From sweetwater to seawater: An environmental history of Narragansett Bay, 1636--1849

Christopher L. Pastore
University of New Hampshire, Durham

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Abstract
This dissertation examines environmental change on and around Narragansett Bay from first European settlement in 1636 to the dissolution of the Blackstone Canal Company in 1849. It uses one of the largest estuaries on the East Coast and one situated at the heart of early English settlement in New England as a means to write estuaries into Atlantic history. Examining the ecological and epistemological complexities that arose at the nexus of land and sea, where improvable space and the push of "progress" met an eternal or "profound" ocean, this study reframes estuaries as watery borderlands that people used but never fully subdued. In this sense, this work challenges an older historiographical tradition of "progress," while it advances environmental historiography by examining not terrestrial or oceanic environments but the soggy spaces in between.

A closer look at the boundary between land and sea, this study shows, provides new insights into the ways Early Modern people envisioned the boundary between humans and nature. By rewriting the history of an estuary from the ground up, so to speak, this work explores the ways people shaped a watery world and how it shaped them in return. It argues that at the confluence of sweetwater and seawater, in the mixing, muddy margins of an estuary, there developed a whole host of political, legal, and cultural ambiguities that shaped patterns of settlement, trade, resource use, and ultimately the Bay itself. But much more than the passive recipient of human action, the Bay became a cultural manifestation of the people who lived along its shores, and in consequence it was shaped and reshaped to meet the changing demands of human desire.

Keywords
History, United States, History of Science, Environmental Studies

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FROM SWEETWATER TO SEAWATER:
AN ENVIRONMENTAL HISTORY OF NARRAGANSETT BAY, 1636-1849

BY

CHRISTOPHER L. PASTORE

Bachelor of Arts, Bowdoin College, 1997
Master of Fine Arts, New School University, 2003
Master of Science, University of New Hampshire, 2011

DISSERTATION

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This dissertation has been examined and approved.

Dissertation Director, W. Jeffrey Bolster
Associate Professor of History

Eliga H. Gould, Associate Professor of History

Kirkpatrick Dorsey, Associate Professor of History

Cynthia Van Zandt, Associate Professor of History

Joyce E. Chaplin, James Duncan Phillips Professor of Early American History, Harvard University
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Christopher L. Pastore

University of New Hampshire, September 2011

This dissertation examines environmental change on and around Narragansett Bay from first European settlement in 1636 to the dissolution of the Blackstone Canal Company in 1849. It uses one of the largest estuaries on the East Coast and one situated at the heart of early English settlement in New England as a means to write estuaries into Atlantic history. Examining the ecological and epistemological complexities that arose at the nexus of land and sea, where improvable space and the push of “progress” met an eternal or “profound” ocean, this study reframes estuaries as watery borderlands that people used but never fully subdued. In this sense, this work challenges an older historiographical tradition of “progress,” while it advances environmental historiography by examining not terrestrial or oceanic environments but the soggy spaces in between.

A closer look at the boundary between land and sea, this study shows, provides new insights into the ways Early Modern people envisioned the boundary between humans and nature. By rewriting the history of an estuary from the ground up, so to speak, this work explores the ways people shaped a watery world and how it shaped them in return. It argues that at the confluence of sweetwater and seawater, in the mixing, muddy margins of an estuary, there developed a whole host of political, legal, and
cultural ambiguities that shaped patterns of settlement, trade, resource use, and ultimately the Bay itself. But much more than the passive recipient of human action, the Bay became a cultural manifestation of the people who lived along its shores, and in consequence it was shaped and reshaped to meet the changing demands of human desire.
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INTRODUCTION

“But for their later Descent, and whence they came ...,” wrote Roger Williams of the Narragansett Indians in 1643, “it seemes as hard to finde, as ... the Well-head of some fresh Strame, which running many miles out of the Countrey to the salt Ocean, hath met with many mixing Streams by the way.” That Williams, new to the shores of Narragansett Bay, likened the history of his Indian neighbors to the myriad inlets and outlets of an estuary was no coincidence. The Bay and its upland sources, its tidal ebb and flood, and even its seasonal winds largely defined the rhythms of Native American and settler life there. And like the greater estuary’s indeterminate geography, the indigenous people who inhabited the western shore and islands of Narragansett Bay, at least to Williams’ English sensibilities, lacked identifiable beginnings. “They say themselves,” he wrote, “that they have Sprung and growne up in that very place, like the very trees of the Wildernesse.”

Although the history of the Narragansett people has been subsequently well documented, Williams’ observation suggests the littoral environment in which they lived


was something unknowable, a myth historians have unwittingly perpetuated, not least because the field of environmental history has largely focused on terrestrial issues. Only recently have environmental historians begun to consider the ocean. In 2005 Lance Van


Sittert concluded a short essay encouraging inquiry into an environmental history of the sea in which he said, “If Donald Worster called sixteen years ago for environmental historians to get mud on their shoes, now is the time for them to get their feet wet.” But even as environmental historians responded to Van Sittert’s invitation, perhaps they charged too hastily into the surf before they took a good look at the shore. In consequence, initial examinations of the ocean highlighted its uniqueness. Scholars emphasized the physical and conceptual boundaries between land and sea and freshwater and saltwater. And by doing so, they overlooked the estuaries in between.

This study widens the scope of scholarly vision by historicizing the nexus of land and sea. Heeding both Worster’s and Van Sittert’s calls, it gets both muddy and wet by plunging into the confluence of fresh and saltwater systems and combing through the conceptual wrack that collects at the farthest reaches of the tide. Poking through piles of flotsam, jetsam, and the dross of the sea reveals the complex ways in which humans and the coastal environment are intricately intertwined. Frayed bits of fishing net, rusty nails, and barnacle-encrusted timbers show specific ways in which humans affected the coastal environment.


5 Lance Van Sittert, “The Other Seven Tenths,” *Environmental History* 10, no 1 (January 2005) 106-109
Van Sittert was referencing Donald Worster, “Appendix Doing Environmental History,” in *The Ends of the Earth Perspectives on Modern Environmental History*, eds Donald Worster and Alfred W Crosby (Cambridge Cambridge University Press, 1988), 289

ocean but also hint of the ways the sea shaped coastal culture in return. By examining the English settlement of an estuary and writing its story from the ground up, this work explores the entangled processes of environmental and cultural change in the coastal zone.

Specifically, this dissertation wades into Narragansett Bay, one of the largest estuaries on the East Coast and one situated at the heart of early English settlement in New England. Although historians have considered Rhode Island’s early history in political and religious terms, few works have examined its environmental history and even fewer in an Atlantic World context. This dissertation, conversely, re-imagines the

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Bay and others like it in light of their complex ecologies, reconstructing their settlement not as the opposition of English culture to pristine nature, but as spaces—neither “natural” nor “civilized”—in which people used nature and were shaped by it in return.9

In *Islands of the Mind*, John Gillis argued the littoral “came to constitute a distinctive world, with its own dynamics.”10 Michael N. Pearson has even suggested that littoral cultures exhibited similarities regardless of their location.11 In its focus on one watery corner of an expanding Atlantic world, this work shows that littorals were political, legal,

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and social zones shaped in part by their environment. But as the people who lived in them erected jurisdiction, as they tamed the chaos and confusion typical of coastal borderlands, they altered the physical environment as well.

A deeper understanding of these littoral dynamics reveals the ways European coastal cultures were often torn between two dominant epistemologies concerning the natural world. The first considered the ocean (and to some extent water in general) unchanging, eternal, and somehow exempt from human influence. The second believed that terrestrial land could be—and often must be—"improved." It was the push and pull of these two conceptions of nature that shaped littoral space. Coastal fringes were cultural margins that, as Greg Dening has argued, were “... beginnings and endings,” places where humans, “divide[d] the world between here and there, us and them, good and bad, familiar and strange.”  

12 At one end of the estuary lay dry land easily measured by the surveyor’s rod, and at the other, a trackless, eternal ocean that defied European understandings of ownership, jurisdiction, and even the passage of time. As a result, the oceans and their estuarine arms were and, until recently, have continued to be presented without attention to historical change. This new look at the Atlantic world’s brackish borders recovers an important piece of the living sea’s history.

For others, the shore was less a boundary, as Dening suggested, and more a zone of exchange. J.C. Heesterman argued “the littoral forms a frontier zone that is not there to separate or enclose, but which rather finds its meaning in its permeability.”  

13 On Narragansett Bay, the estuary-as-borderland was both. At times, the Bay marked lines of

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social and political division. But it was also an avenue of transportation and trade, a conduit for economic and cultural exchange. At once a barrier and bridge, the Bay was a product of both physical geography and cultural expression. For the diverse littoral peoples who lived on its shores, Narragansett Bay was a conceptual space shaped by religious beliefs, political allegiance, and economic aspirations, a margin characterized by cooperation at times and outright conflict at others. But it was also a physical place that humans, acting on those beliefs and struggling to fulfill those desires, changed in dramatic ways.

Fundamentally, therefore, this is a study of boundaries and borderlands. As Dening suggested, the shore is much more than the union of “wet” and “dry.” The edge of the sea marks the border between two conceptions of nature, and, as such, illuminates the perceived boundaries between people and the non-human natural world. In this sense, the study of coastal borderlands advances our understanding of how the Early Modern English understood nature in the broadest terms. A focus on littoral boundaries also opens new avenues of inquiry in Atlantic history. Littorals, after all, set the stage for colonial expansion. Smith, Cartier, Verrazano, and countless others spent considerable time reconnoitering Atlantic world estuaries. Trade was channeled through littoral spaces, which became important points of interconnection where societies became firmly “entangled.” If Atlantic history has profited from the study of “middle grounds,” it will surely benefit from a closer look at “muddy grounds,” where interactions between Europeans and Native Americans were often vexed by the complexities of coastal

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space.\textsuperscript{15}

To systematically explore those complexities, I have organized this dissertation around the concepts of “progress” and the “profound.” I have chosen the term “progress” to describe the impulse toward the “improvement” of dry land, the desire of Europeans to “subdue” coastal forests and “tame” the wilderness. I have chosen the term “profound,” because of its medieval etymological root in the unknown depths of the ocean. That the word subsequently came to reflect great intellectual depth is all the more fitting, for it suggests that although the epistemological trenches of the sea are deep and perhaps even mysterious, they can be revealed. In other words, the ocean is not an abyss. It has a history. And through systematic study of the shore, that history can be buoyed to the surface.

The relentless motion of the ocean, however, makes littoral history a moving target. As any sailor knows, the sea holds the ability to distort time and space, the principal currency of the historian’s trade. Something so fundamental as “distance,” a function of speed, which is subject to so many outside variables on the surface of the sea, can only be measured with imprecision. Among the swirling currents and fluky winds so typical of coasts, time and space expand and contract, making littorals just as difficult to navigate for observers of the past as contemporary captains. “The sea’s vastness, opacity, and hostility to human life,” explained Helen Rozwadowski, “present challenges to prospective historians.” But she proposed they focus their efforts on specific “zones, categories of places, or types of environments ....”\textsuperscript{16}

\textsuperscript{16} Helen M. Rozwadowski, “Forum: Ocean’s Depths,” \textit{Environmental History} 15, no. 3 (July 2010): 524.
The study of an estuary does just that. Bounded by their headlands and rivers, estuaries provide geographically limited spaces in which to observe change over time. Among iconic estuaries, such as Chesapeake Bay, Long Island Sound, Narragansett Bay, and the Charles and Thames Rivers, for example, documentary evidence is rich, allowing the historian to read the cultural history in tension with the environmental history. Finally, the study of estuaries channels the intellectual currents that shaped Early Modern conceptions of the natural world. With one foot buried in dry sand and the other awash in the waves, the littoral historian straddles two very different ways of understanding nature. Over one shoulder is an untamable sea, and over the other, a perfectible shore. Like an endless reflection caught between two facing mirrors, the juxtaposition of land and sea provides the historian examining past conceptions of nature with new angles and insights.

This dissertation argues that at the confluence of sweetwater and seawater there existed a whole host of political, cultural, legal, and ecological ambiguities shaped by the tensions between progress and the profound, that is, between the culture of improvement and the belief that the sea was unchanging. At times, the shore was subdued. People living in the littoral caught fish, dug clams, and sent their animals out to graze its grassy fringes. And their work changed the place. But at other times, the sea prevailed. Its ability to blur lines of ownership and identity often thwarted the impulse toward improvement. Recognizing that environmental change in the littoral was anything but linear, this dissertation challenges an older historiographical tradition of “progress.” It also challenges the assumption that humans were somehow separate from nature alongside the more modern contention that they threatened it. People lived and worked along the boundary between land and sea. In time, they modified. But in grappling with the
ecological and epistemological complexities of the estuary, they shaped it culturally as well. Narragansett Bay was much more than geologic formation or the passive recipient of human action. It was also a cultural construct, created and re-created by the people who lived near and worked on its waters. If the people of the Bay believed there was a boundary between them and nature, it was as porous as the sands along their shores.

**Organization**

This study is organized around five chapters that follow a loose chronology, beginning in 1636 with the first European settlement of Narragansett Bay and ending in 1849, with the final dissolution of the Blackstone Canal Company. It considers Narragansett Bay in terms of its greater watershed, from the headwaters of the rivers flowing into it (the largest being the Blackstone, Taunton, and Pawtuxet) to Rhode Island Sound, where the Bay meets the ocean, and south toward Block Island and the continental shelf. Among contemporaries, however, the boundaries of the Bay were never so fixed, so I have endeavored to describe them according to the assumptions of the time. Although a synoptic analysis of every portion of the Bay would be impossible, I have consciously attempted to address most of the Bay’s regions.

This study examines the dialectical relationship between belief systems concerning nature and ecological change. But ecological transformations are only infrequently reflected in the historical record. In those rare cases in which they are—logging or fishing records, for instance—corresponding materials that explain how individuals or communities thought about those changes rarely exist. In his 2010 review of the field, Peter Mancall acknowledged this directly. “We still do not understand
environmental change on the local level in many places,” he wrote, “the myriad connections between economic ambitions and environmental realities or the tripartite relationship among environmental conditions, European understandings of nature, and indigenous knowledge.” And this is particularly true, he noted, for pre-1800 America. One of the reasons for this continued omission is that scholars have emphasized the cultural history of nature while, Mancall contends, “few early Americanists have embraced the methods of environmental historians, namely drawing on works from other disciplines (such as ethnobiology or the natural sciences) ....”17 A local-level, interdisciplinary examination of how people and their ideas affected and were affected by ecology is still needed.

In its focus on Narragansett Bay, this dissertation answers Mancall’s request for a local study (albeit one that makes explicit Atlantic world connections). Recognizing that ideas are important but that clear-cut forests, polluted rivers, and clogged harbors are too, this study draws heavily from historical geography, historical ecology, and hydrology.18 Like the estuary itself, the historical record, particularly that of the seventeenth century, reflects only a murky image of ecological change. But drawing on scientific literature often sharpens its focus. Some chapters emphasize scientific explanations, while others draw more heavily on documentary evidence. My hope is that this work highlights the importance of interdisciplinary study by employing quantitative methods to a work of history while challenging scientists to consider the complexities of human culture and the value of narrative in explaining environmental change.


18 For a detailed examination of how historical geography and historical ecology are different from but have greatly influenced environmental history, see E.W.B. Russell, People and the Land Through Time: Linking Ecology and History (New Haven, Conn.: Yale University Press, 1998), 14.
Chapters

After describing early Narragansett Bay as seen through the eyes of European travelers and providing a geological history of the region, chapter one examines the ecological effects of the wampum trade during the seventeenth century. Home to some of the richest clam beds in southern New England, Narragansett Bay was an important source of wampum, produced largely from several kinds of whelks and the hard-shell clam, or quahog, *Mercenaria mercenaria*. Cut, polished, and drilled into beads, these shells were assembled by the thousands into intricate belts and traded amongst Indians and Europeans often across long distances into the continental interior. By framing an examination of wampum in an ecological context, this chapter contends that the value placed on wampum—a marine animal mined from the sea—illuminates the ways in which Native American and European cultures placed value on nature. Closely tied to its ecological origins at the intersection of improvable land and a profound sea, wampum’s value rested on its ability to forge physical, conceptual, and economic continuities between the ocean and inland environments. As a result, it fueled the extirpation of beaver. As more beaver were pulled out of the environment, their dams were destroyed, and water that had once been impounded on the landscape rushed into the estuaries. In short, wampum, much of which was produced on the shores of Narragansett Bay, fueled a trade that made the Northeast a drier place and, at least in small ways, affected the estuary in return.

Chapter two examines Narragansett Bay’s grassy coastal fringe. Although much has been written about Rhode Island’s ties to seafaring, comparatively little has been written about its plantations. Carl Bridenbaugh examined Rhode Island agriculture and
livestock farming in *Fat Mutton and Liberty of Conscience* (1974), arguing that Rhode Islanders took to the sea not because the land was too poor to farm but because the fruits of the shore sent them in search of markets.\(^\text{19}\) Although richly researched, Bridenbaugh’s work, observed Gary Nash, tended to be more descriptive than analytic. This chapter, conversely, examines the extent to which pastoral development led to Bay pollution. It argues that by the end of the seventeenth and beginning of the eighteenth centuries, Rhode Island and its animals had begun impacting Narragansett Bay in important ways. In response to environmental issues, the colony, which had once been only a loose association of towns, began to pool resources toward large public works projects, many of which affected the Bay and its harbors either directly or indirectly. In some cases, livestock runoff chemically “improved” tidal ponds, while in others, the power of the profound thwarted human control altogether.

Chapter three examines the Narragansett Bay borderland. It examines the ways its watery nature blurred boundaries, which forced Rhode Island and its inhabitants to continually fend off the territorial advances of outsiders. Specifically, it examines the 1741 dispute over Rhode Island’s eastern boundary with Massachusetts. Rhode Island’s borders were largely defined in terms of Narragansett Bay, so the ability to “place” the Bay was of utmost importance. But bounding littoral space proved difficult. The court commissioners called scores of deponents to explain how they understood Narragansett Bay and its surrounding lands. Their testimonies reveal the extent to which littoral space was shaped, not geologically, but through expressions of political allegiance, the desire for economic opportunity, and interactions between the metropole and colonial periphery.

Narragansett Bay, this chapter argues, was a deeply human construct. And its borders were established by way of testimony showing that the Bay was improvable space. Chapter four examines the dramatic changes to Narragansett Bay during the eighteenth century. The construction of coastal beacons and their abilities to project light over long distances extended control over littoral space. The desire for natural knowledge about Narragansett Bay’s biology led the Rhode Island General Assembly to enter protracted debate over the “nature” of Bay oysters. This attempt to classify the Bay’s biology mirrored the broader culture of improvement embraced by Enlightenment philosophers. But the most powerful force of progress on Narragansett Bay during the eighteenth century was war. Stone forts equipped with long-range cannons sprouted along Bay shores. These asserted control over the estuary and its most important harbors. The incredibly detailed maps of Narragansett Bay published by the English and reproduced by the French during the American War for Independence similarly served to organize littoral space. This chapter argues that commercial expansion and war made the littoral more susceptible to the push of progress. By the end of the eighteenth century order had been imposed on coastal space like never before. Lights, cannon shot, and graphic representations subsumed the profound nature of the Bay.

The fifth and final chapter examines the transformation of the greater Narragansett Bay watershed during the first half of the nineteenth century. The birthplace of the American Industrial Revolution, the Blackstone River played host to a series of pitched legal battles that, in the name of progress, saw the erosion of traditional ideas about access to natural resources—in most cases, river fish. The creation of the Blackstone Canal Company affirmed this trend toward the privatization of water. Upon
opening in 1828, the 45-mile canal connecting Providence and Worcester extended littoral space deep into the New England interior. Such an ambitious undertaking required a highly complex and incredibly expensive network of holding ponds and dams for managing the flow of water into the canal and over mill waterwheels. The Canal Company turned the Blackstone River watershed into an engineered system. But when the Canal Company failed so too did its carefully managed network of ponds, dams, and diversions. So important had the corporation become to the movement of water that the Rhode Island state legislature stalled its dissolution for years. Ultimately, the canal became a sewer that flowed downhill. If Narragansett Bay had been shaped by the push of progress and the pull of the profound in earlier years, industrialization gave progress the upper hand. As this chapter argues, when the improvement of a watershed is privatized, its failure can have dire consequences.

Covering more than two hundred years, this work presents a series of historical snapshots that show how people shaped and were shaped by an estuary. It highlights both conceptual changes in people’s relationship to nature and actual change on the ground and in the water. Throughout this study I have kept one eye trained on Narragansett Bay, home to one of the largest urban centers in American during the colonial period and birthplace to the American Industrial Revolution during the Early National period, while keeping the other focused on more distant shores across the Atlantic world. This bifurcated view exposes the movement of people and their ideas. It reveals patterns of resource use and the changing relationships between centers and peripheries. And it highlights the many shades of littoral legality. Ultimately, an approach that emphasizes

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Christopher L. Tomlin and Bruce H. Mann, eds., The Many Legalities of Early America (Chapel Hill: University of North Carolina Press, 2001), 2-3. Tomlin explained in his introduction that “legalities” are
connectivity and exchange distills broader patterns of interaction between people and the natural world. By taking a closer look at the nexus of land and sea both up close and from afar and by examining the ways humans have conceptualized water over time, this work advances the scholarly discourse in and public understanding of America’s early environmental history. As much of the world faces water shortages because of political strife and climate change, among other factors, perhaps examining past relationships between fresh and salt water systems, between land and sea, and between progress and the profound will provide new insights to the ways people affect the availability and quality of water in their environments today and in the future.

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the social and cultural products of law that are “generated in the course of virtually any repetitive practice of wide acceptance within a specific locale ....”
CHAPTER 1

THE ECOLOGY OF WAMPUM:
SEASHELLS, BEAVERS, AND THE DESICCATION OF THE NORTHEAST

In July 1636 the coastal trader John Gallop weighed anchor from a harbor in eastern Connecticut and steered his bark of twenty tons southwest toward Long Island. Sailing before what was likely a fickle northerly wind across the placid waters of the Sound, Gallop, traveling with a man and two boys, was forced to abandon his intended destination when the wind shifted. Changing course, he sailed east into the open ocean toward Manisses or Block Island, a pear-shaped splotch of land fourteen miles east of Montauk and thirteen miles south of the Narragansett Country. About two miles north of the island they came upon a small pinnace, which Gallop recognized to be that of fellow coaster, John Oldham. To his count, fourteen Indians were on deck, and several others paddled a nearby canoe toward shore. Upon hailing Oldham, Gallop and his crew received no reply.¹ A simple day trip to Long Island, Gallop soon discovered, would grow quite complicated in the coastal waters south of Narragansett Bay.

That such a bizarre scene was unfolding on a vessel owned by Oldham, whose lack of scruples had earned him wide notoriety, seemed not altogether impossible. A troublemaker through and through, Oldham had flirted with impropriety since the day he landed on American soil. Not long after arriving in Plymouth in 1623, Oldham, according

to Plymouth Colony Governor, William Bradford, “grew very perverse and showed a
spirit of great malignancy.” Later accused of religious subversion, Oldham responded
with impertinence, hurling invective at his accusers and even drawing a knife on Captain
Myles Standish.\(^2\) Banished from Plymouth, Oldham fled to Massachusetts Bay, settling
first in Nantasket, then Cape Ann, and finally Watertown, where he continued to indulge
his penchant for mayhem. In July 1632, noted Massachusetts Bay Governor, John
Winthrop, he fired his musket loaded with pistol bullets and shot “three men, two into
their bodies, and one into his hands.”\(^3\) Fortunately, he had been at such a distance that he
inflicted only superficial wounds. A month later, however, Oldham burned down his own
house at Watertown “by making a fire in it when it had no chimney.”\(^4\) So quick-tempered
was Oldham that his contemporary Thomas Morton called him “a mad Jack in his
mood.”\(^5\) Unflinching in the face of risk or confrontation and increasingly unwelcome
ashore, Mad Jack soon became the most experienced and savvy coaster in New England.

Despite his unsavory reputation—or perhaps because of it—Massachusetts Bay
sought Oldham’s extensive knowledge of the New England coast when they asked him to
retrieve a hefty ransom on the colony’s behalf. Four years earlier in 1632 Indians (likely
Western Niantic) killed the English traders John Stone and Walter Norton, and the
Pequots of eastern Connecticut were blamed. A Pequot delegation presented magistrates
in Boston two bushels of wampum and a bundle of sticks representing the number of

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\(^3\) Winthrop, *Winthrop's Journal*, 1 83 n 1, 83

\(^4\) ibid, 90

beaver and otter with which they would compensate the English for the deaths. They sought peace with the English and also requested help establishing concord with the Narragansett, who bordered them to the east. The English, in turn, demanded the Indians responsible for killing Stone and Norton, a promise not to interfere with English settlement in Connecticut, and 400 fathoms of wampum and the pelts of 40 beaver and 30 otter. The final mandate was oppressive. The pelts could be readily acquired, but 400 fathoms of wampum—2,400 feet, or nearly a half-mile comprising roughly 120,000 hand-carved shell beads, which promised to take ten skilled artisans almost a year to produce—was truly onerous, or even infuriating. And it was the irascible Oldham’s job to collect it.

That Oldham remained silent while a band of Indians, “armed with guns, pikes, and swords,” unfurled his vessel’s canvases signaled to Gallop that something was dreadfully wrong. By John Winthrop’s account, Gallop responded swiftly by showering the Indians with “duck shot.” He then drove the stem of his bark into the aft quarter of Oldham’s pinnace, nearly capsizing it. So frightened were the Indians that “six of them leaped overboard and were drown.” Gallop then pulled away and his crew positioned their anchor so that when they rammed the pinnace a second time, the anchor pierced its bow, the two vessels thereby “sticking fast.” At close range Gallop’s crew blasted the

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8 A fathom is six feet. So 400 fathoms equals 2,400 feet. There were roughly 300 wampum beads per fathom, which amounted to a total of 144,000 individual beads. A single person could produce between 36 and 48 white wampum per day. Purple wampum took twice as long. See Paul A. Robinson, “The Wampum Trade in 17th-Century Narragansett Country,” in *What a Difference a Bay Makes* (Providence, R.I.: Rhode Island Historical Society, 1993), 27.

vessel with shot and then “raked her fore and aft,” whereupon four or five more Indians leapt into the sea and drowned. Finally, Gallop stood off a third time, then sailed alongside and boarded. They bound one Indian and threw him in the bark’s hold. They bound another and threw him into the ocean. They deigned to apprehend two Indians who had locked themselves with their swords in a small room belowdecks. While removing the sails and various provisions from the vessel, Gallop and his crew found, under a seine net, John Oldham’s naked body, “his head cleft to the brains, and his hand and legs cut as if they had been cutting them off, and yet warm.” They attempted to tow the battered pinnace toward the mainland (with the Indians still hiding inside), but facing nightfall and building winds, they set it adrift. Before casting off the line, they dragged Mad Jack’s mangled corpse to the gunwales and “put him into the sea.”

Figure 1: A map of the most inhabited part of New England … (London: Thomas Jefferys [sic], 1771). Library of Congress.

10 Ibid.
The assassination of the tribute collector led to calamity. First the English attacked Pequots on Block Island and then Saybrook. The Pequots responded by attacking English towns in Connecticut. This chain of reprisals culminated in May 1637 when the English, with Narragansetts, Mohegans, and Niantics surrounded and massacred the Pequots at Mystic, almost annihilating the tribe in the process. The bloody abandon with which the English slaughtered the Pequots left even their Indian allies appalled.\(^1\) The ferocious manner in which they engaged their foes did much to establish English dominance across southern New England during the seventeenth century. But Oldham’s murder and the chaos that followed also underscored the ways the English, and Massachusetts Bay in particular, had leveraged Indian money to similar ends. English settlers had begun to exact tribute, often at usurious levels, which, as Oldham’s gruesome demise revealed, fomented rancor among indebted tribes and their allies.

But the English adoption of wampum as currency asserted European authority over the region in other ways as well. For Native Americans, wampum, before Europeans adopted its use, was, according to seventeenth-century observer Daniel Gookin, used to “pay tribute, redeeme captives, satisfy for murders and other Wrongs, [and] purchase peace with their potent neighbors, as occasion requires.”\(^2\) It was also used to confer high


\(^2\) Daniel Gookin, *Historical collections of the Indians in New England Of their several nations, numbers, customs, manners, religion and government, before the English planted there Also a true and faithful account of the present state and condition of the praying Indians Together with a brief mention of the instruments and means, that God hath been pleased to use for their civilizing and conversion Also suggesting some expedients for their further civilizing and propagating the Christian faith among them* (1674, Boston Apollo Press by Belknap & Hall, 1792). Also see Frank Speck, “The Functions of Wampum Among the Eastern Algonkian,” in *Memoirs of the American Anthropological Association*, vol 6 (Lancaster, PA The American Anthropological Association, 1919), 56. Speck identified that Native Americans also used wampum to propose marriage.
social status. William Bradford noted that only "sachems and special persons ... wore a little of it for ornament." In other words, wampum was valued for its ability to generate social order. But as Europeans vied to become the arbiters of that social order, they imbued these shell beads with their own value systems. Reflecting New England's growing radiance in the economic firmament of an expanding Atlantic world, William Wood observed of the Narragansetts, "The northern, eastern, and western Indians fetch all their coin from these southern mintmasters." Wampum had become money, and this developing market mentalité had far-reaching social, and as this chapter will reveal, ecological repercussions.

This familiar story of clashing cultures, economic transformations, and wampum's impact on the fur trade has been well documented by historians. As early as 1884, historian William B. Weeden observed, "Wampum was the magnet which drew the beaver out of the interior forests." In Manitou and Providence Neal Salisbury characterized the dramatic impact of the introduction of wampum to the seventeenth-century fur trade as a "wampum revolution." By the end of the 1620s, he showed, the introduction of wampum had invigorated the Dutch West India company fur trade along the Hudson River. Mounting demand for wampum, in turn, changed Native American

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13 Bradford, Of Plymouth Plantation, 203

14 William Wood, New England's Prospect A True, Lively, and Experimentall description of that part of America, commonly called New England discovering the state of that Countrie, both as it stands to our new-come English Planters, and to the old Native Inhabitants, ed Alden T Vaughan (London, 1634, reprint, Amherst University of Massachusetts Press, 1977), 81


patterns of subsistence, as more of them shifted their efforts toward wampum production. Likewise, archeologist Lynn Ceci argued that wampum facilitated economic exchange not only within North America but also between the North American "periphery" and European "core," as furs and other commodities purchased with wampum were exchanged for European supplies and metropolitan credit.

Environmental historian William Cronon, in a similar vein, asserted, "[W]ampum was ideally suited to become the medium for a wider, more commercial exchange." But this continued emphasis on wampum's economic role has reinforced a narrative that has sown shell beads as the seeds of cultural disunity. According to this story, Europeans sullied wampum by supplanting spiritual traditions with capitalism. The well-worn ruts in this narrative road all lead, generally, to the same destination: anomic. And as a result, most historical treatments of wampum comprise no more than five or six pages in monographs examining other aspects of seventeenth-century Indian-European relations. These typically tell a familiar story of the rise and fall of the wampum trade and then move on to more pressing issues. Because many early wampum studies simply catalogued its existence as facets of Native American material culture, and many

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subsequent studies were limited in length and interpretive scope, work on the cultural significance of wampum from within the field of history has all but stalled.  

But an analysis that examines the ways Europeans and Native Americans spun webs of meaning around wampum offers new insights, for underlying wampum’s widespread use during the seventeenth century was a mutual faith in its value. The transformation of wampum into currency certainly led to bouts of discord and even outright violence, but its ability to circulate unimpeded across cultures also reveals a meeting of minds: mounting contention over money presumes that both sides treasured it. In wampum, Europeans and Indians socially constructed a medium of exchange predicated on the idea that shells mined from estuarine mud were important. In its derivation, form, and function, wampum held for both groups considerable significance.

Although Native Americans and Europeans held very different understandings about the purposes of payment—the former believing it was the beginning of a relationship and the later believing it was the end—their shared conviction that wampum was worth something was rooted in the convergence of their belief systems. In 1934 the historian François Simiand argued that money develops not out of economic necessity but

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20 Lynn Ceci, “The Anthropology of Shell Beads Subsistence, Systems, and Symbols,” in Proceedings of the 1986 Shell Bead Conference Selected Papers, eds Charles F Hayes III and Lynn Ceci (Rochester, N Y Rochester Museum and Science Center, 1986), 1-2 The interpretive examination of shell beads from within the field of history is well behind that of anthropology and archeology Although the study of wampum by archeologists, anthropologists, ethnologists, and historians dates to the nineteenth century, the first archeological studies that began to examine these exchange systems began in the 1920s During this time archeologists began excavating shells from Indian sites more carefully and employing malacologists to identify their findings As a result, they began to map the movement of mollusk species, revealing broader economic patterns, and in some cases, specific routes of trade By about 1960, with the invention of Carbon-14 dating, and as Lynn Ceci has characterized it, a “more holistic anthropological approach to shell beads,” archeologists and anthropologists began to place their findings into more concrete chronologies and interpret them in terms of value systems and cultural symbols In subsequent decades archeologists and anthropologists elaborated on this approach As a result, Ceci concluded in the forward to the above volume, “Advances in theory, data-collection, and analysis have transformed the scholarly perception of shell beads and made the anthropology of shell beads a valid and exciting new field of research ”
as a product of social phenomena. Money, he contended, reflected shared systems of belief, including mythic traditions, of the people among whom it circulates. "Money is what it is . . .," he wrote, "because it is a social reality."\(^{21}\) The anthropologist Bronislaw Malinowski argued that "economic conceptions of value, ownership, equivalence, commercial honour and morals" provide particularly powerful insights into a culture. Economics, he explained, were inextricably tied to "social, customary, legal and magico-religious" traditions.\(^{22}\) In other words, the way a society places value on objects of exchange speaks to the community's understanding of that object and the broader world around them. For Native Americans, their understanding of wampum underwent a dramatic transformation during the first half of the seventeenth century when they were confronted with the very different traditions of exchange held by Europeans. As the historian Pierre Vilar has shown, when two societies of different levels of development interact, they often hold quite different conceptions of value. He used the example of Spanish explorers expressing surprise when American Indians willingly accepted trinkets for gold. But eventually, he explained, those seemingly distant conceptions of value converge. "[W]hen there is continuous exchange," wrote Vilar, "money in the end comes to reflect value relationships."\(^{23}\) The establishment of a "relationship" suggests at some level there develops a mutual understanding of value. In the case of wampum, that entente was rooted in the watery origins of the shells from which it was made.

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The value relationship that developed in connection to wampum illuminates similarities, rather than the differences, between the ways Europeans and Native Americans understood land, sea, and nature in general. For both groups, wampum held value, this chapter will show, in part because it was mined from the edges of a “profound” or “unknowable” sea, a watery space that embraced the divine. But wampum also nourished the European desire to subjugate the land. Fueling the beaver trade, wampum drained swamps and ponds and altered forest composition. Like axes, scythes, and ox-driven plows, wampum’s value, in this sense, lay in its ability to alter landscapes. For Iroquois and Algonquin tribes, mythic stories concerning wampum often celebrated its ability to effect terrestrial transformations. The value of wampum, therefore, lay partially in its watery origins and partially in its fantastic powers of “improvement.” And at some level, as this chapter will show, Native Americans acknowledged this. Ultimately, the value relationship that developed over wampum embraced mutually held beliefs about water while assimilating, however reluctantly, European ideas of improvement. As this chapter will argue, the push and pull of these two dominant epistemologies had far-reaching environmental repercussions.

By fueling a fur trade that systematically extirpated beaver, wampum mined from Narragansett Bay and its neighboring coasts, fundamentally reconfigured the broader ecology of the region. Born of the estuarine exchange between freshwater and saltwater, these whelks and quahogs in their cut and polished forms became cultural manifestations of their ecological origins. As a result, wampum embodied the convergence of eternity and temporality, of permanence and improvability, and of heaven and earth. Wampum’s ecological origins affected its intellectual construction, which affected the environment in
return. Imbued with human conceptions of nature and reflecting the ecology of the spaces in which those conceptions were formed, wampum forged physical, conceptual, and economic continuities between the ocean and the continental interior. And this changed the way water rolled downhill. As the wampum trade dismantled the Northeast’s vast network of beaver dams, the residence time of water, or the amount of time a single water molecule remained in the system, dropped significantly. During storms, rivers ran faster, and during droughts the earth grew dryer. This altered, among other factors, the distribution of plants, the biogeochemistry of rivers, and the rate of sedimentation, which in turn affected river fauna, including fish and fowl. In short, wampum, an epistemological vector for ecological change, reconfigured the northeastern landscape. And these dramatic changes began and then radiated upstream from the place where wampum was made. During the first half of the seventeenth century small ripples of environmental change blew across Narragansett Bay and soon developed into waves. For Mad Jack Oldham, the tribute collector bludgeoned to death with a hatchet to the head just a few miles south of the Bay’s mouth, wampum evinced these connections between epistemology, ecology, and culture in ways that were all too real.

**Narragansett Bay: An Early View**

Just over a century before, during the spring of 1524, the Italian explorer Giovanni da Verrazano sailed cautiously toward a hitherto uncharted harbor, its mouth marked by a narrow strip of an island to the north and a low-lying bluff dominated by what he described as a “rock of freestone, formed by nature” to the south. Hired by the French Crown, Verrazano had been at sea for nearly three months, having left the island
of Madeira in January and making landfall in “a new country, which had never before
been seen by any one,” near Cape Fear, North Carolina, in March.24 Unable to find a
suitable harbor to the south, Verrazano and his crew of fifty men, turned north and
continued along the coast, making several stops, until just east of Long Island Sound they
reached a “very excellent harbor” in early May. Before entering the harbor’s mouth,
Verrazano was approached by about twenty small boats “full of people … uttering many
cries of astonishment.” Despite some hesitation, they eventually approached his vessel
and several boarded, including “two kings more beautiful in form and stature than can
possibly be described.”25

Verrazano marveled at their appearance. He described their jewelry as like that of
Egypt and Syria. He praised their ornamented deerskins and the “rich lynx skins upon
their arms.” Many wore their black hair, he observed, in braids and other intricate knots.
They were, he avowed, “the finest looking tribe, and the handsomest in their costumes,
that we have found in our voyage.”26 After anchoring roughly a league from the harbor
for some time, the warm welcome Verrazano had received from the local people
combined with deteriorating weather encouraged him to enter the port at the mouth of
Narragansett Bay that he called “Refugio” and the English later named Newport.

The master was impressed by his surroundings. Rich mudflats and lush marsh
grass covered the harbor’s south side. Sounding north, he and his men found deep water
and a muddy bottom capable of holding an anchor fast in a gale. This refuge and its

24 Giovanni Da Verrazano [to King François I, 8 July 1524], Sailors Narratives of Voyages Along the New

25 Ibid., 14.

26 Ibid., 14-15.
surroundings were so inviting that Verrazano and his men spent fifteen days exploring the area. Stretching twelve miles north from the coast, Narragansett Bay, he estimated was “twenty leagues in circumference.” Near the bay’s southern end Verrazano observed “very pleasant hills” from which flowed “many streams of clear water … to the sea.” Farther north, he described five small islands “of great fertility and beauty, covered with large and lofty trees.” So protected was this bay that, “Among these islands,” he wrote, “any fleet, however large, might ride safely, without fear of tempests or other dangers.”

The country surrounding Narragansett Bay was similarly striking. Traveling into the interior upwards of eighteen miles, Verrazano “found the country as pleasant as is possible to conceive, adapted to cultivation of every kind, whether of corn, wine or oil.” He and his men saw vast plains “entirely free from trees or other hindrances” for “twenty five or thirty leagues in extent,” suggesting the region had been heavily managed by its native inhabitants. The forests, he observed, were filled with oaks and cypresses (among others he did not recognize) and “might all be traversed by an army ever so numerous.” That a large army could pass through this type of wild wood further suggests that Native Americans had cleared the undergrowth, likely by burning, and that the trees were enormous, creating a dense canopy whose shade prevented new growth from clogging the forest floor. Thomas Morton, a seventeenth-century observer of southern New England, explained that the Indian custom of “firing” the land, had made it park-like and “very beautifull and commodious.”

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27 Ibid., 20.

man may well ride a horse amongst them.”29 In the gaps between these impressive stands, Verrazano saw numerous plum, apple, and filbert trees and animals, including, among others, stags, deer, and lynxes “in great numbers.” These, he noted, the indigenous people hunted with snares as well as bows and arrows, which were “wrought with great beauty,” the arrow heads carefully carved from “emery, jasper, hard marble, and other sharp stones.” Also made of stone were their axe heads, which the Indians used to fell trees used for making canoes. These were constructed of single logs hollowed out to “contain ten or twelve persons,” which using short, wide oars they rowed “by force of the arms alone, with perfect security, and as nimbly as they choose.”30

Narragansett Bay and its surroundings, as Verrazano’s observations suggest, supported a large and mobile human population. Canoes certainly provided important means of transportation on and around the Bay. The Indians there frequently moved entire villages as well. They lived, Verrazano noted, in round dwellings “about ten or twelve paces in circumference” that were capable of housing twenty-five to thirty people. Made of split logs and thatched with hay “nicely put on,” their wigwams were used only temporarily, for they moved seasonally to take advantage of local resources. In addition to hunting and fishing, Verrazano noted, they subsisted by growing pulse, or beans, which they “carefully cultivated.” That the impermanence of their dwellings and, as Verrazano believed, their lack of building skill, caused them to live in such simple shelters was a cause of lament for the explorer. Upon the beaches of Narragansett Bay, he

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30 Verrazano, [to King François I, 8 July 1524], 18.
observed, were scattered the raw materials to build “stately edifices.” In its entirety, the shore, he attested, “abounds in shining stones, crystals, and alabaster ....”

For Verrazano, his “Refugio” and its surroundings was a veritable Eden. The mainland and islands abounded with animals and towering trees. The rivers, abundant and running clear and cold, teemed with fish and fowl. And a shelter, comfortable enough to house two dozen people, could be built by simply gathering materials from the landscape. So ripe for the taking were the fruits of Narragansett Bay, that the Native

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31 Ibid, 19
Americans who cultivated beans, corn, and squash in its adjacent soils, who cleared and maintained broad upland meadows, and who in canoes frequently plied its coastal marshes and islands, its salt creeks and rivers, lived, at least in Verrazano’s estimation, in blissful ease.

That Narragansett Bay was the backdrop to what Verrazano suggested was his favorite New World stopover speaks to the richness of its surroundings. Roughly twenty-eight miles from the ocean to its northern end and eleven miles at its widest point, the saline portion of Narragansett Bay covered 147 square miles with an average depth of about twenty-seven feet. An estuary, or, by definition, a semi-enclosed body of water fed at once by the ocean and freshwater sources, Narragansett Bay comprised numerous islands, the largest of which were Aquidneck (later called Rhode Island) and Conanicut dominating the Bay’s southern end, and four smaller islands in the Bay’s center that Roger Williams later named Prudence, Patience, Hope and Hog. In its western, northern, and eastern reaches, the Bay was met by nine river basins, the largest of which were later called the Taunton, Blackstone, and Pawtuxet. Also important was the Wood-Pawcatuck River watershed that fed the marshes and salt ponds of the Narragansett and Pequot Country, what would become southwestern Rhode Island and eastern Connecticut. If one added this vast network of rivers to the tidewater, the Narragansett Bay watershed covered more than 2,000 square miles.


33 Jon C. Boothroyd and Peter V. August, “Geologic and Contemporary Landscapes of the Narragansett Bay Ecosystem,” in Science for Ecosystem-based Management: Narragansett Bay in the 21st Century, eds. Alan Desbonnet and Barry A. Costa-Pierce (New York: Springer Science, 2008), 26. The total Narragansett Bay watershed including estuarine waters is 4,766.2 square kilometers or 1840.2 square miles. The Wood-Pawcatuck watershed is 300 square miles. Combined, they equal more than 2000 square miles.
Moving, mixing water defined this coastal space. Twice per day, tidal water from the ocean flooded Narragansett Bay from the south, while each day roughly 260 million cubic feet of water rolled down its rivers into the upper estuary. The flow of water was dramatic, particularly during the winter months when rainfall was high and strong winds

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accelerated the Bay's circulation. During these periods of high flow the bay's flushing time, or the amount of time it took to exchange all of its water, was only ten days. During the summer, when freshwater input was low, the flushing time could reach thirty-five days. Nevertheless, these high rates of exchange made the waters of the Bay clear, clean, and nutrient rich. And as a result, the Bay was teeming with life.

With ready nutrients, plants burst from the Bay's shores, which in many ways mirrored those of other New England coastal areas. Wide swaths of eelgrass swayed among the sandy shallows, which, in 1634 William Wood noted, provided habitat for a "great store of salt water eels." Using baskets baited with lobster, early settlers could catch a bushel of eels in a night, which were often cleaned and salted for winter. The rocks crawled with lobsters, "some," Wood noted, "being twenty pound in weight." So abundant and easily acquired were they that "their plenty makes them little esteemed and seldom eaten." Only the Indians partook "when they [could] get no bass." Thomas Morton noted that he had seen Indians take 500 or 1,000 of them to "eate and save dried for store."

There were also enormous quantities of fish in Narragansett Bay. Wood, writing about nearby waters, noted that Sturgeon up to eighteen feet long plied coastal rivers and salmon were in "great plenty." Fishermen frequently caught halibut "two yards long and one wide and a foot thick" as well as "Thorback and skates," which were fed to the dogs. The most highly prized coastal fish was striped bass, which Wood described as "one of the best fishes in the country." There were so many bass, "some be[ing] three and


… four foot long,” that, using a hook and line baited with lobster, Wood explained, “a man may catch a dozen or twenty of these in three hours.” Bass typically followed the bait. And in the spring, Wood observed, they chased runs of spawning alewife so thick that the rivers turned black with fish. These alewife, Wood explained, ran “in such multitudes as is almost incredible, pressing up in such shallow waters as will scarce permit them to swim.” Thomas Morton marveled that so many bass pass through the salt creeks that one could walk across their backs “drishod.” On the outgoing tides, the English blocked the creeks with seines to trap bass, catching “sometimes two and three thousand at a set.” When lobsters migrated inshore, the bass could be found in the rocks, and when giant schools of mackerel pushed into the bays, again, the bass followed close behind. During the summer and fall, when the sun was high and the water was warm and algal and zooplankton growth in the Bay peaked, menhaden traveling in frothing schools spanning dozens of acres—schools so big that their smell drifted downwind for miles—were driven into the bay by bass, bluefish, and squeteague and harassed from above by screeching osprey, terns, and gulls, which were, in turn, molested by bald eagles. These oily, foot-long members of the shad family played a key role in the Bay’s food chain but they also served as invaluable seasonal custodians. Each one of these filter feeding fish sifted upwards of eight gallons of water per minute. Arriving by the tens of

38 Wood, New England’s Prospect, 56.


40 Wood, New England’s Prospect, 55.

millions, these menhaden scoured the waters of Narragansett Bay, and as a result it was brilliantly clean.

But the true kidneys of the estuary were its shellfish. Prodigious beds of blue mussels held fast by tough bissell threads covered the intertidal zones, particularly in Rocky areas, such as the southern tip of Conanicut and the shores of Warwick Neck. Wood noted that “Muscles be in great plenty . . .” So numerous were they that mussels were “left only for the hogs . . .”42 Across the bottom of the bay but particularly at the mouths of the tidal rivers, vast reefs of oysters, some covering hundreds of acres, had formed over the millennia, with young “seed” oysters propagating on the shells of others. The banks were so large that at spring tides, noted Wood, they were exposed to the open air. The individual animals were enormous as well. Wood observed that they typically took the shape of a shoehorn and were upwards of a foot long. “The fish without the shell,” he noted, “is so big that it must admit of a division before you can well get it into your mouth.” The Bay’s vast mudflats were packed with soft-shell clams. Their numbers were so great, he explained, that “a man running over these clam banks will . . . be made all wet by their spouting of water . . .” Sharing these same beds but also extending into deeper water were hard-shell clams or quahogs, “some as big as a penny white loaf . . .” Like mussels and their smaller, soft-shelled counterparts, the sheer abundance of quahogs left them largely ignored by settlers. They, Wood noted, “were great dainties amongst the natives and would be in good esteem amongst the English were it not for better fish.”43

42 Wood, New England’s Prospect, 56.

43 Ibid., 57.
The siphoning action of so many millions of bivalves carpeting the Bay's floor created clean water capable of supporting an extraordinarily productive ecosystem.

In terms of the broad sweep of time, the ecologically rich environment Wood and Morton observed was a relatively recent development. Following the end of the last ice age, roughly 10,000 years ago, the massive glaciers covering New England began to recede, causing sea levels to rise. What had been an enormous tundra-covered peninsula spanning more than 20,000 square miles and forming the southern flank of the Gulf of Maine was slowly submerged, becoming Georges Bank, the incredibly productive fishing grounds east of Cape Cod. As sea levels stabilized around 2,500 years ago, a prominent river valley to its west flooded with seawater and the area that now constitutes Narragansett Bay became "coastal."^44

The high biological productivity of the estuary that formed provided a nutrient-rich environment for shellfish growth. Archeological studies of various sites along the coast of Narragansett Bay and particularly Greenwich Cove, on the Bay's western shore, showed that as the bay developed, Native Americans living in the area began to diversify their diets by including marine mollusks.^45 At about the same time southern New England also experienced one of the largest population expansions in prehistory. It is difficult to know whether the exploitation of marine mollusks began in response to population


^45 In *Prehistoric Subsistence*, Bernstein showed that shellfish use began 2,700 years ago. Also see A. Leveillee and P.F. Thorbahn, "An Archaeological Assessment of the Sakonnet River," report 46-1 (Pawtucket, R.I.: Public Archaeology Laboratory, 1984). Leveillee and Thorbahn date quahog use along the Sakonnet River to 4,000 years ago, plus or minus 110 years. Wilbur Smith and Associates found similar results on Conanicut Island, with shells dating to 3850 years ago, plus or minus 120 years.

growth or whether dietary diversification, which incorporated marine mollusks, actually caused it. 47 But the archeological record does show that southern New England's coastal Native Americans integrated shellfish into their lives in important ways as soon as natural environmental changes had made it available. 48

Such powerful draws were the clams, quahogs, and mussels of Narragansett Bay that they altered the ways Native Americans interacted with their environment and each other. Abundant and easily acquired, clams were harvested by coastal Indians year around. 49 William Wood noted of Indian women, who were the principal harvesters of shellfish, "In winter they are their husband's caterers, trudging to the clam banks for their belly timber." Only three or four days after having given birth, one "bare-footed mother

47 Bernstein, Prehistoric Subsistence, 57

48 According to W A Ritchie, the widespread incorporation of shellfish into the Native American diet was late in coming because Indians had not yet acquired the technological proficiency required to exploit marine resources. W A Ritchie, The Archaeology of Martha's Vineyard (New York: Natural History Press, 1969). Similar technological arguments are advanced by D R Snow, "Rising Sea Level and Prehistoric Cultural Ecology in Northern New England," American Antiquity 37 (1972) 211-221. But most archeologists have built a consensus around environmental explanations for the shift toward shellfish use. In Prehistoric Subsistence, 52, David Bernstein's contends, "Without a doubt, the most significant environmental factor to be considered when discussing prehistoric lifeways on the shores of southern New England is the effect that changing sea levels had on coastal ecology." The first to shed light on the effects of changing sea level was B Salwen, "Sea levels and Archaeology in the Long Island Sound Area," American Antiquity 28 (1962) 46-55. D P Braun, "Explanatory Models for the Evolution of Coastal Adaptations in Prehistoric Eastern New England," American Antiquity 39, no 4 (1974) 582-596, showed that widespread use of coastal resources was closely linked to the stabilization of sea levels. S M Perlman, "An Optimum Diet Model, Coastal Variability, and Hunter-Gatherer Behavior," vol 2 of Advances in Archeological Method and Theory, ed M B Schiffer (New York: Academic Press, 1980), 257-310, showed that as sea levels stabilized, Native Americans drew more heavily from marine resources because they provided more optimal energy returns.

...,” carrying her child wrapped in beaver skin, “paddle[d] in the icy clam banks.”

Although, as Verrazano observed, Indian bands moved periodically, they probably moved between coastal sites, rather than simply moving inland with the coming of winter. This coastal sedentism, which began somewhere between 4,700 and 2,500 years ago, led Native Americans to diversify their use of plants and animals. And this placed new environmental pressures on the estuary. The archeological record shows a reduction in the size of shells during the period just prior to European arrival, which when combined with an increasingly diversified diet, suggests increased stress on coastal resources. In other words, Native Americans continued to be mobile, but they increasingly concentrated their ecological footprints on discrete coastal locations. As Indians traveled less, their communities grew in size. And over time, they reached out to their neighbors to acquire things unavailable to them locally. As a result, trade networks formed that continued into the historic period.

The Narragansett Indians were key players in these burgeoning trade networks. Archeologists working in southern New England have uncovered, among numerous other items, copper beads from the Great Lakes region and flint from Ohio and New York.

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51 Bernstein, *Prehistoric Subsistence*, 149.


One important prehistoric trade item among Rhode Island’s Native Americans was stone pipes, cut from steatite, or soapstone, which was abundant in the area. Narragansett pipes were found in archeological sites across southern New England and as far west as Indiana. Roger Williams noted the Narragansetts “sometimes … make such great pipes, both of wood and stone, that they are two foot long, with men or beasts carved, so big or massie [sic], that a man may be hurt mortally by one of them.” William Wood observed that the Narragansetts were, among Native American tribes, “the most industrious, being the storehouse of all such kind of wild merchandise as is amongst them.”

The Social Construction of Wampum

In the years following European settlement the most valuable of the Narragansetts’ “wild merchandise” became tiny beads carefully hewn from the shells of marine mollusks. “They that live upon the Sea side,” wrote Roger Williams, “generally make of it, and as many make as will,” referring to the carefully crafted white and purple beads known to his neighbors, the Narragansett, as wampompeage, to the Dutch as sewan or zeewan, and the English as peage or simply wampum. “The Indians,” Williams explained, “bring downe all their sorts of Furs, which they take in the Countrey, both to

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58 Wood, New England’s Prospect, 81.
the Indians and to the English for this Indian Money: this Money the English, French and Dutch, trade to the Indians, six hundred miles in several parts (North and South from New-England) for their Furres, and whatsoever they stand in need of from them: as Corne, Venison, &c. Wampum, as Williams explained, had during the first third of the seventeenth century, catalyzed a dynamic network of long-distance trade between Native Americans and the various European powers that had settled in New England, New York, southern Canada, and beyond.

These shell beads, which in earlier centuries had been prized among Native Americans for their spiritual significance, had during the early seventeenth century developed into a medium of exchange, and those tribes with ready access to the shells from which the beads were made grew powerful. "It [wampum] is made principally by the Narragansett black [Block] islanders and Long Island Indians," wrote Daniel Gookin in 1674. "Upon the sandy flats and shores of those coasts the wilk shells are found." William Wood observed that the Narragansett "are the most curious minters of their wampomeag and mowhacheis ...." His use of the word "minters" suggests the Narragansetts were producing large amounts of wampum by the 1630s, that they largely controlled its production, and that it circulated widely as currency. Strong in numbers, the Narragansett held considerable influence among neighboring tribes, thereby establishing a major stake in wampum production. Although fewer in number and occupying a

59 Roger Williams, *A Key Into the Language of America*, 173.
62 Salisbury, *Manitou and Providence*, 25-30. Salisbury estimated that there were between 37,000 and 38,000 Narragansett Indians.
geographically smaller area west of the Narragansetts, the Pequot tribe, living along the Pawcatuck and Mystic rivers, maintained close trading partnership with the Mohegans and were likewise important wampum producers. William Bradford observed, “Only it [wampum] was made and kepte amonge the Narriganssets, and Pequents [Pequots], which grew rich and potent by it.” With ready access to an increasingly valuable marine resource, both tribes grew powerful, trading finished wampum for furs and European goods.

The actual production of Wampum required considerable skill. Along the sandy shores of Narragansett Bay and Long Island Sound, Native Americans gathered the Northern Whelks, Busycon canaliculatum and Busycon carica, to produce white wampum from, observed Roger Williams, the “stem or stocke of the Periwinkle, which

63 Ibid, 147-148
they call Meteauhock, when all the shell is broken off ....” Williams explained that these white beads, worth six to an English penny, were often strung into bracelets. Worth twice as much as the white, dark-colored beads—or as Williams explained, “black, inclining to blew ...”—were produced from the hard-shell clam, or quahog, *Mercenaria mercenaria*.65

From the deep purple rim of the quahog’s inner shell known to clam biologists as the pallial sinus, a segment of shell was cut and smoothed into tiny cylinders one quarter-inch long and an eighth-inch in diameter. These were then carefully drilled into beads that the Narragansett called Suckauhock, meaning black, or, as William Wood attested, Mowhackees, meaning black shell.66 Using animal sinews or bark threads, Indian women

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65 Williams, *A Key Into the Language of America*, 173

66 The question of whether or not Indians had the capability of crafting wampum with stone tools has been a perennial source of disagreement. Williams explained that stone tools had been used before the introduction of “Awle blades from Europe.” Dated 1700 or 1702, the catalogue of the British Museum’s Sloane Collection stated that wampum producers “drill the holes with the point of a sharp flint, and worle them round on a fine gritty stone.” But in 1919 anthropologists Frank Speck argued that the prevalence of white discoidal beads found in older archeological sites proved that “Indians were not capable of drilling the finer tubular beads until they acquired metal drills from the Europeans.” More recently, however, others have argued that cylindrical wampum was developed long before European contact. Citing early Dutch and French explorers at the turn of the sixteenth and seventeenth centuries, Barbara A. Mann asserted, stridently, “The native invention of wampum can no longer be doubted, even by the most ardent Europhiles.” Archeologist Lynn Ceci, took a more conciliatory approach, admitting only that “the data are troubling.” But she conceded that the technology used to drill the fine, straight holes through the center of cylindrical wampum beads was more consistent with European metal bits than stone. Whether wampum was first produced along the coast or inland has also been disputed. Iroquois myths claim that wampum was first created to establish the confederacy. Nineteenth-century interviews with the Iroquois conducted by anthropologist Lewis Henry Morgan, for example, told a story of how Hiawatha used spiral freshwater shells or “Ote-ko’-a” to forge the powerful Iroquois League alliance. But the seventeenth-century documentary records overwhelmingly place wampum production along the coast of southern New England, and the widespread use of the Algonquian word “wampum” even among the Iroquois suggests coastal origins. Roger Williams, *A Key Into the Language of America*, 175–176, 177–178, British Museum excerpt in Alison Hingston Quiggm, *A Survey of Primitive Money the Beginnings of Currency* (London: Methuen, 1949), 307, Frank Speck, “The Functions of Wampum Among the Eastern Algonkian,” in *Memoirs of the American Anthropological Association* (Lancaster, Penn: The American Anthropological Association, 1919), 6, Barbara A. Mann, “The Fire at Onondaga Wampum as Proto-Writing,” *Akwesasne Notes* 1, no 1, (Spring 1995) 41, Lynn Ceci, “Tracing Wampum’s Origins Shell Bead Evidence from Archaeological sites in Western and Coastal New York,” in *Proceedings of the 1986 Shell Bead Conference Selected Papers*, eds Charles F. Hayes III and Lynn Ceci (Rochester, N.Y.: Rochester Museum and Science Center, 1992), 64, Henry Louis Morgan, “Report on the Fabrics, Inventions, Implements and Utensils of the Iroquois,” *New York State Cabinet of Natural History Fifth Annual Report, 1851* (Albany: 1852), 76–117
assembled them by the thousands into strings, intricate belts, and other decorative garments. Some, Williams noted, strung wampum into necklaces and bracelets. Others wove their wampum beads into girdles several inches wide that were worn around their waists, shoulders, and breasts. “Yea the Princes,” he noted, “make rich Caps and Aprons (or small breeches) of these Beads thus curiously strung into many forms and figures: their blacke and white finely mixt together.”

Wampum was undoubtedly a symbol of social prominence, but its value was rooted in its mythic meaning and otherworldly origins. For the Iroquois, much of wampum’s spiritual significance resided in its “orenda,” a supernatural force inherent in shiny things that seemed to come from outside the natural world. Among southern New England’s Indians, the ocean played a major part of that other word. Their god Cautántouwit lived somewhere to southwest, past the salt ponds of the Narragansett Country and beyond the ocean and summer breezes. “[T]o the South-west,” wrote Williams, lay the souls of their Forefathers, and there “they goe themselves when they dye.” According to Narragansett tradition, the dead were buried with earthly things they needed in the afterlife, which, for their journey over the seas, often included wampum drills and cutting tools as well as beads ceremonially placed on the body, which Wood

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67 Williams, A Key Into the Language of America, 175-176, 177-178

68 Barbara A. Mann, “The Fire at Onondaga Wampum as Proto-Writing,” Akwesasne Notes 1, no. 1, (Spring 1995) 43 Also see Christopher L. Miller and George R. Hamell, “A New Perspective on Indian-White Contact Cultural Symbols and Colonial Trade,” Journal of American History 73, no. 2, (1986) 315, 325 Probing the Native American value attributed to European-produced “trinkets,” “baubles,” and “trash,” Miller and Hamell showed that shells along with native copper and siliceous stones were “material components of great ritual significance” with “highly charged ideological value.” These items, they explained, were traditionally “other-worldly ceremonial materials given by creatures different from themselves in appearance, yet related to them in a metaphorical and ceremonial sense.”

69 Roger Williams, A Key Into the Language of America, 24
noted, were used “to purchase more immense prerogatives in their Paradise.”⁷⁰ The
estuary from which wampum was plucked had been created by and was home to
important deities. In addition to their “Sea-God,” called Paumpágussit, Williams noted,
the Narragansetts “have many strange Relations of one Wétucks, a man that wrought
great Miracles amongst them, and walking upon the waters ... with some kind of broken
Resemblance to the Sonne of God.”⁷¹ Of central importance to almost all southern New
England coastal bands, Wétucks, Ezra Stiles noted during the eighteenth century, was
also called Maushump by Long Island Indians and Maushop among the Wampanoag.⁷²

The Indians of Cape Cod and the surrounding islands developed a particularly
vibrant estuary-centered creation story. According to one account, the giant Maushop was
the first to visit the coastal plains. He “wandered along marshes, over dunes and through
the forest,” explained one retelling of the Wampanoag creation myth. “[D]ragging his
huge foot, Moshup paused to look around and the ocean rushed to form a pool behind
him.”⁷³ Accordingly, he created the estuaries of southern New England and then, as other
accounts attest, settled on Martha’s Vineyard, where he feasted on fish and whale meat.
Maushop was particularly fond of enjoying his pipe, the smoke and ashes from which
brought fog to Cape Cod and formed the island of Nantucket. Sand from his moccasins
formed the Elizabeth Islands. When the English came, it is said he disappeared below the

⁷⁰ William Scranton Simmons, Cauntantowwit’s House An Indian Burial Ground on the Island of
England’s Prospect, 111

⁷¹ Williams, A Key Into the Language of America, 150, 24

⁷² Ezra Stiles, Extracts from the Itineraries and Other Miscellanies of Ezra Stiles, D D , LL D , 1755-1794,
ed Franklin B Dexter (New Haven Yale University Press, 1916), 157

⁷³ Helen Manning, Moshup’s Footsteps The Wampanoag Nation Gay Head/ Aquinnah, The People of First
Light (Aquinnah, Mass Blue Cloud Across the Moon Publishing Co , 2001), 22-25
wears, but before doing so, Maushop hurled his wife, Saconet, toward the mainland, where she landed and remained to collect tribute at the promontory marking the southeast corner of Narragansett Bay.\textsuperscript{74} That an important deity like Wétucks or Maushop was known to have created some of southeastern New England’s most prominent coastal features and weather phenomena and that he retreated below the waves with the arrival of Europeans, suggests the sea was a spiritual sanctuary. That Maushop’s wife was sent to collect tribute, likely wampum, at her seaside station at the mouth of Narragansett Bay suggests that estuarine shell beads were an important medium between the human world on land and spiritual world at sea.

Its watery origins imbued wampum with value for Europeans as well. For Williams, however, wampum, like precious metals, marked a departure from the path of righteousness. “The Sonnes of men having lost their Maker, the true and onely Treasure,” he wrote, “dig downe to the bowels of the earth for gold sand silver; yea, to the botome of the Sea, for shells of fishes, to make up a Treasure, which can never truly inrich nor statisfie.”\textsuperscript{75} Only God, Williams attested, held true value, but having strayed from him, man burrowed deep into the earth for ores and below the sea for shells. Like gold and silver, wampum was plucked from the deep unknown and held significance because of it. If Williams was skeptical of wampum’s cosmological value, he nevertheless saw beneath the waves of the Bay a touch of the divine. Of one particularly frightening incident, he wrote:

\begin{quote}
\textit{Alone 'mongst Indians in Canoes,}
\end{quote}


\textsuperscript{75} Williams, \textit{A Key Into the Language of America}, 178.
The ocean, he conceded, held the mysteries of God. And when his canoe overturned
God’s “wonders” were revealed. Describing his trans-Atlantic crossing, William Wood
noted that ships “seldom doth … sink or overturn because it is kept by that careful hand
of Providence by which it is rocked.” For Williams and Wood alike, God operated
among the waves.

The Lord spoke through the sea’s creatures as well, including shellfish. “How
many thousands of Millions,” Williams asked, “of those under water, sea-Inhabitants …
preach to the sons of men on shore [?]” Williams referred to marine animals as
“Christ’s little ones,” which after being “Devour’d,” will “rise as Hee.” Blessed in the
brackish waters of Narragansett Bay, these fruits of the estuary delivered to man the word
of God and the body of Christ. This shared belief that the sea was a source of the divine
imbued wampum with special significance for both Europeans and Native Americans.
That its production required highly specialized skill and hours of labor and that the
resultant beads were beautiful, durable, and easy to handle would have also led to a
mutual appreciation of it. But along the coast of southern New England, where wampum
was physically produced and then socially constructed, it was widely acknowledged that
there was something special below the surface of the sea.

As wampum circulated deeper into the continental interior, the tensions between
water and dry land continued to underpin its value. But if coastal mythologies

76 Ibid., 135.
77 Wood, New England’s Prospect, 70.
78 Williams, A Key Into the Language of America, 142.
emphasized the profound nature of the ocean, inland mythic traditions surrounding wampum emphasized its ability to effect environmental transformations on land. In one myth, Hiawatha, while traveling to establish the Iroquois League, saw a flock of ducks take flight from a lake. Upon their departure, they left the lakebed dry and scattered with shells, using which Hiawatha assembled the belts that forged the bonds of the confederacy. That with wampum’s arrival the birds disappeared, the lake dried up, and a powerful political union was formed suggests that among some Native Americans, wampum’s value was rooted in its ability to transform not only social interactions but the physical landscape as well. As it was traded farther inland, wampum’s value reflected the power of improvement.

For other Native American groups, wampum’s ability to transform the land honored important spiritual obligations. One Cree myth justified the slaughter of beaver by claiming the Great Spirit had, for some unnamed offense, banished them from dry land into the rivers where they became numerous and expanded their watery domain. The Great Spirit countenanced the beaver’s destruction, and man, literally defending his turf, obliged. In both the Iroquois and Cree myths, the transformations are environmental, involving the reclamation of dry land. This suggests that some Native American groups were at some level aware of the ways the beaver trade affected water resources. For the Iroquois, wampum desiccated lakes. For the Cree, the exchange of shell beads for furs

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79 Ibid., 64

validated a spiritual duty to drain the swamps and bogs created by a rodent that had fallen from grace.

Although there are still other myths attributed to the genesis of wampum not mentioned here, most show wampum transitioning from the spiritual world to that of humans. Almost all of these stories involve some form of preternatural bird that sheds wampum or leaves it as a gift in its wake, perhaps referencing its distant or supernatural origins or its great mobility. That the birds were either scared off or killed, leaving wampum behind for human use, perhaps acknowledges that wampum was inextricably tied to changes in animal populations. And that water was often central to wampum mythology suggests at some level either contemporary Indians saw changes to the rivers and surrounding landscape or that subsequent generations who retold those myths had witnessed those types of transformations. Over time, the coastal value relationship based on shared belief in a divine sea gave way to one that reflected wampum as a tool of improvement. Dug from the shores of Narragansett Bay and fashioned by the Indians who lived there, wampum, once ferried upstream by canoes and dragged inland on sleds, was re-evaluated by new groups of Indians and the European traders with whom they interacted. If wampum still held a touch of the profound, it also came to reflect the power of improvement. In many ways, the ecological transformations expressed in wampum mythology reflected a parched reality.

**Beaver Removal and Draining the Land**

Less than a year after the Dutch West India Company was established in 1621 one of its own, a trader named Jacques Elekens, kidnapped and held hostage a Sequin
sachem. The lands of New Netherland were still largely unsettled and the Dutch war with Spain in many cases demanded outright violence from the West India Company and its traders.  

Unwilling to limit physical aggression to his European competitors, Elekens embraced the mercenary nature of his mission with grim enthusiasm. Demanding a hefty ransom, Elekens threatened to cut off the sachem’s head if his people did not deliver.

Although Elekens’ countrymen had landed in the New World more than a decade earlier, New Netherland was still a crude outpost along the margins of the Atlantic world. Henry Hudson first landed in the area in 1609, exploring the island of Mannahatta and the impressive river that would later bear his name. In 1614 the New Netherland Company received a patent, but it wasn’t until 1623 or 1624 that colonists began to people the area between the Delaware River and Narragansett Bay in earnest. To lay claim to the land, the Dutch spread out, a few settling near Saybrook Point, others at Burlington Island, a few at Nooten Eylandt near Manhattan, and several along the North River at Fort Orange, or Albany.  

As early as 1625 the Dutch West India Company established a trading station at Quotenis, later named Dutch Island, at the southern end of Narragansett Bay as well as two others on the mainland.

The promise of colonial settlement in the New World captured the imagination of the Dutch at home. Following these New World developments closely, the historian, physician, and publisher Nicolaes van Wassenaer launched the first edition of the

_Historisch Verhael_ in 1622, an annual periodical dedicated to compiling the notable developments in the New World.

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82 Ibid., 30.

events of the year. Impressed by the extraordinary happenings abroad, van Wassenaer dedicated the entire second issue to descriptions of New Netherland.84 His coverage continued until 1630, providing vivid reports as relayed to him from his correspondents, many of whom traveled deep into New Netherland's interior in search of furs.

Figure 5: Pascaert van Nieu Nederland, Virginie en Nieu Engelant, Amsterdam: Hendrick Doncker, 1660. The seventeenth-century lands of New Netherland and New England. This may be the first mention of the town of Providence on a printed map. Courtesy of the John Carter Brown Library at Brown University.

For van Wassenaer, the number of correspondents multiplied after Elekens seized the sachem, for that act played a pivotal role in energizing the fur industry. In exchange for the sachem, Elekens was paid a ransom of 140 fathoms of zeewan, or wampum,

which Van Wassenaer characterized as “small beads they manufacture themselves, and which they prize as jewels.” With hundreds of feet of valuable shell beads in their possession, Elekens and Dutch authorities parlayed their ill-gotten winnings into the fur trade along the Hudson River, which Van Wassenaer explained, was the most important trade route to points north. Prized by Native American hunters and so easily stored and transported, wampum turned a largely localized, small-scale trade in furs into a region-wide mad dash for pelts. And as a result, the hydrology of the Northeast began to change.

Early Dutch West India Company correspondents described a watery world north of New Amsterdam. Fifty leagues above Manhattan, Van Wassenaer carefully noted, was “very swampy, [with] great quantities of water running to the river, overflowing the adjoining country ….” So wet was the terrain that Dutch settlers at Fort Nassau, later Albany, “frequently lay under water” and as a result the site was abandoned. One prominent New Netherland landowner, Adriaen van der Donck, a careful observer of nature who spent considerable time exploring the countryside during the 1640s, noted, “The rivers have their origin in sprouts which flow from valleys, and in springs which connected form beautiful streams.” He also saw “numerous small streams and sprouts throughout the country, serving as arteries or veins to the body, running in almost every direction, and affording an abundance of pure living water.” Still other streams, he noted,

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86 Salisbury, Manitou and Providence, 148-149.

87 Van Wassenaer, Historisch Verhael, 68.
“rise in bushy woods, through which the summer sun never shines, which are much trodden by wild beasts, and wherein the decayed leaves and rotting vegetation falls ....”88

This flooded landscape shaped a rich riparian ecology. Van Wassenaer described vast wetlands that included “all sorts of fowls, such as cranes, bitterns, swans, geese, ducks, widgeons, [and] wild geese.” And this soggy landscape extended deep into the forests, which, he explained, echoed with their calls. “Birds fill also the woods,” he wrote, “so that men can scarcely go through them for the whistling, the noise, and the chattering.” Teeming with other riparian fauna, the forest floors, he explained, crawled with small tortoises and the “most wonderful ... dreadful frogs, in size about a span, which croak with a ringing noise in the evening ....” Dotted with bogs, ponds, and vernal pools, the land to the north was so wet that Van Wassenaer remarked it was “surprising that storks have not been found there, since it is a marshy country.”89

The Dutch in New Netherland expanded their wampum-for-fur trade into this watery interior, while keeping a watchful eye on the English neighbors to the east, who remained largely ignorant of the incredibly lucrative and quickly developing trade. Perhaps realizing that the English would eventually catch on, in 1627 Isaack de Rasieres, the Secretary of New Netherland, traveled to Plymouth Colony to treat with William Bradford. According to Bradford, Rasieres sold him wampum worth fifty English pounds so that Bradford might trade it for furs with the Indians in the English-controlled Kennebec region.90 According to Rasieres, he sold them the wampum “because the

89 Ibid., 71-72.
90 Bradford, History of Plymouth Plantation, 42-44.
seeking after sewan by them is prejudicial to us, inasmuch as they would, by so doing, discover the trade in furs; which if they were to find out, it would be a great trouble for us to maintain.” Rasieres’ generosity was motivated by his interest in keeping the English out of New Netherland’s trading hinterland, the eastern end of which was Narragansett Bay. But Rasieres’s attempt to distract the English ultimately drew them squarely into the trade. “[T]hat which turned most to their [Plymouth’s] profit,” wrote Bradford, “in time, was an entrance into the trade of Wampampeake.”

Narragansett Bay played host to this imperial power struggle, for where wampum was readily available, pelt traders set up shop. While the Dutch West India Company maintained its trading stations on the Bay, Plymouth established truck-houses in 1632 at Sowamset on eastern Narragansett Bay and Aptucxet, at the northern tip of Buzzards Bay. In 1636 Roger Williams established a permanent settlement upon the shores of Narragansett Bay at Providence. Soon after, Richard Smith, in the words of Roger Williams, “broke the ice at his great charge and hazard, and put up in the thickets of the barbarians, the first English house amongst them.” Smith built a trading depot at Wickford on the western shore of Narragansett Bay along the coastal overland route between Boston, Connecticut, and New Amsterdam, and was for several years accompanied by Roger Williams, who did the same. By 1638 increasing numbers of

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settlers had also moved into the Connecticut River valley and the first wave of settlers near Boston had begun trading furs. As coastal beaver were extirpated, traders looked farther inland. In 1636 William Pynchon settled Springfield at the junction of the Connecticut River and the overland Connecticut Path in south-central Massachusetts. There, he established trading relations with Agawam and Woronoco Indians, which commenced a lucrative trade in pelts, which he continued into the early 1670s.  

As wampum was traded deep into the continental interior, increasing numbers of beaver were pulled from the Northeast ecosystem. Whereas only ten years earlier the coasts had served as the fur-trading frontier, by 1630 wampum was traded up the Concord and Connecticut Rivers. By 1640 the traders had pushed as far as Springfield, Massachusetts, and far into the interior along the Blackstone and Merrimac Rivers. Although the exact numbers of beavers hunted is unknown, scattered records indicate that vast numbers were killed and that beaver populations began to decline. Between 1652 and 1657 Thomas Pynchon alone shipped to England 8,992 beaver skins, weighing 13,139 pounds. But in the following sixteen years between 1658 and 1674 he exported only 6,480 beaver pelts, weighing roughly 9,000 pounds, suggesting that due to declining numbers they were much more difficult to acquire and the beavers that remained were smaller in size. Combining Pynchon’s efforts with those of countless others, this mass extraction of beavers caused dramatic changes to the hydrology of the region.

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Prior to European entry into the fur trade, the beaver, *Castor canadensis*, had shaped the Northeast landscape. Beaver engineering was so extensive that Roger Williams characterized them as "beasts of wonder" that could "draw of great pieces of trees with his teeth, with which and sticks and earth I have often seen, faire streames and rivers dammm’d and stopt up by them."\(^9\)\(^8\) Echoing Williams’ seventeenth-century observations, modern scientists have shown that beavers fundamentally altered river morphology. Beavers built dams, which created ponds, in the center of which they constructed lodges of mud and wood. And those beaver ponds, when maintained, often lasted for decades. As a result, the dam- and lodge-building activities of *C. cadensis* established vast wetlands, which retained sediment and organic matter. The wetlands shaped the ways organic matter decomposed and nutrients were cycled through forest systems. The retention of water by beaver dams also affected the chemical composition and amount of water transported downstream. Finally, the activities of beavers shaped the species composition and diversity of plants and animals of the forests in which they lived.\(^9\)\(^9\) Ultimately, the beaver is what ecologists call a keystone species, one that was ecologically integral to the healthy function of forest and riparian ecosystems.\(^1\)\(^0\) But as beavers were removed, the forests, the rivers, and everything in them simply changed.

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\(^9\) Williams, *A Key Into the Language of America*, 127.


The broad geographic range and sheer numbers of beaver in North America made their effects on the hydrologic system profound. Before European arrival in North America, beavers inhabited all of Canada and the territory that now includes most of the continental United States, barring the border regions with Mexico. Although the exact numbers of beavers is unknown, in 1929 Ernest Thompson Seton, compiling figures from
numerous beaver surveys, estimated that before European contact there were between 60
and 400 million beavers colonizing the rivers of North America, a calculation that
numerous scientists have subsequently used for their own estimates.\footnote{101} Before Europeans
began targeting beaver, almost all lower-order streams—small rivers, brooks, and
creeks—and almost every lake or pond in New York, New England, and southern Canada
was occupied by beavers.\footnote{102} If these estimates are accurate, one can assume that during
the seventeenth century beavers were as plentiful as the gray squirrel is today.

The abundance of beavers was incredible. Recounting the fur trade’s history,
eighteenth-century explorer of southern Canada, David Thompson, explained:

\begin{quote}
Every River where current was moderate and sufficiently deep, the banks at
the water edge were occupied by their houses. To every small Lake, and all
the Ponds they builded Dams, and enlarged and deepened them to the height
of the dams. Even to ground occasionally overflowed, by heavy rains, they
also made dams, and made them permanent Ponds, and as they heightened
the dams [they] increased ... [the] extent and added to the depth of water;
Thus all the low lands were in possession of the Beaver, and all the hollows
of the higher grounds. Small streams were dammed across the Ponds formed;
the dry land with dominions of Man contracted, every where he was hemmed
in by water without the power of preventing it... .\footnote{103}
\end{quote}

The ubiquitous beaver, Thompson noted, shaped a watery landscape in which every river,
stream, and creek was dammed, creating broad ponds and marshes that covered lowlands

\footnote{101} Ernest Thompson Seton, \textit{Lives of Game Animals: An Account of those Land Animals in America, north
of the Mexican Border, Which Are Considered “Game,” either because they have held the Attention of


\footnote{103} Thompson, \textit{David Thompson’s Narrative}, 198. Also see Calvin Martin, \textit{Keepers of the Game}, 106.
for miles. In a letter to the Congregational minister Jeremy Belknap of New Hampshire, Joseph Peirce, explained that God “has a farther design in this little animal ... which stops the water from pursuing its natural course, and makes it spread over a tract of land from five to five hundred acres in extent.” Marveling at a beaver dam’s ability to transform the landscape, Pierce explained, “[A]ll trees, bushes and shrubs are killed. In a course of time, the leaves, bark, rotten wood and other manure, which is washed down, by the rains, from the adjacent high lands, to a great extent, spread over this pond, and subside to the bottom, making it smooth and level.” As Pierce observed, beavers and their dams built a watery world.

Weighing up to fifty-five pounds, beavers, like humans, engineered the landscape extensively. Using powerful incisors that grow throughout their lives and sharpen themselves continuously during the process of chewing bark and wood, beavers typically target medium-sized trees located along the bottoms of small river valleys that will fall toward the riverbed. Once a tree is felled and divided into more manageable pieces, it is either floated to the dam site via canals constructed by the beaver or dragged overland. Trees are integral to beaver dams, which can range from two to twenty feet high and can stretch over a hundred feet in length. The logs are piled at the dam site and the spaces between them clogged with mud and other debris. When the dam is complete a pond develops.105

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104 Jeremy Belknap, *The History of New Hampshire*, vol. 3 (Boston: Belknap and Young, 1792), 160.

Quick to multiply, beaver families populated North America with staggering numbers and built millions of ponds in the process. A typical beaver family comprised between four and eight members, which live together in one pond. And most beaver families constructed between two and five ponds. As such, the minimum number of pre-European beaver ponds was between 15 and 100 million, with a maximum range of between 37.5 and 250 million ponds. Observing these numbers—whether at the more

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conservative or more aggressive end of the estimates—one can conclude that before Europeans began hunting beavers in earnest, the Northeast region of America was decidedly wet.

But as beavers were removed from the landscape, patterns of water flow and impoundment changed. In 1624 Van Wassenaer noted of Indian traders who had travelled “far from the interior,” that they “declare there is considerable water everywhere and that the upper country is marshy,” which suggests that near the coast where beavers had already been removed, conditions were drier.\textsuperscript{108} By the 1640s Adriaen van der Donck observed that “beavers keep in deep swamps, at the waters and morasses, where no settlements are.”\textsuperscript{109} This suggests that by mid-century beavers had been reduced to the far reaches of New Netherland and that the watery environment that beavers created was far removed from Dutch settlements. On the coast, remarked van der Donck, the terrain was pleasantly dry. “It is a great convenience and ease to the citizens of New Netherlands,” he wrote, “that the country is not subject to great floods and inundations, for near the sea, or where the water ebbs and rises, there are no extraordinary floods.”\textsuperscript{110} Along the coast where beaver were first removed, van der Donck’s observations suggest, the rivers flowed obediently within their banks. In fact, a lot of beavers had been removed: between 1624 and 1626, during the initial years of Dutch settlement, they shipped 16,553 of them.\textsuperscript{111} And those numbers skyrocketed. Between the 1641 and 1650 van der Donck


\textsuperscript{108} Van Wassenaer, \textit{Historisch Verhael}, 70.

\textsuperscript{109} Van der Donck, \textit{A Description of New Netherland}, 114.

\textsuperscript{110} Ibid., 16.

\textsuperscript{111} Ibid., 16.
estimated that “about eighty thousand beavers have been killed annually, during my
residence . . .”\textsuperscript{112} So sure of these numbers was van der Donck that he was careful to note
he had “frequently eaten beaver flesh, and have raised and kept their young.” In addition,
he avowed, “I have also handled and exchanged many thousands of skins.”\textsuperscript{113}

As tens of thousands of beaver were removed, their dams were destroyed, which
drained the land. The second half of Peirce’s letter to Belknap explained the effects of
beaver hunting. “[T]he water is drained off, and the whole tract, which was the bottom of
a pond, is covered with wild grass, which grows as high as a man’s shoulders, and very
thick.” He continued:

These meadows doubtless serve to feed great numbers of moose and deer, and
are of still greater use to new settlers, who find a mowing field already
cleared to their hands; and though the hay is not equally as good as English,
yet it not only keeps their cattle alive, but in tolerable order; and without
these natural meadows, many settlements could not possibly have been made,
at the time they were made. Such as are not fenced, afford the cattle good
pastures in the beginning of the year, as the grass shoots very early. It is
observed that those meadows which are mowed constantly, produce less at
every mowing; but will always hold out, where settlers are industrious, till
they have cleared ground enough to raise English hay. I have more than two
hundred acres in one body, made by several dams, across one brook, at
various distances from each other.\textsuperscript{114}

Although Peirce’s observations were made a century after the fur trade’s heyday,
the stages of dam-to-meadow succession in newly settled areas likely followed the
same general patterns. After the beaver were hunted, their dams deteriorated, and
what had been vast ponds became dry meadows, which attracted settlement. Adrien

\textsuperscript{111} Van Wassenaer, \textit{Historisch Verhael}, 83.

\textsuperscript{112} Van der Donck, \textit{A Description of New Netherland}s, 111.

\textsuperscript{113} Ibid.

\textsuperscript{114} Belknap, \textit{The History of New Hampshire}, 3: 160-161.
van der Donck observed during the mid-seventeenth century similar patterns. "Near the rivers and water sides there are large extensive plains ...," he noted, "which are very convenient for plantations, villages and towns." And these meadows, he noted, appeared deep within the forests as well. "We also find meadow grounds far inland," he explained, "which are all fresh and make good hayland." As early as 1634, the Englishman Thomas Morton observed that among the "great conflux of waters as are there gathered" in the northern reaches of the Iroquois country, there were "many fruitfull and pleasant pastures all about it." That these meadows were formed near waterways and particularly in patches within the heavily wooded interior suggests that a generation of hunting beaver had begun to transform the land. As Peirce observed, once those meadows were settled, they were frequently mowed, the natural grasses sapping nutrients and moisture from the soil. Grass growth slowed and settlers responded by planting European hays, which further changed the soil's nutrient composition. With nowhere else to go, water that had once inched lazily across the country, coursed swiftly into narrow riverbeds.

Surging rivers and streams caused sedimentation, and in some places on a massive scale. When beaver dams were removed, stored sediment and nutrients were released into faster-moving fluvial systems, which changed downstream water quality. When one dam breaks, faster-moving water can damage those downstream. And sediment loss can be so extensive when a beaver dam breaks, it can kill riverbed plants.

and smother fish eggs.\textsuperscript{118} In the Mohawk country the reverend Megapulensis observed in 1644, “The soil is very good, but the worst of it is, that by the melting of the snow, or heavy rains, the river readily overflows and covers that low land.”\textsuperscript{119} That rivers consistently overflowed their banks suggests that as the marshy buffers surrounding beaver ponds were removed, rivers had begun to run faster and more violently during periods of high runoff. It is possible, too, that the rich lowland soil Megapulensis observed, was sediment that had been moved there from farther upstream. Similarly, van der Donck observed of these lowlands, that “Sometimes the water may wash out a little in places, but the land is manured by the sediment left by the water.” It is impossible to know whether dam destruction was the precise cause of that sedimentation, but for these Dutch observers it was noticeable and even remarkable. When combined with their accounts of capricious rivers, it suggests a system reeling from the effects of widespread dam removal. “Those floods do not stand long;” van der Donck wrote of the wild fluctuations in water level, “as they rise quick, they also again fall off in two or three days.”\textsuperscript{120} Although sediment transport volume is highly dependent on sediment size and hill slope, all indications are that sedimentation increased—and in some cases quite dramatically—when beaver were removed from the landscape.\textsuperscript{121}

\textsuperscript{118} R S Rupp, “Beaver-trout Relationships in the Headwaters of the Sunkhaze Stream, Maine,” American Fisheries Society Transactions 84 (1955) 75-85

\textsuperscript{119} Johannes Megaolensis, Jr., “A Short Account of the Mohawk Indians,” in Narratives of New Netherland 1609-1664, ed J Franklin Jameson (New York Charles Scribner’s Sons, 1909), 171

\textsuperscript{120} Van der Donck, A Description of New Netherland, 17

\textsuperscript{121} David R Butler and George P Malanson, “The Geomorphic Influences of Beaver Dams and Failures of Beaver Dams,” Geomorphology 71 (2005) 55-56 Butler and Melanson generated a low estimation of pre-European sedimentation for 15 million beaver ponds at 3 million cubic meters of sediment flowing down
Ever the ecological keystone, beavers shaped not only the movement of water, but also the surrounding geology and patterns of forest succession. Any disruption to this carefully balanced system—namely, killing beaver—lowered the water table, changed the floral and faunal composition of the surrounding forest, and altered the course of water and the speed at which it moved. If, as Neil Salisbury observed, the introduction of wampum to the fur trade sparked a “wampum revolution,” then one must also acknowledge the ecological revolution that followed.122

The Effects of Beaver Removal on Narragansett Bay

Changes to inland rivers impacted the coastal estuaries into which their waters flowed, and in a relatively small watershed like that of Narragansett Bay where hunting pressure on beaver was particularly strong, the effects on sedimentation were dramatic. Drawing on earlier work that calculated a 673-square-kilometer watershed retained 3.2 million cubic meters of sediment behind beaver dams, Scott W. Nixon calculated that in Narragansett Bay, which was seven times larger, beaver dams would have retained 22

North American rivers. If beaver ponds existed at higher levels, up to 250 million beaver ponds, about 50 billion cubic meters of sediment per year would have naturally flowed through river systems. With the arrival of Europeans and the extirpation of beavers, many dams would have broken. As a result, North American sediment-transport rates would have skyrocketed to 7.5 billion cubic meters of sediment on the low end and 125 billion cubic meters of sediment in the more generous estimates. R K Meentemeyer and D R Butler, “Hydrographic effects of beaver dams in Glacier National Park, Montana,” Physical Geography 20 (1999) 436-444, observed similar results in their calculations. Robert J Naaman, Jerry M Melillo and John E Hobbes, “Ecosystem Alteration of a Boreal Forest Stream by Beaver (Castor canadensis),” Ecology 67 (1986) 1254-1269, calculated the much higher volume of sedimentation of 6,500 cubic meters per pond in their study region of Quebec, whereas the highest estimates for post-European sedimentation by Butler and Melanson were 500 cubic meters per pond. In summary, although the Butler and Melanson estimates show tremendous sedimentation increases following European arrival and subsequent extirpation of the beaver, the Naimen et al., estimates are thirteen times higher.

122 Salisbury, Manitou and Providence, 147-152
million cubic meters of sediment. If those dams were removed, a full 10 centimeters of sediment could have theoretically covered the entire bottom of Narragansett Bay. At the very least such a volume of particulate matter would have surely increased the Bay’s turbidity. But it is important to note that beavers were not removed all at once, and that sediment would have become trapped in beaver ponds downstream. Nevertheless, overall soil retention times were undoubtedly affected. With less time to steep in numerous beaver ponds, river water flowing into Narragansett Bay at higher rates also deposited dissolved inorganic nitrogen and phosphorus, which in turn increased primary productivity, the amount of chlorophyll being produced by bay phytoplankton. Beaver removal, experts believe, caused primary productivity on Narragansett Bay to more than double. In some sheltered inlets, it is possible that increased river flow caused by beaver removal led to moderate eutrophication. As beaver dams crumbled, organic nutrients that had originally been trapped in upland beaver ponds flowed downstream. The introduction of organic matter caused dramatic increases in microscopic plant and animal life in the estuary.


125 Ibid., 258.


Beaver dam removal made Narragansett Bay more productive. Although estuarine ecologists admit that the variables affecting coastal primary productivity are legion and their interactions complex, they nevertheless believe that the introduction of nutrients can increase marine fauna.\(^{128}\) Nixon demonstrated a "strong correlation between the rates of primary production ... for a very wide range of estuarine and marine systems and the reported landings of finfish and shellfish."\(^{129}\) In short, the doubling of nutrients flowing into the estuary likely increased productivity. It is conceivable that the prodigious fish runs and sprawling clam banks observed by settlers like William Wood, Roger Williams, and Thomas Morton, among others, were to some extent accentuated by human action. In other words, in this case, for a brief time humans made things better for themselves before they made them worse.

Although the amounts of freshwater that flowed into Narragansett Bay before beaver dams were removed is unknown, it is highly likely that more freshwater flooded the bay after those beaver were killed and their dams deteriorated. As a result, more nutrients entered the Bay and flushing time decreased, changing the chemical composition of Bay waters, particularly those in the estuary's brackish arms where


shellfish proliferated. Conceivably, the shells mined from Narragansett Bay and later transformed into beads changed the very environment from which they had come. The imposition of Native American and European cultures onto a simple estuarine resource—the shells of whelks and quahogs—ultimately, following a tortuous route, reshaped the environment of that resource itself. The value relationship that prized wampum for its timeless, trackless, and even divine estuarine origins came to reflect the powers of “improvement” as it fueled the relentless search for furs farther and farther into the continental interior. As beavers were “gleaned away,” as William Hubbard, a contemporary, observed, and water drained off the land, the eternal sea felt the impact.\textsuperscript{130} Even before human and animal populations around Narragansett Bay began to grow in earnest and large-scale forest clearing ensued, a handful of fur traders and the Indians with whom they developed shared conceptions of value executed the systematic extirpation of the beaver. This changed not only Narragansett Bay but the entire region as well. Within a generation, the entire Northeast became a dryer place.

CHAPTER 2

SHOVELING DUNG AGAINST THE TIDE:
PLANTATIONS AND THE IMPROVEMENT OF AN ESTUARY

“The Produce of this Colony,” wrote the Anglican minister James MacSparran of Narragansett in 1753, “is principally Butter and Cheese, fat Cattle, Wool and fine Horses, that are exported to all parts of the English America.” Although MacSparran praised the horses for their “fleetness and swift Pacing,” his description of Rhode Island was also disparaging. More than three hundred vessels “from 60 tons and upwards,” MacSparran observed with reproach, called the waters of Narragansett Bay home and some of them shipped this “produce” of Rhode Island’s plantations to points throughout the colonies. “[B]ut,” he groused, “as they [the ships] are rather Carriers for other Colonies than furnished here with Cargoes, you will go near to conclude that we are lazy and greedy of Gain, since, instead of cultivating the Lands, we improve too many Hands in trade. This indeed is the case.” Although Rhode Island was well known for its cows, mares, and mutton, this emphasis on livestock exporting and other forms of inter-colony trade, the good reverend believed, was shady business. Rejecting the blisters of an honest-day’s

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1 James M[a]cSparran, D.D., America dissected, being a full and true account of all the American Colonies, shewing the Intemperance of the Climates, excessive Heat and Cold, and sudden violent Changes of Weather, terrible and Mischievous Thunder and Lightning, bad and unwholesome air, destructive to Human Bodies. —Badness of Money, Danger from Enemies, but above all, the Danger to the souls of the Poor People that remove thither from the multifarious wicket and pestilent Heresies that prevail in those parts. In several letters from a Reverend Divine of the Church of England, Missionary to America and Doctor of Divinity. Published as a Caution to Unsteady People who may be tempted to leave their Native Country (Dublin: S. Powell, Dame Street, 1753) in Collections of the Rhode Island Historical Society, vol. 3 (Providence: Marshall Brown and Company, 1835), 133-134.
work, all "hands," he insisted, had been greased by the drippings of commerce, and as a result had grown ethically soft.

MacSparran was correct in his assertion that Rhode Island farmers had largely emphasized livestock over crops. He was also correct when he observed that by the middle of the eighteenth century Rhode Island ships played a central role in Atlantic world networks of trade. But in his haste to show that Rhode Islanders, who had taken "Liberty of Conscience ... to an irreligious Extreme," had succumbed to sloth and avarice by a collective failure to plow and plant, MacSparran suggested that Rhode Island's graziers and shipping magnates had simply traded an honest day's work in the fields for ill-gotten gain at sea. For MacSparran, a missionary working among some of Rhode Island's largest plantations to sustain an Anglican parish surrounded by "Quakers, Anabaptists, ... [and] Independents, with still a larger number devoid of all Religion," the mercenary nature of Rhode Island's livestock plantations and their close ties to offshore trade was just one of many examples of the colony's corrupt character.

Although free from MacSparran's heavy-handed moralism, modern historians of early Rhode Island have likewise highlighted connections between the shores and ships of Narragansett Bay. Chasing the back-story of the often-repeated caveat "except in Rhode Island," these historians usually emphasized the ways Rhode Island's economic (as well as social and religious) development differed from that of other English colonies in the North. Most notably, Carl Bridenbaugh's 1974 *Fat Mutton and Liberty of Conscience* challenged the assumption that across New England poor soils forced coastal people to turn to the sea. Blessed with rich coastal farmlands, Rhode Island, he showed,

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developed instead a maritime infrastructure with an eye on exploiting the colony’s terrestrial resources. “[It] was the prospect of marketing a lucrative agricultural surplus …,” he wrote, “that forced local merchants to build wharves and warehouses, … ketches, barques, and sloops for the youth of the colony to sail to faraway ports.” Specifically, Bridenbaugh’s study showed the development of animal husbandry on the islands of and coastal mainland surrounding Narragansett Bay, and how this “produce,” as MacSparran described it, shaped the colony’s maritime character. In other words, Rhode Island’s identity—one symbolized by a ship’s anchor by the mid-seventeenth century—was rooted not simply in its ties to the ocean, but in terms of its ability to facilitate exchanges between land and sea. Although many Rhode Islanders drew their livelihood from the shell and finfish of Narragansett Bay and the many tidal lagoons adjacent to it, the colony had during the seventeenth and eighteenth centuries developed an economy that relied primarily on the grasslands of its coastal fringe. In essence, Rhode Islanders established their place as major maritime players because of their collective ability to work in and draw from an estuarine hinterland.

But as Bridenbaugh emphasized the connections between plantations and distant ports, perhaps he drove Rhode Island’s sheep, pigs, cows, and horses too quickly from the stockyards to the quays without considering the ways ecological changes on shore effected changes to the sea closer to home. While eighteenth-century observers like MacSparran emphasized the moral continuities between livestock plantations and

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4 Howard M. Chapin, Illustrations of the Seals, Arms and Flags of Rhode Island (Providence: Rhode Island Historical Society, 1930), 1. After the four original towns of Rhode Island (Providence, Newport, Portsmouth, and Warwick), united under the charter of 1643, they adopted the anchor as their symbol in 1647.
Atlantic world markets, and twentieth-century historians like Bridenbaugh emphasized commercial continuities, this chapter examines the ecological continuities between Rhode Island’s shores, Narragansett Bay, and the coastal ocean. It examines the ways changes to the land—specifically Rhode Island’s plantations—affect the coastal environment and the ways the people who lived there were impacted in return. Fundamental to understanding these entangled processes of cultural and environmental change are the ideas with which the people of Narragansett Bay organized littoral space.

MacSparran’s disparaging account of Rhode Island commerce suggests eighteenth-century coastal people, or at least the ornery, aging ministers who preached to them, saw important conceptual differences between land and sea, between workable soil that nurtured the righteous and a defiant ocean that harbored the avaricious. For MacSparran, confining livestock to their deck pens and driving them toward the sea’s endless horizon was anathema. They were the fruits of the bucolic—of dirt, mud, and grass—not salt spray and the twisting, pounding, infinite tumult of the waves. Cattle represented time-honored tradition and methodical stewardship. Thrust upon an unrelenting ocean, these cows, pigs, sheep, and horses and their profane attendants were, for MacSparran, forced to endure the same physical and spiritual displacement to which he himself had been subjected while living along the Narragansett Country’s godforsaken arms of the sea. Purposefully worked, dry land held hope for redemption. Unchanging and beyond control, the sea, by contrast, was in every way abysmal. The push and pull of these epistemological forces did as much to shape Rhode Island’s littoral physically as it did conceptually.
The Rhode Islanders who lived and worked on the Bay developed cultural attitudes about nature based, in part, on their proximity to the littoral. For farmers who mowed salt hay by daylight and speared eels by torchlight, every facet of quotidian life straddled—sometimes deftly and at other times with noticeable hesitation—the epistemological boundaries between land and sea. Mirroring the complex ecology of the shores on which they lived, a space defined by seasonal winds, weather, and the ebb and flood of the tide, these littoral people forged relationships with the natural world that at various times reflected their beliefs about an eternal sea, an improvable land, and their understandings about the liminal space in between.

As this chapter will argue, that shifting or even ambivalent relationship with nature had environmental repercussions for the coastal zone, for in the interstices between land and sea, between a geography of control and one that was literally and conceptually unfathomable, the boundary between man and nature—the idea that humans were removed or somehow separate from the world around them—became porous. At times, a profound sea thwarted the mastery of man. Every twelve hours, the rhythmic renewal of the tide reminded the littoral people living there that they too were subject to the powerful forces of nature. But as the sea slipped toward shore, its waters growing brown with tannins and green with algae, the shallow, sheltered ponds into which it flowed grew increasingly malleable. Alongshore, the ocean lost some of its opacity. The estuary became a placid harbor of refuge and a cradle of incredible fecundity. And the impulse to “improve” it was strong. The people of Narragansett Bay tinkered with the shore, sometimes to dramatic effect. And as the years passed one after another, the estuary, like an aging face weathered by work and stress, slowly, imperceptibly,
inexorably, began to show the deepening creases and fading pallor of environmental change.

**Settling the Shores of Narragansett Bay**

The bitter winter of 1635 had descended on Salem, a small, coastal Puritan settlement fifteen miles north of Boston, and schism, like the icy winds and knee-deep snows that had blanketed the town in early December, had forced the religious community there, at least a sizeable portion of it, into isolation. With the intense heat of the hearth in his face and bitter cold at his back, Roger Williams, the vociferous minister who, according to the Puritan powers in Boston had infected Salem with separatist sentiments, was, not unlike the clashing climes of his chambers, emotionally and spiritually divided.⁵ For months, Williams had been torn between betraying his conscience for the comfort of community and remaining true to his principles but submitting to banishment. To make matters worse, he had fallen gravely ill in August and had scarcely recovered.⁶ After closing a private letter from John Winthrop, whose advice he later characterized as “a hint and voice from God,” Williams turned his back to the fire and began to pack his things.⁷

Since making the decision to immigrate to New England, Williams had been no stranger to conflict. Born most likely in 1603 in Wales, raised in London, and educated as a minister at Cambridge, Williams was a Puritan, who, like so many other English

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⁶ Ibid., 198.

Protestants believed the Church of England had not distanced itself far enough from Catholicism. In 1629 Williams married Mary Barnard, and a year later the couple boarded the Lyon with twenty other passengers intent on leaving England and the increasingly anti-Puritan policies of Canterbury for one of the newly established Puritan communities abroad. Departing the port of Bristol, the young clergyman and his new wife arrived to a warm welcome on February 5, 1631 at Nantasket, Massachusetts. But the Puritan authorities in Boston soon grew critical of Williams after he turned down a job as a minister because he felt they had not done enough to distance themselves from Anglican ways. Williams, it seemed, sought not only to purify the Church of England but Puritanism itself. And this threatened the authority of the church fathers in Boston. He tried to find a community in Salem and then tried again with the separatist Pilgrims in Plymouth, with limited success. Smarting from Williams’ defiance, Boston leveraged political power to alienate the radical parson wherever he went. Although Plymouth governor William Bradford admitted Williams was “a man godly and zealous, having many precious parts …,” he was nevertheless, Bradford conceded, “very unsettled in judgment ….” Eventually, Bradford explained, Williams began to “fall into some strange opinions, and from opinion to practice …,” and in 1633 Williams and his wife returned to Salem where, no doubt frustrated, he began to express his thoughts in writing.

Heated rhetoric poured from his pen. Williams was particularly critical of the ways the English flagrantly seized Native American property. “[W]e have not,” he wrote in a published response to a letter from John Cotton, “our Land by Pattent from the King,

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but that the Natives are the true owners of it.”10 So egregious was the seizure of land that Williams called it “a sin of unjust usurpation upon others’ possessions.”11 Williams also caused Boston officials to spasm when he raised the issue of women wearing veils during prayer. Debate ensued there, and although the measure was ultimately struck down (contrary to Williams’ opinion), officials saw in the polemical minister’s willingness to broach the subject, the seeds of separatist radicalism. In 1634 Williams was again drawn into contentious debate when Salem freeman John Endecott attempted to cull with scissors what he saw as popish symbolism from the English ensign. “He,” recorded John Winthrop, “judging the cross, etc., to be a sin, did content himself to have reformed it …”12 Although Williams did not participate, his adversaries concluded that Endecott’s brash behavior was yet another manifestation of Williams’ perverse ministry.13 In 1635 Williams opposed a law requiring oaths of allegiance to the Massachusetts Bay magistrates and then wrote two particularly inflammatory letters “complaining of the magistrates for injustice, extreme oppression, etc.”14 The tipping point, noted an exasperated John Winthrop, was when Williams urged his parishioners to “renounce communion with all the churches in the bay, as full of antichristian pollution …”15

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14 Ibid., 18-19.

15 Winthrop, History of New England, 1: 204.
In response, officials in Boston had no choice but to take drastic measures. For a short time, the General Court contemplated his execution. But cooler heads prevailed, and upon hauling Williams into court, on September 3, 1635 the governor and magistrates banished him instead. Williams, the court concluded, “hath broached and divulged divers newe and dangerous opinions, against the authoritie of magistrates ……” In addition, they noted, he had written “letters of defamacion … and mainetaineth the same without retraccion.” And this did not sit well with those in power. For his contrarian ways, the General Court ordered that “Mr. Williams shall departe out of this jurisdiction within six weekes …” or its members would “send him to some place out of this jurisdiccion” themselves. Due to Williams’ illness, the General Court granted him stay in Salem until spring if he did not “draw others to his opinions.” Despite the birth of his second child in October, Williams persisted and was called to court again. Citing his illness, Williams did not appear. In response, the General Court dispatched Captain Underhill to apprehend Salem’s incendiary teacher and place him on a ship bound for England.

Warned of the impending arrest and left with few options, Williams fled. “I was,” he later wrote, “unkindly and unchristianly … driven from my house and land and wife and children ….” Guided by a compass decorated with a winged hourglass supporting a

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17 Winthrop, History of New England, 1: 204.


20 Roger Williams to Major Mason, Providence, 22 June 1670, Letters of Roger Williams, 335-336.
human skull, Williams, laboring through deep snow and freezing temperatures, was no doubt reminded of his own mortality with each check of direction.\(^{21}\) He was, Williams recalled, “sorely tossed, for ... fourteen weeks, in a bitter winter season, not knowing what bread or bed did mean.” The private letter Williams had received from Winthrop had advised him “to steer ... to Narragansett Bay” because of the “freeness of the place from any English claims or patents.”\(^{22}\) As governor of Massachusetts Bay from 1630 to 1634 and Deputy Governor in 1636, Winthrop was clearly part of the Puritan establishment that had run Williams out of town. In fact, he had voted for Williams’ banishment and cast any separatist settlement on Narragansett Bay as a threat, for if Williams and his followers succeeded, “the infection,” he wrote, “would easily spread into these churches ...”\(^{23}\) But privately he supported it. Williams was certainly an indefatigable critic of the Puritan establishment in Boston and perhaps even a threat to its religious authority in New England, but Narragansett Bay presented untapped economic potential. Although Plymouth held jurisdiction over most of the Bay’s eastern shore, an ally in Williams, who was eminently capable of acquiring land to the west and followers to fill it, promised Winthrop substantial dividends.

After surviving a harrowing journey of more than three months, Williams arrived at the head of Narragansett Bay. During his exodus, he had sheltered with the Wampanoags. Nevertheless, upon reaching his new home, Williams felt he had vanquished the angels of the wild. “Unto these parts ...,” he later wrote, “I may say

\(^{21}\) The compass is held in the Rhode Island Historical Society collections.

\(^{22}\) Roger Williams to Major Mason, Providence, 22 June 1670, Letters of Roger Williams, 335-336.

\(^{23}\) Glenn W. LaFantasie, ed., introduction to The Correspondence of Roger Williams, 1: xxxiv; Winthrop, History of New England, 1: 209.
Peniel, that is, I have seen the face of God.” Having learned the Indian language during his time in Plymouth and his stay with the Wampanoags, Williams arranged with the Ousemequin, or Massasoit, for land at Seekonk. But Edward Winslow, the Governor of Plymouth, informed Williams that he was still within Plymouth colony’s jurisdiction. Brokering a deal with the Narragansett Sachem Canonicus and his nephew Miantonomi for £30, Williams, in May or early June, packed his things once again and with five others travelled west by canoe around Fox Point and up the next largest river. There, by a spring flowing from a ridge, they established a settlement that “having in a sense of God’s mercifull providence unto me in my distresse …,” Williams later wrote in the land’s confirmatory deed, he named “Providence.”

In short order, Williams and his small band of followers began transforming the wilderness into a town. Providence was primarily situated on the “lands and meadowes upon the two fresh rivers, called Mooshausic and Wanasquucket …,” but the tract extended northwest along the Blackstone River to Pawtucket and south along the Bay to the Pawtuxet river, which was surrounded on both sides by rich salt meadows. In Providence Williams and his “loving friends” carved out Town Street along which they began building houses, the roofs of which were thatched with grasses from the Bay’s broad marshes. So determined were Williams and his fellow townspeople to develop the area, that by the end of 1636, the town council mandated fines for inhabitants “in case

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24 Roger Williams to Major Mason, 335.


27 James, Colonial Rhode Island, 20.
they do not improve their ground at present granted to them, viz.: by preparing to fence, to plant, to build, etc.” In response, the settlers at Providence subdued the land aggressively, and within a year new laws were necessary to reign in the wanton clearing of forests, for settlers had begun felling trees faster than they could use or remove them. “[A]ny timber … lying on the ground above one yeare after the felling,” the council mandated, “shall be at the Towne’s disposing.”

Although the tract of land surrounding Providence was generous, Williams saw great economic potential in the vast salt meadows ringing the rest of Narragansett Bay and moved quickly to secure property on its islands. In partnership with Winthrop, Williams approached Canonicus about purchasing the five-square-mile island, shaped “spectacle-wise” in the middle of Narragansett Bay called Chibachuwese, which had been previously (and tenuously) owned by the late John Oldham. Desirous of Oldham’s trade goods and hoping to induce him to make Narragansett his base of operations, the Narragansett had offered him the island. Mad Jack never settled there, but Williams, quick to capitalize on an entrepreneurial opportunity, maneuvered to fill the gap that had opened in Oldham’s absence. “[T]urning their [the Narragansetts] affections towards myself,” wrote Williams to Winthrop in October 1637, “they desired me to remove thither and dwell nearer to them.” Although Williams did not want to settle there, he sought a partnership with Winthrop, who had “motioned … desire” to fill some of the Bay’s islands with swine. Knowing Winthrop’s interest in the proposition, Williams himself expressed “more desire to obtain it.” Canonicus was only willing to sell half of the island “because of the store of fish,” likely rich shellfish beds from which the Narragansett mined the raw materials for wampum. Nevertheless, Williams felt confident

that if he approached Canonicus on the island in person, he “shall obtain the whole.” 29
True to his word, Williams acquired the entire island and renamed it Prudence, later purchasing two more nearby that he named Patience and Hope.

As counterpoint to the dogmatic intransigence of Massachusetts Bay, Williams christened the islands composing the geographic center of Narragansett Bay with names that reflected the philosophical and economic dexterity with which he set out to develop his new colony. In short order Williams, in partnership with Winthrop, began populating the islands with livestock. Natural corrals, the islands prevented animals from straying while keeping them safe from wolves, which rarely swam such great distances. So secure were the islands that they required only periodic oversight. “I have a lusty canoe,” wrote Williams to Winthrop in January 1637, “and shall have occasion to run down often to your Island (near twenty miles from us) both with mine own and (I desire also freely) your worship’s swine …” 30 Even in the “lustiest” canoe, twenty-mile paddles down the Bay would be infrequent.

But Williams could not maintain the serenity he envisioned for his island pastures when in 1638 he brokered the purchase of Aquidneck, or “Rhode-Island,” for the followers of the Anne Hutchinson, who had, like Williams, fled religious persecution in Massachusetts Bay. Hutchinson had been excommunicated and banished from the Bay colony for promulgating an understanding of predestination and grace that theoretically made earthbound laws unnecessary, thereby threatening the church hierarchy. The lawless conclusions to which Hutchinson’s ideas led prompted her critics to brand her an

29 Roger Williams to John Winthrop, [Providence], 28 October 1637, Letters of Roger Williams, 70-71.
30 Roger Williams to John Winthrop, Providence, 10 January 1637-8, Letters of Roger Williams, 85.
“Antinomian.” Under the leadership of William Coddington, William Aspinwall, and John Coggeshall, Hutchinson and more than eighty families fled to Narragansett Bay and settled on Aquidneck Island’s northern end where they built a town at Pocasset, which they later renamed Portsmouth.

A mix of farmers, tradesmen, seaman, and merchants, the settlement at Portsmouth was largely agricultural, but with mounting religious strife among the group and growing disparity between economic interests, the settlement fractured. Banished from Plymouth, Samuel Gorton, a particularly zealous Puritan who came to Portsmouth and began preaching ideas similar to but even more extreme than those of Hutchinson, rankled community leaders. And in 1641 they ran Gorton out of town. Crossing the Bay, he purchased land at Showamet where he established his own community just south of the Providence patent on Warwick Cove.31 The desire for religious uniformity on Rhode Island along with more economic opportunity prompted the merchants, led by Coddington, to move south, establishing Newport around the same deep, secure harbor that Verrazano had visited a little over a century earlier. Around a small spring-fed brook, they built their town, each settler receiving a small house lot along the harbor, a piece of meadowland, and a tract of farmland.32 The wealthiest of the Newport settlers awarded themselves with sprawling estates that flanked the harbor to the north, south, and east.

Although most histories of Rhode Island have emphasized Rhode Island’s role as a religious refuge, far fewer have examined the ways a lack of central authority on Narragansett Bay—whether religious or civil—opened the door to economic opportunity during the seventeenth century. And the omission is understandable. During the 1630s,

31 James, Colonial Rhode Island, 30.
32 Ibid., 28.
Roger Williams’ letters, which provide detailed insight into his early years on Narragansett Bay, are overwhelmingly concerned with spiritual matters and the specter of Indian attack, and little attention is paid to economic development. But amidst the religious squabbling and Williams’ tireless efforts at diplomacy, a quiet scramble for land surrounding Narragansett Bay ensued.

At about the same time that Portsmouth, Newport, and Warwick were settled, Richard Smith with his wife and children arrived in Cohannock, or Taunton, a small village resting at the northeastern corner of Narragansett Bay. Following the non-conformist clergyman Francis Doughty, who had sparked the antipathy of religious authorities near Smith’s home of Thornbury in Gloucestershire, Smith and his family abandoned their possession and, most likely departing Bristol, set sail for Plymouth Colony. At Taunton Smith took an oath of allegiance on December 3, 1638 and by 1640 was made a freeman in a growing town that, observed Edward Winslow, had “very good [ground] on both sides, it being for the most part cleared.”33 The forests were filled with timber and upon the river, Winslow explained, “a shipp may goe many myles up it ….”34

Despite his adopted town’s natural advantages and Smith having established himself, according to Roger Williams, a “leading man in Taunton,”35 he quickly pursued opportunity farther afield. Specifically, Smith sought his fortune in the vast salt meadows and rich uplands that formed the western shores of Narragansett Bay. In late 1637 or


early 1638 he became the first European to purchase property there.36 Called Cocumscussuc by the Narragansett Indians, and later named Wickford, Smith’s tract included a sheltered harbor fringed with salt marshes and mudflats and frontage on the main overland route through the region, known at various times on sundry deeds as “The Pequot Path,” “the road to Pequot,” or simply “the country road.”37 His longtime business associate and spiritual confident, Roger Williams, testified in 1679 that “[F]or his conscience sake … [Smith] left Taunton and came to the Nahigonsik countrey, where (by the mercy of God and) the favour of the Nahigonsik Sachims, he broke the ice (at his great charges and hazards), and put up in the thickest of the barbarians, the first English house among them.”38

Initially, however, Smith did not reside there. When Doughty fell out with Pilgrim leaders at Cohasset during the early 1640s, he was obliged to leave New Plymouth. And Smith and his family “for his conscience sake” followed. They spent a brief time in Portsmouth, Rhode Island, and then travelled west into the Dutch territory, whereupon Smith purchased a 13,000-acre tract with Doughty and several others on Long Island, in what is now Maspeth, Queens. Smith also purchased property on Stone Street in New Amsterdam and a lot abutting the East River. His daughter soon married a Dutchman named Gysbert op Dyck in 1643.39 But during that same year Maspeth was attacked by Indians, and after a falling out with Doughty, by 1645 Smith had pulled out of that

36 Ibid.


38 Bartlett, Records of the Colony of Rhode Island, 1: 57.

39 Updike, Richard Smith, 15.
investment altogether. While his family remained in New Amsterdam, Smith left most likely in 1645 or 1646 and settled in the Narragansett Country.40

At about this time, Smith built a trading post along the principal travel route along the west side of Narragansett Bay. Within several years, Roger Williams also built a trading house nearby.41 But in 1651, he sold it to Smith, along with two big guns, and a small island for goats.42 Smith soon expanded his landholdings. On March 8, 1656 he leased from the Sachem Coginiquant the land south from Coccumscussut Harbor to the Annaquatucket River and east to the western shore of Narragansett Bay for sixty years. On June 8, 1659 Coginiquant leased him a slightly larger but more clearly defined parcel, including meadows at Sawgoge and Paquinapaquoge and a spit of land east of Smith’s house on the northern side of Coccumscussut Cove, all for a thousand years. On October 12 of the following year, two other sachems, Scultob and Quequaganuet, confirmed the agreement.43

With the help of Williams’ skills of Indian negotiation, Smith had established himself as the first permanent European resident in the Narragansett Country, but his time alone there was short lived and soon a cadre of investors poured into the area. In 1657 four men from Portsmouth, Rhode Island—Samuel Wilbore, Thomas Mumford, John Porter, and Samuel Wilson—and a fifth, John Hull, a goldsmith and the Mintmaster for Massachusetts Bay, combined to purchase a tract of land along the Pettaquamscutt River,

40 Ibid., 14-15.
41 Wilkins Updike, A History of the Episcopal Church in Narragansett, Rhode Island Including a History of the Other Episcopal Churches in the State (Boston: D.B. Updike, the Merrymount Press, 1907), 13-14.
42 Potter, The Early History of Narragansett, 32.
43 “Records of King’s Province, nos. 56-59,” in Potter, The Early History of Narragansett, 33.
a thin, four-mile-long estuary spilling into the west passage of Narragansett Bay across from the southern tip of Conanicut Island.\textsuperscript{44} The Pettaquamscutt saw prodigious annual runs of alewife and bass and was lined with valuable salt meadows. "[The] country on the west of the bay of Narragansett," observed John Winthrop of the area surrounding the Pettaquamscutt, was "all champaign for many miles, but very stony and full of Indians."\textsuperscript{45} That western Rhode Island was blanketed with sprawling, grassy levels, or "champaigns," and was home to a large Native American population was widely known. The Narragansetts, although increasingly molested by disease, had been largely spared from the devastation wrought upon the Wampanoags on the Bay’s eastern shores. Aware of the Narragansett’s peaceful reputation and willingness to sell land, by the 1650s, English colonists began to purchase tracts. But because the consent of so many Indians was required to secure the land, title to the Pettaquamscutt lands wasn’t finalized until 1660.\textsuperscript{46}

The rocks dotting the Narragansett country’s grasslands did not altogether deny the plow. Corn grew throughout the area and within a decade of the Pettaquamscutt Purchase southwestern Rhode Island played host to some of the most productive livestock farms in New England. But initially the Pettaquamscutt Purchasers were most likely after mining rights. The deed specified that the sellers, the chief sachems of the


Narragansett, Quassaquanch, Kachanaquant, and Quequaquenuet, sold not only the land for “£16 and other reasons” but also “grant[ed] them all the black lead in this title …”\(^{47}\) Nevertheless, the vast tracts of coastal marshland were the principal draw.

Productive farms and valuable mines were highly attractive to investors, but the zealous intent with which they entered and subsequently partitioned Narragansett lands had destabilized the region. Williams contended that that one important cause of the Pequot War was the insatiable thirst for land among the English. Men with a “depraved appetite after the great vanities, dreams and shadows of this vanishing life,” he wrote, placed themselves in “as great necessity and danger for want of great portions of land, as poor, hungry, thirsty seamen have, after a sick and stormy, a long and starving passage.”\(^{48}\) Blinded by avarice, these desperate land speculators, Williams believed, had raised hackles across the region. That Williams characterized the mad dash for property with a seafaring simile was no coincidence. Simon Ryan has observed of Australia that European explorers often employed marine metaphor to establish a “semiotic *tabula rasa,*” or an empty, ocean-like space that could be constructed and controlled according to their own desires.\(^{49}\) It is conceivable that Williams saw such large tracts of land inhabited by so few Europeans as vacant terrain, ripe for improvement, even if he disapproved of the cupidity with which it was obtained. That it was bordered by the Bay and flooded by so many arms of the sea made the comparison all the more fitting. In his willingness to couch the push of progress in oceanic language, to employ the profound

\(^{47}\) *Collections of the Rhode Island Historical Society,* 3275

\(^{48}\) Roger Williams to Major Mason, Providence, 22 June 1670, *Letters of Roger Williams,* 342

nature of the sea to explain progress on shore, Williams reveals many of the conceptual complexities that shaped the settlement of Narragansett Bay’s littoral space. But if emptying coastal lands through symbolic slight of hand improved land theoretically, the powerful investors who swooped into the Narragansett Country took control of it physically.

The unwavering determination with which these speculators targeted coastal lands led, as Williams observed, to contentious dealings with the Indians and even among the English. In 1659, under the leadership of Humphrey Atherton, a second company purchased land in the Narragansett Country and sought to absorb those properties into Connecticut and Massachusetts.\textsuperscript{50} So aggressive were their maneuvers, that Williams characterized the ensuing ill will between Rhode Island and its neighbors “like a prodigy or monster.” He chastened Connecticut and Massachusetts for their greed, for he contended they already had ample rich land. So well endowed were Rhode Island’s English neighbors that he compared their natural resources to “platters and tables full of dainties.” He felt their incursions into the Narragansett Country were akin to “snatch[ing] away their poor neighbors’ bit [of] crust,” which was “a dry, hard one, too because of the natives’ continual troubles, trials, and vexations.”\textsuperscript{51} The great value of Rhode Island’s littoral raised political tensions for everyone involved. It made for covetous English neighbors and exacerbated tensions with the Indians who lived within its boundaries. Nevertheless, by the end of the seventeenth century the English had spread to every


\textsuperscript{51} Roger Williams to Major Mason, Providence, 22 June 1670, \textit{Letters of Roger Williams}, 343.
corner of Narragansett Bay and had begun exploiting that “bit [of] crust” with spectacular results.

**Stockyards of the Sea**

When Thomas Hazard emigrated from England to Portsmouth, Rhode Island, and later helped found the town of Newport in 1638, his son, Robert, was four years old. As an adult in the 1670s Robert moved to the Narragansett Country, acquired his first parcel of land, and even served as surveyor of Kingstown village.\(^{52}\) It was this Robert’s son, Thomas, who became a great landholder in the Narragansett Country. In April 1698 he purchased for £700 roughly one thousand acres in Scituate, along the Saugatucket River, and on Point Judith Neck from Samuel Sewell, the son-in-law of John Hull, who was a key player in the Pettaquamscutt Purchase.\(^{53}\) In 1710 Thomas Hazard bought more land from Sewell along the west shore of the Great Pond and Pettaquamscutt Cove.\(^ {54}\) By the beginning of the eighteenth century Robert’s great-grandson, Robert, was said to have amassed 150 cows and twelve African female slaves working as dairywomen. On Boston neck, a thin spit of land between the Pettaquamscutt River and Narragansett Bay, where the grass was said to have grown waist high, he kept upward of 4,000 sheep.\(^ {55}\)

In a little more than fifty years, Rhode Island had established itself as the most important producer of livestock in New England. In 1661 Royal Commissioners tallied

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\(^{52}\) Elisha R. Potter Jr., *The Early History of Narragansett*, 290.


\(^{54}\) Caroline Hazard, *Thomas Hazard son of Roht*, 16.

\(^{55}\) Ibid., 30-31.
upwards of 100,000 sheep grazing the coasts of New England. Within five years, Rhode Island had become the region’s most important producer. In a letter written in 1665 to Secretary Lord Arlington, King’s commissioner George Carr explained of Narragansett Bay, “The best English grass and most sheep are in this Province, the ground being very fruitful, ewes bring ordinarily two lambs [per year],” which was nearly double the rate of England at the time. Many of Rhode Island’s flocks, however, were lost during King Philip’s War in 1675 and 1676 when fire raged from Westerly, in Rhode Island’s southwest corner, to Providence, destroying most of the established farms in its path. Edward Randolph estimated that across the region 1,200 houses were burned and 8,000 head of cattle were destroyed. But Rhode Islanders were quick to transplant animals from elsewhere as soon as the smoke had dissipated. Conanicut and Block Island, which had been purchased for the express purpose of raising sheep and cattle, helped fuel the recovery on the mainland. But it was on Aquidneck Island, particularly at Newport, where the numbers of sheep were prodigious. As early as 1662 flocks had grown so large on Aquidneck Island that Portsmouth, responding to “the greate Negligence in many persons, for not taking there Sheepe Rames from the Ewes,” made it lawful to kill any


57 Ibid., 343; Carl Bridenbaugh, Fat Mutton and Liberty of Conscience: Society in Rhode Island, 1636-1690 (Providence: Brown University Press, 1974), 53, n. 38. Bridenbaugh’s analysis of seventeenth-century Rhode Island husbandry was invaluable to this chapter. His synoptic survey of primary sources made it necessary, in many cases, to follow his lead. This study, however, has drawn from the original sources.

rams on the town common between August 10 and November 10. In 1673 William Brenton alone bequeathed 1,500 of them to his heirs. On his Newport farm, it was said that he pastured upwards of 11,000. In April 1675 William Harris characterized Aquidneck Island as the “Garden of New-England” and observed, “at a Town called Newport . . ., wch thrives very well,” there are “more sheep than in any place in New-England.” Passing on knowledge from experience, William Coddington of Newport explained to Jonathan Winthrop Jr., who had begun raising sheep on Fisher’s Island, that the sheep “do orderanly double in a yeare, and more of the Lambs have Lambs when they are a yeare ould.” One reason for their proliferation, he explained, was the lack of wolves on Aquidneck, there being only one or two. Assessing New English settlements for the French crown in 1692, La Mothe Cadillac explained, “They say that the settlers [of Rhode Island] own two hundred thousand sheep or lambs.” So important were sheep by century’s end that in 1696 Newport made one the centerpiece of its town seal.


62 “Harris Papers,” in *Collections of the Rhode Island Historical Society*. vol 10 (Providence Rhode Island Historical Society, 1902), 144-145


64 M De La Mothe Cadillac, “Memoire of M De La Mothe Cadillac,” *Collections of the Maine Historical Society*, vol 6 (Portland, Maine Published for the Society, 1859), 288

65 Howard M Chapin, *Illustrations of the Seals, Arms, and Flags of Rhode Island* (Providence Rhode Island Historical Society, 1930), 6, 57. Also see Bridenbaugh, *Fat Mutton and Liberty of Conscience*, 57
If sheep had brought economic prosperity to Rhode Island, grazing so many of them along its shores had a profound environmental impact. Sheep eat grass down to the roots, making it necessary to move them. Narragansett Bay farmers were often forced to expand pastures by cutting forests and in some cases filling marshes.\textsuperscript{66} Even the finishing stages of wool production impacted the environment. Likely one of the first wool manufacturers in the Narragansett Country, Colonel George Hazard gave to Thomas Culverwell in 1719 “a Little part of my farme belonging to my now Dwelling house … for ye Promoting of ye Wooling Manufactury which may be for my benefit and the Publick Good.” Culverwell accepted a half-acre lot abutting the Saugatucket River near Rose Hill, whereupon Henry Gardner commenced construction of a dam “to be made for ye fulling of Cloth, and to ye Promoting of a fulling Mill.” Hazard carefully noted that Culverwell was also to receive the land that “shall be Drowned by making of ye said Dam.”\textsuperscript{67} Sheep would not only denude Narragansett Country meadows. The act of processing their wool would transform, at least in small ways initially, the movement of water through the ecosystem.

In addition to sheep, vast herds of horses and cattle roamed Rhode Island’s shores. William Harris noted in 1675 that the “country is healthy and well replenished with people and cattle and so many horses that men know not what to do with them.”\textsuperscript{68} So numerous were horses on Aquidneck Island that a Portsmouth law made it legal to kill

\textsuperscript{66} Bridenbaugh, \textit{Fat Mutton and Liberty of Conscience}, 49.


any horse over a year old left “unfettered or unshackled” on the town common.69 The horse population grew so great in the Narragansett Country that on June 24, 1686, Rhode Island courts mandated that “thirty or any less number of wild or unmarked horses of two years old or upward shall be taken up, and ... sold ...”70 In Plymouth Colony, which extended to the eastern shores of Narragansett Bay, John Josselyn noted that horses had multiplied rapidly after midcentury.71 There were so many horses and other animals roaming the countryside that horse traders took pains to prevent interbreeding. A part owner of land on Point Judith Neck, John Hull explained to a business partner that if they “did fence [the Neck] with a good stone wall at the north End ... noe kind of horses nor Cattle might gett thereon ... [so] that noe mungreel breed might come amongst them.”72 This, he believed, would protect the integrity of their export business, which specialized in coach, saddle, and draft horses.

The spectacular proliferation of southern New England livestock farms was so dramatic that Samuel Maverick, writing at the end of the century, was awestruck. “In the yeare 1626 or thereabouts,” Maverick explained, “there was not a Neat Beast Horse or sheepe in the Countrey and a very few Goats or hoggs, and now it is a wonder to see the great herds of Catle belonging to every Towne.” In addition to the “brave Flocks of Sheepe [and] The great number of Horses,” he also marveled at the numbers of “those

69 Clarence S. Brigham, ed., The Early Records of the Town of Portsmouth (Providence, E.L. Freeman & Sons, State Printers, 1901), 189.
many sent to Barbados and other Carribe Islands, and ... how many thousand Neate Beasts and Hoggs are yearly killed ... for Provision in the Countrey and sent abroad to supply Newfoundland, Barbados, Jamaica, @ [sic] other places, As also to victuall in whole or in part most shipes which comes there.” As Maverick explained, the shores of southern New England raised the livestock that fueled the movement of ships and their crews around the Atlantic world. Either salted and barreled or transported live, Rhode Island’s animals fed the slave plantations of the West Indies and fueled the expansion of New England fisheries.

So integral to England’s Atlantic world network was Narragansett Bay that officials maneuvered to keep it tightly within the imperial fold. Imploring Whitehall to absorb Rhode Island and Connecticut into the Dominion of New England, in 1686 Joseph Dudley explained “they are the Principall parts of the Countrey whose Corne and Cattle are raised for the supply of the Great Trade of fishing and Other shipping belonging to this his Majestyes Territory ....” Without those valuable livestock plantations, Dudley fretted, “wee shall not be able to support our Trade with bread.” He further explained, that if they were not annexed he advised metropolitan officials to “at least Command a free and uninterruptted trade without Duty for Cattle and Corne ... without which we shall be greatly distressed ....” Narragansett Bay and its coastal farms had become the engine of England’s Atlantic empire and it was worth bending the rules to keep the machine humming.74


By the eighteenth century the business of raising cattle in Rhode Island was firmly established. Contemporary observer William Douglass noted that in addition to butter, cheese, and lumber, Rhode Island was known to “export for the West India islands, horses [and] live stock of several kinds ….”75 So many animals were moving around the Bay that congestion became a problem. In 1748 John Gardner was granted authority to run a new ferry service from Narragansett because trade had increased to the point that the boats had become “crowded with men, women, children, horses, hogs, sheep and cattle to the intolerable inconvenience, annoyance and delay of men and business.”76 The coastal farms of Narragansett Bay were so productive that, as Harris and Maverick had witnessed, they consistently produced a surplus, which fueled a brisk offshore trade.

But many Rhode Island farmers, especially during the first decades of settlement, kept their cattle closer to home. In 1638, Portsmouth allocated to each man “one acree of medow for a Beast, one acree for 5: sheep, & one acree and a half for a horse …”77 This suggests that even the most modest households maintained livestock. And within a generation, most freeman surpassed the allotments of these early statues. When Adam Mott, a farmer in Portsmouth, died on August 12, 1661, he left to his family four Oxen, five cows, a Bull, and two calves, three horses, 30 ewes and two rams, and six pigs.78


78 Ibid., 389.
number of cattle increased on Aquidneck Island to the point where it became necessary to establish a committee of cattle overseers. In 1656 Portsmouth appointed Richard Bulger, Thomas Cornell, Jr., John Trip, and William Hall to “survaie and view all Cattell that shalbe henceforth transported of the Island ....” The law also levied fines to anyone who transported cattle without being surveyed. By the 1660s the allocation of earmarks on cattle dominated the Portsmouth town records, which suggests that there were so many cattle roaming common pastures and nearby forests that authorities needed a way to keep track of them. That confusion over cattle arose was understandable, for almost every household had one. Howard S. Russell has shown that cows were represented in nine of every ten farm inventories in New England and in Massachusetts by the middle of the eighteenth century, roughly two cows for every five people. On the largest estates in southern Rhode Island herds often comprised between fifty and one hundred cows.

Goats and pigs also shaped Narragansett Bay’s coastal landscape, where they typically ran wild according to English custom. Although initially some goats were kept for milk, their time was short-lived. Left to scour Bay islands and mainland plantations, goats were notorious for destroying hedges, trees, and just about any other crop that lay in their path. By about 1650 they had been largely eradicated, after towns like Warwick passed laws making it lawful to kill them should they wander into the commons.

79 Brigham, ed., The Early Records of the Town of Portsmouth, 73.
80 Brigham, ed., The Early Records of the Town of Portsmouth, 262-265.
81 Russell, A Long, Deep Furrow, 158.
Capable of fending off predators and foraging for acorns, roots, and shellfish, swine were left to roam the mainland forests, islands, and mudflats of Narragansett Bay. William Wood noted that the vast beds of clams were "a great commodity for the feeding of swine both in winter and summer." So drawn to the intertidal zone were they that, Wood explained, "once used to those places, they will repair to them as duly every ebb as if they were driven to them by keepers." Coasts pigs even took to the sea to avoid enclosures. In New Haven, "younge cattle & hoggs" hemmed in by a gate, swam around to "doe damadge." Although it is impossible to know exactly how many pigs roamed the shores of Narragansett Bay and the rivers running into it, Howard S. Russell has calculated that Massachusetts Bay in 1735 had 18 swine to each one hundred people. At Dartmouth, on nearby Buzzard's Bay, at mid-century 772 households had 383 swine. It is likely that the numbers were similar on Narragansett Bay, although they could have trended higher on the largest plantations, which packed salt pork for the West Indies and the Atlantic fishing fleet.

The sheer number of animals scouring the countryside took a toll on the Bay and its feeders, particularly in the Narragansett Country, where water dominated the landscape. In the southern portion, there were upwards of fifty ponds, one of which, Worden's, or Pesquamscut, was the largest in the colony. The forested uplands, swamps,
and meadows were laced together by countless streams, springs, and rivers, the largest of which include the Pawcatuck, the Pettaquamscutt, Usquepaug, Shickasheen, Matunuc, Tower Hill, MacSparran, Little Rest, and Sugar Loaf. To the south, coastal barrier beaches dominated the Atlantic shoreline. Covered with white sand and sloping upward to grass-covered dunes, these beaches varied from year to year, depending on weather conditions and the resultant movement of sands due to wind and water. Behind the dunes lay “fastlands,” comprising pockets of grass, shrubs, and intermittent forests stands. And behind these lay tidal wetlands ringing a network of brackish bays. The Narragansett Country was a watery world of winding tidal rivers, salt ponds, and meadows. And the vast herds of animals that lived there were tied to this waterscape in every way.

As the lands of South County (as the Narragansett Country came to be known) were settled and the farms expanded, the rivers, ponds, and estuaries changed in response. When in 1795 “Nailer” Tom Hazard, a blacksmith and farmer in Narragansett and a descendent of the great Hazard planters of the area, noted in his diary that “Philip Shearmn workt for me digin Dung,” he identified a chore that had been central to coastal farming communities for generations. Manure, along with seaweed and fish, had been used by the English to fertilize fields since first European settlement. But as the numbers of animals and people increased along Rhode Island’s coastal margin, the estuary was


fertilized as well. In many cases, cattle strayed into the intertidal zone, which introduced nutrients to the estuary and coastal ocean directly. In a 1785 court case over property rights in Newport, Josiah Arnold affirmed that during his grandfather’s days during the early part of the century “cows and horses that were put to pasture upon his land, went down to feed upon the beach and marsh …”\textsuperscript{90} Multiplied by many times, the effects of these cattle in Rhode Island’s coastal stock farms transformed the biogeochemical makeup of the watershed, which in some cases affected estuarine ecology, forcing the people who lived around the bay to respond.

Although an accurate population count for seventeenth-century Rhode Island remains elusive, records do exist for the eighteenth century. By 1708 Rhode Island had a total population of 7,181 people, 30.7 percent of whom lived in Newport, 20.1 percent of whom lived in Providence, and the remaining 49.2 percent residing in other towns around the colony. By 1730, the total population was 17,935. That number doubled to 31,778 in 1748-49 and to 40,536 in 1755. By 1774, 59,607 people lived in Rhode Island. As the population increased, so too did the number of people who lived outside of Rhode Island’s two major cities. By 1774 only 15.3 percent of people lived in Newport, 7.3 in Providence, while 77.3 percent lived in other towns.\textsuperscript{91}

As the population increased, so too did the amount of sewage flowing into the Bay. Human waste typically produces between 2.2 and 6.2 kilograms of nitrogen per year, with a value of 4.4 kg of nitrogen per capita per year being the most frequently

\textsuperscript{90} Collections of the Rhode Island Historical Society, 7  334

With a population of roughly 20,000 people in 1735, humans would have introduced 88,000 kg of nitrogen into the broader Narragansett Bay system. It is difficult to determine just how much of this nitrogen would have made it into watercourses and ultimately into the Bay. But it is possible to make calculated estimates. A cesspool system without a leach field situated less than 200 meters from a stream—probably exhibiting similar characteristics to the privies of the seventeenth and eighteenth centuries—will contribute roughly 62 percent of its nitrogen into the watershed. It is likely that 4.4 percent of that nitrogen was lost in streams before it reached the Bay. As a result, between 0.7 and 3.3 kg of nitrogen was introduced to Narragansett Bay per person per year via human waste for a total of between 14,000 and 66,000 kg of nitrogen. The closer people lived to the estuary, the more nitrogen was introduced. With a relatively small human population, this non-point source introduction of waste was not in itself enough to cause dramatic change. But when combined with animals, the effects increased dramatically.


95 Horsely, Witten, Hegemann, Inc. showed that in Buttermilk Bay, where most residences were located close to the water, upwards of 3.1 kg of nitrogen per year were introduced to the watershed. See “Quantification and Control of Nitrogen Inputs to Buttermilk Bay,” Report prepared for the U.S. Environmental Protection Agency, Massachusetts Executive Office of Environmental Affairs, and New England Interstate Water Pollution Control Commission, (Barnstable, Mass: Horsley, Witten, Hegemann, Inc., 1991).
Crowded with cattle of all kinds, the shores of the Bay felt the impact. Agricultural census data for Rhode Island did not begin until 1865 and in Massachusetts until 1885. As a result, most scientific studies that examine the introduction of nitrogen from agricultural sources for Narragansett Bay have focused their efforts on the late nineteenth and early twentieth centuries. But by mining anecdotal evidence, it is possible to make some estimates for the seventeenth and eighteenth centuries. Scientists examining agricultural pollution employ a measurement called the "animal unit." A horse or cow equals one animal unit. A pig is 0.25, and a sheep is 0.1. Mid-eighteenth-century estimates for Massachusetts Bay assume two cows for every five people, four cows to each horse, eighteen pigs for every one hundred people, and a three-to-one ratio of oxen to horses. In addition, if one considers La Mothe Cadillac's observation that in 1692 Rhode Island had roughly 200,000 sheep, it is possible to construct rough estimates for the livestock population. Based on a human population of 20,000 people for 1735, it is likely that Rhode Island and its waterways played host to 8,000 cows, 2,000 horses, 6,000 oxen, and 3,600 pigs. All told, this equals just under 37,000 animals units, each of which produced on average 50 kilograms of nitrogen per year. Typically, between 16 and 32

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96 E M Snow, "Report upon the Census of Rhode Island, 1865," (Providence, RI: Providence Press, 1867) and C D Wright, "The Census of Massachusetts 1885 Agricultural Products and Property," vol. 3 (Boston: Wright & Potter Co., 1887)

97 Howard S Russell, A Long Deep Furrow, 158, 153, 165

98 Bridenbaugh contended that this estimate was probably not exaggerated because it represented only a doubling of the Rhode Island flock since 1661. Bridenbaugh, Fat Mutton and Liberty of Conscience, 57

percent of animal waste nitrogen is introduced into any given watershed.\textsuperscript{100} As a result, livestock would have introduced between 296,000 and 592,000 kilograms of nitrogen per year into Narragansett Bay. In turn, in 1735 humans and their animals introduced between 310,000 and 658,000 kilograms of nitrogen per year. It is likely that the numbers would have trended toward the higher side because both farms and the human population were largely situated directly on the Bay or along rivers flowing into it.\textsuperscript{101} In addition, the historical record shows that Rhode Island had higher concentrations of animals than its neighbors, so that, again, the estimates likely trended upward.

The numbers are noteworthy when one compares them to those of the late nineteenth century. At about this time Narragansett Bay began experiencing its first fish die-offs when oxygen was depleted due to heavy nutrient inputs.\textsuperscript{102} In 1885 there were about 30,000 animal units living in close proximity to Narragansett Bay. And by 1880, Rhode Island farmers were fertilizing their fields with guano that introduced roughly another 180,000 kg of nitrogen per year, of which between 10 and 40 percent leached into Bay waters.\textsuperscript{103} In turn, between 258,000 and 552,000 kg of nitrogen were being introduced into the Bay by animals and fertilizers—numbers quite similar to those of the


\textsuperscript{103} Hamburg, et al., “Nitrogen Inputs to Narragansett Bay: An Historic Perspective,” 182, 184. The exact count in 1885 was 304,284.
mid-eighteenth century. These nutrient loads—whether in 1735 or 1885—were not enough to transform the Bay in its entirety. (The devastating anoxic events of the late nineteenth century were most likely the result of industrial pollution combined with untreated human waste from a population that had climbed to over 300,000.) But they were enough to alter tidal lagoons and the most sheltered estuarine creeks.

By the mid-nineteenth century, English chemists had acknowledged that manure polluted water. “They [the chemists] say,” noted an 1886 Rhode Island health commission report that addressed similar issues on the waters of Narragansett Bay, “water from cultivated lands, and from under drains of cultivated lands, is always more or less polluted from the manure, even after it has been stopped in ponds or reservoirs.”

In 1902 an inspection of the tidal Kickemuit River, a portion of which had been dammed to provide water for the town of Bristol, revealed, “cows had passed through the brook, and deposits of cow excrement had been left on the edge of the stream.” In addition, surveyors noted, “Two pigs ... had established a wallow-hole on the side of and in the stream.” These were animal behaviors and pollution trends that had existed from time immemorial. And when animal concentrations were high, as they were in early eighteenth-century Rhode Island, their impact to sheltered coastal waters would have been dramatic. The noticeable effects of animal pollution on the Great South Bay and

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104 Rhode Island State Census, 1885, Amos Perry, Superintendent (Providence, R.I.: E.L. Freeman & Son, 1887), 95.

105 Rhode Island State Board of Health, Ninth Annual Report of the State Board of Health of the State of Rhode Island, For the Year Ending December 31, 1886 and Including the Report Upon the Registration of Births, Marriages, and Deaths in 1885 (Providence: E.L. Freeman & Son, 1887), 102.

Moriches Bay tidal lagoons on Long Island during the 1950s prompted biologist John Ryther to conduct the first study of marine eutrophication.\textsuperscript{107} Algal blooms had destroyed the once prosperous oyster industry there. Ryther's study linked the blooms to the area's large duck industry, which comprised forty farms lining Moriches Bay and the streams flowing into it. The combination of shallow waters, low flushing rate, high temperatures, and the steady influx of duck waste led to such high levels of algae and bacteria that it destroyed the lagoon's bottom-dwelling animals.

That the bulk of seventeenth- through early nineteenth-century agriculture occurred in lower Narragansett Bay would have concentrated the nitrogen load in that area. It is likely that nutrient loads climbed so high that algal blooms occurred during the summer months. On June 8, 1729 the professional surveyor James Helme filed “a Draft of Capt. Henry Bull’s Lots L[y]ing in South Kingstown as the fences now stand ....”\textsuperscript{108} Adjacent to the upper end of the Pettaquamscutt tidal pond, Bull’s lots, according to Helme’s rendering, were a mixture of hills, swampland, and intermittent marshes. Sparing no detail, Helme’s map showed a broad highway running southwest to northeast. Orchards had been planted and an “old garrison” had been likely abandoned for a proper house on the main highway. He showed a ditch, 99 rods long running across the property. Another, 76 rods long, ran to the river, and a third ran 33 rods into the marsh along the river’s western shore. Their proximity to the marshes and the river suggest they had been dug to drain the adjacent meadows for livestock grazing. The Pettaquamscutt River itself, flanked by Bull’s land to the west and a plat marked “Ridington” to the east, was painted


\textsuperscript{108} James Helme, Draft of Capt. Henry Bull’s Lots, S. Kingston 1729, Map 0150, 1729 Cartography Collection, Rhode Island Historical Society.
by Helme a deep, vibrant green. This could have been merely an artistic decision. But it is more likely that Helme, a careful surveyor who took great pains to account for every detail of the landscape, would have painted the map’s most dominant feature with purpose. His choice of vibrant green suggests that the river had become highly enriched, perhaps naturally, but also perhaps due to the introduction of animal nutrients. Marine scientists studying Narragansett Bay have asserted that by the second half of the nineteenth century, the high volume of manure and lack of buffer zones around tidal lagoons would have impacted them considerably. But some simple quantitative estimates and even a brightly painted survey map show it is more likely that these dramatic changes occurred more than a century earlier.

Changes in the Bay

Fueling the dramatic growth of animal populations was the introduction of English hayseed. Although early settlers had been attracted to the shores of Narragansett Bay because of its abundant salt meadows, they soon discovered that the salt hay and even native upland grass did not have the same nutrient content as traditional English hays. In most cases, they carefully cultivated English grasses to replace native species. It is possible that cows simply could not absorb the nutrients in salt hay as efficiently,

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109 Hamburg, et. al., “Nitrogen Inputs to Narragansett Bay: An Historic Perspective,” 204. Also see Sindya N. Bhanoo, “Amish Farming Draws Rare Government Scrutiny,” New York Times, 8 June 2010, A12. Bhanoo explained that E.P.A. officials imposed environmental mandates on Amish farmers, whose "traditional" husbandry practices were polluting Chesapeake Bay. Home to a large Amish community, Lancaster Country, the article showed, produced 61 million pounds of manure per year, by far the highest in Pennsylvania. Six of 19 Lancaster County wells surveyed contained E. coli bacteria and 16 had nitrate levels exceeding E.P.A. limits.

passing it instead of converting it into growth. Having witnessed this phenomenon, the
Reverend Mellon noted in 1794 that “The Manure made of cattle fed on salt hay is much
more fertilizing than that made from fresh.”\textsuperscript{111} With the goal of fattening animals as fast
as possible by stuffing them with English hay, Rhode Islanders converted tidal marshes
into upland meadows by damming and diking.\textsuperscript{112} Inland swamps were likewise drained
and the timber from them removed. The historical record shows that English grass, for
which farmers and merchants were willing to pay handsomely, was ubiquitous in Rhode
Island, where Royal Commissioners and other observers agreed that the best grass
grew.\textsuperscript{113} But English grass sapped the soil of its nutrients and in many cases, transferred
those nutrients to the watershed. After receiving a batch of English hayseed from Robert
Williams, Roger Williams’ brother, John Winthrop Jr., asked for planting directions.
Roger Williams provided a list of instructions, explaining that three bushels of seed
would cover one acre of land. Among his directions, Williams warned Winthrop to “Sow
it not in an Orchard neere fruit trees for it will steale and rob the Trees etc.”\textsuperscript{114} This
suggests that the grass was so efficient at drawing nutrients from the soil that it could
hamper fruit production in nearby trees. This fortified grass digested by livestock
provided a means through which important land-bound nutrients were, via cattle,
transferred to the rivers, streams, and salt ponds besides which they grazed. He also
instructed Winthrop to let the “grasse stand until it seede and the wind disperse it … up

\textsuperscript{111} Reverend Mr. Mellen, “A Topographical Description of Barnstable,” \textit{Collections of the Massachusetts

\textsuperscript{112} Bridenbaugh, \textit{Fat Mutton and Liberty of Conscience}, 33.

\textsuperscript{113} W. Noel Sainsbury, ed., \textit{Calendar of State Papers, Colonial Series: American and West Indies, 1661-
1668} (London: Longman & Co., 1880), 343.

\textsuperscript{114} Roger Williams to John Winthrop, Jr., 28 May 1647, \textit{Winthrop Papers}, 5: 168.
and down …,” which suggests the English method of dispersal quickly transformed grasslands indiscriminately across the entire region.

The clearing of trees and draining of swamps surely facilitated this nutrient exchange as well. As the land was cleared, trees girdled and cut, and swamps drained, the residence time of water—or the amount of time water is retained on the landscape—decreased. And trees were cleared at a blistering pace. The average household used between twenty and forty cords of wood per year for cooking and heating their homes. And forests were cleared for ship masts, construction lumber, charcoal, and for use in lime production and brick making.¹¹⁵ As trees were removed, more water flowed into the estuary and more nutrients flowed with it. And in some places, particularly those where fields were plowed for growing corn, wheat, barley, and even, for a short time, tobacco, sediments were washed downstream as well.

The combined effects of eutrophication and siltation transformed the estuarine environment, often to dramatic effect. In 1735 inhabitants of Westerly, Rhode Island, petitioned the Rhode Island general assembly for financial aid to remedy a clogged harbor entrance. They complained that they were “destitute of a harbor there, by reason of a breach (that formerly used to be open in the largest salt pond in Westerly, aforesaid) being shut up or filled up.”¹¹⁶ The petition explained that the opening had been shallow but that it had over time become blocked, rendering their harbor unnavigable. It is likely that a combination of eutrophication, siltation, and debris caused the blockage.

Surrounded by farmland, stone and brick quarries, timberlands, and saw mills, the salt

¹¹⁵ Howard S. Russell, A Long Deep Furrow, 175.

pond opened to the ocean with only a small entrance.\textsuperscript{117} It is likely that the harbor would have been subjected to high nutrient levels, which would have spurred algal blooms, and the rapid growth of marsh grasses, including \textit{Spartina alternafloera}, which is particularly responsive to nitrogen increases. As algae and various macrophytes proliferated over the years, they contributed to the sedimentation of the salt pond. Coursing downstream, farmland silts and sawmill dust also settled to the bottom as the water slowed, became trapped in the thick mats of marsh grass, or both, which clogged the pond entrance.

In response, Westerly residents realized they had to fix their ailing harbor. Their solution, a massive undertaking for which they needed financial support, was to redirect a branch of the Pawcatuck River into the pond, which would open the silted breach and deepen the anchorage, providing them with a “very commodious harbor” that was “navigable as well for small sloops as boats; and that it would be likewise very convenient for the catching and making of cod-fish, which would be of great service to this colony.”\textsuperscript{118} Westerly’s farms, quarries, and sawmills changed the estuary. And the people who depended on its salt pond, harbor, and fish sought to fix the mess they had created by completely transforming it. By diverting a river into a placid salt pond, Westerly’s residents reconfigured not only the salinity gradient but also the size of the harbor and the species that would have existed there. But of equal importance were the ways this response reflected the relationship between a littoral people and the sea. The reasons for the changes to the harbor were, like the sea, unknowable, but the harbor itself could, through much labor and ingenuity, be “improved.” The shifting sediments of the

\textsuperscript{117} Ibid., 304.
\textsuperscript{118} Ibid.
estuary were wholly unpredictable—in a sense, very much "wild"—but the harbor’s subsequent transformation by the inhabitants of Westerly suggests that they believed it was capable of being "civilized" as well.

Rhode Island’s livestock plantations also transformed other estuarine harbors. In 1661 Dr. John Alcock and several investors from Roxbury bought Block Island off Rhode Island’s southern coast and began raising cattle, which multiplied quickly there. As early as 1665 the Rhode Island Governor, deputy Governor, and John Clarke were ordered to Block Island to ascertain whether the 1000-acre salt pond in the north-central part of the island could be transformed into a harbor. In 1670 the General Assembly ordered “that the … inhabitants are authorized to use all fitting indevers to accomplish the same, and doe very much commend their worthy intentions therein.” No doubt made possible by the harbor’s construction, the town of New Shoreham was established on the island in 1672. But over the course of the next century, the harbor became clogged. It is likely that shifting sands were the primary culprit, but a formal request to widen what had become a trickling tidal creak into a legitimate harbor entrance, emphasized the ways humans contributed to the transformation of not only the tidal lagoon but the coastal sea as well. When Edmond Sheffield and Joseph Spencer petitioned the General Assembly in 1762, they explained that when the salt pond and the sea were connected “the fishing ground for cod was well known, and bass was there to be caught in great plenty.” They were adamant, however, that “since the creek has been stopped, the fishing ground for cod is uncertain, they being scattered about in many

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119 Samuel Truesdale Livermore, *A History of Block Island From Its Discovery in 1514 to the Present Time 1876* (Hartford, Conn.: The Case, Lockwood, and Brainard Co., 1877), 16.

places; and the bass have chiefly left the island.” They testified that if “this communication can be made, the fishery will again become sure and certain.”\(^\text{121}\) As Sheffield and Spencer’s petition reveals, harbor improvement to facilitate fishing and livestock exportation during the seventeenth century had established a rich fishery. But when the estuary became clogged—whether from shifting sands or the introduction of mud, animal waste, and other suspended solids from the cow pastures—that fishery declined. This underscores the importance of the ways terrestrial and marine environments were inextricably linked. But it also highlights the ways the epistemological borderland at the nexus of land and sea was porous and permeable for the littoral people who inhabited it, for no matter how capricious the ocean could be, it was, at least by small measures, improvable as well.

When large-scale environmental problems arose—particularly those concerning waterways—colonists increasingly turned to the Rhode Island colonial assembly for remedies. From the colony’s beginnings, Narragansett Bay was a common geographic point of reference and shared means of transportation for the people who lived there. In 1643 the four original towns of the Bay—Providence, Portsmouth, Newport, and Warwick—entered into a federal compact in part to protect themselves from neighboring Massachusetts Bay and Connecticut. As such, they imbued the Bay with the power of central authority. Physically bound together by brackish arms of the sea, Rhode Islanders, who neither fished nor shipped ocean-going cargo at rates even close to those of Boston, adopted the anchor (and later the fouled anchor) as the most prominent device in their colonial seal.\(^\text{122}\) But the emphasis on protection overshadows the ways these littoral


\(^{122}\) Chapin, *Illustrations Of The Seals, Arms And Flags Of Rhode Island*, 1-2.
people also sought progress along their shores and therefore sought each other’s support to improve them. Although modifying the coastal zone had become a common part of Rhode Island’s littoral culture, it was also complex and expensive. By unifying, Rhode Islanders certainly staved off their aggressive neighbors, but they also established a common pool of resources that transformed the watery world in which they lived. In the case of Westerly harbor, the townspeople understood that their breech could only be repaired if they mobilized considerable funds. Having lost some of its opacity, the sea—or at least the coastal part of it—could, through federal mobilization of money and manpower, be reshaped to meet the collective needs of the community. Littoral people certainly exploited the conceptually porous nature of the estuary by imposing ideas about improvement on the coastal ocean, but littoral people working together were particularly effective.

Although Rhode Island’s central authority was an important arbiter of environmental change, individual towns nevertheless maintained control over their own waterfronts. On May 28, 1707, the General Assembly passed a law that granted each town “full power and authority to settle such coves, creeks, rivers, waters, banks, bordering upon their respective townships … by building houses warehouses, wharfs, laying out lots, or any other improvements ….”\(^{123}\) That the law permitted individual towns to “improve” as they pleased caused, in some cases, environmental problems. In October 1719 the General Assembly passed an act urging town councils “to take care to preserve and improve the fishing of the several rivers in their respective jurisdictions, and

to prevent obstructions from being made, to hinder the same.”\textsuperscript{124} Assembly members recognized that when towns were left to their own devices wanton development and reckless fishing harmed not only those towns in question but also the colony as a whole. In 1755 Major Ebenezer Brenton and others of South Kingston presented a petition to the General Assembly to “prevent people from fishing with seines in the breach and channel …” of Point Judith Pond. Fished “at all seasons,” the seines, Brenton claimed, had led to a situation in which “the course of the fish is daily obstructed.” So acutely were fish stocks affected, complained Brenton, that “if not speedily prevented [the fish] will be totally turned some other way, to the great damage not only of the said town, but of the greater part of this colony.” To remedy the situation, the General Assembly agreed to increase the fine, which in June 1736 was levied at 40 shillings—an amount so low that fisherman paid it as a cost of doing business—to £50.\textsuperscript{125} A local environmental concern, it was recognized, could impact the entire colony, which required General Assembly action.

By the middle of the eighteenth century, a whole host of new environmental pressures had begun to take their tolls on Narragansett Bay. The human population had increased dramatically and was continuing to rise. The animal population combing Bay shores was one of the largest in New England. Lacking buffer zones or even fences in many cases, human effluence and livestock manure fertilized not only coastal farms but also the Bay itself. So much nitrogen flowed into Narragansett Bay that the estuary changed in response. Some of the most sheltered inlets and salt ponds became so

\textsuperscript{124} Ibid., 263.

\textsuperscript{125} Bartlett, ed., \textit{Records of the Colony of Rhode Island}, 5: 462-463.
eutrophic that the water, if the survey of Henry Bull’s lot was any indication, turned green.

Reflecting the estuary’s complex ecology, the conceptual boundaries between land and sea became blurred on Narragansett Bay during the eighteenth century. In no way immune to improvement, the estuarine arms of the ocean changed, albeit in fits and starts. In some cases, environmental changes threatened to close harbors. And the people who depended on them responded, perhaps brashly, with environmentally transformative solutions. Although in the case of Westerly and Block Island these improved harbor accessibility, the ecological ramifications were profound. The Anglican minister MacSparran expressed deep-seated concern that in Rhode Island’s intense focus on livestock production for international trade, it had failed to improve its shores. His adopted colony’s fields and even its people, he felt, had gone, literally, to seed. What he failed to recognize, however, was that as the autumn trees shed their leaves and rivers rose, as melting winter snow coursed into stream beds, and as spring storms flooded coastal pastures, the people and their animals had improved, sometimes in dramatic ways, the arms of the ocean nearby.
CHAPTER 3

BOUNDING THE LITTORAL:
COASTAL SPACE, VERNACULAR KNOWLEDGE,
AND THE 1741 SEARCH FOR NARRAGANSETT BAY

As the smoke settled following King Philip’s War, in 1678 or 1679 a curious man with a curious name settled at the head of Pettaquamscut Pond at the northern tip of the eponymous tidal river, the original seat of the Narragansett sachem Miantonomi.

According to Yale President Ezra Stiles who, at the end of eighteenth century interviewed a neighbor and member of the prominent Willet family, the man known as Theophilus Whale “built himself a little under-ground hut in a high bank, or side hill, at the north end or head of the pond.”

He subsisted, Stiles noted, by fishing, weaving and writing. Whale spoke Hebrew, Latin, and Greek and revealed little of his past to anyone, even his children. Willet remembered that his own father, with a group of notable Boston gentlemen, periodically visited Whale in the evenings, where they usually talked behind closed doors and sometimes gave Whale a little money. During Queen Anne’s War, a captain of an English warship who shared the surname Whale called upon his reclusive

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1 Ezra Stiles, A History of the Three of the Judges of King Charles I, Major-General Whalley, Major-General Coffe, and Colonel Dixwell: Who, at the Restoration, 1660, Fled to America: and were Secreted and Concealed, in Massachusetts and Connecticut, for Near Thirty Years. With an Account of Mr. Theophilus Whale, of Narragansett, supposed to have been also one of the Judges (Hartford: Printed by Elisha Babcock, 1794), 342.

2 Ibid., 342, 348.
countryman and invited him to dine aboard his vessel. But fearing a “snare laid for him,”
the Whale of Pettaquamscutt declined.  

For the people of Narragansett, this was proof that the enigmatic hermit was in
fact Edward Whalley, one of the three surviving judges who had condemned Charles I to
death, and who, upon the Restoration, had fled to America to hide amidst the swamps,
marshes, and meadows of Narragansett Bay. Whale’s peculiar erudition, his close
associations with men of prominence, and even the similarity between his name, Whale,
and that of the judge, Whalley, led the people of Rhode Island, according to Stiles, to
“uniformly believe” that Theophilus Whale was the regicide. Although Stiles ultimately
concluded that Whale was most likely not the judge, the story—or even mystery—
underscores the extent to which the bay borderland was, at least according to popular
belief, a geography capable of obfuscating identity or even harboring a fugitive. It was a
landscape, or rather waterscape, where a man who was likely a sympathizer of Whalley at
some level, could hide his true self.

That the supposed outlaw Whale sought safe haven in the watery world of
Narragansett Bay also reflects the ways the estuary’s complex ecology and indeterminate
geography often resisted definition altogether. Living at the edge of a seemingly endless
maze of salt creeks, Whale eluded his own past at the edge of the unknown. Flood, flux,
and shifting sand—these were the characteristics of an estuary in motion. And although
stone walls, stump rows, and pickets ran through coastal forests and into the black grass
meadows that sprouted along the farthest reaches of the tide, the Bay defied most

3 Ibid., 343.
attempts to impose nomenclature and erect jurisdiction among its waves.\textsuperscript{4} That Whale’s
good neighbors waxed wary of his protean identity reflects a broader anxiety over the
porous and mutable bounds of the Bay by which he had settled and they had lived all
their lives. Anything but fixed, the littoral was physically and conceptually elastic,
geographic quicksilver prone to skidding away from any surveyor’s protractor that tried
to pin it down.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{map}
\caption{The home of Theophilus Whale is marked at the head of the Pettaquamscutt River in the lower
middle of the map. From Ezra Stiles, \textit{History of Three of the Judges of King Charles I...}
(Hartford, Conn.: Elisha Babcock, 1794), 344. Courtesy of the John Carter Brown Library at Brown University.}
\end{figure}

\textsuperscript{4} Patricia Seed, \textit{Ceremonies of Possession in Europe’s Conquest of the New World, 1492-1640}
(New York: Cambridge University Press, 1995), 16-40. Seed showed that houses, gardens, and fences were important
symbols of ownership among early English settlers. Where they could not be built—namely, among the
arms of the sea—the establishment of possession and jurisdiction was considerably more difficult.
As a result, Rhode Island, in the belly of which lay one of the largest estuaries in settled North America, had been mired in territorial disputes since Roger Williams had pitched his tent on the wrong side of the Seekonk River. By its watery, indeterminate nature, in its location at the epistemological nexus of the known and unknown, of the definite and indefinite, Narragansett Bay was in every sense a borderland, a place that blurred identity, defied ownership, and, as Jeremy Adelman and Stephen Aron explained, marked the “contested boundaries between colonial domains.”

Colonial competition was particularly bitter. During the seventeenth century, the English inhabitants of Rhode Island sparred with Connecticut over their shared boundary along the Pawcatuck River. So acrimonious grew the dispute that in 1670 some inhabitants of the Bay borderlands resorted to murder, which precipitated a chain of violent outbreaks. Although relations between the two colonies were fraught with contention, they began working toward a solution, and a tentative agreement was made in 1703. When that failed, however, the Board of Trade in London became so exasperated that it recommended their charters be withdrawn and their lands annexed by New Hampshire. Naturally, this spurred renewed efforts to settle the line, but it was not until 1742 that the colonies reached a firm agreement. Maneuvering for lands in the former Pequot territory, on Block Island, and in the Narragansett Country, Massachusetts was

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never far removed from the debate. Although the Bay Colony’s claims to lands in Rhode Island’s western precincts (and Block Island) were ultimately denied, the two colonies would come to blows during the middle of the eighteenth century over their shared border to the east.

If good fences make good neighbors, a maze of marshes and meandering tidal rivers makes for litigation. As Rhode Island border deliberations with Connecticut finally wound down, the former began new court proceedings in 1741 with Massachusetts to decide who owned the eastern shores of Narragansett Bay. Citing its 1663 royal charter, Rhode Island claimed the lands “extending … three English miles to the east and north-east of the most eastern and north-eastern parts of … Narragansett Bay,” which, Rhode Island contended, Massachusetts had acquired when it absorbed Plymouth Colony in 1691. Massachusetts rejected its neighbor’s claim, arguing the contested space did not actually touch Narragansett Bay. The question of who held jurisdiction, therefore, depended on Narragansett Bay’s location.

But where was Narragansett Bay? As the ensuing court battle showed, the boundaries of coastal space were anything but clear. More than a century after Europeans had settled the region, the people who lived there understood its watery geography in very different ways. Informed by political allegiance, historical understanding, and tensions between imperial mandate and Native American and European vernacular knowledge, among other factors, the geography of Narragansett Bay was a deeply human construct. To define their shared border, both colonies called scores of deponents from all walks of life, including, among others, merchants, sailors, coastal farmers, and Indians,

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who explained to the court how they understood the boundaries of land and sea, saltwater and freshwater, and in many cases how those ideas had changed over time. The proceedings, held mostly in the high heat of summer, were long and messy.

The testimonies reveal that the people of Narragansett Bay developed cultural assumptions, patterns of settlement, and notions of jurisdiction that mirrored the physically and conceptually murky environments in which they formed. As fluid as a flooding tide, the borders had never been and would never be set in the proverbial stone. This chapter argues, however, that Rhode Island’s eastern boundary erected through this littoral space was ultimately chosen and agreed upon because English arbitrators were willing to entertain the idea that the arms of the sea were “improvable” spaces. Well known to the people who moved among them—fishermen, sea captains, and Wampanoag Indians—the salt rivers and creeks of eastern Narragansett Bay were spaces capable of supporting work and therefore spaces capable of upholding jurisdiction. Nevertheless, these decisions were accepted with great ambivalence. After all, the boundary between Rhode Island and Massachusetts was defined in relation to the edge of the Bay, and to run that line required one to define the edge of the unknown. To a littoral community who willfully accepted the myriad identities of Theophilus Whale, who saw the world not as black or white or wet or dry, but in many muddy shades of gray, this was conceptually jarring. A collective anxiety over the littoral’s division developed into such all-consuming acid debate that it even sowed the seeds of war.
Defining the Bay

On the first Tuesday of April in the year 1741 representatives from New Jersey, New York, and Nova Scotia were ordered to convene in Providence, “as being the most conveniently situated,” for “settling adjusting and determining the Boundaries of ...[the] Colony of Rhode Island in America eastwards.” Although the two colonies had made earlier attempts to settle the boundary, their efforts had met with mixed results. Massachusetts claimed that (through its annexation of Plymouth) “they have always enjoyed” a boundary that began where it bisected the mile-wide salt river that separated Rhode Island (Aquidneck) and Little Compton “where it runs into the Main Ocean.” The line, according to officials at Massachusetts Bay, ran north “up the middle of the said River to the ... Seaconk River, and from thence up the ... Patucket River,” also called the Blackstone, north to a “heap of stones on the East Bank.” There, forming Rhode Island’s northern border, it ran due west along a “Line of mark’d Trees and Monuments of Stones through the Wilderness to the Colony of Connecticut.” But citing its 1664 Royal Charter, Rhode Island disagreed, claiming its “just and lawful right to the Jurisdiction of all the lands lying within and bordering on the Narragansett Bay from three English miles East North East.” Rhode Island officials argued their claims “extended from a place called Assonet,” which they believed was in the “most Eastern and North Eastern part” of Narragansett Bay and followed the contours of the Bay’s eastern shore three miles inland in a southerly direction “to the Ocean.” From Assonet, they also drew a line west to Providence. The boundary, Rhode Island claimed, then followed the “Easterly Side or


10 Ibid., 10.
Bank” of the Seekonk River to Pawtucket Falls, where it then ran due north to its northern border with Massachusetts.\textsuperscript{11}

The dizzying descriptions aside, disagreement over the boundary arose because neither party could agree on the location of an arm of the sea. This conceptual impasse was rooted not in geographical ignorance—representatives from both colonies clearly understood the extent of and relationships between the region’s numerous waterways—but in an inability to establish an ocean vocabulary. When it came to imposing all-important definitions on coastal space, an established lexicon had, by the middle of the eighteenth century, yet to be established. Of global hydrography, geographer Martin W. Lewis has written that continents and oceans have been largely considered “nonproblematic features of the natural world, features that have been discovered rather than delimited by convention.” But the extent to which continents and oceans are broken into their individual units, he explained, are “as much intellectual constructs as they are given features of the natural world.”\textsuperscript{12} Even as late as the mid-eighteenth century, Lewis explained, geographers used place names interchangeably on different maps. For instance, Emanuel Bowen’s 1744 \textit{World Atlas} used the label “Southern Ocean” and “Atlantic Ocean” interchangeably and numerous other cartographers alternated between “Pacific Ocean” and “South Sea” to refer to the ocean basin between the Americas and Asia.\textsuperscript{13} It wasn’t until the nineteenth century that geographic terminology was codified

\textsuperscript{11} Ibid., 10-14.


and, as Martin explained, “the conceptualization of sea space emerged as a significant geographical issue ....”

Coastal nomenclature was equally murky. The definition of a “bay” proved to be a stumbling block for deponents on both sides of the line. And the numerous bays nested within greater Narragansett Bay made deliberations downright confusing. That competing definitions emerged, however, was understandable, for among Medieval and Early Modern English writers the word “bay” had many connotations. The Oxford English dictionary attributes the word to the French baia, circa 640 A.D., meaning simply “an opening.”

But use of the word doesn’t appear in writing among English authors until the Benedictine monk Ranulphi Higden, published *Polychronicon, or Universal History*, in Latin in 1385, describing a “grete mouthe and baye” that forms the Aegean.

During the fifteenth century, following the siege of Calais, a political poem outlining English policy concerning “the see enviroun” extolled the promise of colonizing Ireland when it explained “they have ... grete and godely bayes Sure, wyde, and depe.” For Higden, a bay was a broad, deep, piece of the ocean bounded by islands and promontories. The unknown author who penned “The Libel of English Policy” defined a bay as an interface with land. Here, the importance of a bay rested in its ability to extend imperial dominion and facilitate commercial extraction. Even the Great Bard of Stratford

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14 Lewis, “Dividing the Ocean Sea,” 207.


vacillated between definitions over the years. In *Merchant of Venice* (1600), Shakespeare depicted bays as shelters from the storm. He explained:

The scarfed bark puts from her native bay,  
Hugg'd and embraced by the strumpet wind!  
How like the prodigal doth she return,  
With over-weather'd ribs and ragged sails,  
Lean, rent, and beggar'd by the strumpet wind!

Here, a bay represented home, safety, and even purity from which the bark departed for a world of temptation. Outside of the bay, however, the lure of the sea stripped even the most prepared—“scarfed”—sailor of innocence. But in *As You Like It*, written about the same time but not published until 1623, Shakespeare’s Rosalind explained her love for Orlando was so deep that “it cannot be sounded: my affection hath an unknown bottom, like the bay of Portugal.”

Here, the Bay is something unfathomable, an abyss incapable of measurement. If Shakespeare defined a bay only loosely in the early seventeenth century, Daniel Defoe was decidedly more descriptive a century later. After having “coasted the shore,” Robinson Crusoe “came to a very good bay about a mile over, which narrowed till it came to a small rivulet, where I found a convenient harbour, and where she lay, as if she had been in a little dock, made on purpose for her: here I put in, and having stowed my boat very safe, went on shore to see where I was.” For Crusoe, the Bay served as a safe haven. But it also had specific geographic features. At its mouth, his bay was a mile across and narrowed as it extended inland until a freshwater stream tumbled into the upper reaches of what was undoubtedly an estuary. There, at the head of Crusoe’s bay, was a harbor perfectly suited to his and his ship’s needs. In this sense,

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Defoe agreed with his predecessors that bays reflected human needs and desires. Sustenance and security, both physical and psychological—these were the threads that braided the bays of Hidgden’s history, colonial policy, adventurers and lovers, and a lonely shipwrecked sailor together.

But when competing strands of self-interest were introduced, when the demands of private property required a geographically finite description of a bay, little consensus could be had. That Massachusetts Bay, the colony, was named after a broad arc of shoreline that in no way resembled the more penetrating Narragansett Bay likely added to the confusion. Nevertheless, the authorities from both colonies charged with laying a line between them had little patience for the poetics of space. Rather, they sought definition among the islands, salt rivers, and harbors. A bay was no metaphor for unrequited love. Rather, it was a place where people lived, worked, and, as everyone involved was well aware, paid taxes. For Massachusetts, Narragansett Bay, they argued, resided west of Aquidneck Island; the Sakonnet River that flowed along Aquidneck’s eastern shore was simply that—a river. For Rhode Island, which sought a large chunk of Plymouth’s former territory, Narragansett Bay included that saltwater Sakonnet River and lands to the east of it. So confusing were the claims, that the court needed professional help, and specifically, a map. On April 30, 1741, the court appointed three surveyors, Cadwallader Colden of New York, James Helme of South Kingstown, Rhode Island, and William Chandler of Connecticut, and on May 2 commissioned them to

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describe and draught maps of the Rhode Island coast and islands “to illustrate the Bounds in controversy.”

But the dispute over the boundary had been longstanding. In 1663, even before Rhode Island had received its charter, and again in 1664, commissions convened to determine the boundary between Rhode Island and Plymouth. But little progress was made. In 1666 Rhode Island complained to the Crown that their neighbors “could not content themselves but incroached upon this small corner not only dispossessing, molesting, captivating and fining Your Majesty’s liege people here living, but also claiming all the country by strange pretences of free purchases and gifts, by forced Mortgages from the Indians therein ....” Through shady deals and slippery language, Rhode Island’s neighbors, colony officials complained, had usurped their lawful property. Rhode Island felt so threatened by its English neighbors that it felt compelled to pen a defense. In a letter to the Earl of Clarendon dated 1666, Rhode Island officials explained that they had “intrencheth not on Plimouth” because the “Narragansett River,” in relation to which Plymouth’s patent identified its boundaries, did not exist. They also explained, “Rhode Island lyeth as inclosed and in a manner embayed within the Land” and that it was “therefore good reason that the main land inclosing and so near adjoining to the Island should pertain to it.” This suggests that even within the first generation of European settlement, Rhode Islanders saw Narragansett Bay as integral part of their colony’s cultural and geographic identity. It also suggests they conceived of a bay as one

21 Record of the Boundary Proceedings, 17, 20.

22 Commissions were convened on 11 March 1663 and 26 October 1664, Record of the Boundary Proceedings, 270, 367-8.

23 “A true copy as appears recorded Anno 1666 in the Old Leather Book folio 228 in the Secretary’s Office for the Colony of Rhode Island,” Record of the Boundary Proceedings, 354.
continuous body of water comprising myriad rivers and smaller bays. But ultimately, they deferred to the King who in his “express words” as codified in the charter, granted Rhode Island the lands extending “three miles to the East of the most Easterly and North Easterly part of the said Bay.” Finally, they explained to Clarendon that because Aquidneck Island was so small, its inhabitants were forced to pasture animals on the nearby mainland. Some Rhode Islanders had even erected farms there. And finally, they explained, “the land hath other ways never been improved by Plymouth but it hath lain waste near forty years since they first began that Plantation.” That Plymouth had failed to cultivate the Bay’s shores and that Rhode Island farmers and their animals had with great industry and expense made their mark there justified Rhode Island ownership. In other words, he who improved the estuary should own the estuary. But the watery boundaries between the colonies could, literally, never be cut and dried.

Nearly a century after the protracted quarrel between Rhode Island and Plymouth began, the boundary was still blurry and the people who lived near it were still angry. In response, the King’s commission demanded the line be drawn once and for all. Ordered to “make return thereof at the first sitting of this Court . . .,” Colden, Helme, and Chandler, the Boundary Commission’s surveyors, set to work immediately in May 1741. Per the court’s request, they commenced their survey on the Pawcatuck River at Rhode Island’s western boundary; per their own prerogative, they described what they saw in verse. Their 177-line poem was printed as a broadside, and likely in limited numbers.

because only two known copies still exist.\textsuperscript{25} It is unknown whether this was a poetic rendition of a more formal report or whether this was their sole narrative submission to the boundary commission. By order of the court they did, however, also “compleat a plan of all that part of the Continent which the Inhabitants of the Province of the Massachusetts Bay apprehend doth belong to the Colony of Rhode Island.”\textsuperscript{26} (See fig. 9) Drawn to the scale of 150 chains to an inch, and filed on June 24, 1741, the map was quite detailed, including the location, for example, of a small cluster of rocks at the tip of Rumstick Point in Barrington, that might have been omitted had the work been less exact.\textsuperscript{27} But beyond the poem and the plan, no other account of their survey exists and the expediency with which they conducted their assessment—the survey took no more than six weeks if they began the second week in May and submitted their map during the third week of June—suggests the map was their first priority and the poem was simply a way to summarize their impressions.\textsuperscript{28} Although they did not weigh in on where the lines of jurisdiction should lay, these impressions nevertheless paint a detailed picture of Narragansett Bay in its entirety during the late spring of 1741. In some stanzas, they even hinted of the ways quantitatively minded surveyors were forced to grapple with the epistemological complexities of the littoral.

\textsuperscript{25} William Chandler, \textit{Journal of the Survey of Narragansett Bay 1741} (Newport Franklin Ann Publisher, 1741), G1157 Broadsides 1741, no 1, Rhode Island Historical Society Library

\textsuperscript{26} Record of the Boundary Proceedings, 25

\textsuperscript{27} James Helme and William Chandler, \textit{An exact Plan of the Sea coast of the Continent from Paucautuck River Eastwards} (1741), map no 1780, R I Map, vol 17, 1-4, Rhode Island Historical Society Library

\textsuperscript{28} When in 1764 Charles Blaskowitz surveyed Narragansett Bay using the latest triangulation and soundings techniques, it took thirteen men two months to map the lower Bay and islands alone. That it took less than two months to traverse the entire Narragansett Bay with just three surveyors in May and June 1741 suggests their goal was to produce a more descriptive survey. On the Blaskowitz survey, see Mary Sponberg Pedley, \textit{The Commerce of Cartography: Making and Marketing Maps in Eighteenth-Century France and England} (Chicago University of Chicago Press, 2005), 123-127
Chandler and his crew favored narrative description over philosophic essay, and as a result their *Journal* followed a simple chronology. In what was likely a shallop or small pinnace, Colden, Helme, and Chandler left the village of Pawcatuck during what
was most likely the second week in May 1741, sailing south past salt meadows and cleared upland fields. Chandler’s poem noted:

> From Pawcatuck we steer'd our Course away,
> And to Watch Hill we went without delay,
> Which gave a Prospect of the Neighbouring Shore
> And distant Isles, where foaming Billows roar.

Sailing east toward Watch Hill, their account explains, they could see across the shallow entrance to Little Narragansett Bay toward Stonington, Connecticut, and beyond to Fisher’s Island, Montauk at the end of Long Island, and Block Island to the east. The shorelines of southwestern, Rhode Island, they explained was dominated by sandy shoals and beaches pummeled by heavy surf. So powerful were the “Raging waves,” rolling into the southern end of the Narragansett Country that they forced the surveyors to sail through strong rip currents funneling from “the Breaches in our way/ Made by the Surges of the raging Sea.”

> Beyond the surf and over the dunes, however, the surveyors witnessed a placid estuarine world that dominated so much of Rhode Island. The team recalled:

> Where in the Land Calm Ponds we here espy'd
> Which rise and fall exactly with the Tide.
> Within these ponds are Fish of Various Kind,
> Which much delight and please

Behind the barrier beaches and across the coastal fastlands was a tranquil world of tidal salt ponds. The rookeries of the sea, these ponds teemed with fish of all sizes. They would have seen black clouds of minnows scudding across the shallows, and in May and early June would have seen prodigious hatches of clamworms, red and white, legged polychaetes, floating through the water column, particularly at night. In frothing schools

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30 Ibid.
at the water’s surface, juvenile striped bass feasted on the worms and small baitfish. Huge runs of flounder and fluke did the same across the bottom. Buzzing with insects and crawling with crustaceans, broad Spartina grass meadows played host to the frenetic darting of countless sparrows and wrens. Egrets, herons, willets, ibis, rails, and oystercatchers poked among the weeds and rushes of the shallows and sand banks. So filled with fowl were these salt marshes, that the surveyors noted the “Industrious Archer” would surely reap rich rewards.

Although their survey was meant simply to describe the Rhode Island shore, the style of their observations nevertheless illuminated the ways the edge of land and sea was anything but clearly defined among these tidal lands. While exploring the salt ponds of the Narragansett Country on horseback, Chandler noted, parenthetically:

(Here in a Pond, our Caution to oppose
A Horse did launch and wet his Owners Cloaths,
The frighted Jade soon tack’d himself about
Which made us laugh as soon as he came out.)

In some areas, the passage explains, the surveyors used horses to explore this world of saltpans and ponds, marshes and meadows. To travel by boat, Chandler suggested, was in some areas too cumbersome. So too was overland travel on the sponge-like peat, which denied their horses secure footing. Wading through the estuary, one horse, the author explained, stumbled and threw its rider into the mud and muck. Navigating the hybrid environment of the littoral, the horse, according to Chandler, became a sea-going vessel that “tack’d himself about.” Wide-eyed and wet, the horse had tripped off the edge of the unknown and, panic-stricken, blundered into the liminal space between land and sea. But when it had reached dry land and its fear—and perhaps even that of its owners—had
subsided, land and sea were again separated (at least in the horse’s immediate vicinity),

which spurred a cathartic outpouring of laughter and, doubtless, relief.

Colden, Helme, and Chandler then sailed into Narragansett Bay. Traveling east to

Point Judith, they stopped and surveyed the Point and “the courses there” and then sailed

around the point and north to Boston Neck, the long peninsula constituting the eastern

shore of the Pettaquamscutt River. They observed the island of Conanicut across

Narragansett Bay’s west passage, as well as “other Parts too tedious ... to tell.” Sailing

north toward North Kingstown, they sailed “round points of Lands and Coves/Thro’

various Fields and most delightful Groves.” Continuing north, they passed on their way

to Greenwich, “Hope and Prudence that most pleasant Isle/ And Patience also, a most

fruitful Soil.” They were particularly taken with Warwick, which they described in

glowing terms:

And in that Town did of their Dainties eat
And in soft Slumbers pass’d the Night with Sleep.
Here neighbouring Orchards in their verdant Blooms
The gentle Air Sweetens with their Perfumes;
Which pleasing Prospect did attract our sight
And charm’d our Sense of smelling with Delight.

The court’s survey team ate a rich meal in this small but bustling port town, and lulled by

apple and peach blossoms, slept the night before heading north to Pawtuxet, which

divided Warwick and Providence. “Passing along still by the flowing Tide,” they sailed
to the “Famous Town of Providence.” Upon approaching, they made the careful

observation that “This Pleasant Town does border on the Flood,” which suggests the

extent of the tide marked an important point of transition in the debate over jurisdiction.

In fact, Rhode Island’s colonial charter stipulated that Rhode Island held jurisdiction

three miles east and northeast of Narragansett Bay, but when the bay became a river, new
rules applied. Once the surveyors reached “the mouth of the [Seekonk] river which runneth towards the towne of Providence,” Rhode Island held jurisdiction only as far as its eastern bank.31

Chandler also noted how the city’s placement in the head of the tide gave it a distinct character. The survey team noted that the city was at once “Nature made” but “(with Art allied)” the people of Providence capitalized on their city’s propitious location and built a successful “Place of Trade.” Strong drink, including “Wine in Bowls, was readily available to “chear … hungry Souls.” So liberal was this tidewater trade port that “Here Men may soon any Religion find.” It was the cultural diversity and lax laws of Providence combined with the port’s growing commercial success that brought Europe’s great littoral nation, “brave Holland to my Mind.”

Next, the survey team explored the east Bay. They sailed past Seekonk and Barrington and continued south past the mouth of the Warren River to Bristol, where they “turn’d a while to rove” Poppasquash, or Papoose-Squaw, Point, a long peninsula forming the western shore of Bristol Harbor and named for the place to which women and children fled during times of war. They walked through a shaded Black Cherry grove that was so impressive “Methinks young Lovers here with open Arms Need no young Cupids to inspire their Charms.” Across the harbor, they explored the town of Bristol, where “Generous Hearts did give their liberal Treats” but met a women who shocked them with such “impious Talk” that “Her gravel’d Notes … made some of us smile.” They sailed from the busy Bristol waterfront to Hog Island at the mouth of the harbor and northeast toward Mount Hope, where they climbed the hill toward “the Royal Spring/

Which once belong'd unto an Indian King.” There they surveyed the seat of King Philip and “saw the Place where quartered he did hang.” They described the view from the top of Mt. Hope, the highest point along the Bay’s eastern shore:

> Upon this Mount the wandering Eye may gaze  
> on distant Floods, as well as neighbouring Bays  
> Where with one Glance appears Ten Thousand Charms  
> With fruitful islands, and most fertile Farms.

Chandler made little distinction between New England’s most prolific gardens and the bays, rivers, and creeks that surrounded them. From on high, the littoral formed an integrated matrix of water and land, flood and farm. So seamless were the bay and its shores, that when the survey team sailed north to Assonet, which both Rhode Island and Massachusetts had agreed was the far extent of Narragansett Bay, they failed to comment. As such, they simply “turn’d about new Courses now to steer” and sailed south.

Passing the eastern shore of Aquidneck Island, they brought their cruise to a close. Stopping at Sakonnet, they heard a tale of horse thieves whereupon they traveled around Sakonnet Point and into the ocean “where Dreadful Billows roar.” Chandler “survey[ed] the tossing Sea” and then “turn[ed] and view[ed] the Beach and Sands.” Sailing east, they anchored in Dartmouth, which they described as “a most liberal Town/Whose liquid Treats their generous Actions crown.” No doubt with a drink in hand, Chandler concluded his survey by noting that they sat down with their field book “to make a Plan.”³² Although the survey book has since been lost to history, the “plan” or map survives.

³² Ibid.
The Bay Borderlands

If Colden, Helme, and Chandler’s map described the physical geography of the Bay borderlands, their poem highlighted at least some of the ways borders and borderlands were deeply human constructs. Political Scientist William Zartman has defined a border as “an artificial—that is man-made, political-line running through the region.” But in the case of Narragansett Bay, those man-made lines often became entangled with the natural contours of the landscape. Along the Blackstone River, the border followed the natural flow of the river northwest to Pawtucket Falls but then veered due north in a line that, ignoring the existence of hills and cliffs, was only discernable to the needle of a compass. Zartman explained:

Borders can be sharp, clear, deep lines where the political line is reinforced by ‘natural’ distinctions in terms of physical and human geography, that is, where populations are clearly different on either side of the line and where they are thinned out by clearly marked, less inhabitable distinctions such as natural walls and moats, mountains ridges, or water bodies. Or they can be indistinguishable on the ground, corresponding to no natural features, penetrable, uncontrolled; indeed, in the extreme, the border can be the region itself, a buffer state or neutral zone controlled by neither side and tolerated by both.”

At once porous and impenetrable, the marshes and broad bays that stretched from Massachusetts, across Rhode Island, and to the boundary with Connecticut became at various times all three of these border characterizations.

During the seventeenth century, the Bay often served as a border between people. The Wampanoag and Narragansett Indians had long observed the Bay as a natural barrier between them. With the arrival of Europeans, the Bay continued to serve similar purposes. “Narragansett-bay and river, which borders upon us,” wrote John White in

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33 William Zartman, ed., Introduction to Understanding Life in the Borderlands: Boundaries in Depth and in Motion (Athens, Ga.: University of Georgia Press, 2010), 5-6.
1630 from a fishing station in Cape Ann, “is full of Inhabitants, who are quiet with us, and Trade with us willingly, while wee are their neighbours, but are very jealous of receiving either us or the Dutch into the bowels of their Country, for feare wee should become their Lords.”

This excerpt from White’s *Planters Plea* is a good example of Zartman’s first characterization of a borderland. English jurisdiction at the time ran to the eastern shores of Narragansett Bay in Plymouth Colony. Separated by a body of water, numerous islands, and myriad rivers and marshes, the Narragansett Indians and English settlers conducted trade and even lived on good terms but their territory was clearly defined, and an unwillingness or “jealousy” was no doubt strongly suggested to the neighboring colonial powers, letting them know that their presence was not welcome on Indian land. But the Bay’s role as a boundary was short-lived and over the course of the seventeenth century it, reflecting Zartman’s second and third characterizations, developed into a porous, uncontrolled region of movement and exchange.

The canoe played a vital role in the Bay’s transition from boundary to borderland. It was by canoe that Roger Williams first landed on the place that would become Providence in 1636, and throughout the seventeenth century the canoe was integral to any form of travel on Narragansett Bay and throughout coastal New England. In nearby Massachusetts, William Wood was so struck by the sheer number of canoes he noted that “every household [had] a waterhorse or two.” By 1647, there were so many watercraft

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34 John White, *Planters Plea or the Grovds of Plantations Examined and Vsual Objections Answered Together with a manifestation of the causes moving such as have lately undertaken a Plantation in New-England* (London, 1630; reprint, Rockport, Mass.: Sandy Bay Historical Society and Museum, 1930), 31.

in Providence that the town government hired "Water-bailies" to patrol the shores.\textsuperscript{36} That historians have emphasized the ways the English wielded guns and disease to wrest control of Indians lands has all but eclipsed the extent to which, at least for a short time, Indians, and their deft ability to navigate Narragansett Bay by canoe, maintained the upper hand. When Roger Williams purchased Providence outright from Canonicus and Miantonomi it was well understood that the Bay was still Indian territory. When the two sachems later sold Aquidneck Island to William Coddington in 1637, Canonicus and Miantonomi attributed their right to sell it "by virtue of our [the Sachems'] general command of this Bay."\textsuperscript{37} Although we can't assume that the Sachems devised the contract's wording, the quote does highlight English acknowledgment of Indian rights concerning waterways.

One of the reasons Indians maintained control of the Bay during this period of early English settlement was that Native Americans produced most of the canoes and were usually more skilled in their use. In 1643 Roger Williams remarked, "It is wonderful to see how they [Indians] will venture in those Canoes, and how (being oft overset as I myself have been with them) they will swim a mile, yea two or more safe to Land."\textsuperscript{38} In his second voyage to New England John Josselyn marveled in 1663 at the ways "the bold Barbarians in their light Canows rush down the swift and headlong stream with desperate speed, but with excellent dexterity, guiding his Canow that seldom

\textsuperscript{36} John Russell Bartlett, ed., \textit{Records of the Colony of Rhode Island and Providence Plantations in New England}, vol 1 (Providence A Crawford Greene and Brothers, 1856-65), 151

\textsuperscript{37} Ibid., 45

\textsuperscript{38} Roger Williams, \textit{A Key into the Language of America Or, An help to the Languages of the Natives in that part of America, called New-England} in vol 1 of \textit{The Complete Writings of Roger Williams}, ed James Hammond Trumbull (London, 1643, New York Russell & Russell, Inc., 1963), 134
or never it shoots under water or overturns ...."

Although the Indians of Narragansett Bay held, at least initially, the upper hand on the water, the English quickly gained proficiency. For the English and Native Americans alike, the canoe became the primary means by which they navigated the political tensions of their watery borderland.

At times the canoe even became an important tool of diplomacy. In 1675 during King Philip’s War, in a letter recounting a conversation with a Narragansett Sachem, probably Canonchet, Williams was careful to note, "(being then in my Canow with his men with him) that Phillip was ... deafe to all Advice and now was overset and Catcht at every Part of the Countrey to save himselfe but he shall never get ashoare ...." From the safety of his canoe with Canochet and his men in theirs, Williams sought to win the allegiance of a potential hostile. The canoe made the Narragansett territory penetrable and porous. Under the power of a paddle, Europeans and Indians alike glided silently and at times even effortlessly through a contested space that a little over forty years earlier had been "jealously" guarded.

There were places through the springs and swamps surrounding Narragansett Bay that even canoes could not go, and these became for people of the borderlands geographies of refuge. Throughout the seventeenth century, Narragansett Bay’s impenetrable swamps often served as safe havens during times of conflict. Williams noted, "These thick Woods and Swamps (like the Boggs to the Irish) are refuges to the

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women and children in Warre, while’st the men fight.”

But even fighting men used the swamps for tactical advantage. According to William Hubbard’s 1677 account of King Philip’s War, when Indian forces retreated into the “great swamp upon Pocasset-Neck,” Captain Henchman, who led the Plymouth forces, was “not willing to run into the Mire and Dirt after them in a dark Swamp, being taught by late Experience how dangerous it is to fight in such dismal Woods, when their eyes were muffled with the Leaves and their arms pinioned with the thick Boughs of the Trees, and their Feet were continually shackled with the Roots spreading every Way in those boggy Woods.”

Dark and difficult to navigate without considerable local knowledge, the swamps gave the Indians the upper hand. But true to his sinister surname, Henchman, instead of pursuing his foes on such difficult ground, surrounded Philip’s forces and resolved to starve them out.

But if bogs and swamps served to conceal Philip’s men, the Bay itself provided a means of escape. “The Swamp where they were lodged,” recalled Hubbard, “not far from an Arm of the Sea, coming up to Taunton, they taking the Advantage of a low Tide, either waded over one Night in the End of July, or else wafted themselves over upon small Rafts of Timber very early before Break of Day ....”

For Benjamin Thompson, who chronicled King Philip’s War in verse, the protean nature of swamps and marshes extended to Indians themselves, who he described as supernatural “Elves” that united in

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41 Roger Williams, *A Key into the Language of America*, 99 Also, Williams noted, “If an enemy approach they remove into a Thicket, or Swampe, unless they have some Fort to remove unto,” 74

"Swarmes" among the swamps to build their "nests." Lurking in their watery lair, Roger Williams noted, "Phillip['s] great Designe is ... to drawe ... forces ... into such places as are full of long grasse, flags, Sedge etc., and then inviron them round with Fire, Smoke and Bullets." In this sense, swamps were not only geographies of refuge but also spaces from which to mount attacks. As Jill Lepore has shown, the English were loathe to enter New England swamps precisely because Indians were "entirely invisible in swamps, disembodied, indistinguishable from the vegetation around them." So powerful was the fear of such watery, vegetative chaos among English colonists, that in 1624 they coined the word "swamp" and even, on occasion, as Lepore noted, employed it as a verb, as in Indians "swamped them selves ..." So important were these watery landscapes to Native American patterns of engagement that it was no coincidence that one of the war’s most decisive battles took place within a "hideous swamp" in the Narragansett Country. In December 1675 amidst a "quagmiry-Wood" about 3,500 Indians took refuge in four or five acres of uplands surrounded by swampland and accessible only by a downed tree that led across the water. Although the battle resulted in a swift English victory—a massacre really—the results might have been different had not the swamp been frozen solid.

43 Benjamin Thompson, New England’s Crisis or a Brief Narrative of New Englands Lamentable Estate at present, compar’d with the former (but few) years of Prosperity (Boston: John Foster, 1676; reprint Boston: The Club of Odd Volumes, 1894), 18.

44 Roger Williams to Governor John Leverett, 11 October 1675, Providence, The Correspondence of Roger Williams, 2: 705.


The English sought asylum among the swamps of the Bay as well. Although his identity and even much of his past were never revealed, Theophilus Whale—perhaps the regicide but most likely not—nonetheless sought refuge from suspicious neighbors and royal authorities in the marshes at the head Pettaquamscutt Pond. Whale was a cause of conjecture for many, but by the early eighteenth century Narragansett Bay was known to harbor many men of questionable repute.\(^{47}\) Rhode Island had acquired such a dubious reputation that in 1699 Lord Bellomont, the Royal Governor of New York, New Hampshire, and Massachusetts, described the colony’s government as “the most irregular and illegal in their administration that ever any English government was.”\(^{48}\) When Bellomont apprehended and convicted the pirate William “Captain” Kidd, he then set out to find Kidd’s accomplices, some of whom were hidden in and around Narragansett Bay.\(^{49}\) Captain Thomas Paine, a notorious brigand who commanded the eight-gun frigate *Pearl*, was one of them. Sailing under a questionable commission, he attacked St. Augustine, which exacerbated tensions between Britain and Spain. As a gesture of peace, Charles II gave written orders that Massachusetts “give no succour nor assistance to any [pirates], and especially not to one called Thomas Paine.” Instead, he demanded they “exterminate” any pirates “as a race of evildoers and enemies of mankind.”\(^{50}\) In response, and much to the consternation of Massachusetts and New Hampshire authorities, Paine


\(^{50}\) J.W. Fortescue, ed., *Calendar of State Papers, Colonial, America and the West Indies, 1681-1685*, vol. 11 (London: Her Majesty’s Stationery Office, 1898), 443.
the pirate went to Rhode Island, where he bought a home, married the daughter of Caleb Carr who would later become Governor, and in 1689 was admitted a freeman. Like so many others, Paine sought refuge along the shores of Narragansett Bay. Despite his attempts at reform, Paine had run with the wrong crowd for far too long. When Captain Kidd sailed into New England, his first stop was Paine’s house. Kidd anchored and fetched his former comrade, who he asked to “secure some things” for him. Although Paine initially refused, he eventually hid some of Kidd’s gold and as a result was later drawn into the trial that would send the latter to the gallows.  

Widely scorned as a warren of iniquity, Narragansett Bay was known to harbor more than a few buccaneers. When in 1679 a group of English privateers sought permission to unload their loot in Jamaica after having attacked the Spanish in the Bay of Honduras, they told that Royal Governor that “unless they were permitted to bring it [their loot] into [the] harbour … they would … sail to Rhode Island and or to the Dutch, where they would be well entertained.” If Jamaica, the paragon of pirate lairs, barred access, the second choice was Narragansett Bay. Indeed, Rhode Island’s large fleet of merchant vessels could be so easily converted into fighting ships that many captains had been tempted down the slippery slope from privateer to pirate. So commonplace had taking prizes become and so practiced were Rhode Island’s seamen at the art of forceful seizure at sea that during the seven years war Newport commissioned more than sixty


privateers—more than any other colonial port.\textsuperscript{53} Rhode Island’s checkered reputation and the littoral’s long history as a hideout even led some during the Seven Years War to accuse the colony of sheltering deserters. Rhode Island’s colonial agent Richard Partridge vehemently denied “harbouring and protecting the Men of Wars Men,” explaining that “those malicious Reports” had been “propagated by our Enemys to serve some sinister view.”\textsuperscript{54}

This watery maze of inlets, islands and creeks was so attractive to the depraved and dissolute because it was nearly impossible to patrol. That distasteful elements sought refuge within the borderlands of Narragansett Bay certainly caused mouths to pucker. But the colony’s southern border, which was open to the ocean and was wholly unmanageable, also raised the specter of attack. In 1708 Governor Samuel Cranston wrote to the Board of Trade explaining that Rhode Island had, during Queen Anne’s War, incurred “great charge and expense, in keeping watches and wards upon the sea coast.” Although Cranston explained that Rhode Island’s vessels had made “frequent expeditions by sea, in order to secure our coast from being infested with the enemy’s privateers,” it was, he lamented, “[impossible ... to fortif]ie ourselves so as to keep an enemy [from entering into our Bay and rivers, or to obstruct] there landing in most places ....”\textsuperscript{55} No matter how prepared its militias and how vigilant its lookouts and patrols, the Rhode

\textsuperscript{53} William P. Sheffield, \textit{Privateersmen of Newport} (Newport, R.I., 1880), 52-55.


\textsuperscript{55} Samuel Cranston to the Board of Trade, 5 December 1708, \textit{Calendar of State Papers, Colonial, America and the West Indies, 1708-1709}, Cecil Headlam, ed., (London: His Majesty’s Stationery Office, 1922), 172-173; editor’s brackets and italics.
Island government could not possibly do enough to prevent the French from entering such a vast, chaotic network of tidal rivers and salt ponds.

For the same reasons that the Bay harbored pirates and deserters and lay open to marauding marines, it also developed, somewhat reluctantly at first, into the slave capital of the North. On May 30, 1696 the brigantine Seaflower under the command of Thomas Windsor arrived in Rhode Island with forty-seven African slaves, unloaded and sold fourteen for between £30 and £35 each, and then pressed on for Boston, where he sold the rest. But from 1698 to 1707, Governor Samuel Cranston attested to the Board of Trade, “[W]e have not had any negroes imported into this colony from the coast of Africa, neither on the Account of the Royal African Company, or by any of the separate traders.” Cranston went on to explain that Rhode Island, barring those delivered by the Seaflower, had never had any slaves imported directly from Africa. Instead, the “whole and only supply of negroes” had come from Barbados. Having queried the “chiefest of … [Rhode Island’s] planters,” Cranston concluded that his colony would “find but small encouragement for the trade ….” The principal reason for their aversion to slave importation, the governor explained, was “the general dislike our planters have for them, by reason of their turbulent and unruly tempers.”

So averse were some Rhode Islanders, that they actively limited slavery within its borders. In 1708 the General Assembly enacted a duty of £3 per slave imported into the colony. Although that initial act stipulated that the duty would be returned if the slave was subsequently exported, in April of 1708 they passed another law that made the duty permanent, regardless of the slave’s final destination. On February 27, 1711, the General Assembly affirmed the “act for

56 Samuel Cranston to the Board of Trade, 5 December 1708, in Records of the Colony of Rhode Island, 4: 55.
laying a duty on Negro slaves that shall be imported ....” Keen on removing any impediments to the expansion of the Atlantic slave trade, the Crown mandated that Rhode Island repeal that legislation in 1732. 57

If Rhode Island entered into the slave trade cautiously at first, by the mid 1720s it embraced it with verve. In the Narragansett Country, which held the densest slave population in New England for most of the eighteenth century, blacks composed roughly 22 percent of the population in 1730, 19 percent in 1748, and 15 percent in 1774. 58 In Newport, which had the second highest slave population in New England behind Boston, blacks composed 14 percent in 1730, 17 percent in 1748, and 13.5 percent in 1774. 59 Although many historians have argued that Northern slavery was more benign than that of the South, Robert K. Fitts has argued that the characterizations of Narragansett slavery have been “sanitized” by nearly two centuries of historians who have, citing their predecessors, perpetuated an image of Rhode Island master/slave relations in terms of paternalism and even benevolence. 60 Fitts showed that Narragansett planters, much like their southern counterparts, were brutal and controlling, both physically and psychologically. In addition to using physical abuse, masters also organized and shaped the landscape for the purposes of management and surveillance. Increasingly during the


60 Carl R. Woodward, *Plantation in Yankeeland* (Chester, Conn.: The Pequot Press, 1971), 73. President Emeritus at the University of Rhode Island, Woodward contended that among Narragansett plantations the “social and economic conditions prevailing on the plantations were not so rigid and demanding as to involve great physical hardship and paradoxical though it may seem, a tic of affection and respect between master and servant was not uncommon. Within the ignoble institution of human bondage, the slaves as a rule were treated reasonably well.”
eighteenth century, Fitts showed, plantation owners implemented “scientific” practices of management. This included measuring fields and timing workers. It also included partitioning land to monitor crops and the slaves who tended them.61

In Rhode Island, stone walls were the preferred method of dividing property. Wall construction had begun in earnest during the mid-eighteenth century.62 And by the nineteenth, 78 percent of Rhode Island’s field borders had been constructed of stone, the highest concentration of walls in New England.63 Built often by Indians and black slaves, “walls, fences and hedges . . .,” Fitts noted, “acted as symbolic barriers, helping to keep slaves in their proscribed space.”64 For example, when on September 9, 1751 a “headstrong and Disobedient” slave named Hannibal belonging to the minister James MacSparran of South Kingstown ran away, the reverend had his workers build a “Rail Fence round the Field behind the orchard,” presumably to prevent or at least deter any future attempts at escape.65 He also directed his slaves to build more permanent barriers. In September and October, 1743 MacSparran’s and his neighbor’s slaves “sledded stones” and built walls around the north end of his north orchard.66 But for many slaves, particularly those on the biggest plantations, which often had tidal river, salt pond, or


64 Fitts, Inventing New England’s Slave Paradise, 139.


66 Ibid., 12, 14.
even deep-water Bay frontage, access to the marshes and creeks liberated them from the control that stone walls either intentionally or inadvertently created.

Just as the Bay provided a safe haven for slavery's expansion, it also became a waterscape of resistance for the oppressed. In the same ways slaves used forests as geographies of resistance in inland environments, slaves living in the littoral looked to the Bay and the marshes and swamps surrounding it for refuge. On December 8, 1728 a slave belonging to Thomas Wickcom, who had fled, "was found dead in Dyre's swamp," her escape cut short when she likely succumbed to the cold. On November 21, 1774 the Newport Mercury announced that "a Mulatto man, named Primus" owned by Cornelius Harnet, Esq. of North Carolina had run from Newport. The announcement explained that Primus had "formerly belonged to Mr. Benjamin Brenton ... and is supposed to be somewhere in Narragansett at present ...." Probably a sailor, Primus, having landed at Newport only a few miles from his former home in Narragansett, used the Bay and his knowledge of it to make his escape. Similarly, on August 29, 1751, upon realizing his slave Hannibal had "been out," James MacSparran "stript and gave him a few Lashes till he begged." In defiance, Hannibal, "naked as he was above ye waist" fled via the sea and

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69 Newport Mercury, 21 November 1774, in Appendix A, Fitts, Inventing New England's Slave Paradise, 228.
was found near nightfall at Block Island. Returned by Henry Gardiner, Hannibal,
MacSparran explained in his diary, “had wt is called Pothooks put about his neck.”

Providing slaves with considerable mobility in and around Narragansett Bay,
ferries became an important tool of slave resistance. Often, “under pretence of being sent
or employed by their masters or mistresses, upon some service,” these slaves, the Rhode
Island General Assembly lamented, boarded ferries and sometimes disappeared. So many
slaves had taken to the Bay, that in 1714 the Assembly passed a law “that no ferryman or
boatman ... shall carry or bring any slave ... over their ferries, without a certificate under
the hands of their masters or mistresses, or some person in authority ....” In some cases
the unbounded nature of Narragansett Bay saw slaves and privateers crossing paths. In
1757 the General Assembly noted that “it frequently happens that the commanders of
privateers, or masters of any other vessels, do carry off slaves that are the property of
inhabitants of this colony ......” In response, the Assembly passed the first law of its kind:
if a commander or master “shall knowingly carry away from, or out of this colony, a
slave or slaves,” the vessel or merchant ship will be fined £500. The law also stipulated
that if a slave was suspected on board a ship, the slave’s owner had the right to inspect
the ship. It is difficult to tell whether slaves were impressed, kidnapped, or if they had
looked to the sea as a means of escape. It is doubtless that all three occurred at various
times. But in any case, the unbounded, indeterminate nature of the Bay borderlands

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provided opportunities for incredible mobility among slaves—opportunities that might not have existed farther inland.\textsuperscript{73}

As historians of slavery have observed, the most extreme form of resistance to which many slaves were forced to resort was suicide.\textsuperscript{74} The Bay provided a place for that too. In the case of one slave owned by Thomas Mumford of Kingstown, Rhode Island, who in 1707 had “committed the horrid and barbarous murder” of his master’s wife, the slave, it was presumed after his body washed onto the shores of Little Compton, “threw himself into the sea and drowned himself, by reason he would not be taken alive.” By taking his life, the waters of the Bay provided the ultimate freedom. Hauled off the beach, the dead slave’s body was taken to Newport, and in a gruesome act of public display, the General Assembly ordered “that his head, legs, and arms be cut from his body, and hung up in some public place, near the town, to public view, and his body to be burnt to ashes ....” Their justification for dismembering the body was that the “terror” would dissuade other slaves from committing the like.\textsuperscript{75} But it is possible that the grisly proceedings were precipitated by other factors as well. That the body had drifted, presumably from Kingstown all the way to the shores of what was then Massachusetts—roughly fifteen miles—suggested that even after death, the slave had attempted escape. In other words, the ocean at the mouth of Narragansett Bay had not only provided the slave with a means of suicide; it also, at least for a period of two weeks, facilitated the perpetrator’s flight.

\textsuperscript{73} W Jeffrey Bolster, \textit{Black Jacks: African American Seamen in the Age of Sail} (Cambridge Harvard University Press, 1998), 135

\textsuperscript{74} Eugene Genovese, \textit{Roll Jordan Roll: The World the Slaves Made} (New York. Pantheon, 1974), 639 Genovese contends that “The assertion that slaves frequently committed suicide, quaintly put forward by some historians as a form of ‘day-to-day resistance to slavery,’ rests on no discernible evidence.” But he conceded, “Most seem to have resorted to suicide to escape capture after having run away or to avoid punishment or sale.”

\textsuperscript{75} Bartlett, ed \textit{Records of the Colony of Rhode Island}, 4 27
To simply commit his body to the deep—to eternity—would acknowledge, if not condone, the sea’s ability to obstruct justice. It might also concede to the corpse some glimmer of agency. As such, his body was hauled onto dry land, cut into pieces, and left for the gawkers, buzzards, and crows.

**Placing Narragansett Bay**

On June 10, 1741, a Wednesday afternoon, sixty-seven-year-old Thomas Church, the eldest son of Benjamin Church, who had earned fame for leading English forces during King Philip’s War, took the stand on behalf of Massachusetts Bay. Church explained to the commissioners that he had lived in Little Compton and Tiverton for the last forty-five years and during that time had “followed the Sea bout twelve …” and was “Master of a vessel ten years successively.” But all told he had known the waters of the Bay for fifty years. His father, he explained, “used often to take me with him in a boat about the said Bay and other places when I was a boy.” For Church, the Bay was small, including only the stretch of water “between Narraganset Shoar and Beaver Tail” at the southern tip of Conanicut. He complained that until five years ago when the controversy over Rhode Island’s borders resurfaced, he had never heard of any other stretch of water called Narragansett Bay. The salt river that flowed from the ocean between Aquidneck Island and Sakonnet had, he avowed, always been called by sailors, “The coming-in between Rhode Island and Seconet- and Seconet River, but by no other name that I know of.” Farther north, the Sakonnet River widened into Mount Hope Bay, which again narrowed to become the Taunton River. But Narragansett Bay, Church testified, they
certainly were not. For Thomas Church, the Bay was a small body of water and the extent of Rhode Island, in turn, was equally limited.

But for others, the Bay stretched wide. Elisha Wing, 72, of Wareham, Massachusetts, and formerly of Sandwich on Cape Cod, took the Quaker solemn affirmation and explained that he had known Buzzard’s Bay for fifty-two years and had lived roughly a mile and a half from its shores for the last twenty. Throughout his life, Wing explained, he had known the body of water to be called both Buzzard’s Bay and Monument Bay and that “he had heard credible persons, inhabitants of Sandwich say that it had been formerly and in their time called the Narraganset Bay; and that they had heard the Sailors and Traders with the Indians on the South Shoar call it Narraganset Bay.” Buzzard’s Bay, he explained, was fed by a river known by some as the Herring River and others as the Monument River but “the first Setlers ancient People in Sandwich,” Wing attested, “say that in their time it had been called Narraganset River.” Although Wing did not identify the western bounds of Narragansett Bay, he placed its eastern shore roughly twenty-five miles east of that explained by Church.

Such discrepancies were no doubt rooted in political allegiance but confusion also swirled in the murky waters of historical memory. Wing, a Quaker, clearly sought to bolster Rhode Island’s claims by placing Narragansett Bay almost to Cape Cod, and Church, whose father was a Plymouth Colony hero, was protective of those lands that he no doubt believed his father had secured. Wing further testified that the Monument, Herring, or Narragansett River, as it was sometimes called, flowed into the head of

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76 Record of the Boundary Proceedings, 43-47.

77 Ibid., 29.
Buzzard’s Bay. He noted that “said part of Plimouth Township did border on said Bay as long as he remembers and that he had heard that that part which borders on said Bay was an additional purchase to the town of Plimouth.” Wing recalled that the lands west of the river were later additions, suggesting they were illegitimate add-ons. For Church, the names attributed to bodies of water in southern New England had only been called into question since Rhode Island began an aggressive campaign for territorial expansion. “I have never heard of any other place called by the name of Narraganset Bay,” he explained, “until within these five years past and since the controversy … when people talked of extending the Bounds of Rhode Island Government ….”

Key to establishing the region’s territorial history was understanding Native American place names and Indian modes of tribal jurisdiction. Historians have emphasized the ways Europeans imposed their own names on the landscape, often omitting reference to natural features of the terrain. Similarly, they imposed property boundaries that often did not follow the natural contours of the land and watercourses. Native Americans, conversely, explained William Cronon, used place names that “turn[ed] the landscape into a map which, if studied carefully, literally gave a village’s inhabitants the information they needed to sustain themselves.” Far from supplanting or jettisoning Native American ways of understanding the landscape, the New English who squared off over the boundary between Rhode Island and Massachusetts readily tapped traditional Indian knowledge to strengthen their claims. When Church was asked if he

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78 Record of the Boundary Proceedings, 32.
79 Ibid., 45.
was familiar with “any tract of land anciently called the Pockenoket Country,” he responded by explaining what his father had told him: that “King Philip was chief Sachem of that country, which I take to be Mount Hope and places adjacent.” He then explained that “Asamequin,” or Massasoit, was King Philip’s father. By asserting that Massasoit and his son were the Wampanoag sachems of Pokonoket who presided over the lands that comprised Bristol, Warren, Barrington, Swansea, and Somerset, Church invoked Native American authority to situate lands long held by Europeans within the former bounds of Plymouth Colony.

But so bewildering was the watery landscape between Providence and Plymouth that confusion over place names often resulted. Church had situated Pocanocket near Mount Hope at the confluence of the Sakonnet and Taunton Rivers. But others suggested it was miles to the east. This prompted Massachusetts Bay to call the Indians Benjamin Squinimo of Middleborough and John Simon of Little Compton to locate a place called “Assawampset” that several Englishmen had at times called Pocanocket. The sixty-one-year-old Squinimo had lived at Assawampset, he explained, for his entire life. He knew the place as “Assawampset” or “Sawampset,” so called for trees the Indians knew as “Sawamps” and the English called Beech, and described it as a “neck of land about three or four miles long and in some places a mile wide and in others narrower.” Although he admitted he knew of no other place called Pocanocket, his description of the landscape described multiple places—a stretch of land comprising Barrington, Bristol, and Warren southeast of Providence and that of Assawampset Pond twenty miles east in

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81 Record of the Boundary Proceedings, 46.
Middleborough. Although the English desperately sought the mental map of ecological place names that Native Americans had developed over millennia, the widespread acceptance of English nomenclature combined with the watery nature of the landscape had smudged that map and rendered it illegible. Placing Narragansett Bay would require a more learned approach.

In turn, geographic understanding of the littoral was established by melding Native American knowledge with published English accounts, contemporary observations, and the opinions of resident “experts.” To mine the historical record, the Commissioners called upon the minister, scholar, and historian Thomas Prince of Boston. Originally from Sandwich and decidedly well-read, the fifty-four-year-old Prince was asked to provide a lay of the land as history—history in 1741—had revealed it. He explained that he had always known Buzzard’s Bay as “Manamet Bay,” and sometimes as “Bosworth’s Bay” from which “Buzzard may be a corruption ....” He believed that the attribution of Narragansett Bay for Buzzard’s Bay was rooted in a mistake printed in a pamphlet written by Edward Winslow and published in London in 1623. Describing William Bradford’s journey with the English-speaking Indian Hobomok to Manamet twenty miles south of Plimouth, Winslow noted that the Manamet River ran into Narragansett Bay. “Bradford,” Prince explained, “and others that went to Manamet labour’d under that mistake of Manamet Bay being part of Narraganset Bay ‘til the year

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82 Ibid., 37-38.
84 Ibid., 25.
1627 when they built a vessel at Manamet and ... then found out the Narraganset Bay by sailing round into it, and trading with the Natives there.\textsuperscript{85}

The mistake, however, was understandable. A tortuous network of tidal rivers and salt ponds that radiated inward from the surrounding sea nearly converged in the scrub oak mazes of southeastern New England, making the misrepresentation of this coastal space all but inevitable. “[I]t is my opinion,” explained Prince, “that they by mistake apprehended that called Manamet Bay to be the Narraganset Bay, and that they took it to be part of the Bay which had been discover’d the year before at Poconoket ... by Mr Winslow and W. Hopkins, in company with Squanto ..., and shown to them by Masassawit the great Indian Poconoket Sachem, who told them that the Narragansets lived on the other side of that great Bay.”\textsuperscript{86} As Prince explained, in their westering wanderings, Winslow and Hopkins, guided by Squanto had come upon waters that the Pocanockets shared, albeit at a distance of about four miles, with the Narragansetts. When they had wandered to the south, another bay with similar grassy fringes and strong afternoon winds opened before them, which led them to believe that these bays were the same. This instance, Prince attested, was the only time that Buzzard’s Bay had been called Narragansett Bay.\textsuperscript{87} Subsequent accounts simply repeated the mistake.\textsuperscript{88} Prince concluded by saying that he believed Narragansett Bay was between Rhode Island and


\textsuperscript{86} Record of the Boundary Proceedings, 65.

\textsuperscript{87} See also Thomas Prince, A Chronological History of New England in the Form of Annals: Being a Summary and exact Account of the most material Transactions and Occurrences relating to this Country, in the order of Time wherein they happened, from the discovery of Capt. Gosnold, in 1602, to the Arrival of Governor Belcher, in 1730 (Boston, 1736; reprint Boston: Cummings, Hilliard, and Company, 1826), 208.

\textsuperscript{88} Record of the Boundary Proceedings, 65.
the Narragansett Country, "but the generality of Writers that I have met with," he testified, "take the Bay to be between Seconet Point and Point Judith." To Prince and others, southeastern New England was a meandering network of waterways that after percolating through marshes and swamps and pulsing with the tide, coursed in every direction. So bewildering was the watery word of southeastern New England that geographic descriptions became muddled and place names confused.

Seventeenth-century graphic representations of southeastern New England reflect the ways the littoral's indeterminate geography jumbled geographic knowledge. Citing William Wood's map printed in his 1634 *New England's Prospect* (see fig. 10), Prince testified that the Pawtucket or Blackstone River that met Narragansett Bay at Providence had also been known as the Narragansett River. This map, Prince believed, "was the first Map that I know of that has been printed of these par[t]s ...." Although Prince believed it was "full of errors" and "not to be depended on," he did note that the Narragansett River was "the same that is now called Pautucket River," which suggests that Wood's map, regardless of the glaring differences it held with the map produced by the boundary commission's surveyors in 1741, still resonated with the geographic sensibilities of southeastern New English colonists more than a century after it had been created. Mirroring the confusion over geographic boundaries and place names held by many of the boundary dispute deponents in 1741, Wood's map of 1634 showed not two distinct bays—Narragansett Bay to the west and Buzzard's Bay to the east—but a matrix of wide arms of the sea that split the land of southeastern New England into numerous peninsulas.

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89 Ibid., 65.
90 Record of the Boundary Proceedings, 71.
91 Ibid., 71-72.
Although Wood failed to label the Taunton River, he did draw what looks to be the northeast-most tidal arm flowing into Narragansett Bay, which, as he conceived it, extended almost to “the great Baye,” or Cape Cod Bay, nearly severing Plymouth Colony from the mainland. The Blackstone River, or what Wood labeled the “Narragansett River,” extended almost all the way to the Charles River, and the “Merimock” River is not far beyond. Wood’s map suggests that to seventeenth-century English sensibilities, coastal New England was a veritable labyrinth of waterways that, teeming with the same types of fish and bordered by similar vegetation, made erecting distinct territorial boundaries nearly impossible.

Although Prince had criticized the map as inaccurate, he, much to the commission’s concern, took it upon himself to “correct” Wood’s effort, which suggests he saw in it glimmers of accuracy. Prince noted that the island appearing south of Narragansett Bay on Wood’s map had been labeled “Elizabeth Island” but that he had taken it upon himself to erase this designation from his copy. He explained that within the previous two months, “I apprehended them to be a mistake and erased them out of the print,” because the “Elizabeth Islands … [are] twenty or thirty miles to the South of the head of Monamet Bay, and in this Map ‘tis represented as twenty or thirty miles to the Westward.” Upon realizing the problematic nature of his changes, Prince restored the original name as it was written. But as he studied the map, he explained to the boundary commissioners that he subsequently added other place names, including the Seekonk River and Monamet Bay. “I have been these two months last past,” Prince explained, “consulting said Map at Boston, and have wrote a great many words on it, as I grew satisfied of the situation of said places where I wrote said words.” He explained that some of the words had been added before the commission had summoned him to testify and others had been added after but was adamant that he had made the marks in his own handwriting only so that they “might more easily and readily form a truer idea whereabouts those places lay ….” For Prince, an eighteenth-century historian of early New England, it was important to interpret Wood’s map in terms of the geographic assumptions of his seventeenth-century predecessors. If he had dismissed their ideas altogether, he would not have scrutinized the map so carefully. But in adding his own

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92 Ibid., 78-79.
93 Ibid., 79-80.
notations, he admitted—at least to himself—that Wood’s watery and seemingly whimsical depiction of geographic space a century earlier was not that far off.

Although the depositions produced largely inconclusive results when eighteenth-century colonial authorities attempted to divine seventeenth-century notions of jurisdiction among the waterways of southern New England, an examination of the ways these documents were interpreted by deponents like Prince adds a foundational element to early New England historiography. Primary texts that have become the mainstay of modern historical analysis of seventeenth-century New England—Wood, Winslow, Bradford, Gookin, among others—had become, Prince’s remarks revealed, bulwarks of New English identity, among the learned elite. Prince, who published, among numerous sermons, his deeply researched but little-read *A Chronological History of New England, in the Form of Annals*, in 1736, had carefully studied these documents often in manuscript form.94 When referencing William Bradford’s journals, he had studied the originals then in the possession of Bradford’s grandson who, Prince explained, “lent it to me, together with several other Books in Manuscript ....” Prince read the material in Bradford’s “own hand writing,” which was, he explained, “very plain [and] fair.”95 Primarily a chronicler who saw New England History through a religious lens, Prince showed a deep reverence for his predecessors and the land they settled. “New England,” he wrote, “open[ed] Her Arms to embrace them: they judged they now Ought to improve the offer and rather chuse a hideous *Wilderness Three Thousand Miles* across the

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95 *Record of the Boundary Proceedings*, 77-78.
Ocean." For Prince, an untamed New England beckoned the brave. The uncontrolled terrain made their misguided sense of direction understandable. Prince himself expressed sympathy. Commenting on the bounds of Plymouth’s patent and citing Bradford’s manuscript and Winslow’s journal, Prince wrote, “I was always uncertain whether Sowams was the same spot with that of Poconoket, but I understood them to be near one another, and Believe that it was in or near to Bristol, and ... about forty miles from Plimouth ....” An important piece of the boundary deliberations, the exact location of Sowams and Pocanocket and their whereabouts had elicited much debate without producing consensus. In many ways, the studious Prince—and by proxy the commissioners who relied upon his expert testimony—imagined the landscape of southeastern New England in seventeenth-century terms. This was a country where meandering water routes and footpaths cut through marshes, swamps, and dense forests. Places like “Pocanocket,” “Sowams,” and “Assowampset,” were but small outposts within this broad, confused waterscape. Their borders had never been measured, or even contemplated for that matter. But as tensions over jurisdiction rose, the exact location of these “island” outposts grew in importance.

If vague and sometimes conflicting historical understanding made placing Narragansett Bay difficult, human-induced environmental change further complicated the proceedings. On behalf of Rhode Island, the seventy-one-year old John Bowen of Rehoboth in Bristol County, Massachusetts Bay, testified that the contested town of Seekonk was originally named for the “the plenty of Geese that used formerly to be.” Bowen explained that Seekonk derived from the word “Coank,” representing “the noise

they [the geese] were want to make." It is likely that the first syllable derived from its proximity to salt water. Hunted from local existence, the geese that no longer flocked on the shores of Seekonk made placing this contested space more difficult. In short, an environmental transformation that removed the area’s namesake further blurred colonial jurisdiction.

In other cases, environmental action, or the “improvement” of coastal space drew clear lines of demarcation. Of Gold Island, a two-acre splotch of land in the Sakonnet River between Tiverton and Portsmouth, John Cook, a fifty-nine-year-old shopkeeper in Newport who had lived “the greatest part of my time” in Tiverton, asserted that although the island was closest to Tiverton in Massachusetts Bay, “the Portsmouth people have always improved it as belonging to Rhode Island.” The “Rhode Island people,” Cook explained, “have ever improved it by putting their rams on it and cutting wood off it.” Rhode Islanders had “improved” this coastal space by taming its forests and grazing its pastures and in turn had made it their own. Tiverton had never attempted to intervene, Cook explained, because “it was concluded that it lay in the Eastermost [sic] of the Narraganset Bay. And that I have, ever since I was a boy, heard the Ancient People say that Rhode Island lay in the Narraganset Bay.”

The line between Massachusetts and Rhode Island, for Cook, was drawn partially by the natural course of the water, but especially where the estuary—or at least the part of it that included Gold Island—was improved.

Expert knowledge played an important role in placing Narragansett Bay but so too did political allegiance. Elisha Gibbs, a fifty-six-year-old mariner from Newport who had

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97 Record of the Boundary Proceedings, 104-105.
98 Record of the Boundary Proceedings, 116-117.
been master of a vessel for twenty-four years explained that he had known Narragansett Bay since he was boy and had always understood it as filling the space between Sakonnet and Point Judith. Having learned from his father who was “one of the first Setlers of Seconet,” he also held intimate knowledge “all of the creeks up said Bay,” explaining that the easternmost edge of the Bay ran north up the Sakonnet River to Assonet. On behalf of Rhode Island, Gibbs claimed that the myriad rivers and smaller Bays—Taunton River, Assonet River, Mount Hope Bay—were all piece of the larger Narragansett Bay. Still others tried to extend Rhode Island’s boundaries even farther. The sixty-nine-year old Benjamin Chase of Tiverton explained that his reading of the Rhode Island Charter and his “hearing what the Ancient People said” led him to conclude that “the Narraganset Bay was between Montauge Point and Gay-Head” on Martha’s Vineyard. For Chase, Narragansett Bay was a vast stretch of water, and Rhode Island held claim to much of southern Massachusetts.

To counter Rhode Island’s arguments, Massachusetts hinged its case on the location of King Philip, his kin, and their proximity to Plymouth Colony. Although the court records do not reveal the exact words and motivations of counsel for either Massachusetts Bay or Rhode Island, the evidence does suggests that the former believed that if it could establish the bounds of Pocanocket, which was known to rest within the Plymouth Colony’s jurisdiction, then it could make a compelling case for ownership of that land. According to its colonial charter, Plymouth Colony extended roughly twenty-five miles north of Plymouth village to:

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99 Ibid., 121-122.
100 Ibid., 127.
a certain Rivulet or Runlet there commonly called Cohassett alias Conchassett toward the North and the River commonly called Narragansett River towards the South and the Great Western Ocean towards the East and between and within a straight line and directly extending up into the main land toward the West from the mouth of the said River called Narragansett River to the utmost limits and bounds of a country or place in New England commonly called Pokenocutt alias Sawamsett Westward and another like straight line extending it self directly from the mouth of the said River called Coahaseet alias Conahasset toward the West so far up into the main land westward as the utmost limits of the said place or country commonly called Pokanacutt alias Sowamsett do extend. 101

In many ways mirroring the distorted vision of William Wood’s 1634 map, the descriptions in the Plymouth patent were imprecise. From Cohassett on its northern end, the charter explained that the colony extended westward from the ocean to the “utmost” or northernmost limits of “Pokenocutt alias Sawamsett” on the “Narragansett River,” or Blackstone River. The colony then extended along the river south to its outlet with the ocean. But the bounds of Pocanocket were vague, especially since there were two Sowamsetts—one in Barrington and another roughly twenty miles east in Middleborough. Joseph Titus, a seventy-six year old wheelwright from Rehoboth, a village in the contested territory, explained that he had seen King Philip when he was a boy and knew that he dwelt at Mount Hope and that his people “liv’d on the East side of Patucket River … because they were at enmity with all the Indians on the West side of said River, insomuch that if one of either side wounded a Deer he durst not cross the river to pursue and take him.” 102 For Titus, King Philip’s Pocanocket stretched from Bristol to Providence and perhaps farther north along the Blackstone River, or what Plymouth had

101 Ibid., 221-222. See also, William Brigham, ed., The Compact with the Charter and Laws of the Colony of New Plymouth: Together with the Charter of the Council at Plymouth and an Appendix, Containing the Articles of Confederation of the United Colonies of New England and Other Valuable Documents (Boston: Dutton and Wentworth, 1836), 22-23
102 Record of the Boundary Proceedings, 130.
called the Narragansett River. In addition, he explained (while admitting his memory was foggy) that that the people of Seekonk, next to Rehoboth, had purchased their land from Plymouth Colony and were therefore under its jurisdiction. Samuel Newman, seventy-eight, also of Rehoboth and who had also seen King Philip when he was young, confirmed Titus' description of Pocanocket's boundaries and his understanding of the colonial jurisdiction under which Rehoboth fell, explaining that Philip had sold the land to the town of Rehoboth and that "it was always under Plimouth ...."\textsuperscript{103} If, however, living memory of Philip and his men added credence to their country's provenance, the limits of Pocanocket—at once Philip's and his forbearer's village, home range, and region—remained elusive. For a boundary commission forced to rely heavily on anecdotal descriptions of who owned what, where and when, the Bay borderlands defied any easy attempt to lay down a line.

Although the English came to rely on Native American history to define eighteenth-century jurisdiction, they found that forced or coerced Indian removal had further blurred their understanding of this contested space. Samuel Titticut, a seventy-six-year-old Indian laborer of Swansea in Massachusetts Bay, testified that he had known King Philip, who had lived at Bristol and that one Tiask, one of King Philip's captains with whom he had often hunted, had told him that Philip's territory was between Bristol and Senichedeconet, presumably a place near Providence, which, Titticut explained, "comes from Shenicke, which is a Grey Squirrel."\textsuperscript{104} He explained that upon visiting Senichedeconet, "there were no Indians there, only their planting fields ....," for Tiask explained to Titticut, that the Indians there "were removed." At Barrington, Titticut

\textsuperscript{103} Ibid., 133.
\textsuperscript{104} Record of the Boundary Proceedings, 136.
explained, he had known Thomas and Peter Cheese, who “belonged to King Philip” and had heard presumably from them that there were “pretty many Wigwams there” but that they had never seen any Indian dwellings there. Titicut himself had also heard there were Indians living along the tidal Palmer River, which flowed through Barrington, Swansea, and Rehoboth, but that he had never actually seen them there. The displacement of coastal Indians en masse by war, disease, and forced removal had permanently eroded Native Americans’ loose but nevertheless cohesive conceptions of coastal space. A culturally informed geography divested of the inhabitants who had defined it became tangled and confused amidst the brambles and bittersweet of historical amnesia that had grown in their absence.

But the confused nature of the littoral landscape was not limited to the conceptual. Indian removal changed the physical environment as well, further obfuscating earlier conceptions of jurisdiction. Samuel Titicut explained that the Indians who had lived along the Palmer River once had numerous planting fields there but that those lands “have not been improved by the English.” Not only had Native American memory of the place been removed but so too had any evidence of Indians’ impact on the physical geography. If Native American notions of jurisdiction were integral to understanding the boundary between Rhode Island and Massachusetts, then when the physical footprint of their labor on the land was removed, the boundary, like a neglected stonewall, crumbled with the passage of time. That both colonies had neglected to improve the land further added to the confusion. When the people of Portsmouth, Rhode Island, had improved Gold Island in the Sakonnet River, the people of Tiverton in Massachusetts Bay,

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105 Ibid., 137.
106 Record of the Boundary Proceedings, 137.
concluded that the property belonged to their colonial neighbors. When neither side improved the land, the boundary was far less clear.

The political infighting that resulted from an increasingly contentious boundary dispute on the colonial periphery had, since Rhode Island first received its charter, challenged metropolitan authority. Even after a commission was sent by the Crown to determine the boundary between Rhode Island and Massachusetts, the two colonies failed to come to terms. On March 11, 1663, the commission explained “we can make no final Judgment by consent of parties … till His Majesty’s judgment and Determination of their Bounds be known.” To keep the peace, they declared the boundary would follow the “Salt water betwixt” Aquidneck Island and Sakonnet, running north around the island, to the Providence River, up the Seekonk River, and north to the Massachusetts Line.107 But such fluid borders left title to the Bay’s terrestrial borderlands in abeyance. Precipitating a land grab, in 1663 and 1664 the towns of Rehoboth and Swansea maneuvered for the Sowamset lands in what would become Barrington.108 For the Crown, this warranted a stern rebuke. On April 23, 1664 King Charles II urged the Massachusetts governor “to suppress and utterly extinguish those unreasonable jealousies and malicious calumnies which wicked and unquiet spirits perpetually labour to infuse into the minds of men ….” For the Crown, this confusion over jurisdiction threatened to undermine the very foundations of colonial authority. “[O]ur subjects in those parts,” the King’s correspondence declared, “do not submit to our government, but look upon themselves as


108 Order of Thomas Prence, Massachusetts Bay Governor, October 1670, in Record of the Boundary Proceedings, 276-277.
independent upon Us and our laws, and that We have no confidence in their affection and obedience to us ...."\(^{109}\)

Such rancor and insolence among Englishmen, the King explained, threatened not just the chain of command but also the welfare and security of his colonial possessions. He demanded that “lewd aspersions must vanish upon this our extraordinary and fatherly care” and that colonists in New England heed the “several instructions given to our Commissioners ... which will exceedingly advance the refutation and security of our Plantation there.”\(^{110}\) If the fighting didn’t stop, the threat of invasion was all too real, particularly from the Dutch. It was imperative, the King declared, that “We may protect our subjects of our several Plantations from the invasion of their neighbours and provide that no subjects of our neighbour nations how allied soever with Us may possess themselves of any lands or rivers within our territories and dominions ....”\(^{111}\)

Tensions that escalated into outright violence also threatened relations with the Indians. In 1665 the King lamented that “the Great Men and Natives of those countries ... complain of breach of faith and of acts of violence and injustice which they have been forc’d to undergo from our Subjects, whereby not only our Government is traduced but the reputation and credit of Christian Religion brought into prejudice and reproach with the Gentiles and inhabitants of those countreys who know not God.”\(^{112}\) Such acrimony among countrymen, explained the king, soiled the fabric of English civilization and

109 King Charles to the Governor of Massachusetts, 23 April 1664, in Record of the Boundary Proceedings, 234.

110 Ibid.

111 Ibid., 237.

112 King Charles to Colonel Richard Nicholls, 2 May 1665, in Record of the Boundary Proceedings, 278.
threatened to undermine Protestant Christendom’s precarious foothold in the New World. But tacitly, he also suggested that internal struggle raised the specter of Indian attack.

The calamity that would come should the Indians attempt to capitalize on English infighting was well understood by Crown and country, center and periphery, alike. Hauled into court after having threatened Swansea with violence in March, 1671, Philip signed a treaty at Taunton on April 10 and another on September 28 in which he professed that he and his “Council and … Subjects do acknowledge ourselves subjects to His Majesty the King of England & the Government of New Plymouth and to their laws.”

Philip promised to pay the government £100 and to deliver five Wolves Heads in tribute. Likely responding to a request spurred by mounting tensions between the southern New England colonies, he also promised “not to dispose of any of the lands that I have present” and promised “not to make war with any but with the Government Approbation of New Plymouth.” Colonial authorities apparently sought similar assurance among other sachems who resided in the contested space between Massachusetts and Rhode Island, for on November 3 of the same year, they called to court Takamunna, a Sachem from Sakonnet, who agreed to “abide by the same engagement of subjection.”

Although Philip and Takamunna’s deferential treaties in 1671 belie the mounting tensions that engulfed the entire region in total war in 1675, they nevertheless highlight the extent to which the contested space between Rhode Island and Massachusetts played an important role in sparking conflict. Historians have outlined many reasons for the start of King Philip’s War, which in relation to population killed more people than any war in


American history.\textsuperscript{115} Many English contemporaries believed the war began because the Indians had started it: the murder of John Sassamon, the Christian Indian minister from Namasket, who had warned Massachusetts Bay Governor Josiah Winslow that Philip was planning an attack, the English believed, had warranted reprisals. Others believed the war was fought in the name of Christianity. Still other English saw the war as divine punishment for their sins. Many Indians, conversely, believed they had been provoked when Massachusetts Bay tried and hanged three of Philip’s closest advisors.\textsuperscript{116} More recently, historian Virginia DeJohn Anderson has argued that English encroachment on Native American land and its subsequent destruction by domesticated animals played an important role in exacerbating tensions between Indians and Europeans. “Philip resorted to violence in 1675,” she wrote, “because of mounting frustrations with colonists, and no problem vexed relations between settlers and Indians more frequently in the years before the war than the control of livestock.”\textsuperscript{117} But as Jill Lepore noted, “The historian who pores over the records of King Philip’s War will search in vain for a coherent political ideology or a single legal, moral, or religious justification of the war.”\textsuperscript{118}

Regardless of the war’s ostensible causes and the murky machinations that led to the death of Sassamon and the later conviction and execution of Philip’s men, the historical rhetoric surrounding King Philip’s War has been dominated by a historiography that simply pits Indians versus the English. Philip’s ability to forge alliances across the


\textsuperscript{116} Lepore, \textit{The Name of War}, 21-22, 97-111, 94-96.


\textsuperscript{118} Lepore, \textit{The Name of War}, 112.
region, but particularly among the rival Wampanoags, Narragansetts, and Nipmucks of southern New England girded much of his success. As the flurry of letters between colonists across New England attests, cross-colony alliances played a key role in securing an English victory. Even Roger Williams, the great friend of the Algonquian, who spoke their language and had lived among them on peaceful terms for nearly fifty years, became an important English informant for Rhode Island, Connecticut, Massachusetts Bay, and Plymouth alike. So polarized had relations become during the war that the same bands of Indians with whom Williams had lived and traded for decades became “barbarous men of Bloud who are as justly to be repelld and subdued as Wolves that assault the sheepe.”

But little has been written about the ways the vagaries of cross-colony diplomacy—and more often the lack of it—set the stage for war. The contest over land was not simply between the English and Indians. Rather, it was often between the various English governments in southern New England whose shrill infighting sometimes included but often eclipsed Native American interests. And while the English were preoccupied with themselves, opportunity arose for Native Americans to reclaim their place within a contested landscape. In this sense, it was no coincidence that John Sassamon’s body was found frozen beneath the ice in Assawampset Pond and that the first Indian attack upon the English in King Philip’s War occurred at Swansea, in the heart of the Narragansett Bay borderlands. These were watery spaces where English control of the land was tenuous at best. For Indians, these marshy margins provided opportunity. If New England was, as the first wave of colonists had believed, a vacuum domicilum, empty, wild, and ripe for peopling and improvement, then, by the second

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generation of English settlement, those contested spaces where English ownership was cloudy, improvement was lacking, and lines of jurisdiction were blurred by the ebb and flood of the tide, became geopolitics of Indian agency. As Jeremy Adelman and Stephen Aron have argued, “borderlands and frontiers together provide us with the vocabulary to describe the variegated nature of European imperialism and of indigenous reactions to colonial encroachments.” Of the Great Lakes region, they showed that “imperial rivalries allowed the greatest degree of Indian autonomy …”120 Similarly, on Narrangansett Bay, Indians took advantage of English inter-colonial infighting. Navigating the political interstices between Rhode Island and Plymouth, Indians sought advantage amidst confusion.

The power struggle that precipitated King Philip’s War surely saw the breakdown of English-Indian relations but the struggle was often dominated by inter-English strife. Quite different from a borderland dispute between multiple autonomous nation-states—England, France, or Spain, for example—as has been the focus of most borderland studies, this was a dispute between competing English powers in the region. Within the contested lands, particularly in the tidal marshes, even individual towns were not strangers to confrontation. In October 1670 Rehoboth and Swansea, both villages of Plymouth, went to court over tidal meadows. The court decided that although the “Hundred Acre Meadows,” a broad tidal estuary dotted with grassy islands in the upper reaches of the Barrington River, lay within Swansea, it would be owned by Rehoboth. The “Five Ten Acre Lots” that belonged to Sowamset, or Barrington, but lay within

Rehoboth, the court decided, would belong to Swansea.121 Presumably these tidal lots were granted to the towns that had improved them, but the complexity with which such a patchwork of proprietorship extended across the Narragansett Bay borderlands, ushered in assertions of Indian autonomy. Within only six months, Philip and his men paraded their weapons through Swansea, terrifying Plymouth and Massachusetts Bay authorities. Much as Charles II feared, English infighting opened the door to Indian attack. Perhaps in waging war, Philip and his allies were not simply responding to English provocation. Rather, when placed in the context of years of English squabbling, Philip was seeking opportunity. “Equally important to the history of borderlands and frontiers,” wrote Adelman and Aron, “were the ways in which Indians exploited these differences and compelled these shifts, partly to resist submission but mainly to negotiate intercultural relations on terms more to their liking.”122 For an impatient and at times truculent Philip whose people had endured more than a half a century of displacement, enslavement, disease, and famine, the “terms” were dire. And it was in the borderlands, at Swansea, that on June 24, 1765, Philip and his men set the war that would bare his name in motion.

**Laying the Line**

Had Philip survived the war and lived to see the litany of boundary disputes that unfolded in his ancestral homeland, he would have been puzzled, if not exasperated, by the irony of English property politics. Sixty-five years after the English had united to remove him and his people from the southern New England landscape, they convened once again at great expense and commitment of time to piece together any scraps of

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121 *Record of the Boundary Proceedings*, 305-306.

historical documentation and traces of contemporary memory that could reveal the extent of Philip’s territory. The Native American sachem who was once condemned as a bloodthirsty savage by the English became, posthumously, the star witness in a lawsuit that in many ways defined the greater colonial project. In many instances, the English had jettisoned Native American place names and imposed European patterns of land use, all in the name of civilization. But in this case, Indian knowledge was essential. The ancient bounds of Native American territories and the place names that defined them served as correcting spheres to the English surveyor’s compass. At the very least, they served to mitigate any deviation caused by the forces of peripheral politics and metropolitan mandate.

The centrality of Native American history to the English understanding of colonial jurisdiction was not lost to the boundary commissioners. After roughly a month of hearing testimony and deliberations, the court reached a verdict on June 30, 1741. The commissioners explained, first that no evidence had been produced that could prove “that the water between the main land on the East and Rhode Island on the West was ever at any time called Narraganset River.” This excluded Massachusetts Bay’s claim that they have always enjoyed a boundary with Rhode Island that ran up the “middle of the Narraganset River between the End of Rhode Island and Little Compton where the said River runs into the Main Ocean.”123 The commissioners also explained that “no evidence has been produced of the extent of the Pauconoket Country to Seconk or Patucket River ....” That Pocanocket was the seat of Massasoit and his son Philip and that they and their land fell within the Plymouth patent was acknowledged. But the extent of the land remained unknown, as was the allegiance of Indians living nearby. The court explained:

123 Record of the Boundary Proceedings, 10, 403.
[T]hough there be some evidence that the Indians at enmity with King Philip or with other Indians in amity with him, lived on the West side of the said River, and that the Indians subject to King Philip or in amity with him lived on the East side of said River, there is no evidence that all the Indians subject to or in amity with King Philip lived in the Poconoket Country.

Pocanocket, the Indian territory ruled by Philip but lacking finite boundaries, could only be determined on the grounds of political alliances. It was acknowledged that Indians west of the Blackstone River lived “at enmity with King Philip” but, the court concluded, there was no evidence that all of those with whom Philip lived in “amity” on the east side resided in Pocanocket. In short, there was no way to determine where Pocanocket began and where it ended, which precluded Massachusetts Bay from claiming title to the land. In addition, Massachusetts Bay had been unable to produce the Plymouth Patent letters, which made their argument even more tenuous. Finally, under colonial law it was determined that “no jurisdiction within the King’s Dominions in America can be held by Prescription or on the foot of Prescription.”

In other words, land ownership could not be based on prolonged possession. Earlier rulings were likewise thrown out. Upon close examination of the 1664 determinations by the King’s Boundary Commission, it was determined that it was only meant to be temporary “for preserving the Peace on the Borders of both Colonies without determining the Rights and Titles of either.”

In sum, the claims made by Massachusetts Bay were weak at best. The true test of jurisdiction lay in the colonial charters.

Yet Rhode Island’s boundaries still lay in relation to Narragansett Bay. And this required the commissioners to define it once and for all. “The Court is of the opinion,”

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124 Record of the Boundary Proceedings, 404-405.

125 Ibid., 405.
they wrote, “That the Narraganset Bay is and extendeth it self from Point Judith on the West to Seconet Point on the East, and including the Islands therein ….”\textsuperscript{126} In line with the definition of a bay advanced by Defoe, Narragansett Bay comprised all the water and islands between two headlands and extended inland toward a source of fresh water and a sheltered harbor. At Narragansett Bay’s northern end, however, flowed both the Taunton and Blackstone Rivers. That Taunton lacked an extensive deep-water port like that of Providence, perhaps led commissioners to exclude it from consideration, leaving it within the jurisdiction of Massachusetts Bay. Nevertheless, Rhode Island received the lands three miles inland from the Sakonnet River, which was now officially an arm of Narragansett Bay. From Tiverton, the Rhode Island boundary jogged northwest along a line measured three miles inland (in a northeasterly direction) from the northeast corner of Bristol Harbor and again at Rumstick Point, continuing northwest until it met with a line extending three miles (again, in a northeasterly direction) from Bullock’s Point. North of Bullock’s Point, the eastern edge of the Providence River formed the border with Massachusetts until Pawtucket Falls, where the commissioners drew a line north along the meridian to Massachusetts’ southern boundary.\textsuperscript{127} All told, Massachusetts ceded five towns to Rhode Island: Tiverton, Little Compton, Warren, Bristol, and Cumberland, a wedge of land north of Pawtucket Falls that had been known as the Attleboro Gore. The commission’s decision was confirmed by King and Council in 1746 and the land officially transferred a year later.\textsuperscript{128}

\textsuperscript{126} Ibid., 405.

\textsuperscript{127} It wasn’t until 1862 that Rhode Island annexed East Providence from Massachusetts.

Both sides appealed the decision. Naturally, Massachusetts objected, claiming "every part of it, as grievous and injurious to us." Although Rhode Island had gained a considerable amount of territory, it nevertheless felt that all of Narragansett Bay, as the commissioners defined it, should be included. Rhode Island felt that "the most North East part of the said Narraganset Bay is at a place called Assonet," a fork of the Taunton River, roughly twelve miles east of the boundary the commission had established. Ultimately, the appeals were rejected and the boundaries remained largely as the commissioners had established them until 1862, when the boundary lines were tweaked yet again.

The Cultural Construction of Narragansett Bay

At first blush, the story of the 1741 boundary dispute between Rhode Island and Massachusetts presents a banal tale of eighteenth-century colonial administration. Colonies needed boundaries and the people who lived near them often argued. But at the edge of land and sea, where the two dominant Early Modern epistemologies concerning nature—an eternal sea and improvable land, the profound and progress—collided, much more is exposed. The documents and depositions compiled in the commission's report reveal the extent to which coastal space was deeply human. Narragansett Bay was not simply a geologic formation. Rather, it was a cultural construct. The littoral was a place where people lived and worked and shaped their surroundings through aggressive action—burning forests, clearing fields, and hunting birds, for example—but it was also the reflection of ideas and human history. That the boundary commission did not grant

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129 Massachusetts Bay to the Commissioners for Setting the Eastern Boundary, 4 September 1741, Record of the Boundary Proceedings, 412.

130 Rhode Island to the Commissioners for Setting the Eastern Boundary, 4 September 1741, Record of the Boundary Proceedings, 416.
Rhode Island the land extending three miles east of Assonet, a sheltered harbor clearly connected to Narragansett Bay, suggests that much more than the physical landscape was at play. The peregrinations of New Plymouth’s first settlers, the ancestral homelands of the Wampanoag, Taunton’s stands of commercially valuable timber, and even the strategic importance of a southern port for the Bay Colony, no doubt played an important role in the boundary commission’s decision to partition the greater estuary.

Although Narragansett Bay had existed geologically since the end of the Pleistocene, it wasn’t until 1741 that its headlands, islands, harbors, shores, and shoals were fully defined. The commission’s surveyors, Cadwallader Colden, James Helme, and William Chandler, had produced for the court an impressively accurate graphical representation of Narragansett Bay and its surroundings. But it was through careful assessment of seventeenth-century imperial documents and anecdotal descriptions alongside a survey of contemporary memory and local knowledge that the commissioners constructed a bay in southern New England. And in doing so, they provided insight to the ways the Early Modern English understood nature at the edge of the sea. Although the commissioners declared that prescription could not establish the ownership of land, the people who worked on the bay and improved its shores (or lamented that others had failed to), clearly felt that prescription played an important part of defining ownership in the littoral. That northern Mount Hope Bay and the Taunton River remained in the hands of the Bay Colony suggests the Boundary Commission, despite their official rejection of the principle, at some level believed it too. But coastal work also implied ownership through a form of intellectual prescription. As Paul Carter has posited, landscape is “not a
physical object: it is an object of desire." Europeans and Native Americans who hauled goods across bay waters and harvested fish, sand, and seaweed gained fluency in its myriad inlets and outlets, its tidal creeks, and salt rivers. For fishers, farmers, and coasters who had toiled on the Bay for years, who had amassed the skills and knowledge needed to navigate this conceptually demanding waterscape, ownership came from interaction with and interpretation of their surroundings. For the boatman who could feel the heat, eye the sky, and predict the southwesterly seabreeze to the minute, the brackish precincts in which he plied his trade were his and his alone. With knowledge of ledges and eddies, mudflats and marshes came ownership. With comfort in the silence of a salt creek and the familiar smells of his weirs came ownership. No imperial mandate or colonial tax collector could take that away. And in this sense, the inability to reconcile local conceptions of ownership with metropolitan designs denied progress. The littoral was not quite land and not quite sea; it was a conceptually difficult space in between.

The ambiguity of ownership and the blurred lines of jurisdiction inherent in coastal space frequently made Narragansett Bay a favorite among those who sought sanctuary from authority. For some—at various times, smugglers, pirates, African slaves, Native Americans, and even secretive hermits—the watery nature of the bay and its surrounding marshes and swamps provided geographies of refuge. For others, including King Philip and his people, the borderlands that formed where ecological systems converged and lines of colonial jurisdiction overlapped, provided geographies of opportunity, spaces in which marginalized people asserted autonomy and maneuvered for advantage. As a coastal feature of southern New England, Narragansett Bay was

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ecologically complex and biologically productive. But as a space that was at times physically and intellectually improvable and at other times not, as a geography of work, war, and many things legally and culturally untoward, and as a space defined by the tension between local knowledge and imperial mandate, the Bay was a deeply human construct.
Purchased from the Narragansett Indians by a group of Newport planters in 1657, Conanicut Island forms, at its southernmost end, a convex, symmetrical point that, extending from the main body of the island, darts southward into the sea. Perhaps it was just coincidence that Dutch pelt traders had set up shop in the area during the first years of the seventeenth century. Or perhaps the trade in fur had fueled the imagination of those who bestowed English place names. But when the island’s contours were laid on paper, there was no doubt that its southern tip, known as “Beavertail,” clearly resembled the water-slapping after end of New England’s most valuable rodent.

If by the middle of the eighteenth century Beavertail’s name and strangely representative topography echoed Rhode Island’s commercial past, its location at the mouth of Narragansett Bay and orientation toward the sea augured the colony’s future. Atlantic world trade had brought economic prosperity to Narragansett Bay, and Rhode Island’s stalwart defense of “liberty of conscience” had attracted people of all stripes in droves. Between 1730 and 1749 the colony’s population almost doubled from 17,935 to 31,778. The bulk of Rhode Island’s inhabitants lived in the numerous towns scattered along the Bay’s shores, but just under a fifth of the population was concentrated in its
biggest city, Newport.\textsuperscript{1} With its prosperous merchants and proximity to the sea, Newport, it was clear, was a city on the move, rivaling, for at least a short period in the 1730s, Boston and Philadelphia for economic supremacy. At the very least, by mid-century Newport was firmly established as one of the five largest urban centers in America, alongside Philadelphia, Boston, New York and Charlestown.\textsuperscript{2}

The growth of Newport as an important center of trade and the concomitant increase in commercial traffic during the early decades of the eighteenth century precipitated a dramatic reconfiguration of coastal space. While members of the Rhode Island and Massachusetts Bay Boundary Commission were busy locating Narragansett Bay, the businessmen of Newport were working hard to enlarge it. On February 1, 1730 some of Rhode Island’s most prominent merchants, including, among others, John Brown, Christopher and Job Almy, Godfrey Malbone, Gideon Wanton, and Peleg Carr, submitted a petition to the General Assembly “to have a Light house built, either upon Point Judith, Beaver Tail, or Castle Hill,” leaving the final location to the assembly’s discretion. They explained it was “highly necessary & requisite to prevent the Loss of any vessels that shall come from Foreign Parts upon this Coast.” The lighthouse, they felt, would facilitate navigation as evidenced by “our Neighboring governments where it has proved of a very great Advantage.”\textsuperscript{3} In fact, Boston, which had erected the first lighthouse in the New World in 1716, had experienced such rapid growth that by 1720 its


\textsuperscript{3} Petitions to the Rhode Island General Assembly, vol. 2, 1728-1733, Bound MSS, Rhode Island State Archives, 6.
harbor, comprising a whopping fifty-eight piers and wharves, had become a veritable maze of ships and scaffolds.\textsuperscript{4} The merchants who penned the petition certainly stood to gain by a beacon that bolstered ship traffic. But it was also their contention that a lighthouse, wherever it was erected, would serve the common good, for “Navigation . . . ,” they explained, was “a Public Weal to this Colony in general in the Employment of the Inhabitants thereof.”\textsuperscript{5} Addressing fears of Spanish attack during King George’s War, in February 1739/1740 the Rhode Island General Assembly laid out grand plans for a series of watch houses and beacons along Rhode Island’s southern coast. They ordered that lights be erected on Block Island, Point Judith, Beavertail, Newport, and Portsmouth.\textsuperscript{6} But the economic realities of war put their plans on hold. As hostilities with Spain came to a close in 1748, they resumed talks. And on March 3 of that year colonial officials ordered Captain Joseph Harrison, Mr. Abel Franklin, Captain Josiah Arnold, and Captain George Brown “to build a Light House at Beaver Tail in Jamestown” using money from the General Treasury.\textsuperscript{7}

Surely, the lighthouse would protect commercial traffic, but the beacon as it was proposed was much more than a simple aid to navigation. That the petitioners, all merchants and ocean-going ship masters, left the location of the lighthouse to the General Assembly suggests they were less interested in the avoidance of wrecks than they were in putting Narragansett Bay on the proverbial map. For Boston, its lighthouse firmed its

\textsuperscript{4} Bridenbaugh, \textit{Cities in the Wilderness}, 172.

\textsuperscript{5} Petitions to the Rhode Island General Assembly, vol. 2, 1728-1733, bound MSS, Rhode Island State Archives, 6.


position as America’s premier port. Newport merchants undoubtedly wanted the same. A lighthouse at the mouth of Narragansett Bay—whether at Point Judith to the west, Beavertail at its center, or Castle Hill, just south of Newport Harbor—would give Newport political and commercial clout. For a shipmaster scanning a sea of darkness, a beacon at, say, Beavertail suggested bustle and opportunity nearby. The port that boasted an illuminated sea-mark was no sleepy burgh flanked by dusky headlands. Rather, it was a city with money to burn every night from sunset to sunrise. There was no more fulgent form of conspicuous consumption than a towering lamp high above the sea replete with an officer to maintain it. In 1749, atop the surf-drenched crags at Beavertail Point, workers erected a fifty-eight-foot wooden tower capped by an eleven-foot lantern. It was only the third lighthouse built in America. (A light at Brant Point on Nantucket had been built three years earlier.)

When the oil-soaked wicks of Beavertail Light were lit, Narragansett Bay, this dazzling shingle at its door made clear, was open for business.

Thrusting its light across the waters of Rhode Island Sound, the beacon at Beavertail projected Narragansett Bay, literally, as far as the eye could see. The Bay was no longer confined to the headlands between Point Judith and Sakonnet as the 1741 boundary commission defined it. Rather, the light as a point of reference became a solitary ocean signpost. Doubtless, the whale oil lamp was dim, but its presence on the horizon, however faint, sliced a ship’s highway toward shore. In this sense, the beacon, swifter than any saw, scythe, or shovel in its ability to impose a human presence on untamed nature, subdued the sea. John Stilgoe has shown that the construction of lighthouses along America’s coast during the Early National period “announced the end

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of the locally controlled complex of structures and man-altered spaces ....”9 His point
was to highlight the shift from local to federal control of territorial space at the end of the
eighteenth century, but his observations also expose, albeit tacitly, the extent to which
lighthouses extended “man-altered” space—regardless of who managed it—well beyond
the shore.

Although flickering lamps do not transform an estuary, they are emblematic of
broader conceptual changes that occurred in the littoral by the middle of the eighteenth
century. Expanded local-resource use, an increase in ocean-going trade, and mounting
political hostilities among European nations increasingly imposed a human presence on
the sea. Of particular concern among Rhode Islanders, Narragansett Bay oyster stocks
began to decline by mid century, which led some to question their place in nature.10 The
seemingly endless oyster beds of the seventeenth century were being depleted at alarming
rates.11 Like onions or potatoes, they were harvested with oxcarts, which led lawmakers
to even question whether they were animals at all. For some, especially those swept up in
culture of improvement underpinning Enlightenment philosophy, the fields of the farm
rolled well below the tide line. Although the untamable nature of the littoral held their
efforts in check—at least for a while—the process of inquiry, classification, and attempts
at imposing intellectual order on conceptual chaos represented important steps toward
littoral improvement.

9 John Stilgoe, Common Landscape of America, 1580-1845 (New Haven, Conn.: Yale University Press,
1982), 109.

10 “The Journal of a Captive, 1745-1748,” in Colonial Captivities, Marches and Journeys, ed. Isabel M.

11 See “Oyster Act,” 7 November 1734, Petitions to the Rhode Island General Assembly, 1728-34, 191;
“Act to Prevent Destroying Oysters,” 31 October 1766, Acts and Resolutions of the Rhode Island General
Assembly, 1766-1769; Petitions to the Rhode Island General Assembly1755-1757, vol. 9, 1st Monday
February 1755, 84-86, 88, 95. Rhode Island State Archives.
If imposing order through the construction of natural knowledge was nothing more than an intellectual endeavor—conservation measures only slowed the pace of biological decline—advances in technology, communication, and Rhode Island’s commercial infrastructure ushered in sweeping changes to littoral space. Atlantic trade spurred the growth of ports (and the proliferation of beacons), which like the light at Beavertail, extended the human presence well beyond Rhode Island’s shores. King George’s War, the French and Indian War, and the American Revolution also prompted the construction of numerous watch houses and forts along Rhode Island’s southern coast, which with their lookouts and cannons had similar effects. And finally, in the name of profit and power, the littoral was mapped to an unprecedented degree of accuracy by imperial authorities. In sum, the coastal landscape was remade to meet the demands of an expanding Atlantic world. These changes surely had an ecological impact, but more profoundly, they transformed the conceptual relationship between people and the edge of the sea. If during the seventeenth and early eighteenth centuries, the littoral had been a space neither “natural” nor “civilized,” one that more often than not denied “progress,” by the second half of the eighteenth century, technology, trade, and maritime war ushered in an era of littoral improvement. By the close of the eighteenth century, this chapter argues, the infrastructure that accompanied commercial expansion and years of war conceptually redefined Narragansett Bay. Littoral space was reconfigured. In their ability to facilitate safe passage and discourage attack, the people of Rhode Island had imbued the Bay with the culture of improvement. That said, the clamor for clams, oysters, and fish among Rhode Islanders and their Atlantic world clients was, like a strong but
imperceptible crosscurrent, setting Narragansett Bay toward the shoals of ecological decline.

**Animal, Vegetable, or Mineral?**

On November 7, 1745 an English sailor left his home of Weybread in Suffolk, and signed onto the *Adventure* of London, a West India merchantman, which, after setting sail from Falmouth, was attacked by a French warship only a few days west of Lizard Point on England’s southern coast. Taken captive, the sailor, whose name is lost to history, was hauled to Canada where he spent the better part of a year. After gaining his freedom, he traveled south into New England, and on October 18, 1748 arrived at Mr. Gideon Freeborn’s house on Prudence Island at the center of Narragansett Bay where he “was Treated with a great deal of respect and Esteem ....” Freeborn’s visitor explained in his journal that the island was seven and a quarter miles long, comprising seven “fine farms” and that Freeborn’s was “the best by far ....” Nearly two and a quarter miles long, the estate, he wrote, “produceth almost Every thing for the Support of Human Nature ....” The visitor praised Freeborn’s hemp, flax, and “wool,” which, he avowed, was “the best in all the Colony.” He also admired the island’s grains and apple, pear, plum and peach orchards. The vegetables, he explained, were “Exceeding Good as Surpasses Common Belief.” The Musk and water Mellon, he gushed, had “as fine a flavour as any I Ever Eate in Spain or Italy and of an uncommon Size,” some weighing, he believed, upwards of forty-three pounds. He likewise marveled at Freeborn’s peas, beans, cabbages, turnips, potatoes, beets, onions, radishes, peppers, and “all sorts of sallads.” The corn, squash, and beans, were, following the local Indian tradition, grown, he explained, in mounds, whereby “when the Corn comes to Shoot up into Large Stalks the
Kidney Beans Lay hold of them with their Claspers and run up with it while the
Pumpkins Shoot out their Vines through all the Intermediate Spaces below.” Once the
beans reached the top of the corn stalks, he noted, they were gathered. The stalks were
used for cattle fodder and the beans given to the hogs or sold to the Poor. The pumpkins,
he noted, were gathered in September and stored in “Deep Cellars to prevent the frosts
from coming at them.” These, he explained, were used, as the English used Turnips, to
fatten their cattle, which produced “a Great Quantity of Exelent Milk” and meat that was
“Exceedingly Sweet.” Finally, the corn was mixed with Rye, which produced “very good
bread” and which fed Freeborn’s family as well as his cattle, hogs, and fowl.12

In its ability to produce order and productivity from the soil, Freeborn’s Prudence
Island farm represented the apotheosis of terrestrial improvement, but the quotidian
workings of his operation, the visitor observed, extended well beyond his furrowed fields.
“Here in the Creeks and Bays round this Farm,” noted the traveler, “Vast Quantities of
wild fowl in the winter Season Such as Wild Goose; Duck and Mallard; Teal, Widgeon,
Smee, and … other Sorts which I never before Saw which are Easily Shot by Stalking too
[sic] them with an Horse …. .” An extension of the farm, shores and shallows were
harvested using the same beasts that hauled wagons of apples and hay. From high in the
saddle, Freeborn farmed his coastal marshes. Fish, too, he reaped in great numbers.
Freeborn and his fellow husbandman readily tapped the Bay’s vast resources of bass,
“Tortogue” [tautog], sheepshead, mackerel, alewife, and menhaden, of which, the visitor
explained, “they export many hundred Barrells to the West Indies.” Of shellfish, “this
farm (and no other on the Island),” the visitor explained, “has all Sorts … Such as
Lobsters, Crabbs, Scollops, Muscells, Quahauiggs, Clamms, and Oysters the best I Ever

Eate and in Such Quantities that a man and Boy at Low water will take as many as a pair of Oxen can bring home in a Cart and that in Less then an hour’s Time the beds not being a furlong from their Door.” Like harvesting onions, squash, or melons, the oysters of Narragansett Bay could, at the lowest tides, be gathered, piled into carts, and hauled through the barn doors at day’s end.13

If island farmers like Gideon Freeborn saw the Bay as a natural extension of their farms—a space easily tamed by oxcarts and horses—it was only natural that shellfish, which grew from the mud much like terrestrial plants, would cause some to question where they fit within the contemporary understanding of natural knowledge. In his final journal entry, the traveling English sailor noted of Rhode Island that “The Assembly in this Colony Sat 48 hours on a Quere wether oysters were Fish or vegetables Caried per the former per 4 votes.”14 Unfortunately, there are no records of this Assembly debate. Careful examination of the published proceedings alongside the handwritten notebooks corresponding with the Acts and Resolutions of the Rhode Island General Assembly between 1728 and 1748 produce no record of the “Quere.” The journals of the House of Deputies are also silent on the subject. The judicial records from Newport County, which held jurisdiction over Prudence Island, likewise produced no evidence of any legal action rooted in the oyster question. But the specificity with which the anonymous traveler provided the tally of votes—four more assemblymen felt that oysters were fish rather than vegetables—suggests that it likely occurred. Just as the debate over Rhode Island’s eastern boundary asked, “Where is Narragansett Bay?” the debate over whether oysters

13 Daniel Vickers, Farmers and Fishermen: Two Centuries of Work in Essex County Massachusetts, 1630-1850 (Chapel Hill: University of North Carolina Press, 1994). Vickers showed that among coastal people in Essex County, Massachusetts, farming and fishing went hand-in-hand. Specialization in one or the other was rare.

were fish or vegetables, asked, ostensibly, “What is the nature of the Narragansett Bay?”
Was it an arm of the sea or a field ripe for harvest? In asking such questions, the
representatives of the people of Rhode Island attempted to define their relationship with
the littoral. The protracted duration of the debate—two full days—suggests they were
torn.

The members of the Rhode Island General Assembly were not the first to ask such
questions. In 1726 Benjamin Franklin, while sailing from London to Philadelphia through
the Gulf Stream, found within the yellow strands of sargassum weed floating on the
ocean’s surface, “a fruit of the animal kind, very surprising to see.” Franklin explained
that “Upon this one branch of the weed, there were near forty of these vegetable animals;
the smallest of them, near the end, contained a substance somewhat like an oyster ....”
Noticing a small crab nearby, Franklin surmised that the curious animals were crab
embryos and believed that “all the rest of this odd kind of fruit might be crabs in due
time.” For Franklin, what appeared to be tiny mollusks were both “fruits” and
“vegetables” filled with contents that resembled those of oysters. There was no
differentiation between the two until he was led astray by what was most likely a pea
crab, which often lived inside some species of oysters and other bivalves. The oyster’s
blurred taxonomic identity was understandable.

By the outset of the eighteenth century, at least one town in southern New
England had attempted to sow “seed” oysters where they had not previously existed. In

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1711, oysters were planted in Plymouth harbor with a mind for their propagation but because the bank on which they were deposited was exposed for too long at low tide, their plan did not take root. In a 1791 letter from General Benjamin Lincoln of Hingham, Massachusetts, to the Reverend Jeremy Belknap of New Hampshire, Lincoln explained, “We have undoubtedly been criminally inattentive to the propagation of the oyster in different parts of our shores; we can probably fill our channels with these shellfish with much more care than we can fill our pastures with herds and flocks.” That Lincoln felt the town had been remiss in its failure to seed oysters suggests the practice was commonplace in other areas. His comparison to pasturing animals also suggests that by the end of the eighteenth century, the littoral had become increasingly open to cultivation.

Although evidence pertaining to the Rhode Island oyster industry is sparse for the eighteenth century, by the middle of the nineteenth much of the bottom of Narragansett Bay, particularly in its tidal rivers, had been leased by oystermen. Widely known as “planters,” these farmers of the littoral, “bedded” their “seed” oysters by shoveling them overboard from “planting boats.” Invariably men and most often seasoned veterans of “water-work,” observed the American naturalist Ernest Ingersoll in his U.S. Fish Commission oyster report, the nineteenth-century planters of Narragansett Bay didn’t forage for shellfish. They sowed their seed in beds using the same tools with which their

17 James Thacher, *History of the Town of Plymouth from its First Settlement in 1620, to the Year 1832* (Boston: Marsh, Capen & Lyon, 1832), 172.
terrestrial counterparts tended beets and radishes. Narragansett Bay’s oyster beds even required preparation. “Much ground that is not now suitable,” observed Ingersoll, “might be made so, but needs to be carefully prepared.” The Pawcatuck River estuary was a case in point. He believed it was or had become too muddy and polluted for oyster cultivation “unless,” he suggested, “the ground should first be prepared by paving the mud and killing out the eel grass.”

Although environmental conditions on and around Narragansett Bay had changed dramatically by the second half of the nineteenth century, the rich culture that had developed around Bay oyster cultivation—the community of watermen and their patterns of work as observed by Ingersoll—suggests oyster cultivation had existed on Narragansett Bay for considerable time. At the very least, it was likely that word of other coastal communities “planting” oysters had reached the Bay by the middle of the eighteenth century, for it was then that years of overharvesting finally required ameliorative legislation.

By the late 1720s the decimation of Bay oyster beds had become cause for alarm. On July 14, 1729 the Providence Town Council heard a complaint that the “Long oyster bed,” which had been the main source of oysters for people of Providence and the “poore of our several Neighboring Precincts” was “Likely to be wholey destroyed by those that … have took up the trade of Lime burning.” In response, the Council outlawed the practice and ordered that anyone who harvested oysters for the trade would forfeit the shells or lime and pay a fine. The problem, however, was not isolated to a single bed. So widespread had mining oysters for lime become that the Rhode Island General

20 Ibid., 57, 55, 53.

Assembly was forced to tackle the issue head on. The Assembly recognized that “sundry evil-minded Persons in several Towns” had been “Catching of great Quantities of Oysters to burn into Lime, whereby the same are greatly destroyed and diminished ….”22 In response, on November 7, 1734 it passed an act that gave town councils throughout the colony full power to enact laws that would serve for the “Preservation of Oysters & all bottom shellfish within their respective towns ….”23

But if this law only opened the door to potential conservations measures, more forceful legislation during the 1750s addressed additional causes of overfishing. On the first Monday in February, 1755 a petition was submitted to the General Assembly explaining that “the great Destruction of Oyster by pickling and exporting them in shells is a Publick Damage to the People of this Colony, and tends to the Utter extirpation of them.” The petition, signed by members of some of Rhode Island’s leading families, including the Whipples, Browns, Greenes, Olneys, Angels, and Watermans, among others, asked that the General Assembly pass some act for the “General preservation” of the oysters. That at least five copies of the petition were circulated and signed suggests this was no half-hearted effort and that Narragansett Bay’s oysters were truly in peril.24

Overfishing was not the only cause of decline. In October 1756, a group of Providence men, citing an act that prevented hogs from foraging on the “Puckassett River” (likely referring to the town of Tiverton), submitted a petition in response to the “Great Damage

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24 1st Monday, 1755, Petitions to the Rhode Island General Assembly, 1755-1757, bound MSS, Rhode Island State Archives, Vol. 9, 84-86, 88, 95. Five original copies of the petition exist in the Rhode Island State Archives, but it is conceivable that other additional copies were lost.
done in the North West Part [of Providence] ... by the Rooting of Hogs.”

That swine had been plundering shellfish beds since they were first left to wander the Bay’s shores in the early seventeenth century didn’t make them any less destructive, or for that matter, disgusting, more than a century later.

But perhaps the biggest threat to oyster stocks was dragging. In 1766 a petition was submitted to the General Assembly that explained that many inhabitants of Rhode Island had “supported themselves” and “greatly benefited by the Great Plenty of Oysters taken within the Bays, Coves, Rivers, and Harbours ...,” but that recently some had begun to employ “Draggs fitted for that purpose, which rake over the Beds and hill and destroy more Oysters than are taken, and thereby have greatly damaged and almost destroyed many of the Beds of Oysters ....” The Assembly outlawed the practice and placed a ten-pound fine on anyone harvesting oysters by any other “instruments” that injured oyster beds beyond the “usual method of taking them with Oyster Tongs.”

When Rhode Island oyster harvesters began to employ the plow, the Bay’s benthic community underwent dramatic changes. Not only were oysters hit hard but the method of extraction buried those left behind, which in many cases led to their destruction.

That oysters were planted and harvested like vegetables, pickled and eaten as animals, and often mined from the seabed as minerals (for producing lime), suggests that at some level this estuarine creature defied the existing (but quite new) system of taxonomic classification introduced by the Swedish naturalist Carl Linnaeus. In his 1735

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Systema naturae Linnaeus, famously, divided the natural world into the Regnum animale (animal kingdom), Regnum vegetabile (vegetable kingdom) and the Regnum lapideum (mineral kingdom). Any given piece of nature, he avowed, could be classified an animal, vegetable, or mineral. Presaging future parlor games, the oyster, seemingly all three, could not be easily pinned down. In a sense, the indeterminate nature of their estuarine home had been imposed on oysters themselves. But because mollusks were so conceptually malleable, they were, of all ocean creatures, the most likely candidates for cultivation.

Although Linnaeus explained in 1745 that nature’s “laws are unchangeable … and they admit of no improvement,” he nevertheless felt that nature itself could be and should be shaped by man.27 Lisbet Koerner has argued that Linnaeus believed he could, by tapping knowledge of the natural world, create a cameralist, or closed and self-sustaining, economic system in Sweden. Unable to compete with colonial powers like England, France, or the Netherlands, which had profited handsomely by extracting natural resources from their overseas holdings, Sweden would instead send students and explorers abroad to gather specimens with which they could create a “trans-oceanic empire” within its borders.28 Linnaeus saw the natural world as something that could be shaped for economic gain. “For Linnaeus,” explained historian of science Emma Spary, “natural productions had been placed in the world to serve man’s purposes.”29 These sentiments were not restricted to Linnaeus himself. As Spary showed, the writings of


political economist Adam Smith and physiocrat François Quesney had made improvement “immensely popular” among Europe’s monarchs during the latter half of the eighteenth century. As a result, by mid-century agricultural, industrial, and even moral improvement had become defining characteristics of Enlightened Europe.\footnote{Ibid.}

For Linnaeus, the potential for improving nature did not stop at the shore. One of his most ambitious schemes was to farm Lapland’s freshwater mussels to produce pearls. After taking an academic position in Uppsala in 1740, Linnaeus began implanting mussels there with tiny flecks of chalk or gypsum, irritants around which they formed protective pearls. Although his efforts reaped only limited success, he earned himself a handsome monetary award and noble status from the Swedish crown. Nevertheless, “From Linnaeus’s point of view,” wrote Koerner, “his nine small pearls, supposedly demonstrat[ed] the possibility of domesticating Lapland’s foamy rapids . . .”\footnote{Lisbet Koerner, “Carl Linnaeus in His Time and Place,” in \textit{Cultures of Natural History}, 153.} For Linnaeus, the culture of improvement was not limited to industry, agriculture, and the science of man. Entire bodies of water could be subdued. His dominion over fluid spaces was guaranteed when in 1762 he was given the informal honorific “lord of all of Sweden’s clams.”\footnote{Carl Harleman to Linnaeus, Stockholm, 21 July 1748, cited in Lisbet Koerner, “Carl Linnaeus in His Time and Place,” in \textit{Cultures of Natural History}, 153.}

Although oysters and other mollusks were surely causes of conjecture among eighteenth-century natural historians and the laity alike, it was the discovery of the aquatic polyp that caused quite a stir among the Enlightened elite.\footnote{On the history of the polyp’s discovery, see Virginia P. Dawson, \textit{Nature’s Enigma: The Problem of the Polyp in the Letters of Bonnet, Trembley and Réaumure} (Philadelphia: American Philosophical Society, 194)}
Dutch natural historian Antony van Leeuwenhoek noticed, while out for a walk, the thin, hollow, and branched body of a polyp floating in a pond, he assumed it was a plant. But thirty-five years later, a young tutor named Abraham Trembley of Geneva, stumbled upon a similar creature, and noticed it moved. “The shape of these polyps,” Trembley wrote in his *First Memoir*, “their green color, and their immobility gave one the idea that they were plants.” But upon careful examination, the creature seemed to pulse through the water and a series of small tentacles moved food toward what appeared to be a mouth. “This contraction and all the movements I saw the polyps make as they extended” he noted, “once again roused sharply in my mind the image of an animal.” At first, he thought it was an insect, but upon dissecting the creature, Trembley noticed its parts regenerated into new individuals. This was likely an animal, but one very different than anything seen before. In 1740 he wrote a letter to his patron René Ferchault de Réaumur in Paris explaining his findings, which Réaumur shared with colleagues, setting Paris science circles abuzz. Four years later, Trembley published his discovery in a paper that earned him accolades and piqued the curiosity of natural historians throughout Europe. Numerous others confirmed his experiments and began testing other creatures, including sea polyps and worms to see if they would regenerate too.

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36 Abraham Trembley, *Memoirs Concerning the Natural History of the Type of Freshwater Polyp with Arms Shaped Like Horns* (Leiden: Jean and Herman Verbeck, 1744).

37 Vartanian, “Trembley's Polyp ...,” 263.
The novelty of the polyp garnered considerable enthusiasm among natural historians, but the philosophical implications of Trembley’s discovery were staggering. The proponents of Cartesian philosophy, which sought to remove God from the normal workings of the natural world, saw in polyps proof that life could regenerate through material mechanisms without divine intervention. Those who subscribed to a Newtonian view, which proposed that the natural world marched under God’s command (albeit, according to rational and discernable laws), naturally viewed the polyp as a threat. Newtonians had advanced, and by the early eighteenth century largely won, the argument that animals had divinely inspired souls, but the possibility of regeneration—the possibility of creating new animal life through purely mechanistic means—cast doubt upon the entire Newtonian platform. Probably the most contentious interpreter of the polyp was Julien Offray de La Mettrie, who initially began writing in the Newtonian camp but whose opinions increasingly reflected a materialistic worldview. His ideas became so atheistic, that, as Emma Spary has noted, La Mettrie and his ungodly polyps threatened both the divine right of kings and the “careful structures for the maintenance of public order that existed in the old regime ....”38 Perhaps a plant or—god forbid—an animal, this simple aquatic creature threatened to unravel the fabric of society. There were mysteries in the deep, Trembley’s findings showed, that could alter the human connection to and understanding of the natural world.

In its “quere” on the classification of oysters, the Rhode Island General Assembly attempted to define its relationship to the estuary that sustained them. Although oysters lacked the ability to regenerate like the polyp, they, like the environment in which they

formed, defied the contemporary conceptual boundaries that ordered the natural world. Oysters seemed at once fruits of the soil and denizens of the deep. And for some, this mixing of conceptual realms was abhorrent. In a poem titled “The Fate of the Mouse” published in the *New-England Weekly Journal* in 1737, a mouse scavenging for food in a kitchen at an “ill hour” of the night came upon an oyster with “expanded Jaws, and gaping Shell ....” Whereupon:

    The greedy Mouse, [so] fond of some new Dish
    Enters the gloomy Mansion of the Fish
    With Beard exploring, and with luscious Lip,
    He begs the Pickle of the Seas to sip.

Tempted by the oyster, the mouse approached and prepared to eat, but in an instant the oyster’s shell snapped closed upon his head.

    In vain the Victim labours to get free
    From Durance hard, and dread Captivity
    Lock’d in the close Embrace, strange Fate! He cries
    In Pillory safe, pants, struggles, speaks and dies.

Tempted by the open oyster, the mouse crossed a conceptual line between land and sea. After eating the forbidden fruit—“the Pickle of the Seas”—the mouse, ever the terrestrial scavenger, rightly met its doom when it succumbed to ocean temptations. To his readers the anonymous author implored, “This moral learn, to move within their Sphere.” The mouse did not, which led to its demise. The penalty for such a transgression, the poem explained, was, apart from death, public ridicule. Mounted high on the wall above the master’s chair, “The Fish a Monument sublime,” became the butt of his jokes.39

Although the poem was likely a metaphor for maintaining gender roles or perhaps class order, the use of a mouse and an oyster—a terrestrial creature and one from the sea—to

convey deep-seated differences to a wide audience suggests the conceptual chasm between land and sea was wide. But the two did meet and when they did, ever emblematic of the littoral, confusion and even absurdity reigned. It is the act of contact, however, that belies the author’s intent to differentiate spheres, for when the oyster ate the mouse (or a woman defied her husband or a mechanic dressed above his station), the ways society defined nature in the broadest sense of the term were thrown into question. In this sense, a parable that is meant to maintain the status quo exposes or at least suggests that a shift in ideas has or is about to occur. The conceptual chaos represented by an oyster eating a mouse was simply the initial stage of ordering, or improving, the confusing realities of the natural world.

The desire to create order from chaos was fundamental to eighteenth-century natural history. In *Histoire Naturelle* (1749), Georges Louis Leclerc Comte de Buffon explained that when viewed initially the earth’s “heights, depths, plains, seas, marshes, rivers, caverns, gulfs, [and] volcano’s … we can discover, in the disposition of these objects, neither order nor regularity.” But through systematic examination and description, he wrote, “we shall perhaps discover an order of which we had no conception ….”40 Although Buffon intended his eight-volume *Histoire* to be a synoptic study of all aspects of the natural world, he expressed a special interest in the natural history of the oceans, perhaps because of its inherent unruliness. He provided a detailed analysis of shell middens, particularly that of Turenne, which according to Reaumur, consisted of more than 130 million cubic fathoms of shells.41 He included chapters “Seas and Lakes,”

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41 Ibid., 190.
“Tides,” “Inequalities of the Bottom of the Sea, and Of Currents.” He included chapters that examined islands, marshes, and one titled “Of the Changes of Land into Sea, and of Sea into Land” in which he posited that the oceans were the most powerful force shaping the earth. “The motions of the sea,” he wrote, “therefore, must be regarded as the principal cause of all those changes which have already happened, and of those which are daily produced upon the surface of the earth.”42 Through systematic analysis of the sea’s depths and fringes, Buffon brought order to the ocean. Ever the proponent of Enlightenment “progress,” Buffon compiled an inventory of natural knowledge that in many ways, at least conceptually, improved the ocean and its shores.

Systematizing the sea, however, was no simple task because for Buffon it was a space in perpetual flux. Although, he conceded, “the motion of the sea ... has continued invariably the same in all the ages,” it had, nevertheless, always been an agent of change, and often to dramatic effect. The tides “acting with violence,” he explained, submerged isthmuses and eroded coastal lands.43 More recently, he observed, the ocean had bowed to human influence. Of the massive marsh at Romney in the southeast of England, Buffon observed “no man, who has ever seen this plain, can possibly doubt of its having been formerly covered with the sea, as, without the intervention of the dikes at Dimchurch a great part of it would still be overflowed by the spring-tides.” And the sea, he explained, had altered the human environment in return. At the “island of Okney,” he noted, the sea had created land, that “in less than 60 years, has been considerably elevated by the accession of fresh matter brought in by every tide.” He explained that since 1665 the

42 Ibid., 502.

43 Ibid., 484, 487-489.
ocean has receded from the mouth of the Rhone. At the mouth of the Arno “a large quantity of land has been gained from the sea. Ravenna had ceased to be a seaport. “The whole of Holland,” he explained, “appears to be new land.” In sum, Buffon described an agitated sea, one in which humans had effected environmental change in some cases and in others responded to it. And these dynamics were not isolated. “These changes of sea into land, and of land into sea,” he wrote, “are not peculiar to Europe. The other parts of the globe, if properly investigated, would furnish more striking and numerous examples.”

Systematizing the motion of the ocean was but one small step in taming it, but classifying natural knowledge concerning the sea’s creatures remained vexing. As it had with members of Rhode Island’s General Assembly, the oyster stumped Buffon. That which differentiated vegetables from animals, he contended, was the latter’s abilities of locomotion and faculties of sensation. The degree to which the oyster lacked both made its taxonomic designation as an animal questionable. “If we could give to oysters . . .,” he wrote, “the same faculty of sensation as to dogs, but in an inferior degree, why should we not allow it to vegetables in a still lesser degree: this difference between animals and vegetables is not only not general, but even not well decided.” In terms of sensation, the oyster’s classification alongside a dog seemed just as plausible as a plant classified alongside the oyster. Buffon was not convinced that the boundaries of taxonomic identity had been clearly established.

44 Buffon, Natural History, 490-491, 493, 495.

In an effort to classify this slippery creature of the sea, Buffon conducted an experiment. In one bottle he added the “liquor” of an oyster; in the second, water in which pepper had been boiled; in the third, water in which pepper had been infused; and in the forth, water in which he placed some “vegetable seed.” Upon sealing the bottles, he waited two days and observed in the jar containing oyster juice “a greater quantity of oval and globulous substances, which seemed to swim like fish in a pond, and which had all the appearance of being animals.” He noticed, however, that the creatures “had no limbs nor tails” and appeared “to change their forms ... becom[ing] smaller for seven or eight days successively ....” These, he believed, were not real animals because, previously, he had observed similar creatures that grew in “an infusion of jelly of roast veal, which had been also very exactly corked ....” The infusion of seed produced “an innumerable multitude of moving globules” as did the samples in which pepper had been boiled and infused, although it took them longer to develop. He assumed that the globules were the result of fermentation, so in an attempt to differentiate that of his subjects and that of minerals, he added some aqua fortis, or nitric acid, to some powdered stone, which, he observed, bubbled violently. He noted only, however, that the mineral’s response “had not the smallest resemblance to the other infusions ....” Aside from the arbitrary nature of the final step in his scientific methodology, Buffon’s experiment—an attempt to differentiate between plants (pepper) and the oyster—was inconclusive. Buffon had certainly advanced efforts to systematize the sea, but the littoral and its creatures, were nevertheless resistant.

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46 Georges Louis Leclerc Comte de Buffon, Barr’s Buffon. Buffon’s Natural History: Containing a theory of the earth, a general history of man, of the brute creation, and of vegetables, minerals, &c., vol. 3 (London : printed for the proprietor [J.S. Barr] and sold by H. D. Symonds, 1797), 124-125.
The presence of the ocean invariably complicated questions about the nature of
nature. In its constant motion, opaque surface, and dark depths, the sea served to blur the
Judd*, which set out to determine whether whales were fish or something different, D.
Graham Burnett explained that “taxonomy was a fraught and fallible enterprise: the very
possibility of a single, presiding, fixed scheme for arranging the productions of nature
remained in question ….”47 By mining the court record, among numerous other sources,
Burnett argued that politics shaped taxonomic decisions. The volley of arguments that
took place in Rhode Island’s two-day oyster debate simply do not exist, and as such, it is
impossible to know the motives behind the General Assembly’s decision to classify them
as animals (if the debate mentioned by Gideon Freeborn’s guest actually did occur).
Perhaps the animal advocates were asking whether this creature of the sea had a soul. If it
did, and it was imbued with the divine, perhaps its wanton destruction by avaricious lime
burners and predatory picklers raised ethical concerns. But it is also possible that, as
Burnett observed, political and economic motives shaped the terms of the taxonomic,
read legislative, debate.

By the 1730s lime production had become an important industry in Rhode Island,
one undergoing a dramatic period of expansion. Integral to the process of making brick
mortar and wall plaster, lime was also used to tan leather, bleach cloth, to prepare whale
spermaceti for candle production, for refining raw sugar, and for flux used in iron

47 D. Graham Burnett, *Trying Leviathan: the Nineteenth-Century New York Case That Put the Whale on
production. As manufacturing increasingly played an important role in Rhode Island’s eighteenth-century commercial endeavors, the demand for lime, a key ingredient in almost all of them, increased. Although limerocks did exist throughout New England, colonists had relied primarily on burning abundant and easily obtained seashells to produce lime. It was widely recognized, however, that shell lime was inferior to that mined from the earth. There were scattered early attempts to burn quarried lime in Providence in 1661, in Newbury, Massachusetts, in 1697, and near the bowling green in Boston in 1723. But when lime rocks were later discovered during the early eighteenth century in Smithfield, Rhode Island, on land owned by the distiller Richard Harris, his sons, David and Preserved, organized its production. They developed quarries, constructed kilns, and secured vast tracts of forest to fuel them. Lime, which for millennia had been produced locally using knowledge often passed from father to son or master to apprentice, became in the lands north of Providence, a thriving industry.

49 Buffon noted, “Lime made from oysters or other shells, is weaker than that made with hard stone.” In Georges Louis Leclerc Comte de Buffon, Barr’s Buffon Buffon’s Natural History Containing a theory of the earth, a general history of man, of the brute creation, and of vegetables, minerals, &c, vol 10 (London printed for the proprietor, and sold by H D Symonds, 1797), 92. Peter Kalm explained of the people in Pennsylvania, “[T]hey make lime near the sea-shore, from oyster shells, and bring it to town in winter, which is said to be worse for masonry, but better for white-washing, than that which is got from limestone.” In Peter Kalm, Travels into North America containing its natural history, and a circumstantial account of its plantations and agriculture in general With The Civil, Ecclesiastical And Commercial State Of The Country, The Manners of the Inhabitants, and several curious and Important Remarks on various Subjects, vol 1 (Warrington printed by William Eyres, 1770), 84-85.

50 Eugene W Banks, “Lime and Lime Kilns,” Journal of Chemical Education 17, no 11 (1940) 506

In Rhode Island that industry was controlled by a wealthy few. Franklin Stuart Coyle, an assiduous student of Rhode Island lime production, observed that from its outset in the 1730s Rhode Island limeburning was an oligopolistic enterprise.\textsuperscript{52} It is conceivable that when the wealthy men who controlled Smithfields’s lime quarries began investing in the construction of kilns they also sought to remove any competition from shell burners on the Bay. Legislation that ostensibly sought to protect oyster stocks from those who would mine the beds for its living source of lime, could also remove any competition from the merchants upstream. Harris was not above maneuvering in ways that sewed up the market. By contracting numerous agreements, compacts, and a complex system of leases and subleases, he had, by 1767, established an indomitable monopoly.\textsuperscript{53} But there is no direct evidence that Harris actively sought the prohibition of oyster harvesting to bolster his own business. The ban on oyster harvesting for lime production could have simply been the result of growing alarm over the destruction of an important source of food on Narragansett Bay. By mid-century the “oyster-catchers” of New York, reported Peter Kalm in 1748 “own that the number diminishes every year; the most natural cause of it is probably the immoderate catching of them at all times of the year.”\textsuperscript{54} But it is unlikely that the General Assembly would have spent two full days locked in philosophical debate over the identity of oysters if there hadn’t been money on the line.

\textsuperscript{52} Coyle, “Welcome Arnold,” 29.

\textsuperscript{53} Ibid., 32.

For all the acumen with which Harris navigated building a business and cornering the lime market, he lacked the ability to distribute his product widely. This all changed when a young upstart named Welcome Arnold, another Smithfield man, entered the business. And his timing was right. During the eighteenth century, growing cities built, in some cases, extensive municipal infrastructures. Many wealthy merchants constructed elaborate brick homes. And decades of war saw numerous forts rising on prominent headlands at the mouths of important harbors. Rhode Island’s lime barons profited handsomely during this period of growth. And they also played an integral role in reshaping the littoral. If the space between land and sea had been physically and conceptually fluid, when Harris’s and Arnold’s lime was added, those muddy margins began to harden.

Securing Narragansett Bay

On May 8, 1723, Edward Low and Charles Harris, masters of the Ranger and Fortune, overcame the Amsterdam Merchant somewhere off the Atlantic coast. Working in tandem, the two pirate ships forced the Merchant’s captain, John Welland, to strike colors. Boarding, Low and Harris’s men ransacked the ship, taking money and valuable stores. For good measure, they sliced off one of Welland’s ears and then sent the ship to the bottom. A month later, the pirates plundered a merchant ship from Virginia and then set sail for Block Island. Upon receiving the report, the twenty-gun H.M.S. Greyhound under the command of Captain Solgard, took pursuit. After three days of hard sailing, the Greyhound approached the Ranger and Fortune near the east end of Long Island.

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Believing the *Greyhound* was a merchant ship, the pirates attacked, whereupon the three ships bombarded each other for an hour, the *Greyhound* taking the upper hand. Upon realizing they were battling a British warship, the pirates attempted to flee. But as the winds lightened, Solgard’s men, manning the *Greyhound*’s oars, maneuvered between the two ships and engaged them once again. The *Fortune* escaped, but Harris and his *Ranger*, having experienced numerous injuries and several fatalities, surrendered.  

All told, thirty-six pirates were hauled into Newport. So unruly was the bunch that the Rhode Island General Assembly ordered the island militia to set up a “military watch” to “secure the said pirates for making their escape ....” But in short order three “got off their Irons” and when the jailor, his daughter, and his “lusty young” male servant opened the door, the pirates overpowered them. The fleeing buccaneers, however, were soon apprehended and committed to the jail’s “dungeon.” Soon after, Governor William Dumman of Massachusetts convened a Royal Admiralty Court hearing at Newport, which condemned twenty-six of the pirates to death. The court granted Rhode Island’s Governor, Samuel Cranston, the choice of the “place within the seamark, and manner of execution ....” He chose Gravelly Point, at the northern end of Newport Harbor. There, on July 19, 1723 the pirates were given the opportunity to speak. Many, the *Boston News-Letter* reported, advised “All People and especially Young Persons, to beware of the Sins which they had been guilty of ...,” including, “Disobedience to Parents, profaning the

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58 Ibid., 329.


Lord’s Day, Swearing, Drinking, Gaming, [and] Unchastity ....”61 These, they avowed, had led them astray. Upon the scaffold, constructed “within the flux and reflux of the sea,” they prayed.62 Nooses snug around their necks, the sound of the sea washing below them, the twenty-six pirates dangled to death in one of the largest public executions in American history. Fluttering in the seabreeze above their bodies was their own black flag emblazoned with “the Pourtrature of Death” holding an hourglass in one hand and a bleeding heart in the other.63 “[T]hey [the pirates] … often us’d to say,” noted the New-England Courant, “they would live and die under it.”64

The mass execution of twenty-six pirates at Gravelly Point in Newport was in many ways symbolic of Rhode Island’s commitment to patrolling its shores. During the 1720s Rhode Island made a concerted effort to clean up its act. In June 1726 and again in 1729, the General Assembly allocated funds to protect Rhode Island from enemies and pirates. The Assembly ordered “one hundred pistols, one hundred cutlasses and so many muskets as will make up one hundred fifty ….” They also allocated funds for “forty half pikes and twelve good guns with carriages fitting and suitable for a sloop or other vessel ….”65 In November 1738 four pirates were executed in Newport.66 On August 21, 1760 two more were executed there on Easton’s Beach.67 In and of themselves, defense

63 The Boston News-Letter reported it was a “deep Blew Flagg.”
67 Ibid., 225.
spending and executions do not evidence a wholesale shift in Rhode Island's relationship with pirates. After all, the commitment with which royal authorities prosecuted pirates was notoriously fickle, and their willingness to condemn some while pardoning or even empowering others appeared, at times even farcical. Nevertheless, in the decades following Queen Anne's War, piracy on and around the Bay waned.

Just as the lighthouse at Beavertail and a two-day oyster debate represented visual and intellectual forms of Narragansett Bay's improvement, the massive public execution symbolized an assertion of legal jurisdiction over bay waters. That the pirates were hanged in the Bay's intertidal zone according to English custom was powerfully representative of littoral law and order. The Admiralty court at Newport specifically granted Governor Cranston the power to decide where "within the seamark" the execution would be conducted. John Stilgoe has observed that the word "seamark" has had many meanings, including elevated navigational aids on land, but among the British, it was typically used to describe the farthest reach of the tide. For the purpose of pirate executions, according to English custom and law, scaffolds were erected at the edge of the sea. Between high and low water, where the Admiralty courts still held jurisdiction, pirates were hanged and their corpses left submerged or in the mud for three cycles of the tide. Upon the Wapping mudflats along the Thames River in London, tethered bodies of

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pirates hanged at Execution Dock were typically hauled, smeared with pitch, and hung in gibbets to deter others from piratical behavior. Although the New England papers did not report how long the dead Newport pirates steeped in Narragansett Bay, the ceremony with which their execution was conducted—the public address, the prayers, the ironic display of the pirate flag above the gallows—all suggest that officials in Rhode Island were serious about asserting control over Bay waters. With ropes likely spaced the length of two outstretched arms, twenty-six men would have spanned one hundred thirty feet of shoreline. The sprawling, gruesome display of bodies swinging above Newport Harbor asserted authority wherever the coasters and shipmasters that witnessed it went. As a final monument to Bay control, authorities dumped the bodies into a grave at the northern end of Goat Island between the high and low water mark. If the pirates hadn’t spent the customary thirty-six hours soaking atop the muck, they spent an eternity buried just below it.

Integral to the assertion of legal control was military might. In direct and explicit ways, forts and naval ships asserted authority over Rhode Island waters. Coastal defense and imperial policing transformed Rhode Island’s littoral from something unmanageable and amorphous into something patrolled and controlled. Stephen Saunders Webb went so far as to argue in The Governors-General: The English Army and the Definition of the Empire, 1569-1681 that “from the beginning, English colonization was at least as much military as it was commercial.”172 Webb believed Charles M. Andrews had placed too


much emphasis on the effects of commercial growth on imperial expansion. Instead, Webb contended the primary driver of colonial development was the military’s “imposition of state control on dependent peoples by force.” 73 Webb’s military blueprint for empire, however, had flaws. Ian Steele countered that in the final years of James II’s reign, the colonial governors understood that their roles were primarily political. He also noted, “It was the colonial militias that were the sword of civil power ….” 74 Regardless of whether the military presence followed metropolitan directive or addressed specific defense needs of people on the periphery (or represented a combination of both), the militarization of Narragansett Bay played an important role in its development. The construction of numerous forts, the ubiquity of naval ships, and, later, the completion of some of the most detailed maps of the area were potent symbols of military power in the littoral. If one extends Webb’s assertion that “garrison government,” as he called it, defined the relationship between people on the periphery and the metropole, then it is reasonable to assume that a military presence in many ways shaped their understanding of coastal space as well. 75

A few hundred yards away from the twenty-six pirate Goat Island grave stood Fort Anne, which, guarding the mouth of Newport Harbor, was a “regular and beautiful


74 Ian Steele, “Governor’s or Generals?: A Note on Martial Law and the Revolution of 1689 in English America,” William and Mary Quarterly 46, no. 2 (April 1989): 313.

fortification of stone with a battery." The fort itself had been largely constructed with bonds issued by the General Assembly, but royal coffers supplied guns and other provisions. Little more than an earthen embankment when it was first constructed around 1700, the fort soon expanded. On May 6, 1702 the Rhode Island General Assembly voted “for the better defense of His Majesty’s interests and good subjects … there shall be a fortification or battery built … near the harbor of Newport.” The fort was of sufficient size “to mount therein twelve pieces of ordinance, or cannon.” By 1715, however, the fort had fallen into disrepair, requiring the colony to take £30,000 in bills of credit for maintenance. Equipped with an eighteen-foot boat, a wharf, and causeway, it was also manned with gunners. Three years after the accession of George II the fort’s name was changed to Fort George in 1730.

Like the lighthouse that would be built within a few years at Beavertail, the fort served as an important navigational aid at the entrance of Rhode Island’s busiest harbor. The cost of maintaining it, however, had saddled the colony with debt. Requiring extensive renovations, the fort needed caulking, sealing, and filling around its foundation. In addition, “to keep the guns from the weather,” sheds had to be built. Because the General Assembly felt Fort George had been of great utility “for the security of navigation,” in 1732 Newport began requiring shipmasters to pay six pence per ton of

76 Quoted in George W. Cullum, *Historical Sketches of the Fortification Defenses of Narragansett Bay Since the Founding in 1638 of the Colony of Rhode Island* (Washington, 1884), 6.


79 Ibid., 241, 248, 271.


freight that passed through its harbor or one-sixth of a pound of powder "for the use of said fort on Goat island." For merchant ships and coasters plying Rhode Island's busiest commercial thoroughfare, the fort with its guns trained over the water was a beacon of security whose maintenance required communal sacrifice, at least according to the logic of legislators. Although Samuel Cranston had reported to the Board of Trade in 1708 that it was "impossible for us to fortify ourselves so as to keep an enemy from entering into our bay and rivers," by mid-century the brick, stone, and mortared edifice that was Fort George loomed formidably over Narragansett Bay's commercial entrance. Military lookouts scanned the horizon. And cannons asserted coastal control. For all intents and purposes, military improvements had marshaled littoral space.

The ownership of the oceans and the assertion of jurisdiction among their waters had been a hotly contested topic since the early seventeenth century. The Dutch jurist Hugo Grotius, widely considered the father of international law, had argued in 1608 for a *Mare Liberum*, or for freedom of the seas. Where the waters of the ocean flowed, he believed, no nation could claim absolute sovereignty. Responding in 1616 or 1617 but left unpublished until 1635, John Selden argued in *Mare Clausum* that the oceans could indeed be owned. "[T]he Sea, by the Law of Nature or Nations," he wrote, "is not common to all men, but capable of private Dominion or proprietie as well as the Land." For Selden, the King of England ruled the seas and the tidal lands adjacent. One

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82 Ibid., 475-476.
83 Ibid., 57.
85 John Selden, *Of the dominion, or ownership, of the sea*, (London: William Da-Gard, 1652), e2-f.
important tenet of his argument was a belief that the sea, like rivers and the land, could be subdued. Grotius, conversely, believed that the seas were inexhaustible and therefore should be naturally *liberum.* Rejecting that proposition, Selden explained that "truly wee often see, that the Sea it self, by reason of other men’s Fishing, Navigation, and Commerce, becomes the wors for him that own’s it, and others that enjoie it in his right.” It was evident, he explained, that the activities of man on the sea changed it and often to its detriment. Those changes were most glaring, he explained, where pearls and corals were harvested. “Yea, the plenty of such seas is lessned every hour, no otherwise then that of Mines of Metal, Quarries of stone, or of Gardens, when the Treasures and Fruites are taken away.” Acutely aware that the seas were not eternal, that they could be changed in dramatic ways by the hands of man, he argued that they could be owned, just like any piece of dry land. “The Sea (I suppose) is not more inexhaustible then the whole world …,” he concluded, “And therefore a Dominion of the Sea is not to be opposed …” For Selden, it was perfectly acceptable to erect jurisdiction among the waves. Like a mine, quarry, or garden, the ocean could be subdued. And therefore, the seas and its arms could be owned.

Yet the question of how to control such a vast, boundless space had yet to be answered. Ever the pragmatist, Cornelius Van Bynkershoerk of the Netherlands struck a compromise in *De dominio maris dissertatio* (1702), arguing that the oceans should be free but that a state could maintain sovereignty along its coasts. Sovereignty, explained Bynkershoerk and others during the eighteenth century, could be extended as far as a

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87 Selden, *Of the dominion, or ownership, of the sea,* 141.

88 Ibid., 143.
cannon could fire. This "cannon shot" doctrine was widely accepted among European nations, barring the Scandinavian states, which asserted their right to a fixed distance of one Scandinavian league, or four miles.\(^89\) The two systems operated in tandem throughout most of the eighteenth century until 1782 when Ferdinando Galiani proposed in *The Duties of Neutral Princes Towards Belligerent Princes* a fixed distance of three miles, which was the "utmost range that a shell might be projected with hitherto known gunpowder." His proposal incorporated the "cannon shot" spirit while obviating the need to lace one's shores with artillery batteries. All nations would simply observe a three-mile zone, he explained, "Without waiting to see if the territorial sovereign actually erects some fortifications, and what caliber of guns he might mount therein ...."\(^90\) Although much of Narragansett Bay and Rhode Island Sound was still well beyond the firing range of Fort George and the few other batteries scattered along the Bay's shores, the heart of its commercial enterprise was covered—and with vigilance. In 1756 the General Assembly announced it would levy fines on any vessels "to enter the harbor without having first obtained liberty from the [Fort George] captain, or gunner ...." They codified a fee schedule of "£4 for the first shot, £8 for the second, and for every shot after, £12," suggesting approaching ships at Newport were frequently targets of Fort George fire.\(^91\) The "cannon shot" doctrine was no theoretical convention. Just as the lighthouse at Beavertail certainly extended the Bay to commercial traffic, the Fort George cannons promised the same for marauding navies and would-be brigands.

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If colonial expansion on the periphery was, as Webb suggested, primarily a military endeavor, then the extent to which government spending for defense (and other infrastructure projects) relied heavily upon trade-derived bills of credit must be acknowledged. Between 1700 and 1740, Fort George’s construction and upkeep and the requisition and purchase of a 115-ton privateer equipped with “twelve carriage and twelve swivel guns” as well as “small arms, pistols, [and] cutlasses” had cost Rhode Island more than £200,000, much of which was public debt drawn on commercial shipping.⁹² In this sense, the improvement of Narragansett Bay floated on the currents of Atlantic world trade. The shrewd determination with which Newport merchants facilitated the Atlantic world exchange of hardwood from Honduras and Surinam, sugar from Barbados and Jamaica, slaves from the coast of Africa, and rum, candles, fish, and

lime from their own backyard had given them, if not the means, then the leverage to invest in major infrastructure projects at home.

Fort George was just one of many capital improvements. In 1733 a harbor and commercial pier were constructed at Block Island on credit. Rhode Island built a “large brick state house” and appropriated funds for its first lighthouse—on credit. Money was allocated for bridge construction and repair. The colony also invested in highways, one of the most important of which connected Newport and South Kingstown by way of two government-funded ferries that extended the road across Conanicut Island over Bay waters. Expanding infrastructure had improved Narragansett Bay so that it was safe and passable for ships and ponies alike. But Rhode Island’s mounting debt and continued reliance on paper money had caused considerable grumbling and even the outright condemnation from Whitehall. Rhode Island’s boosters, however, believed the expenditures had been well worth it. “[W]e are become,” Governor Ward wrote to imperial officials in 1740, “the barrier and best security of the New England trade. … [I]f this colony be in any respect happy and flourishing,” he continued, “it is paper money, and a right application of it, that hath rendered us so.” That “right application” had in

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92 Ibid., 10-11, 54, 74, 121, 124.

94 Ibid., 11, 58.

95 The Rhode Island General Assembly allocated funds for a “highway from ferry to ferry, across the Island” in its meeting on 28 February 1709-10, in Bartlett, ed., Records of the Colony of Rhode Island and Providence Plantations in New England, 4: 85. On the fourth Monday of August, 1748, the General Assembly appointed Josiah Arnold and John Hull of Jamestown and John Gardner of South Kingstown “to purchase, for the colony’s use, the two ferry places on the west side of Jamestown, with the two ferry places on the west side of Jamestown, with the two ferry boats, and all other appurtenances, if the same may be had at a reasonable rate ….” In Bartlett, ed., Records of the Colony of Rhode Island and Providence Plantations in New England, 5: 251.

many ways added structure to an otherwise indefinite space. But if imperial officials remained incredulous to Ward’s claims concerning bills of credit—by 1740 Rhode Island’s debt had climbed to £340,000, the value of paper bills was plummeting, and counterfeiters were running rampant—Newport’s commercial and strategic value was clear.97

As Whitehall witnessed the changes that unfolded on Narragansett Bay during the middle of the eighteenth century it became increasingly evident how limited their geographic knowledge was of the bay that surround one of America’s largest cities. In the *Social Construction of the Ocean* Philip E. Steinberg explained that ocean space was shaped by social life. “The political-economic logic and structures of a given society lead social actors to implement a series of uses, regulations, and representations in specific spaces, including ocean-space. Once implemented in a particular space,” he continued, “each aspect of the social construction … impacts the others, effectively creating a new ‘nature’ of that space.”98 During the course of the eighteenth century, Rhode Islanders had engaged in intellectual debate over the nature of the Bay’s creatures. They had erected navigational aids on the Bay’s shores, which not only secured safe passage into Bay waters but also marked the colony’s entrance to the world economic stage. They had tapped new natural resources. They had fortified their urban center with guns on shore

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and roving ships at sea. And in the process, they built for Narragansett Bay a "second nature," which Steinberg noted, "is constructed both materially and discursively, and it is maintained through regulatory institutions."\footnote{99}

**Mapping and Maritime Militarization**

During the French and Indian War, Whitehall realized it needed more detailed information on its changing empire. Despite Newport's growing commercial importance, there were few graphic representations of its harbor and the surrounding coastline. Through the 1730s, Rhode Island did not even appear on all British colonial maps.\footnote{100}

Eager to win the financial support of the Board of Trade, Newport citizens commissioned Peter Harrison, the architect of Fort George and Beavertail Lighthouse, to survey Newport Harbor.\footnote{101} But it was at the behest of Dutch military engineer, Samuel Holland, who had served in the British Royal American Regiment during the French and Indian War, that the Board of Trade and the King committed to a detailed survey of Britain's North American holdings. Holland was hired to survey the northern sections of continental North America and the German, William De Braham, the southern section. Concomitantly, the Board of Admiralty commissioned Joseph Frederick Wallet Des Barres, who was probably Swiss-born but underwent training at the Royal Military Academy at Woolwich, to survey the coasts in what would become the four-volume *Atlantic Neptune*. It was one of Holland's deputies, the Prussian-born Charles Sydney V. James, *The Colonial Metamorphosis in Rhode Island: A Study of Institutions in Change*, eds. Sheila L. Skemp and Bruce C. Daniels (Hanover, N.H.: University Press of New England, 2000), 132.

\footnote{Ibid.}


Blaskowitz, who ultimately conducted the most detailed surveys of Narragansett Bay that would become the basis for both the Board of Trade’s and Navy’s maps and charts of the area.\(^{102}\)

In 1764 Blaskowitz began work in Rhode Island that would redefine the way imperial authorities understood the North American coast and the key role that Narragansett Bay would play on it. Over the course of two months Blaskowitz completed a survey of southern Narragansett Bay that included Conanicut, Prudence, and Aquidneck Islands, as well as a detailed map of Newport. “War is one of history’s prolific generators of maps,” wrote historian of cartography Mary Sponberg Pedley, who showed that Blaskowitz’s early surveys were meant to explore the possibilities of a naval base in Newport or elsewhere in Narragansett Bay. A written report of the survey possibly drafted by Grenada’s colonial governor Robert Melville, who was in Newport for a time overseeing the survey work, explained that the Bay “is an excellent man-of-war harbour—affording good anchorage, sheltered in every direction, and capacious enough for the whole of his majesty’s navy, were it increased four fold.” Narragansett Bay, the report explained, had unique advantages for supporting a large military presence, “which cannot be found elsewhere in America.”\(^{103}\)

Narragansett Bay’s natural advantages for military development were legion. First, the report explained, there were no “dangerous ledges or shouls” within the Bay,

\(^{102}\) Ibid

\(^{103}\) "A British navy yard contemplated in Newport, R I in 1764,” in *Rhode Island Historical Magazine* 6, no 1 (1885) 44. An introduction to the documented explains that the report’s author was likely Robert Melville, Governor of Grenada, but Pedley disagreed (p 124 n 18, 274), arguing that the dates of the report don’t correspond with Melville’s time in Rhode Island. That said, in the letter he specifically thanks the official to whom the letter is written for his appointment as “Governor and Commander in Chief of Grenada.”
the entrance of which was “easy with all winds.” Newport Harbor only rarely iced over, the report explaining it “has not been frozen up so as to prevent ships coming in to safe anchorage since the year 1740.” The Bay and its center entrance between Newport and Beavertail were also sufficiently deep for warships and its islands were “admirably situated” for the construction of marine hospitals. But probably the Bay’s greatest advantage was that a “whole fleet may go out under way, and sail from three to five leagues on a tack; get the trim of the ships, and exercise the men within the bay, secure from attack by an enemy.”

Narragansett Bay, Melville believed, was perfectly suited to become an important hub of British naval activity in North America. Later surveys would concur, showing that the lack of tidal current and the Bay’s numerous anchorages for large ships made it one of the most strategic ports north of the Chesapeake.

If Peter Harrison’s chart of Newport was a grass-roots effort to win imperial financial support (which never came), Blaskowitz’s chart was an assertion of imperial control.

The survey, Melville’s hopeful report suggested, would transform Narragansett Bay into a naval stronghold. The maps that presumably accompanied the report but that no longer exist, noted “several excellent sites for docks, ship yards &c.” as well as locations for hospitals and defense structures, which would not only provide security against enemy navies but also “of the men against desertion.” The final maps produced from the Blaskowitz survey, the report suggested, would extend the scope of surveillance over Narragansett Bay. No one would enter or leave without a nod from the British Navy.

104 Ibid., 43-44.

The land surrounding Narragansett Bay would also support the military cause. The map, Melville explained, included all of Rhode Island's roads and showed the "seats of the principal farmers." He noted that Aquidneck Island had "excellent soil, and [was] under the highest state of cultivation." Rhode Island society was even well suited to play host to the naval elite. The large population of West Indian and European "families of fortune" that summered in Rhode Island's healthy surroundings and the "many men of science and erudition" combined with a "very extensive and well selected" library, has, Melville explained, "rendered the whole mass of society much better informed in general literature, than any I have met with in any part of the world." The establishment of a large-scale naval presence in Rhode Island would be well-received and naval officers would be sufficiently entertained, for the people of Newport were "celebrated for their hospitality to strangers, and [were] extremely genteel and courtly in their manners."

Recognizing Narragansett Bay's importance and keenly aware of mounting political tensions within its own ranks and in Rhode Island specifically, the Board of Trade sought even more detailed surveys of the area. In July 1769, Captain William Reid of the armed sloop Liberty took custody of two vessels he suspected of smuggling. Several days after submitting to interrogation, an outraged Captain Packwood of New London, confronted the customs officer, one of Reid's men, who had been assigned to Packwood's vessel. An altercation ensued, and the Liberty's crew fired shots at Packwood as he rowed toward shore. In response, a Newport mob seized Reid and his men, dumped the Liberty's guns overboard, ran the vessel aground, and set it ablaze.


When during the summer of 1772 Lieutenant William Dudingston aboard the H.M.S. Gaspee ordered the Hannah of Providence to submit to inspection, the Hannah’s captain, Benjamin Lindsey, fled in defiance. Perhaps due to a lack of local knowledge, Dudingston, while pursuing Lindsey, ran the Gaspee aground at Namquit Point in Warwick. That night a group of irate Rhode Islanders rowed longboats to the stranded vessel, shot Dudingston, seized the rest of his crew, and upon delivering them on shore, burned the Gaspee to the waterline.\(^{108}\) What was arguably the first armed confrontation of the American Revolution was reason for pause at Whitehall. That a British naval vessel was destroyed after having run aground in what for them was uncharted territory, likely informed their decision to have Blaskowitz return.

In October 1774 Blaskowitz began a second, more comprehensive survey of Narragansett Bay, which also included the waters of the Providence and Taunton Rivers. The chart included soundings throughout the Bay as well as detailed topographical information, including marshes, ridges, stands of trees, and, as Melville had stipulated a decade earlier, planter property boundaries. A year later, in December 1775 British troops occupied Newport, and Blaskowitz’s work was printed for the navy, no doubt with great haste, by Joseph Des Barres in 1776. In 1777 William Faden printed another version based on Blaskowitz’s survey (see fig. 12). Pedley noted that Faden’s title, A Topographical Chart of the Bay of Narraganset in the Province of New England ... , expressed his hybrid goal of depicting both land and sea. By contrast, Des Barres’s 1776

\(^{108}\) "Majesty's Ship; Bonnetta; Admiral Montague; Gaspee; Lieut. Dudington; Providence; Rhode-Island," The New-York Gazette, and the Weekly Mercury, 28 September 1772, 2. Also see Rockwell Stensrud, Newport: A Lively Experiment, 1639–1969 (Newport, R.I.: Redwood Library and Athenaeum and Rockwell Stensrud, 2006), 187-188.
chart, which was based on the Blaskowitz survey but commissioned by the Royal Navy, included less topographic information.¹⁰⁹

Faden’s “topographical chart” relayed more information about Narragansett Bay than had ever been compiled in a single space before. In addition to detailed soundings of Bay waters and topographical contours, Faden included maps of Newport, Providence, and several smaller towns scattered around the Bay. Important ferry landings and gun batteries were also marked, including the number of guns in each battery and their size. One such battery perched on the eastern shore of the Providence River was annotated: “A Breast Work Commanding the Navigation up to Providence and Calculated for a Shelter for men with small arms but without cannon.”¹¹⁰ Even an “Iron Foundery where they cast cannons” was included outside of Providence. Faden also accompanied his chart with a narrative description of Narragansett Bay and its surroundings. He noted in the right margin Rhode Island’s latitude and longitude, explaining that the colony was situated in the “most healthy Climate in North America ….” He explained that the winters were “severe, though not equally so with that of other Provinces …” and that the summers were “delightfull … being alyayed by the cool and temperate breezes that that come from the sea.” Home to “one of the finest Harbours in the World,” Narragansett Bay had “Fish of all kinds … in the greatest plenty and perfection.” So too were its animals on shore: “Horses are boney and strong, the Meat Cattle and sheep are much the largest in America, [and] the butter and cheese excellent ….” Narragansett Bay, Faden’s chart

¹⁰⁹ Pedley, The Commerce of Cartography, 128-134.

avowed, provided “every necessary of Life in Abundance.” As his colorful visual and textual descriptions revealed, Blaskowitz’s survey and its 1776 and 1777 renderings provided much more than military reconnaissance.

The completion, publication, and widespread circulation of detailed charts and maps marked a wholesale shift in the ways this littoral space was understood. Blaskowitz’s surveys as interpreted by Des Barres and Faden added coherence to the coast. Chandler’s 1741 boundary commission surveys had produced a map that clearly displayed the general contours of Narragansett Bay, but it was the Blaskowitz chart that provided a truly comprehensive depiction of Bay waters. Among coastal navigators there is no substitute for local knowledge, but Blaskowitz’s work placed navigational power in many more hands. Most striking in the case of Narragansett Bay was the extent to which those hands included imperial authorities for whom this stretch of coastal space had been largely ungovernable since English settlers had first inhabited its shores. Using Des Barres’ chart, a naval shipmaster could, from almost any point in the Bay, triangulate his position. A drop of the lead line added bathymetric knowledge to his calculations. Philip Steinberg has explained, “The sea largely has been constructed as a ‘non-territory,’ an untamable space that resists ‘filling’ or ‘development.’” But, he explained, by drawing a map or “establishing a grid …, the location of every space in relation to every other space is made generalizable, a key prerequisite for scientific inquiry and the formation of scientific laws. An abstract element susceptible to manipulation, … space is represented as a canvas on which planners and engineers may test and apply their insights and work

\[111\] ibid.
toward human progress." Surveyed and sounded, divided into latitude and longitude, the eternal sea, or at least one corner of it, had been subdued. The Blaskowitz survey had in many ways tamed Narragansett Bay.

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The proliferation of coastal beacons and forts changed Narragansett Bay for the people who plied its waters. Inquiry into the natural history of bay creatures, most significantly the oyster, in many ways contributed to the Enlightenment culture of intellectual improvement and set the groundwork for understanding biological production in Bay waters. War and the graphic representations of coastal space that facilitated it transformed littoral space in ways that reached much farther. During the War for Independence, the French, who sought charts of Narragansett Bay, borrowed heavily from both Faden's and Des Barres's, thereby producing still more maps from Blaskowitz's work. Once an unmanageable borderland whose watery, indeterminate nature created geographies of iniquity for some and refuge for others, Narragansett Bay, had by the end of the eighteenth century been improved physically and conceptually in ways that opened new possibilities for coastal environmental change during the nineteenth century. A space that had once denied human progress, that had stemmed the tides of history, was breached by the storms of technological improvement that at century's end gripped Narragansett Bay's northern reaches and transformed the rest of America in the process.

CHAPTER 5

“UN-LOCKING” THE LITTORAL: THE BLACKSTONE CANAL COMPANY AND THE EXTENSION OF COASTAL SPACE

Just above the tidewater at Mill Bridge in Providence, a large crowd gathered on the morning of July 1, 1828. Dressed in his finest, Rhode Island Governor James Fenner joined fifty notable citizens aboard what could only be described as a “gentleman’s barge.” Seventy feet long, nine and a half feet wide, and drawing only eight or nine inches of water, the *Lady Carrington* was fitted with a low-lying cabin top, “conveniently and neatly arranged,” explained a local newspaper, which extended almost the full length of its hull. Hundreds had gathered along the river’s banks to inspect, and perhaps even scoff at, a boat the likes of which had never been seen in Rhode Island waters.

At around 10 a.m. a cannon was fired, and the *Lady Carrington*’s guests erupted into applause. The “enlivening notes of a band of music” met the clop of hooves as the first boat to ply the waters of the newly built Blackstone Canal lurched northward from Narragansett Bay toward Worcester at the headwaters of the Blackstone River in central Massachusetts. Steadily, the horses pulled the *Lady Carrington* at a pace of four or five miles per hour on the levels, while pausing occasionally to pass through granite locks “of most substantial masonry,” which was “particularly gratifying to those who had never before witnessed this operation.” Apart from the “many hard thumps” the *Lady Carrington* received inside the locks, the canal boat’s journey was, unlike those of its
ocean-going counterparts, eerily silent. Passing mill buildings and tree-lined banks made of "good stone wall," the Lady Carrington ghosted through Horton Grove, "a most romantic spot directly on the Bank of the Canal...," and then stopped at Bishop's Tavern near Scott's Pond where they were "most hospitably entertained." Echoing the chatter of so many conversations, the crowded canal boat was such a spectacle that "scores of neatly dressed females... thronged the windows" of nearby factories. At the village of Albion, where lock gates had not yet been installed, the Lady Carrington reversed direction, arriving in Providence that evening "amid a large concourse of spectators who had assembled to greet her arrival."

The fanfare with which the Lady Carrington commenced and concluded its maiden voyage reflected the widely held belief that the Blackstone Canal would usher in a new age of prosperity. In the same newspaper account, its author announced that beyond providing a "delightful jaunt," the canal promised "immense benefits that must soon result from connecting the Atlantic with the most fertile portion of Massachusetts, the line of communication abounding with sites occupied by flourishing manufacturing establishments." The 45-mile canal between Providence and Worcester would, he explained, connect the port of Providence with a new agricultural and manufacturing hinterland. A link with the sea would connect Worcester to distant markets and would provide Providence merchants with new sources of agricultural production and new outlets for selling European goods and West Indian commodities at home. This, many hoped, would bring economic growth to the entire region.

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1 "First Trip on the Blackstone," Rhode Island American and Providence Gazette, 4 July 1828, 2.

2 Ibid.
Port cities in particular were looking for new avenues of commercial expansion amidst the bustle of early nineteenth-century America. Boston, whose population had ballooned from 18,000 in 1790 to 33,000 in 1810, was filling its marshes to make room.³ Similarly, Providence had, in the years following the American Revolution, undergone dramatic growth, eclipsing Newport to become Rhode Island’s most powerful city. The reasons for this shift were many. The British occupation of Newport during the war had taken its toll. In addition, in the years following, the British closed West Indian ports to American merchants, and London levied duties on American imports, particularly whale oil, which hit Newport hard. As international trade, namely that with Asia, required increasing amounts of capital, commercial activity became concentrated in larger cities, like New York and Philadelphia. Newport, barring a few enterprising individuals, was outmatched.⁴ After “her downfall,” noted one contemporary chronicler, Newport had become but a “mere resort of strangers for a few weeks” every summer.⁵ Responsive to the entrepreneurial maneuvering of a few influential merchants, and most notably those of the Brown family, Providence invested in infrastructure by expanding its port and building roads and turnpikes.⁶

And the city expanded. Between 1790 and 1800 the population of Providence grew by 19 percent, while that of Newport grew by only 4 percent.⁷ Between 1800 and


⁶ Ibid., 97-98.

⁷ Ibid., Appendix A-2, 115.
1820, the population of Providence grew by 54 percent, from 7,614 inhabitants to 11,745. In that same time period Newport’s fell by 320 people to 7,319. What had been one of the largest cities in America on the eve of the Revolution, had failed to make the top twenty by the second decade of the nineteenth century. Although Providence merchants continued to look south over Narragansett Bay toward the sea, many looked inland as well. It was its ability to tap a terrestrial hinterland that made Providence prominent. Boston was similarly endowed, but whereas New England’s largest city had embarked on an ambitious program of “gaining ground,” Providence sought, rather, to extend the sea. A forty-five mile canal would, for all intents and purposes, project Narragansett Bay deep into the New England interior.

In the same ways that industrialization transformed both human conceptions of nature and the physical environment, the Blackstone Canal transformed the human understanding of littoral space alongside the complex interactions of riparian and coastal ecology. In *Ecological Revolutions* Carolyn Merchant argued that both the arrival of Europeans in America during the seventeenth century and the establishment of an industrial market economy at the end of the eighteenth marked major transformations in the human relationship with nature. “Capitalist ecological relations,” she explained of the second revolution, “emphasized efficient management and control of nature.” The

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process of industrialization, therefore, can be characterized as the “superposition of scientific, quantitative approaches to nature and its resources.”

Theodore Steinberg took Merchant’s assertions one step further in his study of industrial development along the Merrimack River in Massachusetts and New Hampshire. “Industrial expansion,” he argued, “involved a profound restructuring of the environment—a far more comprehensive incorporation of nature into the human agenda than ever existed before. At its core,” he continued, “the process entailed a systematic effort to control and master nature ....” In both studies, however, Merchant and Steinberg largely orient their analyses upriver. The historical actors of the industrializing world look upstream; historical action always tumbles toward them. A look at the Blackstone Canal and its interaction with the river on which the American Industrial Revolution was born adds nuance and complexity to the story of the “ecological revolution” that occurred during first half of the nineteenth century. But by examining the canal’s decline, the story also provides new insights into the ways the culture of improvement, or “the systematic effort to control and master nature” affected the sea.

For so long coastal space had been shaped by the vagaries of wind, weather, and the tide, but the canal, flanked by thick walls of stone and its waters managed by a corporation, imposed absolute control. When the Blackstone Canal Company broke ground in 1825, mill owners along the Blackstone River protested, fearing the canal would divert water from their operations. Granting mill owners the “natural run” of the river, the courts compelled the Blackstone Canal Company to build a complex network of


holding ponds to manage the flow of water. With this, the “natural run” of the river was no longer a product of nature but the concession of a corporation. Narragansett Bay, or at least the upper reaches of its watershed, had been “improved” beyond recognition. With the coming of the railroad, the Blackstone Canal Company failed in 1849, and with it the management of a complex hydraulic system. All semblance of the river’s “natural run” was gone.

As this chapter will argue, the technological advancements and culture of scientific improvement that accompanied industrialization enabled the physical manipulation of littoral space as never before. Forty-five miles of ditches, trenches, locks, ponds, and dams extended coastal space deep into New England’s interior. Moreover, the corporatization of this inland sea placed management of the littoral in private hands. When the corporate management of the Blackstone Canal’s water failed, when a highly improved system was no longer managed, the environmental repercussions for Narragansett Bay were staggering.

The Canal Idea

In 1796 the fabulously wealthy Providence merchant, John Brown, desirous of establishing a navigable inland trade route from Narragansett Bay, hired an engineer to assess the feasibility of a canal from Providence north to Worcester and perhaps beyond to the Connecticut River. Brown’s plan was to redirect the economic activity of western Massachusetts away from Springfield and that of Worcester away from Boston and

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13 See C. J. Vörösmarty, et. al., “Global Threats to Human Water Security and River Biodiversity,” *Nature* 467 (30 September 2010): 555–561. The authors show that during the twentieth century industrialized nations created complex and costly systems for mitigating threats to water security. Massive investment in hydraulic engineering and pollution controls allowed industrialized nations to “offset high stressor levels without remedying their underlying causes.” This chapter examines what happens when massive investment in hydraulic engineering is placed in the hands of a private corporation that fails.
channel it into his hometown where he and his ancestors had over the course of the eighteenth century established a veritable commercial empire. Responding to a positive surveyor’s report, John Brown prepared to invest $40,000 and his brother Moses, his son Obadiah, Nicholas Brown, and Thomas Ives, a business associate, also agreed to contribute. Brown applied to the Rhode Island legislature for an act of incorporation, which was soon granted, but Massachusetts, threatened by such an ambitious scheme hatched by one of New England’s most powerful businessmen, denied his request. The plans for a canal were placed on hold.

But by the early 1820s, the success of canal construction up and down the Eastern Seaboard spurred renewed interest in developing the Blackstone Valley. The Middlesex Canal, which connected Boston and East Chelmsford, Massachusetts, was completed in 1803 and had, at least in its initial years, earned a profit. The Santee Canal in South Carolina, the first in America, had been operating since 1800. Other canals were under construction in Pennsylvania. And the middle portion of the Erie Canal was open to navigation, while construction on the western and eastern portions was well under way. Two groups of interested investors, one from Providence and another from Worcester, gathered during the spring of 1822 and commissioned Benjamin Wright, the Chief

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Engineer on the Erie Canal’s middle section, to conduct a feasibility survey. The Worcester contingent then penned a petition to the Massachusetts General Court asking for permission to proceed with their plans.

Figure 13: The Blackstone Canal. From *Pictorial Views of Massachusetts: For the Young* (Worcester, Mass.: Warren Lazell, 1847?). Courtesy of the American Antiquarian Society.

The petition highlighted the dramatic economic, social, and environmental changes promised by the construction of a canal. "[A]mong the many improvements which the enterprise of our countrymen is constantly projecting and multiplying," the subscribers explained, "none, at the present time, receive so great a share of publick attention, and promise such important results as the establishment of Canals with a view to enlarge and extend the natural channels of Internal Navigation." In its enthusiasm for the project, Rhode Island, the Massachusetts petitioners explained, "has given an impulse

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to the dormant energies of the country, and has opened to us new views of our present powers and our future destiny.”19 They explained to the General Court that those who would protest the construction of a canal “cannot any longer shut their eyes to the advantages with which nature seems to have peculiarly favored them.” Establishing a connection between the “seaboard and the very heart and centre of our country,” they emphasized, was akin to opening a “great artery” from which “new life may be diffused, as it were by a thousand veins, to every part of an extensive, fertile and populous territory.” Ultimately, the Blackstone Canal, avowed the petitioners, promised to “develop the immense resources of this territory, give a home to its native population,” and showcase “the ingenuity of our mechanics.”20 In its promise of progress, the language of the petition suggests a new wave of improvement had washed beyond the shores of Narragansett Bay and into the Blackstone Valley. The people of the Rhode Island coast, the petition explained, had opened their eyes to their own potential. The untapped energy of the countryside, in other words, would be released by establishing a connection to the sea. The storm of industrial progress would breech a guzzle through the dunes that would allow the once stagnant waters of Worcester to at last flow downhill to the tidewater. The energy from that storm would just have to be harnessed.

It was widely acknowledged that the canal would benefit not only its wealthy investors but also the broader community. Even before the petition for incorporation had been filed with the Massachusetts General Court, the Worcester-based Massachusetts Spy and Worcester County Advertiser opined in April 1822 that the canal would “be highly

19 “Petition to the Massachusetts General Court Concerning the Blackstone Canal,” 31 May 1822, Worcester Public Library, Canal Folder, 1; also printed in the Massachusetts Spy and Worcester County Advertiser, 4 September 1822; National Aegis, 11 September 1822.

20 Ibid., 2-4.
beneficial ... when it is considered what are ... the wants of the County, as a manufacturing as well as an agricultural district.”21 The canal promised dividends to small farmers and manufacturers alike. On May 10, 1822 citizens crowded into Sikes’ Coffee House in Worcester to weigh the pros and cons of a canal.22 Among the people of Worcester, the sentiment was clear: a canal connecting the breadbasket of Massachusetts with the industrial heart of America was “hailed as highly auspicious ....”23

Nevertheless, there were others who believed improvements to the Blackstone valley would hamper economic growth elsewhere in Massachusetts. Boston feared that communication between Worcester and Providence would lead to its own stagnation. One Boston paper concluded, “It would be well, if the citizens of Boston should endeavor to take measures, to prevent the loss of an important internal trade, which now centres at this city.”24 The Boston Patriot implored its “enterprising citizen ... not to suffer our important internal trade to be diverted from our new and growing ‘city.’”25 Boston’s Columbian Centinel protested the canal’s construction, claiming that “any project which tended to decrease ... prosperity [in Boston], though it might benefit a particular section, would be injurious to the general interests, and therefore on principles of ‘sound public policy,’ ought to be rejected.”26

21 “Canals,” Massachusetts Spy and Worcester County Advertiser, 17 April 1822.


24 Reported in the Providence Gazette, 27 April 1822.

25 Reported in National Aegis, 1 May 1822.

26 “Providence Canal,” Boston Centinel, 18 May 1822.
Completed in September 1822, the survey indicated the construction of a canal was eminently achievable. Submitted on October 2, 1822, Benjamin Wright’s report indicated the canal would stretch from the tidewater in Providence to Thomas Street in Worcester, climbing 451½ feet over forty-five miles. “The ground is remarkably favorable,” he wrote. “The soil generally easy to excavate—the embankments neither large nor extensive—very little solid rock to be removed—the aqueducts and culverts are not numerous or expensive.” But one concern of the engineers was the availability of water not only to fill the canal throughout the year, but also to provide a sufficient supply to “the valuable hydraulic works now erected on Blackstone River and its branches.” Unlike the Erie canal, a canal along the Blackstone required engineers to consider the water needs of the numerous manufacturers whose livelihoods relied on a steady run of water. The smaller, trickling streams that formed the Blackstone’s northern reaches, or the “summit level,” would require considerable hydraulic engineering to make the canal system work. Wright noted the 100-acre North Pond, two miles north of the Worcester Court House, could be dammed, which would flood the pond to 180 acres, allowing spring floodwaters to be saved for summer use. If the pond was eight feet deep and covered 140 acres, and the canal locks seven miles south of Worcester at Dority Pond in Millbury were designed to require 4,200 cubic feet of water each time they were filled, Long Pond could provide the upper canal system with 11,616 locks full of water. Wright’s calculations considered almost every pond along the canal’s route. Through intensive engineering, Wright’s canal and the adjacent river would flow filled with water.


28 Ibid., 5.
throughout the year. No longer tethered to the natural cycles of flood and drought, the canal, in Wright’s estimation, would herein draw upon a heavily managed hydrologic system.

**BLACKSTONE RIVER VALLEY CANAL MAP, CIRCA 1830**

Figure 14 The Blackstone Canal Courtesy of the John H. Chafee Blackstone River Valley National Heritage Corridor/National Park Service From Landscape of Industry: An Industrial History of the Blackstone Valley (Hanover, NH: University Press of New England, 2009), 9
The projected benefits of the canal and Wright's propitious report garnered critical support from the Massachusetts legislature. On January 15, 1823, the Blackstone Canal Company was granted a charter to build its canal to the limits of Massachusetts' jurisdiction. The charter also gave it the right to tap water from North Pond, Quinsigamond, or Long Pond, and Dority Pond "with such other ponds as lie upon or near said route." It also gave the company the right to construct reservoirs and the power to "connect with said canal by feeders or navigable canals, any or all said ponds and reservoirs. The charter did, however, stipulate that the company would be liable for damages.\footnote{Charter Granted by the Legislature of Massachusetts to the Blackstone Canal Company," in \textit{The Charter, By-laws, &c., of the Blackstone Canal Corporation} (Providence: Printed by Knowles, Vose & Co., 1836), 3-11.} Upon receiving the approbation of Rhode Island legislators, the company would then open its book of subscriptions to investors. "We hope their exertions," wrote the \textit{National Aegis}, will not be intermitted, until the completion of this great and stupendous work.\footnote{\textit{National Aegis} 15 January 1823.} On June 25, 1823 Rhode Island granted a charter to the Blackstone Canal Company in that state in a vote "nearly unanimous."\footnote{"Blackstone Canal," \textit{Massachusetts Spy and Worcester County Advertiser}, 25 June 1823.} Although the Rhode Island charter was largely similar to that of the company's Massachusetts branch, it specifically addressed the canal company's obligations to maintaining the water level in the Blackstone River. "[I]t shall be the duty of said corporation," the charter mandated, "to allow the same quantities of water to pass from said ponds, brooks and streams of water, constituting parts of the sources of Blackstone River, whenever the same shall be necessary for the use of the factories and mills ...." The charter further stipulated that the
factories and mills shall have “the benefit of the natural run of water ....”\textsuperscript{32} It also, however, provided a number of contingencies when the “natural run” could be changed as well as fines that would be levied should the company be found negligent, which suggests that legislators anticipated or had already entertained arguments over the canal’s impact on water availability.

Mill owners had clearly voiced their objections. In a letter to Massachusetts canal commissioner, John W. Lincoln, one canal advocate in Providence noted, “The only objection to granting a charter by our legislature will arise from the fears of mill owners that their water will be diminished by the proposed Canal.”\textsuperscript{33} On June 10, 1823 Rhode Island canal commissioner Stephen Smith wrote to Lincoln that “We had a very full meeting at Pawtucket of all those who are concerned in the waters of the Blackstone River in this state. The result of which was in no respect satisfactory to the friends of the canal.”\textsuperscript{34} Mill owners were so resistant that they maneuvered to stall the project. By the following March little on the canal had been completed, and Smith suggested to Lincoln that political posturing might force concessions on the part of mill owners. “To bring them to terms,” wrote Smith, “it had been thought best to talk the project down and in despair, appear to give up all hope of success when there is so much opposition. The fear of losing the water of Long Pond by a Canal to Boston will produce good fruit.”\textsuperscript{35}


\textsuperscript{33} Name illegible to John W. Lincoln, April 1823, Manuscript Collection, Box 1, Folder 1, Blackstone Canal Folder, American Antiquarian Society.

\textsuperscript{34} Stephen Smith to John W. Lincoln, 10 June 1823, Manuscripts, Blackstone Canal Folder, Box 1, Folder 1, American Antiquarian Society.

\textsuperscript{35} Stephen Smith to John W. Lincoln, 16 March 1824, Manuscripts, Blackstone Canal Folder, Box 1, Folder 1, American Antiquarian Society.
Exasperation in Worcester at what was seen as commercial myopia among Rhode
Island manufacturers had raised the possibility of digging east toward Boston. [I]t
becomes our duty, in justice to ourselves,” wrote the Massachusetts Spy; “to improve the
advantages we possess in the next best mode.” That mode, of course, was a canal to the
metropolis. “There can be no doubt,” the papers continued, “that the Legislature of this
State will grant leave to construct a Canal from this town to Boston on the same
conditions that it was to have been done to Providence, as this diversion would confine
the business within the State, which by the original plan, would have been carried to
Providence.” The cause of the stalemate between Rhode Island manufacturers and the
Blackstone Canal Company, the papers argued, was that the Rhode Island charter was “so
overloaded and embarrassed with unnecessary and vexatious restrictions, that it still
remains, and probably forever will remain, a dead letter on the statute books of the State.”
Rhode Island’s insistence on maintaining the “natural run” of the Blackstone River
favored the rights of individuals over those of the Canal Company. To the business
interests in Worcester, “The Corporation” in Rhode Island was “wholly at the mercy of
every one who might fancy his individual rights trenched upon ....”36

The debate over who owned the rights to Rhode Island waters had been
percolating for decades. That Rhode Island lawmakers had built provisions into the Canal
Company’s charter to protect the flow of water in the Blackstone River reflected not only
the economic importance of manufacturing to the area but also a keen awareness of the
incendiary nature of any decision that pitted community rights against the desires of
commercial entities. Gary Kulik has shown that throughout the eighteenth century laws

36 “Canal to Boston,” Massachusetts Spy and Worcester County Advertiser, 6 October 1824.
favored the interests of small farmers over commercial endeavors, such as the millers, fullers, and blast furnaces that depended on the rivers for energy.\(^{37}\) For instance, the Hope Furnace Company, which built iron hollowware and cannons, entered arbitration in 1765 when its Scituate dam flooded the property of James Matheson, a local farmer. Siding with Matheson, the arbitrators ordered that Hope Furnace pay him an annual 110 dollars in rent plus another four dollars per year for flooding the land.\(^{38}\)

But it was the river fisheries that most clearly highlighted tensions between the common good and commercial development. Important sources of food and income for Rhode Island farmers, the annual runs of alewife, blueback herring, shad, and salmon were threatened by river damming, which sparked protest.\(^{39}\) At the insistence of farmers, Rhode Island passed laws in 1719 and 1735 that required clear passage for migrating river fish during their spring runs.\(^{40}\) In 1742, 1743, and 1750 laws were passed to prevent fish from “being stopped in their course” on the Pawcatuck River.\(^{41}\) When earlier fines of 40 shillings were considered insufficient to prevent seine fishing during the spawning run in Point Judith Pond, they were raised to £50 in 1755. In 1756 Job Randall and Benoni Waterman were appointed to draft a bill “for regulating mill dams with respect to the


\(^{38}\) “Joseph Bucklin, Jeremiah Angell and Isaac Hadley arbitration of dispute between James Matheson and owners of Hope Furnace,” 8 August 1765, Hope Furnace Papers, Box 177, Folder 5, John Carter Brown Library

\(^{39}\) Daniel Vickers, “Those Damned Shad Would the River Fisheries of New England Have Survived in the Absence of Industrialization?” *William and Mary Quarterly* 61 (October 2004) 685-712. Vickers argues that if industrialization had not occurred, overfishing would have nevertheless decimated New England river fisheries

\(^{40}\) Kulik, “Dams, Fish, and Farmers,” 40-42

passage of fish up the rivers of this colony ...." Time and time again, lawmakers had decided on behalf of the fish, which, tied closely to traditional ideas about common property, represented the greater good of the community.

So important were Narragansett Bay’s river fish to Blackstone River communities north of Pawtucket Falls that people there physically transformed the environment to accommodate them. Scattered with boulders and pools, Pawtucket Falls had been an important fishing site for Native Americans before Europeans had settled the area. Although some fish would have climbed the falls, others traveled around through a small channel known as “Little River." When a new bridge was built across the Blackstone in 1714, Little River became clogged. And when a dam was built across the river in 1718, there was no way for fish to travel upstream. On behalf of the fish, William Sergeant cleared Little River, which subsequently became known as “Sergeant’s Trench.” It provided fish with clear passage but that changed when the banks of the fish-way became important mill sites. Over the course of the eighteenth century, dams were built in the trench to power the mills that sprung up along its banks. In 1730 a dam for an anchor mill was erected and in the following decades several more were constructed to power ever

42 Ibid., 463, 479.


44 “Opinion Pronounced by the Hon. Judge Story in the case of Ebenezer Tyler & Others vs. Abraham Wilkinson & Others. At the Last Full Term at the Circuit Court for R.I. District” (Pawtucket: Randall Meacham, printers, 1827).
more extensive manufacturing operations.\textsuperscript{45} This elicited numerous petitions of protest from fishermen upstream.\textsuperscript{46}

The General Assembly largely found in their favor, requiring mill owners to provide clear passage for fish during spring spawning runs. But the trends on the trench were clear: an ambitious program of hydraulic engineering designed to protect traditional fishing rights was losing ground to industrial economic expansion. In its transition from a “little river,” to a “trench,” to a walled power canal, the Pawtucket Falls bypass had come to represent a society in transition.

As Providence grew and manufacturing along the Blackstone and Pawtuxet Rivers proliferated, the rights of rural fishermen steadily eroded. In 1769 the owners of Hope Furnace, who only a few years earlier had been ordered to pay restitution to a neighboring farmer, met a more supportive response when they explained to the General Assembly that the Fish Act of 1735 was hindering their business. “[T]he inconsiderable fishery above the furnace,” their petition claimed, “at a season when the labor of the people is most needful, will not, in any measure, equal the advantages which must be derived to the community, by the carrying on so large and so useful a manufacture.”\textsuperscript{47} For the owners of Hope Furnace, which included members of the venerable Hopkins and Brown families, the greater good would be realized not through access to fish but by the success of their blast furnaces. It was better for everyone, they believed, if farmers gave

\textsuperscript{45} Ibid., 4.

\textsuperscript{46} Betty Buckley and Scott W. Nixon, “An Historical Assessment of Anadromous Fish in the Blackstone River,” Final Report to the Narragansett Bay Estuary Program, the Blackstone River Valley National Heritage Corridor, and Trout Unlimited (Narragansett, R.I.: University of Rhode Island Graduate School of Oceanography, 2001), 16-18.

\textsuperscript{47} Bartlett, ed., \textit{Records of the Colony of Rhode Island}, 6: 574.
up fishing the paltry stocks that remained and joined the ranks of modernity in their employ. Playing a similar hand on the Pawtuxet’s south branch a year later, Nathaniel, John, Griffin, and Christopher Greene explained that the fish laws had hampered their business, which had “been at a very great expense in erecting and building dams, forges, anchor works and saw mills ... and employing a great number of hands ....” They, like their neighbors on the north branch, asked to be “totally exempted from preparing and providing fish-ways.” In both cases, the General Assembly agreed. Among the rivers of the broader Narragansett Bay watershed, industry had trumped tradition.

But it was Samuel Slater’s mill and the dam that supplied it with power that marked a shift in the way people and subsequently the courts understood personal property and access to natural resources. After partnering with Moses Brown and Brown’s son-in-law, William Almy, Slater built the first water-powered textile mill on the Blackstone River in 1790. Shortly after, Slater built another larger mill 200 yards upstream of Pawtucket Falls and began construction on its dam, which, at six to seven feet tall and roughly 200 feet wide, was likely the largest dam that had ever been built in America. But while the dam was under construction, the disgruntled blacksmiths Stephen and Eleazar Jenks alongside the miller John Bucklin, both of whom used Blackstone River water farther downstream, tore the dam down. As Kulik showed, the Jenkses and

48 Bartlett, ed., Records of the Colony of Rhode Island, 7-8

49 Mack Thompson, Moses Brown Reluctant Reformer (Chapel Hill, N C University of North Carolina Press, 1962), 231

Bucklin were angry not simply because the dam’s construction had temporarily disrupted their operations but because Slater and Brown were outsiders—Slater was English and Brown was from Providence—and their business, the largest yet established along the Blackstone, was perceived as a threat. In retaliation the Jenkses and Bucklin raised their dam by two feet in an attempt to push water back on Brown and Slater’s wheel. Brown, Slater, and several other mill owners who were also affected and farmers who argued the taller dam threatened clear passage of fish filed a protest, which was upheld by the Rhode Island General Assembly in 1792. But as Kulik acknowledged, Brown used his powers of persuasion to convince the Assembly to remove from its purview decision-making powers over water rights for cotton mills. Subsequently, large mill owners like Brown and Slater were left unmolested. No longer was the fight over water rights one that pitted the public good against economic interests. By the turn of the nineteenth century, mill owners were vying for power amongst themselves.51

The ensuing battles over water rights fell to the courts. Morton Horowitz has shown that it was legal decisions over water allocation that imbued American common law with a penchant for progress. Specifically, Horowitz showed that Judge Joseph Story’s 1827 circuit court decision in Tyler v. Wilkinson, which ruled on the apportionment of water among mills on the Blackstone River and Sergeant’s Trench, set the precedent for interpreted water rights in terms of “valuable use.” Although Story’s decision acknowledged that “no proprietor has the right to use the water, to the prejudice of another,” it was nevertheless, Horowitz explained, “cited more often … to support than

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51 Kulik, “Dams, Fish, and Farmers,” 44.
to condemn the reasonableness of a mill’s interference with the flow of water.” Exempt from politics and favored by the law, cotton mills became not only the engines of economic progress but also the arbiters of environmental control.

The Blackstone Canal Company challenged that. In most cases, a cotton mill controlled the adjacent waters along the extent of its property and to the middle of the river. The water itself could not be owned. In his 1824 treatise on the law of water, Joseph K. Angell, a Providence legal scholar and arguably America’s leading authority on riparian rights, explained that because water was “moving and transient by nature, it can admit of no permanent property. The only property of which it is susceptible is temporary and usufructuary.” Angell explained, however, that the use of water was not without limits. Citing the eighteenth-century English jurist Lord Blackstone, Angell noted a mill owner may detain water only in a manner that does not injure his neighbors, particularly those who had established mills before him. “[E]very subsequent occupant,” he wrote, “is obliged to exercise his right as not to incommode the first occupant.” In the United States, Angell continued, the law allows that when the disturbance is “trivial,” and the use of water is “reasonable,” there are no grounds for redress. But the Blackstone Canal Company, a newcomer, promised to radically restructure the way water moved through the river. It would surely change water levels, perhaps even beyond “trivial” and


54 Ibid., 39-40.
“reasonable.” And half of the company operated outside of Rhode Island’s legal jurisdiction. It is no wonder that mill owners balked.

Although mill owners in Rhode Island largely controlled economic production on the Blackstone, Massachusetts controlled the river’s headwaters. Diverting the canal to Boston surely jeopardized the economic benefits of connecting Providence port to a rich hinterland, but more importantly it also held the power to turn off the spigot. Angered over political gridlock in Rhode Island, the Massachusetts Spy outlined the advantages of digging to Boston. “The State may, if necessary,” it explained, “divert the whole water of the Blackstone River by paying the damage which would accrue to the establishments within the State.” Not only would the entire river be diverted east, desiccating the economic engine of Rhode Island and dramatically altering Narragansett Bay by turning off one of the major sources of freshwater that drove its saltwater circulation, but Massachusetts would only pay damages to riparian proprietors within its own borders. The Federal Government had also become involved, adding further doubt and confusion. A corps of engineers under the authority of Congress was investigating the possibility of a canal between Barnstable on the north shore of Cape Cod and Buzzard’s Bay and another connecting Boston Harbor with the Taunton River on Narragansett Bay. So long had Rhode Island stalled on the subject of the Blackstone canal that the Providence Gazette reported, “[W]e are almost led to believe that the project is abandoned.”

55 Massachusetts Spy and Worcester County Advertiser, 6 October 1824. Newspaper’s emphasis.

56 U.S. House. “Message of the President of the United States, Transmitting a Report of the Examination Which Has Been Made By the Board of Engineers with a View to Internal Improvement, &c.” 18th Cong., 2nd Sess., 14 February 1825, Doc. 82 (Washington, D.C.: Gales & Slator, 1825), 68-69, 78; Massachusetts Spy and Worcester County Advertiser, 17 November 1824, 3.

But the impending doom reported in the papers did not necessarily reflect the steady advances being made by canal authorities behind the scenes. In November 1824 Rhode Island Canal Commissioner Stephen Smith explained in a letter to Massachusetts Commissioner John Lincoln, “There has been continual warfare since I last saw you between the Manufacturers and the friends of the Canal.” Smith assured Lincoln, however, that his interest in the canal had “never for a moment abated,” sentiment had turned in their favor, and that “there never was a time when the general impression was so … favorable as it is now.” By early spring of 1825 it appeared that Blackstone mill owners would allow the canal to proceed, but not without first securing their interests. “They agree with the importance of having the Canal,” wrote T. Beckwith in a letter to William Lincoln, a Worcester attorney, “and I think will agree to something that will be satisfactory but they are all so busy securing mill privileges [water rights] that they have not much time to do anything about the canal.”

By April the canal had been approved. “The long agitated project … ,” glowed the Providence Gazette, “has been resumed in good earnest.” The subscription books were opened to investors and the Canal Company began purchasing property along the canal route. They offered 5,000 shares at $100 each to be sold on Wednesday April 27 between 10 a.m. and 1 p.m. at Franklin Hall in Providence. According to the papers, however, they sold 11,297 shares, amassing promises for $1,127,900, three quarters of a

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58 Stephen Smith to John Lincoln, 15 November 1824, Manuscript Files, Blackstone Canal Folder Box 1, Folder 1, American Antiquarian Society

59 T. Beckwith to William Lincoln, Manuscript Files, Blackstone Canal Folder Box 1, Folder 1, American Antiquarian Society

60 “Blackstone Canal,” Providence Gazette, reported in Massachusetts Spy and Worcester County Advertiser, 13 April 1825, 3.
million dollars more than the original estimates required.\textsuperscript{61} Many of those promises never came to fruition. But to the public, the Blackstone Canal Company was flush with cash. Success seemed ensured. According to the papers, even protests among mill owners were a thing of the past. Both pistons of progress, the canal and mills now thumped rhythmically side-by-side to the beat of nineteenth-century civilization. A rational, quantitative approach executed with "scientific precision," explained the *Providence American*, "would allow the construction of a canal without affecting injuriously the rights or property of the ... manufactories ...."\textsuperscript{62}

This "scientific" approach required a radical restructuring of the entire Blackstone River watershed. Along the length of the canal route, every cubic foot of fluid had to be apportioned so that the canal would flow throughout the year. One of the first priorities of the canal commissioners was to begin the process of damming feeder ponds. In Worcester they purchased land from Samuel Stowell to construct two dams at the outlet of North Pond. In Shrewsbury, they started construction on a dam at the junction of Long Pond and Round Pond. They also planned a dam for Flint Pond and one for others farther downstream. In Douglas, Massachusetts, another was built at Badluck Pond and one across Beaver Brook in Uxbridge. In Millbury, they built dams at the outlets of Dorety and Ramshorn Ponds. In the towns of Douglas and Sutton, they built one at Manchaug Pond. At Upton, another dam went up at Pratt’s Pond. Two more dams were erected at the outlets of Mendon Pond. At Mendon, the canal company also raised a dam across the

\textsuperscript{61} "Blackstone Canal," *Massachusetts Spy and Worcester County Advertiser*, 20 April 1825; "Blackstone Canal," *National Aegis*, 4 May 1825, 2.

\textsuperscript{62} "Blackstone Canal," *National Aegis*, 4 May 1825, 3.
Blackstone River by five feet. The *Massachusetts Yeoman* estimated that “when the necessary dams are completed, more than five thousand acres [of water], varying in the increased depth from five to ten feet ...” would be made available. In Rhode Island, numerous other dams and diversion were either under contract or construction. Within a few months, the hydrology of the Blackstone River watershed was reconfigured. When the dams were completed, water would flow, the logic held, surely and steadily throughout the year regardless of the weather. When a barge operator opened a lock’s upper gates and thousands of gallons of water buoyed his boat to the next level, that water, upon clearing the lower gate, washed downstream to be used by the next person. Apart from these temporary, intentional fluxes, canal waters lay still and controlled. Of course, water seeped through the lock gates and into the surrounding mud banks. It also evaporated. But this had all been taken into consideration. Guided, corralled, and meted out as needed, the waters of the Blackstone valley—the headwaters of Narragansett Bay—were domesticated in ways that would bolster trade while supporting and perhaps even improving water-powered industry.

But if mills were spared injury by the Canal Company’s “scientific approach” to water management, farmers were forced to endure the blunt trauma of the spade. On June 13, 1825, the Rhode Island Court of Common Please assigned three independent representatives to appraise lands through which the Blackstone Canal would pass. The charter of 1823 had granted the Canal Company the power to lay the canal in “such place

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or places as may be deemed most convenient for said company.  

Although an 1826 amendment to the charter limited the company's ability to impinge upon mills, farmers were left largely unprotected. They appeared at the court to voice their opposition with what the *National Aegis* described as "forced gravity." Anticipating encroachment on their lands, farmers demanded damages. One "respectable elderly gentleman" who approached the courthouse with an "indescribably self complacent smile" told reporters that he "should certainly demand *damages*, though he shouldn't be very hard with the canal folks as he didn't know after all whether the canal would be much *injury* to his land ...."

Other farmers expected far worse. William Arnold of Uxbridge wrote to John Lincoln in February 1826, concerning a proposed reservoir near Buxton meadow, explaining, "The owners of the land have been cleaning it of timber & wood entirely—expecting it to be laid some 8 to 10 ft under water in this season."

Nevertheless, many accepted payment. Published in the papers, the appraiser reports listed those who received money for damages and where. Samuel Stowell, whose farm was located at the outlets of Long Pond, received sixty-two dollars. Abel and John Wesson, who owned land at Flint Pond, were awarded eleven dollars each. At Dorety Pond in Millbury, Jacob Dodge was awarded sixteen dollars and Daniel Rice four dollars for a dam that the Canal Company built on their lands. In other cases, however,

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66 Ibid., 26-30.


68 William Arnold to John Lincoln, 18 February 1826, Blackstone Canal Company Records, Box 1, Folder 2, American Antiquarian Society.

69 *Massachusetts Spy and Worcester County Advertiser*, 18 January 1826, 3.
damages were not forthcoming. David Dunn, owner of more than an acre along the canal route in Uxbridge, received nothing because “the advantages of the Canal ...[were] a full equivalent.” Similarly, John Segreve and James and Paul Aldrich were denied compensation on the grounds that the canal would increase the value of their properties.\footnote{0} From Providence to Worcester, the Blackstone Canal Company methodically assessed lands and in many cases arranged for their purchase. The surveyors noted the location and dimensions in chains and links of every parcel and published them widely.\footnote{1} So many transactions were completed, that they often used a pre-printed contract onto which names and fees for damages were handwritten. In some cases they even purchased discharges to future claims. In its willingness to pay in denominations as small as one dollar, the Blackstone Canal Company ensured that every drop of water in the valley fell under its control.\footnote{2}

The Canal Company did everything in its power to determine the way water flowed downhill but the creep of the sea was beyond its control. Even before construction started, Worcester began to experience the effects of the tidewater. Anticipating the canal’s arrival, business boomed. “From a very quiet, well disposed, inoffensive kind of place,” observed the \textit{National Aegis} of Worcester, “it has become more than half a seaport city in bargaining, trading, and trafficking [\textit{sic}]. A most money-giving, land-parting,

\begin{footnotes}
\footnote{0}{“Commonwealth of Massachusetts: Court of Sessions, at Worcester, September Term, 1826,” \textit{Massachusetts Spy and Worcester County Advertiser}, 4 October 1826, 3.}
\footnote{1}{“Canal Notice,” \textit{National Aegis}, 30 September 1826, 4. These assessments frequent the pages of the \textit{Massachusetts Spy and Worcester County Advertiser} and \textit{National Aegis}.}
\footnote{2}{Blackstone Canal Company paid one dollar to Daniel G. Wheeler, 17 July 1826, to “discharge all claims of damage ... ,” \textit{Blackstone Canal Company Records}, Box 1, Folder 2, American Antiquarian Society.}
\end{footnotes}
meadow-buying spirit has sprung up on a sudden...." An inland farming community once parochial and polite, had, with the coming of the canal, adopted the mercenary and acquisitive ways of a seaport. With its connection to the coast, Worcester, some pundits believed, was well on its way to becoming a great commercial entrepot. "[A]t the head of navigation or the top of a tunnel ....," wrote the Providence Patriot, "all the surrounding country, as far north perhaps as the southern counties of New-Hampshire and Vermont, will pour in the surplus produce and their manufactures ...." So powerful was a canal connecting Worcester with Narragansett Bay that it promised to send history in a new direction. "[I]t's marriage with the ocean, by means of the Blackstone canal," the Patriot continued, "will be an important epoch in its history; its marriage portion will be a monopoly of an inland trade."74

When construction began in late 1825, it was the sea that marched north into apple country. Digging commenced at the tidewater in Providence, following the logic that building materials could be floated north in the canal and that every completed portion would have access to the Bay.75 Where the Moshassuck River flowed into Providence Cove, work crews began to excavate the marsh and flats "with great vigor." Nearby at Scott's Pond in Smithfield, between twenty and thirty men, mostly Irish, excavated embankments using pick axes and shovels and loaded the debris into oxcarts, which they reportedly filled upwards of fifty times per hour. Workmen pushing wheelbarrows carted sand from the growing ditch. Nearby, they had erected a barracks 30

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73 "Canal! Canal! Canals!" National Aegis, 11 May 1825, 3.


75 “Blackstone Canal,” National Aegis, 14 September 1825, 3.
by 20 feet, with a “capacious oven made of brick and stone.” The wives and “ruddy”
children of two of the laborers were also present.76

Just as a connection to the sea had changed the commercial culture of Worcester,
so, too, did it transform its religious landscape. As the canal pushed north, Irish
immigrants flooded the region in search of work. Throngs of “strollers,” as the roving
Irish laborers were known, had worked on England’s extensive canal system and then
came to the United States to work on the Erie Canal.77 When construction there drew to a
close, many moved on to other public works. In July 1826 roughly 500 Irish workers
arrived in the Blackstone Valley to dig its growing trench.78 Also from the tidewater
came Worcester’s first priest. The Reverend Robert Woodley, who had a parish in
Providence, established another in Worcester, although until 1830 he only visited his
headwaters flock but twice a year.79

By October of 1826, most of the canal route in Rhode Island had been excavated.
Although rain had hampered progress that fall, a large portion of the canal had been dug
and many of the locks had been constructed. Excepting the “tide lock” in Providence,
which was built of wood, the others used granite blocks.80 Work also began near
Worcester, but not fast enough. “[G]reat impatience has prevailed in this vicinity, for
some near evidence of the progress of the work of improvement,” reported the National

76 “Blackstone Canal,” Providence Microcosm published in National Aegis, 19 October 1825, 2
77 Carol Sheriff, The Artificial River, 36-37
78 Ronald E Shaw, Canals for a Nation: The Canal Era in the United States, 1790-1860 (Lexington
    University of Kentucky Press, 1990), 51
79 Timothy J Meagher, To Preserve the Flame: St. John’s Parish and 150 Years of Catholicism in
    American and Providence Gazette, 2 June 1826, 2
Nevertheless, work was underway. On July 6, 1826 William Farnsworth submitted his estimate to the Massachusetts canal commissioners to produce locks of 130 feet long and 13 feet, 6 inches high, at $4,400. And two days later workers with shovels and barrows began to excavate the meadow between Main and Back Streets in Worcester. What had been impatience soon turned to assurance, and perhaps even hubris. Of the farms and factories dotting the rolling hills and “luxuriant vegetation” of the Blackstone Valley, one reporter marveled at “the extent to which the natural resources of a rich territory have been made subservient to human enterprise and skill.” If the plow and waterwheel had subordinated nature, the canal would bring it to its knees.

By early 1827 major changes were well underway. At eighteen feet wide at the bottom, thirty-four feet wide at the water’s surface, and four feet deep, the canal required the massive movement of soil, sand, and stone along most of its route. Patrick O’Connor, who led an excavation team, was receiving eight cents per cubic yard for removal and ten cents per cubic yard for building embankments. He received payment in February of 1827 for $1,000, suggesting he and his crew had displaced roughly 10,000 cubic yards of soil, or a continuous mound 10 feet high, nine feet wide, and 3,000 feet long. Many of the embankments were situated around holding ponds, which were altered as well. Alum

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81 “Blackstone Canal,” *National Aegis*, 7 June 1826, 3

82 William Farnsworth to John Lincoln, 6 July 1826, Blackstone Canal Company Records, Box 1, Folder 2, American Antiquarian Society

83 *National Aegis*, 12 July 1826, 3

84 “Blackstone Canal,” *National Aegis*, 19 July 1826, 3

85 Patrick O’Connor to John W Lincoln, 31 October 1826, Blackstone Canal Company Records, Box 1, Folder 1, American Antiquarian Society

86 Stephen Salisbury Jr , to John W Lincoln, 1 February 1827, Salisbury Family Papers, Box 22, Folder 4, American Antiquarian Society
Pond in Rhode Island was raised six feet. An embankment at North Pond in Worcester allowed engineers to raise it by eight feet. Nearby Long Pond, which had already been raised five feet, was elevated another two. Finally, seventeen of twenty stone locks in Rhode Island had been completed and twenty-five of twenty-nine in Massachusetts had been contracted. All told, forty-nine locks would allow the canal to climb 41\(\frac{1}{4}\) feet from the Providence tidewater to Worcester.\(^87\)

As the canal progressed, mill owners began to seriously consider the benefits of a fully engineered hydrologic system because the way water moved through the landscape was changing dramatically. When one reporter traveled the Blackstone Valley in 1826, he described “forest retreats” that were “overspread by the harvest of cultivation where wind stirs up the little ripples of gold to chase each other over the surface, and break on the margins of verdure,” which “stretch on either side of the pleasant stream.”\(^88\) His candied prose aside, the writer described a largely deforested landscape. Stands of trees existed only as “retreats” and “margins.” The cleared strips of cultivation were likely covered with goldenrod, the ubiquitous colonizers of New England’s un-mowed pastures. By the turn of the nineteenth century, New England forests had been largely cleared. Of coastal southern Maine, Yale President Timothy Dwight observed in 1807, “The forests are not only cut down, but there appears little reason to hope that they will ever grow again.”\(^89\) In his turn-of-the-century travels through the mid-Atlantic, Isaac Weld observed of

\(^{87}\) Pawtucket Chronicle and Manufacturers and Artisans Advocate, 13 January 1827, 1; “Blackstone Canal,” Massachusetts Spy, 24 January 1827, 2; “Providence Canal,” National Aegis, 27 January 1827, 2.

\(^{88}\) “Blackstone Canal,” National Aegis, July 19, 1826, 3.

Americans, “They have an unconquerable aversion to trees.” Traveling at mid-century, the English poet Emmeline Stuart-Wortley lamented of coastal Massachusetts that the few scraggly trees remaining were “almost as sad to look at” as the “girdled trees, which look like skeletons of malefactors bleaching in the wind.” On John Sanderson’s farm in the central-Massachusetts town of Petersham, only 100 of his 850 acres were wooded during the 1830s and 1840s.

Rhode Island experienced similar levels of deforestation. Along the Blackstone River and adjacent to the canal route, giant swaths of forest were cleared for lime burning and potash and charcoal production. Of primary importance to the newly established Hope Furnace in 1765 was firewood. After establishing its Cranston dam site, Stephen Hopkins signed agreements with thirty-seven local workers for “Cuting Carting or Coling the Said Wood” from the surrounding forests. By 1769 Rufus Hopkins was managing the furnace’s production of charcoal, a necessary ingredient for smelting iron ore. In May of that year, he explained, they had “five pitts afire ... & shall have two if not Three more afire this Evening and Shall Continuous Firing as fast as Possible ....” The speed with which he and his coalers were clearing Rhode Island’s forests was unfortunately accelerated by accidents. Joseph Briggs, Hopkins explained of their coaling operation, had accidently set the woods on fire by “Burning Bushes Last Saturday Evening or

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Sunday morning ....” He had burnt “60 or 70 acres ... and Distroyed all the wood and Timber Left on the Land” as well as between 750 and 1,000 split rails that had been piled nearby. That the exact day of the fire’s start was blurry suggests the forest had been smoldering for some time. As stands of trees were razed and converted into charcoal, Hope Furnace agents scoured the countryside farther afield. In 1784 Rufus Hopkins negotiated with Christopher Lippit for woodlots west of Cranston in Scituate. Well aware that nothing would be spared once the deal was sealed, Lippit was careful to stipulate “There are 8 or 10 Pine Trees on the Different Lots that I do Reserve as [I] shall want them for my own use.”

Figure 15: Nineteenth-century deforestation. Lithographed plate by Augustus Kollner. In Country Sights for City Eyes (Philadelphia: American S.S. Union, 1858?). Courtesy of the American Antiquarian Society.


By the early nineteenth century, Rhode Island, like much of the Atlantic seaboard, was being cleared of trees at a rapid pace. According to the agricultural census in 1850 and again in 1860 just over 64 percent of Rhode Island had been denuded. The expanding population, which had grown to 108,830 people by 1840, required fuel as did Rhode Island's growing textile industry, which, per capita and square mile, was by far the largest in the United States. Rhode Island's rivers were driving almost five spindles per person and 427 spindles per square mile across Rhode Island. Although the overall textile output of Massachusetts had surpassed that of Rhode Island by 1840, its rivers drove fewer than one spindle per person and only 63 spindles per square mile. Such high concentrations of mills in Rhode Island required a lot from its forests. The buildings, including the mills themselves, worker housing, and machines shops all required thousands of board feet of lumber. Water wheels, raceways, and flumes were made of wood, as were most of the machines. Milldams, too, were made of large wood timbers. And finally, these mills were connected via an extensive network of turnpikes, during the construction of which hundreds, if not thousands, of acres of forest had been cleared.


97 U S Department of State, Compendium of the Enumeration of the Inhabitants and Statistics of the United States as Obtained at the Department of State, From the Return of the Sixth Census, by Counties and Principal Towns Exhibiting the Population, Wealth, and Resources of the Country (Washington D C Thomas Allen, 1841), 14, 10, 112


99 Daniel P Jones, "Commercial Progress versus Local Rights Turnpike Building in Northwestern Rhode Island in the 1790s," Rhode Island History 48 (February 1990) 20-32
As forests were cleared, particularly those lining stream and riverbeds, the movement of water through Rhode Island’s rivers changed alongside the growing demand for power. Mills that had largely confined their operations to periods of adequate flow now required a constant supply of water, regardless of the season or weather. As modern hydrologists have shown, deforestation is one of the principal drivers of hydrologic change. When trees and their ability to retain moisture are removed, water flows faster through the landscape. Riverbeds that have lost their buffer of trees are prone to flooding. Winter snows, exposed to the sun, melt faster, and again, without a forest buffer, inundate rivers at a faster rate. For the same reason that rivers swell immediately after trees drop their fall foliage—their leaves no longer transpiring—rivers filled their banks when trees were chopped for charcoal. During wet periods the rivers roared, and during dry periods they slowed to a crawl. Although these processes are complicated by soil type, hill slope, climate, and the amount of impervious surface nearby, among numerous other variables, the basic hydrologic patterns hold true: when the land is cleared river basins become “flashier” and less predictable.

It was exactly this predictability that mill owners wanted but that had grown increasingly difficult to achieve. The dramatic changes to the hydrology of the Blackstone River were surely affected by land cover change but the complicated matrix

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of dams combined with impervious surfaces, such as mill roofs, roadways, and the stone walls lining river banks, had affected the way the river flowed as well. The canal promised a solution. But so unpredictable had the flow of water become, that its construction was often delayed. During the spring and fall of 1827, rains hampered excavation and even led some work crews to abandon sections of it altogether. Although the rain-induced damage to the canal was considerable, the flooding was affirmation that the natural system would no longer do. “The experience of the present season,” wrote the Massachusetts Spy of the heavy rains, “has fully demonstrated the capacity of the reservoirs, to afford an abundant supply of water, even more durable than was anticipated, thus improving instead of injuring the water privileges on the route.”

The canal and its feeder ponds, reasoned the Spy, would form a bulwark against such capricious weather. But that wouldn’t help trench workers chest-deep in mud. The rains continued to “deluge the earth” through the winter and following spring. Although broader climatic trends were beyond human control, human meddling along the river and in nearby forests would have surely exacerbated the rain’s effects. Although work slowed, the canal was completed except for the lock doors, which would be hung during the summer of 1828. When the weather broke in July, the Lady Carrington made the first excursion up the lower portions of the canal near Providence.

Despite the canal’s purported abilities to control the excesses of the weather, there were cracks in the walls of manipulated nature. And in some cases they were actual cracks. Scott’s Pond, which had been raised a whopping fourteen feet from its natural


106 Massachusetts Spy and Worcester County Advocate, 16 April 1828, 2.
level, had sprouted numerous leaks. The porous soil in the area had made its man-made
berms susceptible to breaches. The *Rhode Island American and Providence Gazette*
reported that “in many places” there were “little rivulets through the embankments.”107
The problems grew worse as the rains returned later in July. The *National Aegis*
explained, “The contractors have been delayed in their operations by the fountains and
streams bursting from the earth ....” Not only were sections of embankment giving way,
making work impossible, but alterations to the canal’s surroundings once again
aggravated the situation. Without forest buffers, water “poured down from every hill-
side.”108

The message was clear: the Canal Company’s control over the valley’s water was
far from absolute. That the canal used a section of the Blackstone River made it
particularly vulnerable to the pressures of flood and drought.109 During periods of low
water, barges were often unable to pass on the river, and the enclosed portion of the canal
system lost water when boats passed into the main river. The effects of this were being
felt in August 1828 when after months of rain southern New England experienced four
weeks without a drop. “[M]any fields have become so dry that vegetation suffers
severely,” wrote the *Massachusetts Spy*, “The roads are so dry and dusty as to render
travelling rather uncomfortable even were it not for the excessive heat ....”110 Human
error or malicious intent was also to blame. Massachusetts Canal Commissioner John
Lincoln announced a ten-dollar reward for any information that led to the conviction of

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1828, 2.
the person who, using a "false key," raised the gates at the North Pond reservoir in Worcester, which caused the loss of valuable water reserves.\textsuperscript{111} Apparently the company suspected unruly youths, for they specifically addressed "Parents" and "Guardians" when they announced the fine of $500.\textsuperscript{112} In response, the Canal Company made further attempts to secure its growing hydraulic network from natural and human pressures by raising Manchaug and Badluck Ponds by six feet and a dam across the Blackstone River at Mendon by twenty-seven inches.\textsuperscript{113}

The need to further bank the canal raised question about, well, bankrolling the canal. Building dams and turning ponds into walled pools was expensive. The cost of fixing breaches and repairing towpaths from winter frost heaves was also costly. And the dizzying business of paying damages continued to drain the coffers of the Blackstone Canal Company throughout its operation. All told, the canal had cost roughly $750,000 but had taken in only $400,000 in stock subscriptions from Rhode Island and $100,000 from Massachusetts. Those shareholders received only five dividends between 1832 and 1836 that amounted to a total of $2.75.\textsuperscript{114} When on October 7, 1828 the \textit{Lady Carrington} bent its lines around the bollards at Worcester, becoming the first boat to travel the full length of the canal, the celebration that followed replete with cannon shot and banquet, belied the precarious financial footing on which the entire operation rested.

\textsuperscript{111} "Ten Dollar Reward," \textit{Massachusetts Yeoman}, 6 September 1828, 3.

\textsuperscript{112} "Extract from the Charter of the Blackstone Canal Company," \textit{Massachusetts Spy}, 27 September 1828, 4.

\textsuperscript{113} "Canal Notice," \textit{National Aegis}, 13 August 1828, 4.

Tolls, it was hoped, would generate enough revenue to maintain the canal and pay its investors. And in its first few years, revenues increased. An abstract prepared by the canal commissioners and submitted to the Providence Journal showed that in 1828 canal toll revenue was $1,100 and in 1829 it climbed to $8,603. In 1830, the Blackstone Canal Company reaped $12,006.\footnote{“Blackstone Canal,” Providence Journal, published in the Massachusetts Spy, 19 January 1831, 2; Massachusetts Yeoman, 29 January 1831, 3.} From Providence cargos of, among other items, corn, rye, flour, salt, molasses, whale oil, and lime, as well as cotton, wool, iron, bricks, cheese, fish, and leather were sent north. From Worcester cloth, cordwood, wine, stone, chairs, staves, lead, boots and shoes, paper, and ship timbers were sent south.\footnote{Ibid.} By 1832 tolls would reach their all-time high of $18,907.\footnote{Richard E. Greenwood, “Natural Run and Artificial Falls: Waterpower and the Blackstone Canal,” Rhode Island History 49, no. 2 (May 1991): 57.}

The near constant movement between Providence and Worcester projected Narragansett Bay north. The Boston Centinel marveled at the way Worcester papers now included a weekly “Marine Intelligence” section that listed vessels clearing into and out of its port. So “imposing” was the sheer number of boats in Worcester, the Centinel estimated the town had roughly the same traffic as Boston did thirty years before.\footnote{“Internal Improvements,” Boston Centinel, published in Pawtucket Chronicle, 16 May 1829, 2.} Embracing its new maritime identity, the Lady Carrington had become a canal “Packet,” making scheduled runs between Providence and Worcester in just over fourteen hours. References to “shoals” along the Blackstone also suggest maritime language had begun to trickle into the interior.\footnote{“Canal Packet,” Massachusetts Spy, 24 June 1829, 3; Massachusetts Spy, 1 July 1829, 2.} Worcester woodcutters had begun targeting ship’s timbers in
nearby forests. In April 1829, the salty-named Christopher Columbus Baldwin observed that the canal boat *Washington*, "the first built in Worcester," was wheeled through the streets to the distillery basin where it was launched on the thirteenth. No simple barge to the people of Worcester, the *Washington*, like any proper vessel, received a speech and song the day it was splashed. When in July 1829, the canal boat *Independence* delivered the Providence Light Infantry Company to Worcester, a Dr. Fiske commented, "We have witnessed fleets of commerce wafted on our waters, we now see borne to our port, *first rate men of war*." For Fiske, Worcester had become a full-fledged seaport. Not only was the town shaped by the bustle of trade, but it was also filled with a maritime military presence. Worcester had become an arm of the sea in every way. With the canal, even the first wharf rats arrived.

But the construction of an inland port had come at the expense of mill owners, who felt cheated. In 1833 and 1834 the Blackstone Canal Company was slapped with one hundred forty-nine lawsuits over water rights. Although the Canal Company had placed markers at various points along the river to show the low-water mark, the Rhode Island Supreme Court found that the Canal Company had failed to measure and record the water's fluctuations. As Richard E. Greenwood has shown, the court cases proved that the Canal Company's reservoirs, which claimed to hold 698 million cubic feet of water,


122 *National Aegis*, 8 July 1829, 3.

only provided 264 million cubic feet.\textsuperscript{124} The great effort that had gone into impounding water had not been enough. Engineering an entire hydrosystem, the centerpiece of which was “the hardest working river in America,” as the Blackstone has been long called, had been so complicated, costly, and politically treacherous that the goal of improving nature for everyone could not be achieved.

If the mill owners’ lawsuits weakened the Canal Company, problems with water availability and the coming of the railroads dealt deadly blows. During the winter months, the canal was forced to close because of ice. As early as mid November, the still-water sections froze hard. By December, the locks were typically drained to prevent damage, and canal operation might not open again until March or April.\textsuperscript{125} During the summers, when the water level was low, sand bars in the Blackstone often delayed boats for days. Breaches to canal walls also delayed traffic.\textsuperscript{126} Talk of a railroad between Boston and Worcester began in 1828. There were many who believed Providence and its canal would usurp Boston’s rightful place as the capital of New England. Giving a toast at the Worcester Cattle show, one Boston Merchant raised his glass and said of the canal with trepidation, “May it give activity to the ‘Heart,’ without depressing the Head.”\textsuperscript{127}

In their push to build support for their cause, railroad boosters were keen to address the shortcomings of canals. Railroads, they explained, were less costly to construct and maintain. Canals needed bridges and were subject to droughts, floods,
leaks, and freezing. Canals could not climb mountains and required loading at wharves, whereas rails could be laid to the doors of, if not into, warehouses and factories. And of course, canals interfered with water rights. The advantages of the railroad were legion. When the Boston and Worcester Railroad was completed in 1835, it caused many farmers and manufacturers in central Massachusetts to look east. The Norwich and Worcester Rail Road, which was under construction, and another anticipated line connecting Worcester with Albany, likewise led inland merchants to turn their trade elsewhere. The canal simply could not compete. In 1836, toll revenues dropped by 20 percent. By 1844 boats no longer ran clear through to Worcester. In 1846 canal navigation stopped altogether. And with the establishment of the Providence and Worcester Railroad in 1848, the water route between the cities was all but abandoned. Although the tracks running parallel to the canal were no more than a foot high, they cast a long, dark shadow. Forever caught within it, the canal withered.

The canal had earned its shareholders only a pittance but Worcester had nevertheless profited. Between 1825 and 1836, the population grew from 3,650 to 7,500 people. Between 1821 and 1831 Worcester had built almost 400 new buildings. And

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130 Richard E. Greenwood, "Natural Run and Artificial Falls," 58.


between 1825 and 1835, the town tax revenue climbed 50 percent.\textsuperscript{133} Worcester had gained enough importance to compel William Lincoln, the compiler of such statistics, to write a 383-page history of the town, which he published in 1837.

The dissolution of the Blackstone Canal Company, however, had profound environmental impacts across the entire Blackstone River watershed and into Narragansett Bay. When the company attempted to disband in the 1840s, many mill owners fought it. At their behest, legislators stalled the process.\textsuperscript{134} Although mill owners had sued the Blackstone Canal Company to restore the “natural run” of the river, they soon realized that the patterns of natural flow were so far gone and the river so intricately engineered that abandoning the system as it existed would cause hydraulic chaos. The Canal Company’s corporate model of water control, one that heaped massive amounts of capital at problem after problem, had, for a time, worked. But when it failed, the effects were far-reaching.

\textbf{The Environmental Fallout}

It was a combination of hubris and blind faith in an inexact science that led to the Canal Company’s demise. Canal managers had failed to account for environmental variability, including extended periods of rain and draught that either damaged the canal or made it impassable. They had not considered human error. Misguided water storage estimates and massive water losses that occurred when lock gates and dam doors were left open often delayed operations and undermined confidence. And they had not

\textsuperscript{133} Ibid., 313-314 According to Lincoln, tax revenue climbed from $2,437,550 in 1825 to $3,667,250 in 1835

\textsuperscript{134} Greenwood, “Natural Run and Artificial Falls,” 58
anticipated the possibility of superior technology in the coming of the railroad. For all these reasons, the Blackstone Canal Company failed.

Dissolving the Blackstone Canal Company’s assets fragmented the hydraulic system. In May and June 1849 the locks between Providence and Woonsocket were sold. Samuel Saunders bought the Mineral Spring Lock for $217.50. The Horton Lock was sold to William Randall for $250. And the sprawling Lonsdale Company, owned by, among others, Nicholas Brown, Thomas P. Ives, and Edward Carrington, a canal commissioner, purchased three locks and the surrounding land at Scott’s Pond for $335. Various firms and individuals purchased the remaining locks. The Canal Company was legally dissolved and its charter withdrawn by the end of the year. No longer would one company manage, or attempt to manage, the entire Blackstone River watershed. Individual firms took control of their own dams, holding ponds, and head and tailraces in a watershed that had, over the course of twenty years, been pushed, pulled, and prodded far from its natural inclination. In some places, such as at Lonsdale, the canal continued to work hard. In other places, the waters lay stagnant. Ignored, the alders, swamp apple bushes, and laurels that had been trimmed periodically by the Canal Company, choked the canal’s banks. As mills transitioned from water to steam after mid-century, the canal transitioned from an energy source to sewer.

By 1880, conditions in the canal had become cause for alarm. Responding to a query by the Rhode Island Superintendent of Health, Professor John H. Appleton at

135 Israel Plummer, *History of the Blackstone Canal*, 9. On the Lonsdale Company, see Richard E. Greenwood, “Natural Run and Artificial Falls,” 59-60. Greenwood proposes that Brown, Ives, and Carrington, working through an intermediary, had, prior to the canal’s construction, purchased land near Scott’s Pond and then subsequently steered the course of the canal through it for the express purpose of developing the Lonsdale Company, which became one of the largest textile firms in New England.

Brown University explained, "The water of the river is polluted and rendered exceedingly foul and offensive before it reaches the limits of the city, and gives off an offensive odor of sulphureted hydrogen gas, like very foul sewers." The pollution the professor described was not limited to the canal. The entire length of the Blackstone River had become an industrial dump and cesspool. Worcester was pumping sewage into the Blackstone, as were other towns along its length. Industrial waste flowed down river as well. By the time the Blackstone flowed into Providence, it was downright hazardous. The *Providence Evening Press* explained the river “can be looked upon only as an open sewer, and the time is rapidly approaching when it must be treated as such, and must be covered ....” This river of sludge coursed into Narragansett Bay. “It is certain that much filth is turned into the river in the city,” explained Appleton, “and it must be still more filthy when it reaches the harbor.”

In 1885, the *Providence Sunday Journal* explained that below Mill Street, where the canal met Narragansett Bay and where the *Lady Carrington* had embarked on its maiden voyage in July 1828, the water was of a “dull greasy brick hue.” At Horton’s Grove, where the *Lady Carrington*’s guests had stopped for refreshments, the canal was altogether gone, “the railroad and freshets,” the *Journal* explained, “having perturbed the old artificial conditions and left the Moshassuck [River] to follow its aboriginal inclination in seeking the sea.”

The Blackstone Canal marked an important transition for Narragansett Bay. There’s no doubt that most of the action between 1825 and 1849 occurred above the tidewater. But in its remarkable ability to transform the natural run of a watershed into a

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quantified, systematized machine, the Blackstone Canal Company imposed
unprecedented order on the freshwater half of an estuary. When that intricate system
proved untenable, the canals and rivers became sewers for human and industrial waste,
which, flowing downstream, subsequently posed the single most important environmental
challenge for Bay waters. During the second half of the nineteenth century and
throughout most of the twentieth, Narragansett Bay became the receptacle for countless
environmental transgressions in its northern reaches. Shell and finfish populations
decayed. Marshes were fouled and filled. And algal blooms became increasingly
prevalent.139 The canal and its many feeders and holdings ponds showcased the brass of
human ingenuity and bluster of the new corporate order. But politics, property, the
vicissitudes of nature, and the fallibility of human beings tend to complicate things. Alas,
absolute control is a chimera. With the ecstasy of improvement, comes the agony of
decline.

Providence, R.I., 1915), 121. Cited in Scott W. Nixon, Betty A. Buckley, Stephen L. Granger, Lora A.
Inputs to Narragansett Bay: Past, Present, Future,” in Science for Ecosystem-Based Management:
Narragansett Bay in the 21st Century, eds. Alan Desbonnet and Barry A. Costa (New York: Springer,
2008), 126.
CONCLUSION

[W]e are in a sense amphibious, not exclusively connected with the land, but with the sea as well. ... [T]he sea and earth in which we dwell furnish theaters for action; limited for limited actions; vast for grander deeds ...."

—Strabo, Geography, (c. 7-24 A.D.)

“Before the land rose out of the ocean, and became dry land, chaos reigned; and between high and low water mark, where she is partially disrobed and rising, a sort of chaos reigns still, which only anomalous creatures can inhabit.”

—Henry David Thoreau, Cape Cod (1865 A.D.)

The space between land and sea, suggests Strabo of the ancient world and Henry David Thoreau of the modern, responded to human desires and shaped them in return. For Strabo, humans were inherently intertidal. The nexus of dry land and ocean provided “theaters” for both the steady march of quotidian progress and all things extraordinary and profound. And the push and pull of these two forces shaped not only that space but also history itself. For Thoreau, nearly two millennia later, the littoral, likewise, shaped human culture, albeit a distinct one. The powerful tension between land and sea, he believed, created conceptual chaos. Like the Victorian woman “disrobed,” dry land exposed at low-water induced cultural vertigo and perhaps even panic. So jarring was this space, he explained, that only “anomalous creatures,” whether human or nonhuman, could navigate it. Although thinking and writing in vastly different times and places,


2 Henry David Thoreau, Cape Cod (Boston: Ticknor and Fields, 1866), 64.
Strabo and Thoreau agreed that the epistemological complexities of littoral space made the muddy interstices between land and sea something special.

For the littoral people of Narragansett Bay, the tension between inland and ocean defined almost every facet of life. Theirs was a watery world of salt creeks and rivers, marshes and beaches, and islands and shoals. Across the Bay, they shuttled themselves and their animals in canoes, lighters, and ferries. Most were just as familiar with anchoring work punts and hauling seines as they were haltering horses and hoeing turnips. Native Americans and Europeans alike navigated this physically and conceptually brackish borderland on a daily basis. And as a result, they, much as Thoreau had observed, developed a distinct littoral culture. The liminal nature of their coastal world shaped local economies and often blurred legalities. At once a geography of political strife and a tool of diplomacy, the Bay waterscape shaped relations among people within Rhode Island’s borders and with those outside them who clamored for its land and coastal resources. And the conceptual flexibility of the place in many ways dovetailed with, if not contributed to, Rhode Island’s long tradition of cultural and religious tolerance and political autonomy.

Subject to the complexities of littoral culture, Narragansett Bay, the “theater” for human action that Strabo described, responded to the pressures of work, war, and expanding population. Complicated by the liminal nature of the estuary, environmental change often came in fits and starts. Where land and sea met, where progress met the profound, where improvable land was inundated by an eternal sea, the patterns of environmental change were anything but linear. At times, the sea denied the push of progress and at others it bowed under its weight. Humans sliced lines of jurisdiction
through the watery borderlands, but as evidenced by the contentious squabbling and even
outright violence that followed, geographic and conceptual confusion often held sway. In
its ability to internalize the push of progress on shore and pull of the profound at sea the
estuary became much more than a geologic formation. Rather, the Bay became a cultural
construct of the people who plied its shores and worked its waters. In this sense, the Bay
became at once the “theater” and an “actor,” which in dialogue with its human
counterparts changed them and their responses in return. The Bay as theater surely
endured the scuff of boots but as a construct of littoral culture, it also actively shaped the
play and the people who performed it.

As the people of Narragansett Bay culturally constructed the estuary on which
they depended for food, transportation, and a sense of identity, they imbued those things
plucked from Bay waters with many of the same beliefs and desires. Dug from
Narragansett Bay and nearby Long Island Sound, wampum, the carefully crafted beads
hewn from quahog and whelk shells that had long held great spiritual and social
significance for coastal Indians, were socially re-constructed when Europeans began to
use them as a medium of exchange. The value relationship that made wampum worth
something for two very different cultures was predicated on a commonly held belief that
the profound sea from which wampum was procured held spiritual significance. But as
wampum circulated deep into the continental interior in service to the beaver trade, the
value relationship began to reflect wampum’s ability to transform the land. And this,
wampum achieved with spectacular results. As wampum fueled the extirpation of beaver,
it changed the way water moved through the landscape. What had been a soggy interior
dotted with thousands of beaver ponds and marshes, grew dryer as beavers were
removed. The rivers ran faster in the wet season and slowed to a trickle during the dry. Carrying the nutrients of the forests, rivers flooded the estuary, which changed in response. Within the first generation of settlement just a handful of fur traders had, drawing from a Narragansett Bay resource—wampum—changed the hydrology of the entire Northeast, which in turn, at least in small ways, transformed the Bay as well.

Within a few decades the shores of Narragansett Bay developed into the “garden” of New England. Tapping its rich coastal meadows, investors from Newport and Boston, among other places, established some of the largest livestock farms in British America. Sheep, cows, horses, pigs, and for a short time, goats, were raised in prodigious numbers. Thousands of animals scoured the shores of the Bay islands and the Narragansett Country. Farmers replaced native grasses with those of England, which held ability to draw more nutrients from the soil. The cattle grew in size and number, and in many cases farmers expanded their meadows by diking marshes and clearing forests. The manure of so many animals naturally washed into the tidal lagoons and estuarine creeks by which they grazed. And this nutrient-rich run-off altered them. When combined with other human modifications, most notably logging, and the natural movements of shifting coastal sands, the most sheltered corners of the estuary began to change. In response, the people of Rhode Island pooled their resources to fix environmental problems. But often those “fixes” altered coastal ecology as well. In small ways, littoral people had begun to improve the edge of the sea.

Yet, the profound nature of the ocean still held the ability to deny progress. In 1741 Rhode Island went to court to settle its eastern boundary with Massachusetts Bay. The line as it had been explained in the Rhode Island charter was set in relation to the
eastern edge of Narragansett Bay. But there was no consensus on the Bay’s location. For some, Narragansett Bay was small stretch of water between Newport and Narragansett. For others, it reached clear from Fishers Island to Martha’s Vineyard. To define its boundaries, the commissioners assigned to settle the dispute sought scores of depositions from people from all walks of life to explain how they understood Bay waters. They compared their testimonies with surveys and historical documents and weighed them with metropolitan directives. The Bay, as its borders were defined, became an historical and social construct, shaped by the tensions between, among other factors, political allegiance, Native American vernacular knowledge, and metropolitan rule. If the tensions between progress and the profound shaped littoral culture in the estuary, it was that culture that in return shaped Narragansett Bay.

Once the borders of Narragansett Bay had been defined, the people of Rhode Island found other ways to order the littoral. They built lighthouses, which extended coastal space out to sea and improved the ability to navigate it closer to shore. They erected forts and filled them with cannons, which trained over Bay waters, further asserted control. They actively sought to suppress the activities of smugglers and pirates, which had earned Narragansett Bay a reputation for depravity. They also erected laws to protect marine resources and even entered intellectual debate over their “nature.” This quest for natural knowledge concerning Bay creatures in many ways embraced the Enlightenment culture of improvement. Finally, the British Navy mapped Narragansett Bay to an unprecedented degree of accuracy, which added the ability to control coastal space like never before. Over the course of the eighteenth century, canons, lights, and visual representations added order to the littoral like never before.
The promise of progress came to Narragansett Bay with industrialization and once again reshaped it to reflect the cultural demands and desires of the times. In the upper reaches of the estuary, the Blackstone Canal Company, which opened in 1828, radically reconstructed coastal space. The canal, which ran from Providence to Worcester, extended Narragansett Bay deep into New England’s interior. It also imposed a new mechanistic order to the way water flowed downstream. To fill the canal and provide the numerous mills along the Blackstone River with enough water to operate, the Canal Company devised a complex system of holding ponds and dams that would provide water whenever it was needed. The natural flow of the river was no longer “natural” but managed by a corporation, which, when it failed in 1849, led to hydrologic disarray. A highly engineered system, when no longer managed, led sections of the canal and its feeder rivers toward ruin. These became sewers down which industrial and human waste coursed into the Bay. That the canal ultimately failed and the watershed was never fully controlled denied the impulse toward improvement. The final dissolution of the Blackstone Canal Company marked a turning point in Narragansett Bay’s history, for it highlighted the ways that the pursuit of progress in conceptually complex spaces, when combined with the technology of the industrialized world, can lead to catastrophic decline.

Narragansett Bay is still feeling the effects of nineteenth-century pollution along its heavily industrialized rivers. The desire to rehabilitate the watershed has prompted calls for dam removal. But when the dams are dismantled, the Blackstone River’s long legacy of industrial waste, washes downstream, blanketing the Bay’s benthic community.
In addition, for a century, the Bay has been a “sewage fueled” ecosystem. Nitrogen pumps into Bay waters from several waste treatment plants, which has caused algal blooms and even anoxic conditions that have killed fish and other marine life. The effects of fertilizer run-off from the carpet-like lawns lining much of the Bay have likewise contributed to this phenomenon. In its ability to affect water temperatures and the amount of freshwater flowing into the Bay, which affects patterns and rates of circulation, global warming is yet another threat.

But all is not lost. As history has shown, humans will culturally construct the Bay to meet the desires and demands of the times, and Bay will respond and transform them in return. Narragansett Bay still forms the belly of Rhode Island, a state whose culture is inextricably tied to the estuary. It is a place where the boundary between land and sea has been and continues to be porous. In consequence, so has the boundary between humans and nature. If the push of progress defines Rhode Island’s future relationship with the Bay, it will no doubt be met with the pull of the profound. And somewhere in between, along the slipper-shelled shores of its islands, among the tidal rips at Nayatt Point and Narrow River, and among the mud-line creeks of Hundred-Acre Cove, there exists something that is perhaps “chaotic” or even “anomalous” but is surely something special.

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BIBLIOGRAPHY

Manuscripts:


Arnold-Greene Collection, John Carter Brown Library at Brown University.


Miscellaneous Manuscripts. Rhode Island Historical Society Library.


Rhode Island Colonial Currency Collection, 1715-1786, vol. 1, American Antiquarian Society.


**Newspapers**

*Boston Centinel*, May 1822 to May 1829  
*Boston News-letter*, July 1723  
*Connecticut Journal*, July 1769  
*Essex Gazette*, July 1769  
*New-York Gazette, and the Weekly Mercury*, September 1772  
*Pawtucket Chronicle*, May 1829  
*Providence Gazette*, April 1822 to April 1825  
*Rhode Island American and Providence Gazette*, July 1826 to July 1828  
*Massachusetts Spy and Worcester County Advertiser*, April 1822 to January 1831  
*Massachusetts Yeoman*, January 1826 to January 1831  
*National Aegis*, May 1822 to February 1840
Published Sources


*A map of the most inhabited part of New England; containing the provinces of Massachusets Bay and New Hampshire, with the colonies of Konektikut and Rhode Island, divided into counties and townships: The whole composed from actual surveys and its situation adjusted by astronomical observations.* (London: Thomas Jefferys [sic], 1771). 1:440,000. Library of Congress Geography and Map Division Washington, D.C.


———. Barr's Buffon. Buffon's Natural History: Containing a theory of the earth, a general history of man, of the brute creation, and of vegetables, minerals, &c. Vol. 3. London: printed for the proprietor [J.S. Barr], and sold by H. D. Symonds, 1797.


*Country Sights for City Eyes.* Philadelphia: American S.S. Union, 1858?.


Cullum, George W. *Historical Sketches of the Fortification Defenses of Narragansett Bay Since the Founding in 1638 of the Colony of Rhode Island.* Washington, 1884.


Daniels, Bruce C. *Dissent and Conformity on Narragansett Bay: The Colonial Rhode Island Town.* Middletown, Conn.: Wesleyan University Press, 1983.


Gookin, Daniel. *Historical collections of the Indians in New England. Of their several nations, numbers, customs, manners, religion and government, before the English planted there. Also a true and faithful account of the present state and condition of the praying Indians ... Together with a brief mention of the instruments and means, that God hath been pleased to use for their civilizing and conversion ... Also suggesting some expedients for their further civilizing and propagating the Christian faith among them.* Boston: Apollo Press by Belknap & Hall, 1792.


Headlam, Cecil, ed. *Calendar of State Papers, Colonial, America and the West Indies, 1708-1709.* London: His Majesty’s Stationery Office, 1922.


“Letter from the Secretary of the Navy: Transmitting a Report and Survey of Narragansett Bay, & c.,” December 20, 1832, 22nd Congress, 2nd Session, House of Representatives, Doc. No. 19, 2.


Livermore, Samuel Truesdale. *A History of Block Island From Its Discovery in 1514 to the Present Time 1876.* Hartford, Conn.: The Case, Lockwood, and Brainard Co., 1877.

M[a]cSparran, James D.D. *America dissected, being a full and true account of all the American Colonies, shewing the Intemperance of the Climates, excessive Heat and Cold, and sudden violent Changes of Weather, terrible and Mischievous Thunder and Lightning, bad and unwholesome air, destructive to Human Bodies.*
Badness of Money, Danger from Enemies, but above all, the Danger to the souls of the Poor People that remove thither from the multifarious wicket and pestilent Heresies that prevail in those parts. In several letters from a Reverend Divine of the Church of England, Missionary to America and Doctor of Divinity, Published as a Caution to Unsteady People who may be tempted to leave their Native Country. Dublin: S. Powell, Dame Street, 1753. In Collections of the Rhode Island Historical Society, vol. 3. Providence: Marshall Brown and Company, 1835.


*Pictorial Views of Massachusetts: For the Young*. Worcester, Mass.: Warren Lazell, 1847?


*Plan de la ville, port, et rade de Newport, avec une partie de Rhode-Island occupée par l'armée française aux ordres de Mr. Le comte de Rochambeau, et de l'escadre française commandée par Mr. le Chr. Destouches*. 1780? 1:26,200. Library of Congress Geography and Map Division Washington, D.C.


Prince, Thomas. A Chronological History of New England in the Form of Annals: Being a Summary and exact Account of the most material Transactions and Occurrences relating to this Country, in the order of Time wherein they happened, from the discovery of Capt. Gosnold, in 1602, to the Arrival of Governor Belcher, in 1730. Boston: Kneeland & Green, 1736; reprint Boston: Cummings, Hilliard, and Company, 1826.


Ramusio, Giovanni Battista. La Nuova Francia. Venice: Giunti, 1606.


Sheffield, William P. *Privateersmen of Newport.* Newport, R.I., 1880.

Shute, Edith W. “Reminiscences of the Blackstone Canal.” Read before and published by the Deborah Wheelock Chapter, Daughters of the American Revolution. 9 November 1907:


Staples, William R. *Annals of the Town of Providence from its First Settlement to the Organization of the City Government, in June, 1832.* Providence: Knowles and Vose, 1843.


Stiles, Ezra. *A History of the Three of the Judges of King Charles I, Major-General Whalley, Major-General Coffe, and Colonel Dixwell: Who, at the Restoration, 1660, Fled to America; and were Secreted and Concealed, in Massachusetts and Connecticut, for Near Thirty Years. With an Account of Mr. Theophilus Whale, of Narragansett, supposed to have been also one of the Judges*. Hartford: Printed by Elisha Babcock, 1794.


Thompson, Benjamin. *New England's Crisis or a Brief Narrative of New Englands Lamentable Estate at present, compar’d with the former (but few) years of Prosperity*. Boston: John Foster, 1676; Boston: The Club of Odd Volumes, 1894.


Trembley, Abraham. *Memoirs Concerning the Natural History of the Type of Freshwater Polyp with Arms Shaped Like Horns.* Leiden: Jean and Herman Verbeek, 1744.


White, John. *Planters Plea or the Grovds of Plantations Examined and Vsual Objections Answered Together with a manifestation of the causes moving such as have lately undertaken a Plantation in New-England.* 1630; reprint, Rockport, Mass.: Sandy Bay Historical Society and Museum, 1930.


