Archaeological Analysis of Native American Oysters from the Chesapeake Bay Watershed
By Mary Lawrence Young

Once upon a time oysters (*Crassostrea virginica*) filled the Chesapeake Bay, functioning as a filter system for the Bay. They filtered the water by removing organic and inorganic particles from the water column resulting in cleaner water. However, the Bay we see today is not that same pristine body of water it was when John Smith arrived in North America. Instead, it is the location of many pollutants and overfishing ventures, depleting and harming many aquatic species, including the oyster. The focus of my research this summer was to determine more sustainable oyster harvesting techniques that could be adopted by oyster fisheries today by looking at methods used by past inhabitants of the Chesapeake Bay Watershed.

I specifically studied the harvesting practices of Native American people from the Powhatan chiefdom living along the York River during the Middle Woodland Period (500 BC – AD 900). Past studies have shown that Native fisheries were able to harvest oysters from the Chesapeake Bay for millennia in a sustainable way prior to European Contact. These theories lead to me spending half of my summer sitting in the basement of Washington (aka the Anthropology Department) in a very cold room analyzing oysters. The oysters I studied were unearthed during archeological excavations of a Middle Woodland resource procurement camp along the York River—site 44YO0797. This project centered on the technique of Native fishers in the Chesapeake Watershed primarily focusing on oyster harvesting of nearshore reefs, and only harvesting from offshore reefs for special events and feasts, leaving offshore reefs to act as "parent" reefs continuing to replenish the nearshore reefs.

To begin my research process, I inventoried 20 boxes filled with separate features of oysters from the site dating to the prehistoric, historic, 19th and 20th centuries to identify all the prehistoric features. I determined there to be 14 features dating to this time, ranging from Middle Woodland I to Late Woodland (500 BC – AD 1500). After locating all the shells applicable to my research questions, I began my analysis. I measured the mass, height, length, height-length-ratio, presence or absence of attachment scars, left value concavity, presence or absence of boreholes, and if applicable, the percent of boreholes on the shell and the type of boreholes. When combined, these attributes provided an accurate determinate for the location of harvest for each shell—nearshore or offshore reefs.

After analyzing all 2,182 shells in my collection, I imported my data into the statistical analysis software SPSS to look for patterns both within the 14 features and between other similar studies. My initial hypothesis revolved around the idea a decreasing mean shell height—a symptom of over harvesting—during the Middle Woodland period and into the Contact period was due to a higher demand of oysters. However, after reading more about site 44YO0797 and studying the feature content, I determined that creating a chronology for this site was more complicated than I had initially expected as most of the features did not contain a significant amount of diagnostic artifacts, and those that did were likely effected by historic plowing. To resolve this problem, I sent 6 shells from 6 different features to DirectAMS for radiocarbon dating. I am still awaiting those results and expect to be able to construct a more accurate chronology with that data.

I compared the mean results I obtained in my 14 features with data from a similar study conducted by Jessie Jenkins and Martin Gallivan, where 2 features were analyzed, the first of which called YO2 Midden contained 947 primarily nearshore oysters and second called Feature 7 contain 105 primary offshore oysters. This study showed a significantly larger number of nearshore oysters being harvest by the Native Americans during this period of fishery sustainability. My results closely aligned with those of Jenkins and Gallivan in terms of mean height; most of my features had a smaller mean height, closer to that of the YO2 Midden while a few features had an abundance of larger shells with larger mean height, closer to Feature 7. While I expected this to be the case, as harvesting nearshore oysters appears to be one of the major techniques implemented by the Native Americans for continued sustainability, a larger than expected portion of the oysters were determined to have evidence of boreholes which is a large determinate of offshore conditions. These conflicting results are

something I plan to clarify in my continued work on this research starting with developing a more accurate chronology of the site and continuing to look at the social, cultural and possibly political aspects of the Native fishery system by asking questions such as "Why did they harvest where they did?" and "What methods did they employ to harvest both the nearshore and offshore oysters?" and "Were oysters roasted and eaten right away or were they prepared to store for later consumption?" Since the Native Americans proved to maintain a sustainable fishery for hundreds of years, I believe the answers to all these questions can influence policy being made today surrounding oyster harvesting to help decrease the amount of harm and degradation currently facing the Chesapeake Watershed.

This is a picture of me at the archaeological field school I participated in this summer with Martin Gallivan at site 44YO2 which was used as a source of comparison data for the site I analyzed shells from over the summer, site 44YO0797. They are both Powhatan chiefdom settlements along the York River from the Middle Woodland to Late Woodland periods of different settlement scales.

This is an image of me working in Professor Gallivan's lab over the summer measuring the height of several oyster shells from site 44YO0797.