

'BLUE' SPACE AND 'BLUE RECREATION' IMPORTANCE: A CASE STUDY OF
MARINE EDUCATION PROGRAMS IN THE STATE OF CALIFORNIA

by

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This Thesis for the Master of Environmental Studies Degree

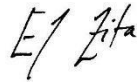
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ABSTRACT

‘Blue’ Space and ‘Blue Recreation’ Importance:
A Case Study of Marine Education Programs in the state of California Shayley Jacobson

‘Blue’ spaces are natural and human-made areas where water is present, and the color blue is visible including oceans, lakes, rivers, ponds, pools, and waterparks. ‘Blue recreation’ activities enjoyed in blue spaces include swimming, surfing, sailing, kayaking, snorkeling, and scuba diving. After an intensive literature review, I found limited research on ‘blue’ spaces and their importance to American society. However, the United Kingdom has conducted research that documented the positive human health benefits of blue spaces and suggest that these spaces may be more beneficial than ‘green’ spaces. Blue spaces can be highly productive environments (especially for youth) to fully develop their emotional, social, and physical skills and well-being. Social equity of public participation in blue recreation was reviewed to gain a better understanding of participation barriers to local blue spaces. This understanding may expand marine education programs to reflect the ecological interconnectedness humans have with blue spaces.

Through my case study and associated research, I gained insight into how marine educators in California view and value their recreation programs; and a greater understanding of their mission statement(s), goals, and objectives. I used the Guidelines for Excellence for Community Engagement produced by the North American Association for Environmental Education (NAAEE) to guide me through the evaluation, assessment, and recommendations process. This can help inform recreation policies, as well as help us refine our definitions of blue spaces and blue recreation and enhance our understanding of their importance to our health and well-being.

Table of Contents

List of Tables	v
I. Heart Journey: A positionality statement	1
<i>A. My Home is with Water (Blue Spaces)</i>	1
<i>B. Becoming a Nature Lover</i>	2
<i>C. Self-Actualizations through Work Experiences</i>	3
<i>D. Intellectual Pursuits at The Evergreen State College</i>	5
<i>E. My Life Purpose Actualized through the MES Program</i>	6
II. Literature Review	9
<i>F. Introduction</i>	9
<i>G. Children and Nature Network</i>	10
<i>H. Blue Space Visibility and Participation</i>	11
<i>I. Availability, Preference, and Analysis of Blue Spaces and Blue Recreation</i>	14
<i>J. Health Benefits of Swimming and for Youth</i>	16
<i>K. Blue Recreation Programs and Environmental Education Curriculum</i>	21
<i>L. Ocean Literacy and Goals</i>	24
<i>M. Conclusions</i>	26
III. Research Design and Methodology	28
<i>N. Qualitative Research Approach and Study Rationale</i>	28
<i>O. Data Collection</i>	29
<i>P. Interview Protocol Procedure</i>	31
<i>Q. Data Analysis</i>	32
<i>R. Evaluation Process</i>	32
IV. Results, Analysis, and Discussion	34
<i>S. Interview Protocol</i>	34
<i>T. Background of Program Directors (8)</i>	34
<i>U. Attractions and Motivations</i>	35
<i>V. Terminology knowledge and organizations' value of blue spaces and blue recreation</i>	37
<i>W. Information gathered about organizations' local blue space environments</i>	39
<i>X. Integration of blue space and blue recreation knowledge</i>	41
<i>Y. Mission Statements</i>	43
<i>Z. Summary of Goals and Objectives</i>	44
<i>A. Measurement Tools Used</i>	45
<i>B. Pre and Post Test Example</i>	46
<i>C. Suggested Measurement Tool Improvements</i>	46
<i>D. More Discussion on Improvements for Program Evaluations</i>	47
<i>E. Participant Demographics and Matching by the State (CA)</i>	48
<i>F. Target Audiences</i>	49
<i>G. Ways of Sharing Stories and Common Themes and Examples Shared</i>	51
<i>H. Blue Space/Blue Recreation Experiences and Life-Changing Impact on Participants</i>	52
<i>I. Program Sustainability</i>	53
<i>J. Top Challenges</i>	54
<i>K. Additional Comments</i>	57
V. Conclusions	58
VI. References	63
VII. Appendices	68
Appendix 1.....	68
Appendix 2.....	69
Appendix 3.....	70
Appendix 4.....	71

List of Tables

Table 1: Director Work Experience (Marine Education/Recreation)	34
Table 2: Student Enrollment by Ethnicity for the state of California	49

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I. Heart Journey: A positionality statement

A. *My Home is with Water (Blue Spaces)*

I grew up viewing the natural world as an integral part of my spirit and soul. My sisters and I were raised vegetarian by our parents, and I transitioned last year, to an entirely plant-based diet in the final year of my 20's. This lifestyle choice has helped me foster deeper compassion for all living things, especially animals, and a curiosity of our interconnectedness to our environment.

My special affinity with water took hold early on. I was told stories of how I was taken to swimming classes as a baby. I was shown the baby pictures of myself smiling underwater and was first told by my mother that I was a 'natural' in the water. I would think that many people have similar stories to mine; because after all, all humans originate from watery wombs. Our human bodies are comprised of water to varying amounts, up to 90% at birth, and 50-65% as we develop into adults (Helmenstine, 2020). Water is within us and water surrounds us in many different forms (71% of Earth's surface is covered by water).

I held tight to the narrative that I was a 'natural' swimmer. I felt the water calling me home as I first tip-toed, waded, and then leaped, jumped, plunged, and submerged myself into many, many different bodies of water. Whenever I am near the water, I always feel the 'need' to get into it and to feel its energy. It gives me life and for that, I will be forever grateful. A second narrative that I was told, brought me to believe that I was a part of an Irish folklore tale involving "Selkies." This folklore was made into a movie called *The Secret of Roan Inish*, and the movie retells the selkie legend of how some seals when they come on land, molt out of their tough skin, and

transform into human women. The logical side of my brain told me this was an impossible feat, but my creative and imaginative ‘being’ told me it could be true. At the very least though, this story made me feel more bonded with the ocean, its marine mammals, and other watery creatures.

Every time I participate in water activities, I find a piece of myself again. I relish the times I travel to beaches and get to smell the fresh sea air. Annually, (as I was growing up) I was fortunate to travel with my family each summer to play in a ‘blue’ space – to slide at a waterpark, swim in a mountain lake, or to frolic in the wild ocean. ‘Blue’ space is an urban development term defined to describe any form of water whether natural or human-made (nclurbandesign.org). For me, once I am near, on, or in the water, I can feel my body loosening and relaxing, and – sometimes tightening again -- depending how cold the water is -- and then loosening again.

B. Becoming a Nature Lover

My parents encouraged me to spend quality time in nature to be at ‘one’ with myself, and to find my strength to face any harshness that daily life challenges might bring and throw at you. This exploration and adventure I enjoyed was nurtured by my mother’s love of nature, and her career as an environmental educator. She helped foster and shape my stewardship values of our lands and waters. I found myself volunteering on many of her field trips-- planting native trees, pulling ivy, and monitoring the water quality of our local streams and rivers.

Growing up with two older sisters who played competitive volleyball, I found myself as a youth and teen fully immersed in the path and life of a volleyball player. Because of this, I took many steps away from outdoor spaces. As I developed my

athletic intensity for this very competitive and surprisingly, brutal team sport, I longed to reconnect to the outdoors and especially to the water. As a high school senior, I did my senior project on scuba diving, to learn the history of scuba diving and to participate in open water dives in Puget Sound. However, I was still focused on and bombarded with the stress of working intensely to earn a college volleyball scholarship. Luckily, after performing well at several out-of- state volleyball tournaments, I succeeded and won a volleyball scholarship to a small school in Kansas. Playing college volleyball had been my long-term target goal for years.

I embarked on a new journey and left for college in Kansas. I had never been to the Midwest and did not know what it would be like to live where no real blue spaces were present. In so many ways, I lost myself that year. I determined that I needed to quit the volleyball program and school to find myself again. I returned to my hometown of Olympia where I could again be near water (Puget Sound and our many lakes) and near to the people I loved, and who loved me.

Even though I was back in my hometown, and living with family, I felt an emptiness inside of me from what I viewed as a failure of my volleyball career. Although I was down on my confidence and had a wave of doubt of my abilities as a human being, I pulled myself together enough to enroll in my local community college (South Puget Sound Community College-SPSCC) where I completed my Associate of Arts (AA) degree. After the completion of my AA, I was determined to be done with school for good and was ready to focus on exploring a life out in the ‘real’ world.

C. Self-Actualizations through Work Experiences

I got several different jobs, worked hard, and saved up several thousands of

dollars to travel out of the country (except for Canada) for the first time in my life. I invested my hard-earned money into a two-month Outward Bound Leadership Program in Costa Rica (a country known for its beautiful and natural landscape: lush jungles, wild rivers, and inviting beaches). It was a demanding training -- emotionally, physically, and intellectually. However, I was awarded by earning seven internationally accredited outdoor leadership skill certifications (whitewater raft guiding, lifeguarding, and scuba diving being my favorite certifications earned). In this intense, full-on outdoor immersion, I more fully developed a belief in my leadership capabilities.

Over the next couple of years, I lived and worked in Hawaii and California. In Hawaii, I wanted to continue to learn about the land and the water, and of being of service to the community. This is when I am happiest. I found a job working with at-risk youth sent from the mainland to Hawaii and helped guide these teens toward physical and mental well-being through gardening and exploration of traditional Hawaiian culture.

While on the Big Island of Hawaii, I also worked with a tour boat company and first learned the ropes as a deckhand. Later, I was able to share my love of marine life and guided guests in snorkeling and scuba diving. I still so clearly remember my first dive in Hawaii. The water was an aqua blue water and the multicolored fish were incredible. Through this job, I acquired my first official scuba diving certification and I experienced so much growth in my dive training and skills. In Hawaii, I fully rediscovered my passion for the ocean through recreational diving and snorkeling at my favorite ocean coves.

A few years later, I returned to my hometown of Olympia. But before long, I decided I needed to venture out again. I moved to the coastal town of Big Sur, California where I worked as a Park Aide and Visitor Center Specialist with the California State Parks and the Big Sur Ranger Station. As I transitioned from the Park Aide work, I picked up work as a deckhand and a natural history tour guide for two small cruise boats. My passion for the ocean continued to grow through my exploration of Monterey Bay's Marine Sanctuary waters. I loved being able to show the out-of-town visitors the vast marine life surrounding us --whales, dolphins, seals, otters-- and the wonderous kelp forest communities seen just below us in the glass-bottom boat. During this time, I prospered and learned so much through these challenging hands-on work experiences. However, I also knew I needed more intellectual stimulus and academic growth.

D. Intellectual Pursuits at The Evergreen State College

Again, I returned home to South Puget Sound, and decided to investigate Evergreen State College's undergraduate program. I applied and was accepted. I registered for the Field Ecology Program. "*I must be crazy,*" I thought at the time, to pick the hardest science program after taking so much time off from my formal education. But this fear motivated me more to prove that I could do it! The decision to take this program was one of the best decisions that I have ever made. I learned to make scientific observations, create hypotheses, conduct scientific research to test my hypotheses, and how to write clear and concise scientific papers. After I completed the program, something clicked inside of me. I was prepared to take on the world and began to go after everything I wanted and envisioned. I had decided to go for a double

major in the Arts and Sciences and carefully planned out each academic quarter. I had felt in ‘control’ of my future.

The classes, programs, and independent learning contracts I created suited my learning style, and I was on the way to becoming a well-rounded individual. I learned that I **still did want to** study marine science. I volunteered for the non-profit organization, (*Love the Oceans*), and spent part of my fall 2017 quarter in Mozambique, Africa. This was a place that I never thought I could experience in my 20’s. I learned so much and performed numerous marine science field skills. I also strengthened my ability to effectively teach students, while I taught the young African children about sharks and rays, (two marine creatures that I am especially passionate about).

The young children in turn taught me words of their language and lively ways for me to continue to teach. I loved being able to teach these young children with joy and creativity and to conduct meaningful scientific research and fishing surveys. This experience was pivotal for me. It inspired and confirmed that I indeed wanted to pursue a career in marine biology and conservation. As I further reflected on this profound African place-based learning experience, it also strengthened my passion for marine conservation work with underserved children. I knew that I had much to give and was ready to give more towards marine conservation and protection.

E. My Life Purpose Actualized through the MES Program

The Evergreen State College has been the perfect integrated academic learning platform for me. It’s Master of Environmental Studies (MES) program has helped me grow my subject matter knowledge, hone my research and writing skills, and has

shown me ways to effectively make positive impacts on human health and well-being while also caring for our water resources.

Through my work in Mozambique and through initial literature reviews, which I will detail in the next section of this paper, it reinforced how important it is to serve those who are often overlooked in society. I uncovered the documented evidence of the disparity of access to blue spaces and ‘blue recreation’ activities for youth. ‘Blue recreation’ is any activity enjoyed in a blue space (nclurbandesign.org). One blue recreation activity I focused on in my literature review was swimming. I strongly believe that swimming is an essential safety skill for all and will prepare individuals with the confidence and interest needed to explore their local blue spaces more fully.

My MES candidacy paper was inspired by my experiences with the students in Mozambique. These students knew little about their local marine environment, and most did not know how to swim. After our volunteer marine education program, the most actively engaged students were rewarded with the opportunity to gain swimming skills in a rented pool. This, however, was not an equitable blue recreation opportunity as only 25 percent of the students (if that) were selected to participate. The children lived very near to the ocean, yet they did not have easy access to it. Their and their family’s daily lives revolved around fulfilling their most basic of human needs (Maslow’s Hierarchy of Needs).

I decided to explore physically active marine education programs in the state of California and conducted much of my research and thesis work last summer (2019) while living and working in a California coastal community. Through my initial literature review process, I realized that I had been studying, training, and working

hard to share and tell the story of the importance of blue spaces and help underserved youth have blue recreation opportunities in their local communities. My passion for blue recreation, along with my life experiences and outdoor skill and instructor certifications will help me build underserved youth blue space and blue recreation program opportunities.

Upon graduation of the MES program, I hope to expand my influence and positive impact in the marine conservation field and -- to keep teaching youth. My long- term goals include owning a research vessel and building an onboard marine education program. Through this program I will be able to teach youth from around the world how to swim, snorkel, kayak, and scuba dive and to be fully engaged in our ever-fragile marine environment.

II. Literature Review

F. Introduction

As a community, we aim for a fuller understanding of blue spaces and blue recreation, their value and importance for human health, and an understanding of the barriers to access blue spaces. Through my literature review and case study, I explored the following research questions:

- 1. What is the Importance of Blue Space and Blue Recreation for Healthy Youth Development?*
- 2. What are the Barriers to Equitable Blue Space and Blue Recreational Opportunities?*
- 3. How Can We Best Create Communities of Caring, Engaged, and Environmentally Literate Stewards?*
- 4. How Do We Build Upon Successes to Create Additional Blue Space Opportunities in Local Communities?*

Current research on blue space and blue recreation is extremely limited compared to the amount of research available on the importance of ‘green’ spaces (urban green areas—lawns, parks, forests) to personal well-being (Dorward, 1990; Miller, 1997). There is a need for more studies to be conducted on blue spaces and how they can enhance youth development – emotionally, socially, and physically. More research on the barriers of blue spaces/blue recreation access for minority groups and youth is also recommended.

Following the literature review, I will introduce you to my research design and methodology and case study of 8 blue recreation programs in the state of California. I hope that once a better understanding of the importance of blue spaces and blue recreation is recognized and of participation barriers, more opportunities will be created for developing stewardship for the blue spaces we depend on.

G. Children and Nature Network

The Children and Nature Network is a developing website offering over 850 data-driven research articles on connecting kids to nature. The mission statement is as follows:

We are leading a global movement to increase equitable access to nature so that children– and natural places–can thrive. We do this by investing in leadership and communities through sharing evidence-based resources, scaling innovative solutions, and driving policy change (About-Vision and Mission section, childrenandnature.org, n.d.).

In January 2019, I attended a workshop featuring Richard Louv, the author of nearly a dozen nature-based books, and recipient of a National Audubon Award. Louv’s book *Last Child in the Woods* was the catalyst for the creation of the Children and Nature Network, as he is a strong advocate for connecting people, (especially children to nature). I affirmed my belief alongside Louv’s in that “*the higher-tech we get, the more nature we will need*” (R. Louv, personal communication, January 2019). The Children and Nature Networks’ mission statement is vital in a world that will become increasingly urbanized, which will result in a decrease in inequitable access to nature for children. Louv attributes this decrease in access to monetary limitations, and to the lack of ecological knowledge by many present-day people.

The Children and Nature Network offers valuable insight into what nature provides for youth: the alleviation of many stressors and the associating positive health benefits for youth to develop their physical, social, and emotional learning and well-being. This network predominantly focuses on the importance of creating ‘green’ spaces, such as creating schoolyard gardens in increasingly urbanized environments. Many studies are cited which address the connection to the Earth, and the importance of

green space for health. This is evident in the agenda put forth by this global network in their *2017-2020 Strategic-Agenda*. For example, a focus on cities, “where the trend of living in growing developments in urban areas around the world will continue to increase and the role of reimagining them as places of nature connection is also increasingly important” (About-Strategic Agenda section, childrenandnature.org, n.d.).

Some network initiatives include collaboration with city and community leaders to “rethink the role of cities and developing scalable solutions that provide the benefits of nature connection more equitably for children and families” (About-Strategic Agenda section, childrenandnature.org, n.d.). Over the last century, research has documented the need for accessible green space. However, additional research on the importance of blue space and blue recreation needs to be a regional, national, and international priority.

H. Blue Space Visibility and Participation

A growing body of research on blue space visibility and its important correlations to creating positive health effects are primarily being conducted in Europe. We argue (including marine biologist Dr. Wallace J. Nichols, author of the book *Blue Mind: The Surprising Science That Shows How Being near, in, on, or under Water Can Make You Happier, Healthier, More Connected and Better at What You Do*) that blue spaces are as important or more important than green spaces. Nichols writes that “Views of nature – whether through windows or in artworks—have been shown to help hospital patients feel better and recover faster” (Nichols, 2015, p. 203).

Nichols features one survey study conducted on a patient group recovering from heart surgery. The study group viewed three scenes shown on panels at the foot of their beds (enclosed forest, view of open water, abstract design, or blank white). Nichols noted

the especially interesting facet of the study, “is that the anxiety levels of patients viewing the open-water scene were significantly lower than those looking at the enclosed forest” (*The Fishbowl Effect, Outside Looking In*, Nichols, 2015, p. 203).

Other studies prove that viewing water and fish in aquariums (with a healthy biodiversity) helps lower stress and promote better moods (Nichols, 2015). For example, a study done at the “National Marine Aquarium in Plymouth, England, monitored the blood pressure, heart rate, and self-reported relaxation levels and moods of 112 people who spent a minimum of ten minutes observing an aquarium tank.” These tanks had “three different levels of biodiversity (no fish or crustaceans; a few specimens; and a healthy variety of marine life). In all three conditions, blood pressure dropped substantially during the first five minutes in front of the tank, while the most positive changes in heart rate, relaxation, and mood occurred with the greatest amount of biodiversity” (*The Fishbowl Effect, Outside Looking In*, Nichols, 2015, pp. 203-204).

In addition to lowering stress levels, promoting relaxation and improving moods, cognitive function is also enhanced through the viewing of blue spaces. A study was conducted on seventy-two undergraduate students living in dormitories at a large mid-western university (Nichols, 2015). “Students whose rooms overlooked trees and the lake not only performed better on the cognitive tests but also rated their “attentional functioning” as more effective than that of all of the other groups combined” (*Water, Nature, and the Optimum Brain*, Nichols, 2015, p.212).

A study by Ashbullby et al. (2013) examined the health promotion benefits of living near the ocean (about one mile away) for 15 English families. Beach visits provided a deeper understanding of the psychological, social, and physical health

benefits of children aged 8–11 years (Ashbullby et al., 2013). The beach was a place for relaxation and a place where people of all ages and physical ability could be engaged in physical and blue recreation activities such as swimming and surfing (Ashbullby et al., 2013). This promotes healthy child development. Visits to their local beach were great opportunities for many families to maintain a legacy of health and well-being attributed to surrounding blue space and blue recreation opportunities available. One of the fathers interviewed in the study had grown up surfing and wanted to pass that activity down to his daughters (Ashbullby et al., 2013). The beach also provided families with the opportunity to connect and socialize with other families and friends.

However, while many families can positively experience blue spaces, many others cannot. Ashbullby et al. (2013) documented several barriers that families encounter. Some commented that the beach wasn't close enough for the perceived benefits; not wanting to pay the parking fee every time they visited; and the hassle of packing and planning and the time it took to prepare for a beach visit (Ashbullby et al., 2013). Furthermore, some of the families perceived the ocean as being unsafe or a dangerous place and some of the mothers were afraid of the sea (Ashbullby et al., 2013). This may have been attributed to a lack of knowledge, confidence, and competency in the swimming abilities of the adults and their children.

A more recent study Pearson et al. (2017) looked at quantifying blue space importance and measured blue recreation activities on 168 students from high and low deprivation schools in Wellington, New Zealand. Measurements of blue space importance were captured through head-cameras worn by each student to gather data on a two-day involvement in blue spaces. Results from this study showed that socioeconomic

status, gender, weight, and other factors such as proximity to blue spaces did not make a significant difference when determining which groups of students were participating in blue recreation activities.

Perhaps surprisingly, after image analysis from each student's head-cameras, results found that students from the most deprived schools had the highest statistical exposure to their blue spaces compared with students from the least deprived schools (Pearson et al., 2017). Although this is insightful information to note, limited research on quantifying blue space importance leads me to believe that there is a huge opportunity for more research to attain more definitive results.

I. Availability, Preference, and Analysis of Blue Spaces and Blue Recreation

To have equitable blue space experiences our basic needs must be met first. An *Integrated Ecosystem Assessment* was conducted by Washington Sea Grant and led by Kevin Decker, Washington State Sea Grant Coastal Economist. “59 social indicators were identified for ten domains of human wellbeing: basic needs; access to social services; health; education; social connectedness; governance: planning and management; safety; environmental conditions; economic security; and population demographics” (*Social Indicators for the Washington Coast Integrated Ecosystem Assessment*, p. 10). Many studies including the (*Social Indicators for the Washington Coast Integrated Ecosystem Assessment*, p. 27) have documented that “a healthy lifestyle is evaluated by the opportunities to engage in physical exercise and recreational opportunities...”

Most studies do not analyze which outdoor physical activities were preferred by adolescents, and by gender, to link potential health benefits to participation in specific

blue recreation activities. However, several European studies are gathering data on these factors, including a pan-European research initiative called Blue Health. This initiative is currently investigating the links between environment, climate, and health and is specifically focused on understanding how water-based environments in towns and cities can affect health and well-being (bluehealth2020.eu). A key researcher within this initiative stated that “Physical activity has a strong effect on mental health and when combined with being in a natural, coastal environment, these effects become even stronger” (DR. Elliot, Environmental Psychologist, University of Exeter’s European Centre for Environment and Human Health).

One recent European study gathered data from (2009 to 2016) Fromel et al. (2017) through surveys of Czech and Polish adolescents and did analyze gender preference of physical activities. Results showed that boys preferred swimming, cycling, and downhill skiing, while girls preferred swimming, skating and horse-back riding. These results showed that swimming was the preferred activity by both boys and girls (Fromel et al., 2017). Enhancing future studies to analyze why youth are choosing swimming, a blue recreation activity over other activities -- and their associated health benefits should be further investigated. Additionally, other factors that affect equitable access to these blue space environments should also be included in future study designs.

Preference for outdoor activities does not equate with equitable opportunities to these spaces. For example, overall outdoor recreational experiences are unequal for girls when compared to boys (Culp, 2017). Qualitative analysis of this inequity in accessing outdoor activities, illuminated many barriers for girls, including “stereotypical gender roles, differences in outdoor recreation opportunities for males and females, peer and

family expectations, access, and physical and environmental factors” (Culp, 2017).

Studies show that by societal standards and norms, girls are not expected to accompany their fathers in the outdoors and their fathers are less likely to ask them to go hiking, fishing, or hunting (Culp, 2017). What steps can we put in place to remove barriers to get more girls participating in outdoor recreational activities? Culp suggested a strong need for more adolescent co-ed outdoor programs along with additional programs offered exclusively for girls. These types of programs invite girls to discover and develop more confidence in themselves and can initiate new social constructs of increased value and access for girls in the outdoors (Culp, 2017).

J. Health Benefits of Swimming and for Youth

Lynne Cox, (the world-famous long-distance open-water swimmer and author), The American Heart Association, The Center for Disease Control, all agree that swimming offers a multitude of health benefits. The key benefit that swimming provides is a longer lifespan. In a comparative case study on men’s activities over their entire lifetimes, men that swam regularly outlived their counterparts who did not by 50 percent (americanheartassociation.org and health.harvard.edu). Many studies have examined how the physical body reacts to water and the benefit of swimming on the brain, heart, and lungs. “The list of intellectual and artistic breakthroughs sparked by a wander or a swim is long indeed” (*This Must Be the Place*, Nichols, 2015, p. 223).

The multitude of benefits youth receive from swimming include reducing or preventing obesity (promotion of heart and lung health; prevention of juvenile diabetes); is an activity that children can participate in for the rest of their lives (improves stamina, flexibility, strength, balance, and posture); few injuries are

sustained from swimming as compared to other youth sports (individual or team sport); provides a fun and challenging way to help children stay fit (mental exercise that can help improve emotional health and well-being), and teaches important water safety skills to prevent childhood drowning. Drowning is the second leading cause of unintentional injury death among youth (johnstonhealth.org). Swimming has significant health benefits. Later, in my literature review, I will discuss the reasons why more adults and children do not participate in blue recreation programs like swimming to reap the myriad of health benefits.

Swimming Access: Fear, Gender and Race Inequality

Fear of the water is termed ‘aquaphobia’ and Irwin et al. (2011) discussed why some minority groups have a fear of water, and what major influences result in lower aquatic program participation by people of color. In a historical review, “poor African American women have especially borne the brunt of institutional segregation of pools for 100+ years” (Irwin et al., 2011). In the 1800s with urbanization, came the emergence of community pool facilities (Irwin et al., 2011). During this time, however, women of all races were prohibited in the use of the swimming pools. Only (white) men were allowed to swim. Systemic issues (lack of civil rights including women’s rights) perpetuated this segregation.

In the book *Swell: A Waterbiography*, author Jenny Landreth wrote about the suffragette (voting) and swimming movement established by white women in the 1930s (Landreth, 2018). These women fought for their rights to access community pools. After lengthy battles to gain access, women were allowed into the pool facilities, and able to compete in swimming events (Landreth, 2018). Later, pool usage rules were changed,

and only affluent people were allowed in pool facilities (Irwin et al., 2011). This change prohibited poor people and people of color from the use of the public pools (Irwin et al., 2011). It was not until the passage of The Civil Rights Act (1964) that prohibited the segregation of all public pools and other public facilities.

A survey Irwin et al. (2011) uncovered that African Americans experienced higher rates of non-fatal drowning accidents. “Sixty-two percent of African American survey respondents were deemed at-risk or with limited swimming ability (Irwin et al., 2011). These individuals could not swim or pass a swim test of being able to swim one length of a pool. Latinos/Hispanics and Asian Americans show similar results of swimming inability (Irwin et al., 2011). Additional results from this study showed that parents from these underrepresented populations were concerned that their children may drown or become injured while learning to swim, accompanied by their own fears of swimming (Irwin et al., 2011). Due to these fears, parents usually did not seek out swimming lessons for their children.

A Film Called Blacks Can't Swim illuminated the swimming fear felt by Ed Accura. Accura, a black British man developed an acute phobia with water after watching an upsetting news report on stormy weather and flooding. The film showed how his anxiety over his inability to swim, which pushed him into buying a life jacket that he wore everywhere. Throughout the film, one saw how torn Accura was about learning how to swim. He received conflicting messages of encouragement from his daughter and friends to take swimming lessons, along with messages that reinforced societal stereotypes that black people can't swim. One British black woman interviewed, stated: “*Culturally, we don't see it as a priority.*” Luckily for Accura, he

moved past fear and stereotypes, and dared to learn how to swim.

The study of underrepresented individuals and their swimming abilities Irwin et al. (2011) conducted was an exploratory study. A convenience sampling method was used to better understand and identify the barriers for youth to learn how to swim. More studies like this should be conducted throughout the United States, to offer more confidence in the collection of data and results for future use and analysis. Enhanced studies could help to move past historic systemic barriers, reduce inequalities, and provide more youth and other community members with additional opportunities to exercise their 'human' rights of water safety and to positively experience their local blue recreational spaces.

Social and Emotional Learning for Disadvantaged Youth through Swimming

Swimming offers a multitude of benefits: including learning a life-skill, lessening the risk of drowning; having the potential to enjoy an outdoor swim in the future; to gain confidence and motivation to experience other water-based activities such as kayaking, canoeing, snorkeling or even scuba diving. Other benefits of swimming competency include the acquisition of social, emotional, and team-building skills which can reduce behavioral issues in youth. However, there are many barriers to overcome, including limited access to community swimming venues for low-income minority groups. Storm et al. (2017) studied this limited access to blue spaces in Baltimore, Maryland, where 65 percent of the population is African American. Storm et al. (2017) looked to see the effect these barriers had on this population and how building new aquatic programs reveal and overcome some of these barriers. Storm et al. (2017) included conversations with city officials, lifeguards, and other participants. Within this study, participation in

swimming programs was analyzed and based upon four key themes:

- 1) *What it means to “know how to swim”*
- 2) *Availability, adequacy, and knowledge of available pools*
- 3) *Role models and peer influence*
- 4) *Opportunities afforded by swimming*

It is important to point out that program success depended upon the access or infrastructure to public aquatic spaces, which include pools in local schools and other public places. Education and influence from role models, such as teachers and/or parents is also key to encourage youth to participate and benefit from what these programs have to offer and to help communities better understand why public pool blue spaces are important for present and future generations.

Another study Beale (2016) focused research on Project Guard, a grant-funded project (the American Red Cross Association) developed in New York and facilitated for high school students from low-income high schools. The goal of Project Guard was to build youth’s swimming skills from novice to advanced swimmers, to help prevent drowning among minorities. Two goals were addressed:

- 1) *to combine physical education, swimming instruction, water safety and lifesaving skills to prevent drowning in minority communities*
- 2) *to equip high school students with relevant and inspiring educational experiences*

The project also provided students with the opportunity to become lifeguards, which would provide extra household money, and alleviate some of the financial burden found in these low-income families. Project Guard provided opportunities for students in the program to have more focus on their lives and to “shape their career goals” with the aspiration to continue higher education in college (Beale, 2016). Another element of the Project Guard program included the goals of “Make-A-

Difference” which included:

- 1) to increase minority participation in swimming*
- 2) increase the percentage of minority lifeguards*
- 3) develop occupational skills and behaviors that foster citizenship in their communities*
- 4) and promote the development of positive cognitive and affective skills through physical activity*

Study results showed that all 30 high school participants completed the program, and went on to attend college (Beale, 2016). I believe this program is a strong example of how positive youth development can be fostered through teaching youth how to swim, and how programs modeled after this one can make a large difference in one’s future opportunities. Programs like this provide insight into how aquatic programs can be expanded to reduce or eliminate participation barriers. This may lead more youth, especially disadvantaged youth to have a better understanding of our “water” world and to create more opportunities to use water safety and swimming skills in other blue spaces like at a nearby lake, or the ocean.

K. Blue Recreation Programs and Environmental Education Curriculum Camp

Seymour

Since 1905, thousands of youth have annually participated in summer camp experiences at Camp Seymour, located along Puget Sound, outside of Gig Harbor, Washington. (I also participated in Camp Seymour’s summer camp as a fourth grader). Several years ago, their program offerings expanded to include a residential, school year Outdoor and Environmental Education (OEE) program, designed for (4th through 6th-grade students). Students spend one to five days at Camp Seymour, participating in hands-on classes such as marine science investigation, squid dissection, forest ecosystems, wildlife ecology, sustainability, canoeing, and others

(campseymour.org). Participating students acquire youth development skills and build a ‘sense of place’ (campseymour.org) while they explore their natural Puget Sound environment. Classes are also designed to address Next Generation Science and Washington State Learning Standards (nextgenscience.org).

In 2018, students were surveyed to understand the program impact. A total of 451 students answered the following questions on a scale of: strongly disagree, disagree, no change, agree, or strongly agree:

- I get along better with my classmates
- I feel more comfortable talking with my classmates
- I enjoy nature and spending time outside more now than I did before
- I care more about the Puget Sound and its environmental issues
- I am more likely to do whatever I can to help the environment
- Conserving energy and resources (for example turning off lights, taking shorter showers, recycling, etc...) is more important to me now I want to work in the environmental field or environmental education when I grow up

Analysis of student survey responses showed an agreement or strong agreement to all the questions asked, (except for the last question: if students wanted to work in the environmental field/environmental education when they grew up). The results documented the significant impact the outdoor learning had on the youth, (with an emphasis on blue recreation immersion). The overwhelmingly positive responses to the survey questions helped students develop social and emotional skills. Students also gained more interest in spending time in the outdoors and learning about ways to protect fragile Puget Sound marine resources. More opportunities like these will only help youth expand their knowledge of their local marine environments and their personal interconnectedness with the ocean.

Dive Into Your Imagination

Annie Crawley is a significant contributor in helping youth understand the importance of blue spaces in Puget Sound, and around the world. She is an award-winning producer, underwater photographer, author, and motivational speaker. Crawley founded “*Dive Into Your Imagination*, and created a series of Books, eBooks, DVDs, lesson plans, prints, posters, cartoon characters, and more products to entertain, educate, and awe you about life within our ocean” (anniecrawley.com). Annie Crawley also works with the dive shop (Underwater Sports) in Seattle and I had the pleasure of being in the audience to hear several of her inspirational presentations. During the presentations, Crawley invited youth and their families to get involved in blue recreation activities, (scuba diving) in particular.

Through an interview conducted in (May 2020), Crawley shared with me that many teens that she has introduced to the magical underworld via scuba diving expressed that they found “*home*.” Crawley shared that she grew up in Chicago and studied broadcast and photojournalism in college. She did not really ‘see’ the ocean until she became a scuba diver after college (at age 23), and said, “When I slip below the surface, I become the ocean.”

Through her school-based programs, scuba excursions, and other endeavors, Crawley strongly advocates for taking action to protect our oceans. Recently she has worked diligently with her Edmonds, Washington community to ban the use of single-use plastics -- and for other communities to do the same. Crawley said, “...no matter where you are on the planet, you should be connected to the ocean and know you are, no matter where you are at...every single thing we do on land, impacts our life source...”

From her website, (anniecrawley.com) “As a professional youth speaker at schools, I transport students on an imaginary dive around the world while encouraging an understanding of life lessons about respect, responsibility, trust, and character. Engaging their imagination with images of sharks, turtles, coral reefs, and kelp forests we explore our world. I encourage students to face personal fears, express their imagination, breathe differently and think before acting.”

Crawley recognized that scuba diving is a cost-prohibitive experience for many youths, but through her storytelling and photography and videos, she helps youth and their families fall in love with the ocean. Statement made by (African environmentalist, Baba Dioum, 1968) at the International Union for the Conservation of Nature (IUCN): *“In the end, we will conserve only what we love; we will love only what we understand; and we will understand only what we are taught.”*

L. Ocean Literacy and Goals

Even though oceans cover 70 percent of Earth and play an enormous role in influencing our weather and climate, providing most of our oxygen, and feeding much of the human population, ocean topics are hardly discussed in the K-12 curriculum (oceanliteracy.org). While out on the water-conducting ocean experiments or scuba diving, individuals can develop ocean literacy. Cava et al. (2005) defined ocean literacy as an understanding of the ocean’s influence on us and our influence on the ocean. Elaborating on this understanding of interdependencies, the authors define an ocean literate person as someone who understands the essential principles and fundamental concepts about the functioning of the ocean can communicate about the ocean in meaningful ways and can make informed and responsible decisions regarding the ocean

and its resources.

“When the National Science Education Standards (NSES) were published in 1996, ocean scientists and educators were dismayed that the National Standards contained almost no mention of the ocean and aquatic sciences” (oceanliteracy.org). If oceans, our most important blue spaces, are not studied in our K-12 schools, how can we understand oceans importance and human interconnectedness with oceans? I believe implementing more ocean topic curriculum in our K- 12 schools will have a significant impact on discovering the importance of these blue spaces.

This can be a “strategic point of leverage for bringing about significant systemic change in the content of science education” as well as helping youth develop ocean stewardship for future generations to come (oceanliteracy.org).

An ocean literacy measurement tool is currently being piloted in communities around the world. The International Ocean Literacy Survey (IOLS) aims to serve as a community-based measurement tool that allows the comparison of levels of ocean knowledge across time and location. The survey will assess individuals’ knowledge of the Seven Essential Principles of

Ocean Science:

Ocean Literacy Principle #1: The Earth has one big ocean with many features.

Ocean Literacy Principle #2: The ocean and life in the ocean shape the features of Earth.

Ocean Literacy Principle #3: The ocean is a major influence on weather and climate.

Ocean Literacy Principle #4: The ocean made the Earth habitable.

Ocean Literacy Principle #5: The ocean supports a great diversity of life and ecosystems.

Ocean Literacy Principle #6: The ocean and humans are inextricably interconnected.

Ocean Literacy Principle #7: The ocean is largely unexplored.

(Source: oceanliteracy.org)

Use of the IOLS is a key strategy for justifying and promoting efforts to increase the public's capacity to understand, communicate about, manage, sustain, and protect ocean resources and ocean ecosystems (*Development of the International Ocean Literacy Survey: measuring knowledge across the world*, Fauville et al., 2019).

M. Conclusions

In this literature review, I focused on the critical need to understand the importance of blue spaces and blue recreation. The studies illuminated the historical, cultural, financial, and educational barriers for equitable access for youth to these blue spaces and blue recreational opportunities. After review of studies, I understand the value of blue space and blue recreation on the well-being of youth to help reach their human potential.

I investigated and identified barriers that the public, (in particular disadvantaged youth and their families face) in accessing blue space and participating in blue recreation. The acquisition of this new knowledge and understanding about blue spaces could be used to develop more public aquatic programs in high poverty areas. This would provide more blue space and blue recreation equity, as blue spaces, (like swimming pools) can be highly productive environments for youth to fully develop their emotional, social, and physical skills and well-being.

By reducing barriers, the hope is to build communities of youth and their families who seek out blue spaces, feel confident and safe in their blue spaces, and will forge deep and meaningful connections with the “watery” world that we all depend on for our existence. Furthermore, an increased understanding of blue space and blue recreation importance can help develop K-12 school curriculum to engage students in a deeper

understanding of coexistence, ecological interconnectedness humans have with blue spaces, understanding our dependence on the ocean, and the principles of ocean literacy.

III. Research Design and Methodology

N. Qualitative Research Approach and Study Rationale

My extensive review of current and available literature on blue space and blue recreation, highlighted their importance for human health and well-being. However, quantitative and qualitative evaluation of blue space and blue recreation importance is underdeveloped. Through my research, I understood the need to bring more attention to the positive impacts that blue space and blue recreation marine programs have on humans (socially, emotionally, physically, and culturally). My participation in the MES elective courses: *Environmental Education: Practice and Theory* and (attendance at the North American Association for Environmental Education-NAAEE Annual Conference and Research Symposium (2018) and *Environmental Sociology* inspired me to pursue a qualitative study design.

Initially, I had intended to evaluate marine education programs through a mixed-methods study design. I had planned to conduct participant observations and survey data of children participating in selected California marine education programs, along with a review of their operational budgets. However, I was advised against this approach by core faculty advising member, Shawn Hazboun, Ph.D., Sociology. The main reasons provided by Dr. Hazboun were, the extensive time required to complete this type of human subject's analysis and that it would be difficult to get the needed approval by the Institutional Review Board (IRB) from The Evergreen State College.

Alternatively, I chose to conduct qualitative interviews with selected directors (8) of marine education programs in California. I chose this qualitative method because it can empower the interviewees as they have an active voice in the study; and can be used as an effective tool to understand people's beliefs, experiences, attitudes, behavior, and

interactions. Through my interviews, I was also able to address gaps in environmental marine education programs in California and note the positive impacts of blue outdoor recreation on their program participants.

While there is not a national standard for evaluating marine environmental education programs, I chose to use the North America Association of Environmental Education (NAAEE) *Community Engagement: Guidelines for Excellence* (NAAEE.org) to assist in the evaluation process of the selected programs. According to the *Guidelines*,

qualitative research and case studies help environmental educators and others serve the underserved in our communities. This type of research is important to conduct to better communicate the complexity and types of issues faced across regions by a diversity of individuals. *Community Engagement: Guidelines for Excellence* serves a broad diversity of individuals and organizations dedicated to environmental quality and community well-being. It was created by environmental educators, for environmental educators who want to work in partnership with communities to strengthen the underpinnings of well-being—environmental quality, social equity, shared prosperity, and the capacity to pursue these goals together.

(Source: NAAEE.org)

O. Data Collection

After completing a Mini-Prospectus, Human Subjects Review through the IRB at The Evergreen State College, and receiving approval (spring of 2019), I was able to go forth with the interview process (see appendix for supporting documents). I collected new data through (2) in- person and (6) phone interviews, with a total of (8) California marine education program directors. Based on my research, California has the most established marine education programs, more than Washington state or other regions of the U.S. Therefore, the state of California was the best-suited study area for my sampling frame.

I considered sampling bias when selecting programs to interview and selected marine education programs that offered a variety of 'blue recreation' activities (some focused on sailing, and for others, surfing or a mixture of swimming, snorkeling, kayaking, stand up paddleboarding, and scuba diving). Sample interview protocol (questions), along with a recruitment letter, letter of information, and informed consent form examples were provided by Dr. Hazboun. These assisted me in the development and formulation of my material (see appendix).

Recruitment of Directors and Communication

I selected the marine education directors by researching programs online that offered highly physical blue recreation activities (kayaking, surfing, sailing, swimming, snorkeling, and scuba diving). This consistency was important during my sampling selection so that I would be able to make comparisons of directors' answers most effectively in my analysis. To find these marine education programs I used keywords in the search engine (such as *kids, camp, youth, recreation, outdoor, scuba, kayaking, surfing, and environmental education*). I will note that this search process was very time consuming, as it was difficult to find varied geographic program representations and to access programs online.

Once a program was selected I began the recruitment process. I recruited interview subjects over email, and others via phone calls made to their main offices. An excel spreadsheet was created, and each director's contact information (director name, organization's name, email, phone number, and location) was noted. Agreements were made unofficially, and I followed up with emails to program directors that included: the (*Letter of Information*), detailing the goals, objectives, and overview of the interview

process.

Consent was obtained from each program director before each audio-recorded interview through an (Informed Consent Form) and signed in person or online and exchanged through email. After I scheduled each 30-45-minute interview, I needed to keep an open line of communication with the directors, if any questions were to arise before their interviews. Before each interview, I set up materials (audio-recording device, computer laptop with back up audio-recording, a printout of the interview protocol, and writing utensils).

P. Interview Protocol Procedure

At the beginning of each interview, I thanked the directors for their time, confirmed that they still had the time available for the interviews, answered any unanswered questions, and outlined the structure and format of the interviews. The interview script was: *“The interview should take 30-45 minutes and is comprised of 10 questions. Some of the questions have two and three parts to them, so please feel free to stop me at any time to repeat the question or to take them more slowly one at a time.”* I notified the directors when I started the audio-recording and began the interviews. My questions were structured and intended to be asked in order from one through ten, rather than having the interview process open-ended with follow-up questions. The only follow-up questions I asked were to clarify a response they gave and to confirm that I heard them correctly. I restated some of the questions I asked, as some of the phone interviews received ‘feedback’ from the audio recording and were hard for both parties to hear clearly. Overall, though, the audio recordings worked well.

Q. Data Analysis

I labeled and filed away each recording with their corresponding director's name. I uploaded interviews onto the free transcription application: (<https://otter.ai/>). Once transcribed, I cleaned up each interview transcription within the application by playing the recording and listening back to label speakers and fix all incorrect words. For all interviews, the accuracy of the transcription application was about 90 percent. It was important that I reviewed and listened to the interview recordings several times to transcribe data as close to 100 percent accuracy as possible. I will note here, that after the director interviews, I did not reach out to further clarify any of the director's answers. If I were to repeat a similar interview protocol, I would pursue continued consent (before and after publishing) with the respondents to increase the accuracy and completeness of information being translated. In this regard more transparency is beneficial. This practice will be considered in higher regard in future research.

I printed out all transcribed interviews and used an open and selective coding method to highlight key themes and summarize each question. I used a color-coding technique to differentiate the director answers and summarized all key findings into a word document. I organized directors in order (1-8) according to relative geographic location (4) from the central coast and (4) from the southern coast. Again, this document was organized in ascending order of questions and printed out. I then labeled all summaries to their corresponding director as **(R1- R8)** to keep reporting and associated answers confidential.

R. Evaluation Process

I used the Community Engagement: Guidelines for Excellence produced by

NAAEE to guide me through the evaluation, assessment, and recommendations process. I used this document as a high-level framing device to conduct open and selective coding, and let the themes reveal themselves. I used the top 5 key characteristics of engaging community outlined within the Guidelines for Excellence document to strengthen the validity of this process:

- 1) Community-Centered
- 2) Based on Sound Environmental Education Principles
- 3) Collaborative and Inclusive
- 4) Oriented Toward Capacity Building and Civic Action
- 5) A Long-term Investment in Change

I then chose overarching themes that highlighted blue space and blue recreation importance and those that applied to the blue space literature that I reviewed.

IV. Results, Analysis, and Discussion

S. Interview Protocol

Marine Educators' Views on their Recreation Programs in California

*Key: Interview respondents are referred to as **R1-R8**

Question 1: Can you tell me a little bit about yourself? How long have you been in (city) California; what attracted you to this position and what motivates you with this work?

T. Background of Program Directors (8)

The program directors have lived in California and have worked in the field of marine education and recreation for an average of 23 years. The longest individual has been in the field for 40 years (**R1**) and the shortest being 10 years (**R6**).

	R1	R2	R3	R4	R5	R6	R7	R8	
Lived in California (in years)	40	33	24	14	20	10	14	26	Average = 22.625 (rounded up to 23 years)

Table 1: Director Work Experience (Marine Education/Recreation)

Longevity of experiences in the field of marine education and recreation, may positively impact the program director perspectives towards community building and managing a successful organization. This is seen as I go through each question and report respondent answers (**R1-R8**). Most program directors had an academic background in marine biology and marine science. Two out of eight respondents (**R2** and **R7**) commented on how they have always loved the ocean, while (**R1, R4, R5, R6, and R8**) commented on how the ocean environment influenced both their career choices and current positions.

For example, **R2** said that, "As a child, I always loved the ocean, vacations to ocean locales primarily and spent hours on a beach, beachcombing and learning about

animals”; and **R7** said, “I have always had a love for the ocean and the field of science in general.”

U. Attractions and Motivations

Many respondents shared that working with children was a key motivator to what attracted them to their field and positions in the first place. Working and interacting with children continued to be a prime motivator for many.

Several respondents’ comments.:

R2: The main goal is to get kids excited about the ocean; they are right at your elbow following you around seeing nudibranchs and sea stars.

R4: I like getting kids out on the water, using sailing as a teaching tool for science and math.

R5: I like working with the kids and love my staff.

R6: I wanted the shift into a more hands-on role and to have some influence on how kids and people really see the environment and feel about the ocean.

R8: I thought to myself, I wish I could get back to teaching kids about marine biology. That was my passion.

While realizing what motivates people in the work that they do in a community, according to many environmental educators, “*it is essential to support the concerns and interests of the variety of learners in a diversity of settings*” (NAAEE.org). This supportive response was seen in the shared interview responses given. For example, many respondents stated that their motivation for working in the field of marine education and conservation stemmed from providing **equity** of **access** for all children.

Examples:

R3: There weren't girls in the ocean, and I wanted to solve that problem.

R4: I liked the idea of working with the population we serve and to those that don't need a lot of money to participate. We have a community center that allows the community to access sailing without much expense and currently campaigning that will develop our financial position and will help shape and mold the organization.

Inclusivity is directly linked to engaging the community equally and fairly and requires cultural competence: *“the ability to interact effectively and appropriately with people of differing cultures and backgrounds within an organization for the benefit of all”* (Bonta et al. 2015). Another common motivation for the directors is their ability to work in the field of marine biology and marine science and to help create environmental conservation and stewardship by their participants.

R6: My work is really rewarding on a personal level because of the direct work with youth and adult groups to understand and develop a greater appreciation of the ocean.

R7: Science is a really dynamic field, everything is always changing around us, so we need more scientists, need people with the mindset to want to learn about the natural world and how we can survive with it, how we can keep it sustainable and basically how we can co-exist.

R8: We are developing world changers. Just knowing we are making an impact on people and young people for courage because we are character building as well and with every effort, we can teach our story there.

Building community capacity through the engagement of blue recreation in their programs was evident. It is also clear how these programs are developing their environmental education effectiveness, (by speaking to local issues, problems, and priorities). *“People are more likely to participate in and benefit from environmental education if they see the direct link to personal as well as community well-being.”* —

U.S. EPA2

Question 2: I am interested in the use of blue recreation in your programs. Do you know what blue space and blue recreation are and defined as? Can you generally describe your views on how your organization values blue spaces and blue recreation in your programs?

V. Terminology knowledge and organizations' value of blue spaces and blue recreation

Six out of eight respondents did not know what blue space or blue recreation were or how they are defined. Most commented that they had never heard of this specific terminology and asked me to define the terms. Two respondents, (**R3** and **R8**) said that they were familiar with the terminology of blue space as they had attended conferences where the topic was discussed, however, they were unfamiliar with the term blue recreation.

R3 defined blue space as “anything around water, water-based like the blue mind research with the color blue.” **R3** also communicated their value of water by stating:

A relationship with water makes a difference. It opens up your mind, relaxes you, and helps with stress.

R3s' values were also strongly portrayed in the values of their organization of blue space and blue recreation. For example, **R3** stated it is “valued around creating **any** opportunity around water as being important...” Though most respondents were unfamiliar with both terms, they quickly incorporated the terms into their responses for how they programmatically value blue spaces and blue recreation.

For example, **R1** stated that their

entire premise is in creating blue space experiences, with a combination of showing authentic ocean environments and communities (plants, animals) as they would exist with awe-inspiring contemplative affective experiences with hands-on touch pools.

R4 stated that they

founded an entire organization that provides recreation on the water and value it by putting it at the head of our programs. Every program has some component of water.

R5 said,

it's the course of what we do. We are a marine science program and is about the ocean, so it's a giant blue space.

The hands-on experiences these organizations provide (touch tanks, kayaking, snorkeling, scuba diving, surfing, sailing/powerboating, boogie boarding and stand up paddling) are based to be highly valued by the responses they gave.

For example, **R4** illustrates this well:

Our number one priority is to help people recreate on the water, using it as a tool to youth to engage, build character, environmental stewardship, and academic pursuits.

For this organization, it was important for them to keep blue space accessible for area youth. They were also amid a public dispute with their marina which as working to develop the coastal area.

R6 stated that the

primary reason clients come here is because they are interested in ocean-based activities and education. Everyone who comes, spends at least 50 percent of their time or more in the ocean.

Most respondents expressed the belief that the educational experiences are more profound when you are in the environment experiencing it first-hand.

As stated by **R7**,

the hands-on aspect is extremely eye-opening. You can learn a lot from books, but it's a different experience once you are out in the environment seeing how these natural processes are working.

R7 also commented on the fact that their

organization does a good job combining aspects to learn from the environment (soak

up) and apply to learning back in their classrooms to then take it to the actual real world.

Lastly, **R8** talked about the value of the educational components they do (plankton tows, food web of the ocean activities, water analysis, and water chemistry).

R8 shared,

We talk about marine debris in the ocean (plastic and pollution), and we talk about the solutions instead of just the problems. It is terrible because a lot of kids have eco-anxiety, so we talk about being the solution makers.

A value that some of these organizations spoke of, were centered on **access** and how they want to positively impact their participants' lives in the future.

Program examples:

R1: We have young women in science programs and programs for high school students from low-income school districts to conduct field research in their local wetlands.

R3: The value being inclusive is the driver of our work, because of the tools it can give for the rest of their lives. I think women and people of color have been sidelined in that.

R4: Our goal is to provide for all members of the community, regardless of barriers (physical, economic, culturally).

Question 3: Where do you get information about your local blue space environments (primary literature, scientists, professional associations, other marine educators, etc.)?

W. Information gathered about organizations' local blue space environments

One out of eight respondents (**R1**) were perceived to be the facilitators of the information distributed through their programs. For instance, **R1** commented that they are the “provider of all the information (go-to organization for content for environmental promotion and education in the region.”

For other organizations, knowledge held on blue spaces and blue recreation was predominately based on their own first-hand experiences. For example, **R3** described that

their organization (in an establishment for ten years) has focused their programming for the last six years, from research contained in the *Blue Mind* book. **R3** remarked on the disparity of wellness work happening in the marine science field, that there is “*very scientific*” information and that they have to “seek out material on my own through the internet or attend a conference.” **R3** found that there was a lack of communication with other marine conservation/education colleagues with an especially limited amount of *Blue Mind* work being conducted in the local community.

I pressed respondents to clarify if their information on blue space and blue recreation was obtained locally, globally, or both-- if their answers did not have that clear distinction. **R8**, who was familiar with the blue space term, also used their direct experience through their recent completion of a master’s program in Marine Science Education. **R8** commented that they did a lot of “online and peer-reviewed research with no agenda attached to it,” kept field journals and with on-going work on marine research vessels, and said that they generally “try to stay as informed as possible.” **R8** also stated that the “information gathered was mostly locally based but with global context too, because, through a Green Ecological Forum, they do a lot of work in China.”

All other respondents mentioned using websites (such as NOAA) and other online resources (textbooks and identification books) to secure relevant marine issue information. (**R2**, **R5**, **R6**, and **R7**) also commented on how they conduct their education and conservation activities by working collaboratively through locally based networks with other marine science educators. Some respondents, (**R2**) emphasized the utilization of teams within their organizations and building partnerships to facilitate the information distribution of their local blue space environments.

Question 4: Do you integrate this blue space/ blue recreation knowledge in your program planning and development? If so, how?

X. Integration of blue space and blue recreation knowledge

Most of the respondents replied to the question with strong positive statements including: “Yeah, absolutely” (especially including statements made by **R6** and **R7**).

R1: We are 100% blue space interpretation, that’s what we do, that’s all we do.

R3: Our whole program is done at the beach, everything we do is around the ocean.

R5: Our whole program is planned around recreation and blue space.

R8: We are all about the ocean, we do have a mountain camp, but 80% of our business is blue space.

Most respondents mentioned how through curriculum development, the design and plan their marine lessons and **R3** commented on wanting to “work more with the watershed and connecting kids to their local rivers, because they live so close to them.”

R2 mentioned how they have a “well-established outdoor school curriculum where teachers request marine-themed lessons from a menu of activities for their students.” **R2** said that use a “whole set of lessons (thinking like a scientist)” to lead students through activities towards the understanding of specific marine themes.

For **R7** it was clear how well blue space and blue recreation knowledge was integrated into their program planning and development. For example, **R7** spoke about doing more than just recreational activities out on the water, but also “showing the students how you can use these activities and apply it to a scientific study.” Furthermore, **R7** shared an example that they ask their students: “if you are not walking, how else could you reach the area of study to observe as a scientist”? The importance of this lesson was of how using a kayak or observing fish via snorkeling, one can work as a scientist to

do fish specimen counts more accurately.

R7 emphasized that they use research vessels to conduct plankton tows, as well as conduct water sampling and water chemistry tests. **R5**, **R6**, **R7**, and **R8** also introduce their students through kayaking, paddle boarding, and snorkeling to their marine-based lab curriculum. They first go out on the water to observe algae, plankton, invertebrates, fish, and marine mammals. Then they return to their marine lab (which is sometimes a floating lab onboard their research vessels) to discover more about the marine flora and fauna they just observed and view others they didn't have the opportunity to see out in the marine environment.

Several respondents, specifically **R1** also commented on the importance of using content experts for project-based learning, participant workshops, and for strategic program planning.

R4 was an outlier respondent and was concerned with my use of the terms blue space and blue recreation and was frustrated with why I had to use them. **R4** wanted me to refer to blue space as just water. However, **R4** was able to give examples of how the knowledge is integrated into program planning, development, and implementation.

For example, **R4** referred to using weather forecasting websites (such as the ocean focused agency NOAA) and radio channels as a tool to stay up to date on inclement weather and high winds. **R4** relayed that information is always incorporated into their program planning to maintain program participant safety. The organization also cancels programs or use different vessels when the weather out on the water is too inclement. Additionally, **R4** commented on "using and wearing wetsuits (for cool air temperatures and the ocean water which remains at 55 degrees year-round). They also purchase rain

gear for program participants (to be comfortable in the rain) and lifejackets, as **R4** said, “you can drown in a blue space.”

According to the *Community Engagement: Guidelines for Excellence* distributed by NAAEE, “public access to information may create challenges...it also highlights the important role environmental educators can play in providing the context and deeper understanding needed to address increasingly complex issues” (NAAEE.org).

Question 5: Is blue space/blue recreation included in your organization's mission statement, programming goals and objectives? If so, how is that stated?

Disclaimer: I want to address the fact that I could collect these organizations’ mission statements on their websites. However, I chose to ask each respondent to share their organizations’ mission statement, goals, and objectives in my interviews. This allowed me to gauge the respondent’s personal connection to their organization and how the information that the respondents shared aligned with what their organizational websites portrayed. Through this method, I was able to navigate and get the bigger picture of their organization more effectively.

Y. Mission Statements

Five out of eight respondents (**R1, R2, R3, R4, and R8**) said that blue space and or blue recreation was included in their mission statement, programming goals, and objectives. A sixth respondent (**R7**) stated that it was not specifically included in their mission statement. However, after careful analysis, I found that four out of these six organizations (**R1, R2, R3, R7**) had the word “ocean” directly stated in their mission statements. This included the sixth respondents’ organization (**R7**). The focus on oceans encompassed their programming goals and objectives. Furthermore, (**R1, R2, and R3**) which included the word “ocean” in their mission statement, also listed conservation, stewardship, and the importance of relating and connecting their participants to their local blue spaces.

One organization that did not include the “ocean” as a blue space in their mission

statement, did include a statement regarding the stewarding of the Earth. **R8** who is affiliated with the organization above, acknowledged that the “Earth definitely includes the ocean.” The last respondent (**R4**) whose organization did not include the word “ocean” or “stewardship”, did discuss their blue recreation activities, and about providing access for all people, regardless of “socio-economic backgrounds, abilities, and skill levels to the water.”

The remaining respondents (**R5** and **R6**) responded with a strong “no” that these terms were not included in their mission statement. One of those respondents commented on having “no idea if it is stated on the website, I never go online.” I later researched their website and confirmed that they do not have blue space or blue recreation mentioned in their mission statement. However, (**R5** and **R6**) did state the importance of enhancing the lives of their participants through discovery within their programs. **R6** stated that, “there has never been mention of those terms.” However, the organizations’ mission statement does include aspects of conservation and exploration.

Z. Summary of Goals and Objectives

Most organizational representatives incorporated a theme of health as an overarching goal and objective for their organization (although not all respondents gave answers to their specific goals, objectives). This health theme encompassed the personal well-being of their community participants and the stewardship of their local blue space environments. Although not all organizations included direct statements of blue space or blue recreation, (nor focus on these terms within their programs), strong concern and the fostering of stewardship for the environment statements are as follows:

R6: We are focused on leadership and values. We use these in our outdoor environment to foster an appreciation of the environment as a whole and to help develop leadership

skills through ropes courses and team building activities.

R8: We are trying to develop a movement of people that will be environmentally responsible with strong character, and to really transform environmental issues that are in society today.

Several respondents commented that their organizations were developing new programmatic goals in their desire to improve program components. These components addressed the need to reduce participant financial barriers, to provide more access to blue spaces and blue recreation for all. This in turn would make a more positive community impact.

For example, **R2** commented on a new program goal of their organization:

getting local kids (to participate in programs) who live in a nearby watershed that impacts the ocean. We want to be more sustainable by finding a parent organization, instead of relying on grant writing funds and want to reach kids that wouldn't normally be reached (the underrepresented).

Another respondent (**R4**) voiced their organizations' priority and emphasis on "helping people enjoy recreating in the blue spaces."

Question 6: What measurement tools does your organization use to assess blue space and blue recreation integration and programming effectiveness?

A. Measurement Tools Used

A variety of measurement tools were used by respondents to assess their integration of blue space and blue recreation and programming effectiveness of their organizations. Measurement tools included: formal participant and parent surveys, informal evaluations for teachers; parent feedback forms; and questionnaires with use of engagement tools for social media impact.

Many of the organizations' respondents (**R2, R3, R4, R5, R6, and R7**) commented on using participant surveys as their organizations' main measurement tool to

gauge programming effectiveness. However, most of the respondent's surveys conducted were done informally (with no pre and post-tests for their participants). Only one out of the eight respondents (**R3**) shared that they provide pre and post-tests to all their program participants. Additionally, respondents used curriculum assessments and tests; and one organization (**R1**) used an outside consultant to conduct formal evaluations.

B. Pre and Post Test Example

The respondent mentioned above (**R3**), stated that their

pre-tests ask about their participants' daily/weekly/monthly/yearly experiences with the ocean, so the assessment at the beginning can see where the relationship lies.

R3 post-test questions included

how the relationship has changed (increased or encouraged to experience more); (has it affected their family time and beach visits)?

This organization highlighted their focus on improving the overall well-being of their participants through the work of "mindfulness meditation, to teach the surfers 'code' and how they can 'catch a wave' in their life every day." The experience that a program participant experienced in catching a wave was used as a direct metaphor for applying the lessons learned from the ever-changing ocean to proving to oneself that great things can be achieved with effort, awareness, and determination.

C. Suggested Measurement Tool Improvements

Several respondents addressed their desire to do more formal program assessments.

For example, **R2** commented, Yeah, we don't do enough of that. We used to do extensive evaluations under grant requirements (pre and post-tests for kids).

R2 continued to explain that they do surveys every week of the running program, but that they haven't been processing them recently, because of the expense of (\$2,000). Evaluations forms are filled out from teachers and staff, with the addition of parent comments, however, no formal evaluations are done because they are no grounds to require it.

Another respondent (**R5**) replied with, Ooh, that's a good question. We have no formal assessment tools (no pre and post-tests). The closest to it is asking for feedback from the teachers (every 35 days), which asks them to assess the quality of the program to their students through the use of Survey Monkey or conducting direct interviews.

Additionally, **R6** replied that they didn't use any assessment tools because blue recreation isn't in their vocabulary. They use evaluations and survey questions to ask the participants of their overall programmatic experiences, and what their favorite activity was. Participants are not asked specific questions regarding their oceans or the use of blue recreation or blue space.

I found this interesting as the respondent relayed that when program participants listed their favorite activity: "most of the time it has something to do with ocean-based activities." The vocabulary of blue spaces or blue recreation is not mentioned on their website either.

D. More Discussion on Improvements for Program Evaluations

Several respondents gave feedback that they are working towards creating more opportunities for program evaluation and assessments. **R4** commented that they "collect testimonials and satisfaction surveys for adult programs and are working with consultants to develop more assessment tools." Another respondent (**R7**) commented that their organization has been

very active on social media for the past year and a half, and that it has been a big help for being more 'accessible,' because a lot of time people don't want to read or fill out forms, it is easier to send out a comment and get feedback through social media.

Although this organization encourages feedback via social media, **R7** recognized that it may also be a good idea if they had program evaluation forms on the social media platform. This is in addition to collecting the statistics of their social media impact over the last two years since they have increased their social media presence.

Lastly, one respondent (**R8**) stated that they have an "educational director that is checking courses to make sure all programs are taught as they

should be.”**R8** also commented, we’re also developing a program, which is part of my thesis, where we will send out pre-tests (surveys) to get post-tests afterward (going to teachers and parents). This would allow them to see what differences they see with their kids, as far as understanding the importance of environmental impact and stewardship.

Question 7: What are the demographics of your ‘blue recreation’ program participants? Is there a specific target audience for your programs?

E. Participant Demographics and Matching by the State (CA)

Overall, respondents mentioned that a goal as an organization was for their program participants to reflect the ethnicity demographics of the state of California. Several respondents stated that in some capacity they were matching the demographics of California. For example, **R1** said that they were “matching the demographics of the state, except for the Latino audience (which is 25-28% of California audience).” **R1** also commented that these percentages were “approaching the state demographics.”

However, Table 2 that follows below, shows the student enrollment by ethnicity for the state of California, and Hispanic or Latino students are at 54.6%. Although data in the table do not reflect non-student, and adult audiences of the state, it provides a good reference for trying to target specific ethnic groups for participation in their programs. Most of the respondents did emphasize that they tried to cater to a **diversity** of school groups.

Table 2: Student Enrollment by Ethnicity for the state of California

Ethnicity	State
<i>African American</i>	5.4%
<i>American Indian or Alaska Native</i>	0.5%
<i>Asian</i>	9.3%
<i>Filipino</i>	2.4%
<i>Hispanic or Latino</i>	54.6%
<i>White</i>	22.9%
<i>Two or More Races</i>	3.6%
<i>None Reported</i>	0.9%

**Source: Adapted from the 2018-19 California Department of Education, Dataquest, Student Enrollment*

Other respondents' answers reflected that they were matching or nearly matching the demographics of the state or by county. Two organizations' demographics (**R2** and **R3**) were "40% Latino (**R3** wanted it to be 50%), 40% White, with small percentages of African American, Asian American and Pacific Islander." To have an increase in their Latino audience was a common theme from the respondents.

R2 stated,

if given a grant we could recruit from the target population for the local neighboring region (more from Title I Schools and more like 60-80% Latino).

I confirmed that this target audience is a more accurate depiction of the student enrollment demographics of the state for Hispanic or Latino, as well as for their respective county.

F. Target Audiences

According to respondent answers, these organizations provide services to a diverse and broad set of demographics including pre-k to college students.

Responses included:

R5: All socioeconomic backgrounds, no one student depicts us.

R6: Our demographics are pretty diverse.

R7: It kind of varies.

One respondents' answer (**R4**) was surprising and alarming.

R4 spoke to

catering to families that have been challenged by the housing crisis and base a lot of scholarships on income (85% of all kids who come, come for free). And, although the demographics are a good diverse mix of gender, race, and socioeconomics, the target economics are leaning more towards disadvantaged populations than affluent.

Marginalized communities—often, but not always, communities of color—suffer disproportionately from negative environmental impacts. From higher exposure rates to pollution and proximity to landfills, to neurological damage from pesticide poisoning with farmworkers, environmental racism continues to plague marginalized communities in addition to significant disparities in income, education, poverty, access to jobs, and health (Stevens et al., 2010).

The focus on serving the underserved, lower-income students (from Title 1 Schools) was consistent in most of the responses. “A Title 1 School is a school receiving federal funds for Title 1 students and is the largest federally funded educational program. The program provides supplemental funds to school districts to assist schools with the highest student concentrations of poverty to meet school educational goals,” according to USlegal.com.

The disparity of lower-income schools accessing marine education field trips was clear in one respondents (**R7**) answer.

R7 stated that

most of our clients come from private schools, we do have a handful of public, some inner-city kids, but unfortunately nowadays it's hard for some of our Title 1 Schools to come and actually do field trips, because the money just isn't there.

R7 continued to share that public schools aren't allowed to ask their parents for money for trips, whereas the private schools are allowed to do that. To provide more field trip opportunities for Title I Schools, this organization is working to set up scholarship funds to offer to Title 1 students.

While some respondents wanted to target student participation from lower-income school districts. Others emphasized that their target audience was the same for the demographics they serve (school groups, grades 4th-12th). One respondent (**R7**) voiced that they did not have a target audience, and stated, "we are open to absolutely anybody and everybody who wants to learn."

Question 8: Can you please share a specific example of how your blue recreation program has impacted your participants' understanding of blue space? What outreach tools do you use for providing these impactful stories to others?

G. Ways of Sharing Stories and Common Themes and Examples Shared

Organizations have a variety of ways in which they share these impactful stories with others. Most respondents responded that they share their stories through social media, with posts on Facebook as the most common outreach tool. Through their examples, nearly all respondents shared that their programs had large impacts on their participants. Some went onto college and were inspired to pursue and obtain marine biology and marine science degrees. Some examples shared by respondents about their program participants are as follows:

R1: We have a lot of participants graduating from our Teen Programs and going into Marine Biology majors and ocean conservation advocacy work, with a lot of them coming back here to work as ocean educators.

R2: A scholarship kid from our summer camp credited her experience at camp to influencing her decision to go to UC Santa Cruz.

R3: One girl went to college at UCLA on a scholarship, which she contributes a lot of her

success to where she is now from her experiences in the program and being in the water.

R5: We have gotten feedback from students about how our program has motivated them to further education in science (in college) and go into the marine science world.

R6: I was flying home to visit my parents, took a Lyft and it turned out that the drivers' two sons had been to our camp. The man specifically said that their sons' experience at camp and taking oceanography and advanced oceanography really impacted both of their decisions on not only where to go to college, but what to study. One son is up in Berkeley studying environmental science and policy, and the other son is at UCLA getting a biology degree with an emphasis in Marine Science.

R8: A young woman who went to the camp was sailing with a friend of mine. She told my friend that when she went (to camp) 14 years ago, it was also the same day that she decided to become an environmental scientist. She is now in her senior year at UC Santa Barbara.

H. Blue Space/Blue Recreation Experiences and Life-Changing Impact on Participants

Individuals featured in the examples above, attributed their pursuit of higher education and marine-based college majors on their experiences in the marine programs that they participated in. Respondents also shared that students also directly shared their stories of how their lives were deeply impacted through their program experiences.

For example, **R1** shared that a lot of their participants are

being inspired and mentored through the years and that is why they come back to volunteer with us.

R2 said,

students send in their thanks for giving them friends and (how they) found people like them (like-minded individuals). They get to have nature nerds come together into community and having the opportunity to do group sharing to talk about an environmental issue and trying to solve it.

Several respondents further illustrated how life-changing of an impact their blue space and blue recreation programs had on their participants. Here are some comments that feature this theme:

R2: They are overcoming personal barriers to that kind of involvement with water and with the ocean.

R3: They (Hispanic girls) don't have a relationship with any water, so getting over the fear of being in that space, (have large numbers of Hispanic girls in their programs). These girls are not in their comfort zone at the beach, not culturally. When they look around, they do not say **yeah, my people are here**. I always hear about how life-changing it is for them and getting to feel the 'space' in their identity and saying things like **I can be a surfer and water woman**.

R6: Even though our program is only for one week and sometimes they will come back for a second visit; they always remember that one- week experience with specifically spending time in the ocean. So, I think it impacts people pretty dramatically.

R7: We get school groups from Arizona or even southern California and have kids that had never been to the beach before. They had not seen the Pacific Ocean, which is kind of mind-boggling considering that some of them live maybe 8-10 miles away from it. So that is kind of eye-opening to see how these kids are so close to something, yet they don't have the resources to get there.

Question 9: What mechanisms does your organization have in place for program sustainability and what are the top challenges in blue space and blue recreation programming?

Disclaimer: While I recognize that the word 'sustainability' has a few different meanings, respondents also asked me what I meant by program sustainability. They asked me to clarify if it was about how they keep their programs fiscally solvent or if it was about how 'green' their programs were. I responded along the lines of, "I would like to limit my bias as much as possible, it is really about how you interpret sustainability and what it means for your programs, whatever that may be."

I. Program Sustainability

With that said, **R1** mentioned that they have a

robust membership program with a robust fundraising program, as well as current building of an endowment fund to further provide income to everything they do. **R1** additionally commented that funding all of the programs is a challenge for 'smaller' nonprofits, but that it wasn't a challenge for them.

R4 spoke about their organizations' sustainability in terms of business models with "balanced budgets and a board of governance to keep their financial income stream stable."

R5 said that their programs have a

balanced budget, which is somewhat unusual for a nonprofit because they rely on ‘soft’ money. So, we are working on a zero balance.

I know that many nonprofit organizations rely predominantly on ‘soft’ money. This is funding coming in from many different sources, including multiple grant sources.

R6 shared,

ideally, we would have endowments that would help support our programs, but as a nonprofit, everything we make goes back into the program somehow.

This comment confirmed my prior knowledge about nonprofit programs and how many nonprofits operate year to year on shoestring budgets. I will address this more fully as I discuss organizational challenges.

Other organizational respondents interpreted the question differently. They focused more on how ‘green’ they are within their programs (such as water conservation, recycling, reusing materials, and participation in ‘zero’ food waste programs).

Respondents also shared that their programs were ‘sustainable’, and curriculum enhanced as they cooperated with their staff members, received feedback from teachers and parents. This also enveloped the objective of staying current with new marine education material (aligned with Common Core, and Ocean Literacy Standards), and with a strong Science Technology, Engineering and Math (STEM) focus.

J. Top Challenges

After careful analysis, I have distilled respondent answers into the top challenges below.

- 1) *Funding*
- 2) *Risk Management*
- 3) *Outreach and Curriculum Development*

As I tallied up all programs' top two challenges, (2) programs stated that funding was their number one challenge, and (4) programs stated that funding was their number two challenge. Risk management totaled up to (6) programs split evenly with (3) and (3) stating it as their number one and two top challenges. Finally, (2) programs stated that outreach and curriculum development were their top challenges.

Challenges Shared R1-R8:

R1: Providing immersive experiences like scuba diving and field research programs, which is very labor-intensive. Also, having a caring adult with provision of staff to provide a lasting experience and to really have an impact on the kids. It was also, clear that **R1** believed in the power of mentorship has on creating a positive learning environment by stating that more important than learning about the ocean is to have adult mentors (aka staff), who mentor them through school and life.

R2: Having fees to cover expenses **R2** stated that it is very competitive to find funding and that finding grants that aren't based on projects but for operations are really hard to find. We are operating at a deficit. Most of the outdoor schools that they know are also operating at a deficit too. The second top challenge that **R2** relayed that they need a willingness for school districts to accept liability for recreating.

R3: Finding grants and grants in different branches to keep up with the growth (since exponentially grown in the last 10 years, as having 500 kids come to their program in one summer to 8-900 kids and then soon to be moving to around 1500). In this way, keeping up with the growth also meant growing structurally to getting more funding to have a bigger administration staff, because right now, it is only me. **R3** also shared that it is hard to measure how you feel and that the challenge was of using the learned new knowledge to facilitate growth in a new field that has to do with public health, environmental justice, and recreation. *(This last statement reaffirmed my beliefs that we need to keep navigating through this new field, where we continue to grow our qualitative research and analysis of the impact environmental educators have on program participants).

R4: Programming to continue to outreach and seek the population that we intend to provide access to and funding the programs to (provide transportation to our location and to hire instructors every year). **R4** reinforced this being a challenge, because of the high prices and cost of housing and living in the area.

R5: Economics of getting kids here (while maintaining the top price point that is affordable to everybody. The goal is to never exclude a kid based on money, so we try to keep costs extremely low. The second part of that challenge is dealing with the rising prices and paying for (insurance, leasing rate, cost of wetsuits).

R5 said that at some point, it will be a squeeze. The second top challenge was about risk management. **R5** said there is a fear of lawsuits, because there always must be a 'distance' between the kids at any time. There is a lot of things at the school system that limits our ability to do our job and that is beyond our control.

R6: Trying to keep programs up to date and accurate (aligned with climate literacy ideas) and hands-on to make it more exciting for the kids, to get them to really think, rather than it being lecture-based. The second top challenge consisted of risk management and ensuring that everything that we do is as safe as possible, while still getting them out in the ocean. Even while risk management was a concern for their programs, it was nice to hear that they got a lot of support. **R6** commented that we get a lot of leeway to guide and direct our programs to where we would like them to go.

R7: stated that weather was one of their top challenges: when you're doing outdoor education, you're at the mercy of the weather. But you can use it as a teaching point to deal with scientific exploration and how it will impact your study. If there are not good sea conditions, you can find ways to work around it and being patient. The second top challenge **R7** shared: wanting to serve more in the community. We would like to grow bigger to offer more scholarships and have more opportunities to get more underprivileged groups to be able to come out with us. That is something we are constantly working on.

Operating expenses were also a large part of that picture of the funding challenge:

R7: stated that they continue to go up. It impacts us because we can't control the fuel prices and costs of the boat, etc. It was also important to keep serving the community through their programs as **R7** explained that they are looking at other ways we can fundraise because we want to keep the prices as low as possible.

R8: shared their challenges were two-folded. We are an ocean camp, so everything you do is being worked by the elements (saltwater being the hardest elements). So, we keep our stuff stewarded well by staff and it can be younger staff, so giving them training on that. The second challenge was about funding and continuing to get resources (especially doing work in California where taxes are so extremely high and having to source and raise money for that).

Through the respondent answers shared, you can see just how much funding challenges play into every aspect of programming and development. Funding is at the root cause of how we can provide more blue recreation services (safely through risk management) to the community and how we can keep working towards providing them equitably (through outreach and curriculum development).

Question 10: Thank you! Is there anything else you would like to add?

K. Additional Comments

Most respondents did not have any additional comments and stated that they covered the material they wanted to speak to about their programs. Overall, respondents were comfortable with the interview process, appreciative of the questions asked, and wished me luck in my future work. Some respondents reiterated the importance of their programs.

For example, **R2** shared that they wished they could speak more to blue space and blue recreation, and that they will have to read more about it. **R2** ended by saying that “but basically that’s why we’re here, to encourage people to learn more about and love the ocean and to act on that.” Additionally, **R5** and **R7** both commented on the significance of creating baseline opportunities for kids to experience the ocean for the first time (as most have not been able to) and how providing that opportunity will help kids learn to protect what they love (the ocean) and becoming a steward in it.

Jacques Cousteau (famed open ocean and undersea explorer) and other passionate environmentalists, tribal leaders, scientists, and conservationists, have all expressed that “*people protect what they love.*” These programs offer youth the recreational opportunity to discover blue spaces, learn to love and how they ‘feel’ while in them, and begin to understand the vital importance they play in their lives.

V. Conclusions

Summary and Recommendations

My extensive literature review found limited research on the importance of blue space and blue recreation in the United States. This reinforced the need to link and promote the health correlations that blue space participants benefit from. Studies reviewed in the literature revealed that by just viewing blue spaces, stress levels in humans are lowered, and there is a promotion of relaxation and improved moods. For example, viewing blue spaces helps patients in hospitals recover faster from surgeries. Other studies showed higher cognitive functioning in students by the viewing of and being in close proximity to blue spaces. Also, learning how to swim is a key water safety skill, as accidental drowning is a leading cause of death of children in America.

The comprehensive pan-European Blue Health (2016-2020) study is increasing the visibility of blue space and blue recreation importance. The research thus far demonstrates the tremendous importance of blue space and blue recreation for human and environmental health. A recommendation is for the United States to conduct its own comprehensive initiative to investigate the links between environment, climate, and health, and modeled after the pan-European Blue Health initiative. With this knowledge communities will begin to connect more with their local blue space environments, and that these benefits may be most important for vulnerable populations including disadvantaged American youth.

Equitable participation in blue spaces is my overarching goal, as the health and wellbeing of our communities depend on it. As we continue to explore blue spaces and their importance, communities need to continue to identify and overcome the barriers to

these spaces. As we move into blue recreation program development, the inclusion of the voices and input from a diversity of community members is vital. This will build community health, trust, and social equity.

Crawley reinforced the opportunities for public engagement and urges all to get their feet wet, with an emphasis on getting children to participate in (scuba diving in particular) and become the next generation of ocean storytellers. Crawley said,

There are people in the world that will only hear your story or our kids' stories. Storytelling is very important to bring ideas and concepts from generation to generation...and the ocean needs a new storyteller. (It's been misrepresented and misunderstood for far too long.

She explained that through storytelling and public awareness, youth can help drive corporate and policy change both now and impact 10, 20, or 30 years from now. This can also help us improve how we move together in decision-making, through local, state, and national coastal management goals and objectives, and the utilization of comprehensive blue space and blue recreation community surveys.

I recommend a 'call for action' to expand marine education and recreation programs. The marine education program directors in my case study listed funding as a top challenge. To overcome this known key barrier, funding for blue space and blue recreation programming needs to be local, regional, and national priorities. Most program directors and their staff spent a considerable amount of their work time searching and applying for grants to help fund their programs. The program directors wanted their programs to serve a clientele that more closely reflected the demographics of their communities at large, and to include more disadvantaged youth in their programs. But to do so, more funding is needed to provide opportunity scholarships.

Program funding may likely be a consistent hurdle for organizations in the

future. To leverage their programming capabilities, and sustainability, it is recommended that these programs use invaluable resources available. This includes using the *Community Engagement: Guidelines for Excellence* created by NAAEE, with the intention and goal of making programs more equitable and to eliminate many of the barriers I have identified. These blue recreation programs can also use and adapt the tools, activities, resources, and case studies provided within the *Guidelines* to meet their organizational goals and objectives while building capacity through partnerships. In turn, this will “help create more civically engaged communities that embrace change, diversity, and new ways of working together toward a more sustainable future” (NAAEE.org).

In my case study, I learned how marine education program directors are influenced by their understanding of the importance of blue spaces and how they use that understanding with their community blue recreation programs. I also learned that through the equitable expansion of blue recreation programs, we can build a collective consciousness of the importance of blue spaces for our personal and environmental health and well-being.

My case study program directors revealed themes that reinforced the importance of blue spaces and blue recreation and the powerful impact they especially had on disadvantaged youth. Many of the participants were reported to ‘seeing and experiencing’ the Pacific Ocean for the first time during their blue space recreational activity, (even though many of the participants lived in relatively close proximity to the ocean). Program director (**R3**), shared that through surfing, girls of color learned how to take on and overcome challenges and ‘catch a wave’ in their daily lives. This was demonstrated well

by a Hispanic girl (program participant) who said, “I can be a surfer and water woman.” Along with providing program participants with the acquisition of new skills, and attitudes, their participation had a lasting impact on their future. Program directors stated that several of their program participants shared that their involvement in the marine program was a catalyst for going to college and studying marine biology and conservation.

Another important conclusion is that with the expansion of blue space – educational and recreational opportunities, we will promote a more ocean literate citizenry. As stated earlier, Cava et al. (2005) defined ocean literacy as an understanding of the ocean’s influence on us and our influence on the ocean. Elaborating on this understanding of interdependencies, the authors define an ocean literate person as someone who understands the essential principles and fundamental concepts about the functioning of the ocean, can communicate about the ocean in meaningful ways and can make informed and responsible decisions regarding the ocean and its resources.

In closing, I would like to share the following quotes:

Children and Nature Network

By missing nature, right now and each other, this may be a way to fall in love again, with nature and with each other. I'm thinking about imaginative hope... Imagine what the world would be like a lot of things went right, if we acted on climate change, if in fact, we set aside big areas for biodiversity, imagining a different kind of city where it's filled with biodiversity. If we begin to imagine that now, and I hope that this occurs, particularly with young people, it's a lot more likely that we will get that world than we will get the post-apocalyptic world that we're too used to imagining.

(Richard Louv, Connecting with nature in the time of COVID-19, 2020)

Surfrider Foundation

The more people know and experience the coastline and the ocean
the more they will love that coast and be advocates for protecting it.

(Gus Gates, Washington State Surfrider Foundation Policy Manager,
Personal communication, October 9th, 2019)

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VII. Appendices

Appendix 1

Marine Educators' Views on their Recreation Programs

Phone/Email Recruitment Script 2019

Hello, my name is **Shayley Jacobson**. I am a **graduate student** at The Evergreen State College, and I am working on a research project examining marine educators' views on their recreation programs. Specifically, I am interested in gaining insight into marine educators' practices and decision-making around program planning and development. I was wondering if _____ might be available for a thirty-minute interview sometime in the next few weeks?

I would like to email _____ a letter of information about the study if possible, along with some possible interview times. Would that be possible?

Or, I could leave my phone number and perhaps _____ could get back to me as he/she has a chance?

Thank you very much!

LETTER OF INFORMATION

Marine Educators' Views on their Recreation Programs in California

Dear Marine Educator:

I am Shayley Jacobson, a graduate student at The Evergreen State College. I am conducting a research project titled "Marine Educators' Views on their Recreation Programs in California." The purpose of my project is to gain insight into how marine educators view their recreation programs and how they value them. I am especially interested in current marine program practices and how they operate under their mission statement(s), goals, and objectives. I am interested in this topic because it will inform me of current marine education practices through their recreation programs and I am interested in gathering qualitative data for my thesis. If you are willing to participate, I will be conducting a 30-45 minute audio-recorded interview of you about your views on your recreation program(s), including your perspectives on their value, and how they operate into your program planning and development.

Your responses to interview questions will be used alongside other marine educators' interviews as qualitative data, which will be analyzed and eventually compiled into a manuscript that will be submitted as my thesis and will be publicly available at The Evergreen State College Library. Your responses could be used for future research studies or distributed to another investigator for future research studies, with all identifiable information removed, without additional informed consent from the subject or the legally authorized representative. At your request, I will provide you with a copy of the final manuscript. I may report your answers in my paper, but your identity will be kept confidential.

Your participation will be completely confidential and anonymous; neither you nor your views will be personally identified in any output of this research. I will keep the digital audio recording of our interview in a password protected computer accessible only by me. Upon completion of the project, the digital files will be destroyed. The recording will be transcribed verbatim, and the transcription will also be password-protected. I will be the only one to have access to the recording or the transcription. As such, risks to you are minimal. Your participation is completely voluntary, and you may withdraw at any point or skip any question you do not wish to answer without penalty.

If you have any questions about this project, please call me at [REDACTED] or email me at [REDACTED]. The person to contact if you have questions concerning your rights as a research subject or experience problems as a result of your participation in this project is John McLain, IRB administrator at The Evergreen State College, Library 2211, Olympia, WA 98505; Phone 360.867.6045.

Please let me know if you would be willing to schedule a 30-45-minute interview. Thank you for your consideration! Sincerely,

Shayley Jacobson
Graduate Student – The Evergreen State College

[REDACTED]

INFORMED CONSENT AGREEMENT

Marine Educators' Views on their Recreation Programs in California

I, _____, hereby agree to serve as a subject in the research project titled "Marine Educators' Views on their Recreation Programs in California." It has been explained to me that its purpose is to gather information about how marine educators view their recreation programs and how they value them. The research activity I will participate in is a 30-45-minute audio-recorded interview.

I have been informed that the information I provide will be transcribed verbatim and will be used as qualitative data for a thesis paper that will be submitted to a faculty reader and then offered to the public after being finalized. I understand that my responses may be reported in the paper, but that my identity will be kept confidential and no identifying information about me will be included. Shayley Jacobson has agreed to provide, at my request, a copy of the final draft of her paper.

I understand that the risks to me are minimal. I agree to be interviewed, and to have that interview audio recorded for this project. I have been told the recording will only be heard by Shayley Jacobson and will be destroyed when the project is finished.

There will be no compensation of any kind available for my participation. I have been told that I can skip any question or stop the interview and withdraw my full participation from the study at any time without penalty. If I have any questions about this project or my participation in it, I can call Ms. Jacobson at _____, or email her at _____. Likewise, the person to contact if I have questions concerning my rights as a research subject or if I experience problems as a result of my participation in this project is John McLain, IRB administrator at The Evergreen State College, Library 2211, Olympia, WA 98505; Phone 360.867.6045.

I understand that my participation in this project is completely voluntary, and that my choice of whether to participate in this project will not jeopardize my relationship with The Evergreen State College. I am free to withdraw at any point before or during the interview. I have read and agree to the foregoing.

Signature _____ Date _____

Appendix 4

Marine Educators' Views on their Recreation Programs in California Interview Protocol 2019-2020

1. Can you tell me a little bit about yourself? How long have you been in (city) California, what attracted you to this position and what motivates you with this work?
2. I am interested in the use of 'blue recreation' in your programs. Do you know what 'blue' space and 'blue recreation' are and defined as? Can you generally describe your views on how your organization values 'blue' spaces and 'blue recreation' in your programs?
3. Where do you get information about your local 'blue' space environments (primary literature, scientists, professional associations, other marine educators, etc.)?
4. Do you integrate this 'blue' space/ 'blue recreation' knowledge in your program planning and development? If so, how?
5. Is 'blue' space/'blue recreation' included in your organization's mission statement, programming goals and objectives? If so, how is that stated?
6. What measurement tools does your organization use to assess 'blue' space and 'blue recreation' integration and programming effectiveness?
7. What are the demographics of your 'blue recreation' program participants? Is there a specific target audience for your programs?
8. Can you please share a specific example of how your 'blue recreation' program has impacted your participants' understanding of 'blue' space? What outreach tools do you use for providing these impactful stories to others?
9. What mechanisms does your organization have in place for program sustainability and what are the top challenges in 'blue' space and 'blue recreation' programming?
10. Thank you! Is there anything else you would like to add?

--END OF INTERVIEW--