growers Association, in 1991. Rheault credits his mother, a French teacher, for his conception of the term. The French word *terre* means land, and *terroir* is the characteristic flavor given to a wine by the land in which its grapes were grown. Soil, climate, and topography of the vineyards all contribute to making each wine unique. In French, the word for sea is *mer*, thus *meroir* was born. Rheault says that for oysters, “*meroir* is a combination of the algae, the sediment, the salinity, the ionic composition of the water, and really whatever gives the oyster flavor—we are still figuring it out.”

Rhode Island Meroir

Rhode Island is home to about 50 different aquaculture businesses, most of which are dedicated to growing oysters. Not only does the state produce a lot of oysters, but it also produces incredibly delicious oysters. In his book, *A Geography of Oysters*, Rowan Jacobsen describes Rhode Island’s oysters as “jewels—oysters that rival any in the world.”

To understand Rhode Island’s unique *meroir*, we need to take a closer look at the environment in which the oysters are grown. “Rhode Island has a unique geology in that the adjacency of the salt ponds to each other creates a compact, really good area for producing oysters ... we have the coastal ponds all aligned and then Narragansett Bay,” says Perry Raso, Rhode Island shellfisherman, oyster grower, and owner of the Matunuck Oyster Bar.

Most of Rhode Island’s landscape and much of its *meroir* is a product of ice, as glaciers have been the dominant shaping force of the past 80,000 years. During this time, glaciers repeatedly covered Canada, much of the northeastern United States, Europe, and Asia. The glaciers formed lobes of incredibly thick, heavy layers of ice over a mile high, which flowed under their own weight. As they moved, the force and weight of the ice bulldozed the bedrock. The glaciers carried layers of rock and sediment with them for hundreds of miles, with

each lobe carrying a different mineral composition along its path.

The glaciers eventually reached the Narragansett Bay area, which at the time was a large freshwater lake within a sedimentary basin. As the glaciers flowed through the basin they carved channels through the sediments, exposed very old bedrock, and turned the mud and cobble into metamorphic rock.

The glaciers continued to flow past what is our present-day coastline, then paused, and slowly retreated as temperatures warmed. In the place where they paused, they left behind mounds of soil, rock, and gravel. These mounds formed what are now Long Island, Block Island, Martha’s Vineyard, and Nantucket. The glaciers grew and paused again, depositing rocks, soils, and gravel between Westerly, Charlestown, and Narragansett, and forming what is called the Charlestown Moraine.

Rhode Island’s famous salt ponds were also a result of the glaciers. According to Mark Stolt, an environmental soil scientist in the College of the Environment and Life Sciences at the University of Rhode Island, “if you get below the marine materials [in the salt ponds], you would find remains of fresh water deposits of cedar swamps.” The locations of the salt ponds mark the place where large glacial ice blocks once sat. As temperatures warmed, meltwaters flowed from the glaciers carrying and deposit-

Perry Raso, owner of the Matunuck Oyster Bar, grows oysters in Potter Pond.

ing stratified materials, building up the land around the ice blocks. When the ice blocks melted, the depression left from the ice filled with fresh water and formed the beginning of the salt ponds. The meltwater also deposited rocks, sand, and sediment into the ponds, stratifying the layers of the pond's floor. The largest and heaviest rocks and sediments sank to the bottom and the smallest sediments—clay and silt—settled on top, later adding an important flavor component to Rhode Island's salt pond oysters.

Sea level rose after the glaciers retreated, causing salt water to flow into the ocean basin, filling Block Island Sound and Narragansett Bay. According to Janet Freedman, a coastal geologist at the Rhode Island Coastal Resources Management Council, "sea levels did not rise at a constant rate. Initially, when the glaciers first collapsed, there was rapid sea level rise. However, about 5,000 years ago, the rate of sea level rise slowed, which allowed barrier spits to form." During extreme weather events, the waves broke open inlets, allowing salt water and marine materials to mix with the fresh water and nutrients in the ponds, creating brackish water and ideal oyster-growing conditions.

The same glacial influence that produced each pond also created variations among the ponds. "What we have here in southern Rhode Island is a unique situation with pond, after pond, after pond, at different depths," says Perry Raso. He added that among and within the ponds there are also differences—salinity, mineral composition, sediment type, nutrient levels, and plankton composition all vary on different scales. Therefore, each oyster farm, even if it is located within the same pond as others, has its own environmental conditions, and these



unique differences can be experienced through the flavors of the oysters that grow in them.

Stages of Flavor

When you eat an oyster, there are three stages of flavor. The first stage is salt. "Salinity is what hits you immediately when you tilt an oyster into your mouth. It can be overwhelming, unnoticeable,

or anywhere in-between," writes Rowan Jacobsen. How salty or briny your oyster tastes is a function of the salinity of the body of water it was grown in. This is communicated to you by the oyster, through the liquor, the liquid the oyster sits in within the shell. An oyster's blood is primarily sea water, and it takes on the salinity of its surroundings. Additionally, an oyster can hold seawater within its



shell, allowing it to survive out of water for extended periods of time.

The bodies of water in Rhode Island and throughout most of New England are highly saline, thus New England oysters are typically salty. Despite this, even slight differences in salinity can be tasted. "Your tongue is so primed for salt, you can detect about 2 ppt [parts per thousand] pretty easily," says Bob Rheault. Within Rhode Island, the two major oyster growing regions are the salt ponds and Narragansett Bay. The bay typically has very salty oysters, while oysters grown in the salt ponds are typically less salty due to fact that many ponds have freshwater inputs such as streams or groundwater sources that lower that salinity.

However, there are exceptions. "A Quonnie Rock, grown in Quonochontaug ("Quonnie") Pond, is a very salty oyster.

The pond flushes unbelievable amounts of water through it," explains Max Sherman, general manager at the Ocean State Shellfish Cooperative, referring to a large inlet that allows a lot of salt water to enter Quonnie. "You might taste it and think it was a bay oyster, but it's not. It's just grown in a salt pond that has unbelievable flow."

The second stage of flavor comes from the body of the oyster. Body, in this sense, is not referring to the literal body of the animal, though it is a key component. It is another term borrowed from the wine world and refers to the way a flavor fills your mouth. Something that is "full-bodied" is bold and complex in flavor, while something that is "light-bodied" tends to quickly dissipate or vaporize in your mouth. To really taste the body of an oyster, you must chew the actual body to release the

Russ Blank, owner of Rome Point Oysters, motors out to his farm.

oyster's sweetness, texture, and other distinctive flavors.

"Much of the body of an oyster comes from what the oyster is eating," says Graham Brawley, director of sales and marketing at the Ocean State Shellfish Cooperative. A large part of an oyster's diet consists of phytoplankton, and many oyster farmers believe that the type of phytoplankton their oyster is eating impacts the flavor of their oysters. At different times of year, you will see different combinations and amounts of phytoplankton in the ponds, and they often differ from the types of phytoplankton that grow in the bay.

David Borkman, an environmental scientist for the Rhode Island Department

of Environmental Management, says, "in terms of plankton, quantity is more important than either quality or composition." The salt ponds and estuaries can accumulate larger quantities of phytoplankton because they are enclosed spaces and don't get flushed out as easily as the open ocean. More phytoplankton equals more food for the oyster. And more food means the oyster can produce more glycogen—a polysaccharide, or starch—that gives an oyster its sweetness.

Phytoplankton is not the only thing an oyster eats. "A big part of an oyster's diet is actually detritus," says Rheault. "It's pieces of eelgrass that are rotting and being decomposed, or different parts of organic matter that might be floating around in the pond or bay. As much as 50 percent of what they eat is not phytoplankton, but other types of organic carbon." These other food sources can create unique and interesting flavors that link an oyster to the body of water in which it had been feeding.

The third stage of flavor in an oyster is the finish. The finish is the aftertaste, the lasting impression the oyster leaves after you have chewed and swallowed. In oysters grown on the East Coast, the finishes are often mineral flavors but can also be buttery, nutty, or metallic, and taste of seaweed, citrus, cucumber, tea, melon, and a wide range of other possibilities. What the oyster is eating, the bottom sediment, mineral composition, and other environmental characteristics all impact both the body and finish of an oyster.

The actual experience of eating an oyster only lasts a moment. In that short period of time, the three stages of flavor come together to reveal the oyster's story and its connection to place. For example, eating a Salt Pond oyster, grown in Point Judith pond by Dave Roebuck, is an intense oyster experience. They are grown at a salinity of 32 ppt in bottom culture, meaning they are planted directly on the mud versus sitting in oyster cages

above the bottom, as is common with many Rhode Island oysters. This creates a briny oyster with a complex, full body and lots of mineral flavors. Roebuck says you can taste iron and petrol in his oysters. (While petrol may not be a term you typically associate with something you plan to consume, it is a common descriptor for wines and is often associated with sought-after Rieslings.)

Eating an East Beach Blonde oyster, grown in Ninigret Pond, is a completely different experience. Ninigret has a narrow saltwater inlet and also several freshwater streams, creating a mild salinity oyster with a smooth buttery sweetness. Oysters coming out of Ninigret Pond are also sometimes said to have a cucumber finish that is attributed to a type of phytoplankton that grows there.

Rheault says that he has noticed a "distinctive aftertaste" associated with all shellfish that come out of southern New England salt ponds—an aftertaste that bay and oceanic shellfish lack. It's a "rich, full-bodied flavor" that he attributes to the clay left by the glaciers.

In contrast, "A bay oyster is a wonderfully clean, salty, and bright oyster that I liken mostly to the oysters that I taste from Maine," Rheault says. This is certainly true of a Fox Island oyster, grown by Wickford Oyster Company; however, bay oysters can also have complex finishes. For example, Rome Point oysters, grown by Russ Blank in Narragansett Bay, are high salinity, briny oysters with a strong minerality and slight metallic finish. "Our oysters have a very distinct mineral aftertaste. It's from all the weeds and algae that grow on the cages. It's a totally different weed than what they get in the ponds," says Russ.

Whatever your preference, Rhode Island has an oyster for you. Rhode Island's geologic history and glacial influence have produced excellent oyster-growing waters and, as a result, a diverse portfolio of delectable oysters. Each oyster has its own unique *meroir*. So, on your next trip to the raw bar, order a selection of local oysters, and as they are served to you on a bed of crushed ice, take a second to acknowledge the glaciers that made your meal possible.

