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COASTAL ZONE ACCESS AND THE PELL
ELEMENTARY SCHOOL SAIL NEWPORT PROGRAM:
EXPERIENTIAL EDUCATION OUTCOMES IN
NEWPORT, RHODE ISLAND
BY
LEAH FELDMAN

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF
MASTER OF ARTS
IN
MARINE AFFAIRS

UNIVERSITY OF RHODE ISLAND

2019

MASTER OF ARTS IN MARINE AFFAIRS THESIS
OF
LEAH FELDMAN

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2019

ABSTRACT

Newport, Rhode Island is a diverse community. Although there is a population of very wealthy households in Newport, roughly 11% of the population lives below the poverty line. Newport is one of the more demographically diverse communities in Rhode Island, with 49.7% of its populous identifying as white, 27.1% identifying as black, and 18.2% identifying as Hispanic. The state of Rhode Island consists of 81% white, 6.5% African American and 5.8% other races and ethnicities. In this thesis I discuss the effects of a place-based experiential environmental education program, the Pell Elementary School Sail Newport Program, on this diverse demographic of students enrolled in the fourth grade at this school in Newport, Rhode Island. This population is of interest because of historic inequities in coastal access that remain today. To analyze the effects of this program on student knowledge, attitudes and behaviors, the same in-person survey was given to fourth grade participants after completing the program, as well as to third grade non-participants who would complete the program the following year. I performed informal participant observation to better analyze program impacts. Results of this study showed that students who participated in the program left with a positive attitude toward the sport of sailing and were more likely to say they planned to pursue opportunities to sail or boat in the future. Observation reinforced these results, as a great deal of enthusiasm and sailing knowledge was observed in members of the program's 2018 Spring session. Results also indicated no relationship between participation in the program and changes in recreational or pro-environmental behavior. Implications for these findings warrant the development of similar programs throughout the United States, with the added

recommendation of encouraging family-oriented education regarding access (i.e., a “family day” for Sail Newport’s Pell Students) and additional experiential knowledge regarding coastal access. Programs may also consider implementing this curriculum at a later state in childhood development (i.e., 7th or 8th grade, students aged 12 to 14) when more individual agency is afforded to students, and decisions regarding recreation are left to students.

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I would like to thank my major professor, Tracey Dalton, for her tireless efforts in making this thesis a reality. Her dedication to the quality of my work, and the work of my peers, was truly remarkable. Professors Amelia Moore and Bryan Dewsbury were also sources of inspiration and encouragement, and I thank them immensely for their guidance. I would also like to thank Erik Barro for his consistent encouragement and support, and Danielle Bilecki and Rennie Meyers for their inspirational work and reassurance.

My mother taught me to love the beach. We shared our happiest moments there and were our truest selves by the water. It is the greatest gift she ever gave me. My father taught me to pursue justice, and through the story of a single starfish, not to let ambition get in the way of success. I am grateful to them both for their support and unwavering belief in me.

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CHAPTER 1

INTRODUCTION

Coastlines are fragile and vital natural resources. They are dynamic places of play, production, ecological productivity, and human habitation. As such, there are tensions between stakeholders with different use preferences at the coast. Protection of vital ecosystems, development of energy and shipping infrastructure, coastal housing, and recreation all compete for limited and fluctuating coastal land. Among these diverse uses, recreation often finds itself last on the list of priorities. All over the United States (US), coastlines are being hardened and developed, and people are struggling to connect to the shorelines that surround us. “We are becoming a landlocked people,” Texas senator Ralph Yarborough warned in back in 1969, “fenced away from our own beautiful shores, unable to exercise the ancient right to enjoy our precious beaches.¹” Development has only increased since then.

There are barriers to recreational access to Newport Harbor and coastlines all over the US. The US Coastal Zone Management Act of 1972 mandates the prioritization of public access availability for recreation on all major coastlines, but many states fall short in public coastal accessibility². Public access is frequently hindered by competing demands on coastal space such as energy production, shipping facilities, and waterfront residential and commercial development. While there is inherent value in ensuring coastal access for the public, studies have shown that

¹ Ralph Yarborough, “Introduction to the National Open Beaches Act,” 91st Cong., 1st sess, *Congressional Record* 115 (October 16, 1969), pt. 22:30335

² Coastal Zone Management Act of 1974, <https://coast.noaa.gov/czm/act/>

increased sense of place and connection to the environment - a potential outcome of increased public access to the coast - can lead to increased pro-environmental behavior³. Pro-environmental behavior is now more important than ever, as the planet continues to react to increased carbon emissions, marine plastic pollution, and global warming. Increased access to outdoor recreation can lead to an increased connection to the coast, and fragile coastal environments. Experiential environmental education is one way to introduce students to outdoor recreation and involvement and can foster feelings of connection and value in outdoor spaces.

Environmental education has long been cited as a method for increasing pro-environmental behavior. However, the nature of environmental education interventions formatted as day-long field-trips or in-class visits from educators often fails to create long-term changes⁴. Longer-term interventions, such as year-long curriculum changes and annual environmental education center visits, have been shown to create longer-term behavior changes⁵. Experiential programs that use experiences, as opposed to information, to teach have lasting impacts on students and associate meaning with learning. In order to better understand the connection between coastal access, experiential environmental education and environmental behavior, this study explores a year-long environmental education curriculum delivered to elementary school students in Newport, Rhode Island. This curriculum was developed in 2017 by Donna Kelly, a Chairwoman of the Sail Newport Sail Education

³ Clayton and Meyer, 2009, Conservation Psychology, Understanding and Promoting Human Care for Nature, John Wiley & Sons, April 20, 2009, Nature 253 pages

⁴ Harold R. Hungerford & Trudi L. Volk (1990) Changing Learner Behavior Through Environmental Education, The Journal of Environmental Education, 21:3, 8-21, DOI: [10.1080/00958964.1990.10753743](https://doi.org/10.1080/00958964.1990.10753743)

⁵ Gardner, G. T., & Stern, P. C. (1996). Environmental Problems and Human Behavior. Boston, MA: Allyn & Bacon.

Committee and a Pell Elementary School 2nd grade teacher, during a 1-year sabbatical dedicated to this project.

I hypothesize that reported measures such as knowledge of the location of Sail Newport (where the program takes place), increased time spent on the coast, and inclusion of ones' self as a member of the coastal community are indicators of a sense of connection to the water and the coast, and that the Sail Newport Pell Elementary School Sailing Program has increased participants' sense of connectedness to nature, as demonstrated through survey responses.

Newport, Rhode Island is an international sailing hub. Newport was home to the defense of the America's Cup, the oldest and one of the most prestigious sailing races in the world, for over 50 years⁶. Sailing is part of Newport's identity, and remains an integral part of Newport's recreational scene and economy. While many competitive sailors and sailboats reside in Newport Harbor, much of the city's population remains locked out of the prestigious world of sailboat racing. Yacht clubs and sailing establishments have a mired history of racist and exclusionary policies⁷. Many yacht clubs and sailing establishments were explicitly "white-only" for most of their history, including in that classification men-only, Christian-only, and rich-only as general but unwritten rules. This comes in stark contrast to the current demographics of Newport, which consists of an ethnically and economically diverse populous surrounded by some of the most exclusive recreational coast in the country. This study seeks to examine whether bringing historically underserved populations to this

⁶ History of the America's Cup, 12 Meter Charters, webpage accessed on March 14, 2019, <https://12metercharters.com/about-us/sailing-history/americas-cup-race-history>

⁷ Le Batard, Daniel, "OPEN SEAS?: Yacht Clubs Argue That They're Not Just for Rich Men," Los Angeles Times, August 13, 1989, http://articles.latimes.com/1989-08-13/sports/sp-859_1_yacht-club-member/2

coastline through experiential environmental education programs will create a more universally valued and protected coastline through the inclusion of more sectors of people who feel a sense of connectedness to the coast than are currently present.

Sail Newport, Rhode Island's largest public sailing center, is located on Narragansett Bay in Newport, Rhode Island, and is a non-for-profit 501 (C)(3) company dedicated to providing affordable sailing instruction and rental opportunities for the public. Beginning in September 2017, Sail Newport partnered with the Newport Public School System for Pell Elementary School 4th grade students to learn to sail as part of their regular school day. The mission of this program was to provide hands-on educational opportunities for children in the community to be exposed to life on and under the waters of Narragansett Bay⁸. The Sail Newport program exposed and educated Pell's 4th grade class on the fundamentals of sailing, sustainability, marine science, weather and ocean conservation, with contributions and education instruction from related non-profit organizations and educational institutions such as Save the Bay and Sailors for the Sea. All of this took place twice a week for 8 weeks in the fall and 8 weeks in the spring in 2018 during the school day from 10am to 12pm. The program included an on-land curriculum and a sailing program, each taking 1 hour, and focusing on 4th-grade STEAM (science, technology, engineering, arts and mathematics) education elements.

Newport, Rhode Island is a unique place to introduce an environmental education program focused on increasing public access. Newport is a wealthy coastal town with a rich history of sailing and coastal recreation. Newport hosted every challenge in the prestigious America's Cup sailing race between 1930 and 1983 and

⁸ Sail Newport webpage, www.sailnewport.org/PellSchoolSailingProgram, accessed Feb 2019

continues to host internationally significant sailing each year. It was a playground for the wealthy in the 19th and 20th centuries and was considered the “Summer Whitehouse” for several U.S. presidents such as John F. Kennedy and Dwight D. Eisenhower⁹. It was the first location of the U.S. Open Tournaments in both tennis and golf and remains a staple New England summer resort. Newport is home to many world-class beaches, many of which are private and include entry fees for access. The stark disparity between Newport’s wealthy summer tourists and the low-income year-round community means that there is a steep divide between those who have regular access to Newport’s coastlines and those who do not. Sail Newport’s Pell School Sailing Program offers students, many of whom are members of low-income families and are living in subsidized housing communities, the opportunity to engage with the coast in a way that may have otherwise been inaccessible to them. This inaccessibility is a product of homes located in less desired locations than the coastlines, years of institutionalized racism allowing only certain Americans to access public pools, beaches, and swimming lessons, and cultural histories that do not include coastal recreation. Genetic memory is the psychological concept that memories experienced by older generations are passed down to younger ones. This phenomenon may create discomfort in descendants of slaves and former slaves in areas their ancestors felt discomfort in, such as ships and coastal areas (as it may instigate images of the slave trade) or wooded areas (where lynching and other racial violence occurred).

Early exposure to waterfront activities such as those available in Sail Newport’s Pell School Sailing Program may have a lasting impact on participants’ willingness to access the waterfront and their attitudes toward the water. Increased

⁹ Newport Historical Society, www.newporthistory.org, accessed Feb 2019

access and improved attitudes toward the water (i.e., feelings of connection and belonging) can foster pro-environmental behavior and lifelong connection. Creating change surrounding attitudes and access to the coast may foster stewardship surrounding these areas and create a more environmentally aware and engaged population for the future of these fragile coastal ecosystems. This research aims to understand the impact this program has on the students of Pell Elementary School. The objectives of this research were to:

- 1) *Identify the impacts of the Pell School Sailing Program on students' knowledge, attitudes and behaviors regarding Narragansett Bay and individual environmental features.*
- 2) *Identify feelings of connectedness to nature and the coastline in relation to the Pell School Sailing experience*
- 3) *Identify potential connections between knowledge, attitudes and behaviors regarding coastal recreation practices and beliefs.*

More insight into how this population of students reacted to this program will help create more effective environmental education programs through tailored goals and procedures for specific populations, as well as more generalizable practices that can be transferred around the region. More precise information about student experiences may help aid in fundraising to expand programs and deliver more effective programming. Discovering how interaction with the coast might impact pro-environmental behavior can lead to more numerous, more effective environmental

programming. This could justify the strengthening of public access legislation and encourage increased environmental education curriculum in public schools.

Chapter 2 of this study presents background information on environmental education, coastal access legislation, surveying methods, and ethical considerations for research involving children. This background information presents a need for analyzing programs like Sail Newport, which are unique in their focus on students from diverse backgrounds engaging in experiential education in a place-based manner. Chapter 3 presents methods for data collection and analysis. Chapter 4 provides the results of statistical tests. Chapter 5 discusses key findings from these tests and highlights implications for these results, alongside a discussion of the results of informal participant observation of the program. Recommendations for further research and future programs are also included. Chapter 6 presents conclusions from the research and what this study can add to the existing literature on experiential environmental education, place-based learning, and inclusion on our dynamic coastline.

CHAPTER 2

BACKGROUND

In order to understand the need for equitable and accessible coastal recreation provided through pathways like the Pell Elementary School Sail Newport program, this chapter discusses the following topics: (1) the Coastal Zone Management Act; (2) environmental education; (3) differential access to the coast among demographic groups; and (4) place attachment or connectedness to nature. Each section details the contemporary state of the topic, the history that has led to the current state, and why they are important to the issue of access. A more accessible and socially diverse coast matters; the Public Trust doctrine holds the area where the land meets the sea in trust for the public at large – not just a small subsection of the public¹⁰. A variety of processes including privatization, parking limitations, coastal engineering, and other exclusionary practices along the coast have long resulted in a segregation of privilege and poverty along America’s coastlines. Undoing this process has proven difficult, as activists such as Ned Coll and Ann Petry demonstrated in their attempts to “free the beaches” of America’s Gold Coast in the late 1970s and early 1980s. Their efforts to create truly accessible public beaches on the Long Island Sound caused violence, riots and death threats throughout the state of Connecticut¹¹. Political campaigns, funded by wealthy Connecticut homeowners, allowed for the conflation of public and private land, to the detriment not only of Connecticut’s lower and middle classes, but also the

¹⁰ Public Trust Doctrine, US Legal, <https://definitions.uslegal.com/p/public-trust-doctrine/>

¹¹ Kahrl, Andrew, *Free the Beaches: The Story of Ned Coll and the Battle for America’s Most Exclusive Shoreline*, 2018, Yale University Press, ISBN 978-0-300-21514-4

coastline itself. Efforts to privatize often included building jetties, quays and other coastal engineering projects that resulted in unstable beaches starved of sand.

This chapter will provide insight regarding the existing barriers to coastal access and research on attaining a more accessible and diverse coast.

2.1 THE COASTAL ZONE MANAGEMENT ACT OF 1972

The United States government outlined its approach to coastal management through the 1972 Coastal Zone Management Act (CZMA), which established a national policy and program for the management, beneficial use, protection and development of the coastal zone¹². The coastal zone is currently home to 39% of the US population and spans more than 95,000 miles¹³. The CZMA, which remains the prevailing framework for coastal policy within the United States, addresses specifically the competition between public and private use of the shoreline and emphasizes protection of the shoreline for public use by providing federal match funding to help administer state coastal zone management programs.

The increasing use of the coastal zone of the United States between the years of 1930 and 1960, as well as unprecedented growth in population and industry, created the need for enhanced legislation protecting the vital and fragile ecosystems along the United States coastline¹⁴. Competition between private uses (industry, tourism,

¹² “The Social and Economic Dimensions of the Shoreline Recreation Problem.” *Shoreline for the Public: a Handbook of Social, Economic, and Legal Considerations Regarding Public Recreational Use of the Nation's Coastal Shoreline*, by Dennis W. Ducsik, MIT Pr., 1974, pp. 13–36.

¹³ <https://oceanservice.noaa.gov/tools/czm/>

¹⁴ “The Social and Economic Dimensions of the Shoreline Recreation Problem.” *Shoreline for the Public: a Handbook of Social, Economic, and Legal Considerations Regarding Public Recreational Use of the Nation's Coastal Shoreline*, by Dennis W. Ducsik, MIT Pr., 1974, pp. 13–36.

fishing, etc.) and public uses (recreation, open space, etc.) created increased pressure on the coastline. This increased pressure decreased the quality and quantity of available shorelines for public use. The Coastal Zone Management Act of 1972 (CZMA) was enacted to prevent the further degradation of the coastline caused by population growth and development and protect the decreasing public space available¹⁵. Section 302 of the CZMA declares that there is a “national interest” in the effective management, beneficial use, protection and development of the coastal zone, which is “full of resources for the well-being of the Nation.”¹⁶ Section 302 further states that the *states* are best suited to manage these resources and exercise their full authority over the coastal zone through the implementation of policies, criteria and standards for dealing with land and water use. In Section 303, the declaration of policy, this point is further stressed in stating that all federal Agencies in programs affecting the coastal zone are to work with state and local governments using interstate/regional agreements, cooperative procedures and joint action to implement management plans.

The Coastal Zone Management Act mandates that individual management plans must give “full consideration to ecological, cultural, historic and aesthetic values as well as needs for economic development.”¹⁷ This demonstrates the intention of Congress to enhance opportunities for general public use in addition to economic development. This reflects a focus during the 1950s and 60s on the availability of the coastline for recreation, as demonstrated by a 1954 National Parks Service survey on national ownership and use of shoreline recreation resources which showed that

¹⁵ <https://coast.noaa.gov/czm/act/>

¹⁶ Coastal Zone Management Act of 1974, Section 302, <https://coast.noaa.gov/czm/act/sections/#302>

¹⁷ Coastal Zone Management Act of 1974, Section 304, <https://coast.noaa.gov/czm/act/sections/#302>

almost every attractive seashore area from Maine to Mexico accessible by road had been developed or acquired for development, and that only 6.5% of the Atlantic and Gulf coasts were under federal or state ownership¹⁸. In the early 1960s, the shoreline of the United States had been in general relegated to private interests including tanker-oriented oil companies, chemical manufacturers, metal plants, power stations and paper mills. This private development necessarily meant the exclusion of the public. Public beaches were expensive to buy and came with the added costs of maintenance, transportation facilities and municipal services. In addition, the absence of reliable methodologies for assessing the socio-economic value of recreation-related public expenditures meant that these unattainable “values” were readily ignored or forgotten¹⁹. The costs of publicly-funded recreation were clear, while the benefits remained intangible and unquantifiable, at least in the years preceding the CZMA. Additionally, as Ducsik speculates two years after the CZMA was passed, fragmented political control over the shoreline meant that political jurisdictional boundaries were irrelevant, as the impacts of coastal use could and did easily spill over into adjacent jurisdictional areas. The Coastal Zone Management Act’s emphasis on cultural, historic and aesthetic values was a reaction to these overlapping and arguably irrelevant jurisdictional boundaries, and the growing public interest in coastal recreation.

Prior to CMZA, the government in general had not put high value on public recreation; private owners with waterfront land were gaining most of the benefits from

¹⁸ U.S. Dept. of the Interior, *Our Vanishing Shoreline*, Washington, D.C. (1954).

¹⁹ “The Social and Economic Dimensions of the Shoreline Recreation Problem.” *Shoreline for the Public: a Handbook of Social, Economic, and Legal Considerations Regarding Public Recreational Use of the Nation's Coastal Shoreline*, by Dennis W. Ducsik, MIT Pr., 1974, pp. 13–36.

the coast. Local communities were willing to sacrifice their coastlines in order to increase tax revenue from private owners. The Coastal Zone Management Act changed the perspective of the government to that of the public trust – creating and sustaining public use of the coast became the primary focus of local and state government’s interaction with the coast²⁰. It cannot be forgotten, however, that the federal government occupied this position partially because the local governments needed the revenue with which to accomplish these goals.

The Coastal Zone Management Act has been a success in many ways. The original CZMA’s goals were to protect natural resources, manage coastal development, improve coastal water quality, control non-point source pollution and provide public recreational access to the coasts. The act has accomplished much of what it set out to do. There are, however, weaknesses within this nearly 50-year-old policy.

Many researchers have recommended the CZMA take a more precautionary approach to coastal zone protection considering events such as Hurricanes Katrina and Sandy²¹. As populations continue to increase, various challenges arise regarding limited resources. The CZMA failed to anticipate the growing disparities in coastal access; protections were made to prevent the coast from being dominated by industry, but not to protect the coast from being accessed exclusively by a singular majority²². As one recent article published in *The Guardian* put it, summers have often been

²⁰ <https://coast.noaa.gov/czm/about/>

²¹ Garten, Lindsay. “The Coastal Zone Management Act: A Mixed Success.” *Consilience*, no. 16, 2016, pp. 1–13. *JSTOR*, www.jstor.org/stable/26188770.

²² “Coastal Zones: Solutions for the 21st Century,” by Juan Baztan and Omar Chuinard, 2015 Elsevier, 978-0-12-802748-6, Chapter 1, p. 1-14

America's "most segregated season."²³ One of the most memorable acts of racial violence in America's history happened because of an invisible race line along Lake Michigan, when white gang members stoned a black teenager to death after he accidentally drifted into the "white" part of the water, triggering the infamous 1919 Chicago Race Riot which lasted seven days and claimed 38 lives²⁴. Segregation in America was not limited to inland areas. The United States government enacted many policies in the segregation era to separate areas of outdoor leisure by race and effectively exclude people of color from public beaches. A stark example of this practice was the installation of "Paradise Park" in Ocala, South Florida, a segregated black-only park adjacent to its white-only counterpart across the Silver Spring river, since demolished in the 1960s²⁵.

The practice of segregating coastal areas has continued, though more subtly, since. Predominantly white suburbs designate public beaches for residents only or charge exorbitant fees for non-residents. Many beaches bar non-residents from parking near the shore – another method for keeping minority populations in neighboring cities out²⁶. Coastal recreation for the public is in some places limited to unsafe, unappealing and polluted beaches or vest pocket parks in urban areas consisting of a few benches and picnics tables on asphalt surfaces.

The Coastal Zone Management Act has claimed as one of its chief goals the maintenance of coastal access for the public. But, as populations have increased, it has

²³ Kahrl, Andrew, "America's segregated shores: beaches' long history as a racial battleground," June 2018, The Guardian World 2018, <https://www.theguardian.com/world/2018/jun/12/americas-segregated-shores-beaches-long-history-as-a-racial-battleground>

²⁴ HISTORY, www.history.com/topics/black-history/chicago-race-riot-1919, Accessed February 9, 2019, A&E Television Networks, Published December 2, 2009, by history.com editors.

²⁵ Kirksey, Eben, "Emergent Ecologies," Nov 2 2015, Duke University Press, Social Science, p. 313

²⁶ Kahrl, Andrew, *Ibid*, 25

become more and more obvious that the coast is being accessed by a predetermined few, and not the public at large. In the decades following World War II, Federal programs such as the Federal Housing Administration and later, the Federal Highway Act, facilitated the mass exodus of people and capital from central cities. Areas surrounding major urban hubs like New York City and Boston quickly filled with corporate executives, lawyers and professionals, and states like Connecticut and New Jersey experienced some of the largest population growth in the nation²⁷. Alongside this growth, vacation homes were developed and bought up along the shore at alarming rates. Around the nation, seasonal and year-round populations of shoreline towns grew quickly and the amount of undeveloped open land along the shore shrank. By 1967, the public could claim ownership of only 2% of the 59,157 miles of the shoreline in the continental United States. Most of this land was under military control and restricted to the public. Of the 21,724 miles of suitable recreational coastline, 86% was under private control. By 1970, 95% of the suitable recreational coastline was closed to the general public.²⁸

In the Northeast, the Department of the Interior estimated 97% of the regions 5,912 miles of recreational shoreline was “inaccessible to the general public.”²⁹ Those beaches in the Northeast that did remain public were riddled with social divisions and inequalities. Wealthy towns replenished their beaches and worked to keep their waters clean, older industrial cities with public beaches suffered from water pollution, erosion and spotty maintenance. Scores of city beaches closed during the 1960s due to

²⁷ Herbert F. Janick, Jr., *A Diverse People: Connecticut, 1914 to the Present* (Guilford, CT: Pequot, 1975)

²⁸ Kahl, *Ibid*

²⁹ House Subcommittee on Fisheries and Wildlife Conservation and the Environment, *Open Beaches: Hearings*, 93rd Cong., 1st sess., October 25, 26, 1973, 33.

underfunding and over-pollution.³⁰ Urban dwellers or those without the means to join private beach clubs were forced to find relief from the summer heat elsewhere, often at polluted urban waterfronts, which resulted in shocking numbers of drowning victims each summer. While various state programs and federal aid have ameliorated many of these problems, lingering inequalities remain. The structural forces that facilitated these phenomena still exist, and still operate.

2.2 ENVIRONMENTAL EDUCATION

In addition to the major perpetrators of global warming, such as industrialized economies and natural resource dependencies, the impacts of human behavior are accelerating the pace of environmental damages due to global warming and climate change³¹. Because of this trend, research has focused on the drivers of environmentally harmful behavior in individuals, and how to redirect behavior patterns³². This has, in turn, led to an increased degree of focus on environmental knowledge and attitudes. In the 1960s, with books such as Rachel Carson's *Silent Spring*, the concept of changing environmental behavior through education became prominent³³. This applied not only to environmental change, but also to other societal issues (i.e., health, careers, etc.). It has been made clear, however, through several studies that education alone cannot guarantee behavioral change; external barriers and

³⁰ Kahr, *ibid*.

³¹ Dunlap, R.E., Liere, K.D., & Mertig, A.G. (2000). Measuring Endorsement of the New Ecological Paradigm : A Revised NEP Scale.

³² Dunlap et al, *Ibid*

³³ Gardner, G. T., & Stern, P. C. (1996). Environmental Problems and Human Behavior. Boston, MA: Allyn & Bacon.

constraints set limits on what can be accomplished by education and attitudinal changes alone³⁴. These barriers and constraints can come in the form of financial limitation, as many experiences that facilitate environmental awareness, like family vacations to national parks or environmental centers, require financial stability. They can also come in the form of social barriers, as many environmental programs and areas are predominantly frequented by upper- or middle-class visitors. It is for these reasons that for environmental education programs to motivate behavioral changes, they must begin at an early stage in life and utilize more than traditional methods for sharing educational information³⁵.

Immersive experience-based environmental education programs for children combine traditional environmental education with experiential learning. These experiences often remove the external barriers (i.e., inability to identify and locate environments, lack of transportation methods, busy school and work schedules) to environmentally focused behavior and attempt to create practices that can be replicated throughout the student's life.

Although there have been many attempts to create universal tools to measure the impacts of these programs on environmental awareness and behavior, no single methodology has been isolated as best practice. Instead, several worldviews and instruments have been combined to create an existing litany of studies on environmental thought, education, and behavior³⁶.

³⁴ Gardner & Stern, *Ibid*

³⁵ Khawaja, Amir, "Measuring the environmental attitudes of children in grade 4: A study in Clark County" (2003). UNLV Theses, Dissertations, Professional Papers, and Capstones. 181

³⁶ Gardner & Stern, *Ibid*

The existing literature on environmental education includes information regarding the effects of these programs on participants. Otto and Pensini (2017) focus mainly on the relationship between nature-based environmental education and ecological behavior. Their study finds that environmental knowledge and connectedness to nature, together, lead to ecological behavior, defined as behavior related to protecting and preserving the environment. Varela-Candamio et al. (2017) focus mainly on the motivators behind ecological behavior and linking environmental education to those behaviors. Vaerla-Candamio et al. (2017) uncover motivational factors and environmental behaviors such as recycling practices, energy savings, green purchasing and pollution to discover links in motivations and behaviors. Other approaches seek to understand the importance of place-based education or “PBE,” an educational approach that takes advantage of geography to create authentic, meaningful and engaging personalized learning (e.g., *Getting Smart*, Tom Vander Ark, 2014).

There are several existing studies on the impacts of experiential environmental education programs. These studies are essential to the development and continuation of environmental education programs, which have been shown to increase environmental literacy and therefore impact environmental behavior³⁷. There are even studies regarding specifically marine-based and vessel-based environmental education programs on environmental literacy and attitudes (e.g., Lieflander, 2014; Williamson and Dann, 1999). These studies incorporate stringent methodologies for valid and reliable results, relying on measurement instruments constructed from previously

³⁷ C. Leeming, Frank & O. Dwyer, William & Bracken, Bruce. (1995). Children's Environmental Attitude and Knowledge Scale: Construction and Validation. *The Journal of Environmental Education*. 26. 22-31. 10.1080/00958964.1995.9941442.

validated sources. Many of these studies find that the intervention of an extended environmental-education program can have effects on environmental affinity (i.e., enjoyment and value in the environment). These studies stress the importance of developing a measurement tool or instrument that has external validity and can be used to add to the existing cannon of such studies.

Elementary-school aged children are particularly equipped to benefit from outdoor education experiences. Many educators report that outdoor learning experiences result in greater academic achievement overall³⁸. Educational programs for school-aged children can aim for outcomes such as greater academic achievement.

This study explores different outcomes of an educational program. What kinds of changes do these intervention programs make on deeper feelings regarding the places people live and study? How, specifically, do attitudes and knowledge change pre- and post- intervention? Does this change in attitudes create more frequent or more holistic uses of an environmental resource? These are some of the questions my study seeks to answer. Existing studies suggest that place-based environmental education, over a long enough period and with the correct resources, can implement a shift in attitudes in school-aged children (e.g., Varela-Candamio, 2018). Ecologically-minded behavior (i.e., behavior that promotes environmental health like recycling or spending more time in nature) may not always follow from environmental education, at least not in a prolonged manner, but exposure to environmental concepts and practices can have lasting impact. Valera-Candamio, Leeming et al, Williamson and Dann, and others, have used several approaches to measure these thoughts and behaviors, but a

³⁸ Alexander, J., M. North, and D. Hendren. 1995. Master Gardener classroom garden projects; An evaluation of the benefits to children. *Children's Environ.* 12(2):256-263.

combination of instruments and language-formats have emerged as successful in the field. Certain elements of reliable structures for surveying elementary school aged children have become clear. Manoli et al. (2010) revise the New Ecological Paradigm Scale for use with upper elementary students. The New Ecological Paradigm, or NEP, was originally created and disseminated in 1978 in a study conducted by Dunlap and Van Liere. Their work pointed out that the “Dominant Social Paradigm” of abundance, progress, prosperity and property rights was being overtaken by a new “ecological paradigm,” which rejected anthropocentric notions of nature serving human needs³⁹. Manoli et al. revised and validated the NEP scale for use with elementary students. The NEP studies individual world views, and Manoli has created a modified version of it suitable to use with elementary-aged children.

Borgers et al (2004) highlight the importance of scaling all questionnaire elements to proven psychological factors in 10-12-year-old minds. McKenna and Kear’s (1990) study suggest using no more than four response options in surveys targeted towards children and adolescents. They also cite Jean Piaget’s 1929 book “The Child’s Conception of the World” to differentiate between his four stages of cognitive development to best scale surveys for children.

2.4 CONNECTEDNESS TO NATURE

Connectedness to nature or “place attachment” is generally defined as “the extent to which an individual includes nature within their cognitive representation of

³⁹ Constantinos C. Manoli , Bruce Johnson & Riley E. Dunlap (2007) Assessing Children's Environmental Worldviews: Modifying and Validating the New Ecological Paradigm Scale for Use With Children, The Journal of Environmental Education, 38:4, 3-13, DOI: 10.3200/ JOEE.38.4.3-13

self.⁴⁰” Drs Stephan Mayer and Cynthia Franz conducted a benchmark study in 2004 assessing the reliability and validity of the “connectedness to nature” scale, a measure of individuals trait levels of feeling emotionally connected to the natural world. Their research supports many eco-psychologists’ contentions that feelings of connection to nature are an important predictor of ecological behavior. Mayer and Franz’ work echoes author Aldo Leopold’s description of the “land community,” in which the concept of the moral community is extended to include the land; in this practice, human beings begin to love and respect the land as they do other members of their community (i.e., their “human” community)⁴¹. The concept encourages fostering ecological behavior through expanding our sense of self, if the “self” is expanded to include the natural world. It also includes connecting one’s own welfare to the welfare of the natural world. In other words, as human relationship closeness increases so does empathy and willingness to help, and the same phenomenon is observed in closeness between humans and nature.

Mayer and Franz state that people need to feel they are part of the natural world if they are to effectively address environmental issues. Their research shows that an affective relationship with nature may have a stronger impact on ecological behavior than mere knowledge-based information approaches, such as those measured in Dunlap and Van Liere’s “New Ecological Paradigm” scale⁴². This research was

⁴⁰ Mayer, F. Stephan. Franz, Cynthia MacPherson, *The connectedness to nature scale; A measure of individuals feeling in community with nature.*, December 2004., *Journal of Environmental Psychology* 24 (2004)., 503-515

⁴¹ Leopold, Aldo, 1886-1948. *A Sand County Almanac, and Sketches Here and There*. New York :Oxford University Press, 1949. Print.

⁴² Iozzi, L. A. (1989). What research says to the education: Part one: environmental education and the affective domain. *Journal of Environmental Education*, 20, 3–9., Kals, E., Schumacher, D., & Montada, L. (1999). Emotional affinity toward nature as a motivational basis to protect nature. *Environment and Behavior*, 31, 178–202.

conducted in response to Mayer and Franz' observations that modern life has greatly decreased the self-nature overlap that was inherent to many civilizations prior to the industrial revolution. This, the authors contend, explains the slow human response of some groups of people to the environmental crisis. It follows, then, that the answer to increased pro-ecological behavior in non-motivated groups is to redevelop and nurture the human-nature overlap and to expand the definition of one's self and their communities to include the natural world. It is this connection that Mayer and Franz measure, and suggest improving.

The relationship between human being and nature is best improved through direct experiences in the outdoors, including simply increasing the amount of time spent outdoors. It is reported that the average human spends nearly 90% of their time inside buildings⁴³. Introducing habitual time outdoors at an early age can create important habits in seeking time outside in students. Just as relationships between people grow through quality time spent together, so can relationships between people and the outside world.

2.3 DIFFERENTIAL ACCESS TO THE COAST AMONG DEMOGRAPHIC GROUPS

Environmental access and use among various populations have been an important focus of study in recent years. As the United States population continues to diversify, the importance of ethnic and cultural differences on environmental attitudes

⁴³ Evans, G. W., & McCoy, J. M. (1998). When buildings don't work: The role of architecture in human health. *Journal of Environmental Psychology*, 18, 85–94.

and awareness, a direct link to access and use, becomes ever more important (Johnson, Bowker & Cordell, 2004; Jones, 2002). African American and Hispanic children are twice as likely as white children to live below the poverty line (U.S. Census Bureau, 2016). Minority children from low-income neighborhoods may have fewer opportunities to safely access natural resources due to environmental justice inadequacies, social prerequisites and access (Jones & Rainey 2006; Taylor, 1989). This inequality may lead to fewer chances for these children to experience positive reinforcement of ecological concepts and diminished opportunities to experience changes in perspectives on environmental issues (Larson et al, 2010).

The study of environmental justice has focused mainly on the uneven distribution of environmental costs and benefits on specific groups of people. The environmental justice movement of the 1980s and 90s brought environmental activism to the mainstream and made patterns of inequity visible to the general public as well as the federal government. Studies from even earlier – from the early 1970s to the late 1980s - focused on rates of participation in recreational behaviors that varied by ethnicity. Washburne found that white people have a higher rate of participation than black people in visiting remote parks and recreational sites for camping and hiking. Kelley's 1980 study found that white people participate in camping, winter sports, waterskiing and golf more than minorities. Hutchinson's 1987 study found that black and Hispanic communities valued the social element (i.e., gathering with family members and friends) of outdoor activity more than white people. Kaplan and Talbot's (1989) study found that perception of natural recreation sites also differed among ethnicities. White Americans favored more natural, less developed environments while

black Americans favored more developed areas⁴⁴. This simplified distinction between preferences of racialized groups is only a glimpse into the forces and phenomenon that motivate such discrepancies. Institutional racism and historic patterns of discrimination created disparities among ethnic groups that complicate these numbers immensely; it is for this reason that these studies come now under intense scrutiny to discover what led to these differences, and what can be done to dismantle those forces.

Limited recreational access as a result of these discrepancies can have a major impact on future career paths and livelihoods. Underrepresented minorities account for 24% of the workforce, but only 5% of earth, atmospheric and marine science Ph.D.s among US citizens and permanent visa holders (Helmreich, 2009). This fact is brought up in Helmreich's (2009) *Alien Ocean* to discuss the racial divide present in the world of marine science, specifically aboard the research vessel *Endeavor* with students from the University of Georgia. This discussion centers on color and the linear and non-linear effects of racism on urban, suburban, rural and coastal geographies. This is relevant to this research in a way best described by the American Society for Limnology and Oceanography in their "Steps to Increase Minority Participation in the Aquatic Sciences: Catching Up with Shifting Demographics" Bulletin:

"Aquatic scientists develop an affinity for water before their academic careers begin; exposure to water bodies in childhood ignites interest. This exposure is not as available to minority youth...the legacy of segregated facilities means that parents and grandparents who were kept away from swimming pools, beaches, and state parks, are

⁴⁴ Boas, Ewert and Chaves, 1991 "Influence of Ethnicity on Recreation and Natural Environmental Use Patterns: Managing Recreation Sites for Ethnic and Racial Diversity"

less inclined to introduce their own children to water-related activities. While minority youth are probably aware of various aquatic systems from the media, this does not replace direct experience with these systems” (Helmreich 2009, p. 203).

2.4 SAIL NEWPORT

While the Sail Newport program does not make any direct claims to be a cultivator for future scientists, there are, as noted above, distinct failures in inclusivity in the world of marine science. These failures may or may not stem from a historical divide in the recreational activities of youth of different demographics (ASLO, 2014). A well-designed environmental education program that crosses structural and cultural barriers and accounts for demographic diversity in a given locale may confer unique benefits to minority children of low socioeconomic status (Larson et al, 2010). The Sail Newport program tries to address inclusion, as the program is offered free of charge to all students enrolled in the Newport public school system.

The mission of the Sail Newport Education program is the following:

“provide hands-on educational opportunities for children in our community to be exposed to life on and under the waters of Narragansett Bay and beyond. The education program at Sail Newport will expose and educate participants to the fundamentals of sailing, sustainability, marine science, weather and ocean

conservation in partnership with related non-profit organizations and educational institutions⁴⁵.”

The curriculum of this program includes tying in classroom-achievement goals particularly focused on STEM (science, technology, engineering and math) elements and also sustainability. The land-based curriculum focuses on science, social studies, weather, mapping, land-forms, soil, erosion, sustainability and other 4th-grade-teacher-developed topics. At the beginning of each session, students are given a “Science and Sailing Journal” in which to record their land-based curriculum questions, information, and activities. These include programmatic activities developed through organizations such as Sailors for the Sea, 11th Hour Racing, the Volvo Ocean Race, and Sail Newport, an important involvement of the community in this program. These journals provide areas to record information such as habitat ecosystems, plastic pollution information, food chain dynamics, microscopic organisms in the water, salinity and density, coastal stewardship, and basic sailing information. These journals are meant to record progress on the program objectives, including stewardship, increased coastal access, and knowledge of Narragansett Bay.

My work with this program included 8 weeks of informal participant observation in which I attended each day of Sail Newport’s Pell School programming. Four 4th grade classrooms were at Sail Newport for 2 hours, splitting their time between sailing lessons and on-land curriculum. During this time, I observed the enthusiasm and excitement of the students as they arrived and got out on sail boats

⁴⁵ Sail Newport Pell Elementary School Program website., www.sailnewport.org/pell_elementary_school

every day. I observed the focus and determination of students as they completed on-land tasks such as scavenger hunts and plastic-pollution infographics. I listened to students of color explain to me that they wanted to be meteorologists when they grew up, students with disabilities demand that the ban on plastic bags be extended to the entire world and students who had never touched the water before looking at samples of Narragansett Bay under microscopes. I watched the students listen in awe as we video-chatted with a Vestas 11th Hour Volvo Ocean Race sailor currently underway in the middle of the Indian Ocean. My experience with the students allowed me to watch the empowering and educational impacts of sailing take hold on students who might have otherwise never felt themselves to be a part of the coastal community.

The topics described above are processes that are still in motion. The Coastal Zone Management Act is a living policy that seeks to create more modern and inclusive spaces of recreation for the public. While there are structural limitations to this goal that still need to be addressed, programs like the Pell Elementary School Sail Newport program, or other place-based environmental education programs at the shore, can pave the way for a more inclusive future. Creating positive experiences for students who may otherwise not have the opportunity to cultivate relationships with coastal spaces can be the first step towards environmental stewardship.

CHAPTER 3

METHODOLOGY

3.1 STUDY AREA

This study was conducted in Newport, Rhode Island. This community was of interest as a location because of the demographic diversity of the public-school system (49.7% white, 27.1% black, 18.2% Hispanic in Newport area, with Rhode Island's general diversity currently standing at 81% white, 6.5% African American and 5.8% other races^{46, 47}) alongside Newport's world-class sailing conditions and reputation. The location of this school is important because of the relative distance of the school zoning area from the nearest coastline, approximately a mile and a half, and the diverse student population.

3.2 SAMPLE

Surveys were conducted in two 3rd grade classrooms and two 4th grade classrooms. The Sail Newport Pell School Sailing Program includes all eligible 4th graders from the Pell Elementary School in Newport. This includes roughly 200 9 to 10-year-olds from eight classrooms. These students are from a wide range of socioeconomic backgrounds, from living below the poverty line to coming from affluent families. Sixty eight percent of Pell Elementary School students are eligible for subsidized lunch, a number considerably higher than the state-wide rate of forty

⁴⁶ HMFH Architects State II Application for Housing Aid

⁴⁷ <http://worldpopulationreview.com/states/rhode-island-population/>

eight percent. In a SurveyWorks School-State Comparison Report Student Survey administered in 2014, thirty three percent of the Pell Elementary School students in the 4th and 5th grades identified as Hispanic or Latino, as opposed to the statewide percentage of twenty three percent. Twenty eight percent of students identified as Black or African American, as opposed to the thirteen percent statewide⁴⁸. Some students are children of immigrants and speak English as a second language. Some families have motorboats and sailboats of their own; others have never been out on the water before. The median family income in Newport is considerably lower than that in the rest of Rhode Island, roughly \$51,000 in Newport as compared to \$70,000 in Rhode Island. The number of children living in families below the federal poverty line in Newport has decreased over the last ten years from twenty five percent to fourteen percent, with income on a steady increase (median household income increasing fourteen percent in the last 3 years) but remains only slightly lower than the national average⁴⁹. The federal poverty threshold has been shown to underestimate the needs of families. Families and children are defined as low-income if the family income is less than twice the federal poverty threshold. Families and children are defined as poor if family income is below the federal poverty threshold; the federal poverty threshold for a family of four including two children was \$24,339 in 2016. Sixty five percent of students enrolled in Newport's public-school system are considered "low-income"⁵⁰,

⁴⁸ SurveyWorks 2013-2014 Student, Parent, Teacher Evaluation, Claiborne Pell Elementary School, <http://infoworks.ride.ri.gov/files/surveyworks/2013-2014/combined/surveyworks-2013-2014-claiborne-pell-elementary-school-student-parent-teacher-es.pdf>

⁴⁹ Department of Numbers, <https://www.deptofnumbers.com/income/rhode-island/>

⁵⁰ KidsCOUNT 2018 Factbook Snapshot of Newport, RI Report; *Indicators of Child Well-Being*

while Rhode Island's percentage of low-income children is estimated at only thirty nine percent.⁵¹

All 4th grade classes participated in the Sail Newport program, and two classrooms were selected to participate in the survey. 3rd grade classrooms had not yet participated in the Sail Newport program, and were treated as the control population. Two 3rd grade classrooms were chosen at random to participate in the survey. A total of 42 4th grade students and 46 3rd grade students completed the survey. This sample represents 25% of the 3rd grade and 28% of the 4th grade students at the Pell School. This relatively small sample is not necessarily generalizable to the wider 3rd and 4th grade student populations in Newport but provides an important case study that can be explored further.

3.3 SURVEY INSTRUMENT

Self-administered surveys were conducted with each of the four participating classrooms. Structured surveys are carried out as part of a fixed design and work best with standardized questions that are formulated to extract pre-determined formats of information.⁵² This survey used a combination of previously validated methodologies for children, relying on proven procedures for attaining valid quantitative responses from elementary school aged children. This survey was created using elements of surveys based on reading comprehension skills, environmental attitudes, and other

⁵¹ National Center for Children in Poverty, Columbia University, Mailman School of Public Health, New York, 2018 http://www.nccp.org/profiles/RI_profile_6.html

⁵² Robson, Colin, *Real World Research: A resource for social scientists and practitioner-researchers*, Second Edition, 2002, Blackwell Publishing, ISBN 0-631-21304-X

surveys used in public elementary schools in the United States. Substantial research on surveys and young children suggest the use of no more than four possible textual responses in a categorical survey, as young children can normally discriminate among no more than five discrete bits of information simultaneously. (e.g., Case & Khanna, 1981; Chi, 1978; Chi & Klahr, 1975; Nitko, 1983). Additionally, a consistent, appropriate expectation on the part of the students was established by wording each survey with a uniform beginning; i.e., “How do you feel....⁵³”

The surveys were given out in English and Spanish and took approximately 25 minutes to complete. The survey questions were read out loud two times before students were given the opportunity to answer. This practice was implemented because when a survey is read aloud, the “listening” or oral comprehension of text for children is approximately two years higher than their understanding of written material⁵⁴.

During the survey administrations, questions from students regarding the survey were fielded and answered. Each survey consisted of three parts: behavior/characteristics questions, knowledge questions, and attitude questions (See Appendix I for complete survey). The behavior/characteristics section addressed frequency of coastal visits, favorite coastal recreation activities, and connectedness to the coast. The knowledge section included questions related to Newport Harbor animal habitat, geographic location, and water pollution from boats. The attitude

⁵³ McKenna, Michael & J. Kear, Dennis. (1990). Measuring Attitude Toward Reading: A New Tool for Teachers. *Reading Teacher - READ TEACH.* 43. 626-639. 10.1598/RT.43.8.3.

⁵⁴ Vidal, K. (2011), A Comparison of the Effects of Reading and Listening on Incidental Vocabulary Acquisition. *Language Learning*, 61: 219-258. doi:[10.1111/j.1467-9922.2010.00593.x](https://doi.org/10.1111/j.1467-9922.2010.00593.x)

questions focused on feelings in response to various scenarios, such as steering a sailboat or going to the shore.

Figure 2: Graphic of correct option for location of Sail Newport

Figure 3: Example of the attitudes chart students were asked to choose from

3.4 DATA ANALYSIS

The survey responses were analyzed using the Statistical Package for Social Sciences, version 25. Descriptive statistics, such as frequency tables, were computed for responses to the survey questions. Chi square tests were run on the data from the 3rd graders or “non-participants”, the control group, and the 4th graders or

“participants”, the impact group, to investigate the relationship of participation in the Pell Elementary School Sailing Program to potential changes in attitudes, behaviors and knowledge. Chi-square tests were run on variables of interest such as boating as a favorite coastal activity and desire to be a sailor or someone who works with the water as an adult. These tests analyzed the impact of the program on participants and non-participants knowledge, attitudes and behaviors. Phi-values for these interactions were computed to indicate the strength of these relationships. These tests analyze the likelihood of 3rd graders and 4th graders answering questions in ways that indicated success of the program’s goals, such as belonging on the waterfront or feeling positive about steering a boat alone.

In addition, binary logistic regression was used to examine which factors had the greatest influence on one particular outcome, i.e. whether a student plans to be a boater in the future. Significance for all statistical tests was determined at the commonly-accepted 5% level.

3.5 INFORMAL PARTICIPANT OBSERVATION

Participant observation is a strategic method for collecting information like narratives, numbers, or other kinds of data. Some participant observation data is qualitative, such as field notes taken about things heard or seen during field work, but an equal amount is quantitative and based on methods like direct observation, questionnaires and pile sorts⁵⁵. For this project, I participated in informal participant

⁵⁵ Bernard, Harvey Russel, *Research Methods in Anthrology, Chapter 13: Participant Observation*, p. 361-363, AltaMira Press, 2002, University of Michigan, ISBN 0759101485

observation in which I observed the program but did not formally analyze the observational data. This field work was done to gain an understanding of the process of the program, get to know the students on an individual basis, and further the quality of my survey data interpretation (e.g., Bernard, 1988).

During the eight weeks of the Spring session of the Sail Newport program, I attended the Tuesday and Thursday morning Pell Elementary School sailing programs. I spent the first two weeks introducing myself to students and making certain the students, the sailing instructors, and the teachers were comfortable with my presence. The students acclimated to me quickly, as they were interacting with adults of a similar age teaching them sailing and were aware of the Sail Newport environment as possessing many new faces. During the students one-hour on-land curriculum, I participated in the activities, helped students answer questions, and observed students reactions to various prompts, their level of attentiveness to the instruction, their comfort in various settings (i.e., at the rocky shore, at the beach, in the classroom) and their general knowledge on topics such as pollution, ecosystems, and earth science.

CHAPTER 4

RESULTS

4.1 DESCRIPTIVE STATISTICS

Table 1: Summary Statistics of Relevant Variables⁵⁶

Variable	Description	# of Participants* (% out of 42 total)	# of Non-Participants* (% out of 46 total)
<i>Knowledge</i>			
Sail Newport Know	Correctly identify Sail Newport location on a map	36 (85%)	30 (65%)
Knowledgeable (marine life)	Correctly identify four or more animals living in Newport Harbor	41 (97%)	42 (91%)
Pollution	Correctly identify which boat makes less pollution (sailboat vs motorboat)	41 (97%)	39 (84%)
<i>Attitudes</i>			
Positive Boat Alone	I feel happy, excited, and/or silly when thinking about steering a boat by myself	30 (71%)	24 (52%)
Coastal Play Favorite	Playing by the water is my favorite coastal activity	23 (54%)	13 (28%)
Boating Favorite	Sailing or boating is my favorite coastal activity	24 (57%)	12 (26%)
Positive Shore	I feel happy, excited and/or silly when thinking about being on the shore	36 (86%)	35 (76%)
Belonging	The water is a place I feel I belong	27 (64%)	28 (60%)
Stewardship	I think about keeping the water I live near clean and healthy	26 (61%)	35 (76%)
Future Boater	In the future, I want to be a boater or someone who works with the water	24 (57%)	16 (34%)
Time on Water	If I could, I would spend more time on a boat or hanging out by the water	25 (59%)	21 (45%)
Polluting Negative	I feel frustrated, angry, worried and/or sad when thinking about polluting the water	41 (98%)	42 (91%)
<i>Behavior</i>			
Coastal Access	In the past year, I have gone to the waterfront for fun	23 (54%)	37 (80%)
Beach Goer	In the summertime, I go to the beach once or twice a week or every day	18 (42%)	29 (63%)
Coastal Recreator	In the past year, I have either gone on my friend's boat, gone on my family's boat, or gone to the waterfront for fun.	23 (55%)	18 (39%)

⁵⁶ *Participants refers to students in the 4th grade who have taken part in the Pell Elementary School

Sail Newport Program, Non-Participants refers to students in the 3rd grade who have not yet participated in the Pell Elementary School Sail Newport Program

4.2 RELATIONSHIP BETWEEN PROGRAM PARTICIPATION AND KNOWLEDGE, ATTITUDES AND BEHAVIORS

In order to analyze the effects of the Pell Elementary School Sailing Program and the expected outcomes of the program, chi-square tests were run to discover relationships between the Program and variables related to participants' attitudes, knowledge and behavior.

4.2.1 RELATIONSHIP OF SAILING PROGRAM AND ATTITUDES

Figure 4: Boating as a favorite activity (*Boating Favorite*) by participation in the Pell Sailing Program

Participation in the program is statistically significantly related to the variable *Boating Favorite* ($\chi^2 = 8.759$, p-value = 0.003, N = 88, df = 1). The strength of the relationship is moderate ($\phi = .315$, p = 0.003). There is a statistically significant relationship

between participation in the program and choosing boating as their favorite coastal activity.

Figure 5: Hanging out or playing by the shore as a favorite activity (*Coastal Play Favorite*) by participation in the Pell Sailing Program

The Pell Sailing program is statistically significantly related to the variable *Coastal Play Favorite* ($\chi^2 = 6.670$, p-value = 0.010, N = 88, df = 1). The strength of the relationship is relatively weak ($\phi = .275$, p = 0.010). Students who did not participate in the program are less likely to choose hanging out or playing by the water as their favorite waterfront activity than students who participated in the program.

Figure 6: Positive feelings in response to steering a boat alone (*Positive Boat Alone*) by participation in the Pell Sailing Program

There is a statistically significant relationship between participation in the program and the variable *Positive Boat Alone* ($\chi^2 = 3.433$ p-value = 0.051, N = 88, df = 1). The strength of the relationship is relatively weak ($\phi = -.198$, p = 0.064).

Students who participated in the program were more likely to indicate positive feelings (happy, excited, silly) in response to thinking about being on a boat alone than students who did not participate in the program.

There is a statistically significant relationship between the variable *Future Boater* and participation in the program (p-value = .035, N = 88, df = 1). This relationship is weak ($\phi = 0.224$).

Figure 7: Desire to be a Future Boater (*Future Boater*) by Participation in the Pell Sailing Program

Participation in the program was not statistically significantly related to the variable *Stewardship* ($\chi^2 = 3.283$ p-value = 0.194, N = 88, df = 1). in other words, there is no relationship between the program and wanting to keep the water clean and healthy. Participation in the program was not statistically significantly related to the variable *Polluting Negative* ($\chi^2 = 1.634$ p-value = 0.201, N = 88, df = 1), indicating that there is no statistically significant relationship between participation in the program and negative feelings (frustrated, angry, sad, worried) in response to thinking about polluting the water. Participation in the program is not statistically significantly related to the variable *Belonging* ($\chi^2 = 0.109$ p-value = 0.741, N = 88, df = 1), indicating that there is no relationship between participation in the program and feelings of belonging at the waterfront.

4.2.2 RELATIONSHIP OF SAILING PROGRAM AND KNOWLEDGE

Figure 8: Location of Sail Newport Identification (*Sail Newport Know*) by participation in the Pell Sailing Program

Participation in the program is statistically significantly related to the variable *Sail Newport know* ($\chi^2 = 4.919$ p-value = 0.027, N = 88, df = 1). The strength of the relationship is moderate ($\phi = -.236$, p = 0.027). Students who participated in the program are more likely to correctly identify the location of Sail Newport on a map.

The program is not statistically significantly related to the variable *Knowledgeable* ($\chi^2 = 1.634$ p-value = 0.210, N = 88, df = 1), indicating that there is no statistically significant relationship between the program and correctly identifying animals who live in Newport Harbor.

The program is not statistically significantly related to the variable *Pollution Knowledge* ($\chi^2 = 2.672$ p-value = 0.102, N = 86, df = 1), indicating that there is no relationship between participation in the program and correctly identifying a motorboat as the boat which creates the most pollution when given a choice of motorboat or sailboat.

4.2.3 RELATIONSHIP OF SAILING PROGRAM AND BEHAVIOR

The program is not statistically significantly related to the variable *Coastal Recreator* ($\chi^2 = 2.156$, p-value = 0.142, N = 88, df = 1), indicating that there is no relationship between participating in the program and accessing the coast through Sail Newport not during school, going on a family's boat, going on a friend's boat, or going to the waterfront for fun in the past year. Participation in the program is not statistically significantly related to the variable *Coastal Access* ($\chi^2 = 6.567$, p-value = 0.287, N = 88, df = 1), indicating that there is no relationship between participating in the program and going to the waterfront for fun. The program is not statistically significantly related to the variable *Beach Goer* ($\chi^2 = 5.276$, p-value = 0.287, N = 88, df = 1).

4.3 OTHER FACTORS RELATED TO EXPECTED PROGRAM OUTCOMES (KNOWLEDGE, ATTITUDES, BEHAVIOR)

This section examines the relationships among various factors and expected program outcomes, such as *Boating Favorite*, *Future Boaters*, *Positive Boat Alone*, *Coastal Recreator*, *Sail Newport Know*, and *Knowledgeable*.

There is a statistically significant relationship between the variables *Positive Boat Alone* and *Boating Favorite* ($\chi^2 = 9.465$, $p\text{-value} = 0.002$, $N = 88$, $df = 1$). The relationship between the variables is moderate ($\phi = .38$, $p = 0.002$).

Figure 9: Positive Feelings in Response to Steering a Boat Alone (*Positive Boat Alone*) by Choosing Boating as a Favorite Activity (*Boating Favorite*)

There is a statistically significant relationship between the variables *Coastal Recreators*, which includes those who either went sailing at Sail Newport not during school, went on a family member's boat, went on a friend's boat, or went to the waterfront for fun, and *Beach Goer*, which includes those who go to the beach every

day or a few times a week in the summer ($\chi^2 = 4.505$, p-value = 0.004, N = 88, df = 1).

The relationship between the variables is moderate ($\phi = -0.219$, p = 0.002).

Figure 10: Participating in Coastal Recreation in the Past Year (*Coastal Recreator*) by Those Who Frequent the Beach (*Beach Goer*)

There is a statistically significant relationship between the variables *Sail Newport Know* and *Boating Favorite* ($\chi^2 = 7.592$, p-value = 0.012, N = 88, df = 1). The relationship between the two variables is relatively weak ($\phi = 0.267$, p = 0.002).

Figure 11: Sail Newport Location ID (*Sail Newport Know*) by Choosing Boating as a Favorite Activity (*Boating Favorite*)

There is a statistically significant relationship between the variable *Sail Newport Know* and *Positive Boat Alone* ($\chi^2 = 3.667$, p-value = 0.023, N = 88, df = 1). This relationship is weak ($\phi = 0.243$, p = 0.002)

Figure 12: Sail Newport Location ID (*Sail Newport Know*) by Positive Feelings in Response to Steering a Boat Alone (*Positive Boat Alone*)

There is a statistically significant relationship between the variables *Knowledgeable* (those students who answered four out of six animal identification questions right) and *Future Boaters* (those students who indicated that they wanted to be a sailor or someone who works with the water when they grow up) ($\chi^2 = 4.418$, p-value = 0.036, N = 88, df = 1). The relationship between the two variables is relatively weak ($\phi = 0.224$).

Figure 13: Knowledgeable about Animals in Narragansett Bay (*Knowledgeable*) by Desire to be a Future Boater (*Future Boater*)

4.4 FACTORS HAVING THE GREATEST INFLUENCE ON THE OUTCOME OF BEING A FUTURE BOATER

A logistic regression was performed to analyze the relationship between Participation in the Program (*Grade*), Belonging (*Belonging*), and Positive Attitudes about Boating Alone (*Positive Boat Alone*) and the likelihood that a student would want to be a boater or someone who works with the water in the future (*Future Boater*). The logistic regression model was statistically significant ($\chi^2 = 9.509$, p-value = 0.023, df = 1). The model explained about 13.7% (Nagelkerke R^2 statistic) of the variance in desire to be a Future Boater and correctly classified 67% of cases.

The odds of a student wanting to be a boater or someone who works with the water in the future (*Future Boater*) when they did *not* have feelings of belonging at the coast (*Belonging*) is 0.365 times that of a student who *does* feel they belong at the coast (p-value = 0.037). The odds of a student wanting to become a boater or someone who works with the water when they grow up (*Future Boater*) when they did *not* participate in the program (*Non-Participant*) is about 0.405 times that of a student who did participate in the program (*Participant*) (p-value = 0.05). The variable *Positive Boat Alone* did not contribute to this model (p-value = .711). These findings indicate that students who say they want to be future boaters are more likely to feel like they belong at the coast and to have participated in the Pell Sailing Program.

CHAPTER 5

DISCUSSION

This chapter first provides a brief overview of the results, focusing mainly on the impact of the program on participants' knowledge, attitudes and behavior. I discuss the results of this study within the context of the current literature. I also discuss the implications of my results on programs like the Pell Elementary School Sailing program that may be developed in the future, and how programs like the Pell Sailing program might be improved to better reach stated goals. Finally, I discuss the limitations of my study and offer insights for future studies.

5.1 OVERVIEW

The goals of the Pell Elementary School Sailing Program, as found in the program's mission statement, are to provide hands-on educational opportunities for children in the community to be exposed to life on and under the waters of Narragansett Bay and beyond. Additionally, the mission statement focuses on educating participants in the fundamentals of sailing, sustainability, marine science, weather and ocean conservation. My survey analyzed the impacts of this program on participants' knowledge, attitudes and behaviors as they pertained to these goals, but also as they related to goals of environmental education at large, such as creating a sense of place or belonging in the environment, increasing recreational access, and

cultivating behaviors and feelings of stewardship in the environment. Survey findings indicate that the Pell Elementary School Sailing Program helped students learn how to sail, promoted enjoyment of sailing, and taught them about sustainability, the environment, the mechanics of sailing, and Narragansett Bay. My informal observations of the program during the 8-week spring session supported my survey findings and provided additional insights on student connections to the ocean and sailing. These observations helped me to understand more fully how the participants felt about the ocean, about sailing, and the program. These observations gave me insights as to the program's effects that were not evident from survey data alone. Both the informal observations and the survey data provide insights as to the immediate changes in knowledge, attitudes and behavior that resulted from participation in the Sail Newport program. What neither the observations nor survey data can provide, however, is information about the future. What this program, like many environmental education programs, sets out to accomplish may take years to become evident. If this program successfully plants a seed of value and love for the coast as a place of recreation and accessibility in students who might otherwise never be given the opportunity, neither the surveys nor participant observations would necessarily capture that. Students in this program are from a diversity of backgrounds. Many of these students told me that had never previously been on a boat or seen Aquidneck Island from the water. This opportunity may have been their first and potentially only chance to begin a relationship with the water they are surrounded by.

5.2 PROGRAM EFFECTS ON KNOWLEDGE, ATTITUDES AND BEHAVIOR

There were several statistically significant and interesting relationships between a student's participation in the Sail Newport Pell Elementary School Sailing program and their knowledge, attitudes and behavior. Analysis of the survey data helped better understand these relationships, as did observational findings and statements made by individual students participating in the program. Of specific interest were changes in geographic knowledge, positive feelings regarding sailing, feelings of belonging at the coast, and coastal recreation behaviors.

5.2.1 PROGRAM EFFECTS ON KNOWLEDGE

The Sail Newport Pell Elementary School mission statement includes exposing and educating participants to the fundamentals of sailing, sustainability, marine science, weather and ocean conservation. Curriculum documents highlight geographic awareness and Narragansett Bay wildlife and habitat as educational goals. Findings indicate that only geographic knowledge (as observed through the variable "*Sail Newport Know*") was directly affected by participation in the Pell Elementary School Sailing program. There were no direct relationships between participation in the program and knowledge questions regarding animals who live in Narragansett Bay (as observed through the variable "*All Know*"). Participants and non-participants alike were knowledgeable about the animals; it may be that this is a topic covered during in-school education for both third and fourth graders. No survey questions were asked analyzing knowledge changes in sailing, weather, or ocean conservation practices as

an impact of the program. It is possible that the program affected knowledge on these topics, but the survey was not designed to capture these impacts. The influence on students' knowledge of the location of Sail Newport reflects an increase in geographic comprehension that might give students more capacity to return to Sail Newport now that they know of its location. Knowing where a publicly available sailing center is located seems like an important aspect of experiential knowledge needed for students to access the coast in the future.

In my time observing the students at Sail Newport, I noticed a substantial increase in sailing knowledge as the second 8-week session went on. Students were more and more willing to provide answers to sailing instructors while on the water regarding the parts of the boat, the points of sail, and the landmarks surrounding Sail Newport's harbors. Of particular interest to the students was the Claiborne Pell bridge, which could be seen from the sailboat. Students were quick to point it out and identify it, doing so with pride. At the conclusion of the spring session, the students participated in a "Sailing Jeopardy" activity, which served as a test of the sailing knowledge learned in the previous eight weeks. This version of the famous television game was split into four categories: Sailing Guidelines/Safety, Lines, Boat Parts, and Navigation. There were certain questions everyone knew the answer to; for instance, parts of the boat such as the keel, tiller and boom were easy wins. More complex parts of the boat stumped most students; the winches (a gear used to assist in sheet trimming), for example, proved a difficult name to remember. The "Boat Parts" category, in fact, was the first to be completed. Navigation proved somewhat more difficult; students had a hard time remembering the names of various points of sail like

“run” and “beam reach.” Sailing Guidelines/Safety questions had clearly been drilled into the minds of students repeatedly – the term “lifejacket” was used in response to many safety questions, as were the rules against running on the dock and ducking when the boom swings over. The students demonstrated a clear understanding of the basics of sailing, knowledge of parts of the boat, and navigational landmarks surrounding Sail Newport.

The Sail Newport Jeopardy game demonstrates that the Pell Elementary School Sail Newport program seemed to increase sailing knowledge of the students. As noted, the survey instrument did not ask about sailing knowledge. It would be useful for future studies to examine impacts of this program on sailing knowledge. Questions did ask about conservation and pollution knowledge, but the survey data did demonstrate a change in knowledge on these topics.

Students participating in the program demonstrated a high level of awareness on these issues, however. Pollution and stewardship were concepts stressed by Sailors for the Sea during their day of curriculum with the program. Sailors for the sea is an organization based in Newport that focuses on ocean health through sailing and racing. Sailors for the Sea was one of several not-for-profit groups partnering with Sail Newport to provide curriculum on stewardship and marine pollution. During their lesson on April 26th, 2018, compost, natural resources and plastic pollution were taught using demonstrations of items made from natural resources that became elements of marine pollution. Items such as aluminum, newspaper, cardboard, fishing line, straws and shampoo bottles were shown to students, who were asked to guess how long each item might take to break down in the ocean. Students demonstrated

familiarity with these concepts, answering these questions accurately and with conviction. Students were familiar with terms such as microplastics, compost, and natural resources. When asked how the problem of plastic pollution might be solved, students offered applicable solutions such as using reusable items, picking up garbage when it is seen, recycling, and reusing single-use bottles and containers. This level of knowledge and comprehension indicates that students were familiar with concepts like marine pollution and recycling and may very well have had more developed ideas of stewardship than were captured in the basic-level questions included in the survey. This may have been the product of an inadequate number and structure of pollution and stewardship-based questions. The survey only included one question related to conservation literacy which asked which of two boats (a sailboat and a motorboat) produced the most water pollution.

Identifying areas in which survey questions can more accurately assess knowledge is an important area of research for evaluation of programs like the Pell Elementary School Sail Newport program. Accurately reporting changes in knowledge in areas such as ocean health, sustainability, conservation measures, and local ecological knowledge is an important indicator of the impact of place-based environmental education programs achieving their goals. In a study evaluating literacy and stewardship on the Great Lakes, Dann and Schroeder (2015) focused on increased knowledge and literacy as a result of a one-week 4-H Great Lakes youth camp. The camp programs are structured to reflect place-based educational best practices and demonstrated a significant increase in Great Lakes literacy in participants. Great Lakes

literacy questions focused on lake biology, ecology, fish anatomy and habitat.⁵⁷

Similarly worded questions could be used in future evaluations for programs like the Pell Elementary School Sail Newport program.

5.2.2 CHANGES IN ATTITUDES TOWARDS SAILING AND THE COAST

In addition to increasing knowledge about sailing, conservation and coastal environments, the Pell Elementary School Sailing Program ventured to change attitudes about the coastal environment through place-based education, recreation and familiarity. The survey data does not show obvious changes in participants' attitudes to things like environmental stewardship, pollution, or feelings of belonging at the coast. This may have been a product of question wording. It may also be a product of a shortcoming of the program itself, which I will discuss in detail in later sections. It did, however, indicate substantial changes in participant's attitudes about sailing. Participants in the program demonstrated a marked increase in positivity surrounding boating and coastal recreation, as analyzed through the variables *Boating Favorite* and *Coastal Play Favorite*. This trend is reinforced by the relationship between the program and positive attitudes regarding steering a boat alone. Participants in the program developed positive feelings in response to steering a boat alone, something that reinforces the program's effects on participants' increased affinity towards boating and the sport of sailing. These findings are reinforced by the "I Like Sailing Because..." prompts seen in Figures 1 and 2, drawn by students after completing the

⁵⁷ Dann, Shari L., Schroeder, Brandon, (2015) Developing Great Lakes Literacy and Stewardship through a Nonformal Science Education Camp, *Universities Council on Water Resources*, Journal of Contemporary Water Research & Education, Issue 156, pgs 21-36, Dec 2015

Sail Newport program. These drawings and captions indicate the fun and enjoyment students got from sailing.

Participant observation reinforced this observed affinity. When students got off the bus from their school each day, the first question they asked were almost always regarding who got to go sailing first, and how long they would get to be on the water. While on the water, several students demonstrated their excitement by lots of laughing and giggling, excited screaming, running their hands in the water, and asking excitedly when they would have a chance to steer the boat. Students enthusiastically told me about experiences they had on boats outside of the Sail Newport program on boats belonging to friends or family members. The most convincing demonstration of a students' excitement and enjoyment came from a boy who had experienced some disagreement with his friends and was visibly upset by this interaction. He sulked for the on-land portion of the lesson, barely participating and remaining aside from the group with his arms crossed. He remained surly while the boat was being rigged and prepared, but as soon as the boat got underway, his arms uncrossed, his brow unfurrowed, and he began to smile. He was quickly cured of his poor mood and appeared to forget entirely about the disagreement that kept him distanced from the on-land segment of class.

Participants in the program were more likely to indicate a desire to be a boater or someone who works with the water in the future. These findings indicate that the program succeeds in beginning to shape future sailors, boaters, or people who work with the water. Creating these attitudes in elementary-school aged children is integral to influencing life-long practices. Participants in the program, through their increased

positivity towards sailing, may seek out opportunities to sail in the future because of their formative sailing experiences through this program.

In many cases, students would not have had the opportunity to experience sailing outside of this program. While there is no direct evidence that sailing leads to environmental stewardship, there is evidence that exposure of elementary-school aged children to place-based environmental learning can have significant impacts on environmental literacy and positive attitudes regarding environmental places, which can then impact environmental behavior.⁵⁸

The structured exposure to coastal recreation offered through this program may have been unavailable to students otherwise. This exposure is an important factor in shaping future environmental behavior, as students introduced to coastal recreation may develop feelings of value for these places in the future.

⁵⁸ Leeming et al, 1995

Figure 14: Student illustration and description of what they like about sailing

Figure 15: Student illustration and description of what they like about sailing

Figure 16: Student illustration and description of what they like about sailing

Figure 17: Student illustration and description of what they like about sailing

5.2.3 PROGRAM EFFECTS ON BEHAVIOR

The survey data reveal little to no relationship between participation in the program and changes in behavior. The survey demonstrates no connection between participation in the program and increased coastal access or increased pro-environmental behavior. It may be that the survey questions did not capture changes in behavior that did occur as a result of the program, or that the program simply did not encourage behavioral changes in participants. There is a growing field of scholarly research that analyzes the “agency” of children in behavioral studies. Much of the recent work on this field rejects the notion that children exercise agency; that is, that children knowingly act on their worlds to change them⁵⁹. Instead, most scholars agree that the behavior of children is controlled mostly by their parents, or whatever adult is given the responsibility of caring for them. Questions in the survey addressed frequency of access to certain resources, such as a family or friend’s boat. The survey also addressed the frequency with which students went to the beach or accessed the coast after participating in the program. An inability to control recreational activities in elementary-school aged children may make these questions ineffective. Students participating in the Sail Newport program, as students aged seven-to-nine years old, are not likely to make decisions regarding recreation on their own. Students may not have the ability to access coastal resources without their parents’ participation, even in a coastal island setting such as Newport and Aquidneck Island.

⁵⁹ Lancy, David F., "Unmasking Children's Agency" (2012). *Sociology, Social Work and Anthropology Faculty Publications*. Paper 277. https://digitalcommons.usu.edu/sswa_facpubs/277

What may currently result from participation in the Pell Elementary School Sailing program, however, is a level of experiential knowledge in boating at Sail Newport that may affect behavior in participants in the future, when agency is awarded (i.e., once students are of driving age, can choose recreational activities after school, etc.). The survey instrument did not account for this future possibility outside of the variable “*Future Boater*,” which investigated participant’s interest in returning to the water as a sailor or someone who works with the water as an adult. The results of this question indicate that there is a connection between participating in the Pell Elementary School Sailing Program and a desire to return to the water, once agency is a possibility. Therefore, while behavioral changes in recreational access to the coast were not apparent from this study, there is no reason to believe that participation in this program will not have effects on the future of access and inclusion in Newport.

5.3 SENSE OF BELONGING IN AND AROUND THE SHORE

Two essential outcomes of the Pell Elementary School Sailing Program were changes in feelings of belonging and changes in attitudes regarding stewardship. A sense of belonging at the coast is made up of emotional connectedness to this area, potentially a product of exposure and repeated positive experiences. Eco-psychologists contend that feelings of connection to nature are an important predictor of a type of ecological behavior known as stewardship. In this way, these two concepts (belonging and stewardship) are closely tied together. A product of belonging or connectedness to nature is the extension of the moral community to include the land – or in this case,

the coast⁶⁰. As stated in Mayer and Franz (2004), the inclusion of land or the natural world in one's moral community includes an expansion of one's sense of self; one's own welfare becomes tied to the welfare of the natural world. It is this demonstrated linking of care that the Pell Sailing program seeks to instill in participants.

The survey instrument demonstrated a connection between choosing boating as a favorite coastal activity and feeling a sense of belonging at the coast. Additionally, students who indicated feelings of belonging at the coast were more likely to express a desire to be a boater or someone who works with the water in the future. Furthermore, participants in the program were more likely than non-participants to indicate that they wanted to be a boater or someone who works with the water when they grow up. Other tests indicating connections between being knowledgeable (either about the location of Sail Newport and/or animals that live in Narragansett Bay) and choosing boating as a favorite activity indicate that there is a connection between learning in this experiential setting and a desire to return to it.

There was a significant relationship between the variables *Boating Favorite* and *Belonging*. Findings show that those who did not indicate that boating was their favorite coastal activity were less likely to indicate that they felt like they belonged at the coast. What this demonstrates is that an increased level of enjoyment of boating is related to a feeling that one belongs at the waterfront. This sense of belonging is important; a sense of place and connectedness to nature is one of the key goals of environmental education. While the Sail Newport program is not in itself statistically related to feelings of belonging, it is related to choosing boating a favorite coastal

⁶⁰ Mayer, F. Stephan. Franz, Cynthia MacPherson, *ibid*

activity, which may eventually grow into feelings of belonging at the coast. Students may be able to choose sailing later in life.

5.4 WHY SAILING?

Environmental education has been promoted as a way to shape the state of connectedness to nature, pro-environmental attitudes and environmental knowledge⁶¹. The literature states that this is a result of increases in both informational and experiential knowledge, as well as through a connection to nature that occurs as a product of familiarity with outdoor spaces, enjoyment of outdoor activities, and a sense of belonging in the spaces that make these experiences possible. Various scholars have observed the importance of developing learners' sense of place in addition to knowledge and scientific literacy as precursors to stewardship⁶². Sailing has been acknowledged as an effective method for promoting the connection between sociocultural history and activity in experiential education settings, fostering a more developed sense of place⁶³. The sport of sailing requires an intimate and focused relationship with the space in which it takes place. To succeed in sailing a boat, a sailor needs to have a basic understanding of fundamental aspects of wind, wave energy, and hydrodynamics. Unlike operating a motor-powered vessel, a sailing vessel puts the skipper in closer connection with the nature surrounding it, not farther away.

⁶¹ Lieflander, Anne K., (2015) Effectiveness of environmental education on water: connectedness to nature, environmental attitudes and environmental knowledge, *Environmental Education Research*, Vol. 21, No. 1, pages 145-166, <http://dx.doi.org/10.1080/13504622.2015>

⁶² Vaske J.J. and K.C. Kobrin, 2001, Place attachment and environmentally responsible behavior, *Journal of Environmental Education*, 23(4): 16-21.

⁶³ Leather, Mark & Nicholls, Fiona (2016) More than activities: using a 'sense of place' to enrich student experience in adventure sport, *Sport, Education and Society*, 21:3, 443-464, DOI: [10.1080/13573322.2014.927758](https://doi.org/10.1080/13573322.2014.927758)

On the Sail Newport Pell Elementary School webpage, sailing is lauded as a way to instill confidence and self-reliance, teach teamwork, planning, problem solving and communication, connect people to nature, instill discipline and maturity, inspire learning about weather, water and the marine environment, and teach skills that transfer to life success at school, at work and in the community⁶⁴. Most important of these skills, I would argue, is the ability of sailing to connect people to nature. Sailing brings people to the coast and creates a deep connection between sailor and water. These are the connections that I believe foster stewardship and protection.

The coastline in America is a contentious space; development and preservation compete for limited space in an already sensitive and dynamic setting. A closer look at these contentions will reveal a similar tension between available recreational coastline; that is, the social battle between classes competing for highly inadequate coastal space. This contention has been underway for centuries (i.e., settler colonialism) and under the public eye since at least Ned Coll's famous hike along Connecticut's coast to raise awareness about public beach access⁶⁵. Spaces of recreational access to the coast are too often limited to certain groups of people, including those with the financial ability and social acceptance to either privatize public land or provide social capital as a means of excluding others. Extending recreational access to the coast means creating spaces for a diverse base of recreators, such as sailors, swimmers, surfers, beachcombers, and coastal activists of all backgrounds. Programs like Sail Newport pave the way for a future in which this is possible. Increasing knowledge and

⁶⁴ Sail Newport Programs Home Page – Pell Elementary School Sailing Program, <https://sailnewport.worldsecuritysystems.com>

⁶⁵ Kahr, Andrew W., *Free the Beaches: The Story of Ned Coll and the Battle for America's Most Exclusive Shoreline*, Yale University Press, 2018, ISBN 978-0-300-21514-4, p. 225

improving attitudes towards sailing in a diverse group of students like those who participated in the Pell Elementary School Sailing Program may lead to a better protected coast, with coastal stewards of a variety of backgrounds. Students who grew to love the coast and the sport of sailing are more likely to protect it in the future. Additionally, students who may not have otherwise had the opportunity to participate in coastal recreation activities like sailing now have the informational and experiential knowledge to repeat these behaviors in the future.

5.5 LESSONS LEARNED AND RECOMMENDATIONS

The Pell Elementary School Sail Newport program set out to expose and educate participants to the fundamentals of sailing, sustainability, marine science, weather and ocean conservation. Many of these mission goals were met. Program participants left the program with a higher level of sailing knowledge, an exposure to marine science and sustainability concepts, and an appreciation for the coastline. Other goals, such as increased knowledge in ocean conservation methods, an increased desire to engage in sustainability efforts, and changes in coastal access were not evident in the findings.

In order to more effectively capture the elements of coastal access in children, survey instrument questions could address changes in *desires* to access the coast more frequently. Alternatively, educational programs seeking to increase coastal access in elementary-aged children may expand programming to include families and caregivers. Expanding programming to include families – potentially realized through

a weekend of programming inviting families to Sail Newport – may enlighten parents to possibilities for coastal recreation of which they would not otherwise be aware.

Studies that seek to understand programs like these would benefit from the following suggestions:

- 1) Gather baseline data more broadly on knowledge base; include questions regarding sailing knowledge and sociocultural location knowledge (history of Newport, sailing culture, etc.)
- 2) Gather data from families as well as children, as children lack agency to control many behavior changes.
- 3) Perform analysis on individuals before and after they participate in the program instead of participants and non-participants as a whole; changes in individuals can be more informative than overall changes (this study was unable to contain this analysis due to time constraints).

Institutions that seek to achieve goals such as those stated in the Sail Newport Pell Elementary School Mission would benefit from the following changes to curriculum and education:

- 1) Include family members in program, as students are unable to increase coastal access without caregivers
- 2) Incorporate sociocultural activities and lessons (i.e., history, arts, traditions) into programming in order to form more obvious connections between the place students are learning and the activity of sailing

Coastal managers looking to expand recreational access may consider the following suggestions:

- 1) Ensure there are family-friendly events planned on the coast to encourage visitation; these may include beach clean-ups, kayaking and paddle boarding, bird-watching, and, of course, sailing demonstrations.
- 2) Coastal managers should partner with programs like the Pell Elementary School Sail Newport program to better integrate into the overall program more public access to sites beyond Sail Newport. This would broaden the program and extend opportunities to students outside Sail Newport.

CHAPTER 6

CONCLUSION

6.1 CONCLUSION

The coastal zone is a dynamic and contentious place. This area of high demand is under pressure from competing interests, each seeking to utilize the coast in unique ways. Coastal recreation has often found itself low on the list of priorities for the coast in the US, leaving only a small margin of area available for the general public to access the water. This limitation is exacerbated by privatization of the coastal area and other mechanisms for keeping certain groups of people out and ensuring access for others. This cannot remain; a coast that is accessed only by a homogenous group of people is one that is vulnerable to limited perspectives for management. Recreational coastal access must be extended beyond its current borders to include the public at large, not just a subset of the public.

Beyond the inherent value of a diversified coast, this expansion of access may bring about a larger population of environmental stewards, while simultaneously inclusively changing what stewardship consists of. Exposing all members of the public, not just a select few, to the fragility of the coastal ecosystem, the joys of coastal recreation, and the value of belonging to the coastal community may create new motivations for environmentally friendly behavior. The introduction of place-based experiential environmental education programs, such as the Pell Elementary School Sail Newport Program, that expose students to coastal ecosystems at a young

age, are an effective method for cultivating environmentally-friendly attitudes, knowledge and behaviors. In ethnically and financially diverse cities like Newport, these programs can effect substantial change on populations that have been historically excluded from coastal recreation. Programs like Sail Newport can mold children who care about the water and the coast - and by molded by them, too - and will be more prepared to engage with and further the fight for environmental well-being at the water's edge.

APPENDICES

APPENDIX 1: Consent form for parents

Parental / Legally Authorized Representative Permission Document for Research

To Whom It May Concern:

My name is Leah Feldman, and I am a graduate student in the University of Rhode Island's Marine Affairs department. I am reaching out in regards to your child's participation in Pell Elementary School's Sail Newport Education program.

For my University of Rhode Island Graduate School master's thesis, I, alongside Professor Tracey Dalton, Marine Affairs Department Chair of URI, am conducting a study analyzing the impact of this program on student's environmental knowledge, attitudes and behaviors regarding the coast. For this purpose, I have created a survey to measure things like frequency of visits to the water and knowledge of marine life and geography. This survey will take about 15 minutes, and will be administered at Sail Newport if your child is in 4th grade and in the classroom if your child is in 3rd grade.

The risks associated with this survey are minimal. Your child may feel uncomfortable thinking about topics such as pollution and access. These risks are similar to those experienced when discussing personal information with others. If your child feels upset from this experience, you or your child can tell the researcher, and he/she will tell you about resources available to help. There is no benefit for taking part in this study. However, we hope the information we get from this study may help develop a greater understanding of access programs such as Sail Newport in the future.

This survey will remain confidential, and no names will be connected with the results of the survey. The students will be asked to give their assent to participate in the survey, but in order to ensure informed consent you as parents must also agree to have your child participate. This survey is entirely optional, and your child will not be punished or excluded from any activities if they do not participate. You are under no obligation to allow your child to participate in the survey.

If you wish to **remove your child from this study**, please sign and return this paper. If you have any questions about this study, please feel free to contact me at leahfeldman10@uri.edu or Professor Tracey Dalton at Dalton@uri.edu.

Thank you very much!

Best wishes,

Leah Feldman
University of Rhode Island
Masters of Marine Affairs

By signing this consent form, I confirm I have read the information in this parental permission document and have had the opportunity to ask questions. I will be given a signed copy of this parental permission document. I do not wish to have my child participate in this study.

Printed Name of Child

Printed Name of Parent/Guardian

Signature of Parent/Guardian

Relationship to Child

Date: _____

Department of Marine Affairs

A quien le interese:

Mi nombre es Leah Feldman y soy estudiante de posgrado en el Departamento de Asuntos Marinos en la Universidad de Rhode Island. Estoy contactando con respecto a la participación de su hijo en el programa “Sail Newport Educacion de la Escuela Primaria Pell”. Para mi tesis de maestría en la Escuela de Posgrado de la Universidad de Rhode Island, estoy estudiando el impacto de este programa en el conocimiento, actitudes y comportamientos ambientales de los estudiantes. Por este propósito, he creado una encuesta para medir cosas como la frecuencia de visitas al oceano y el conocimiento de la vida marina y la geografía.

Esta encuesta se mantendrá confidencial y no se vincularán nombres con los resultados de la encuesta. Se les pedirá a los estudiantes que den su consentimiento para participar en la encuesta, pero ustedes como padres también deben aceptar que su hijo participe. Esta encuesta es completamente opcional y su hijo no será castigado ni excluido de ninguna actividad si no participa. No tiene la obligación de permitir que su hijo participe en la encuesta.

Si desea eliminar a su hijo de este estudio, firme y devuelva este documento.

Muchas gracias,

Leah Feldman
University of Rhode Island
Masters of Marine Affairs

Yo, _____, deseo eliminar a mi hijo del estudio de Vela de la Escuela Primaria Pell de la Universidad de Rhode Island.

Fecha: _____

APPENDIX 2: Assent Form for Participants

Hello!

You are being asked to do a **SURVEY**. Do you know what a **SURVEY** is?

A **SURVEY** is kind of like a TEST, but there are **no wrong answers**! A **SURVEY** is something that helps someone understand a certain subject. Today our subject is the water and **YOUR** relationship to it.

If you are reading this, you are either a 3rd grader getting ready to learn to sail, or a 4th grader who has mastered the high seas with Sail Newport. We want to know a little about what this program has done, or might do, for you.

Remember, there are NO wrong answers! We just want to know about your time at Sail Newport. We hope that maybe someday other public schools will get to have programs like this, and everyone will be able to use the water like you have.

Don't worry, no one except my team and I will be able to see your answers, and it will stay TOTALLY confidential. Confidential means your answers are safe! If you have any questions about this, or the survey itself, please feel free to ask your teachers or me.

You do NOT have to take this survey. Saying no to this survey will not affect your grades in your class. If you DO want to take the survey, write your name on the dotted line below. You can stop taking the survey at any time. This survey will take about 15 minutes.

Thank you!

I was able to ask questions about this study. Signing my name at the bottom means that I agree to be in this study. My parent or guardian and I will be given a copy of this form after I have signed it.

Your Printed Name

Date

Sign your name

Printed Name of Person Obtaining Consent

Signature of Person Obtaining Consent

Date

_____ **The participant is capable of reading the assent form and has signed above as documentation of assent to take part in this study.**

_____ **The participant is not capable of reading the assent form, but the information was verbally explained to him/her. The participant signed above as documentation of assent to take part in this study.**

Leah Feldman

University of Rhode Island
Department of Marine Affairs

Hola!

Te piden que participes en una ENCUESTA. ¿Sabes que es una ENCUESTA?

UNA ENCUESTA es como una PRUEBA, pero no hay respuestas incorrectas! Una ENCUESTA es algo que ayuda a un graduado (¡como yo!) A recopilar información sobre cierto tema. Hoy, nuestro tema es el agua, y SU relación con ella.

Si estás leyendo esto, eres un alumno de 3er grado que se está preparando para aprender a navegar, o un alumno de 4º grado que ha dominado el “heavy seas” con Sail Newport. Queremos saber un poco sobre lo que esta experiencia ha hecho o podría hacer por ti.

Recuerda que, ¡NO hay respuestas incorrectas! Solo queremos saber sobre tu experiencia. Esperamos que algún día otras escuelas públicas puedan tener programas como este, y todos puedan usar el agua con todo su potencial.

No se preocupe, nadie excepto mi equipo y yo podremos ver sus respuestas, y se mantendrá TOTALMENTE confidencial. ¡Confidencial significa que tus respuestas están seguras!

No tienes que hacer esta encuesta si no quieres. Diciendo no a esta encuesta no afectará sus calificaciones en su clase de ninguna manera. Si DESEAS tomar la encuesta, escribe tu nombre en la abajo. Recuerda que tu puedes dejar de tomar la encuesta en cualquier momento.

¡Gracias!

Su nombre impreso Fecha

Firma con tu nombre

Nombre impreso de la persona que obtiene el consentimiento

Firma de la persona que obtiene la fecha de consentimiento

_____ **El participante es capaz de leer el formulario de consentimiento y ha firmado arriba como la documentación del consentimiento para tomar parte en este estudio.**

_____ **El participante no es capaz de leer el formulario de consentimiento, pero la información fue explicada verbalmente a él / ella. El participante firmó anteriormente como la documentación del asentimiento para participar en este estudio.**

APPENDIX 3: Survey Instrument

Hello! Thank you for taking this important survey about the ocean and your relationship to it. Please be sure to mark your answers clearly on the survey.

1) In the past year, I have done the following things:

(Check off all that you've done)

- ☐ Went sailing at Sail Newport during school
- ☐ Went sailing at Sail Newport not during school
- ☐ Went swimming in natural water (ocean, bay, lake – NOT a pool)
- ☐ Went on my family's boat
- ☐ Went on a friend's boat
- ☐ Went to the waterfront for fun (the beach, the bay, a dock)

2) In the summertime, I go to the beach or the shore: (choose one)

- ☐ Every day
- ☐ Once or twice a week
- ☐ A few times per summer
- ☐ Never

FOR 4th GRADERS ONLY:

3) Since participating in the Sail Newport program, I go to the waterfront: (choose one)

- ☐ More
- ☐ Less
- ☐ The same amount

4) Which of the following activities is your favorite? (You can choose more than one!)

- ☐ Swimming in natural water (ocean, bay, lake)
- ☐ Walking or playing near the water
- ☐ Fishing
- ☐ Sailing or going on a motorboat

5) If I could, I would spend more time on a boat or hanging out by the water: (choose one)

- ☐ Yes
- ☐ No
- ☐ I don't know

6) In the future, I want to be a sailor or someone who works with the water: (choose one)

- ☐ Yes
- ☐ No
- ☐ I don't know

KNOWLEDGE

7) Which of these animals live in the water in Newport Harbor? (Circle as many as you want)

HARBOR SEAL

STRIPED BASS

CORMORANT

SEA TURTLE

PENGUIN

ALLIGATOR

8) Where is Sail Newport? (circle one)

1

2

3

4

9) Which one of these boats makes the most pollution? (circle one)

ATTITUDES

For each of these questions, choose the face (or faces!) that match best.

10) When I think about being on a boat with an adult, I feel:

11) When I think about steering a boat myself, I feel:

12) When I think about being on the shore, I feel:

13) When I think about polluting the water, I feel:

YES, NO OR MAYBE:

14) The water is a place I feel I belong.

15) The water I live near is clean:

16) I feel safe being near or on the water:

17) I think about keeping the water I live near clean and healthy:

Thank you for participating!!

BIBLIOGRAPHY

- Alexander, J., M. North, and D. Hendren. 1995. Master Gardener classroom garden projects; An evaluation of the benefits to children. *Children's Environ.* 12(2):256-263
- Baztan, Juan and Chuinard, Omar, "Coastal Zones: Solutions for the 21st Century," 2015 Elsevier, 978-0-12-802748-6, Chapter 1, p. 1-14
- Bernard, Harvey Russel, *Research Methods in Anthrology, Chapter 13: Participant Observation*, p. 361-363, AltaMira Press, 2002, University of Michigan, ISBN 0759101485
- Boas, Ewert and Chaves, 1991 "Influence of Ethnicity on Recreation and Natural Environmental Use Patterns: Managing Recreation Sites for Ethnic and Racial Diversity"
- C. Leeming, Frank & O. Dwyer, William & Bracken, Bruce. (1995). Children's Environmental Attitude and Knowledge Scale: Construction and Validation. *The Journal of Environmental Education*. 26. 22-31. 10.1080/00958964.1995.9941442.
- Clayton and Meyer, 2009, *Conservation Psychology, Understanding and Promoting Human Care for Nature*, John Wiley & Sons, April 20, 2009, Nature 253 pages
- Coastal Zone Management Act of 1974, Section 302, <https://coast.noaa.gov/czm/act/sections/#302>
- Constantinos C. Manoli , Bruce Johnson & Riley E. Dunlap (2007) Assessing Children's Environmental Worldviews: Modifying and Validating the New Ecological Paradigm Scale for Use With Children, *The Journal of Environmental Education*, 38:4, 3-13, DOI: 10.3200/ JOEE.38.4.3-13
- Dann, Shari L., Schroeder, Brandon, (2015) Developing Great Lakes Literacy and Stewardship through a Nonformal Science Education Camp, *Universities Council on Water Resources, Journal of Contemporary Water Research & Education*, Issue 156, pgs 21-36, Dec 2015
- Data USA, 2018
- Department of Numbers, <https://www.deptofnumbers.com/income/rhode-island/>
- Ducsik, Dennis W., "The Social and Economic Dimensions of the Shoreline Recreation Problem." *Shoreline for the Public: a Handbook of Social, Economic, and Legal Considerations Regarding Public Recreational Use of the Nation's Coastal Shoreline*, MIT Pr., 1974, pp. 13–36.

- Dunlap, R.E., Liere, K.D., & Mertig, A.G. (2000). Measuring Endorsement of the New Ecological Paradigm : A Revised NEP Scale.
- Evans, G. W., & McCoy, J. M. (1998). When buildings don't work: The role of architecture in human health. *Journal of Environmental Psychology*, 18, 85–94.
- Gardner, G. T., & Stern, P. C. (1996). *Environmental Problems and Human Behavior*. Boston, MA: Allyn & Bacon.
- Garten, Lindsay. "The Coastal Zone Management Act: A Mixed Success." *Consilience*, no. 16, 2016, pp. 1–13. *JSTOR*, www.jstor.org/stable/26188770.
- Harold R. Hungerford & Trudi L. Volk (1990) Changing Learner Behavior Through Environmental Education, *The Journal of Environmental Education*, 21:3, 8-21, DOI: [10.1080/00958964.1990.10753743](https://doi.org/10.1080/00958964.1990.10753743)
- Helmreich, Stefan Alien Ocean: Anthropological Voyages in Microbial Seas, *American Anthropologist*, 112: 669-670. doi:[10.1111/j.1548-1433.2010.01294_10.x](https://doi.org/10.1111/j.1548-1433.2010.01294_10.x)
- Herbert F. Janick, Jr., *A Diverse People: Connecticut, 1914 to the Present* (Guilford, CT: Pequot, 1975)
- History of the America's Cup, 12 Meter Charters, webpage accessed on March 14, 2019, <https://12metercharters.com/about-us/sailing-history/americas-cup-race-history>
- HISTORY, www.history.com/topics/black-history/chicago-race-riot-1919, Accessed February 9, 2019, A&E Television Networks, Published December 2, 2009, by history.com editors.
- HMFH Architects State II Application for Housing Aid
- House Subcommittee on Fisheries and Wildlife Conservation and the Environment, *Open Beaches: Hearings*, 93rd Cong., 1st sess., October 25, 26, 1973, 33. <http://worldpopulationreview.com/states/rhode-island-population/>
- Iozzi, L. A. (1989). What research says to the education: Part one: environmental education and the affective domain. *Journal of Environmental Education*, 20, 3–9., Kals, E., Schumacher, D., &
- Kahrl, Andrew W., *Free the Beaches: The Story of Ned Coll and the Battle for America's Most Exclusive Shoreline*, Yale University Press, 2018, ISBN 978-0-300-21514-4, p. 225

- Kahrl, Andrew, "America's segregated shores: beaches' long history as a racial battleground," June 2018, The Guardian World 2018, <https://www.theguardian.com/world/2018/jun/12/americas-segregated-shores-beaches-long-history-as-a-racial-battleground>
- Khawaja, Amir, "Measuring the environmental attitudes of children in grade 4: A study in Clark County" (2003). UNLV Theses, Dissertations, Professional Papers, and Capstones. 181
- KidsCOUNT 2018 Factbook Snapshot of Newport, RI Report; *Indicators of Child Well-Being*
- Kirksey, Eben, "Emergent Ecologies," Nov 2 2015, Duke University Press, Social Science, p. 313
- Lancy, David F., "Unmasking Children's Agency" (2012). *Sociology, Social Work and Anthropology Faculty Publications*. Paper 277.. https://digitalcommons.usu.edu/sswa_facpubs/277
- Le Batard, Daniel, "OPEN SEAS?: Yacht Clubs Argue That They're Not Just for Rich Men," Los Angeles Times, August 13, 1989, http://articles.latimes.com/1989-08-13/sports/sp-859_1_yacht-club-member/2
- Leather, Mark & Nicholls, Fiona (2016) More than activities: using a 'sense of place' to enrich student experience in adventure sport, Sport, Education and Society, 21:3, 443-464, DOI: [10.1080/13573322.2014.927758](https://doi.org/10.1080/13573322.2014.927758)
- Lieflander, Anne K., (2015) Effectiveness of environmental education on water: connectedness to nature, environmental attitudes and environmental knowledge, *Environmental Education Research*, Vol. 21, No. 1, pages 145-166, <http://dx.doi.org/10.1080/13504622.201>
- Mayer, F. Stephan. Franz, Cynthia MacPherson, *The connectedness to nature scale; A measure of individuals feeling in community with nature.*, December 2004., Journal of Environmental Psychology 24 (2004)., 503-515
- Mckenna, Michael & J. Kear, Dennis. (1990). Measuring Attitude Toward Reading: A New Tool for Teachers. Reading Teacher - READ TEACH. 43. 626-639. 10.1598/RT.43.8.3.
- Montada, L. (1999). Emotional affinity toward nature as a motivational basis to protect nature. Environment and Behavior, 31, 178–202.
- National Center for Children in Poverty, Columbia University, Mailman School of Public Health, New York, 2018 http://www.nccp.org/profiles/RI_profile_6.html

Newport Historical Society, www.newporthistory.org, accessed Feb 2019

Robson, Colin, *Real World Research: A resource for social scientists and practitioner-researchers*, Second Edition, 2002, Blackwell Publishing, ISBN 0-631-21304-X

Sail Newport Programs Home Page – Pell Elementary School Sailing Program, <https://sailnewport.worldsecuritysystems.com>

Sail Newport webpage, www.sailnewport.org/PellSchoolSailingProgram, accessed Feb 2019

Santos-Beneit, G., Sotos-Prieto, M., Bodega, P., Rodríguez, C., Orrit, X., Pérez-Escoda, N., Bisquerra, R., Fuster, V., ... Peñalvo, J. L. (2015). Development and validation of a questionnaire to evaluate lifestyle-related behaviors in elementary school children. *BMC public health*, 15, 901. doi:10.1186/s12889-015-2248-6

SurveyWorks 2013-2014 Student, Parent, Teacher Evaluation, Claiborne Pell Elementary School, <http://infoworks.ride.ri.gov/files/surveyworks/2013-2014/combined/surveyworks-2013-2014-claiborne-pell-elementary-school-student-parent-teacher-es.pdf>

U.S. Dept. of the Interior, *Our Vanishing Shoreline*, Washington, D.C. (1954).

Vaske J.J. and K.C. Kobrin, 2001, Place attachment and environmentally responsible behavior, *Journal of Environmental Education*, 23(4): 16-21.

Vidal, K. (2011), A Comparison of the Effects of Reading and Listening on Incidental Vocabulary Acquisition. *Language Learning*, 61: 219-258. doi:[10.1111/j.1467-9922.2010.00593.x](https://doi.org/10.1111/j.1467-9922.2010.00593.x)

Yarborough, Ralph “Introduction to the National Open Beaches Act,” 91st Cong., 1st sess, *Congressional Record* 115 (October 16, 1969), pt. 22:30335