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NATIVE AMERICAN MARINE RESOURCE
MANAGEMENT IN RHODE ISLAND PRE AND POST

CONTACT

BY

SARAH BOWEN

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF

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OF

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2020

ABSTRACT

This study examines Native American marine resource management as a coastal adaptation in Rhode Island. It argues that marine resource management techniques were developed by indigenous people between the Archaic and the Late Woodland period, and uses Rhode Island's salt pond region as a case study. It then looks at how European settlement altered Native American coastal adaptations and changed marine resource management through commodification and eventually loss of access to subsistence bases. The study contrasts Native American management practices with European resource use through the end of the colonial period, and relates how indigenous conservation efforts are applicable to today's marine resources.

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CHAPTER 1

INTRODUCTION

The first peopling of Southern New England occurred 21,000 – 16,000 years ago with the retreat of glacial ice. Bands of Paleoindians made their way from the plains to the coast, beginning the process of coastal adaptation in New England, both people to the coast and the coast to the people.¹ From the various rivers, marshes, and lakes to the vast coastline of the Atlantic Ocean, the coastal ecosystem was key to human survival, while greatly influencing indigenous culture. Archaeological evidence reveals the formation of social structures, subsistence strategies, and technologies centered on the use of marine resources.²

With the arrival of Europeans, a written historical record of New England and its' inhabitants emerged. From these records, an image of Native coastal use formed, although there is often inconsistencies between what was recorded in texts and what is revealed by the archaeological record. The location of Native settlements along the coast began to change after colonization, as did the nature of the coastal resources themselves. The systematic use of these resources by indigenous peoples and Europeans were drastically different, with one using them for subsistence and culture,

¹ Joseph N. Waller, Alan Leveillee, and Daniel Forrest, "Phase III Data Recovery Archaeological Investigations of the Salt Pond Site (RI 110)" The Public Archaeology Laboratory, Inc. RIDOT Archaeology Series No. 185 (2019) 35.

² Richard W. Judd, *Second Nature: An Environmental History of New England* (Amherst, MA: University of Massachusetts Press, 2014), 21.

and the other for profit.³ As European power in the New World grew, Natives began to rely more heavily on European goods, agriculture, and the use of marine resources as commodities. Pre-contact cultural items that evolved from coastal adaptations, such as wampum, became commoditized themselves, often used as a currency or to trade for European goods.⁴

One possible adaptation that emerged during the Woodland period was the management, or manipulation, of marine resources, mainly shellfish, because these resources were more accessible and easier to view than stocks of finfish. This is significant because it suggests that Native populations were concerned with resource consumption, and took steps to conserve that resource in order to ensure its longevity. For this study, the term management classifies any conscious choices made that effected the resource, including harvesting methods and enhancements strategies.⁵ Although the term management in modern society may signify ownership and control over resources, Native American attempts at improving and stabilizing their environment are early forms of resource management. Humans still struggle with marine resource management today, and knowing the steps indigenous populations may have taken could help us better understand how today's populations need to alter their thought process in regards to marine resources. Such a study could also aid in public opinion on Native rights and culture, and provide a lesson in reciprocity.⁶

³ Christopher L. Pastore, *Between Land and Sea: The Atlantic Coast and the Transformation of New England* (Cambridge, MA: Harvard University Press, 2014) 10-17.

⁴ Judd, *Second Nature*, 48; William Cronon, *Changes in the Land: Indians, Colonists, and the Ecology of New England* (New York, NY: Hill and Wang, 1983) 1-4.

⁵ Dana Lepofsky and Megan Caldwell, "Indigenous Marine Resource Management on the Northwest Coast of North America" in *Ecological Processes* Vol. 2 No. 1 (New York, NY: SpringerOpen, 2013) 2.

⁶ David Griffith, *Estuary's Gift: An Atlantic Coast Cultural Biography* (University Park, PA: Pennsylvania State University Press, 1999) 1-5.

In Rhode Island, Native American life became so intertwined with the 675 km of coastline that the state serves as a case study to analyze pre-contact marine resource management, and how those practices were altered and destroyed with the arrival of Europeans.⁷ More specifically, the salt ponds dotting the coast and the area around Point Judith Pond, which boasts a high density of pre-contact archaeological sites, are the best examples. The Point Judith Pond site is one of the only Native village sites in Rhode Island, providing a view of intensive resource use which is mimicked in other salt pond sites along the coast. By analyzing this area through archaeological information, historic accounts, Native traditions, and the state of the ecosystem today, the intersection of coast, contact, and commodification can be clarified.

This study is divided into six chapters. Following this introduction, chapter two overviews histories, studies, and oral traditions regarding coastal adaptations and marine resource management. The question of whether or not pre-contact populations in New England, or even North America as a whole, managed coastal resources is just coming to light. Not many scholars have broached the topic other than to say it is possible, or that it is difficult to find evidence in the archaeological record. The studies that do explore the topic tend to focus on the West coast, citing the health of the salmon stock, clam gardens, or techniques still practiced by indigenous populations today.⁸

Chapter three provides a summary of coastal adaptations in New England, with specifics relevant to Rhode Island, from the Archaic period to the Late Woodland

⁷ Timothy Ives, Kevin A. McBride, Joseph N. Waller, "Surveying Coastal Archaeological Sites Damaged by Hurricane Sandy in Rhode Island, USA" in *The Journal of Island and Coastal Archaeology*, Vol. 13, No. 1 (2018) 68.

⁸ Lepofsky and Caldwell, "Indigenous Marine Resource Management on the Northwest Coast of North America" 1-2.

period. The importance of coastal adaptations made over this time lies in the need to understand how people have familiarized themselves with, and adjusted to, coastal ecosystems. Being familiar with these advancement over time provides a history and model of marine resource use necessary to deduce how and why marine resource management would have evolved. Knowledge of the coastal adaptations made by the people of Rhode Island shows how entwined Native populations were with their land at the point of European contact. Colonization utterly changed Native American life, resource extraction, and resource management. Understanding coastal adaptations provides a point of contrast when discussing marine resource management and coastal adaptations.

Continuing the discussions of coastal adaptations, chapter four delves into relevant archaeological sites that demonstrate land use for coastal Rhode Island, specifically salt ponds. Each site discussed provides information relevant to possible marine resource management techniques developed over time. From information on various marine resources, modes of harvest, seasonality of extraction, and tools, the archaeological record serves as the base for hypotheses about marine resource management.

Chapter five uses the details of archaeological findings, combined with anthropological assessments of indigenous culture, to analyze pre-contact marine resource management. Pre-contact marine resource management includes effects relating to season of harvest, population density, variations in diet, and area rotation, some of which were purposeful techniques, others a result of coastal adaptations. Factors such as season of harvest, area rotation, and diet variation based on abundance

were continued choices made by communities that effected a resource. Whether or not the choices were first made with the intent of altering a resource is insignificant to this study, often the choice to continue the action after observing the effect is what can be considered a management technique.

In order to fully understand marine resource management, both as purposeful techniques and effects of coastal adaptation, it is important to analyze how it changed, and eventually dwindled. European contact and settlement altered the environment of New England and Native lifeways. The clash between commodification of resources and reciprocity with nature affected the way both Europeans and Native Americans used marine resources. Through different patterns of land use, an emphasis on quahogs, and conflict with Europeans, Native American marine resource management adapted to pressures brought on by coexisting with Europeans. This alteration takes shape in restricted access to traditional resources through loss of land and freedom. After King Phillip's War, 1675-1678, the Narragansett people were removed from their homelands, many forced into slavery in the West Indies, Block Island, or areas outside of Providence Plantations.⁹ Without access to marine resource bases, the people who once occupied the shores of Point Judith Pond and Narragansett Bay could no longer practice traditional management techniques developed over millennia. That is not to say that Native people were no longer a part of Rhode Island's history after the seventeenth century, just that they were unable to use their lands and resources in the ways they had before. It was not until 1978 that the Narragansett were officially

⁹ Robert A. Geake, *A History of the Narragansett Tribe of Rhode Island: Keepers of the Bay* (Charleston, SC: The History Press, 2011) 58-59.

given land, but not their original homelands.¹⁰ In the face of all of the hardship brought on by European settlement, the Narragansett and Niantic, as well as surrounding tribes, still found ways to keep their culture and belief system intact.

The goal of this thesis is to explore the question of whether or not Native American pre-contact marine resource management was a coastal adaptation in Rhode Island, how it changed due to the commodification of resources, and how it was practically destroyed through loss of land and access to resources. Identifying ways Native populations may have consciously, or accidentally, managed marine resources pre and post contact reveals cultural and ecological factors important to the history of New England, Rhode Island, and the Narragansett. Part of this discussion includes the role wampum played in affecting resource consumption. Specifically, did the uptick in wampum manufacture cause people to extract more quahogs and whelk than they would have otherwise, and were oysters, one of the most predominant pre-contact shellfish, being eaten less? Did this shift put a strain on the resource and overpower management techniques? In order to explore this, the advancement of pre-contact peoples' intimacy with their environment, their subsistence strategies, and their resolve to maintain their culture in the face of extreme forcible pressure from outside factors is considered.

¹⁰ Ibid., 133.

CHAPTER 2

HISTORIOGRAPHY

While there is a large amount of information available that discusses Native American coastal adaptations in New England, and specifically Rhode Island, ones that focus mainly on marine resource management are rare. The collection of work can be broken down into four categories: historic analyses of and anthropological studies on coastal adaptations, archaeological reports, and Native oral histories. The analyses done by historians and anthropologists tend to focus on the contact period and how the arrival of Europeans altered the environment and Native life. Use of marine resources is always included, but sole focus on Native coastal adaptations before contact is uncommon. In some cases, anthropologists use activities practiced by today's indigenous populations as possible examples of management developed before contact. Archaeologists, however, particularly since the 1980's, have focused on pre-historic Native life in relation to the coast in Rhode Island. Native oral histories and traditions provide insight into practices revolving around the coast and have been passed down through generations. Sustainable coastal resource use, or rather the lack of overexploitation, is evident in oral histories and the tradition still practiced by the Narragansett Tribe today.¹¹ All three disciplines provide different ways of viewing coastal adaptation in Rhode Island and when combined create a more comprehensive picture.

¹¹ Ella W. Sekatau and John B. Brown III, "Narragansett Indians and Narragansett Bay" in *What a Difference a Bay Makes* (Providence, RI: What a Difference a Bay Makes, 1993) 23.

History

One of the first studies of the contact period history in Rhode Island is Sydney James' book, *Colonial Rhode Island: A History*. James became one of the first authors to produce an account of colonial Rhode Island life and land, but mainly focuses on the creation of the modern institutions created by European colonists, specifically Roger Williams. The history does, however, provide an overview of the way Europeans viewed Rhode Island, their interactions with the land's indigenous peoples, and allows readers to conjecture about the commodification of its' resources.¹²

Along the same lines as James' book is, *Rhode Island: A History*, by William McLoughlin, which spans from the contact period through to the twentieth century. Beginning with Roger Williams, McLoughlin describes the political and religious formation of Rhode Island. Interestingly, the author argues that during the eighteenth century, Rhode Island's lack of natural resources drove its' citizens trade goods such as rum and slaves.¹³ Both James and McLoughlin's books serve as European histories of Rhode Island, and say little to nothing about Native American and their use, and management of, coastal marine resources.

As for the history of the Narragansett tribe, whose ancestors occupied the archaeological sites discussed further on, Roger A. Geake's book, *A History of the Narragansett Tribe of Rhode Island: Keepers of the Bay*, provides a detailed timeline. However, Geake's book primarily focuses on post-contact events, such as King Phillip's War, and the tribe today. He does briefly reference Native pre-contact life, but little about marine resource use, only that they had a large domain and were able to

¹² Sydney V. James, *Colonial Rhode Island: A History* (New York, NY: Scribner, 1975) 1-25.

¹³ William McLoughlin, *Rhode Island, a History* (New York, NY: W.W. Norton; American Association for State and Local History, 1986) 5-18.

harvest “unlimited resources of shells from the bay.”¹⁴ However, the post-contact information is useful to trace loss of access to marine resources, ultimately hindering management techniques, and the Narragansett’s traditions today that are influenced by marine resource use.

Among the first systematic studies of the effects environment and people had on each other is William Cronon’s 1983 book, “Changes in the Land: Indians, Colonists, and the Ecology of New England.” Cronon seeks to answer the question “how did the ‘nature’ of New England change with the coming of Europeans, and can we reasonably speak of its changes in terms of maiming and imperfections?”¹⁵ Often cited by later authors in the field, Cronon’s analyses of Native use of resources in New England and the environmental changes that occurred with the arrival of Europeans was one of the first studies to look at the intersection of coast, contact, and commodities. Although Cronon does not focus specifically on Rhode Island or exclusively on marine resource use, his story is directly relevant since it provides an overview of how Natives used coastal resources and how Europeans altered them. This book differs from others because it focuses on East Coast Native populations rather than the trend of using West Coast, as seen in Acheson’s article. While he focuses on the contact period, Cronon inspired others to view the history of New England through the lens of place, which would morph into a more specific look at coastal adaptations.

Perhaps the most related to Cronon is Richard W. Judd’s 2014 book titled *Second Nature: An Environmental History of New England*. The structure of the book and its

¹⁴ Geake, *A History of the Narragansett Tribe of Rhode Island*, 14.

¹⁵ Cronon, *Changes in the Land*, 5.

focus on people interacting with their environment no doubt reflects the work Cronon completed decades earlier. However, Judd gives more attention to Native inhabitants prior to contact than does Cronon, and is more up to date with Native practices thanks to archaeological studies. Judd even criticizes Cronon for treating nature as a “passive victim rather than historical force.”¹⁶ Judd analyzes changes made to nature and credits the low impact Natives had on resources, including aquatic life, to “low population density, seasonally dispersed hunting and foraging activities, shifting forms of agriculture, and spiritual practices that emphasized reciprocity with the rest of nature.”¹⁷ Unfortunately, much of the book focuses on the contact period and later, but the consideration of the original inhabitants is key to understanding the rest of the history. Overall, Judd addresses how different pre-contact people treated resources in New England, and were actively practicing strategies that would preserve the resource, although he never specifies how this was accomplished.

Other related environmental histories include both *Between Land and Sea: The Atlantic Coast and the Transformation of New England* by Christopher L. Pastore and *The Saltwater Frontier: Indians and the Contest for the American Coast* by Andrew Lipman. Pastore’s study focuses on Rhode Island and Narragansett Bay, beginning with the arrival of Europeans. While he focuses on the changes of the coastal landscape, Pastore does not often discuss Native American practices before European arrival.¹⁸ Lipman’s book does not focus on Rhode Island, mainly centered on the

¹⁶ Judd, *Second Nature*, 8.

¹⁷ *Ibid.*, 18.

¹⁸ Pastore, *Between Land and Sea*, 1-7.

Pacific coast, but he does challenge traditional accounts of Native marine use.¹⁹ While neither book fully broaches management, they come close to the discussion of indigenous coastal changes.

Anthropology

The shift towards studying Native coastal adaptations began broadly, and James M. Acheson's 1981 article, "Anthropology of Fishing," serves as an example of how far the field has progressed. Acheson's article does not focus on Rhode Island, or even New England, but his perspective is important because he seeks to combine the subspecialties of "modern fisheries, shipboard life, and prehistoric marine adaptations" in order to highlight how this information can be useful in today's attempts at conserving resources.²⁰ Acheson acknowledges the difficulty of harvesting marine resources and how "even primitive technology can affect the stocks of aquatic animals."²¹ This is important because even though he never broaches the topic of Native marine resource use, Acheson points out that without proper knowledge, marine life can be drastically altered. However, the article focuses heavily on the use of marine resources to earn a living, and goes on to use more modern examples, only mentioning Native populations on the Pacific coast.

Similar to Acheson's article, is "The Archaeology of Aquatic Adaptations: Paradigms for a New Millenium," by Jon M. Erlandson. Erlandson states that "most models of human evolution have all but ignored the role of aquatic or maritime

¹⁹ Andrew Lipman, *The Saltwater Frontier: Indians and the Contest for the American Coast* (New Haven, CT: Yale University Press, 2015) 1-8.

²⁰ James M. Acheson, "Anthropology of Fishing" in *Annual Reviews of Anthropology*, Vol. 10 (1981) 275.

²¹ *Ibid.*, 276.

adaptations during earlier stages of human history.”²² The article serves as a foundation for others to study the Woodland and contact periods because it provides information on the first peopling of New England through to the Archaic period. The author shows how the proximity to coastal resources provided a sustainable environment for people to live in New England, even with sea level and climate change, and details how archaeological excavations can reveal this information. Erlandson’s article marks a point in the literature where scholars focus specifically on pre-historic coastal adaptations and the effects marine resources had on people and vice versa.

A more specific study is Kevin McBride’s article, “The Source and Mother of the Fur Trade: Native-Dutch Relations in Eastern New Netherland.” Centered on the period after contact, McBride’s research is important to the subject because it details the significance of wampum. Wampum, beads made from whelk and quahog shells, exemplifies the commodification and overexploitation of a marine resource once used for subsistence by Native populations in Rhode Island.²³ The Dutch fur trade is an instance of Europeans altering the environment of New England, and using a coastal adaptation made by Natives as the fuel to do so.

Perhaps the most comprehensive, more recent, studies of Native coastal resource management techniques is “Indigenous Marine Resource Management on the Northwest Coast of North America,” by Dana Lepofsky and Megan Caldwell. While this article focuses solely on the west coast, it defines the emerging interest in

²² Jon M. Erlandson, “The Archaeology of Aquatic Adaptations: Paradigms for a New Millennium” in *Journal of Archaeological Research*, Vol. 9, No. 4 (2001) 287.

²³ Kevin McBride, “The Source and Mother of the Fur Trade: Native-Dutch Relations in Eastern New Netherland” in *Enduring Traditions: The Native Peoples of New England*, Ed. Laurie Weinstein (1994) 41.

anthropology regarding marine resource management techniques, and describes the pitfalls encountered by archaeologists. The information is important to New England, and Rhode Island, because many of the statements regarding human coastal activity can be applied, and the framework of study can be transferred to any location or population. Lepofsky and Caldwell conclude that:

Management of marine resources was enacted both directly through choices about when, where, and how to harvest and tend resources and indirectly through social relations and rules about the right way to behave. Collectively, the marine management system resulted in long-term sustained and sometimes enhanced production of targeted resources.²⁴ The sentiments presented in their hypothesis, specifically long term resource use and harvest time, are easily replicated on the eastern seaboard and Rhode Island's salt pond region.

As for the effects European contact and settlement had on Native populations, and as an extension their subsistence behaviors, Bruce G. Trigger provides a detailed look at the different anthropologic interpretations of these events in "'Early Native North American Responses to European Contact: Romantic versus Rationalistic Interpretations.'" Not specifically focused on Rhode Island, Trigger sheds light on the use of first hand European observations of Native populations, and cautions scholars that these written histories were more than likely not the very first interactions between the people of North America and Europeans. This is useful because he provides a historical timeline of contact events while also taking into account Native culture and their possible perceptions.²⁵ Trigger does not say much about marine resource use, but imparts interpretations of Native life through contact experiences

²⁴ Lepofsky and Caldwell, "Indigenous Marine Resource Management on the Northwest Coast of North America" 9.

²⁵ Bruce G. Trigger, "Early Native North American Responses to European Contact: Romantic versus Rationalistic Interpretations." *The Journal of American History* 77, no. 4 (1991) 1206-1209.

that other histories do not, allowing for insight on how changes may have indirectly affected subsistence practices in the coastal communities.

Archaeology

While authors have pushed the study of Native of coastal adaptations, they tend to focus on regions; there are no specific case studies in Rhode Island. They are also drawn to the contact period, looking at how drastically the environment of New England changed as a result of cultural interactions, few detail of how Native Americans managed marine resources beyond saying that they were aware of resource use. For this information, the archaeological record is the most useful. Archaeologists focus on one site at a time, and then connect the information to other sites in the same area and time period. The most relevant sites to this Study are RI 110, RI 1818, the Foster Cove Site, and the Potter Pond site, which is close to the Point Judith Pond area. Beyond this area, other sites include important finds related to marine resource management, mainly information on shellfish use. The main site that will discussed which is not in the vicinity of a salt pond is the Greenwich Cove site, which provides information on shellfish use and seasonality.

Fig. 2-1. Map of Rhode Island's southern coast with the general area of the archaeological sites discussed in the salt pond region.²⁶

One of the largest examples for pre-contact indigenous coastal use in Rhode Island is Site RI 110. The Phase III archeological report, which notes that 14,588 shells or shellfish fragments were found at the site.²⁷ This large amount of shellfish debris reveals the importance of the resource to the indigenous people. RI-110, also known as the Salt Pond site, is located in Narragansett and one of only three village sites in Rhode Island. The site was occupied ca. 1000-500 B.P. and is at the confluence of a fresh water spring, Point Judith pond estuary, and the freshwater Silver Lake.²⁸ Although the research questions for the archaeological investigation focused on maize horticulture, the report does do an in depth analyses on marine resource use, and

²⁶ "RI Maps and Aerial Photos" Ridemgis.maps.arcgis.com. Accessed March 14, 2020. <http://ridemgis.maps.arcgis.com/apps/webappviewer/index.html?id=a2960d1a022e4dccaab14aa4a58f5d45>

²⁷ Waller, Leveillee, and Forrest, "Phase III Data Recovery Archaeological Investigations of the Salt Pond Site," 171.

²⁸ Joseph N. Waller, "Late Woodland Settlement and Subsistence in Southern New England Revisited: The Evidence from Coastal Rhode Island" in *North American Archaeologist* Vol 21, No. 2 (2000): 141.

provides enough information to begin the study of Native marine resource management. The excavation not only revealed shellfish exploitation, but evidence for a wide variety of marine subsistence practices:

Stone net sinkers and weights, a bone harpoon tip, needles/awls, as well as the bone fishhook recovered by RIC during Phase II archaeological investigation of the site indicate fishing by spear, net, and line. Evidence of a sea turtle carapace, sturgeon scutes, tautog, and other marine fish suggest offshore seafaring capabilities and likely dugout canoe use. The remains of large fish and terrestrial mammals and complete and incomplete projectile points broken by use indicate fishing and hunting.²⁹

These finds, combined with those from surrounding sites, provide the information necessary for archaeologists to study marine resource management in Point Judith, even though the research questions specific to this excavation were centered on maize production.

Other relevant archaeological sites and studies in Rhode Island include RI-1818, the Foster Cove Site, Potter Pond and Greenwich Cove.³⁰ Although Foster Cove is not connected to Point Judith Pond, the research adds to the body of work regarding pre-contact marine subsistence, making all of them useful to the discussion of resource management. The Greenwich Cove site is also not in the area of Point Judith Pond. While the site provides the same sets of relevant information, it is also not a salt pond site, but its' significance lies with the in depth marine subsistence studies completed. Connected to Point Judith Pond through a tidal inlet, Potter Pond contains a high

²⁹ Waller, Leveille, and Forrest, "Phase III Data Recovery Archaeological Investigations of the Salt Pond Site," 207.

³⁰ Paul A. Robinson, "The Potter Pond Archaeology District" National Register of Historic Places Registration Form. On file, Rhode Island Historical Preservation Commission, Providence, RI (1986); Debra C. Cox and Peter Thorbahn, "Prehistoric Archaeological Investigations at Narragansett Rhode Island: Campbell and Sprague I Sites" Public Archaeology Laboratory, Department of Anthropology, Brown University Report. Submitted to Lee Pare & Associates, Providence, RI (1982) 1-3.

density of cultural resources, including shell middens, and refuse heap mainly compromised of shellfish remains, dating to 3,000 years ago.³¹

RI-1818 borders Point Judith Pond from South Kingstown, and was examined in 1990 and 1996 by the Public Archaeology Laboratory, Inc. The goal of the phase I examination was to locate and identify any cultural resources on the 106 acre property owned by South County Sand and Gravel Company, which was to be developed into a 95 single family facility. The examination revealed a high density of pre-contact material in the area closest to the pond, including shellfish remains mainly made up of oyster.³² A phase III examination was carried out in 1996 with a focus on marine resource exploitation and a need to create a land use model for Narragansett Bay. Looking at exploitation can be considered the first step to studying marine resource management, and the research questions associated with the Phase III report are more specific than most site reports thus far.³³

While the Foster Cove site is not located in the direct vicinity of Point Judith Pond, it is still part of the largest salt pond in Rhode Island, Ninigret Pond. The section of the site with evidence of pre-contact occupation was investigated in 1974 and 1979, after which it became was added to the National Register of Historic Places. At the time,

³¹ E. Pierre Morenon, "Environmental Diversity of Salt Ponds and Prehistoric Adaptation: A Comparative Study of Trustom and Potter Ponds, Volume 1: Interpretive Results" Public Archaeology Program, Rhode Island College, Providence, RI (1983) 8-11.

³² Renee Van Couyghen and Deborah C. Cox, "Phase I Archaeological Survey South County Hills III Property South Kingstown, Rhode Island" Public Archaeology Laboratory, Inc. Submitted to South County Sand & Gravel Co., Inc., Peace Dale, RI (1990) 1-52.

³³ William R. Begley and Alan Leveillee, "Archaeological Investigations Proposed House and ISDS Replacement Area Limited Phase III (Data Recovery) within RI 1818" Public Archaeology Laboratory, Inc. Submitted to South County Sand & Gravel Co., Inc. Peace Dale, RI (1996) 13-16.

Foster Cove was one of the first shell midden sites in Rhode Island.³⁴ The examination provides examples important not only to the development of archaeological subsistence research, but information on shellfish exploitation necessary for pre-contact management study. For example, during the 1973 archaeological investigation, Trench 2 revealed a shell deposit of predominantly oyster remains, similar to that found in RI-1818, RI-110, and sites surrounding Potter Pond in South Kingston.³⁵ All four archaeological sites provide insight into coastal subsistence strategies in the salt pond region and the treatment of resources, even if the reports were not entirely focused on that research.

Although it is outside of the salt pond region, the Greenwich Cove site in Warwick, Rhode Island is relevant due to its' large shell midden and extensive study of marine subsistence behavior. David Bernstein's article, "Prehistoric Seasonality Studies in Coastal Southern New England," discusses the results of a season of death study performed on various shells from Greenwich Cove's midden. The results reveal information pointing to year round gathering and more intensive harvest during the late summer and fall.³⁶ This combined with Bernstein's *Prehistoric Subsistence on the Southern New England Coast* and the information regarding shellfish size and the increase and decline of certain specie use throughout time provide evidence for marine resource use relatable to the salt pond sites. Bernstein's research goals are better

³⁴ Paul A. Robinson, "Foster Cove Archaeology Site RI-CH-2" National Register of Historical Places Inventory – Nomination Form. On file, Rhode Island Historical Preservation Commission, Providence, RI (1980) 1.

³⁵ "An Historic, Architectural, & Archeological Investigation of the Former Charlestown Naval Air Station and Vicinity" Rhode Island Historical Preservation Commission (1974) 44.

³⁶ David J. Bernstein, "Prehistoric Seasonality Studies in Coastal Southern New England" *American Anthropologist* 92 No. 1 (Hoboken, NJ: Wiley on behalf of the American Anthropological Association, 1990) 96-98.

aligned with the topic of Native marine resource use than other archaeological reports from the sites on Rhode Island's southern coastline.³⁷

Fig. 2-2. Map of Narragansett Bay showing the general location of the Greenwich Cove site.³⁸

Oral History

In the article “Narragansett Indians and Narragansett Bay,” Narragansett tribal members Ella W. Sekatau and John B. Brown III use information passed down over generations to discuss how the Bay has been depleted and polluted from overexploitation and lack of reciprocity with the environment. When explaining

³⁷ David J. Bernstein, *Prehistoric Subsistence on the Southern New England Coast: The Record from Narragansett Bay* (San Diego, CA: Academic Press, 1993) 58-65.

³⁸ “RI Maps and Aerial Photos” Ridemgis.maps.arcgis.com. Accessed March 14, 2020. <http://ridemgis.maps.arcgis.com/apps/webappviewer/index.html?id=a2960d1a022e4dccaab14aa4a58f5d45>

marine resource use, the authors state that, “Customarily the Narragansett People used summer camp areas for three to four years; they would then pick another favored spot for three to four years, and rotate the areas. This process allowed for regeneration of all natural resources in a given place and prevented ‘wipe out’ of species.”³⁹ The mobile lifestyle of pre-contact populations, the Narragansett included, would certainly have a positive effect on marine resources, allowing them to have periods of rest before being harvested. However, Sekatau and Brown suggest that moving from place to place frequently was in part because the Narragansett knew that they would put a strain on the resources otherwise, acknowledging a form of management of marine resources.⁴⁰

³⁹ Sekatau and Brown, “Narragansett Indians and Narragansett Bay” 24.

⁴⁰ Ibid., 24-26.

CHAPTER 3

COASTAL ADAPTATIONS

The study of pre-contact coastal resource use in Southern New England has evolved over the last seventy years. Archaeologists went from knowing fairly little, mostly concerning the Woodland period, to creating a land use pattern specific to the Narragansett Bay area.⁴¹ In order to understand marine resource management, an analysis of coastal adaptations from the Late Archaic period to the Late Woodland period is necessary to discern how management may have developed and why. Equally as important, knowing where the Native population was in terms of resource use when Europeans arrived provides the information necessary to discern how resource management techniques may, or may not, have changed. Coastal adaptations created advancements that enabled people to predict and manage food sources, and set the stage for the clash of economies during European contact and settlement.

Archaic Period

The Late Archaic period can be roughly dated from 5,000 B.P. (before present; present defined as 2000 A.D.) to 3,000 B.P., the Transitional Archaic from 3,600 B.P. to 2,500 B.P., the Early Woodland period from 3,000 B.P. to 2,000 B.P., and the Middle Woodland from 2,000 – 1,000 B.P.⁴² These periods delineate technological advancements that pushed coastal adaptations forward. Although the first people of

⁴¹ William A. Ritchie, "Fifty Years of Archaeology in the Northeastern United States: A Retrospect" in *American Antiquity*, 50 (Washington, DC: Society for American Archaeology, 1985) 6.

⁴² "Bp ±" In *Cambridge Dictionary of Human Biology and Evolution*, by Larry L. Mai, Marcus Young Owl, and M. Patricia Kersting. Cambridge University Press, 2005; Waller, Leveillee, and Forrest, "Phase III Data Recovery Archaeological Investigations of the Salt Pond Site (RI 110)" 36.

New England arrived earlier than the Archaic Period, subsistence strategies differed greatly due to the varying availability and accessibility of food sources, which had yet to stabilize. Shellfish were not a primary part of these peoples' diets. The environmental changes that were occurring, which can be attributed to the receding glacial ice, and affecting ocean levels and temperatures, did not allow for a large, marshy coastal plain, where shellfish are thrive. Most archaeologists acknowledge the likelihood of some marine use, but the constantly transforming coast likely destroyed the associated archaeological evidence.⁴³ The retreating ice did, however, set the stage for intensive coastal occupation in later years through the formation of salt ponds (Fig. 3-1):

Coastal salt ponds are rare and found only in the areas of New England and Long Island where outwash plains formed. Salt ponds are dynamic environments and their uniqueness derives from their variable salinity. All salt ponds have a continuous freshwater source through a combination of rainfall, stream flow, and groundwater flow from associated watersheds. However, salt ponds also have an intermittent salt-water source. Storms associated with abnormally high sea levels form intermittent breachways through the ponds' barrier beaches, reconnecting each pond with the ocean until the process of longshore drift deposits enough sand to close the breachway.⁴⁴

The salt ponds that formed on Rhode Island's southern coast enabled a variety of coastal adaptations to evolve between the Middle Archaic period and the Late Woodland period. Even the landscape itself influenced indigenous belief systems. For example, Narragansett legend tells of Wetucks, also known as Moshup by the Wampanoag, a giant and culture hero responsible for the formation of coastal geological features along the coast of Rhode Island and Massachusetts. Although it is difficult to discern when this legend originated, it was recorded multiple times by

⁴³ Bernstein, *Prehistoric Subsistence on the Southern New England Coast*, 47.

⁴⁴ Alan Leveillee, Joseph Waller, and Donna Ingham, "Dispersed Villages in Late Woodland Period South-Coastal Rhode Island" in *Archaeology of Eastern North America* Vol. 34 (Watertown, NY: Eastern States Archaeological Federation, 2006): 72.

Europeans after contact and kept alive through oral traditions among Algonquian tribes.⁴⁵ The unique ecotone influenced culture and provided resource stability, not only for shellfish, but for diverse vegetation, finfish, coastal birds, and a variety of terrestrial animals. Salt ponds are among the most productive ecosystems in the world, and Rhode Island's coast contains nine brackish lagoons that comprise the 45 square mile salt pond region.⁴⁶

Fig. 3-1. Glacial advance in Southern New England with the location of RI-110.⁴⁷

The climate during the Late Archaic period is often referred to as a catalyst for settlement on the coast, and according to David Bernstein, “[i]n New England,

⁴⁵ William S. Simmons, “Return of the Timid Giant: Algonquian Legends of Southern New England” in *Papers of the Thirteenth Algonquian Conference* (Ottawa, Ontario: Carleton University Press, 1982) 237-238; “Legendary Native American Figures: Wetucks” native-languages.org. Accessed April 23, 2020. <http://www.native-languages.org/wetucks.htm>

⁴⁶ Alan Desbonnet et al., *Rhode Island's Salt Pond Region: A Special Area Management Plan (Maschaug to Point Judith Ponds)*, Prepared for the Coastal Resource Management Council (Westerly, Charlestown, South Kingstown and Narragansett, RI: CRMC, 1999) 1-2.

⁴⁷ Waller, Leveillee, and Forrest, “Phase III Data Recovery Archaeological Investigations of the Salt Pond Site (RI 110)” 24.

stabilization happened after 4,000-5,000 B.P., when there was a general climatic cooling, a lessening of the effects of isostatic rebound, and a concomitant decrease in the rate of sea-level rise.”⁴⁸ Climate stabilization brought with it the consistency of marine resources. The people of New England, and Rhode Island, slowly began to make use of these resources as they became available. Hunting and gathering was predominant during the Late Archaic period, but the archaeological record shows evidence of shellfish use in New England, along with the expanded exploitation of plants and small animals, which continued through the Transitional Archaic period.⁴⁹

Woodland Period

The Early Woodland period in Rhode Island is notable due to a comparative scarcity of sites, generally attributed to a possible decline in population.⁵⁰ However, known sites reflect an increased use of shellfish and an increase in the number of villages located on ecotones. The transition can be attributed to the larger availability of resources and the development of established estuaries.⁵¹ Shellfish beds attracted other food sources that positively contributed to the dietary value of the coastal region, and today can be studied by archaeologists through shell middens, which often contain remnants of “deer, fish, waterfowl, crustaceans, turtles, and, rarely, seal and whale.”⁵² Each of these animals provided a variety in subsistence for humans that allowed them to begin to occupy one area for longer, and put less strain on one single resource.

⁴⁸ Bernstein, *Prehistoric Subsistence on the Southern New England Coast*, 50.

⁴⁹ Waller, Leveillee, and Forrest, “Phase III Data Recovery Archaeological Investigations of the Salt Pond Site (RI 110)” 36; Barrie Kavasch, “Native Foods of New England” in *Enduring Traditions: The Native Peoples of New England*, Ed. Laurie Weinstein (Westport, CT: Bergin & Garvey, 1994) 6.

⁵⁰ Waller, Leveillee, and Forrest, “Phase III Data Recovery Archaeological Investigations of the Salt Pond Site (RI 110)” 36.

⁵¹ Bernstein, *Prehistoric Subsistence on the Southern New England Coast*, 50.

⁵² Elizabeth A. Little and Margaret J. Schoeninger, “The Late Woodland Diet on Nantucket Island and the Problem of Maize in Coastal New England” in *American Antiquity* 60, no. 2 (1995) 351-352.

Middle Woodland era people centered their economies on coastal resources. The availability and variety of coastal food sources allowed populations to become more sedentary as their subsistence bases strengthened. In order to easily access these resources, groups relocated to areas where all items could be easily reached. More specifically, “settlement began to focus along Rhode Island’s south coast and along the margins of Narragansett Bay.”⁵³ The proximity to the coast began to inundate almost every aspect of Native life from location, subsistence, and culture. With a more stationary lifestyle, the need for resource storage techniques arose, and food such as “[l]obsters, striped bass, white perch, clams, and nuts were preserved by sun drying and smoking, thereby extending the period of time when they would have been available.”⁵⁴ Preservation of food and storage vessels are an instance of coastal adaptation, creating more dependable food availability throughout each season.

With the production of pottery, shellfish remains were adapted to temper ceramic vessels, which had originally contained grit. With this process emerged cultural aspects, such as decoration using shell. For example, on the Greenwich Cove site located on Narragansett Bay, the ceramics found dating from the Woodland period were decorated with the stamped imprints of scallop shells. There were also pieces with trailing details thought to have been made with the edges of the same shells.⁵⁵ Potsherds discovered at RI-110 reflect this decorative process as well. This signifies cultural adaptations to the marine environment and the use of resources after their

⁵³ Waller, Leveillee, and Forrest, “Phase III Data Recovery Archaeological Investigations of the Salt Pond Site (RI 110)” 42.

⁵⁴ Little and Schoeninger, “The Late Woodland Diet on Nantucket Island and the Problem of Maize in Coastal New England” 355.

⁵⁵ Bernstein, *Prehistoric Subsistence on the Southern New England Coast*, 25-31.

value for sustenance had passed. The recycling of subsistence remains was repeated with terrestrial resources as well.

Fig. 3-2. Example of scallop shell scraping on Native American clay vessel found at RI-110 in Feature 07-1420.⁵⁶

The Middle Woodland period exemplifies the transition of coastal adaptations from pure subsistence to cultural practices. The salt ponds of Rhode Island's coast "represented a sacred or spiritual landscape" where people consistently returned to live, eat, and bury their loved ones.⁵⁷ The Early and Mid-Woodland periods saw an increase in coastal subsistence strategies with the stabilization of the environment, and set the groundwork for more extensive use to the eve of European contact, including management behavior.

⁵⁶ Waller, Leveillee, and Forrest, "Phase III Data Recovery Archaeological Investigations of the Salt Pond Site (RI 110)" 162.

⁵⁷ Leveillee, Waller, and Ingham, "Dispersed Villages in Late Woodland Period South-Coastal Rhode Island," 79.

During the Late Woodland period, about 1,000-450 B.P., integration of marine resources in Native life increased significantly. The archaeological record in Rhode Island reflects village sites and subsistence behavior centered on Narragansett Bay and the salt ponds. A village site is defined by the majority of a community's population residing in an area for the larger part of the year, a prime example being RI-110 on Point Judith Pond. These sites tend to show occupation beginning in the Late/Transitional Archaic, but a growth in population and resource consumption toward the latter part of the Woodland period. While the area surrounding the salt pond indicates a considerable amount of pre-contact use, "none of the other large sites around Point Judith Pond exhibit characteristics that would qualify them as villages."⁵⁸ By establishing a large village on Point Judith Pond, people were able to easily access fresh water, shellfish beds, fish, and hunting grounds. With resources in close proximity to the village virtually year round, the community would have been able to streamline their extraction and preservation techniques while increasing cultural activities. These advances, in part, could have been due to the implementation of environmental management, while simultaneously producing a lifestyle more conducive producing new strategies.

The evidence of marine remains used to fulfill various purposes, outside of nutrition, reveals ingenuity and adaptation. Marine resource exploitation in Late Woodland sites shows remnants were being used more extensively, reaching beyond shell tempered and decorated ceramics to the rearing of agricultural crops. Women were more often than not the primary agriculturists, as well as shellfish gatherers. The tools developed to cultivate crops mainly consisted of marine material, left over from

⁵⁸ Waller, "Late Woodland Settlement and Subsistence in Southern New England," 149.

consumption. Shells, for examples, were used as tools for planting, as were horseshoe crab carapaces - the large, hard outer shells of the animal.⁵⁹

Fig. 3-3. Illustration of a quahog shell hoe.⁶⁰

The “Patterns of hunting and gathering, and harvesting delineated early lifeways well before agriculture was embraced in the prehistoric Northeast.”⁶¹ The persistent use of traditional resources for more than subsistence after the institution of agriculture is evidence of this. Even place names centered on where “plants could be gathered, shellfish collected, mammals hunted, and fish caught,” not agricultural practices.⁶² Through more extensive use of shellfish remains, shells transformed into important cultural symbols, often representing reciprocity between people and their neighboring communities.

The reciprocity between Native Americans and nature extended to neighboring tribes. Unity between tribes was often represented through items created from

⁵⁹ Judd, *Second Nature*, 32.

⁶⁰ Clyde L. MacKenzie, Jr. et al, *Quahogs in Eastern North America: Part I, Biology, Ecology, and Historical Uses*, in *Marine Fisheries Review* 64, No. 2 (March 2002) 12.

⁶¹ Kavasch, “Native Foods of New England,” 5.

⁶² Cronon, *Changes in the Land*, 65

subsistence practices and the surrounding environment. While a full understanding of the production of wampum, beads made from quahog and whelk shells, before European contact is unclear, the beads were certainly used by Natives as gestures of good will and continuing relationships.

It is unclear if wampum was manufactured during the Late Woodland period due to the lack of archaeological evidence. Although shell beads have been found throughout North America, some dating to 4,500 year ago, it is disputed whether or not the indigenous people of New England possessed the technology to create beads from quahog shells.⁶³ However, white wampum, typically made from whelk whorls, would have been easier to create due to the elongated shape and presence of a hole along the shell stem. The technology required, “would have involved the use of a rod and an abrasive, but it would have required considerable patience and effort.”⁶⁴ It is possible small amounts of white whelk beads were produced before European arrival, which would explain why the Narragansett word for white is *wompom*.⁶⁵ There was also different meanings behind the color of the shell beads, and “[w]hite wampum represented purity, faith, well-being, and peace” whereas purple wampum came to symbolize the importance of civic affairs.⁶⁶ The production of pre-contact wampum beads was for ceremonial purposes, and symbolized reciprocity between the people giving and receiving the beads.⁶⁷ The post-contact transformation of wampum

⁶³ Paul A. Robinson, “The Wampum Trade in 17th Century Narragansett County” in *What a Difference a Bay Makes* (Providence, RI: What a Difference a Bay Makes, 1993) 26.

⁶⁴ MacKenzie, et al *Quahogs in Eastern North America: Part I*, 13.

⁶⁵ Robinson, “The Wampum Trade in 17th Century Narragansett County” 27.

⁶⁶ MacKenzie, et al *Quahogs in Eastern North America: Part I*, 3..

⁶⁷ Robinson, “The Wampum Trade in 17th Century Narragansett County” 27-28.

represented an important coastal adaptation that was altered by the arrival of Europeans, and possibly effected the abundance of whelk and quahogs.

Every adaptation made because of Native people's proximity to the coast, from the Archaic period to the eve of European contact, reflected the use of a wide variety of marine resources, reciprocity with nature, and the intertwining of subsistence and culture. All of these factors played a role in Native life, but it is necessary to note that while the environment had a profound effect on people, they also effected nature. Scholars often cite the environment as the driving factor behind coastal adaptations, and tend to ignore peoples' ability to adapt their environment to their needs. The landscape, the animals, and the people are all members of the same ecosystem.

As Native people in Rhode Island adapted to the changing landscape and environment, they changed their surroundings to suit them. The most popular example of this is the controlled burning of underbrush, something that Europeans often noted. "Over much of the region, they set fire to the woods to improve travelling and visibility; to drive or enclose game, and to destroy 'vermin.'"⁶⁸ Burning forests helped to clear pathways for hunting, to cultivate favored plants and animals, and in turn help the forest grow. Evidence of burning is most common near areas of coastal and inland water-body settlement, matching the patterns of population observed by Europeans during the contact period.⁶⁹

There is no reason to assume that indigenous people took what was in front of them without thinking about how to either better their approach, stabilize their food

⁶⁸ Gordon M. Day, "The Indian as an Ecological Factor in the Northeastern Forest" in *Ecology* Vol. 3, No. 2 (Hoboken, NJ: Wiley, 1953) 342.

⁶⁹ Timothy Parshall and David R. Foster, "Fire on the New England Landscape: Regional and Temporal Variation, Cultural and Environmental Controls," in *Journal of Biogeography* Vol. 29, No. 10/11 (Hoboken, NJ: Wiley, 2002) 1313.

source, or make it more accessible, even in the case of marine resources.

Archaeological faunal assemblages provide information on subsistence, and tools reveal extraction techniques. Both provide supporting evidence for marine resource management and conservation, especially in sites strategically located on Rhode Island's salt ponds. However, the archaeological record does not often discuss the possibility of conservation efforts because tangible remains of management techniques rarely exist. The information provided by archaeological evidence is extremely important, but must be combined with coastal adaptation knowledge, ethno history, and oral history in order to create a model of marine resource management for the pre-contact populations of Rhode Island's coast.

CHAPTER 4

ARCHAEOLOGICAL SITES

As the oysters were larger, sweeter, and the lobsters bigger, more tender, in the salt ponds and the southernmost bay boundaries; the beaver were more numerous and larger in size. The deer far more formidable in size and antler, the quahog contained more purple and the wolf had blacker pelts in the easternmost boundaries.⁷⁰ – Ella Sekatau and John Brown III

The archaeological record in Rhode Island's provides information relevant to whether or not pre-contact populations managed and preserved coastal resources. Management was adapted by indigenous people for the same reasons today's population practices resource management: as a way to preserve important food sources and create a predictable subsistence base. Archaeological finds in sites settled on salt ponds contain an abundance of oyster. Most of which were occupied around 2,000 B.P. and abandoned just before European contact.⁷¹ Studies of these sites show seasonality of shellfish harvested and examples of tools which could be utilized for management, not exclusively extraction. Through summarizing relevant sites and analyzing coastal and marine faunal assemblages, an image of subsistence use and management can be seen. In this chapter, possible management techniques represented in the archaeological sites discussed, as are traditions and histories from the Narragansett people. In order to fully understand how these strategies were altered by post-contact commodification of coastal natural resources the sites, reasons, and evidence must be connected and explored.

⁷⁰ Sekatau and Brown, "Narragansett Indians and Narragansett Bay," 23.

⁷¹ Waller, Leveillee, and Forrest, "Phase III Data Recovery Archaeological Investigations of the Salt Pond Site (RI 110)" 70-81.

RI-110

Located in Narragansett, Rhode Island, RI-110, the Salt Pond Site, sits on 56 acres of land that overlooks Point Judith Pond. Re-discovered in 1929 by the Rhode Island Historical Society, the site was more or less undisturbed until housing plans developed in the 1980's presented potential disturbance. Since then, both Rhode Island College and the Public Archaeology Laboratory, Inc. have conducted archaeological investigations, leading the Rhode Island Department of Transportation to purchase the land in 2013, with the goal of preserving the site.⁷²

Archaeological investigations have demonstrated that the site was occupied for thousands of years, with use discontinuing on the eve of European contact. The oldest artifact found, a Neville quartzite projectile point, was dated to the Middle Archaic period. The most intensive use of the area occurred "beginning ca. 1150 radiocarbon B.P. and continuing to ca 400 B.P."⁷³ There is some evidence in other areas of the pond indicating European use, but:

No European trade items or other diagnostic artifacts clearly attributable to the Contact Period were recovered from the site, suggesting Native American habitations pre-date Italian navigator Giovanni da Verrazzano's visit to Narragansett Bay in the spring of 1524. A maize cupule from storage/refuse pit Feature 07-1301 was radiocarbon dated to 296 ± 21 B.P. (1510-1660 cal. A.D.), indicating the feature may have been constructed at some time between Verrazano's visit and the first European settlement of Providence in 1636.⁷⁴

While it is true that the majority of the refuse pits had been emptied, if Feature 07-1301 was created after Verrazzano visited the Narragansett, then RI-110 had not been completely abandoned, and was still used for some subsistence.

⁷² Waller, Leveillee, and Forrest, "Phase III Data Recovery Archaeological Investigations of the Salt Pond Site," 5.

⁷³ *Ibid.*, 188.

⁷⁴ *Ibid.*, 181.

Before European contact, RI-110 served as a centralized location, with food often acquired elsewhere, mostly fin-fish, then brought back for processing and consumption.⁷⁵ It is possible that the semi-abandonment of the site was attributed to a decline in the shellfish population of Point Judith Pond, a change in fin-fish stocks or migration, or to be closer to locations of European landings for trade purposes, spurred on by Verrazzano's visit. The last suggestion is often cited as the reason for mass abandonment of salt pond sites along the coast, but the population decline at the Salt Pond pre-dates Verrazzano's arrival. However, the possibility of other European traders making contact with the Narragansett before 1524 should be noted.⁷⁶ The other two hypotheses are supported by the fact that the refuse pit was used for maize, not marine remains. "RI-110 data suggest that the shores of Point Judith Pond were dotted with dwellings and their related nearby maize/beans/squash planting fields."⁷⁷ If the fields surrounding the village still in use, then it is possible people were returning to collect crops. While there is no evidence to directly support marine resource harvest after contact, it is possible there was small-scale extraction when people returned to collect and store maize. Because the site is so large, it is extremely possible evidence exists and has yet to be found. Even for the period of high population density, archaeologists have yet to produce evidence of a large shell midden at RI-110. The likelihood of there not being a large shell midden for the site is little to none, with all of the supporting evidence for the importance of marine and estuarine resources, and

⁷⁵ Leveillee, Waller, and Ingham, "Dispersed Villages in Late Woodland Period South-Coastal Rhode Island," 77-78.

⁷⁶ Geake, *A History of the Narragansett Tribe of Rhode Island*, 13-14.

⁷⁷ *Ibid.*, 85.

archaeologists surmise one could be located in the western limits of the site, which have yet to be completely defined.⁷⁸

Although the Public Archaeology Laboratory, Inc.'s research questions for the Phase III excavation of the site are not oriented to the investigation of marine resource management, their faunal data allows analysis related to marine use. Out of the 32,713 faunal remains recovered, 14,588 were shells or shellfish fragments. The rest were either animal bone, deer antler, or turtle carapace fragments. Fish bones represent the majority of the animal bones recovered. Interestingly, 57.5%, approximately 8,386, of the bivalve assemblage was oyster, with soft shell clams totaling 4%, 589, and quahogs 3.2%, 468.⁷⁹ The remaining shells were made up of scallops, surf clams, ribbed mussels, and "[c]omparatively few gastropods such as whelk, moon snail shells, dogwinkles, and slipper shells."⁸⁰ Everything except for whelk were likely only found because they were attached to the larger bivalves.

While fin-fish species would be more difficult for Native populations to truly control, the consistency in the fish species eaten suggests a familiarity with the location and amount extracted, so much so that if stocks were to decline or relocate, they would certainly notice and take action. In RI-110:

The remains of Atlantic sturgeon, tautog, sea bass, summer flounder, scup or porgy, as well as shark, American eel, rockfish or striper, shad or herring, sheepshead, and white perch were recovered. Many of these fish (particularly the herring and white perch) arrive in Point Judith Pond and Narragansett Bay in the spring to spawn and then travel offshore. Atlantic sturgeon is well represented at the Salt Pond Site and is easily recognized by the large platy and boney scutes. This fish travels up freshwater rivers to spawn from about May to as late as July and returns to the open ocean about September. Tautog are nearshore fish that inhabit southern Rhode Island's rocky coastline from late April to as late as November. Tautog and summer flounder and are

⁷⁸ Waller, Leveille, and Forrest, "Phase III Data Recovery Archaeological Investigations of the Salt Pond Site," 236.

⁷⁹ Ibid., 171.

⁸⁰ Ibid.

common in southern New England waters from May through October. Sea bass move offshore during the winter but return to the coastal bay areas in the spring, and scup or porgy are common in inshore waters from Massachusetts to Virginia from the spring to autumn. Sand sharks have been found along the near coast of southern New England from June to November.⁸¹

It is evident from this information that the seasonality of fin-fish in, and around, Point Judith Pond differ between species, and people knew which fish to catch and eat during certain times of the year. This assumption is based on other coastal adaptations, such as the move towards a more sedentary lifestyle, which could only occur in a population if the availability of food and water was stable and predictable. Given the amount of marine remains recovered at RI-110, and the fact that shellfish remains and fish bones represent over half of the faunal remains discovered, it would be difficult to state that the people who lived here did not recognize the consistent availability of their varying foods, or notice when they were changing. This understanding was a prerequisite for managing resources in order to produce the highest possible yields each year.

In order to determine what time of year resources were used and seasonality, the Public Archaeology Laboratory, Inc. analysed three quahog shells and three oyster shell microscopically for winter growth breaks and summer growth bands. The results estimate harvesting throughout the year but intensity in the fall months. Two oyster shells were collected during early fall, the other in early spring while the quahogs were gathered in both spring and fall. This indicates that shellfish were gathered at multiple times of year and not restricted to a single season.⁸² The same pattern is seen in other sites. Both seasonality and oyster favorability point to shellfish bed management and

⁸¹ Ibid., 208.

⁸² Ibid., 186.

consistent observation of stock. Due the shift in seasonality and oyster use in others sites, it is possible that the population of RI-110 noticed a decline in oyster, and relocated so as not to burden the resource and ensure resource predictability.

RI-1818

Although smaller in population than RI-110 (i.e. not a village site), RI-1818 consists of a 106 acre project area that borders Point Judith Pond from the South Kingstown side. The site is owned by South County Sand and Gravel Company who wanted to develop 64 acres of the property, leading the Public Archaeology Laboratory, Inc. to investigate in 1990 and again in 1996.⁸³ The results of both seasons of field work contribute to the hypothesis that Native Americans practiced marine resource management. This is evident in the type and amount of marine faunal remains found.

Consistent with the pattern of occupation seen at the Point Judith Pond site, RI-1818 was inhabited prior to European contact, and was populated intermittently between the Transitional Archaic to around the eve of contact. During the Phase I survey, which covered 25 acres of the project area, archaeologists noted faunal remains consisting of “fish bone (one), mammal bone (three), gastropod (one), and shellfish including oyster, quahog, and softshell clam. Ninety-seven percent of the shellfish were oyster.”⁸⁴ Again, the large collection of oyster remains, and significantly smaller amounts of other shellfish, is present at this site. The consistency reveals either a heavier abundance of oysters or a preference in shellfish. Either way,

⁸³ Couyghen and Cox, “Phase I Archaeological Survey South County Hills III Property,” i-2; Begley and Leveillee, “Archaeological Investigations Proposed House and ISDS Replacement Area Limited Phase III,” 1.

⁸⁴ Ibid., 52.

oyster beds were the resource seeing the heaviest amount of extraction pre-European settlement, something that is continuously backed up by other Rhode Island salt pond sites.

Besides faunal remains, the artifacts found during the Phase I survey included projectile points and two quartz scrapers. The scrapers were usually used for shaving or skinning, and the “eight projectile points indicate fishing and/or hunting were important activities that took place beyond the boundaries of the site. Fishing may have occurred along Point Judith Pond with subsequent processing, cooking, and discard of remains taking place on the site, as suggested by fish bone remains found....”⁸⁵ The site served as an area to process food retrieved from either the pond itself, or areas just outside of it. However, chipping debris were the largest class of cultural resources found, not shellfish remains.⁸⁶

The goal of the Phase III investigation was the create a land use model Narragansett Bay. The model reiterated connections made between the Point Judith Pond site and RI-1818, as well as others. Part of their land use goal was to explore marine resource exploitation, the first step to studying marine resource management. The Phase III findings were consistent with those from the Phase I survey and the work at RI-110, including shellfish and offshore fish subsistence. However, “there is no evidence to suggest that foods were being processed in quantity for large numbers of people or that large storage pits are present here.”⁸⁷ While there may not be storage to the extent of RI-110, there were smaller features that contained marine refuse, the majority of which were oyster. As for the land use model, it is defined by the coastal

⁸⁵ Ibid., 59.

⁸⁶ Ibid., 43.

⁸⁷ Ibid., 56.

adaptations discussed in the previous chapter, mainly that areas with access to the coast, fresh water, and terrestrial plants and animals were of the utmost importance.⁸⁸

Potter Pond

Located in South Kingstown, Potter Pond connects to Point Judith Pond through a tidal inlet, and is fed through underwater springs.⁸⁹ The area surrounding Potter Pond has a variety of archaeological sites, including shell middens dating to 3,000 years ago.⁹⁰ The Potter Pond Site, which was discovered in 1945 and excavated by the Narragansett Archaeological Society of Rhode Island, produced 1,216 artifacts, including “shells from oyster, quahog, conch, scallop, sea-clam, lobster, and mussel.”⁹¹ The assemblage is consistent with the faunal remains found elsewhere along coastal Rhode Island. Investigators discovered two main periods of occupation estimated from 1-500 A.D. (Late Archaic), and the then 500-1600 A.D. (Middle to Late Woodland).⁹² The cultural difference between periods seen in other salt pond sites, and discussed in chapter three, are reaffirmed here, mainly “the people of both culture periods depended upon hunting and fishing for subsistence, while in the latter epoch, hunting may have been partially replaced by net and hook fishing and by the taking of shellfish.”⁹³ Among the most significant finds, besides the marine faunal remains, was a fish bone hook and a stone net sinker (Fig.4-1).

⁸⁸ Ibid.

⁸⁹ “Potter Pond,” saltpondscoalition.org, Salt Ponds Coalition. Accessed March 10, 2020. <http://www.saltpondscoalition.org/PagePotter.html>

⁹⁰ Morenon, “Environmental Diversity of Salt Ponds and Prehistoric Adaptation” 11-16.

⁹¹ William S. Fowler and Herbert A. Luther, “The Potter Pond Site” in *Bulletin of the Massachusetts Archaeological Society* XI, No. 4 (Middleborough, MA: Massachusetts Archaeological Society, 1950) 92.

⁹² Ibid., 101; David J. Bernstein, “Long Term Continuity in the Archaeological Record from the Coast of New York and Southern New England, USA” *The Journal of Island and Coastal Archaeology* (2006) 272.

⁹³ Fowler and Luther, “The Potter Pond Site,” 93.

Fig. 4-1. Illustration of stone net sinker found at the Potter Pond Site during excavation by the Narragansett Archaeological Society of Rhode Island. Illustration by William S. Fowler.⁹⁴

Both the hook and the sinker are the remnants of coastal adaptations used to extract marine resources, mainly finfish, and are often the only remains of this activity found in the archaeological record in New England. The site is important to discuss due to its' proximity with a salt pond ecosystem, shell remains, increased reliance on marine resources, and time of occupation. One thing that makes this site different, however, from RI-110 and RI-1818, is post contact artifacts, likely used by Narragansett and/or Niantic people. Archaeologists believe that because these items were mixed in with other cultural artifacts that they were discarded by Native people who had traded with Europeans. One artifact which helps to date this stage of activity is a British copper coin bearing the date 1752. While there is no evidence to support that the site was constantly occupied from the Late Archaic through the eighteenth century, Potter Pond

⁹⁴ Ibid., 97.

was a place that indigenous peoples returned to after contact and settlement.⁹⁵

Unfortunately, specific information available for the Potter Pond Site is somewhat limited due to the age of the archaeological work.⁹⁶

Foster Cove

Foster Cove, in Charlestown Rhode Island, is a part of Ninigret Pond, the largest salt pond in Rhode Island at 1,647 acres.⁹⁷ The Foster Cove site is significant and relevant to possible marine resource management because at the time it was added to the National Register of Historic Places in 1980, it was only one of three well-preserved Late Woodland shell middens in Rhode Island.⁹⁸ An excellent habitat for oyster, softshell clams, and quahog, the cove relates to the other sites and fits into the land use pattern for Narragansett Bay. The site itself is located on the property of the former Charlestown Naval Air Station, which was built in the 1940's and closed in 1974, and is now part of the Ninigret National Wildlife Refuge.⁹⁹

Investigated in 1974, and again in 1979, the Foster Cove site revealed shell middens and was dated to the Late Woodland period around, just before European contact. This is the same as RI-110 and RI-1818.¹⁰⁰ However, areas around the site were first excavated in 1921, when the construction of a house on the Air Station revealed burials containing post-contact items such as “copper kettles and bowls,

⁹⁵ Ibid., 93.

⁹⁶ Morenson, “Environmental Diversity of Salt Ponds and Prehistoric Adaptation,” 13.

⁹⁷ Rob Lyons et al., *Charlestown Harbor Management Plan*, (Charlestown, RI: The Town of Charlestown, Rhode Island Coastal Pond Management Commission, 2016) II-2.

⁹⁸ Robinson, “The Potter Pond Archaeology District,” 1.

⁹⁹ “Charlestown Naval Air Field,” [Charlestownhistorical.org](https://www.charlestownhistorical.org), Charlestown Historical Society. Accessed March 7, 2020, <https://www.charlestownhistorical.org/charlestown-naval-air-field/>.

¹⁰⁰ Ibid.

pottery, glass, and shell wampum.”¹⁰¹ These finds are proof of occupation beyond European contact, similar to Potter Pond and not something seen in the salt pond sites previously discussed. Oyster remains were found in the two trenches dug in 1974, one of which was specifically identified as an oyster shell deposit. Consistent with RI-110 and RI-1818 was the predominance of oyster shell in the faunal assemblage; the only other shell identified was a very small amount of scallop.¹⁰² On the National Register of Historic Places Inventory Nomination Form, it was noted that the cove at the time of submission was “very rich in shellfish, particularly oyster and softshell clam.”¹⁰³ The continuation of these species in the past may be part of the reason the Narragansett and Niantic people frequently returned to the area, as is evidenced by the previously mentioned burials that contained European trade goods and wampum.

Greenwich Cove

Although the Greenwich Cove archaeological site does not match the same criteria as the other sites (located on a salt pond and on the southern coast of Rhode Island), it provides an important example for the study of shellfish seasonality in Narragansett Bay. Located in East Greenwich, Rhode Island, the site was discovered in 1976. Time of occupation was dated to the Late Archaic period through the Woodland period. The shellfish seasonality study covered dates from roughly the last 2,000 years, and like RI-110, suggest virtually year round settlement and harvesting. However, one major difference between the salt pond sites and this one is that while

¹⁰¹ “An Historic, Architectural, & Archeological Investigation of the Former Charlestown Naval Air Station and Vicinity,” 31.

¹⁰² Ibid., 44.

¹⁰³ Robinson, “Foster Cove Archaeology Site RI-CH-2” (1980) 1.

oyster and quahog were certainly an important subsistence base, softshell clam was the predominant shellfish.¹⁰⁴

An aspect consistent with RI-110 is the seasonality findings, mainly that oysters and quahogs were gathered between October and November, with some taken during the summer and the winter.¹⁰⁵ The discussion around seasonality at this site is important because the large population that resided at Greenwich Cove was supported by the shellfish beds, but it is likely that the population also acted as a defense mechanism for the resource, keeping other people from exploiting it. A larger population means a larger amount of harvest, but “with any condition that restricts residential mobility, of either foragers or collectors, we can expect (among other things) a responsive increase in the degree of logistically organized production.”¹⁰⁶ The move towards population increase, both in order to guard a resource as well as benefit from it, would result in a more organized procedure of extraction.

Even if the shellfish beds provide for a larger population, the centralized settlement controls how it is used, without having to worry about others whose practices may not be similar or as concerned about the longevity of the resource. With year round habitation, the large population would keep other people, who perhaps are just passing through, from overexploiting the shellfish. This overexploitation could occur if many smaller groups were using the area, possibly forcing the shellfish beds to support more people in the long run than the larger, single group of inhabitants. From this theory, the similarity in seasonality studies, and relative population size

¹⁰⁴ Bernstein, “Prehistoric Seasonality Studies in Coastal Southern New England” 109.

¹⁰⁵ Ibid.

¹⁰⁶ Lewis R. Binford, “Willow Smoke and Dogs’ Tails: Hunter-Gatherer Settlement Systems and Archaeological Site Formation” in *American Antiquity* Vol.45 No. 1 (Cambridge, UK: Cambridge University Press, 1980) 17.

between the Greenwich Cove site and the Point Judith Pond site, a larger population is equivalent to increased methods of marine resource management.

One related aspect that was observed from the shell assemblage at the Greenwich Cove site was the decline in shellfish size over time. Archaeologists noticed the decline in shell size for soft shell clam, quahog, and oyster during the Late Woodland period.¹⁰⁷

Fig. 4-2. Mean height for oyster shell from the Greenwich Cove site.¹⁰⁸

This is not to say that Native populations were severely overexploiting shellfish beds, but it is an important aspect of the results to note. The reduction in size could have happened from a variety of factors including “human harvesting practices, pressure from non-human predators, or an alteration in some aspect of the environment that

¹⁰⁷ Bernstein, *Prehistoric Subsistence on the Southern New England Coast*, 79.

¹⁰⁸ Ibid.

negatively affected all three.”¹⁰⁹ This, combined with population increase, all probably played a role in the decrease of shellfish size at Greenwich Cove.¹¹⁰

The archaeological sites discussed in this chapter illustrate a salt pond settlement pattern created through various coastal adaptations. The Greenwich Cove site, while not situated on a salt pond, provides key information on shellfish studies in Rhode Island relevant to the salt pond sites and marine resource management. These studies provide a framework that can be applied to salt pond settlement and shellfish use. The information presented by each archaeological site helps to determine management techniques used by indigenous populations in Rhode Island, specifically varied diets, seasonal harvests, and area rotation through evidence of extensive marine resource use.

¹⁰⁹ Ibid., 80.

¹¹⁰ Ibid., 81.

CHAPTER 5

PRE-CONTACT MARINE RESOURCE MANAGEMENT

Each of the archaeological sites discussed in the previous chapter reflect the settlement pattern for the Narragansett Bay area during the Middle Archaic to the Late Woodland periods. In this chapter the argument that Native Americans practiced a form of marine resource management as a coastal adaptation will be presented and analyzed. The idea is that a varied diet, seasons of harvest, rotation of areas where resources were collected, and resource abundance dictating the amount of extraction, were conscious acts of preservation adapted out of subsistence. The settlement of salt ponds is a major example of coastal adaptation in Southern New England, and was driven by variation in diet, the need for food stability and dependability, and access to the large variety of other resources that a coastal ecotone has to offer. It is clear from the findings in the majority of the archaeological salt pond sites that oyster was the predominant shellfish. Each site featured a large assemblage of oyster shells recovered, and comparatively lower amounts of other shellfish remains. From the results of investigations at RI-110, fish were eaten in more abundance than terrestrial animals, such as deer.¹¹¹ Due to the reliance people at RI-110, and other sites, had on the marine ecosystem, it seems likely that they would have taken steps to observe, preserve, and attempt to mitigate any negative factors affecting their food sources.

¹¹¹ Waller, Leveillee, and Forrest, "Phase III Data Recovery Archaeological Investigations of the Salt Pond Site," 101.

The interactions humans have with their environments encompass a wide range of activities, including observation, alteration, preservation, and overexploitation. These factors are seen repeatedly across the globe, to varying degrees, in every human culture. There is no reason to assume that the pre-contact peoples of Rhode Island did not make choices that would directly affect their dietary resources. In fact, “a likely scenario is that the people who relied on the resources, and who closely watched animal behavior, understood the consequences of their actions.”¹¹² While direct, undeniable evidence of marine resource management techniques are not usually present in the archeological record, this does not mean that it did not occur.

The field “does not often provide evidence of the subtle management practices that may mimic natural processes (...) or that are conducted by individuals.”¹¹³ Archeological investigations regarding to coastal adaptations and subsistence strategies, as detailed above, need to be interpreted and weighed with possible management techniques in mind, as they have with the evidence of non-marine resource management. This includes the comparison of marine faunal assemblages with what we know about the specific resources today, and the analyses of general human behaviors. RI-110 provides the highest probability of containing evidence of resource management techniques out of the salt pond sites discussed because of its village status. Village sites are more likely to contain evidence of management strategies because of the larger population and usually the longer periods of occupation.

¹¹² Lepofsky and Caldwell, “Indigenous Marine Resource Management on the Northwest Coast of North America” 5.

¹¹³ Ibid; Joseph E. Taylor III, *Making Salmon: An Environmental History of the Northwest Fisheries Crisis* (Seattle, WA: University of Washington Press, 1999).

Terrestrial Resource Management

Whether or not the people of New England consciously made attempts to manage plants and terrestrial animals is easier to discern and more frequently studied. The difficulty with determining marine resource management is due to issues with accessibility, visibility, and preservation of materials over hundreds to thousands of years. The burning of underbrush was an activity observed by Europeans, but earlier instances can be discerned through records of fossil charcoal and pollen preserved in lakes, that allude to use of large fires.¹¹⁴ Pre-contact people were able to observe the results of these fires and determined them in their favor. For example, in Massachusetts, the outcome of controlled burning was an increase in turkey, deer, and pigeons.¹¹⁵

In addition, the use of agriculture in Rhode Island can be viewed as a management technique. Through the domestication of plants, people controlled their food supply, altering the resource. The instance of maize horticulture in Rhode Island is something that is frequently studied by archaeologists, and is something more easily proved through faunal assemblages. Fields cleared for maize were often abandoned once yields began to decline, in order to give the soil time to regenerate, then they would be used again.¹¹⁶

New England Native American horticultural fields were planted for 8–10 years before they were abandoned. Periodic episodes of intensive maize consumption followed by periods of temporary abandonment are consistent with the Salt Pond Site's

¹¹⁴ Parshall and David R. Foster, "Fire on the New England Landscape" 1306.

¹¹⁵ Day, "The Indian as an Ecological Factor in the Northeastern Forest" 339.

¹¹⁶ Waller, Leveillee, and Forrest, "Phase III Data Recovery Archaeological Investigations of the Salt Pond Site," 224.

archaeological record and with swidden or shifting horticulture, when a field's productivity determined a village's level of dependence on the resource.¹¹⁷ There are two management techniques mentioned above, one being area rotation and the other the level of productivity being the determining factor of use. Both of these practices could be applied to marine resources, especially shellfish beds, which are more visible and somewhat similar to agricultural fields. It is possible that the ideals of maize cultivation were applied to marine resources, or had adapted from years of marine resource management. While there is no denying extensive use of marine resources on coastal sites in Rhode Island, management of shellfish beds, fish stocks, or even coastal birds, is rarely discussed due to the lack of direct evidence. In contrast, there is much more direct evidence of resource management on land through burning and agriculture.

Seasonality

Although the lack of direct management evidence is an issue, the seasonality studies of shellfish completed for the Greenwich Cove site, and RI-110, reveal a relevant pattern of subsistence. That, combined with our understanding of spawning and growth cycles, indicates heavier Native American extraction during seasons that we now know are when quahogs have completed the majority of their growth, and are mostly finished spawning.¹¹⁸ At the Greenwich Cove site "The quahog assemblage from the Late Woodland is similar to the one from the Middle Woodland in that spring deaths are absent. Over half the specimens seem to have been taken during the October-November period, and summer and winter deaths are only lightly

¹¹⁷ Ibid., 225.

¹¹⁸ "Shellfish (250-RICR-90-00-4)," ri.gov, Rhode Island Department of State. Accessed February 12, 2020. <https://rules.sos.ri.gov/regulations/part/250-90-00-4>

represented.”¹¹⁹ Although shellfish were collected year-round, the results of this season of death study place most collection activity in the fall. The seasonality sample for quahogs taken for RI-110 are also consistent with a larger fall harvest, but do include instances of some shellfish gathered in the spring.¹²⁰

Although high accuracy rates for seasonality studies can be difficult to obtain due to a small percentage of shells large enough to study, the results from Greenwich Cove correlate with the major growth seasons of quahogs. “In Narragansett Bay, R.I., the principal growing season extends from about mid-April to mid-November, but most of this growth may occur by mid-July.”¹²¹ If the majority of harvesting occurred in the fall, then the people of Greenwich Bay and Point Judith Pond were taking quahogs at the point they had finished growing for the year. It is likely that people were aware of the time of year the quahogs were the largest, and provided the most nutritional value, while coinciding with an uptick in storage needs for the winter months. In Rhode Island today, quahogs can be gathered throughout the year in select areas, but during spawning times areas are more restricted.¹²² The intensity of extraction during the season where quahogs are the largest, and mostly done growing, is evidence of a management technique. While harvesting at this time probably arose from the need to prepare for winter, and an observation of larger quahogs, the choice to continue the practice through generations substantiates an influence on the organism.

¹¹⁹ Bernstein, “Prehistoric Seasonality Studies in Coastal Southern New England” 109.

¹²⁰ Waller, Leveillee, and Forrest, “Phase III Data Recovery Archaeological Investigations of the Salt Pond Site,” 186.

¹²¹ MacKenzie, et al, “Quahogs in Eastern North America: Part I,” 3.

¹²² “Shellfish (250-RICR-90-00-4),” ri.gov, Rhode Island Department of State. Accessed February 12, 2020. <https://rules.sos.ri.gov/regulations/part/250-90-00-4>

Resource Abundance

It is difficult to discern which shellfish were being used the most frequently, and therefore hold the highest possibility of being managed. Oyster shells undoubtedly made up the majority of the faunal assemblages at the salt pond sites analyzed in the previous chapter, but, quahog and softshell clam were also highly utilized, with instances of bay scallops, mussels, and whelk. Unfortunately, the amount of shellfish and the variety available today in Point Judith Pond, Potter Pond, Foster Cove, and Greenwich Cove are not entirely indicative of availability from the Late Archaic to Late Woodland periods. Due to pollution, over fishing, habitat degradation, and development, ecosystems in some of these locations have changed as well as the shellfish themselves.¹²³ However, if shellfish are still able to remain in these areas, albeit in smaller numbers, the habitat preference and location today aid in the general knowledge of resource availability during pre-contact salt pond site occupation.

Concerning habitat in Point Judith Pond, the intertidal estuary once boasted large mud flats, a trait that is mimicked in Rhode Island's other salt ponds. Mud flats are the preferred habitat for multiple species of shellfish, including oyster, quahogs, and softshell clams.¹²⁴ Although Point Judith Pond's mud flats no longer provide the nutrient dense habitat Native populations once utilized, the state of today's fisheries provide key information about the availability of various shellfish. For example, wild oysters are currently declining, but in the Narragansett Bay area, and Point Judith Pond specifically, scientists have noted that hard clams (quahogs) are more densely

¹²³ Jennifer McCann et al., *The Rhode Island Shellfish Management Plan Version II* (South Kingstown, RI: The University of Rhode Island and The Coastal Resources Center, 2014) 59-61.

¹²⁴ Waller, Leveillee, and Forrest, "Phase III Data Recovery Archaeological Investigations of the Salt Pond Site," 36.

populating areas where oysters were once abundant.¹²⁵ This is possibly due to the stationing of permanent breachways on salt ponds, which severely alters the salinity of the water. A similar beachway was installed on Point Judith Pond between 1902 and 1910.¹²⁶ Although quahogs are hardier shellfish than oysters, less sensitive to salinity and less susceptible to certain diseases, this information points to a higher abundance of oyster than quahog in pre-contact Point Judith Pond. This would explain, in part, why oyster shells were the predominant remains found at the Point Judith Pond sites and Foster Cove. That amount of wild oyster extraction would not be able to occur in Point Judith Pond today, but would not have been a problem for people near the pond hundreds of years ago.

The issue of specific shellfish abundance in certain areas is important because it alludes to the possibility of marine resource management based on availability. While some may point to Native populations' extraction of the most obviously ample resource as simply a way of life, it is also a management technique. Through observation and the repeated choice to heavily harvest the most abundant resource, Natives were managing other, smaller, shellfish populations. Although there is still much to be learned at RI-110, the lowest amount of shellfish remains recovered was whelk.¹²⁷ The gastropod typically experiences episodic growth, which means they go long periods without growing at all. There are two types of whelk, channeled and knobbed, and they prefer different habitats (Fig. 5-1). Channeled whelk typically

¹²⁵ McCann et al., *The Rhode Island Shellfish Management Plan Version II*, 30.

¹²⁶ Waller, Leveillee, and Forrest, "Phase III Data Recovery Archaeological Investigations of the Salt Pond Site," 29.

¹²⁷ Ibid., 171.

thrives in deep, cool water, but spends about 65% of their time buried in sediment, while the knobbed whelk prefer shallow, warmer waters with muddier bottoms.

Fig. 5-1. Illustration of channeled whelk (top) and knobbed whelk (bottom) by Brandon Fuller.¹²⁸

If the residents of the RI-110 site collected whelk from Point Judith Pond, they were likely knobbed whelk, and “[d]ue to their low reproductive potential, limited movement, slow growth, and large size at maturity, knobbed whelk are highly susceptible to over harvesting.”¹²⁹ The comparatively low amount of whelk recovered from RI-110 was likely proportionate with the availability in Point Judith Pond, showing that the amount eaten was relative to the amount of abundance. While it is possible whelk were, at times, overharvested, it is unlikely that Natives would have

¹²⁸ Ibid., 45-46.

¹²⁹ Ibid., 44-47.

extracted to the point of mass depletion based on generations of use, and the amount still available today, even with a much larger population and habitation degradation.

The comparative study of shellfish remains with knowledge of modern shellfish provides evidence for pre-contact subsistence levels predicated on resource availability. If high numbers of shellfish were observed, such as oyster, more would be collected, and vice versa. While it may seem simplistic, this practice represents a technique based on reciprocity with nature, and ability to supplement shortages with a varied diet when necessary.

Subsistence Variation

Diet variation may not seem like a purposeful management technique, but it is a practice that results in an effect on the resource base. Much like today's society, pre-contact Native peoples undoubtedly had food they enjoyed more than others, but only eating from one, or a handful, of wild food sources would have resulted in overexploitation. There are multiple factors that contribute to the variety in Native subsistence, such as seasonal availability, environmental changes, and nutritional needs. Marine resources gathered in the fall were stored in preparation for the winter months as a way to ensure food availability and in case hunting returns were not as large. The sole reliance on shellfish during the winter, though, would have resulted in lack of proper nutrients, and could have become toxic.¹³⁰ The investigations at RI-110 revealed a variety of wild plant and animal subsistence species, consisting of terrestrial animals, shellfish, finfish, agricultural crops such as maize, squash, and beans, and

¹³⁰ Jordan E. Kerber, *Prehistoric Human Occupation and Changing Environment of Potowomut Neck, Warwick, Rhode Island: An Interdisciplinary Approach* (Providence, RI: Brown University, 1984) 37.

wild plant species.¹³¹ By eating seasonal, diverse diets, Native people put less strain on every resource they used. This also allowed for flexibility when one resource noticeably dwindled and another became more abundant.

As discussed in the overview of the Greenwich Cove site, archaeologists noticed that shellfish size, mainly for oysters, was declining by the Late Woodland period. There are a number of factors, including harvesting techniques and environmental changes. Whatever the reason, archaeologists at the Potowomut Neck site, in the vicinity of Greenwich Cove, noted a shift in the most predominant shellfish remains away from oyster to more quahog and softshell clams, over roughly the same period as the size diminution at the Greenwich Cove site.¹³² With decline in oyster size, Native people seemed to switch their primary shellfish to ones that were larger and more abundant. Variability in diet allowed for an easy transition, already knowing effective harvest techniques and location. The choice to switch predominant shellfish in the Greenwich Cove area is evidence of a management technique caused by an observation of resource changes. It was a better choice for the health of oyster as well as health of the people, who would not have been received adequate nutrition from a lesser amount of smaller oysters.

Variation in shellfish size also played a role in amount of consumption per shellfish species. The larger the shellfish, the more nutrition it offers, whereas small species require multiple shellfish to generate the same amount of sustenance.

Quahogs, for example, offer more meat compared to the softshell clam, and are

¹³¹ Waller, Leveillee, and Forrest, "Phase III Data Recovery Archaeological Investigations of the Salt Pond Site," 222.

¹³² Jordan E. Kerber, "Digging for Clams: Shell Midden Analysis in New England" *North American Archaeologist* 6, no. 2 (Amityville, NY: Baywood Publishing Co., Inc., 1985) 97-113.

comparable to oysters. From this information, it would be likely that there would be less quahog and oyster remains in comparison to softshell clams. However, this is not usually the case. As previously stated oysters tend to dominate the most shellfish remains found at salt pond sites. In the event of fluctuations in oyster availability, we see other shellfish collected in larger, or smaller, amounts. For example, softshell clams were the primary resource for people at the Greenwich Cove site, but, “[q]uahog also assumes a greater importance for the entire prehistoric sequence at Greenwich Cove when available meat is used as an abundance index.”¹³³ Quahogs provide more meat than softshell clams, so even though there is less quahog shell remains found, it does not mean they were not an important food source. The same can be applied to oysters. When oyster size began to decline at Greenwich Cove, especially during the Middle Woodland period, the amount of quahog remains increased. This is reversed in the Late Woodland period, when amounts of quahog decreased, and oyster shells increased.¹³⁴ The way Native Americans interchanged oysters and quahogs throughout time indicates resource management in the form of meeting sustenance standards. As one species declined in size or abundance, another replaced it. Native populations still had to intake a certain amount of nutrients, and instead of trying to gather more of from the declining source, they switch to one of similar nutrients.

Area Rotation

Rotating resources in order to keep nutrients at the same level is a form of management born out of necessity. The reason Native people were able to accomplish this with ease can be attributed to their varied diet. However, resource rotation also

¹³³ Bernstein, *Prehistoric Subsistence on the Southern New England Coast*, 76.

¹³⁴ *Ibid.*, 76-77.

indicates a knowledge of food location which allows the same resources to be extracted from multiple areas. Area rotation was used as a management technique for agriculture in order to let soil replenish nutrients before returning to plant again.¹³⁵ In the archaeological record, instances of area rotation can be seen through the occupation of multiple locations, such as the various salt pond sites, but also inferred based on where certain species thrive. Much like the discussion regarding today's location of shellfish, and the affect changing habitats have had, knowledge of shellfish and fish locations indicate places of likely harvesting, and ability to rotate collection during times of resource fluctuation and stress.

Site RI-110 is located at the northernmost end of Point Judith Pond, meaning there was about 1,530 acres of water stretching out towards the ocean to be utilized for fishing and shellfish harvesting.¹³⁶ The beds closest to the settlement were in all likelihood used the most, but the mudflats throughout the pond were probably utilized too. The reason shellfish beds outside of Point Judith Pond were not extracted from during seasons of occupation at RI-110 is due to “a tight matrilineal community, in which women did not travel far from the core territory.”¹³⁷ Proof of this societal structure is present in the pottery assemblage, which is internally consistent. Since women and children were the primary collectors of shellfish, it is unlikely that they rotated shellfish beds in Point Judith Pond with other beds in entirely different areas. However, it is possible that this was practiced with shellfish in Point Judith Pond,

¹³⁵ Waller, Leveillee, and Forrest, “Phase III Data Recovery Archaeological Investigations of the Salt Pond Site,” 224.

¹³⁶ Office of Water Resources, *Total Maximum Daily Load Analysis for Point Judith Pond Waters: Pathogen/Bacteria Impairments* (Providence, RI: Rhode Island Department of Environmental Management, 2008) 7.

¹³⁷ *Ibid.*, 207.

using one bed more frequently, then switching to another in order to evenly distribute extraction. Because RI-1818 was not used for processing foods, but harvesting, the site could indicate area rotation for finfish, but also represents knowledge of other shellfish beds, due to the large amount of shell discovered.¹³⁸ While there is little physical proof of shellfish bed rotation occurring within RI-110, and the other salt pond sites, behavior patterns among people are often very similar. Women were also the primary agriculturalists, and if field locations were rotated in order to replenish soil, it is possible that shellfish beds in Point Judith Pond were too.

The better indicator of area rotation occurs in marine resource extraction from outside of the salt pond, mostly from finfish species. The faunal remains at RI-110 indicated several species of fish that could have only come from outside of Point Judith Pond. While there is no direct evidence that people fished in various areas for the same type of fish, it is likely. For example, the presence of a sea turtle carapace, sturgeon scutes, and tautog remains indicate seafaring capabilities during the Late Woodland period occupation of the site. Tautog inhabit Rhode Island's rocky coastline, and sturgeon are not represented in the pond, at least not today.¹³⁹ Sturgeon do occupy brackish and freshwater rivers during spawning season, but adults are found primarily in the open ocean.¹⁴⁰ From the species of fish found at RI-110, archaeologists concluded that some "were acquired from Block Island Sound, Rhode

¹³⁸ Begley and Leveillee, "Archaeological Investigations Proposed House and ISDS Replacement Area Limited Phase III," 52.

¹³⁹ Ibid., 207.

¹⁴⁰ "Atlantic Sturgeon," fisheries.noaa.gov, National Oceanic and Atmospheric Administration. Accessed March 10, 2020. <https://www.fisheries.noaa.gov/species/atlantic-sturgeon>.

Island Sound, or Narragansett Bay and then brought to the site.”¹⁴¹ These types of fish are also represented in other sites surrounding Point Judith Pond, mainly at Potter Pond.¹⁴² Various fishing spots were likely used in the three waters, and it is also probable that locations of other, more stationary marine resources such as shellfish were observed and remembered for future use as well.

Members of the Narragansett, Ella W. T. Sekatau, former ethno-historian and medicine woman, and John B. Brown III, state that their ancestors were aware of people’s and nature’s effect on resources, and “In case of shortages due to natural causes, areas would not be touched.”¹⁴³ This implies that the inhabitants of coastal Rhode Island were aware of stock shortages, and took measures to overcome any decline in their subsistence bases. Whether it be by moving to a different location less effected or switching to a more abundant resource until the other had re-populated, Native Americans practiced purposeful management and the preservation of marine resources.

Population Density

Perhaps the most cited reason for the better health of marine resources before European contact is population density, mainly that resource abundance declined due to the significantly larger number of people relying on them. While this is certainly a major factor, especially for today’s resources, it is also relative to the number of resources being used (deep sea shellfish, such as sea scallops, were not accessible to Native Americans prior to European arrival) and the health of habitats.

¹⁴¹ Waller, Leveillee, and Forrest, “Phase III Data Recovery Archaeological Investigations of the Salt Pond Site,” 224.

¹⁴² Fowler and Luther, “The Potter Pond Site,” 93.

¹⁴³ Sekatau and Brown, “Narragansett Indians and Narragansett Bay” 24.

However, pre-contact population control over a marine resource could be seen as a management technique, as mentioned in chapter 4 for the Greenwich Cove Site. Larger populations allowed for more control over the resource, and could have been a strategy employed by people to ensure that the resources they continually returned to were not over exploited by multiple, smaller groups.¹⁴⁴ The overall lower population occupying Rhode Island's coast before European contact did play a role in habitat health. Although general population size was not a conscious decision made by leaders, it did have a more beneficial effect on habitat health than the dramatic increase of people after European contact followed by industrialization, which severely polluted water sources.

Pre-contact marine resource management techniques are difficult to prove through physical evidence, but subsistence information provided by archaeological investigations allow possible strategies to be explored. The history of Native American coastal adaptations in Rhode Island until the eve of contact indicate that resource management emerged with the increased use of coastal resources. Through seasonal harvest, extraction based on abundance, varied diets, area rotation, and population density, Natives managed their marine resources in order to ensure long term availability for themselves and for the continued health of the resource base.

In order to fully understand Native American marine resource management, not only as a coastal adaptation, but the techniques in general, the effects caused by the arrival of Europeans should be explored. First-hand accounts of Native subsistence by Europeans are helpful in confirming some techniques discussed above, as well as

¹⁴⁴ Binford, "Hunter-Gatherer Settlement Systems and Archaeological Site Formation," 17.

tracing how they were adapted by Native Americans after contact. The differing outlooks on resources caused a clash of cultures, one that impacted Native use of resources and the overall health of the environment. It is possible that management strategies adapted before contact were altered due to commodification of natural resources, and effected those resources. Marine management by Natives in Rhode Island was eventually restricted due to loss of freedom and land. These were important processes in the history of Native coastal adaptations.

CHAPTER 6

CONTACT AND COMMODIFICATION

With the arrival of Europeans, the written record of New England began to emerge, albeit an extremely one-sided one. The best use of first hand European accounts, in this case, is to analyze observations of Native American interactions with, and their use of, coastal resources for the purpose of confirming coastal adaptations and subsistence patterns reflected in archaeological sites. While first-hand accounts were not focused on indigenous marine resource use, or management, they reveal European's observations of new land, possible future commodities, and trade relations. These records of Native life, combined with the role Europeans had in altering marine resources, create an overview of the deterioration of natural resources in Rhode Island. The, "early contact between Europeans and Native Americans can best be explained as an interaction between cultures, or more specifically between mentalities."¹⁴⁵ Resources once used for survival were now exploited for profit, and the control Native populations once exerted dwindled by the end of the 18th century. In order to fully understand Native marine resource management, it is necessary to explore how European contact and settlement altered Native life and land use patterns.

For Europeans, settling in New England, specifically Rhode Island, opened up a world of new trade items, many of which derived from coastal resources.¹⁴⁶ The same resources that drew people to New England thousands of years ago, drew Europeans

¹⁴⁵ Trigger, "Early Native North American Responses to European Contact" 1200.

¹⁴⁶ Laurie Lee Weinsten, *Enduring Traditions: The Native Peoples of New England*, Ed. Laurie Weinsten (Westport, CT: Bergin & Garvey) 1.

to the region hundreds of years ago, and part of the abundance came from coastal proximity. Talk of this abundance was apparent in references to New England's ecosystem and included accounts of vast marine resources:

Oyster banks on Massachusetts Bay that were a mile in length. Wood declared that individual oysters could be as much as a foot long: once the animal was removed from its shell, it was so large "that it must admit of a division before you can well get it into your mouth." The movement of the tides brought thousands of lobsters into the shallow waters offshore, and exposed an "infinite store" of mussels and other shellfish. One observer described how a person running over exposed clam banks was soon "made all wet by their spouting of water," and he had seen clams "as big as a penny white loaf" of English bread.¹⁴⁷

The plentiful description of resources compiled by historian William Cronon provides an example of resources that drove Native coastal adaptations as well as possible over embellishment by Europeans, likely to justify the commodification of these resources. If there was an overabundance, as would be suggested by the above account, then there was no harm in extracting resources for export on top of subsistence.

Evident in the 17th century, and carried into the present day, was the mindset brought from the Old World regarding resource use. Europeans viewed the abundant New World, New England in particular, as a land of wealth. In order to make a profit, coastal resources such as whales and cod could be fished to near extinction so the commodities could be shipped back to Europe. This mindset was one of the greatest differences between Europeans and Native Americans, who used the same resources for subsistence and cultural practices. However, commodification began to change how Natives used marine resources. This in turn was tied to the production of wampum. It is possible that Native Americans adapted some marine resource management techniques in order to accommodate larger quantities of the shell beads.

¹⁴⁷ Cronon, *Changes in the Land*, 30-31.

It is important to trace how Natives altered management practices as commodification of natural resources occurred.

Through resource commodification, the selling of z lands, and Native-European wars, Native ways of life and access to traditional coastal resources changed drastically by the end of the 17th century. The possible over exploitation of shellfish by both Native Americans and Europeans, population increase, and European control over marine resources resulted in habitat destruction and loss of adequate management techniques. The differences in mentality and treatment of resources changed the course of Rhode Island's environmental history.

First Contact and Settlement

The first European explorers began to visit New England in the early 16th century, making contact with Natives and establishing trade. Among them was Giovanni da Verrazzano, an Italian explorer sailing for France, who navigated the eastern coast of North America in 1524. The explorer was one of the first outsiders to interact with the people of Narragansett Bay and the salt pond region, or at least the first to document it. In a letter written by Verrazano to King Francis I, he described seeing large fires all along the shores of today's Block Island. From there, he anchored in Narragansett Bay, where he was greeted in boats by the Sachem of the Narragansett Tribe, Tashtasick, leader of the people whose ancestors likely occupied RI-110 (see Fig. 6-1). Verrazano's description of the Narragansett people reveal a community extremely familiar with the water, and a willingness to trade for beads and other items

that reflected their own, which were usually made from shells.¹⁴⁸ After Verrazzano's departure fifteen days later, the next documented experience of European contact in Rhode Island came from Adriaen Block, after whom Block Island is named. Block was a Dutch explorer, who from 1611 – 1614, searched for points from which to establish a fur trade. Unfortunately, there is little information about Block's interactions with the people of Narragansett Bay, but his establishment of the fur trade had future ramifications for the people of Rhode Island.¹⁴⁹

Fig. 6-1. Detail of *La Nuova Francia* by Giacomo Gastaldi, 1556 depicting Narragansett Bay. Map partly based off of Giovanni da Verrazzano's 1524 voyage.¹⁵⁰

¹⁴⁸ Giovanni da Verrazzano, *Letter to King Francis I of France, 8 July 1524*. Letter. From nationalhumanitiescenter.org (accessed November 11, 2019) 6; Trigger, "Early Native North American Responses to European Contact" (1991) 1213.

¹⁴⁹ "1614 Adriaen," Colonialwarsct.org, The Society of Colonial Wars. Accessed March 23, 2020. <https://www.colonialwarsct.org/1614.htm#>

¹⁵⁰ "La Nuova Francia [cartographic material]" banq.qc.ca, Bibliothèque et Archives nationales du Québec. Accessed January 8, 2020. <http://numerique.banq.qc.ca/patrimoine/details/52327/2246848>.

In 1620, the settlement at Plymouth marked the beginning of European colonization in New England. After the establishment of the Massachusetts Bay Colony in 1629, colonization soon expanded into Rhode Island. While the Puritan's motivations for settling in the New World were not based on resource exploitation, their accounts of the waters surrounding Cape Cod reflect the European mindset. In *Mourt's Relation*, believed to have been written by William Bradford and Edward Winslow, who were both passengers on the *Mayflower*, they write:

And every day we saw Whales playing hard by us, of which in that place, if we had instruments & meanes to take them, we might have made a very rich returne, which to our great grieve we wanted. Our master and his mate, and others experienced in fishing, professed we might have made three or foure thousand pounds worth of Oyle; they preferred it before Greenland Whale-fishing, & purpose the next winter to fish for Whale here;¹⁵¹

The rhetoric expressed clearly gives the impression that these men viewed whales as a commodity, not a subsistence base. The comparison of the quality of the whales observed and whales from Greenland puts a value on them, and the proposal to return next year confirms their profit driven mindsets. This mindset was dangerous for Native populations, because “seeing landscapes in terms of commodities meant something else as well: it treated members of an ecosystem as isolated and extractable units.”¹⁵² Native Americans were seen as removable when Europeans could earn a profit from their lands.

With the establishment of the Massachusetts Bay Colony, the number of Europeans in the New World grew. Roger Williams, a Puritan minister, arrived in Boston, Massachusetts in 1630 and lived briefly in both Salem and Plymouth.

¹⁵¹ Henry Martyn Dexter, Edward Winslow, and William Bradford, *Mourt's Relation or Journal of the Plantation at Plymouth* (J. K. Wiggin, 1865) 3-4.

¹⁵² Cronon, *Changes in the Land*, 21.

Williams was banished from Massachusetts for his religious beliefs in 1635. A year later he established a settlement in Providence, Rhode Island after acquiring land from the Narragansett Tribe.¹⁵³ Because of his exile, Williams formed relationships with Rhode Island Natives, specifically the Narragansett and the Niantic. Williams' accounts of interactions with the Narragansett and Niantic, and their lifestyle, provides the most detailed information available in regards to Native coastal use in Rhode Island.

Williams' records also reveal a string of cultural misunderstandings, mainly involving reciprocity. Issues between Native American and European mindsets arose because "[w]hat the Narragansetts wanted and expected of these new people was what any Indian community expected of newcomers: to join and participate in providing for the social, spiritual, and physical well-being of the community."¹⁵⁴ Europeans viewed most interactions with Native communities as business transactions, not indicative of a continuous relationship. Europeans caused further miscommunication because they failed to accept differences for what they were, cultural. Instead, they belittled and demeaned indigenous practices, viewing them as lesser instead of different.

Marine Resource Use

Although Europeans had a difficult time understanding Native culture, they were aware of how local resources were used. Roger Williams in particular observed Narragansett resource use closely, and made note of the type of food eaten, how it was acquired and where, and when the Narragansett varied their harvest, or were going

¹⁵³ Roger Williams and Glenn W. LaFantasie, ed., *The Correspondence of Roger Williams Volume I, 1620-1653* (Providence, RI: Published for the Rhode Island Historical Society by Brown University/University Press of New England, Hanover and London, 1988) xciii.

¹⁵⁴ Robinson, "The Wampum Trade in 17th Century Narragansett County," 26.

through times of scarcity. These details are significant because they aid in the confirmation of coastal adaptations, or alterations, made as European influence grew, while revealing the issues of societal disagreements that would add to the discontent between both parties.

Cast out of Massachusetts Bay, Williams spent a considerable amount of time with the Narragansett, learning their ways of life. Some important observations regarding marine resources include the collection of quahogs, fish, and the seasonal production of wampum.¹⁵⁵ For example, Williams observed:

The Natives take exceeding great paines in their fishing, especially in watching their seasons by night; so that frequently they lay their naked bodies many a cold night on the cold shoare about a fire of two or three sticks, and oft in the night search their Nets; and sometimes goe in and stay longer in frozen water.¹⁵⁶

The fact that people would spend nights on the beach in order to observe their fishing nets is further evidence that sites like RI-1818 may have been used for frequent fishing, but not large scale processing. The archaeologists who investigated RI-1818 surmise that fishing was likely carried out, but that the fish were not processed at the location. It is possible that the site was a location for the activity referenced above, nets being cast and monitored, while the fish were processed at a more central location.¹⁵⁷ The above quote attests to the importance of marine resources in Native life; that they would fish in freezing cold waters throughout the night shows a way of life reliant on access to the coast.

Time spent with the people of Rhode Island revealed to Williams the frustration Natives had with aspects of European life and agriculture, particularly their

¹⁵⁵ Roger Williams, *A Key Into the Language of America* (London: Gregory Dexter, 1643) 110-117.

¹⁵⁶ *Ibid.*, 116.

¹⁵⁷ Begley and Leveillee, "Archaeological Investigations Proposed House and ISDS Replacement Area Limited Phase III," 56.

pigs. Europeans brought swine with them to New England, and would often let them run free until such time as they were slaughtered for food. In reference to soft shell clams, Williams stated that, “English Swine dig and root these Clams wheresoever they come, and watch the low water (as the Indian women do) therefore of all the English Cattell, the Swine (as also because of their filthy disposition) are most hateful to all Natives and they call them filthy cut throats...”¹⁵⁸ English pigs encroached on important resources, and Europeans more often than not ignored it. As discussed in the last chapter, shellfish beds were considered prime territory, and Natives were accustomed to controlling access to them. Having groups of pigs and their owners not conform to traditional ways of harvest depleted stocks, while greatly offending the Native populations. Williams confirmed that women were the primary shellfish gatherers, and would dig for softshell clams at low tides. He also established that shellfish were eaten in multiple seasons, and mentioned that people enjoyed the clams in both winter and summer.¹⁵⁹

As for fluctuations in resource collection, in a letter Roger Williams wrote to John Winthrop Junior on ca. May 23, 1650, Williams noted that the Narragansett had taken a large amount of sturgeon, cod, and bass that year compared to previous years. It is interesting that Williams made this observation, especially since only two years prior the Narragansett likely experienced a food shortage because they purchased corn from the English at Pawtuxet.¹⁶⁰ While it is possible food fluctuations were part of a normal cycle, also experienced by Natives before European contact, it could be from ineffective management of marine resources by Europeans, or Native American

¹⁵⁸ Williams, *A Key Into the Language of America*, 114-115.

¹⁵⁹ Ibid., 114.

¹⁶⁰ Ibid., 314; Robinson, “The Wampum Trade in 17th Century Narragansett County,” 28.

difficulty adjusting to the emerging constraints of the colonial period. Just before these fluctuations were noted, mainly between 1641 and 1645, Massachusetts Bay attempted to increase their foothold in Narragansett Bay. The Puritans had created the United Colonies of New England, the goal of which was to subdue the Narragansett. This tense and busy time period could have contributed to the highs and lows of resource extraction noted by Williams.

While Roger Williams' writings are significant to the study of Narragansett coastal use, even he was biased, and often viewed aspects of Native life as lesser. For example, in reference to wampum, Williams mused that, "[t]he Sonnes of men having lost their Maker, the true and onely Treasure, dig downe to the bowels of the earth for gold and silver; yea, to the bottome of the Sea, for shells of fishes, to make up a Treasure, which can never truly enrich nor satisfie."¹⁶¹ What Williams failed to realize was that the Narragansett did not seek out shellfish to enrich themselves, but to feed themselves. By comparing precious metals to wampum, Williams does what all Europeans did: belittle the importance of quahog and whelk to Native culture because of their little monetary value. Instead, what Europeans failed to see was the necessity of shellfish for sustenance, and the recycling of that practice into practical and cultural objects that signified the importance of the resource to society.

The commodification of marine resources aided in the change of Native life. As coastal resources became restricted and depleted due to European colonization, Natives began to rely more heavily on horticulture.¹⁶² The pattern that emerged from the move to agriculture, as well as selling prime coastal land to Europeans, reflects the

¹⁶¹ Williams, *A Key Into the Language of America*, 160.

¹⁶² Little and Schoeninger, "The Late Woodland Diet on Nantucket Island and the Problem of Maize in Coastal New England" 351-352.

transformation of broadly apparent coastal adaptations into something more complicated. This was mainly, a combination of the preservation of culture while conforming to European economic structures. Native Americans adapted their lifeways to European settlement, but only after a series of conflicts forced them to. These alterations were not a willingness to adopt European culture over Native culture, but a way to adapt and preserve Native culture.

Wampum

The commodification of wampum, a once ceremonial symbol of reciprocity, exemplifies the European idea of business and one-time transactions transforming a facet of indigenous culture into an economic cornerstone. Wampum serves as the prime example of marine resource commodification in Rhode Island. According to Allen Hazard, wampum maker, owner of the Purple Shell in Charlestown, RI, and member of today's Narragansett Tribe, "[p]re-European, we really didn't know what money was. They came over and landed on our shores and tried to bring that reality with them. When they saw us give wampum to each other, it was usually in the respect of 'Thank you.'"¹⁶³ It is also possible that wampum stemmed from the adaptation of *niccommoes*, or ceremonial feasts. *Niccommoes* represented social obligation and reciprocity, both things that wampum also symbolized to the Native community.¹⁶⁴ Perhaps a ceremonial feast would have been easier for Europeans to interpret than a physical item, but European insistence on one time transactions prevailed. The Narragansett even created the word "cuppaimish" which translates to "I will pay you"

¹⁶³ Sarah Schumann, *Rhode Island's Shellfish Heritage* (Narragansett, RI: Rhode Island Sea Grant, 2015) 16-17.

¹⁶⁴ Robinson, "The Wampum Trade in 17th Century Narragansett County," 27.

and was used to describe exchanges with the English.¹⁶⁵ Instead of viewing wampum as a gift of goodwill for future relationships, Europeans transformed it into something they understood very well: a monetary system.

As Europeans began to instill the fur trade into the New England economy, wampum was distorted into currency, both through the European need of a trade economy and Native American's want of economic and political power, which control of wampum production afforded them. Wampum "revolutionized Indian economies less by its new technology than by its new commercialism, at once utilizing and subverting Indian trade patterns to extend European mercantile ones."¹⁶⁶ The beads were highly sought after by inland tribes, and Europeans, especially the Dutch, used wampum belts and beads to trade for fur, which they would ship back to Europe to sell for a profit. Natives on the New England coast, however, hardly saw this monetary wealth as they often traded wampum for European goods.¹⁶⁷ This created a pattern of Native reliance on European goods, especially since the wampum manufacture could be extremely time consuming, and people were pressured into creating larger amounts.

Within the correspondence of Roger Williams, the story of wampum and the burden on the Narragansett to produce large quantities can be viewed. In 1644, conflicts between the Narragansett and their allies and the Mohegans broke out. Both tribes signed a peace agreement shortly after, but the Narragansett resumed fighting early in 1645, after which the United Colonies issued a formal declaration of war against the Narragansett and Niantic. Before any conflict began, the covenant of 1645 was created and both tribes signed. However, the treaty mainly caused "relations

¹⁶⁵ Ibid., 26.

¹⁶⁶ Cronon, *Changes in the Land*, 129-134.

¹⁶⁷ McBride, "The Source and Mother of the Fur Trade" 41.

between the Narragansett and the United Colonies to go from bad to worse.”¹⁶⁸ In the covenant, it was detailed that the Narragansett and Niantic owed 2,000 fathom (one fathom is six feet) of wampum, which is roughly 480,000 to 720,000 beads depending on the exchange rate.¹⁶⁹ Not surprisingly, by the summer of 1647, the wampum had yet to be paid to the commissioners in Boston, who believed “that the Narragansetts are a greate people, and can raise a greater quantity of wampum upon a short warning when they please.”¹⁷⁰

By September of 1647, the Natives said they had paid over 800 fathom of wampum, but the commissioners claimed roughly half of that had been paid, specifically 448.5 fathom.¹⁷¹ In a letter to John Winthrop Jr. dated March 20, 1648/9, Roger Williams details the confusion of the exchange rate of wampum, stating:

The Sachims pray you tell them whether their peat will be told [i.e. counted] at underrates as Pumhamnin coming 2 dates since from the Bay informed them viz: that they must pay great black at 13 to the peny and small bl [black] 8 to the peny. I tel them the last word was sent to me they should pay it by measure.¹⁷²

Because wampum was viewed as money by Europeans, they created exchange rates with Old World money in order to keep track of value fluctuations, which is why the amount of beads per fathom varied. The exchange rate for wampum was set by the number of beads needed to equal sixty pence, and the value changed depending on the value of English currency on the London Market. In the 1640’s, one fathom of wampum was equal to five shillings. However, Roger Williams had stated in a letter that it was once worth ten, but attributed the decline to the value of beaver in England.

¹⁶⁸ Williams and LaFantasie, ed., *The Correspondence of Roger Williams Volume I*, 222.

¹⁶⁹ Ibid., 236 & 276.

¹⁷⁰ Ibid.

¹⁷¹ Ibid., 237.

¹⁷² Ibid., 274.

Although the Natives in New England valued the purple beads more because of their beauty and difficulty to produce, the English held them at half the value of white beads, saying that they could be easily counterfeited with purple dye. By the 1660's, the Pine Tree Shilling had become the official colonial currency, and wampum had begun to be phased out in Rhode Island. Wampum was still being manufactured into the 19th century, but Narragansett Bay was no longer the center of production, it had shifted to Albany, New York and Bergen, New Jersey.¹⁷³

In September of 1649, the Narragansett and Niantic were still working on paying the 2,000 fathom, evident in a letter to William Field from Roger Williams saying "At this present though God's mercy our neighbors are quiet and quietly praepare for their payment to the Bay."¹⁷⁴ This preparation likely produced about 20 fathoms of wampum, because in October Williams mentions in a letter to John Winthrop Jr. that a messenger was sent to Massachusetts with a payment of 20 fathom or possibly more.¹⁷⁵ Twenty fathom of wampum may not seem significant compared to 2,000, but it was a substantial amount. In fact, it was the same amount that Roger Williams paid to Miantonomi and Canonicus for the purchase of Prudence Island. Canonicus was sachem of the Narragansett, and uncle to Miantonomi, who would later succeed him.¹⁷⁶

Even 20 fathom had at one time been considered of great value. For example, in a May 1637 letter addressed to Governor Henry Vane or Deputy Governor John Winthrop, Roger Williams states that, "Sir Miantunnomu desired me to give you a hint

¹⁷³ Robinson, "The Wampum Trade in 17th Century Narragansett County," 27.

¹⁷⁴ Williams and LaFantasie, ed., *The Correspondence of Roger Williams Volume I*, 299.

¹⁷⁵ Ibid.

¹⁷⁶ Ibid., 136.

that the 6 fathom of Beades wch he gave for the slaying of Audsah be repaid him and sent now if it maybe. His wars keep him bare.”¹⁷⁷ Miantonomi had paid a Manissean Native the 6 fathom of wampum to kill Audsah as a display of loyalty to the English, who believed Audsah murdered John Oldham.¹⁷⁸ Miantonomi had valued 6 fathom of wampum enough to request it back rather than just make more. Williams’ reference to Miantonomi’s wars also hints that the Narragansett may not have had the time to make wampum. Although not produced and given by the Narragansett, in 1622 in the Connecticut River valley, a Dutch trader was offered 140 fathom of wampum in exchange for the release of a chief.¹⁷⁹ If the life of a chief was worth 140 fathom, then 2,000 fathom must have seemed like an insurmountable amount to produce, especially since the Natives believed the agreement upon which the payment was based was invalid.

The amount of time it took to produce one fathom of wampum varied, but the Dutch observed in 1654 that one person could produce 36-48 white beads a day, and two days for the same amount of purple beads. This indicates that it would take one person one week to create one fathom of white wampum, longer if purple beads were included, and does not include the amount of time it takes to harvest and consume or preserve the shell fish.¹⁸⁰ Based on the exchange rate of 1640, which meant there were 240 beads per fathom, it would have taken one person thirty eight years to produce the 2,000 fathom Europeans claimed were owed to them.¹⁸¹ While there were obviously multiple people working to produce wampum, it is still an extremely time consuming

¹⁷⁷ Ibid., 79.

¹⁷⁸ Ibid.

¹⁷⁹ Robinson, “The Wampum Trade in 17th Century Narragansett County,” 27.

¹⁸⁰ Ibid., 27.

¹⁸¹ Williams and LaFantasie, ed., *The Correspondence of Roger Williams Volume I*, 276.

task. Interestingly, in 1643 Williams notes that “most on the Sea-side make Money, and store up shells in Summer against Winter whereof to make their money.”¹⁸² This indicates that the Narragansett made the beads in the slower winter months when more people would have been available to concentrate on the production of wampum.

White wampum was made from both whelk and the white portion of a quahog shell, while purple, or black, wampum was made solely from the purple section of a quahog shell (see Fig. 6-2). Each quahog shell could produce 1 or 2 purple beads, and 2 or 3 white beads, depending on the size and color of the shell as well as the skill of the creator. Whelk shells could produce several white beads, also depending on size and skill.¹⁸³ In order to produce one fathom of white wampum, it would take anywhere from 80 to 120 whelk shells. For one fathom of purple wampum, it would require 120 to 180 quahog shells.

Fig. 6-2. Wampum collar that belonged to Mohegan Sachem Uncas.¹⁸⁴

¹⁸² Williams, *A Key Into the Language of America*, 160.

¹⁸³ MacKenzie et al, “Quahogs in Eastern North America: Part I,” 12.

¹⁸⁴ “Uncas Wampum Collar (c. 1638)” Mohegan.nsn.us, Mohegan Tribe. Accessed March 24, 2020. <https://www.mohegan.nsn.us/explore/heritage/artifacts>

Fig. 6-3. Strings of white and purple wampum courtesy of the Rhode Island Historical Society.¹⁸⁵

While it is difficult to determine the exact number of whelk and quahog Natives regularly consumed before European contact, it was certainly not the amount it would have taken to manufacture 2,000 fathom of wampum, at least not in a short amount of time. It is likely that the increase in wampum production affected marine resource use because even though quahog was an important pre-contact resource, oysters made up the bulk of shellfish consumption while whelk played a more minor role. It is difficult to discern how many quahogs were gathered each season from the information provided from pre-contact salt pond sites, but it is clear that whelk was not predominant in the same way oyster was. The best way to discern whether or not wampum altered Native subsistence would be to note the increase, or lack thereof, of whelk shells, at an archaeological site during the post-contact time period. The difference in quahog shell amounts would be significant too, but could be more difficult to discern the reason given that quahogs have been found in large amounts at

¹⁸⁵ Williams and LaFantasie, ed., *The Correspondence of Roger Williams Volume I*, 144.

salt pond sites, and an increase in harvest could correlate with a reduction in oyster for availability. This would also answer whether or not it was subsistence that was effected, or management. If it were purely management that changed, there would probably be the same amount of oyster remains but significantly larger amounts of quahog and whelk, which would indicate that Natives were consuming traditional diets, but harvesting more than may be necessary for subsistence. If Natives altered their diets in order to incorporate more quahog and whelk, the number of oyster remains would likely decrease.

Also worth noting is Roger Williams' observation of quahogs being gathered in the summer in order to produce wampum in the winter, which could be evidence of an alteration in seasonal harvest. Previously discussed archaeological sites tend to indicate a larger collection of quahogs in the early fall, when they had stopped growing, but if the Narragansett were harvesting mainly in the summer, this could suggest a shift caused by an increase in wampum production.¹⁸⁶ While it is possible that by "summer" Williams was generally referring to late summer or early fall, and that the seasonality data from RI-110 and Greenwich Cove are not fully accurate, it is still worth further exploration.

Unfortunately, the only way to definitively prove that the commodification of wampum increased the amount of quahog and whelk harvested, or replaced oyster as the predominant shellfish, would be the presence of an archaeological site continuously occupied by Native Americans before contact and through the 17th century. This site would reveal the types of shellfish consumed over time, and a

¹⁸⁶ Waller, Leveillee, and Forrest, "Phase III Data Recovery Archaeological Investigations of the Salt Pond Site," 186.

drastic increase in quahog and whelk could be discernable. To study the change in seasonality of quahog harvest, a comprehensive season of death study would need to be carried out from the shells at the site. In order to surmise if this increase was due to wampum production, the site would need to include evidence of wampum manufacture, such as shell blanks and perhaps needles, used to drill the holes. As of now, no such site has been discovered, likely due to the relocation of settlements just before contact, making it impossible to prove whether or not the commodification of wampum changed marine resource management techniques and created an increased use of whelk and quahog beyond subsistence needs.

Loss of Access to Marine Resources

Throughout the second half of the 17th century, tensions between the English and the Native tribes of Rhode Island increased. European land lust around Narragansett Bay amplified during the 1660's, and caused discord between Roger Williams, the English, and the Narragansett. This combined with rumors of a large Southern New England Native plot against the English created fear among colonists. King Phillip's War enveloped the region in 1675. On December 19th, a United Colonies army attacked the Narragansett in South Kingstown. During what is now known as the Great Swamp Massacre, a Narragansett fort was burned, along with a large number of Narragansett that included women and children. After the fight, the survivors of the Tribe retreated into the swamp.¹⁸⁷

After King Phillip's War ended in 1678, the Narragansett either fled, or were forcibly removed, from their territories. Some were sold into slavery and sent to the

¹⁸⁷ Roger Williams and Glenn W. LaFantasie, ed., *The Correspondence of Roger Williams Volume II, 1654-1682* (Providence, RI: Published for the Rhode Island Historical Society by Brown University/ University Press of New England, Hanover and London, 1988) 590-593 & 714.

West Indies, Block Island, or other areas outside of Providence Plantation. One of the driving factors in the enslavement of the Narragansett outside of Rhode Island was to cut them off from their homelands. If they had access to their territories, they would have more power and control since they knew the land better than anyone.¹⁸⁸ Tribe members that merged with surrounding tribes were eventually able to reconnect with their lands, and ultimately preserve their culture.¹⁸⁹

However, the Narragansett were continually forced into debts which they had to pay off through land grants. Eventually, the amount of Narragansett territory grew small, and in 1773 and 1779, they petitioned the General Assembly to aid in preserving their land. The 1773 petition details the major loss of land the Narragansett suffered:

We have consented to the sale of the greatest part of the most valuable lands belonging to the tribe; so that there now remaineth but a small tract, compare with what they once possessed; and that they have only one small piece of Fort Neck by which they can get to the salt water, from which they fetch great part of the support of themselves and families...we therefore humbly petition this Honorable Assembly to pass an act, to secure to the said tribe, forever, as well as the said small part of Fort Neck, as all other lands now of right belonging to them; and that the same be not, for the future, liable to the payment of debts.¹⁹⁰

At this point, the Narragansett were only able to access the ocean, and its resources, by way of Fort Neck, in Charlestown, Rhode Island. They no longer had access to their traditional marine resources closer to Narragansett Bay and Point Judith Pond. The petition is also requested that lands could not be exchanged for a debt, essentially a

¹⁸⁸ Geake, *A History of the Narragansett Tribe of Rhode Island*, 58.

¹⁸⁹ "Perseverance," Narragansettindiannation.org, Narragansett Indian Tribe. Accessed March 10, 2020. <http://narragansettindiannation.org/history/perseverance/>

¹⁹⁰ Russell J. Bartlett, ed. *Records of the Colony of Rhode Island and Providence plantations, in New England VII 1770-1776*. Printed by order of the General Assembly (Providence, RI: A.C. Greene and Brothers, 1862) 214.

reservation. The Assembly voted in favor, stating that all lands currently belonging to the Tribe were theirs and could not be used to pay off any debts.¹⁹¹

By 1779, the Narragansett petitioned the General Assembly again, asking it to restrict the ability of tribal members to lease land without the consent of the Tribe. The reason for this was that individuals were leasing out their land for long terms, and unable to support themselves. The responsibility of caring for these people would then fall on the Tribe, who were also unable to support them, mostly due to their restricted access to traditional resources. The Assembly voted in favor of restricting the lease of land without the Tribe's consent, but both this petition and the previous speak to the issues the Narragansett faced after being removed from their traditional lands and resources.¹⁹²

The coastal adaptations made between the Late Archaic period and the Late Woodland period allowed the indigenous people of Rhode Island to create a sustainable way of life predicated upon access to marine resources. Even though the Narragansett had land in Charlestown during the 18th century, they were unable to provide for the entire Tribe because they did not have access to enough marine resources. They could no longer practice natural resource management strategies such as area rotation and widely varied diets. Their population was becoming scattered, people who leased land to white inhabitants would often live with other Tribes who had better resources, prompting the Narragansett's 1779 petition.¹⁹³

¹⁹¹ Ibid., 215.

¹⁹² Russell J. Bartlett, ed. *Records of the Colony of Rhode Island and Providence plantations, in New England VIII 1776-1779*. Printed by order of the General Assembly (Providence, RI: A.C. Greene and Brothers, 1863) 573-74.

¹⁹³ Ibid., 573-74.

While the Narragansett were able to preserve their culture, resource knowledge, and lifeways, their day to day life was restricted. People who once had the ability to move with the seasons could no longer make use of resources outside of their plot of land. However, it is important to remember that indigenous populations were not just passive components in history. They played a role in trade and the economic changes in New England, “selling the animals had been the Indians’ major contribution to their new circumstances,” but “it was by no means the only reason their world turned upside down. Ecological changes wrought by the colonists themselves were far more extensive and needed no Indian partners for their accomplishment.”¹⁹⁴ The loss of access to marine resources after King Phillip’s War stunted coastal adaptations and restricted marine resource management by Native Americans in Rhode Island, while simultaneously allowing colonists to drastically change the landscape.

Effects on Marine Resources

Just as the large influx of European populations in New England caused discord with Native use of coastal resources, it created issues with the physical resources themselves. The use of these resources for profit quickly depleted fish stocks, ones that had been utilized by Natives for hundreds, in some cases thousands, of years. The differing coastal adaptations by Native Americans and Europeans was marked by resource use, but the resources suffered. Even before Native access to the coast was restricted, marine resources which people once managed to ensure longevity, were exploited for profit. Not only that, but a quickly growing population negatively affected the environment. The establishment of stationary settlements and large swaths of agricultural fields contributed to a pattern of habitat degradation that is still

¹⁹⁴ Cronon, *Changes in the Land*, 107.

occurring today. Colonists' actions in Rhode Island's coastal zone, and that of all of New England, depleted shellfish and finfish through pollution, habitat loss, and over exploitation.

The belittling of Native American practices throughout the colonial period resulted in lack of proper management by colonists that has extended to today's population. European influence also effected Native actions, and in some cases allowed them to be a driving factor of commodification to varying degrees. Wampum may have been commoditized by Europeans looking to trade, but Native Americans also sought out trade relations.¹⁹⁵ This does not mean Natives abandoned their cultural values, trade was an important and familiar practice before European contact, but they were complicit in events that transpired which negatively impacted resources. It is the same pattern of actions and observations that allowed marine resource management to develop in the first place. The difference is by the time the effect was observable, Native Americans were no longer in a position to control Rhode Island's marine natural resource management practices.

Beyond the commodification of marine resources such as wampum, cod, and whale, the variances between Native American and European resource management in Rhode Island consisted of a lack of reciprocity, stationary settlements, and less varied diets. Evidence of reciprocity in indigenous culture can be found in the use of subsistence remains for other purposes (quahog hoes, shell beads, decorative ceramics, etc.).¹⁹⁶ While the European population of Rhode Island has certainly adapted decorative items based on marine resources, such as jewelry, the use of food remains

¹⁹⁵ Ibid.

¹⁹⁶ MacKenzie, et al, "Quahogs in Eastern North America: Part I," 12; Waller, Leveillee, and Forrest, "Phase III Data Recovery Archaeological Investigations of the Salt Pond Site (RI 110)" 162.

as practical tools was scarce. The ability of Natives to move seasonally with resource abundance put less stress on marine resources, even when they occupied areas like RI-110, Greenwich Cove, and Foster Cove for longer periods of time. That is, because populations still moved. European settlements, on the other hand, were permanent and were not used seasonally, putting a larger strain on resources in the immediate vicinity.

While a more stationary lifestyle allowed pre-contact peoples to vary their diet through the addition of agriculture, Europeans made comparatively little use of wild resources. Colonists used agriculture and domesticated animals to fulfill most of their dietary needs, adding wild plants and animals and marine resources as necessary. While the reliance on livestock may, at first, seem positive for other subsistence bases, it actually caused a lot of harm.¹⁹⁷ When colonists consumed marine resources, they often focused on a few species rather than several, putting strain on those favored. Agriculture and cattle aided in habitat degradation, including the draining of swamps and salt marshes as well as erosion in places with sandy soil. The use of fish fertilizer combined with the construction of dams depopulated entire rivers.¹⁹⁸ Colonists showed little concern for managing marine resources, they were too focused on the management of agriculture and livestock.

By the 19th century, the abundance of resources once celebrated by early Europeans was decimated due to the changes brought on by differing political, economic, and subsistence views that occurred when Europeans arrived in New

¹⁹⁷ Cronon, *Changes in the Land*, 129-134.

¹⁹⁸ *Ibid.*, 149-155.

England.¹⁹⁹ However, it was the Industrial Revolution that truly solidified these changes. The installation of a capitalist economy allowed monetary gain to outweigh environmental health.²⁰⁰ It wasn't until the 20th century that New England saw widespread environmental movements that attempted to combat water pollution. However, "the hard times faced by the textile industry... left legislators reluctant to impose regulations that might further burden mill owners."²⁰¹ Rather than invest in the future of New England, those in power were too concerned about the effect environmentally friendly regulations would have on the economy. Although the United States has since established many regulations with the goal of creating a healthier world, the government continually makes choices that place the economy over the environment. What colonists, today's population, and at times Native Americans, have failed to see is that investing in marine resources can actually boost the economy. According to the National Oceanic and Atmospheric Administration, the commercial use of oyster beds causes severe dilapidation, but when oysters are managed and sustained, they can inject billions of dollars into the economy.²⁰²

As previously mentioned, oysters were the predominant shellfish used by pre-contact salt pond inhabitants in Rhode Island. Today, they are at all-time lows, not just in Rhode Island, but along the entire Atlantic coast of the United States due to erosion, habitat loss, and water pollution.²⁰³ In Narragansett Bay, oysters were already overfished by the 1880's, only slightly over a century after the Natives lost control

¹⁹⁹ Ibid., 107.

²⁰⁰ Ibid., 161.

²⁰¹ Judd, *Second Nature*, 251.

²⁰² "Oyster Reef Habitat," fisheries.noaa.gov. National Oceanic and Atmospheric Administration. Accessed March 10, 2020. <https://www.fisheries.noaa.gov/national/habitat-conservation/oyster-reef-habitat>

²⁰³ Ibid.

over them. The reason modern Rhode Islanders are still able to consume large amounts of oyster from places like Point Judith Pond is due to aquaculture, not wild oyster management.²⁰⁴

While the sheer increase in population that occurred between the Late Woodland Period and modern day has undoubtedly played a huge role in the depletion of marine resources, pre-contact Native American management techniques such as a varied diet, extraction based on abundance, and the alteration of behaviors based on reactions from resources should be taken into consideration by today's regulators. Native Americans in Rhode Island used management techniques to adapt marine resources to their needs, but they also adapted their society to the environment. While anthropological and archaeological information attests to varying levels of marine resource management by pre-contact indigenous populations, instances of management can also be viewed as coexistence rather than domination.

Most management systems introduced today are only used until resources replenish, after which restrictions loosen instead of working to alter the harmful behavior that originally caused harm. Even then, most management systems do not have the power to control the negative effects brought on by population increase and factors related to an ever growing economy. To fully conserve marine resources, and ensure that management policies are able to take into consideration a variety of outside factors, the United States must adapt to the environment, and spend less time trying to adapt it to suit their commercial needs. There is no reciprocity if only one side is forced to change.

²⁰⁴ McCann et al., *The Rhode Island Shellfish Management Plan Version II*, 29.

CHAPTER 7

CONCLUSION

From the first peopling of New England to today, marine resources have played an integral role in subsistence and culture. Between the Archaic period to the Late Woodland period, coastal adaptations allowed Rhode Island Native Americans to develop marine resource management techniques that included varied diets, seasonal harvests, area rotation, and harvest based on abundance. Archaeological sites such as RI-110, RI-1818, Foster Cove, Potter Pond, and Greenwich Cove all provide evidence of coastal adaptations and subsistence strategies that played a role in pre-contact coastal natural resource management. However, archaeology is limited in that it is unable to provide physical evidence of subtle marine resource management techniques.²⁰⁵ Through subsistence strategies evident in archaeological sites, anthropologic knowledge of human behavior, Native history, and interactions between Europeans and Natives, it is unlikely that pre-contact indigenous populations in Rhode Island did not attempt to manage marine resources.

At the point of European contact, the Narragansett practiced a stable pattern of subsistence that was fortified by agriculture, hunting, fishing, and wild plant collection. With the onslaught of European settlement, marine resource management changed as did the indigenous economy. It is probable that the commodification of wampum altered management strategies, either by pushing Natives to eat more whelk

²⁰⁵ Lepofsky and Caldwell, "Indigenous Marine Resource Management on the Northwest Coast of North America" 1-2.

and quahog than oysters or extracting a larger amount of the shellfish than they previously had. Unfortunately, the only way to prove, or disprove, this hypothesis would be through the analysis of a Native archaeological site that was continuously occupied from the Woodland period through the 17th century, but one has yet to be discovered.

Pre-contact marine resource management techniques were practiced by Rhode Island Natives during the colonial period, but to a lesser degree. Trade became a more important factor in tribal politics, and that provided strong incentive for an increased amount of resource extraction and an amplified use of European goods.²⁰⁶ After King Phillip's War, many Rhode Island Native American Tribes lost access to their lands, and by extension the use of traditional marine resources. The Narragansett in particular were moved to a 64 acre plot of land in Charlestown, Rhode Island, which only provided one access point to the ocean.²⁰⁷ By the end of the 18th century, Native Americans in Rhode Island were no longer in a position to manage marine resources.

As Europeans took over, marine resource health was compromised in favor of agriculture and livestock. Wild subsistence bases were no longer as important to human survival, and the reactions coastal species had to pollution and habitat loss were not closely observed. Colonists were unwilling to adapt to the resources, a mindset that was solidified later during the Industrial Revolution, when prioritizing the health of the economy overtook the health of the environment. Today, New England fisheries are getting better thanks to the resurgence of marine resource management, but society still has much it can learn.

²⁰⁶ Cronon, *Changes in the Land*, 107.

²⁰⁷ Judd, *Second Nature*, 65.

In Rhode Island, the 2014 Shellfish Management Plan recommended that, “[a]daptive shellfish management should be the norm for Rhode Island, evaluating management regimes every few years so that new research, new techniques and technologies, and new understanding of coastal ecosystems, particularly in light of changing climatic conditions, can be amended into management planning.”²⁰⁸ This plan reflects a recent push by scientists for ecosystem based management plans. Part of these plans usually include customary management areas, which are protected based on local practices and cultural knowledge passed through generations. However, indigenous voices tend to be left out because they were never allocated marine resources, meaning the generational knowledge used to influence management practices come from more modern fishing families, rather than from the people who inhabited the coastline for thousands of years. Unfortunately, the reallocation of marine resources restructured to include Native Americans, and other non-users, is a costly process, both monetarily and politically. Today’s fishermen would lose a lot of money if access to marine resources were restricted, making anyone implementing the reallocation very unpopular among coastal fishing communities. While scientists believe that ecosystem based management plans that include cultural knowledge are among the best options to protect marine resources, money and politics often get in the way.²⁰⁹ Society needs to acknowledge that there are a finite amount of resources available, and the only way to ensure sustainable subsistence is to observe and adapt behavior, and incorporate knowledge from other people.

²⁰⁸ McCann et al., *The Rhode Island Shellfish Management Plan Version II*, 61.

²⁰⁹ Sophal Chhun, Viktoria Kahui, Henrik Moller, and Paul Thorsnes, “Advancing Marine Policy Toward Ecosystem-Based Management by Eliciting Public Preferences” in *Marine Resource Economics* 30, no. 3 (Chicago, IL: University of Chicago Press, 2015) 263-265.

The study of Native American marine resource management is important because, “[r]ecognizing the ecological and cultural place of these systems is linked to larger issues of indigenous rights and title, governance, and food security, as well as the value of integrating millennia-old indigenous knowledge with modern resource management.”²¹⁰ The return to more environmentally friendly forms of marine resource use and extraction based on indigenous knowledge should lead to policies that make marine resources more available to Native populations, such as the Narragansett Indian Tribe. Indigenous people should have rights to the environment beyond their designated reservations as well as be included in decisions regarding the health of resources. Through the recognition of Native American’s right to access their traditional marine resources bases, ones used long before the arrival of Europeans, it is likely that marine resources would be better conserved based on previously discussed management techniques and reciprocity with nature.

Today, the environmental impact of humans staying home due the Covid-19 pandemic has revealed just how much scaling back can boost the health of the environment, as well as how much single use items can harm it. The drop in carbon emissions has resulted in a dramatic increase of air quality, especially in cities, and people are seeing wild life venture further into human territory. However, the amount of unrecyclable items, such as gloves and masks, has increased. The waste is already being found in the world’s oceans, and poses a risk to the health of marine species. Scaling back has shown improvements in the decrease in emissions, but unless

²¹⁰ Lepofsky and Caldwell, “Indigenous Marine Resource Management on the Northwest Coast of North America” 11.

humans further educate themselves on how to live more reciprocal lifestyles, the environment and its resources are still in danger.²¹¹

While the Narragansett are now a federally recognized tribe, and have 1,800 acres in Charlestown, Rhode Island, they still had to fight for it. Today, the Narragansett continue to celebrate their ancestors and their culture, as well as educate the public about their history.²¹² The Tribe continues to practice reciprocity with marine resources in areas their ancestors once inhabited, and at Black Point in Narragansett, “[e]verybody still heads out after a coastal storm to gather shellfish pushed to the shoreline by the tides.”²¹³

²¹¹ Robert Hamway, “Environmental Impacts of Coronavirus Crisis, Challenges Ahead” *United Nations Conference on Trade and Development* (Geneva, Switzerland: UNCTAD, 2020) 1.

²¹² “Perseverance,” Narragansettindiannation.org, Narragansett Indian Tribe. Accessed March 10, 2020. <http://narragansettindiannation.org/history/perseverance/>

²¹³ Sekatau and Brown, “Narragansett Indians and Narragansett Bay” 26.

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