

"The abundance of oysters is incredible":

The Oyster In Chesapeake History

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The Chesapeake is justifiably famous for its oysters. Indeed, one translation of the word Chesapeake from the Algonquian language is "Great Shellfish Bay." Oysters have influenced the nature of the Chesapeake estuary and of those who have dwelled along its shores for centuries. Despite the oyster's currently low numbers, it remains a central figure in our collective sense of the Bay, deeply imbedded in the culture, heritage, and lore of the region.

Oysters are found around the world, and the variety that lives along the Atlantic and Gulf coasts of North America is the American oyster, which has the scientific name *Crassostrea virginica*. The species name, *virginica*, was assigned because of the oysters' predominance in the Virginia waters of the Chesapeake. It is hard to imagine how abundant this shellfish once was in the Bay. One of the early English settlers, William Strachey, wrote in 1612 that "Oysters there be in whole banks and beds, and those of the best. I have seen some thirteen inches long." (Strachey 1953) A Swiss visitor to the Chesapeake in 1701, Francis Louis Michel, was amazed at the number of oysters. He observed, "The abundance of oysters is incredible. There are whole banks of them so that the ships must avoid them. . . . They surpass those in England by far in size, indeed, they are four times as large. I often cut them in two, before I could put them into my mouth." (Michel 1916)

These numbers were the result of virtually ideal conditions for oysters in the Bay. It offered relatively shallow waters that were rich in nutrients and with generally firm bottom conditions. Forest-covered lands that bordered the rivers and creeks deterred erosion, which meant that little silt would cloud the waters and clog the gills of oysters. Ocean water from the Atlantic was diluted by fresh water flowing into the Chesapeake to produce the moderately salty water in which oysters thrive. Apparently, no serious diseases infected the shell beds. Finally, since the number of people living in the Chesapeake region for most of its existence was low, and since they had relatively simple technology for harvesting shellfish, oysters could grow and flourish with little disturbance by humans.

Such huge numbers of shellfish had a major impact on the environment. Oysters are filter feeders, which means that they remove nutrients from the water as they siphon it through their gill system. This filtering process removes the phytoplankton and other small organisms that grow in the water. In essence, each oyster is a small, water- treatment plant that cleans the water passing through it as it feeds. The cumulative effect of millions and millions of oysters feeding each day was to keep the waters of the Chesapeake clear and pristine. Biologists have estimated that when the English settlers reached Virginia and Maryland in the 1600s, oysters were filtering the entire Chesapeake Bay once a week. The result was waters of remarkable clarity, even down to depths of twenty feet or more.

Oysters first colonized the Chesapeake Bay around 5,000 years ago, after the rapid rise of sea level caused by melting glaciers had slowed and conditions stabilized. Very soon thereafter, people began eating oysters. The earliest evidence of oyster use found thus far in the region dates to around 4,500 years ago. Shell deposits, called middens, were formed as people harvested shellfish and dumped the empty shells in the same location repeatedly over the centuries. The earliest middens have oysters mixed with softshell clams, ribbed mollusks, periwinkles and other shellfish, showing that the Chesapeake Indians were initially eating a wide variety of species. Over time, use of the other types declined, and oysters became the preferred shellfish and a permanent element in the annual food cycle of Chesapeake people (Wasselkov 1982; Potter 1993). For them, oysters were especially important in the late winter and spring, when other food stocks began running low.

The oyster's prominence in the native diet was remarkably enduring. At the White Oak Point site on the south shore of the Potomac near the Coan River, archaeologists found evidence that people

had returned repeatedly to this same place to collect and eat oysters and other shellfish for over 3,000 years. Oyster middens created by the American Indians are still easily found along the tranquil streams of the region, and these shell piles comprise the most obvious physical traces left by the original inhabitants of the Chesapeake.

As noted above, the European settlers were amazed at the quantities of oysters in the bay and almost immediately began eating them. Oysters soon became an important part of the diet. People living on tobacco plantations would harvest oysters for their own use. We know this because the shells archaeologists recover from colonial sites precisely match the salinity and bottom conditions found in nearby waters. Swiss traveler Michel tells us that Saturday was the normal day for harvesting oysters. Study of the shells from sites in St. Mary's City indicates that the colonists tended to collect oysters from shallow waters near shore, the same habitat favored by the Chesapeake Indians. People probably waded out and picked up the oysters, and used boats and short rakes to get them from slightly deeper areas. Around 1700, tongs came into use to obtain oysters from deeper waters. As is true today, oysters were only to be eaten in months with an "R". This idea is an ancient one and was well known in sixteenth- and seventeenth-century England. While some think it is just a superstition, there are actually good reasons for it. Among these is the fact that oysters spoil much more readily in warm weather. Furthermore, oysters are thin and have a less desirable texture and flavor during the summer, when they spawn.

There is little evidence of any seafood marketing during the colonial era. Some shells excavated from late seventeenth-century sites near Jamestown grew in high salinity water and may have been brought up the James River to Virginia's capital from near the mouth of the Chesapeake, a distance of perhaps thirty miles. In the Eighteenth Century, the capitals of Annapolis and Williamsburg were regularly supplied with oysters. It is unclear how, but local fisherman probably took advantage of the demand for oysters by the city residents. Virtually all oysters would have been transported alive in the shell, and shucked or steamed open when needed for the table. The preservation method typically used during colonial times for oysters was pickling.

Since human populations were small during the colonial period, it is unlikely that people had much impact on the oyster stocks. We can check this by examining shells at sites from different time periods. A good series of shell samples was discovered at the St. John's site in St. Mary's City, where shells were found along with many other artifacts in pits and cellars. These sealed deposits, undisturbed since the shells and other materials were thrown there in the Seventeenth Century, can be precisely dated.

The size of the shells is a key index of human impact: when people over harvest shellfish, such as oysters, the average sizes decline because the oysters are not allowed to grow very large before being taken. When we took these measurements, we were surprised to find major changes in oyster sizes. While the average size of shells in the 1640s was over 80 mm., it declined rapidly, and by ca. 1690, the average oyster shell was only 30 mm. In contrast, shell samples from around 1710 were back up to around 80 mm. in size.

When we plotted the human population in the St. Mary's City area over this same period, we found that changes in the number of people were proportionally related to changes in shell sizes. The population of the city grew until 1695, after which most of the residents followed the government to Annapolis. This perfect, inverse correlation between shell size and population density strongly suggests that oysters were being over-harvested in the St. Mary's River by the late 1600s. Although moving the capital led to the demise of St. Mary's City, it had a beneficial effect on the local oysters by greatly reducing the harvesting pressure on them. This is the earliest evidence for a human impact on a Chesapeake resource and shows that even a relatively small permanent settlement could result in over-exploitation. Given the huge numbers of oysters found throughout the Bay, however, this was only a short-term effect and did not result in any significant alteration of the environment.

It was only in the 1800s that oysters began to be viewed as something more than a local food resource. The rise of cities with growing populations such as Baltimore, Norfolk, Washington, D.C., and Richmond spurred more demand for seafood, and harvesting of oysters and fish began to increase. The abundance of the shellfish also attracted outsiders. In the early decades of the 1800s, New England fishermen came into the Chesapeake with a dredge device that literally scooped up hundreds of oysters from their beds, a technology that had rapidly depleted the oyster resources in New England after its introduction in the late 1700s. The presence of "Yankee" dredgers taking Chesapeake oysters sparked concerns and animosity. Virginia banned this equipment in 1811 and Maryland did so in 1820. Legislation also stipulated that only Maryland citizens could transport the oysters in its waters. Bay fishermen mostly collected oysters using hand tongs or nippers in waters less than twenty-five feet deep during this period. They would fish during the warm months and oyster in the cooler times of the year. Many farmers supplemented

their incomes with oystering during the winter. Among the people who were able to take advantage of the opportunities provided by this new demand for seafood were African American freedmen.

In the 1830s and 1840s, several key events occurred that had a profound impact on oysters and the Chesapeake Bay. One was the discovery of massive oyster reefs in the deep waters of Tangier Sound, reefs that could only be harvested with dredges. Another was the development of canning technology that made it possible to preserve oysters effectively. At the same time, the development of steam-powered ships and railroads meant that transportation became more dependable, and perishable seafood could be carried to distant markets. These innovations sparked commercial harvesting and the take of live oysters expanded rapidly. The earliest estimate of the amount of oysters taken in Maryland is 1839, when 700,000 bushels were harvested (Kennedy and Mountford 2001), and this figure more than doubled by the late 1850s. Although the American Civil War slowed the harvests, production exploded as soon as the war ended. Dredges were again legalized in 1865 (Cronin 1986), and this proved a huge factor in the expansion of the industry. In that year, Maryland's harvest jumped to 5,000,000 bushels and Virginians took 2,000,000 bushels of oysters.

Annual takes of oysters continued to rise in a boom-time environment. By 1875 a total of 17 million bushels was removed from the Chesapeake, yet harvesting continued to increase. At its peak in the mid-1880s, over 20 million bushels of oysters were being taken from the Bay each year (Cronin 1986). This was the golden age for oystering on the Chesapeake, and its oysters were internationally renowned. Canneries located in Baltimore and elsewhere along the Bay were supplying not only much of the United States but other countries as far away as Australia.

While the delicate flavor of bay oysters made them in great demand, the shells also became a significant market item. Oyster shells had been used throughout the colonial period to make mortar and plaster for buildings, but other uses were found in the Nineteenth Century. They became a valuable source of agricultural lime for farmers, served as grit in chicken feed, and were sought for road building and fill. Most of the shells for this were new but demand was such that attention even turned to old Indian shell middens. Ancient archaeological sites were literally carted away for fill and fertilizer. Also exploited for their shells were oyster reefs that had slowly formed over thousands of years as generation after generation of oysters lived and died on them. These reefs grew into underwater hills, and many were so high that they reached the surface of the Chesapeake. After the live oysters were dredged off, work crews began mining the reefs and rapidly reduced them to small jagged mounds on the bottom. (Kennedy and Mountford 2001)

This golden age of the oyster had a huge impact on the region. It brought economic opportunity and created new wealth, especially for boat and cannery owners. More farmers engaged in oystering during the winter and some became full time watermen. Many African Americans recently freed from enslavement also found employment on the water, or did oystering along with tenant farming. The oyster boom spurred the creation of new types of watercraft, and large fleets of these vessels were constructed in Chesapeake shipyards. Some of these boats were intended for hand tonging while others were specifically made for dredging. In the early 1800s the bug-eye boat was developed for oystering. After the Civil War, Eastern Shore boatyards created the famous skipjack. In Southern Maryland, the dory became the boat of choice for oystering (Beitzell 1968). These nautical innovations became enduring hallmarks of the Chesapeake Bay region, especially the skipjack. During the height of the oystering age, thousands of sails dotted the waters of the Bay and its tributaries, either pulling oysters from the deep or transporting them to the shucking houses.

During this time the Chesapeake became a maritime version of the Wild West. Rowdy young men were drawn to the boom-time setting. Gunfights over oysters were a frequent occurrence. As in gold and silver mining areas of the West, boomtowns also appeared in Maryland. One example is Crisfield. When a railroad connection was established there in 1868, this community underwent explosive growth. It was soon filled with shucking houses, saloons, brothels, packing plants, and men needing escape from the harsh work of oystering. So many oysters were processed at Crisfield that the town literally began growing over them. As adjacent marsh areas were filled with discarded shell, buildings were constructed on top. (Wennersten 2001) Other small towns that directly benefited from the oyster boom in Maryland included Oxford, Cambridge and Solomons Island. Baltimore became the true center of the oyster packing industry with more than one hundred canneries lining its dock areas.

The golden age of oystering also had negative aspects. The work was incredibly hard and involved pulling up dredges and sorting sharp shells in often freezing conditions on the Bay. Men were often unwilling to do the work. To make up a crew, some captains resorted to plying men with liquor, drugging them, and then "shanghaiing" them to the oyster boats, where they were forced to work the dredges over the oystering season. At the end of the season, they might be paid off with only token wages or sometimes just set ashore on some lonely stretch with no pay. These were

the lucky ones. There are also documented cases of men being "paid by the boom," where a crewman was knocked overboard in freezing water and left to die. (Beitzell 1968) Newly arrived immigrants in cities such as Baltimore were especially targeted as oyster crewmen. A few sympathetic observers noted the plight of oyster crews. In 1886, Thomas Weeks wrote, "The oyster dredgers of Maryland are the most ill-conditioned body of labor I have met in the course of this inquiry. It is labor that has no home, no money---scarcely clothes. It is poor and beggardly, exposed to cold and hardship without restraint or protection of the law." (Weeks 1886:67) The situation became so bad that state laws were passed in 1890 and federal laws in 1906 to control the oyster industry and improve work conditions.

To help regulate oystering and avoid conflict, State authorities designated areas in which oysters were to be collected by dredging or by hand tonging. The efficiency of the dredge meant that oyster bars or reefs could be quickly scrapped clean of live oysters, leaving nothing for the tongers. Not surprisingly, as the abundance of oysters declined, competition for those that remained increased. From the Chesapeake Bay itself, attention turned to the bountiful oyster beds in the Potomac and other rivers, where tonging had been the normal collecting method. Dredgers quickly exhausted their dredging areas and then illegally moved into areas set aside for tonging or harvested from private oyster beds. Conflict inevitably ensued, made even worse by weak laws and inadequate state enforcement of regulations.

By the late 1870s, this competition grew into the Oyster Wars, which continued off and on for nearly seventy years. Local oystermen from St. Mary's County competed with "Eastern Shoremen" and Virginians for oysters, and tongers fought dredgers over who had access to oyster stocks. Gunfights frequently occurred on the water, boats were rammed or dismasted, and deaths resulted. Running battles between state authorities and dredgers occurred on numerous occasions in the Chesapeake. (Wennersten 2001)

In the 1890s harvests began to decline. Many oyster beds were destroyed and reefs had been mined away. By the 1920s, the boom was over and the annual take of oysters averaged between 3 million and 5 million bushels, with over harvesting the cause. Not only were oysters being taken faster than they could reproduce, but harvesting was making the bottom environment less suitable for new oysters, which need a firm surface on which to grow. Old shells were excellent for the purpose. However, the shells were not being returned to the bay and rivers to serve as new attachment sites. Specialists recognized that returning shell to the bottoms was critical for maintaining the resource, and the practice was begun in the early 1900s, which helped to keep the industry stable for a time. In the 1950s and 1960s, however, new and eventually devastating oyster diseases reached the Chesapeake, populations plummeted, and by the end of the Twentieth Century, less than 200,000 bushels of oysters were taken from the entire Chesapeake.

Literally billions of oysters were harvested from the Chesapeake during a single century, and most of these were removed in a forty--year period--- with enormous environmental repercussions. In particular, the water-filtering capacity of the Chesapeake was seriously compromised. Whereas in 1600 the water of the bay was completely filtered about once a week, a process that removed the accumulated organic materials suspended in the water, by the late 1900s the remaining oysters would require over one year to accomplish this same feat. (Newell 1988) Removal of so many shellfish meant that nutrient levels would build up in the waters. This enrichment was increased even more by human activities in the twentieth century with the dumping of massive quantities of chemicals, fertilizers and other materials into the Bay waters. The result was greater biological production of tiny phytoplankton and other organisms and not enough oysters to eat them. As these creatures died and decayed, oxygen was removed from the water in greater amounts, eventually leading to the development of dead zones. Evidence suggests that in the early 1900s, the Chesapeake ecology began to shift from being a body of water dominated by bottom dwelling organisms in clear water to one dominated by microscopic animals, plants, and bacteria suspended in murky water. (Kennedy and Mountford 2001) Over harvesting of the oyster populations was a crucial factor in bringing about this profound biological change.

For thousands of years oysters thrived in the Chesapeake. They not only had a strong effect on the nature of the Bay itself but significantly influenced the ways of human life that developed along these shores. But in less than a century, the oyster was decimated. Today, virtually nothing is left of the abundant oyster bars and reefs of the past. Although efforts are being made to restore the native oysters, introduce non-native oyster species, and expand oyster farming, it is uncertain whether they will meet with success. The Chesapeake oyster industry is a classic example of a recurring tendency in human history: use it until it is gone. More thoughtful and restrained use of this abundant, delicious, and profitable resource would have allowed it to benefit far more people over a long period. And we are still becoming aware, over a century later, of the environmental--- and human---consequences from strip-mining the oysters from the Chesapeake.

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