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## INDIGENIZING ECOSYSTEM MANAGEMENT IN RHODE ISLAND

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INDIGENIZING ECOSYSTEM MANAGEMENT

IN RHODE ISLAND

BY

JACKSON COX

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## **ABSTRACT**

This project interviewed members of the Narragansett Tribe on the concerns the Tribe has with climate change. Following the guidelines of decolonizing methodologies and the concept of Indigenizing futures, this project aimed to be as respectful and useful to the Narragansett Tribe as possible. The project delves into current and future Narragansett concerns the Narragansett regarding climate change, and it identifies some of the cultural, historical, and societal factors that inform their viewpoints on climate change and climate change adaptation. Some of the concerns for the Tribe included: air quality, the health of forest resources, and energy production and consumption. Ultimately, the project aims to create an informational tool for the Tribe to use to begin formulating a climate change adaptation plan. After analyzing interview responses and literature, this thesis presents initial recommendations for potential actions and strategies the Narragansett people might choose to implement in a climate change adaptation plan.

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## CHAPTER 1

### INTRODUCTION

English colonists<sup>1</sup> would have starved had they not relied upon Indigenous<sup>2</sup> agricultural knowledge as soon as Plymouth Colony was established in 1620, even if that reliance went largely unacknowledged (Deetz, 2000). Indigenous peoples in New England have historically been ravaged by English colonial powers that have forcibly removed them from their lands and decimated their populations and cultures in place of capitalist and Judeo-Christian beliefs (McCarthy, 2001). Eventually, the colonists exhausted their use of the Indigenous peoples in New England and began to wage wars and initiate the systemic eradication of peoples whom colonists viewed as occupying what was now their land. Survivors of the wars on Indigenous populations were then subjected to cultural genocide. Isolated, ignored, and marginalized in American society, their struggles with colonialism, industrialism, and capitalism have not ceased, despite what some public-school systems might teach today. For example, it was not until reading for this project that I had learned about the horrible experiments Indigenous people had been put through by western scientists<sup>3</sup>. Exemplifying Indigenous people's struggles against marginalization, 'western' scientists promulgated the delegitimization of Indigenous knowledge systems, in favor of their own hierarchical system for performing "proper" scientific studies (Whyte,

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<sup>1</sup> 'Colonists,' or any other variation of the word will refer to British Colonists unless otherwise noted

<sup>2</sup> 'Indigenous' will refer to a broad conception of a people that have inhabited a land for centuries or millennia and are the people who were 'colonized.' Exceptions will be made to refer to specific Indigenous groups when necessary

<sup>3</sup> 'Western science' refers to the hierarchical construction of science that most of us know today. That the scientific method is the "proper way" to conduct research and there will always be more qualified experts based on degrees, experience in their fields, amount of peer-reviewed articles, etc.

2017). However, the Indigenous peoples have not exhausted their knowledge, and now colonial scientists are once again seeking to use Indigenous knowledge to combat climate change. After their knowledge was extracted by colonizers, Indigenous peoples were subsequently killed or moved to reservations<sup>4</sup> in New England and across the country; many were placed thousands of miles from their home regions (Torgerson, 1988). Those who remain have managed to retain communities and tribal affiliations despite intense processes of marginalization and many forms of erasure remain ongoing.

Today, industrialized development has led to the present condition of rapid environmental change across all living systems (Das, 2014). As some scholars believe, humans are currently living in the Anthropocene<sup>5</sup>, a period in which the human dominance of the Earth's biological, geological, and chemical processes will be detectable now and millions of years into the future (Crutzen, 2011). Many Indigenous peoples are experiencing greater immediate stresses on their communities than affluent, colonial/settler societies due to reservation lands being more sensitive to environmental changes than urban spaces, and Indigenous peoples are more susceptible to ecological vulnerability (Kornfeld, 2016; Jodoin, 2020; Lyons, 2020; Yurth, 2011). Indigenous people live in some of the most hazardous regions in the world regarding the impacts of increasing temperatures, rising sea levels, melting ice, and other negative results of climate change (Lyons, 2020). Vulnerability of

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<sup>4</sup> 'Reservation' will be capitalized when referring to a specific reservation and lowercase when referring to non-specific reservations

<sup>5</sup> Some scholars disagree with the use of the term "Anthropocene" as it implies all humans are responsible for climate change, when in fact it is more fairly attributed to capitalist, industrial, and colonial societies

Indigenous populations is compounded further by their disadvantaged socio-economic position which impedes their capacity to respond to changes. One example of a greater vulnerability Indigenous people face is Indigenous water rights, which have become more stressed as climate change worsens because many Indigenous populations live on land that already had limited access to fresh water (Jodoin, 2020). With rainfall totals changing in many areas and sea levels increasing, leading to saltwater infiltration of freshwater resources, certain Indigenous groups at higher risk will see even greater strains on their access to fresh drinking water.

Indigenous scholars argue that local Indigenous ecological knowledge could provide a potential source of resilience for many environmental stressors as Indigenous populations have preserved throughout history's largest natural and anthropogenic climatic changes (Whyte, 2017). However, some group knowledge is not recognized by the colonist population in control of scientific information. The failure to acknowledge the legitimacy of knowledge from marginalized groups is called recognition injustice (Schlosberg, 2009). One example of failed recognition comes from Edwards (2002), who tells a story of an Inupiat community in Alaska whose lands were subjected to nuclear radiation testing to see how radiative chemicals move through waterways. The government knew there could be a potential health risk from radiation, so they picked a "remote, isolated, and barren" location to perform the experiments. Years later cancers were appearing in wildlife and people of the Indigenous community who knew that there was clearly a problem resulting from the radiation testing based on their knowledge about wildlife and people in the region, but

government officials deemed the effects to be "statistically insignificant," and they discounted community observations and arguments.

Such blatant disregard for Indigenous peoples' wellbeing and the knowledge they hold is a major problem that still has not disappeared from institutionalized western science. By making the past, present, and possible connections between local Indigenous experts and western science more visible and explicit, a closer connection, deeper respect, and greater inclusion of Indigenous values can be incorporated into regional ecosystem management and climate adaptation and mitigation planning while simultaneously recognizing the centrality and vitality of Indigenous knowledge.

Ecosystem management is vital to Indigenous peoples of New England and Rhode Island because the land is part of the Narragansett Tribe, and to care for the land is to care for the Tribe<sup>6</sup>. Ecosystem management, for this project, is defined as, "an approach that will protect the environment, maintain healthy ecosystems, preserve biological diversity, and ensure sustainable development," (Lackey, 1998) (pg. 1). Many impacts from climate change can be mitigated by proper ecosystem management because healthy ecosystems provide various ecosystem services that reduce climate change impacts. Coastal wetlands provide buffers against storms, filter water, sequester carbon, and provide ecosystem services to a wide range of many important organisms. Forests stabilize soil and prevent erosion, provide shade and habitat, and play a major role in carbon sequestration. Managing every type of ecosystem provides many benefits to wildlife and humans.

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<sup>6</sup> 'Tribe' will be capitalized when referring to a specific tribe and lowercase when talking about the broad concept of a "tribe"

For the state of Rhode Island and the Narragansett Tribe, ecosystem management and climate change adaptation go hand-in-hand. Climate change adaptation is important for both entities because almost any point in the entire state is located within just a thirty-minute drive from the ocean where sea levels are rising, increasing ocean temperatures are shifting important fisheries populations farther north, and shifting rainfall patterns brings the future status of freshwater resources of the state into question. On the Narragansett Reservation, located in Charlestown, Rhode Island, there are two important ponds to the Tribe, and if they cannot be managed and protected as best as possible against climate change, the losses of sustainable food sources, cultural resources, and spiritual derivations from the land and waters could be catastrophic. The Narragansett Tribe does not have a climate change adaptation plan, though developing such a plan has been on their agenda for many years. COVID-19 has pushed back developing a plan further since the virus has had a devastating impact on the Tribe and particularly their Elders.

This thesis project has been designed in conjunction with Tribal authorities to give a head start for the Tribal Department of Natural Resources and Community Planning in assisting with the development of a climate change adaptation plan for the Tribe. Discussions between myself and the director of the Narragansett Department of Community Planning and Natural Resources, Dinalyn Spears, was the catalyst for the creation of this project. The Tribe, I had been told, had been wanting to work on a climate change adaptation plan for a while but had never had the time or resources to begin such a plan. The pandemic had also complicated proceedings for every department within the Tribal government, which added another factor into delaying

work on a climate change adaptation plan. Dinalyn and I were able to come to a consensus that I could provide input to the Tribe based on Narragansett beliefs and values to help initiate the creation of a climate change adaptation plan, and I would in turn receive experience in conducting projects with Indigenous peoples and be able to assist in fighting climate change and climate injustice. This project created recommendations for the Tribe based on the issues that are most important to the members of the Tribe. Information on Tribal members concerns about climate change was assessed through remote interviews with members of the Tribe who have experience and knowledge about the Tribe's natural resources. There were three research questions:

- i) What are the current concerns of Narragansett Tribe members concerning the impacts of climate change on the Reservation?
- ii) What are the future concerns of Narragansett Tribe members concerning the impacts of climate change on the Reservation?
- iii) What are the most important cultural, environmental, and societal considerations for a climate change adaptation plan for the Tribe?

Furthermore, beyond serving as a direct source of information for the Tribe, this project could have implications at state and federal government levels. Currently, there are efforts and actions being taken by U.S. government agencies to be more inclusive when creating environmental policy. Most importantly, the inclusion of Indigenous viewpoints in all climate change policy discussions, the creation of legislation, and policy implementation. These actions will provide post-colonial (and

neo-colonial) governments to address some of the ways that marginalized groups have been harmed by climate change which they had a miniscule role in causing.

It is important to reiterate that Indigenous knowledge is not "outdated" simply because western scientists failed to recognize the validity of Indigenous knowledge systems. Including Indigenous peoples and their knowledge in ecosystem management policy will be beneficial to all parties involved. For example, a project in Utqiavik, Alaska, headed by scientists at the Woods Hole Oceanographic Institute, was meant to launch an unmanned underwater research vessel to track Arctic ocean changes and make sea ice analyses. The day the project was meant to launch, Indigenous peoples<sup>7</sup> working on the project knew that something bad was about to happen (Hugus, 2021). The wind and currents had suddenly shifted direction in a way that Indigenous people of the area had known was a bad sign. An ice floe had broken off and was rapidly approaching land, and the collision caused ice to pile up to five meters high outside the testing facility. Their knowledge led to the team turning around and delaying the project for a while and most likely saved lives. After this experience, researchers at the Woods Hole Oceanographic Institute created a new relationship with the Indigenous people of the area to send more unmanned vehicles for Indigenous researchers to use. The primary use of the technologies was to track oil under sea ice in the event of an oil spill in the Arctic, and another vehicle can measure sea-ice thickness, salinity, and temperature. Therefore, this collaboration between Indigenous and western science is beneficial to all parties because the Indigenous people have new technologies that can help them respond to oil spills faster and understand the impacts climate change is

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<sup>7</sup> The name of the Tribe, nor the names of participants were not included in the article

having on their waters and ice, and the Western scientists receive data from the Indigenous researchers that can be applied in their own research or to assist Indigenous researchers further.

In the future, projects such as this thesis can continue to provide practical frameworks for working alongside tribes to develop climate change adaptation plans that are primarily useful for the tribe but that will also provide information to universities and governments that make even bigger policy decisions impacting millions of more people. Mutual information sharing between tribes, governmental bodies, and western scientists will allow for inclusive and comprehensive policy creation that will reflect many viewpoints and will allow for more socially successful climate change adaptation policy because there is more wealth of information when all groups are given equal voices. Diverse backgrounds of knowledge will offer the best chance at creating policy that is effective and equitable if all viewpoints are considered and addressed in climate change adaptation policy.



## CHAPTER 2

### REVIEW OF LITERATURE

The literature review process focused primarily on papers from Indigenous authors as opposed to those written by non-Indigenous authors, as Indigenous peoples will have more accurate representations of those identifying as ‘Indigenous.’ The literature I selected to synthesize for this project falls under three categories:

1) Histories of New England Indigenous tribes, with a focus on the Narragansett Tribe.

The histories and experiences of maltreatment towards Indigenous groups by European colonial settlers are important to review because these histories highlight the general and climate related injustices brought upon the Indigenous peoples of North America that have led to exacerbated climate change impacts on North American tribes.

2) Indigenizing futures, decolonizing methodologies, and projects which have incorporated Indigenous involvement in developing ecosystem management plans. Indigenizing futures refers to including and incorporating Indigenous viewpoints into policy decisions as Indigenous peoples have been excluded from policy creation until now (Whyte, 2017). Decolonizing methodologies departs from standard ‘western science’ because it recognizes that Indigenous peoples have been taken advantage of and abused by western scientists on many occasions (Smith, 2012). Instead, decolonizing methodologies ensures the participation and direct benefit of the communities involved in the project, rather than the project serving as a means for western researchers to add to their list of publications and establish their renown in

their field. Projects which engage and involve Indigenous peoples around the world to address climate change impacts can lead to a better understanding of how non-Indigenous people have attempted to be more inclusive with their projects regarding the response to climate change and how their projects have advanced environmental management. Ecosystem projects designed for and by Indigenous people are an important part of decolonizing methodologies and indigenizing futures.

3) The climate change adaptation plans of other tribes in the Northeast U.S., with a greater focus on those tribes with land most similar to the Narragansett. I reviewed the climate adaptation plans of some tribes that are similarly situated, geographically, to the Narragansett Tribe to compare what nearby tribes are doing to combat climate change impacts and how they are structuring and wording their plans. The state of Rhode Island has many plans for ecosystem management and climate change based on various areas around the state, called Special Area Management Plans (SAMP), but each fails to list any Narragansett member as a contributor (650-RICR: 10-00-01, 20-00-2, 20-00-3, 20-00-4, 20-00-5, 20-00-6, and 20-00-7). Furthermore, there is no mention of “tribal,” “Indigenous,” “Native,” or “Narragansett” concerns being protected in any of the plans. Protecting historical and archaeological sites seems to be valued as an economic pursuit rather than an attempt to protect sites important to the Narragansett people for the sake of Tribal cultural sovereignty.

### *History of New England Tribes*

Foremost, the history and experiences of New England tribes, and the Narragansett more specifically, as affected by settler colonialism is a necessary backdrop for understanding how the country has reached the point where Indigenous

knowledge is neglected from research, government decision-making, and of particular interest for this project, ecosystem management and climate change adaptation policy. Most literature, and the literature relied upon for this project, focuses on the histories of Indigenous peoples after the arrival of British colonists.

Most tribal histories are passed orally and sharing the oral histories does not occur often outside of tribal communities, however there are some written histories and folklore of tribes in Southern New England (Simmons, 1986). Some Narragansett folklore is told by Princess Red Wing in Simmons' book including a story warning against cutting too many Narragansett spruce trees because the tree bears a blood red flower that represents the blood of Narragansett people killed by white men, and those who cut down the trees will themselves die. Everywhere a Narragansett spruce tree grows is in a spot where Narragansett blood was shed, and each tree holds a soul of a Narragansett. This story shows the Narragansett historical experiences with colonialism, reflecting Narragansett beliefs of respecting ancestors and the environment, and showing the interrelation between the human, natural, and spirit worlds.

Geake (2011) provides an early history of the Narragansett Tribe. The first documented encounter between Narragansett and European peoples came in the year 1524 when Giovanni di Verrazzano landed in what is now known as Rhode Island. In his letter to King Francis I, Verrazzano described the Narragansett as, "the most beautiful and have the most civil customs we have found on this voyage." (p.8) During the beginning of the 17<sup>th</sup> century, the Narragansett Tribe saw much violence brought upon them and other Tribes in the area by colonizers. Metacom's War or King Philip's

War as it is most popularly taught in American school systems, took place between 1675 and 1676 and did not initially involve the Narragansett Tribe as they were politically neutral at that time. Out of fear the Narragansett would eventually join the Wampanoag side in the war and that the Narragansett were harboring Wampanoag war refugees, the Plymouth Colony's governor, Josiah Winslow, ordered a preemptive attack on the largest Narragansett settlement in the Great Swamp in present day Kingston, Rhode Island. An estimated 300 Narragansett and Wampanoag people including women and children were killed in the attack or from exposure to the winter conditions, and by the end of Metacom's War, the Narragansett and Wampanoag Tribes were nearly extinguished. Through conquest and submission, colonists gained full sovereignty over all of Rhode Island. Meanwhile the Narragansett Tribe held no political sway, nor did they have the manpower or firepower to fight back against the colonizers after the systematic eradication of Indigenous peoples from New England.

Between 1880 and 1884, the Narragansett Tribe was illegally detribalized by the state of Rhode Island without federal sanction (Narragansett Indian Tribe, 2018). This was the state's effort to acquire Narragansett Reservation lands whereby the Tribe would have no means to legally defend their land from being taken. The Tribe continued to maintain its traditional government, even if that government was not recognized by the state. Two land claims in state courts, one in 1884 and another in 1898, were unsuccessful. Eventually the Tribe was incorporated again in 1934, meaning the public now recognized the legitimacy of the Tribal government. However, it was not until forty-nine years later, in 1983, that the Narragansett Tribe was federally recognized. Through hundreds of years of violence, persecution, and

marginalization the Narragansett Tribe persisted and remain still today through their determination.

Pastore (2014) chronicles the history of the Narragansett Bay and how different land managers have shaped it. First, the Narragansett people knew that the Bay provided abundant resources, and they saw it as a way of life and part of their Tribal identity. Colonists saw the success the Narragansett had on the land and saw their own visions of how that land could be managed or “improved” (Lipman, 2015). It is important to remember that the primary goal of British colonization was to extend worldwide influence and to create economic or material gain for the mother country. The Narragansett way of living off the land and not exploiting it for natural resources would not adequately provide what the British government was seeking through colonization. Colonists had to manipulate the land in ways that would profit the British government, so they sought to “improve” upon the land. The many “improvements” the colonists had in mind included seaside fortifications, and the construction of many harbors, docks, and seaside villages due to the growing markets for seafood and whaling. Finally, something that cannot go unmentioned, was the use of slave labor on vast plantations.

Aggressive conversion methods used by Judeo-Christian colonists impacted the identity of Indigenous peoples and the impact of conversion on tribal religion and spirituality (McCarthy, 2001). The Indigenous peoples of New England struggled for lawful treatment from the new colonists’ governmental institutions (Torgerson, 1988). During and after the near eradication of Northeastern tribes, O’Brien (2010) unveiled ways in which the Indigenous peoples of Southern New England have been “written

out of existence” by the colonists who claimed to be the first people to provide institutes of social order, that local Indigenous people had disappeared, and that Indigenous peoples did not have a place in “modernity” (105). This work is important because it shows how the Indigenous peoples of Rhode Island have been misrecognized by scholars throughout the region’s history, and the resulting impact that has had on all sorts of public policy, ecosystem management included. As mentioned before, the state of Rhode Island gives little credence to Narragansett points of view as they do not even give them a spot at the negotiating table for the Special Area Management Plans. Even though Reservation lands are important to the Narragansett people, they are still left out of the discussion for environmental policy at the state level.

Kimmerer (2013) provided stark evidence that despite this systemic erasure, Indigenous peoples have always been conscious of the way they interacted with the environment to treat the ecosystem with respect, and to ensure that the land provides as much for them as it will seven generations and beyond. The concept of “Honorable Harvest” falls in-line with sustainability models created by western scientists thousands of years after many of the Indigenous peoples of the world already achieved a balance of giving and taking from the environment. Delucia (2019) focuses on the term “terrapolitics”, a term derived from Australian Indigenous peoples’ context that “argues for understanding ontologies through the lens of place” (p.549). As seen through the lens of the Wampanoag Tribe in New England, Delucia examines how tribes in the northeastern U.S. have understood, valued, and acted regarding their homes and how they navigated colonists’ policies intended to dislocate and

exterminate their people. Colonists interacting with the Wampanoag believed the land to be “underused” and sought the exploitation of the land for expansion for towns, roads, and farms (Delucia, 2019). For the Wampanoag, the land itself provides the identity of the Tribe. Without preservation of their historic lands, their continuity into the future becomes clouded. The Wampanoag and other Northeast tribes understood the value of wetlands, valued biodiversity, and ensured that overharvesting of wildlife important for consumption and cultural importance did not occur.

### *Indigenizing Futures and Decolonizing Methodologies*

The definition for indigenizing futures comes from Kyle Whyte, an Indigenous scholar, and it emphasizes how Indigenous experiences, especially the changes that stem from the experience of European colonialism, are uniquely those of Indigenous peoples and can be offered as background knowledge for how society can survive and adapt to worldwide threats, such as environmental changes from climate change to more localized forms of change (Whyte, 2017). Whyte describes colonialism as a form of domination whether it be of land, resources, or people. Indigenous peoples know well the painful experiences of exploitation, war, slavery, genocide, and being written out of existence. Often, colonialism paved the way for capitalism which led to further exploitation of Indigenous peoples’ land and resources which culminated ultimately into industrialization and militarization which are both responsible for immense carbon emissions. Climate changes that have directly cascaded from colonization and decimation of Indigenous peoples around the world have made traditional lifestyles of Indigenous peoples more difficult and tenuous. Indigenous peoples’ cultures, health, food systems, and economies have now been altered because of the rapid ecological

changes around their communities globally. As Indigenous peoples around the world have persisted through colonialism, capitalism, and industrialism, their ecological knowledge likewise has persisted.

Whyte (2017) offers the example of the Menominee Tribe's well-developed sustainable forestry plan focused on maintaining biodiversity (160). The Menominee used ecological knowledge to provide a knowledge base for a sustainable forest management plan that identifies and protects unique Menominee cultural resources and organisms that benefit from the presence of abundant biodiversity. Indigenizing futures, as it relates to climate change response, ultimately means that Indigenous peoples today reflect on their ancestors' actions, while keeping presence of mind that the decisions they make presently will have resulting impacts on future generations.

The basis for decolonizing methodologies utilized in this project comes from Linda Tuhiwai Smith, a Maori writer (Smith, 2012). Decolonizing methodologies is defined as ways in which research is designed and conducted to dismantle the hierarchical construction of western science. Its main goal is to generate positive change for Indigenous peoples resulting from publication of research. Dismantling the hierarchical construction of western science refers to the idea that the way western science is performed as the "right way" to do things. To perform research the "right way" one must have a degree and have spent much time buried in scholastic endeavors. It is a privileged point-of-view to be able to determine that another's research and knowledge as lesser than their own simply because they do not follow the established scientific methods. Indigenous knowledge systems are ridiculed as incorrect and lacking the rigor and discipline that it takes for research and knowledge



be seen as valid in the eyes of western science. Indigenous knowledge and the methods used to obtain this knowledge are not less valid than western science. Indigenous people observe how the world is and come to conclusions to describe the processes of the world just as western science does. In many ways, Indigenous knowledge, ecological knowledge being one, can be more valid than western science because it is built through centuries of observations and learned experiences of Indigenous people.

One example of how local ecological knowledge is as valid as western science, if not more, is seen in Calakmul, Mexico (Haenn et al., 2014). The people of Calakmul may not be considered an Indigenous group, but the similarities between their perceptions and experience with the environment is not entirely different. The people of Calakmul have lived in the region for hundreds of years and have developed their own ecological knowledge, just as Indigenous peoples have. Haenn et al. (2014), observed two studies to identify King Vulture populations around Calakmul, but the lack of knowledge of the areas made it difficult for the two projects' research teams to even find King Vultures. Researchers from both studies recognized that traditional ecological knowledge was going to be a vital tool in completing projects on the biology and monitoring of the King Vulture. Local experts were able to guide researchers to where they should look for King Vultures. One local participant in guiding the researchers said about one of the other men in that lives in the area, "He knows things as if they are in textbooks... He sees animals every day. The person who wrote the book maybe only saw them at a certain moment" (p.955). I believe this

quote exemplifies, more than anything, how local, traditional, or Indigenous ecological knowledge can be more valuable and valid than western science.

Some of the ways that decolonizing methodologies can benefit Indigenous people are highlighted in twenty-five ways in Smith's treatise on the subject. This serves as a guiding hand for the formation of methods and the design of this project. Three that I will mention are "celebrating survival – survivance" (p.146), "intervening" (p.148), and "envisioning" (p.153). I am highlighting these three because they apply well to climate change adaptation planning and as a researcher, they help define how I could use decolonizing methodologies to benefit the Narragansett Tribe. *Survivance* is a term created by Gerald Vizenor which is a combination of the words *survival* and *resistance*. The term is defined as the way in which a project can accentuate the degree to which Indigenous communities have maintained cultural and spiritual values while withstanding the impacts of colonialism. *Intervening* is defined as taking action and being proactive in research and having the intent to make changes both structural and cultural. Intervention was often used against Indigenous peoples, but a decolonial methodological approach would require the outside actors to change their way of performing research, redirecting policy, training staff to be more inclusive, or designing new programs that will benefit Indigenous peoples. *Envisioning* projects ask those involved to imagine a future that can bind different political entities to overcome issues that are daunting and often demoralizing. *The confidence of knowing that we have survived and can only go forward provides some impetus to a process of envisioning* (p.153).

Complementing Smith is Wilson's Indigenous research paradigm (2008).

Wilson highlights the interconnectedness of self to people, the environment, ideas, and the cosmos. The relationship of self to people is simply how one relates to others. Self to the environment is how one relates to the space between people. Self to ideas is how one relates to ways of life, culture, or ways of thinking or knowing. Finally, self to the cosmos is how one relates to their sense of place in the universe and its systems.

Understanding how the Narragansett Tribe relates to these connections allowed me a greater capacity to recommend some of the important areas that should be included in a tailored climate change adaptation plan. Furthermore, as someone not identifying as a Narragansett member, doing my best to understand their relationships to people, the environment, cosmos, and ideas helped me to offer a more meaningful contribution to Narragansett climate change planning. Recognizing Narragansett relationships in all aspects of life will help separate my project from taking the point of view where I have the information and I am going to tell the Tribe what is best for them without talking to them or understanding their relationships of self to people, environment, ideas, and the cosmos. All involved in the research must hold themselves accountable to uphold respect for these relationships to build trust, interconnectedness, and opportunities to learn.

One example of a project designed to 'indigenize futures' and 'decolonize methodologies' comes from Apraku, whose project identified Indigenous voices and knowledge as a fundamental viewpoint for planning for climate change impacts in Africa (Apraku et al., 2018). Their study consisted of interviews, focus group discussions, and visual sociology with 140 Indigenous people over the age of 35 who

live in the Eastern Cape province of South Africa. While no specific tribes or groups were identified, every person spoke the Xhosa language. Some of the study's findings identified agricultural practices, community-based societies, and architectural styles as factors that positively impact these peoples' interactions with the environment and their response to climate change because they are resource-efficient methods and yield high returns. The preservation of Indigenous knowledge and the ingenuity of the Xhosa-speaking people to solve the unanticipated impacts of climate change falls in line with indigenizing futures as they are using their own knowledge and technologies to respond to changes that they are not responsible for. Some of the practices that would fall under good examples of decolonizing methodologies are the focus on personal interviews and focus groups because it allowed for the Indigenous people to speak rather than to be observed or silenced. The project provided recognition to the Xhosa-speaking people and did not attempt to tell the people that the way they were doing things is wrong. While it may not have a tangible difference on the people from these groups, it still provides acknowledgement that many Indigenous communities are still struggling to find.

Nurse-Bray et al. (2019) worked with Indigenous peoples of Australia to see how they have used their ecological knowledge to address climate change where they live. Their study analyzed how Australian aboriginals responded to climate change. They invited 100 Indigenous members from 70 groups participated in workshops where they could discuss this issue amongst themselves. The respondents had a low awareness of anthropogenic climate change, but they provided several examples of how they were being impacted by the changing climate. One group that lives in the

Torres Strait mentioned how rising sea levels harmed sites of historical and cultural significance. The study found that words and terms such as “climate change, resilience, and vulnerability” are not used by or are accepted by Australian Indigenous. In particular, the use of the words, “vulnerability” and “resilience” by the researchers were seen as condescending to Indigenous peoples, and the researchers have noted this in their paper as something that future researchers should consider. Certainly, the way things are presented and worded are a part of decolonizing methodologies because researchers must reflect on how they are presenting the Indigenous image, and they should change their language as Indigenous people voice their disagreement with certain words or how some words are used. The people were provided with recognition for their methods and innovations in addressing climate change and ecosystem management.

Pyke et al. (2018) highlighted how Indigenous people in Northwestern Australia are using “Indigenous knowledge systems” to inform wetlands management. Their project interviewed Indigenous people from the Bardi Jawi or Nyul Nyul groups in Northwestern Australia. Interviewees were asked to select the wetland(s) of their choice and how their people interact with the land. After the interviews, participants were invited back to analyze the responses alongside the researchers, and they found that wetlands management for the group fell into four principles: active maintenance, custodianship, respectful use, and learning. Each wetland and how it is interacted with is unique within the two groups, so a generalization was not made by the researchers because even the way two neighboring Indigenous groups interact with wetlands is differing. Pyke and their team paid careful attention to Indigenous participation and

took care to respect the opinions, values, and decisions made by participants.

Researchers provided a means of recognition to the Bardi Jawi and Nyul Nyul people by arguing that their knowledge and other Indigenous peoples' knowledge could be useful to not only those groups but could also inspire similar strategies around the world that would help address climate change.

An additional Australian project sought to elevate and recognize the Indigenous ecological knowledge of groups in Northern Australia to contribute to water planning and policy (Liedloff et al., 2013). Nine Gooniyandi people were interviewed on their ecological knowledge of the Fitzroy River catchment in Northern Australia. Some of the information provided by the experts was the seasonal fish populations and weather prediction systems based on ecological, meteorological, and spiritual indicators known by the Gooniyandi people. The researchers recommend that resource management agencies partner with Indigenous peoples when deciding how to manage the land that Indigenous populations depend on. Researchers found that some of the water management strategies might not be viable in the future due to shifting flow patterns but they offered advice to the Gooniyandi people on how to circumvent some of these issues, while also maintaining low-impact methods of water management. Encouraging partnerships between Indigenous and non-Indigenous groups can be mutually beneficial as long as the Indigenous voices are not tokenized and are weighted more than their proportion to colonial populations.

Australian researchers are seemingly more keen to try and compensate for previous injustices towards Indigenous peoples by placing them in the focal point of research and policy to ameliorate problems imparted on them that they were not

responsible for. However, Australia is not the only location where indigenizing futures and decolonizing methodologies are utilized. In India, a project was conducted to document and put into practice Indigenous knowledge and methods of riverbed cultivation for rice farms used by the Rai people of the Una district, Himachal Pradesh, India (Babu, Saha, and Garkoti, 2020). The researchers garnered trust from the Rai people by learning about their culture, listening, and respecting their societal norms and customs. Eighty-seven Rai farmers volunteered to have their farming practices be observed during the three stages of their agricultural process: 1) land preparation, sowing, and transplanting of crops, 2) germination and growing phase when irrigation and manuring practices could be observed, and 3) harvesting and marketing time. Researchers documented the unique and highly sustainable riverbed cultivation strategies used by the Rai people. The project is a good way for the Rai people to have a documented version of their practices in the event that the agricultural knowledge is no longer shared, and they also can share their method of farming to other farmers in India. The preservation and promotion of Indigenous knowledge is a key component of indigenizing futures.

Makondo interviewed members of many tribes in Zambia about their knowledge and methods of rainwater management, forest management, and the ecosystem services that result from their practices that benefit society at-large (Makondo, 2018). Eighteen interviewees representing sixteen ethnic groups were selected because of their experience in agricultural practices. They were asked to answer questions about how their groups respond to environmental stressors. One finding is that many farmers in Zambia choose to farm in areas called “dambos” (86)

because those areas retain much more moisture and have higher organic matter than other surrounding areas. Furthermore, many Indigenous peoples of Zambia will shift crop production to naturally wetter areas in times of drought and shift farming back to traditionally drier areas during periods of flooding. Rainwater is culturally important to Indigenous peoples of Zambia because rain refills what they call “rain shrines” (87). Rain shrines are perennial wetlands that represent abundant biodiversity and the life-giving water. Rain harvesting is another practice implemented by Indigenous peoples in Zambia because the value of water is so high to sustain life, and the unpredictability of freshwater availability from month to month and year to year leads the Indigenous people to be precautionary and prepared for water shortages. The key points the authors make is that a western science-based approach to water management cannot be the only option considered because Indigenous populations have their own knowledge and will respond to western science differently than their own knowledge systems. The Indigenous groups gain greater recognition for their knowledge and practices, which could lead to more meaningful cooperation between Indigenous and non-Indigenous groups.

A couple of North American studies of Indigenous peoples directly involved Indigenous participation in forest management in Canada (Spies, 2019) and subsistence harvesting of resources in Northwest Alaska (Green et al., 2020). Both of these projects highlighted the ecosystem service values provided by forest lands in Canada and Alaska, and how Indigenous knowledge can assist in the management of forest resources that will increase the ecosystem service value. Some of the ecosystem services that forests provide are recreational value, carbon sequestration, erosion



control, and for Indigenous Alaskans specifically, the forests provide much spiritual and cultural value. The Iñupiaq people of Kotzebue, Alaska use sustainable hunting and gathering practices such as: take only what is needed, do not shoot the first caribou crossing the river, and keep the place like it was found (Green, 2020).

Indigenous peoples of Canada and Alaska understand the importance of a healthy, biodiverse, and sustainable environment because the forests provide subsistence for these groups. The Northern Secwepemc te Qelmuw (NStQ), an organization of four Indigenous communities in British Columbia, proposes that there should be fewer fences and roads which fragments the forests and harms movement of animals, habitats critical for caribou and moose populations should be completely protected, and preventing development on or near sites of cultural heritage (Spies et al., 2019).

Both projects involved Indigenous participation to determine the general values and concerns held by their people and allowed the Indigenous participants to collaborate in the formulation of the recommendations and final project. Spies et al. (2019), provided a list of forest management recommendations based on interviews and current management practices implemented by the NStQ to possibly provide approaches to anticipated climate change impacts. Green et al. provided a film to the Iñupiaq people which Indigenous testimonials claim was a respectful and educational way to display Iñupiaq culture so that the film would hopefully, help maintain traditions. Promoting Indigenous values and ideas as means to respond to Indigenous problems is an example of indigenizing futures, and the involvement, respect, and adherence to Indigenous values resulting in a meaningful product for the Indigenous groups follows decolonizing methodologies well.

One of the most inclusive and fruitful projects involving Indigenous people in North America comes from the Northern Institute of Applied Climate Science and their Tribal Adaptation Menu Team (Tribal Adaptation Menu Team, 2019). Their project directly impacts tribes in New England by assisting in the creation of climate adaptation plans specifically designed in conjunction with tribal members across the eastern U.S. states, including Rhode Island. This climate adaptation plan was created with an idea that researching Indigenous ecological knowledge has two types of participants: knowledge holders and knowledge seekers. Knowledge holders, in most cases are the Indigenous people, as they obtain the knowledge sought after by a knowledge seeker. A knowledge seeker is how I would be identified. As a knowledge seeker it is important to ensure the ownership of knowledge by the knowledge holder, instead of claiming that knowledge as my own. For this reason, recognition of knowledge holders is a necessity for most Indigenous communities.

Since the primary goal of the Tribal Adaptation Menu Team's adaptation plan was written together between Indigenous identifying people and non-Indigenous identifying people based on existing adaptation tools, focus group discussions, and workshops with natural resource professionals. The end result of Indigenous and non-Indigenous cooperation created fourteen strategies for addressing issues regarding environmental management (Appendix A). The strategies are not necessarily mutually exclusive, and a group can choose more than one strategy; strategies can be mixed together to best address the issues most prominent on the lands tribal natural resource management departments are concerned about. Furthermore, the authors mention that this adaptation plan was designed specifically with Indigenous people in mind, but

they also suggest non-Indigenous organizations and governments to use the tool as well, as they might find that there are very similarly held goals and values for environmental management.

### *Tribal Climate Change Adaptation Plans*

Tribal climate change adaptation plans from other regions are important because what other tribes have written can serve as a base for how a climate change adaptation plan for the Narragansett Tribe could be written. All the climate change adaptation plans reviewed here come from tribes that have an affiliation with the Northeast Indigenous Climate Resilience Network (NICRN, 2020). The NICRN was created by the Sustainable Development Institute (SDI) at the College of Menominee. The SDI provides four work activities for members of the NICRN to participate in:

- 1) The SDI facilitates a Tribal Advisory Council which guides joint action and dialogue for tribes' sustainable development. Additionally, the Tribal Advisory Council collects literature on climate change impacts on the Indigenous peoples of the northeastern United States.
- 2) The SDI works with specific, individual tribes through education, workshops, and other strategic planning activities to support the tribes' capacities to plan for climate change impacts.
- 3) The Indigenous Planning Summer Institute provides opportunities for the next generation of Indigenous scientists to learn and find answers for social, ecological, and economic problems relating to U.S. settler-colonialism and globalization.

4) Seminars and other forums are provided to connect Indigenous communities around the world, not only in the northeast U.S., to find solutions to common problems such as climate change.

The NICRN site lists every tribe that is represented within the network, and one of them is the Narragansett Tribe. Member tribes reach as far west as Minnesota, as far south as Virginia, and up to Maine. For this review, I looked first at Connecticut and Massachusetts tribes that already have climate change adaptation plans, and then at Atlantic coastal tribes in the entire area.

Four tribes in Connecticut are part of the NICRN: Eastern Pequot, Mashantucket Pequot, Mohegan, and Schaghticoke. The Mashantucket Pequot, Mohegan, and Schaghticoke do not have open access to natural resource department documents, so none of those tribes could be evaluated if they do in fact have climate change adaptation plans. The Eastern Pequot tribe does have an Environmental Regulatory Master Plan, though the plan was written in 2000 and does not explicitly mention climate change (Sebastian et al., 2000). The plan provides valuable insight into which resources to protect i.e., soils, wildlife, vegetation, cultural resources, and water resources.

In Massachusetts, there are three tribes affiliated with the NICRN: Mashpee Wampanoag, Nipmuc, and Wampanoag at Gay Head. The Mashpee Wampanoag and Nipmuc Tribes do not have natural resource department documents available publicly. The Wampanoag at Gay Head have limited web-based information on resource management, environmental protection, and emergency response, but no official documents available for open access (Wampanoag Tribe of Gay Head, 2020).

The Passamaquoddy Tribe at Pleasant Point, Maine and the Shinnecock Indian Nation of New York have comprehensive climate change planning materials online. The Passamaquoddy Tribe at Pleasant Point's website offers access to a brief plan titled, *Climate Change Impacts and Strategies* (Wall, 2008). Being directly on the coast, some of the primary concerns for the Passamaquoddy at Pleasant Point involve how changing ocean temperatures will impact their fisheries. Their plan follows four steps:

- 1) Measure the amount of climate change in the area;
- 2) Recognize what the changes are;
- 3) Develop a plan of action; and
- 4) Find funding to implement the plan.

The four-page document does not provide much detail on how the Tribe will address climate change except a section on renewable energy initiatives. The Passamaquoddy Tribe at Pleasant Point has received assistance from the Federal Energy Regulatory Commission on the feasibility of wind energy production at three different sites on the Reservation and have begun their own project to turn algae into diesel fuel.

Lastly, the Shinnecock Indian Nation, located on Long Island, is most similar to the Narragansett with regard to proximity and geography. The Shinnecock published their climate change adaptation plan in 2013. This document provides the planning process, action recommendations, and how the plan will be implemented (Shinnecock Indian Nation, 2013). Some of the concerns of climate change that the Shinnecock will address are erosion and flooding, decreased availability of shellfish,

and saltwater intrusion of fresh, groundwater used for drinking. The implementation of the plan falls into four categories: shoreline change analysis, development of a long-term monitoring system (water levels and shoreline change), assessment of estuaries and wetlands on the Shinnecock Nation peninsula, and identification of useful engineering adaptations. The plan will be reviewed yearly and revised as needed. While many different Tribal departments and committees are actively involved, the Tribe will seek assistance from outside consultants when necessary. Due to the availability, usefulness, and easy-to-read structure, the majority of recommendations made in this project will follow the same structure as the Shinnecock Indian Nation's climate change adaptation plan.

## CHAPTER 3

### METHODOLOGY

This project was qualitative, collaborative, and interpretive. Collaboration was the guiding principle during data collection and analyses. Using decolonizing methodologies required the researcher to concede much of the power in how a project was guided by providing power to the people who are most affected by the outcomes of this project. By employing decolonizing methodologies, Indigenous collaborators have an opportunity to speak for themselves, rather than responding to predetermined assumptions about their values and beliefs (Smith, 2012). Individual responses, the social meaning behind them, and the historical and current complexity of Narragansett goals and values in ecosystem management are all factors that necessitated this qualitative study. This researcher deferred many decisions and judgements made during the research process to the group interviewees because the information gained from the Indigenous experts directly impacted their fellow Indigenous communities and potentially provided benefit to everyone living in the region through more thoughtful ecosystem management. A successful project using decolonizing methodologies seeks to benefit the ‘subject’ above all else.

The three principles of intentionality, reciprocity and reflexivity were thoughtfully applied throughout the project (Canfield et al., 2020). An intentional project will ensure that Narragansett members are not only participating in the research, but that their opinions for what a good climate change adaptation plan should protect are heeded and valued in the development of the recommendations. Reciprocity refers to a mutual benefit between the researcher and the Tribe. Finally, a

reflexive project will maintain communication between the researcher and the Tribe to collectively determine whether the researcher succeeded in the project, what could have been done better, and what was done well. All three of the inclusive science communication principles are necessary to ensure an inclusive, fruitful, and respectful relationship with members of the Narragansett Tribe.

Data collection occurred in two steps: conducting data analysis with existing data collected through group interviews from a former project conducted by a URI faculty member, Dr. Marcella Thompson, and follow-up interviews with some of the participants from that project. Dr. Thompson's The Nemaus (All Things Fish) Project best displays Narragansett Tribal members' perceptions of fish contamination in freshwater ponds on Narragansett lands. Dr. Thompson has an extensive and long-lasting relationship with the Narragansett Tribe and many individual members therein, so the trustworthiness of the responses is likely to be high since there is a mutual level of respect between the two parties. Furthermore, the wellbeing of the Tribe is what is most important to Dr. Thompson, so the questions asked, data collected, and dispersal of information was purposefully designed in the best interest of the Tribe. Her research and approach provided a solid basis for this project because indigenizing policy and decolonial methodologies are grounded in the fact that the research will ultimately benefit the marginalized population. The responses to her group interview questions helped develop a climate change adaptation plan for the Tribe and provided information most helpful for creating recommendations through separate interviews with specific individuals from Dr. Thompson's project. Responses to her questions on contamination were relevant to this project because the contamination in their ponds



resulted from human activity harmful to the ecosystem. Contamination of the ponds and the fish that live in these ponds are critical to the Tribe's identity, culture and sustenance - important topics for a climate change adaptation plan.

Intentional follow-up interviews with participants in Dr. Thompson's project were used rather than a random sampling method. It takes effort and long-term relationships to build trust with Indigenous groups, especially when the researcher is from colonist roots. I am a descendant of Europeans who immigrated to the U.S. Also, I had no prior relationships or communications with any Narragansett member. By working with and through Dr. Thompson's project, there is an 'in' to the Tribe through a person that many members of the Tribe have come to trust in her judgement and intentions. Interviewees for this project were selected based on whether they worked within the Tribal Natural Resource and Community Planning Department, had extensive knowledge through experience on Tribal land (i.e. hunting, fishing, and gathering), or they could be identified as a youth (age 18-26) or Elder (age 55+) for a continuous comparison of concerns across generations. The aim going into the project was to interview between four to eight people. The reason for the low desired sample size being that I am an outsider to the Tribe who has to gain trust of Tribal members, the time to conduct interviews, and working around COVID-19 restrictions. Four interviews were conducted of fourteen possible candidates who were asked to participate.

Interviews were conducted remotely through Zoom due to the COVID-19 pandemic. While in-person interviews are preferred it was simply not a safe, ethical option (Healy, 2021). Interviewees were reached out to by either phone call or email.

At the beginning of each interview, the researcher read from a verbal consent script and each interviewee answered consent questions, including if they would like to include their name in the final thesis. Usually, respondents are not given this opportunity, but for recognition of Indigenous knowledge, which is usually not recognized in many cases, it was pivotal for this project. Follow-up interviews were semi-structured using directions and recommendations from Creswell (2008), Kajornboon (2005), and Smith (2012). Creswell and Kajornboon provided the general methods for semi-structured interviewing and design, and Smith provided the unique perspective and considerations that must be given when researching alongside Indigenous peoples. The interviewer came to the interview prepared with a list of questions that the interviewee could choose to answer, and with questions to be used if the conversation stagnates. The role of an interviewer in a semi-structured interview is to keep the interview on the primary topic but to allow the interviewee to control the conversation because the main goal of a semi-structured interview is to acquire knowledge about worldviews or opinions of the interviewee (Kajornboon, 2005). Since, the discussion was left to the discretion of the interviewee, the interviewer did not have any opportunity to influence the answer of the interviewee. Furthermore, the interviewer is cognizant of how questions are worded, sorted, delivered, and using a neutral tone as to not persuade an answer one way or another (Creswell, 2008). By preventing persuasion of an answer, the answers are more reliable as they reflect the views held by the interviewee. An open-ended, semi-structured interview format is a successful way to allow Indigenous peoples to represent their values without having a researcher guide their answer in one way or another (Smith, 2012). Having interviews

also allows the researcher to “show one’s face” and build meaningful relationships with those they are working alongside in their research, another important factor that an interview format can provide (Smith, 2012). The list of questions that were provided as options for all interviewees to answer were:

1a. Tell me about yourself. 1b. in what ways are you involved directly or indirectly with the Narragansett Tribal government? other tribes? other Indigenous-related activities? 1c. Do you follow Traditional practices?

2a. In what ways is the Narragansett Tribe being impacted by climate change now? 2b. in the future what do you anticipate?

3. In what ways is the Tribe managing these impacts now?

4. In what ways does Traditional Ecological Knowledge (TEK) inform plans for meeting the challenges of climate change?

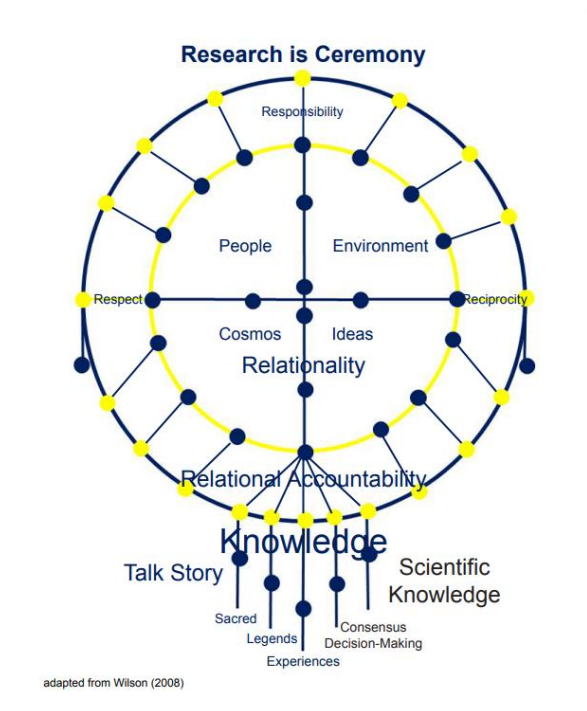
5. If you were asked by the state (RI) or federal government for assistance in creating plans for combating climate change, what would you tell them? (how would you advise them?)

6. What are the three main topics you would want addressed in such a plan for the Tribe? state?

Analysis of the responses from Dr. Thompson’s group interviews and follow-up interviews was conducted under the guidance of Wilson (2008). Wilson states that Indigenous ontology centers on relationships; these relationships are self to people, self to environment (space between people), self to ideas (culturally based ways of

thinking), and self to cosmos (internal sense of connection to the universe). Almost every response from interviewees should fall into at least one of these four types of relationships, though it is possible for one response to overlap into a couple or more types of relationships. The interrelationship between all aspects of Narragansett life is what makes Wilson’s Indigenous research paradigm effective for this project. Figure one visually portrays how all four

relationship types connect resulting in many types of knowledge or ways of knowing (Fig. 1). Understanding these relationships and what they mean helps to determine what is truly important to the Narragansett people regarding climate change and its impacts as best as possible for a person not identified with the Tribe. All the relationships can be protected, bolstered, and



magnified through a climate change adaptation plan that would protect all the important relationships of the Narragansett people.

Analysis of the interviews took place in two stages. First, each individual interview was analyzed and key relationships from Wilson’s framework were highlighted. Second, the interviews were cross-examined for recurring themes and relationships that would help guide a comprehensive climate change adaptation plan for the tribe. Transcripts for the interviews were taken and responses were color-coded

based on the types of relationships they represent, which made the cross-examination of relationships easier to realize.

One of the shortcomings of this project was that only four people could be interviewed. It is desirable in research to have as many participants as possible to increase the knowledge base and validity of a project, but given a couple of reasons, reaching more people was difficult. First, being a non-Narragansett non-Indigenous person who self-identifies as a white, male descendant of European immigrants while representing the University of Rhode Island, a land grant University sitting on Narragansett lands, building trust was going to be difficult no matter how well-intentioned I was. Second, COVID-19 made face-to-face interviews impossible to build trust and rapport with the interviewee. Many Narragansett people do not have access to remote interviewing either because they do not have internet, a computer, or have struggles with and are uncomfortable using unfamiliar technologies.

Another shortcoming of the project is the lack of a particular question in the interview. If I could, I would have asked, “What is the make-up of the land on the Reservation?” It could have been useful information for making recommendations if the interviewees could have given rough estimates on the make-up of the land. For example, the land is X% forested, Y% water, and Z% impervious material (roads, buildings, parking lots, etc.). As someone who has never stepped foot on the Reservation, this could have been useful information to know exactly what types of land they are living on because that would guide a climate change adaptation plan. However, I stayed away from this question because the interviewees may not be able to give an accurate estimation, or they might be unwilling to give out that type of

information. The bright side of this shortcoming is that the Tribe will have that type of information when they decide to draft their climate change adaptation plan, so they can create policies and strategies that protect the specific land cover types.

## CHAPTER 4

### FINDINGS

Four Narragansett people participated in interviews. Each interview was analyzed individually then compared across interviews. Analyses identified the types of relationships Narragansett people have to people, the environment, ideas, and the cosmos. Each participant's name was included with their expressed consent.

*Dinalyn Spears, Age: 50-55*

Dinalyn Spears is Director of the Tribe's Community Planning and Natural Resources. She also serves as the transportation manager for the Tribe. As the head of Natural Resources, she works with many other Tribes on the Atlantic coast on similar natural resource problems that other tribes are facing. Furthermore, she sits as the representative for the Narragansett Tribe in the Northeast Indigenous Climate Resilience Network, which provides tools and resources for Indigenous peoples and scientists to collaborate and address the challenges of climate change.

#### Self to People

Dinalyn relates her 'self' to the Narragansett people as a whole in many ways. She says in Narragansett culture, Elders of the Tribe are revered highly and they are recognized for their long-term experiences and observations of the changing climate and the ecosystems that the Narragansett people are attached to. It is the Elders who have noticed that there are no longer certain types of fish in the two freshwater ponds on the Reservation. The Elders grew up catching and eating or using for bait types of fish that are no longer part of the Tribe. Elders are those who have hunted, fished, and

gathered on the lands the longest, and could thus provide evidence for how climate change has impacted the ecosystems that the Narragansett live on.

She mentioned that it is not only Narragansett people living on the Reservation who are being impacted by climate change, and it is something important to consider. For example, even though the Reservation is not on the oceanfront, there are Narragansett people who live on the shore or nearer to the shore than the Reservation, so Narragansett people will still be impacted by sea level rise.

One final way she relates to people is how she and the Tribe relate to other governmental groups, mainly the Rhode Island state government. The Tribe is still experiencing the products of colonization and capitalism at the hands of the U.S. governmental bodies and legislation. Narragansett people no longer have access to many areas they have historically inhabited or used for hunting, fishing, or gathering materials, and a direct result of obstructing Indigenous activities on these lands has had a cultural impact on the Narragansett people. She would like the Narragansett people to be given the opportunity by the state government to develop environmental management plans and proposes the idea that Narragansett people should have easier permitting or no permits at all to fish on the ocean. Even better, that there would be no permits required at all for Narragansett members because the Narragansett people are not responsible for the overharvesting of fisheries, they had the rights to the land taken from them unjustly, and ocean food sources are important for the Tribe's food sovereignty. Working with the state has not been an opportunity afforded to the Tribe, but working with the state on climate change planning is just as important to the Tribe because lands outside the Reservation still hold significance to the Narragansett people



historically, culturally, for residence, and for hunting, fishing, and gathering. Altogether, she relates her 'self' to people by emphasizing the significance of Elders in Narragansett society, that Narragansett people do not only live on the Reservation, and finally that she wishes the state would listen to and include the Tribe in more discussions on statewide plans that will inevitably impact the Narragansett Tribe.

### Self to Environment

Next, Dinalyn shared her concerns with climate change and its impact on the environment of the Reservation and surrounding lands in Rhode Island. Currently, there are many impacts that the Narragansett people have experienced regarding climate change. The first example she provided was the drought conditions in 2020. A survey of the two freshwater ponds on the Reservation found that the water levels were the lowest biologists have ever recorded. Only one sandplain gerardia, an indicator species of the health of freshwater ecosystems in the area, was found in bloom over the time of the biological survey.

Another example of how the Tribe has been impacted by climate change already was during the floods of 2010. Floodwaters damaged the areas around the two ponds, the health center, gardens, and ruined an attempt at planting Black Ash trees in the area. Black Ash trees are an important tree to the Narragansett people for the many uses its parts have in the creation of Tribal art, but the Black Ash in the area, as well as most ash trees in the country, have been ravaged by an invasive species, the emerald ash borer.

Hurricane Sandy and storms after hurricane sandy have harmed forest resources in the area along with gypsy moths whose populations are of concern if springtime rains are not adequate to grow a fungus on the moths that kills the moths before they can cause massive amounts of damage. Both storms and the gypsy moths create more debris on the forest floor which can serve as tinder for the beginning of a wildfire, and more debris on the forest floor makes it easier for the fire to continue to spread.

As mentioned previously, climate impacts on oceans have an impact on the whole Tribe because not all Narragansett people live on the Reservation and many people harvest resources from the oceans, so increasing ocean temperatures have had an impact on the Tribe. Furthermore, ocean ecosystems and land ecosystems are not entirely separate, as they affect each other. With increasing temperatures, species are migrating farther north and entirely out of Rhode Island waters, which has a negative impact on the Narragansett's capability of attaining food sovereignty.

All these examples of how she and the Narragansett people relate to the environment are culminated in her main concerns she would want addressed in a Tribal climate change adaptation plan. First, she would like to ensure protections on water resources because, "Water is life." Second, she wants to protect or improve air quality because many Narragansett people have respiratory issues. Third, she would like to provide protections for all flora and fauna so that the Tribe can attain food sovereignty, get back to eating traditionally important foods, and to ensure that cultural practices are not lost through climate change.

Self to Ideas

Certainly, Narragansett culturally based ways of thinking and life are directly connected to the environment. Dinalyn states that climate change has had a direct impact on the Tribe's cultural identity. Sites where resources are collected for consumption, medicine, or ceremonies are already being affected by climate change. Cattails are traditionally used for mats and wigwams, but recently finding cattails on shorelines is like trying to find a "needle in a haystack." She reports that similarly mushrooms were not as easy to find in the past couple of years compared to experiences of mushrooming growing up. Culturally important areas, such as a traditional spring, are closely protected and patrolled every day to ensure that it is clean, and no one is harming the area.

An important answer to one of the questions during the interview that should not be left out is how some Elders in the Tribe do not like the term "Traditional Ecological Knowledge" because they view it simply as knowledge and do not see why it has to be minoritized as such. To the Narragansett people knowledge is knowledge because the people are not separate from the environment. Viewing the world as a holistic system is central to the Narragansett beliefs, so when there is a disturbance in the natural world, it disturbs the culture of the Tribe. All the problems the Tribe has already faced and will face in the future regarding climate change will impact the Tribal way of life in ways that someone from a colonial descent could never understand.

### Self to Cosmos

How all these relationships come together fall into how Dinalyn and the Narragansett people relate themselves to the cosmos. Dinalyn and the Narragansett

people realize such things as “water is life” and that human activity has profound impacts on the environment. Moreover, the way she relates to the people, environment, and ideas all impact how she perceives her position and belonging in the universe. To perform ceremonies, they need materials from the natural world, and by providing those materials the Narragansett recognize the reciprocity that exists between human and nature because they are just a part of the system, not apart from it.

*Lorén Spears, Age: 50-55*

Second of the interviewees is Lorén Spears, the Executive Director of the Tomaquag Museum in Exeter, Rhode Island. The Tomaquag Museum features collections and information primarily about the Narragansett, Niantic, and other tribes in New England. She works within the museum to uplift Indigenous stories of history, culture, trauma of conquest and colonization, and interrelationship with the land. The museum coordinates with people outside the organization on projects of food sovereignty, educational gardens, environmental walks and presentations, and teaching people about environmental impact, environmental justice, and climate change. She has served two terms on the Tribal council and the tribunal for one term.

### Self to People

Her relationship of self to people is emphasized much through her work in the museum with various Tribal departments and with other tribes in the area. Serving two terms on tribal council and one term on tribunal have afforded Lorén with an understanding of Tribal government, and experiences in stakeholder engagement and community interaction. She partners with various tribal departments to create new

educational and historical initiatives with the help of the museum. Furthermore, Lorén coordinates programs with members of the Mohegan, Mashantucket, and Aquinnah Wampanoag tribes, to name a few, in work that is part of the “Indigenous Empowerment Network.” The Indigenous Empowerment Network seeks to share information and empower Indigenous communities out of economic poverty through job training, internships, apprenticeships, and artisan residencies. The Network puts an emphasis on supporting Indigenous artists by hosting art markets and art shows, however, they also seek to help all small, Indigenous businesses. Everyone in her family is an artist whose art relies on acquiring materials from the natural world, but she has many concerns on how climate change will impact the Narragansett people.

First, she is concerned on the future possibility of ice fishing because there has already been noticeably less ice for shorter periods of time on the ponds during winter. She is concerned what this will mean for the community as ice fishing and the activities that revolved around being out on the pond may disappear as ice is less frequent on the surface of the ponds. Second, is what climate change will have an impact on the Narragansett peoples’ ability to meet energy demands. The Narragansett people are still statistically the poorest demographic in the state of Rhode Island, and Lorén anticipates climate change will exacerbate problem because Narragansett people will need to install expensive air conditioning systems. Furthermore, a sustainable energy source is desirable and will soon be necessary as the price of fossil fuel energy becomes more expensive, so the Narragansett people will have to both figure out how to afford air conditioning systems while also finding new ways to create sustainable energy systems to power the air conditioning. Third, there is still much for

Narragansett people to learn about climate change and for people in general to realize regarding climate justice. Lorén believes it would be beneficial to teach Narragansett people about the impacts of climate change on the Tribe, and how their cooperation is necessary to mitigate damage and create a sustainable future for many generations to come. Highlighting the inequities created in the U.S. on tribal peoples is a top concern for Lorén and pausing to take a step back to ensure that a climate change adaptation plan would not overlook climate justice is important to her.

### Self to Environment

Perhaps the most evident relationship Lorén has to the environment is through her and her family's reliance on the environment for their art, but this is not the only example of her relation of 'self' to the environment. She, like Dinalyn, mentions the project to try and replant Black Ash that was destroyed by the floods of 2010. However, Lorén also mentions another project at this time to replant sweetgrass in Indigenous areas. Further compounding these losses, the sweetgrass was also replanted in 2011, but that year was too hot and dry and the sweetgrass could not survive. Worth mentioning in this section again, there are only one or two days when ice fishing is appropriate given the increased temperatures and less frequent freezing of the ponds, and the longer, hotter summers means that more Narragansett people will need air conditioning installed.

Stronger storms are another concern for Lorén. She remembers hurricanes growing up, but that storms recently are "getting more and more potent." Invasive species are concerning to Lorén, and she provides the same examples of Dinalyn of the emerald ash borer and decreasing cattails. However, Lorén provides some

additional information on the cattail issue by providing the information that cattails have been displaced by phragmites. Young cattail shoots can be ground and turned into a nutritious flour, the fronds can be weaved into mats, and the tops of the plant have historically been used to line moccasins or cradles. Phragmites, however, Lorén supposes could be used for weaving but that is it. Species migration and extinction are especially important to Indigenous people because of their cultural significance. Bears and moose used to inhabit Rhode Island, but they have moved north where there are still large forests and more desirable temperatures. Other species of unspecified plants, trees, birds, and salamanders have all seemingly disappeared due to changes in temperatures, amount of rainfall, and soil moisture.

Lorén also mentions the PCB, lead, and other toxins contamination in the two ponds on the Reservation but does not specifically mention how it will impact the Tribe. However, it might be safe to assume that because the Tribe relies so heavily on the pond for food, habitat for non-consumptive beings, and spirituality that this is an area of greater concern for the Tribe.

Finally, Lorén mentions that wildfires were never much of a concern when she was growing up, but the summer of 2020 they reached “high risk” for wildfires. This problem is exacerbated by the growing presence and danger of gypsy moths creating more debris to catch alight.

### Self to Ideas

There are clearly many ways that the Tribe is having their relationship to the environment changed, and that has a direct impact on their ways of life. In Lorén’s

family there are many hunters, though she is more of a shellfisher herself, and both methods will be negatively impacted by climate change if their target species migrate northward to more desirable climates. In turn, this will have an impact on Tribal tradition because the resources used for millennia in ceremony or for consumption will no longer be present.

Lorén and other members of her family practice traditional gardening methods. She provides the examples of the three sisters (beans, squash, and corn) and her son grows traditional tobacco used in ceremonies. Beyond their own traditional gardening, her family also tries to get most of their food from local land and waters as much as possible, rather than buying it in stores. Finally, Lorén mentions how Indigenous ways of life and points of view will be critical to developing a climate change adaptation plan for the Tribe because retaining tradition and culture is important to the Narragansett people, so a good plan will protect the Narragansett way of life.

### Self to Cosmos

All three relationships of self to people, the environment, and ideas all convalesce into the relationship of self to cosmos. Similar to Dinalyn, Lorén repeats the belief that the Narragansett people are inseparable from land and is perhaps no better worded than by this quote: “Elders always said to us, ‘We are the land. What we do to the land, we do to ourselves.’” The Narragansett people have a well-attuned understanding that drastic changes cannot happen to the land that will not drastically impact the people living off the land. This type of belief is not held by many people of western descent who still believe that humans are the master of the Earth. Whether it be for ceremony, consumption, or any other purpose, the Narragansett people always



remember to keep themselves humble and remind themselves that they are not above or beyond the one system that connects everything in the universe.

*Cassius Spears Jr., Age: 30-40*

Third of the interviewees is Cassius Spears Jr., the first councilman of the Narragansett Tribe with work experience in non-Tribal, non-profit environmental organizations across the state of Rhode Island. He has learned the traditional uses and relationships to the land from his family and carries those lessons and practices today.

### Self to People

Cassius shares many similar relationships of ‘self’ to people as Dinalyn and Lorén. He states how many Narragansett people are fishermen and many of their sites and methods for acquiring fish is becoming strained under climate change. Community engagement and ceremony that comes with ice fishing will potentially become impossible if the ponds no longer freeze thick enough for ice fishing.

The thoughts he shared on traditional ecological knowledge show how the knowledge the Narragansett people hold is also part of the identity of the Tribe. Tribes have their own scientists who have performed observations, experiments, and derived results from methods of lived experiences with nature. Just because the results were not derived from a study in a lab or following western methodologies does not mean that the knowledge Indigenous people hold is incorrect or less rigorous. To quote Cassius, “Our own people understand the land. They understand the patterns of the land longer than the existence of science itself, and this information is passed down.” Cassius also states that there are some people in the Tribe who know and understand

the ecological knowledge better than other members. People who hunt, fish, and gather most are likely to know more of the ecological knowledge because they use it more frequently than those who do not participate in those activities. Additionally, Elders who have a long-term observation and collection of stories about the land might have more information about the ecology of the land than a younger person. It is important to ask those who know most about the Narragansett ecological knowledge to share what they know to help the Tribe as a whole. Cassius also states that the Narragansett ecological knowledge should be put into the “context of modern science.” By putting the traditional ecological knowledge in the “context of modern science,” Cassius argues that a co-benefit could exist because you would have western scientists bringing their knowledge while not ignoring and valuing the traditional ecological knowledge.

Another good example of Cassius’s relationship of ‘self’ to people is how the Narragansett people have experienced climate change as an extension of colonialism and capitalism. He correctly states that climate change is not the fault of the Narragansett people – a statement which could be extended to most Indigenous peoples of the world. Indigenous populations are also at greater risk of climate change impacts than affluent, western societies. Cassius proposes that the state and national government should take considerable time and effort into listening to Indigenous voices when creating climate change or natural resource policies. One example he provides is the fishing regulations and fishing requirements in the state of Rhode Island, a topic that Dinalyn also spoke about. He first notes that fishing regulations are a necessary evil because the populations have been overfished. However, he says that

because Narragansett people were not responsible for overfishing, they should not be faced with fishing restrictions. Furthermore, fish for consumption is very important to the Narragansett people, more so than the majority of non-Indigenous populations in Rhode Island, and it is an injustice to take away a critical food source from a group that was not responsible for depleting the resource. Finally, Cassius argues that by restricting the Narragansett people from fishing, it harms both the state and the Narragansett people because the Narragansett people would maintain a sustainable fish population and the Narragansett people would have access to traditional fishing spots and food.

However, he fears that Indigenous people are still thought of as something of the past. It is a widely held belief that the Narragansett people disappeared after colonization and the creation of the state of Rhode Island. However, the Narragansett people have continuously existed throughout the state of Rhode Island and into other states, and they had retained relationships with the land all the while. The people still use the land for food, medicine, spirituality, culture, and lifeways. He wishes that there would be more cooperation between the state and Tribe on climate change adaptation, but also admits that some of the problems of climate change are too far gone to do anything about. The Tribe should have been listened to long ago. When I told him that what he was saying about the Tribe not being involved in climate change or natural resource management plans being confirmed by my own review of the Rhode Island Department of Environmental Management's documents, he was not surprised. He states that often a plan would be written and given to the Tribe for comment, but never where the Tribe is asked to participate in the creation of a plan. The state seemingly

only reached out after the plan had been written to put a "blurb" in the plan about how Indigenous voices and concerns were being considered.

### Self to Environment

Much of the Tribe and Cassius's identity can be tied to the land. Since the Narragansett people are tied so strongly to the land, even small changes to the environment are noticed by them and the impacts are greatly felt. Limited or prohibited access to traditional hunting, fishing, and gathering spots are noticed much more by the Narragansett because they have lived off these spots for generations and when they do not have access to these spots, it impacts their way of life. Increasing ocean temperatures affect the fish patterns of the few ocean fishing spots they are given access to, and if patterns or access decrease too much, then an entire food source could be lost for the Tribe. Rare plants and animal species that are most susceptible to development and habitat loss may be lost and their traditional uses to the Tribe with them. To quote Cassius again, "Every single material, food, or medicine that we harvest is impacted by climate change." Even though the Reservation is the property of the Narragansett, the Tribe is still impacted by all the climate changes outside of the Reservation because the world operates on one large system made up of many smaller systems. Lands in Rhode Island outside of the Reservation are still considered 'Narragansett' to the Tribe, but they are not given a voice in how that land is managed. If the Narragansett do not get a voice in managing the lands they consider still to be their own, then there is likely no way Narragansett values will be reflected in the management of those resources.

Another tale of experiences of colonialism shows the relationship of ‘self’ to environment. Colonists came to the area of New England and saw the abundance of the land and attributed it to their Christian god, and they saw it as their right to exploit and shape the land as they wished. The Narragansett and other tribes in the region know that it was the planned management of the ecosystem and respect for nature that allowed for the abundance. Indigenous people of the region practiced forest management, management of streams and estuaries, regulated harvests, and knew how to manage many other complicated systems. “That was not just a natural bounty. That was intended, intentional, and beneficial manipulation by the tribal people here to benefit not just themselves, but the [ecological] systems that are around them.” Yet, the colonial powers did not see it this way and through force, displaced Indigenous people and manipulated the land to fit a capitalist system whose impacts have compounded into climate change.

### Self to Ideas

Experience of ‘self’ to people and the environment find their way into the ideas of the Tribe as they form much of the culturally based ways of thinking for the Narragansett people. When a change in the environment occurs, it has an impact on culture, tribal identity, and traditions because certain practices may not be possible. Cassius says, “Indigenous knowledge and relationships between person and place are a foundation in what we do, how we speak, and how we live.” It is impossible to separate the knowledge and experiences with the people and land from the identity of the Tribe.

One good example of how knowledge of the natural world and the identity of the Tribe is connected can be seen in how certain ceremonies throughout the year are timed. Every month there is a certain event that is associated with that time of year such as harvests of certain crops or the arrival of a particular fish to spawn in freshwater. These cycles are called moon cycles, and these cycles are shifting. This does not mean that the moon is literally changing when it arrives every month, but rather there are certain events that can be predicted every month that are no longer falling where they usually do. As the climate changes the timing of ceremonies will have to shift because maybe a certain berry does not grow until a month later than expected, and worst-case scenario is that certain ceremonies may not be able to take place because the particular event does not occur at all. Without the preservation of these ceremonies, the culture of the Tribe will be harmed, and the only way to preserve the ceremonies is to ensure that the resources the ceremonies honor continue to exist in the Narragansett world.

Another example is how the language is tied directly to the Tribe, and how climate change could threaten the language of the Tribe. As climate zones change, so will the distribution of organisms because plants and animals will always try to move to areas of the world where they are suited best. An example of a plant that the Narragansett are struggling to maintain a population of on the Reservation is the Black Ash tree, as also mentioned above. Declines in the Black Ash are already being seen both due to the emerald ash borer and climate change shifting the tree's preferred habitat farther north. The Black Ash provides many materials for crafts, but the decreasing population means that the crafts that the Narragansett make from the tree

are going to be harder to make. The fate of the Black Ash tree is tied to the Narragansett language because it is a spoken language that is not recorded, except on in a few rare instances. The only way to preserve the language is to speak it. The Narragansett language differs from English also that it is a more descriptive language and words only exist for things that exist in the Narragansett world. For example, there is no Narragansett word for elephant because there are no elephants in Rhode Island for the Narragansett people to have experienced. If the Black Ash ceases to exist in the Narragansett world, then the word for the tree, the parts of the tree used for crafts, and the crafts will all disappear. Though it is an unusual thing for someone descendant of an English-speaking society to initially understand, language holds a deeper meaning to the Tribe as it connects the people to everything around them. Cassius puts it best in his own words, “Language is tied to our ceremony, and our ceremony is tied to our language, both of them are tied to this life, the species.” While for a non-Indigenous person it might initially be hard to understand the true meaning between the connection of language to the land and the people, the most important thing is to recognize that it is something that holds great significance to the Tribe, and it should be a priority to protect the language.

### Self to Cosmos

The interconnectedness of the language to the land, people, and ideas of the tribe lends itself well into looking into how the Narragansett and Cassius position themselves in the cosmos. On one final note on the Black Ash tree Cassius states, “We can show the web of connection that surrounds that one plant and what it means to an Indigenous person.” Truly, there is no separation from person, to land, to ideas, and

ultimately the position the Narragansett see themselves in the universe. Tribal people have always placed themselves lower than all life around them because they understand their position and relationship to the world. Regarding climate change, Cassius states that it is hard to single out climate change as one issue because everything is “connected into one holistic understanding of our relationship with the Earth, and with the Mother Earth.” Earth and its natural systems are part of the Narragansett Tribe (or perhaps it would be better said that the Narragansett Tribe is part of the Earth and its natural systems).

*Quaiapen Perry, Age: 30's*

Fourth and final of the interviewees is Quaiapen Perry, a young woman who has been raised on traditional practices and has participated in powwows since she was a young girl. Her responses had to be kept short due to special circumstances, but she was still able to provide information that hints at how she relates to people, the environment, ideas, and the cosmos. Keeping up with the language, hunting, and fishing as frequently as possible are all important for her to maintain. She suggests that the Narragansett government gets involved with local towns and state governments on climate change planning on how to prevent harm to the environment, as she believes there could be beneficial co-creation of climate change adaptation plans. She has noticed more bacteria than usual in the waters of the Reservation over the last five years, less animals moving through the land, and less dense vegetation which she attributes to the lack of seasonal change. Regarding the local, state, and national governments, she wants them to know that the lands and waterways have special meanings that are unique to the Narragansett and a small change to one of these can



“set off the balance of nature” and send the whole system into disarray that will not only harm the Narragansett, but all people in general.

She proposes three main areas she would like addressed in the Tribe’s climate change adaptation plan. 1) Keep the environment clean. 2) Keep others from damaging the land and water, especially from deforestation, overfishing, and overhunting. 3) Educate the youth and adults on the importance of maintaining a healthy environment for sustaining the Narragansett way of life for the next “seven generations” to be able to enjoy too.

### *Summary of Interviews*

Cross-examination of the interviews finds many similarities in how participants within the Narragansett Tribe relate to people, the environment, ideas, and the cosmos.

#### Self to People

One common theme on the relationship between people is that every respondent is concerned about the way the Tribe interacts with the state government on climate change planning. For many interviewees, they responded that it was just as important to protect all lands in Rhode Island as well as the Reservation because there are Narragansett people all around the state. However, there is skepticism that the state would be willing to work with the Tribe on climate change or natural resource policies considering the history of the Tribe’s relationship with colonial governments and the continued exclusion of the Tribe in the drafting of plans.

All interviewees mention the role their families play in their practices of tradition, ceremony, and Narragansett way of life. Every interviewee or a member of their family hunts, fishes, gathers, gardens, shellfishes, or creates art from materials found in nature. The ability to continue these practices and share these experiences with their families is something that drives conservation and protection of the resources. Traditions and practices, such as ice fishing, that rely on specific environmental conditions might be in danger and the community, familial, and generational engagement that comes with it may be lost.

#### Self to Environment

All the interviewees have specific concerns with how the Tribe relates to the environment and the current and potential impacts of climate change on those relationships and the welfare of the Tribe. The forests on the Reservation serve as the home for most of the plants and animals that are used by the Tribe for food, medicine or arts, and each interviewee mentioned how protecting the forests should be a top concern for the Tribe. The fear of migrating plant and animal species is concerning to the Tribe because it could mean they not only lose that resource, but also the traditions and Tribal identity that are derived from those organisms. The Black Ash was mentioned by three of the interviewees as a target species of concern because of its uses in arts, and it has seemingly become a symbol for how climate change has the capability of wiping out entire words from the Narragansett language. It may yet be possible to preserve the Black Ash populations in and around the Reservation, but it would take careful planning and management of many factors, chiefly the emerald ash borer.

Another example of how the Tribe relates to the ways the environment has been altered is by the restrictions of access to traditional hunting, fishing, and gathering locations. The concern of ocean fishing permitting processes were brought up a couple of times because limiting the amount of fish Narragansett people can catch is going to have a negative impact on their food sovereignty. The Narragansett were not responsible for the regional overfishing, so interviewees believe that the permitting process and catch limits are unfairly put upon the Tribal members. Other areas around the state have limited access for Tribal people. In many places the Narragansett can no longer freely hunt, fish, or gather because they are now private property or there are regulations on hunting, fishing, and gathering activities. The fragmentation of the land from the Narragansett people has a detrimental impact on the Tribe's ability to continue traditions and maintain sovereignty because the colonial state and federal governments are limiting the activities of the Indigenous population with the lowest impact on the resources.

Of final note to the interviewees' relationship to land, is the fact that, in Narragansett culture, the land and the people are inseparable. In western society, it is widely held that there is a fundamental binary between the human world and the natural world. The human world is set to rule atop the natural world and manipulate it as they see fit. However, the opposite belief is held by the Narragansett people. Humans are not separate from the natural world, and they must share a harmonious relationship to the lands, waters, plants, and animals because a harm to a plant species, for example, harms the entire system. When the interviewees say that Indigenous peoples are more susceptible to climate change impacts, they not only are referring to

the fact that Indigenous peoples tend to occupy lands that are more sensitive to environmental changes and are of lower socioeconomic stature, but also that Indigenous cultures and ways of life are more heavily impacted than those of affluent, western societies that seek to separate and place themselves above nature. All interviewees seem to agree that careful action must be taken to protect the land because protecting the land will in turn protect them.

### Self to Ideas

Climate change has already had impacts on the ideas and culturally based ways of thinking of the Narragansett Tribe, and all the interviewees are worried that there will only be more harm to Narragansett ideologies. Since the Narragansett people are inseparable from the natural world, climate change is going to impact the way the Narragansett people live. Shifting plant and animal populations will make Narragansett cultural practices and traditions, such as creating art for ceremonies, harder. Ceremonies are central to Narragansett spirituality as it allows them to connect with intangible things. The Narragansett have a well-founded understanding of how the natural systems work and they have practiced and perfected management strategies over thousands of years. The ability to continue these practices is something irreplaceable for the Tribe. A climate change adaptation plan should include assurances to the Narragansett people that the plan will protect and preserve the ability for future generations to continue holding the ceremonies and traditions that have been practiced for the entirety of Narragansett existence.

### Self to Cosmos

Finally, the overarching connection of ‘self’ to people, the environment, and ideas can all be collectively gathered under how the Narragansett people relate to the cosmos. The Narragansett see themselves as part of a larger system connecting humans to nature to the spirit world. Sometimes western terms like ‘climate change’ or ‘biodiversity’ can be hard to single out because the Narragansett do not see such separations or need for these terms. It is abundantly clear however, that the Narragansett people know they have a responsibility to sustain the lifeways for nature to work as intended. The people do not see themselves as the beneficiaries of a divinely abundant world ripe for manipulation however they see fit. Rather, the Narragansett will put themselves equal to, and often below, plants and animals. A climate change adaptation plan should be able to reflect these particular beliefs and should always keep in mind the humility and respectfulness with which the Narragansett position themselves within the universe.

## **Discussion**

The discussion section will be used primarily to make recommendations for types of actions that could be taken by the Tribe to address the concerns held by the interviewees. Some of the recommendations will draw from similar issues that that the Shinnecock Nation identified in their climate change adaptation plan (Shinnecock Indian Nation, 2013). The last question of the interview asked, “What are the three main topics you would want addressed in such a plan for the Tribe?” Answers to these questions provide direct answers, but the responses throughout the interviews identified other concerns that were not explicitly answered for this question.

*Forest Resources*

Each interviewee mentioned protecting forest resources as a main concern for the Tribe going forward. Aspects of climate change are and will continue to impact forest resources on the Reservation. Specific changes that are impacting forest resources are: increasing temperatures, changing rainfall, increased storm intensity, and insect pests.

To address both increasing temperatures and shifting rainfall patterns and their impact on forest resources, the Tribe could plant trees that will be more durable in hotter, drier climates. This could ensure that a forest cover is still maintained but comes with a large downside for the Tribe's culture and identity. As mentioned by the interviewees, the plants and animals that the Narragansett have existed alongside have historical, cultural, and spiritual significance to the people. Some tree species might not have the capacity to exist on the Reservation as the climate will be significantly different with each decade, and this will be felt greatly by the Narragansett people. However, should the Tribe choose to be proactive on this subject, they could prevent future damages from loss of forest cover. The Tribe can also choose which trees they would like to plant based on the benefits they could accrue from certain trees. Ultimately, the desired outcome would be to retain the current trees that the Narragansett have existed alongside throughout their history, but it may not be possible depending on how much temperatures increase or rainfall patterns change over the coming decades. I recommend researching what types of trees could be sustained on the Reservation and in the region that are currently occupying the land first, then researching desirable trees that could be optional substitutes if it is deemed impossible to retain certain tree species.

Increased storm intensity is a problem under forest resource management because the more intense storms are, the more intense damage to forests occurs. Intense storms can do a wide range of damage from knocking over entire trees to snapping little twigs that pile into large amounts of forest debris. Debris created by storms can become dangerous if not properly maintained by forest management. The Tribe does have a Forestry Management Plan, but Dinalyn states that the Tribe could be better at cleaning debris after storms. While this is an important aspect of forest management, it is also good practice to manage trees that could become problems in the event of a storm. One recommendation I would provide is to perform surveys on the trees in the forest to identify dead trees, trees with dead branches, or with other indicators of poor health. Identifying these “problem areas” before they actually become a problem could provide benefit to the Tribe. Tribal forestry department members may need additional training, or perhaps the Tribe could seek outside help from state forestry professionals. Either way, taking a precautionary and preventative approach is a better way to prepare for storm crises rather than reacting to crises after they have already occurred. It may not be feasible to completely prevent damage from storms, but there are actions that can be taken to minimize the damage caused to forest resources after a strong storm.

Finally, insect pests, primarily the emerald ash borer and gypsy moth, are threats to the forest resources because they kill trees that are important to the Tribe. Essentially, the emerald ash borer and gypsy moth create the same problems as increased storm intensity by creating more dead debris that could catch fire. However, these pests create the problem more subtly, over a longer period of time whereas an

intense storm creates a very sudden amount of debris. A study published in 2020, finds that controlling emerald ash borer populations remains a challenge and few successful methods of controlling the pest are highly cost-prohibitive (McCullough, 2020). Furthermore, even though the emerald ash borer can be controlled, it would take the state Forestry Department's efforts in controlling the emerald ash borer populations outside and around the Reservation as well, otherwise the pest would still have ample source of non-controlled ash trees to consume and they would keep returning to the Reservation. It is still worthwhile, however, to investigate some of the potential emerald ash borer control methods to see if the Tribe could implement them.

Gypsy moth controls are more assured, but it is unclear what the cost of implementing successful methods would be. The moths will die naturally if it rains enough during the spring because it will allow a fungus to grow and kill the moths, but if there is not enough rain, then there are two bacterium that are proven to control gypsy moth populations well: *Bacillus thuringiensis* Berl. and *Lymantria dispar* multicapsid nuclear polyhedrosis virus (Nyadar et al., 2017). Both these methods are preferable because they have little impact on other organisms, but they are expensive to create and are therefore, expensive to purchase. Insecticides are a cheaper option but are not recommended due to their negative impacts on the environment. The best action the Tribe could take is to continue to monitor the gypsy moth species and the impact they are having on the forest resources.

#### *Maintain Health of Freshwater Ponds*

The health of the two freshwater ponds on the Reservation is an important issue for the Tribe as indicated in both Dr. Marcella Thompson's project on the



contamination issues in the two ponds and from the responses received in my interviews. Contamination from airborne sources is not possible to control because the genesis of the pollutants is not controlled by the Narragansett Tribe, nor is it possible to “strain” the pollutants out of the air before they reach the waters. Pollution and contamination from the land is much easier to control and there are simple actions the Tribe can take to protect the two ponds.

Riparian buffers, areas of vegetation along bodies of water, are abundantly important to maintaining the health of water habitats. They slow the flow of water into the ponds which lets contaminants be deposited into the soils rather than the waters. While this might still be a bad outcome, it is better than the contaminants reaching the waters. Another benefit of riparian buffers is that litter will not immediately get blown or carried into the waters because the plants will either catch the litter or will slow down the litter's progress because the presence of plants and trees slows down the wind speeds. Again, it is not good that there would now be more litter on the forest floors, but it is still better than the litter reaching the waters where collection would be harder. Riparian buffers also anchor the soil to the roots of the plants and trees which slows erosion into the pond. Preventing erosion is beneficial because the visible purity of the water is aesthetically pleasing, but more importantly it prevents the deposition of nutrients into the water that might create dangerously high populations of algal blooms. Algal blooms can be detrimental to a water body because they remove the dissolved oxygen in the water which can lead to mass fish deaths. Finally, riparian buffers can mitigate flood damages because there will be more water infiltration and the plants will impede the path of the water.

Monitoring concentrations and investigating the source of contaminants such as PCBs, lead, and mercury should be a priority for the Tribe. If concentrations get too high, especially accumulated in fish, then there might have to be limits on fish consumption. While this would be another instance of a problem brought upon the Tribe which they are not responsible for, it is important for the health of Tribal members to limit their fish consumption from the ponds if the contaminants are too dangerous.

### *Energy Consumption/Production*

Fossil fuels are becoming less price-competitive compared to renewable energy sources, especially wind and solar. The Shinnecock Nation makes a commitment to act to reduce the reliance on fossil fuels, audit every building on their Reservation, and increase the use of renewable energy programs (Shinnecock Indian Nation, 2013). Lorén mentioned that switching to a greener, more sustainable lifestyle is an important aspect for the future of the Tribe. It is becoming a reality that all communities around the world will have to face that they will have to find ways to shift to renewable energies. Additionally, the average temperature is increasing worldwide and many of the houses owned by Narragansett families do not have air conditioning because the summers have never been hot enough to warrant one and many families cannot afford the installation of air conditioning. Adding air conditioning to houses will be expensive to install and will increase monthly energy bills during the months that the system is run. Therefore, energy consumption is an important factor in becoming more sustainable on the Reservation.

First, Lorén would like many of the Reservation's buildings to have solar implemented to them. It would begin with the highest energy consumptive buildings such as the Health Center and Community Center. Costs of implementing solar are decreasing but are still prohibitive to the Tribe without outside spending. Grant writing should be a focus for the Tribe to procure funds to implement solar panels on the roofs of the most consumptive buildings first. After building solar panels on the biggest buildings first, then the Tribe could focus on acquiring solar panels for the houses on the Reservation that would benefit most from the implementation. Solar energy has a high upfront cost, but becomes cheaper to produce than fossil fuels, and because the Tribe would essentially be creating their own energy, they would save money in the long run. A self-sufficient energy system would also promote the Tribe's sovereignty as they would hardly rely on any outside production of energy. A safeguard to solar Lorén proposes is access to generators for every house and critical building on the Reservation. Flooding, storms, and snow cover on the solar panels would cause times where no solar energy could be produced, so it is reasonable to have a backup in the event of emergencies.

To further save on energy troubles, it is recommended to not only look into a self-sustainable energy grid, but also to look at technologies and engineering methods that minimize the amount of electricity needed for homes and buildings. Energy efficient lighting and appliances are all good starts, but even more exciting options such as green infrastructure could be implemented. One example of green infrastructure in practice and benefit is green roofs. Green roofs replace the traditional form of roofing and is replaced with roofing that has grasses, flowers, plants, bushes,

and all other variety of vegetation. Green roofs provide natural insulation which means during cold months, the heating does not need to be run as high, and in hot months, the air conditioning does not need to be run so cold. Not only do green roofs save energy, but they also provide mini-habitats and can provide a small haven for pollinators. It is highly recommended for certain buildings to be retrofitted with green infrastructure changes, and I think it is a wise idea for the Tribe to consider, cost permitting.

### *Air Quality*

Air quality is of concern to the Tribe because there are many members of the Tribe with respiratory issues, according to Dinalyn, and ambient air quality can have an impact on those with respiratory issues. Many issues with air quality can be ameliorated by many of the practices recommended earlier in this paper. Maintaining forest cover will improve air quality by filtering carbon gases and by decreasing the amount of particulate matter in the air. A study in Mexico found that people of Mexicali, Baja California, Mexico stated improved air quality in neighborhoods with more trees due to decreased particulate matter in the air (Muñoz-Pizza; et al., 2020). The Shinnecock planned on limiting the number of trees cut down and are planting new trees with air quality benefits as one of the main reasons of doing so (Shinnecock Indian Nation, 2013).

Since the Narragansett people are already maintaining forests and have vested interest in their continuity an additional solution might be necessary. A transition to alternative fuel cars for the Tribal government and then the general Tribal population could be an effective solution to further increasing the local air quality. Switching to a hybrid or electric car after her current car's use has been exhausted has been on

Lorén's personal plans for a while. Alternative fueled cars are becoming much cheaper than when they first became popular on the markets and should be more feasible for more people in lower income brackets to afford. One possible solution for the Tribe could be to purchase alternative fuel cars when replacing governmentally owned cars. This may encourage other Tribal citizens to switch to alternative fuel cars.

The Shinnecock Nation also recommends plans to improve air quality by implementing ordinances which would create restrictions on idling zones (Shinnecock Indian Nation, 2013). Basically, there would be parts of the Reservation that people are not allowed to idle their cars. For the Narragansett, such zones could be implemented around the Health Center and Community Center, where there is frequent activity.

A final applicable recommendation from the Shinnecock Nation is an ordinance to limit the burning of wood in the open (Shinnecock Indian Nation, 2013). I do not know how often open burning of wood occurs on the Reservation and no interviewee mentioned how frequent they burn wood or listed wood burning as a concern. This topic might need to be looked into further by the Tribe when drafting a climate change adaptation plan.

### *Food Sovereignty*

Maintaining plant and animal populations that could sustain the Tribe's food supply was a topic of concern mentioned by all four interviewees. By performing the best management practices for the water and forest resources on the Reservation, food sovereignty can be more attainable. The Shinnecock Nation has attempted to

encourage and promote food security and sovereignty by asserting themselves to reestablish traditional food systems and forming community gardens (Shinnecock Indian Nation, 2013). I am unsure of the total extent to which the Tribe as a whole tends to rely on the land and waters for food, but the participants in my study and Dr. Thompson's study seems to indicate that most families have multiple people who either hunt, fish, or gather food from their surroundings.

Creating or maintaining programs to teach youths about the plants and animals for consumption could be beneficial to the Tribe because it will benefit the future generations and would create a sense of respect and responsibility to maintain the health of the natural world. More specifically, the interviewees seemed to agree that the Tribe could use take more time and opportunities to educate the Narragansett people, not just youths, on the impacts of climate change on Tribal lifeways and the benefits that can be gained from working within natural systems. While there are programs that touch on these topics in coordination with the Tomaquag Museum and the Tribe, perhaps there could be even more programs conducted by Tribal Departments and the Museum.

### *Climate Justice*

A brilliant idea posed by Lorén was to explicitly mention climate justice in the climate change adaptation plan. Climate change is not the fault of the Narragansett people, and in many ways climate change is a continuity of impacts of colonialism, industrialism, and capitalism on Indigenous peoples. In the plan, it would be interesting to include how the proposed actions and methods of addressing climate change are also contributing to climate justice. The problems that cascade from

industrial activity and development on Indigenous populations can all be highlighted in the plan to serve as a reminder to the Narragansett people, but also any non-Tribal member how they are overcoming and creating their own justice for actions brought upon them by colonial societies. Furthermore, the people drafting the plan should “take a step back” and ensure that the solutions the plan suggests are addressing climate justice. This is a fantastic idea that can be included in a plan.

Schlosberg (2012) recommends a capabilities approach to addressing climate justice planning. A capabilities approach recognizes the specific and local vulnerabilities and impacts of climate change on a group, leading to a better understanding of what a community could conceivably do to create a climate change adaptation plan. Recognizing the vulnerabilities and impacts of climate change can only go so far, and justice can only be achieved if there is political action. The Tribe has the opportunity to address their concerns and capabilities to create an effective climate change adaptation plan that uniquely responds to the ways in which their histories and experiences with colonialism and capitalism have positioned them.

## CHAPTER 5

### CONCLUSION

Topics such as the health of forest resources, health of the freshwater ponds, energy production and consumption, air quality, and food sovereignty and security are all current concerns the interviewees have regarding climate change presently and into the future. Forest resources provide much to the Narragansett people by providing food and ecosystem services such as, cleaning the air, preventing erosion, and providing habitat for important organisms for a healthy ecosystem. Likewise, maintaining healthy freshwater ponds provides the Narragansett people with a resource that can be used for food, recreation, and community gathering.

Implementing newer, greener technology onto the Reservation is important to consider because the Tribe will potentially need to produce more energy with changing average global temperatures, and the Tribe would like to implement environmentally friendly means of producing energy. Air quality is of concern to the Narragansett mainly because there is a considerable number of people within the Tribe who have respiratory problems, and the ambient air quality has an impact on the frequency of respiratory issues flaring up, so improving air quality will provide relief for those with respiratory problems while also providing benefit to all members of the Tribe. Food sovereignty and security was mentioned by every interviewee as an important facet of Tribal life to protect and bolster when facing climate change because the Tribe needs to survive and there is much culture and tradition tied to the foods the Tribe has historically eaten.



More than the tangible or measurable benefits maintaining a healthy environment in the face of climate change, is the intangible, cultural, spiritual, and sense of identity the natural world gives to the Tribe. For the Narragansett people, the natural world is not separate from the human world - it is all one big system. As such, the Narragansett have as much respect for a tree, deer, or fish as they do for humans. The sense of community the Narragansett feel implies a strong relationship of every Narragansett person's relationship of self to people. Understanding the necessary cooperation between the land and the people lends to an enhanced relationship of self to the environment. All interviewees made connections on the necessity of maintaining a healthy environment and its ties directly to the Narragansett ways of life and culturally based ways of thinking, implying a strong relationship of self to ideas. As stated earlier in this paragraph, the Narragansett do not see themselves as above the plants, animals, land, and water and note that reciprocity between all beings in the universe can lead to a harmonious, beneficial, and fulfilling life. This commonly held belief implies the strong relationship the Narragansett people have to the cosmos.

### *Implications*

Future projects can use this project as an example for how to structure discussions on climate change adaptation with Indigenous peoples in the region with a caveat, of course, that no Indigenous group is the same as any other, so approaching, talking to, and working alongside any Indigenous group will require tailoring to that specific group. My project also avoids trying to overshadow or dictate to the Narragansett people, and ultimately other researchers should ensure that they are not

determining what an Indigenous group should do regarding climate change adaptation because most Indigenous peoples worldwide maintain their own sovereignty.

Additionally, this project may potentially reach Rhode Island governmental officials who will see some commonalities regarding climate change adaptation but will also see how the governmental roles they serve are directly possible because of exploitation of the Narragansett people and their lands and waters. Hopefully, by seeing the struggles the U.S. and Rhode Island governments have put the Tribe through, they will be more receptive to input from Narragansett members and the Tribal government when developing not only climate change adaptation policy, but all manner of departments and specialties. My project is intended to initiate discussions between the state government and the Tribe on all matters and not just those instances where it seems like the Tribe is being tokenized.

The Narragansett people have yet to draft a climate change adaptation plan, but hopefully, this project can serve positively as one step in the process for the Tribe. By no means am I expecting them to accept every recommendation I make, but I look forward to seeing what innovative ideas they may come up with for addressing climate change and climate justice in their own terms.

## APPENDICES

### Appendix A

- 1) Consider cultural practices and seek spiritual guidance.
- 2) Learn through careful and respectful observation (gikinawaabi).
- 3) Support tribal engagement in the environment.
- 4) Sustain fundamental ecological and cultural functions.
- 5) Reduce the impact of biological and anthropogenic stressors.
- 6) Reduce the risk and long-term impacts of disturbances.
- 7) Establish, support, and recognize opportunities for beings or sites of concern to  
the community to withstand climate change.
- 8) Maintain and enhance community and structural diversity.
- 9) Increase ecosystem redundancy and promote connectivity across the landscape.
- 10) Maintain and enhance genetic diversity.
- 11) Encourage community adjustments and transition while maintaining reciprocity and balance.
- 12) Support a new ecosystem balance after a major disturbance.
- 13) Design and modify infrastructure and access to match future conditions and community needs.
- 14) Accommodate altered hydrologic processes.

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