

"One day you're gonna know you won't starve here":

A social and cultural exploration of Coast Salish restoration of clam gardens

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Abstract

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Since time immemorial, First Nations shaped the environment around them to create and maintain highly productive societies. Today with the growing threats of a changing climate and continued nearshore development, important traditional resources may not be available for future generations. Indigenous traditional ecological knowledge (TEK) systems are more important than ever in decision making and restoration practices as these threats increase in the Salish Sea. One example of a structure built and managed utilizing TEK is the ancient mariculture known as clam gardens: a purposely constructed rock-walled terrace that increases the habitat and productivity of traditional foods. This research aims to utilize the case study of a clam garden eco-cultural restoration in the southern Gulf Islands of British Columbia, Canada to better understand the relationship between humans and ecosystems and how focusing on those relationships offer a model for success in restoration and management. For this master's thesis research qualitative data was obtained utilizing participant observations during restoration events and open-ended interviews with willing members of W̱SÁNEĆ First Nations traditional knowledge working group. We found that all people involved in this project bring unique experiences, backgrounds, and motivations. We also found

that this work has qualities and attributes that expand the current definition of resource active management. We identified ten qualities of the clam garden restoration work: Connections, Sharing, Work, Intergenerational, Caring for the Land, Knowledge, Alive, Engrossed, Commitment, and Food. By conducting this research utilizing Indigenous Research Principles we aim to inspire future research to obtain better data, establish better long-lasting relationships with Tribal and First Nations communities, and empower the next generation of Indigenous Scholars to conduct research for their communities.

Table of Contents

<i>Abstract</i>	3
<i>Research Goals and Aims</i>	12
Methods	13
<i>Relevant Literature</i>	14
<i>Field Methods to Achieve Study Aims</i>	20
Participant Observations	21
Participant Interviews	21
<i>Analysis Methods</i>	23
Results	24
Aim 1	25
Aim 2	28
Aim 3	41
Conclusion and Reflection	49
<i>References</i>	52
<i>Appendices</i>	55
Appendix A- Informed Consent Form	55
Appendix B- Interview Guide	57

Introduction

Through active management humans have altered the distribution and abundance of marine species for millennia (Rick & Erlandson 2008), yet only recently have researchers recognized that a subset of human-natural interactions enhances the sustainability of marine species and ecosystems (Deur and Turner 2005). In the Pacific Northwest, Coast Salish Indigenous communities have used complex natural resource management techniques to increase the sustainability of traditional food systems for millennia (Deur and Turner 2005, Lepofsky and Caldwell 2013, Lepofsky et al. 2015). One example of the interactions between Coast Salish Indigenous peoples and the natural environment is ancient clam garden technologies built by First Nations peoples, drawn in Figure 1.

Coast Salish Indigenous Peoples “did not wander aimlessly around in the rain hoping to trip over food” (Williams, 2006) as the European conquerors had proclaimed.

These 3-dimensional structures within intertidal zones supported the production and collection of traditional marine foods. These beaches were cultivated to produce more than nutrients to the people; they provide a space for teaching, community interactions, food

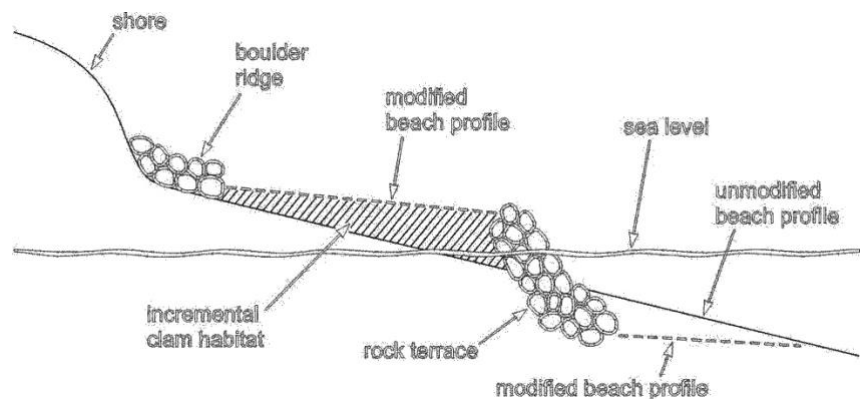


Figure 1. Diagram of clam garden (Augustine & Dearden, 2014)

security during times of scarcity and physical activity (Caldwell et. al, 2012). In traditional clam garden practices, low tides were utilized to construct and maintain the beaches; rocks from the higher intertidal were placed at the lowest intertidal line to

increase the trapping of sediment behind the rock wall terraces increasing ideal habitat for clam species and other marine food species (Groesbeck et. al, 2014).

These beaches were traditionally actively managed by removing algal species from the beach, repairing the rock wall during low tide events, harvesting of bivalve species, and tilling of the sediment (Lepofosky et al., 2015). These practices have been passed down through generations of First Nations communities, rooted in generations of critical observation (Groesbeck et al.,2014). Clam garden structures range from southern Alaska to the southern Gulf of British Columbia. However, there is historical documentation of a clam garden on Orcas Island in Washington state in the publication *The Lummi Indians of Northwest Washington* (Stern, 1969) but contemporary research of clam gardens has not yet explored this specific site.

Researcher interests in Indigenous peoples' practices of clam gardening has shed light on the ways that Indigenous peoples engage in and manage these ecosystems. These sustainable practices are especially significant as climate change and nearshore development promulgate disastrous effects in the Salish Sea. However, researchers' focus on these ecological relationships is not sufficiently inclusive of the social and cultural effects of clam gardening.

An innovative eco-cultural restoration project developed by the Parks Canada Agency and Coast Salish peoples in the Gulf Islands National Park Reserve (GINPR) takes a different approach. *Listening to the Sea, looking to the future* is a collaborative effort undertaken by Coast Salish peoples and Parks Canada Agency clam garden project staff. The two overarching goals of this five-year project are: "First, to determine whether or not clam gardens can be used as an effective resource management tool

within the GINPR, and; second, to facilitate opportunities for Coast Salish peoples to engage with their ancestral territories and practice their traditional harvesting rights within the GINPR.” (Clam garden network).

Listening to the Sea, looking to the future has not only yielded beneficial effects, but may serve as a precedent for future restoration and management efforts. Unlike many other ecological restoration research projects, the roles of Parks Canada Agency and Coast Salish communities are mutually interdependent and key to its success. This collaboration foregrounds Indigenous traditional knowledges, which supports the premise that when traditional knowledge is applied and incorporated into local management practices, biodiversity is promoted and sustained (Cuerrier et al., 2015, Augustine & Dearden, 2014). WSÁNEĆ and Hul’q’umi’num First Nations’ are recognized as key stakeholders, they guide the restoration of the rock wall and beach area, and participate in ecological experiments being conducted by the Parks Canada Agency taking place at their traditional sites. The larger project of clam garden restoration includes monitoring clam and algal species, sediments and other intertidal organisms, and to expand knowledge of the clam gardens and restoration events through social media and outreach activities.

This region is often referred to as the Salish Sea and has been home to many Coast Salish Nations since time immemorial. These nations continue to be protectors of their homelands and stewards towards a symbiotic relationship with mother earth. Today with the growing threat of a changing climate and continued nearshore development that is leading to degradation of ecosystem health within the Salish Sea, (Dethier et al., 2011) these TEK systems are more important than ever in decision

making and restoration practices. The goal of this research is to better understand the relationship between humans and ecosystems and how focusing on those relationships offer a model for success in restoration and management.

Master's Thesis Research

My involvement with and commitment to First Nations' clam garden restoration efforts began long before I undertook my master's thesis research. My interests in Indigenous peoples' cultural relationships to food took root in a clam garden beach located in the southern Gulf Islands of BC. I explored the edible species found there, and this undergraduate research internship was the foundation for my capstone research project that identified how the creation of a rock walled clam garden increases the abundance of edible invertebrate species through quantitative data collection. My ongoing volunteer work was sustained by the relationships built by being involved in this restoration work for multiple years. My continued commitment is grounded in my support for Indigenous traditional ecological knowledge (TEK) systems, which are derived from generations of knowledge transfer and critical observations.

This work was conducted within a public health context, to better understand Indigenous Peoples' relationship to place and how a values-based paradigm for resource management could have benefits not only to the environment but also to Indigenous communities. This work will provide an example for resource managers who are wanting to do restoration and management of traditional food resources. Indigenous Peoples' have a strong connection to place and with the growing threats of climate change, development, and changing policies, their way of life is being threatened (CTKW, 2014).

The process of working with Coast Salish Indigenous communities has been rewarding and continues to be grounding, I hope this research paper serves to inspire other Indigenous scholars to engage with their community. By continuing to honor other Indigenous scholars we are incorporating voices that have historically been silenced. Advocating for Indigenous research methodologies in an academic setting can be difficult to navigate and challenging at times, as traditional knowledge systems have not found a seat at the western science table. But in a paper by someone who came before me, Simonds' (2013) quotes:

“We realize the importance of not feeling paralyzed by this idea of “decolonizing” our research—either as Indigenous people or as non-Indigenous people working in partnership with Native American communities. The answer, however, is to accept that challenge in spite of our weaknesses and move forward.”

This master's thesis research stresses the importance of TEK in restoration and management practices of the Pacific Northwest coastal region (Dethier et al., 2011). Through informal interviews and participant observations focused on describing the practices and attributes associated with clam garden restoration and management to achieve the following aims: (1) Identify the range of roles that come together in a First Nation–Governmental Agency partnership in order to better understand the value of collaboration and how eco-cultural restoration creates space for community-driven contribution and priorities; (2) explore the social and cultural benefits, and motivations for the WSÁNEĆ Traditional Knowledge working group; and (3) explain the use of Indigenous Research Principles (IRP) in this master's thesis research, exploring the relationships during an eco-cultural restoration event.

I will be using a case study of the clam garden eco-cultural restoration project to meet the research aims because of the novel collaboration between First Nation's Traditional Knowledge holders and Parks Canada Agency to restore and actively manage a traditional technology in the Salish Sea. This research is focused on the southern Gulf Islands of British Columbia within the traditional territory of the Hul'q'umi'num & WSÁNEĆ First Nations (Figure 2).



Figure 2. Map of Salt Spring Island clam garden site, BC, Canada. maps generated by google earth, photo taken by Sonni Tadlock

Research Goals and Aims

The overarching goal of this master's thesis research project is to better understand the relationship between humans and ecosystems that emerge in a community-driven eco-cultural restoration project to assess how those relationships builds and strengthens community, honors traditional knowledge, and supports traditional knowledge holders as managers of these projects.

There are three aims of this master's thesis research project (Figure 3):

Aim 1: Identify who is within the community of clam garden restoration work through participant observation and interviews and understand the different roles they play.

Aim 2: Better understand the social and cultural benefits and motivations for the WSÁNEĆ Traditional Knowledge working group through their involvement with the clam garden eco-cultural restoration project through informal interviews and participant observations.

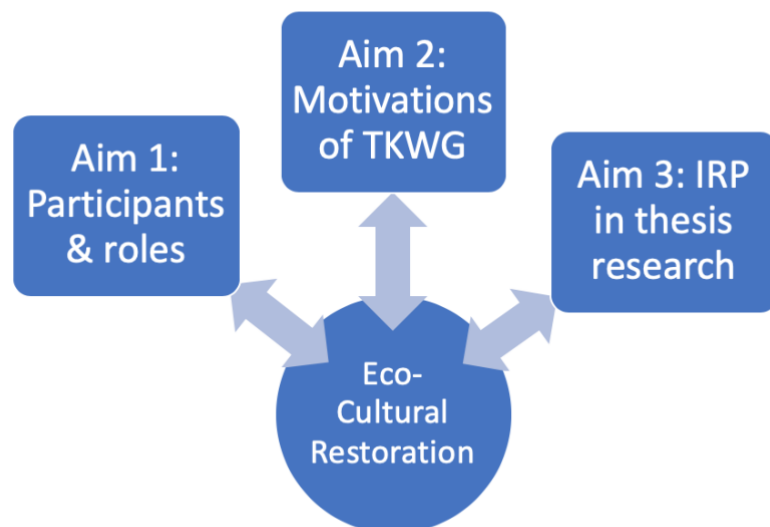


Figure 3. master's thesis research aims

Aim 3: Explain the use of indigenous research principles followed during this master's thesis research, exploring the relationships during a clam garden eco-cultural restoration event, during pre-data collection, method creation and execution, and data analysis.

Methods

In this section I will first provide a theoretical explanation of the methods used within this master's thesis research through a brief summary of the relevant literature that provided an academic foundation for the methods used and the primary data analysis. Then I will explain the Indigenous Research Principles (IRP) utilized throughout this master's thesis research and the role they played throughout this project. Lastly I will explain the field method data collection of participant observations and participant interviews and the analytic methods utilized in this research project. Qualitative research was utilized in the collection of data for this thesis and was chosen because it was the best mode to achieve the research Aims. The goal of collecting and analyzing qualitative data is to understand the concepts, characteristics, metaphors, symbols, and descriptions (Berg & Lune, 2018). I chose to use a qualitative approach over a quantitative approach because I wanted to better understand the "why" behind people's involvement in eco-cultural restoration. To understand the "why" for the First Nations involved, specific research principles were followed. To honor and contribute to the growing body of work that is practicing and advancing the decolonization of research I have outlined the principles followed within this master's thesis research three sections (1) Pre-data Collection, (2) Methods, and (3) Data Analysis. Bringing all

these approaches together allowed me to critically engage with First Nations community members while serving in the role of graduate student researcher at a large academic institution.

Relevant Literature

The following papers were critical in the development of this thesis research. The following papers were chosen because they all focus on Indigenous resources managers in the Pacific Northwest. This literature review was used to build upon peer reviewed work on resource management. In attempting to compare and cross-walk the identified attributes among the published literature and with results from this thesis research, a key challenge was the disparate terms and language use when describing attributes. I was able to find similarities amongst my results and identify potential additions that are specific to clam garden eco-cultural restoration work. This section is meant to define the research methods used, and emphasize the importance of context when working with Indigenous communities, as each one of these publications deals with unique communities. This literature helped support the achievement of Aim 3 represented in Table 3 in the results section.

Developing Responsive Indicators of Indigenous Community Health

Jamie Donatuto, Larry Campbell, & Robin Gregory

Background: This work was developed to fulfill a community identified need for a better way to define health for the Swinomish Indian Tribal Community (SITC). Health assessments conducted within Tribal communities tend to focus on metrics such as the prevalence of heart disease and cancer rates, and then completely overlook the specifics of what health, or lack of health means to the community themselves. This work was created after the first author gave the results of a study during a Tribal Senate

meeting that warned about the physiological outcomes from shellfish containing bio accumulative toxics. The Chairman of the Tribe asked: "But what does this mean for the health of our community?". This question led to the development of a body of work that continues to be built upon and adapted for individual communities. This work has laid a foundation for Tribal communities all over the nation to define health for themselves. This work helps provide Tribal communities with the tools they need to create a definition that not only improves the health of the community but supports Treaty rights, emphasizes education of the next generation on traditional foods and practices, and creates better understanding and relationships with non-tribal communities.

Relevancy: This paper is relevant to this graduate thesis work because it has created a template for resource-based communities to tailor in order to capture their specific connections and priorities. The indicators laid out served as a basis for the identified clam gardening attributes so this could potentially be a tool used by Tribal and First Nations Communities in future intertidal management and construction. Donatuto et al.,2016, also served as an example of qualitative data collection methods as they utilized informal open-ended individual interviews to create a space for Tribal Community members to share their stories, views and opinions. By following this model, I was able to collaboratively create an interview guide that would allow for the Traditional Knowledge working group members to share experiences and motivations for being involved in the clam garden eco-cultural restoration project. By collaboratively creating the question guide with the Parks Canada Agency project coordinator we were able to create a space where the participants understood the questions, felt comfortable with answering the questions, and felt confident the information provided to us would be

used for the sole purpose that was expressed to them. Creating trusting relationships is the foundation for quality data collection that reflects the community's own words and priorities.

"Sense of Place": Human wellbeing considerations for ecological restoration in Puget Sound

Melissa Poe, Jamie Donatuto, & Terre Satterfield

Background: This important work aims to align people's sense of place with restoration efforts to better protect traditional knowledge of place and the integrity of the resources the environment provides. This paper adds to the growing movement towards ecosystem-based management that seeks to incorporate social and cultural values into research programs and restoration efforts, especially with regard to culturally important sites or resources. Furthermore, this work was able to capture diverse voices by utilizing qualitative mixed-methods to examine the connections between sense of place and human wellbeing for Washington Puget Sound residents. This body of work was able to create a framework to develop metrics to identify people's sense of place and how these might be impacted through warming oceans, structural development, and regulations that could make ecosystems vulnerable to degradation. In this thesis work we aimed to mirror this by focusing our study on locations in places with cultural, social, and historical ties such as clam gardens. By modeling a similar mixed method approach in this master's thesis research, we aimed to capture the benefits to people participating in clam garden eco-cultural restoration work by restoring the knowledge and traditional practices associated with the First Nations' communities involved in the project.

Relevancy: This paper is relevant to this graduate thesis work because it is assessing people's sense of place and human well-being for the Puget Sound area of

the Salish Sea. Using this paper as an additional example, this thesis research also utilized the collaborative efforts that went into collecting this data. Poe et al. worked with Tribal Liaisons, community outreach experts, social networks, local leadership to reach out to potential research participants. Each participant was corresponded with personally and invited to participate in the study. We followed similar methods by engaging with Parks Canada Agency leadership, First Nations Community leaders, and other participants of the eco-cultural restoration project. By utilizing Poe et al.'s mixed methods of data collection model we were able to better understand the motivations behind Coast Salish Traditional knowledge holders to become involved and stay involved in a clam garden eco-cultural restoration project managed by a governmental agency.

Conceptualizing and operationalizing human wellbeing from ecosystem assessment and management

Sara Jo Breslow, Brit Sojk, Raz Barne, Xavier Basurto, Courtney Carothers, Susan Charnley, Sarah Coulthard, Nives Dolšak, Jamie Donatuto, Carlos García-Quijano, Christina C. Hicks, Arielle Levine, Michael B. Mascia, Karma Norman, Melissa Poe, Terre Satterfield, Kevin St. Martin, Phillip S. Levin

Background: The 4Cs framework is designed to assist in selecting a conceptually valid and pragmatic set of social indicators for ecosystem-based management, and in outlining where additional social science research is needed. This study has created a comprehensive, structured, and transparent conceptual framework of human wellbeing.

Relevancy: This paper is relevant to this master's thesis research because it is creating a framework for ecosystem-based management practices and the social indicators associated with them. By creating what they define as "social science-based constituents of wellbeing" it allowed for me to critically categorize the motivations and

opinions of the TKWG members into qualities and attributes unique to restoring and managing a clam garden beach.

Indigenous Research Principles

Understanding the culture(s) of the communities you wish to engage in research with and shifting towards a culturally-centered approach will lead to the improvement of research ethics, and also increases the overall quality and relevancy of the research (Wallerstein et al., 2018). This is important in healing the historically traumatic extractive relationships between Indigenous communities and western researchers. Following IRP while conducting research with communities is closely associated in employing Community Based Participatory Research (CBPR) methodologies. Indigenous communities have very strong value systems that are followed in every aspect of life and should be recognized and followed before conducting work with that specific community. As another note, every Indigenous population is unique, there is no formal document that outlines the protocol that needs to be followed before engaging with Indigenous communities (Wallerstein et al., 2018). The incorporation of CBPR methods to the three sections of the research process: pre-data collection, data collection methods, and data analysis, can help recognize and follow as the research project in its entirety reflects community priorities, values and language. By engaging the people you intend to study within every step of the creation of the research project you will be able to identify context and barriers much deeper, in turn creating a project that has broad implications instead of satisfying one research question that was created using a western science mentality and methodology. As an Indigenous scholar I have the responsibility to respect and honor the cultural context of any community I conduct

research with. While this master's thesis did not utilize CBPR methodologies, by practicing IRP I am being intentional of always being self-reflective of how my actions will affect the community, prioritize building trust by being open and honest with community participants, being mindful of creating lasting relationships with community participants that outdate the research project and lastly not viewing participants as "research subjects" but as partners. Being intentional in all my actions while conducting this research was difficult within a larger academic setting. One example of following these principles is not taking notes during the interviews and being able to utilize that time together to build rapport and trust with the participants by being able to provide an exchange instead of an extraction of knowledge by sharing my experiences and family stories.

The clam garden eco-cultural restoration project is a prime example of the benefits of utilizing a values-based paradigm to conservation. IRPs were interwoven into the clam garden eco-cultural restoration project since its inception by critically engaging with First Nations communities with traditional territories within GINPR using inclusive tactics in balancing the power dynamics between First Nations Communities and Parks Canada Agency clam garden project staff. This work emphasized the role of First Nations' communities as rights-holders with critical knowledge of active management practices that have been passed down through the generations. Augustine et al., 2014, suggests that active management needs to be more broadly interpreted to include cultural practices, this could then lead to better policies and practices around resource management and restoration. This work supported Aim 3, in advancing a values-based paradigm in conducting any type of research with Indigenous communities.

Field Methods to Achieve Study Aims

Three informal open-ended individual interviews were used to obtain opinions and motivations of the TKWG's involvement in the clam garden eco-cultural restoration project. An informal open-ended interview approach was selected because of its flexible structure to account for the specific community you are interacting with. (Berg & Lune, 2018) This fit within this master's thesis research as the community we were working in does not have a formal mechanism for communication with Parks Canada and the correspondence had to be adaptive. This thesis research followed the protocol set out by Parks Canada to collect data, and interact with First Nations' on the clam garden eco-cultural restoration project. Informal verbal approval was given during a meeting with Parks Canada clam garden project staff and WSÁNEĆ First Nations Traditional Knowledge working group. Formal introduction to this group was done by way of the Parks Canada Agency project coordinator. The project coordinator also helped inform who should be asked to participate in the participant interviews. This led to convenient sampling as each participant agreed to be interviewed, and then I was able to be adaptive to the situation by meeting participants where they were most comfortable (coffee shop, house, or restaurant).

I sought confirmation from another Indigenous Scholar and clam garden project coordinator on the interview guide to utilize the most appropriate language when asking the interview questions. By collaboratively creating the question guide with the Parks Canada Agency project coordinator we were able to create a space where the participants understood the questions, felt comfortable with answering the questions, and felt confident the information provided to us would be used for the sole purpose of

this master's thesis research, and inform a larger project with the Swinomish Indian Tribal Community.

Participant Observations

I conducted participant observations during the summer months of 2018 on the clam garden beach in Fulford Harbor on Salt Spring Island, BC. Participant observations allow researchers to experience the event through collaboration, observation, and sharing. This method was chosen because we wanted to capture the feelings during specific events with a lot of people. A preliminary meeting was conducted with Parks Canada staff and the WSÁNEĆ First Nations community members and knowledge holders to develop the purpose of our project and gain informal approval to move forward with the project. This meeting was held at the Parks Canada office in Sidney, BC in the beginning of June of 2018. This meeting was a space for the team to tell the community members where we come from and what our intentions are for the research we planned to conduct. The meeting was very friendly and everyone was supportive and excited about our project. This then led to opportunities to be a volunteer and observer during the summer eco-cultural restoration events. My coordination with the Parks Canada staff was easy and friendly, they made me feel welcome and truly wanted to help in any capacity to support this research. The restoration events took place in the summer months of: July 9-15th, August 11th-12th, August 17th at the CEO special award ceremony.

At the beginning of each day, we [Parks Canada staff, volunteers, interns, researchers, and community members] would meet at the Parks office, each one of would get a personal flotation device (PFD) and wait to be told to board which boat. This was a time for brief introductions and small talk. As this work is tide dependent,

sometimes these boat rides were very early in the morning, but they were always filled with excitement and laughter. Once the boat reached the beach we had to take the gear off the boat and our own personal items as we would be on the beach for the duration of the low tide. Once everyone was on the beach and ready to work we would circle up, this created a space for people to share where they come from, why they find themselves on the beach that day and usually a fun fact such as your favorite seafood. This was also a space to set intentions for the day, someone (usually the elder on the beach) would offer a prayer, and then we would discuss the goals of the restoration work for the day (turning over sediment, building up a section of the wall etc.). In my own introduction I would ask for permission to observe the people on the beach that day, I would say “I will be here taking pictures and writing notes, but I promise I am not lazy, I will move some rocks as well”. Gaining permission from participants is crucial in quality data collection as I want to observe authentic interactions and work tasks. By being honest and open of what I was doing I was able to create trusting relationships with people involved in the clam garden eco-cultural restoration work.

After the work tasks were established people were free to do the work that made them happy, this meant some people were clearing rocks from higher in the intertidal, some were fixing the rock wall itself, whatever the task was people were engaged in the work. During this time, I would sit back from a place to view the work that was going on as a whole, I observed the different tasks being done and the social interactions that took place. I took field notes in a small notebook and took pictures using a digital camera. After the day was over I would sit down for a concentrated amount of time and transcribe my notes into a Microsoft word document, recalling things people say, or the

general feeling of the day. This time allowed me to reflect on the interactions and work that took place during the restoration event that happened that day. All of the word documents were added to Atlas.Ti to be coded later to define what took place and the feeling during a clam garden eco-cultural restoration event.

Analysis Methods

A grounded theory approach was used to analyze the collected data from the participant observations and the participant interviews in order to achieve Aim 1 and 2. This meant that themes were identified by reoccurring topics heard and observed during the summer months of data collection. (Berg & Lune, 2018) Two methods were used to code the data, audio interview data was coded using sticky notes, as the poor quality of the recording made it difficult to transcribe the interview. I listened to the recordings and pulled out the information being asked and noted it on sticky notes. The notes were then placed on a larger piece of paper and grouped into common themes. As we did not have the transcripts of the interviews due to technical and time restraints, the context was provided by the interview guide and repeated listening of the interviews. These themes and correlating quotes were then transferred to a word document and uploaded into Atlas.Ti. Atlas.Ti is a qualitative data analysis program used to digitally code data. This program was utilized in this thesis research by inputting field notes, categorical word document, and photographs into the program. The codes were then combined to generate a list of attributes and associated qualities specific to restoring and actively managing clam gardens.

For the purpose of this master's thesis research the relationships created with interview participants laid the foundation of how to interpret the stories, knowledge, and feelings that were shared. Part of my analytic approach took place within my data

collection itself. Indigenous methods of analysis are based on the value of service leadership, whereby the interpretation of the research is done within the context of the specific community and to ensure that the end product is a valuable contribution to all the parties involved. To fulfill Aim 3, I was intentional in following all the proper protocols with Indigenous community members in order to obtain knowledge from them and create lasting relationships. Through the process of refining this research project I had to self-reflect frequently to understand how this body of work could be helpful in its publication. The best way to disseminate this information is documenting the intentional steps taken in order to go about this work in a good way. Indigenous Principles of Research in Wilson, 2008 Judy Atkinson outlines guidelines that indigenous research should follow, such as being intentional that the research participants must feel safe and be safe, including respecting issues of confidentiality but there are many sources (Fisher & Ball, 2015, Harding, 2015, Laveaux & Christopher, 2009) on this topic that explore Indigenous epistemologies and call for better awareness of the history of Tribal Communities and researchers.

Results

In the following section I will lay out the results to my three Aims of this master's thesis research. The goal of this research is to better understand the relationship between humans and ecosystems and how focusing on those relationships offer a model for success in eco-cultural restoration and management efforts.

Aim 1

Identify the range of roles that come together in a First Nation-Governmental Agency partnership in order to better understand the value of collaboration and how eco-cultural restoration creates space for community-driven contribution and priorities.

It is important to highlight the people that participate in this significant project, and how community driven collaborative projects serve as a catalyst for

connections among people of all disciplines. This master's thesis research project was created to be a collaboration with the Traditional Knowledge Working Groups (TKWG) of the First Nations whose traditional territory is within the Southern Gulf Islands of BC. Through participant observations and participant interviews we found that all people involved in this project bring unique experiences, backgrounds, and motivations. Even with everyone being from different walks of life, an atmosphere of equity and shared responsibility was felt during restoration days. We found that the work that goes into clam gardening is collaborative and community building. During community eco-cultural restoration events it was observed that people spent their time on the beach moving rocks, observing wild life found on the beach, sharing interesting things found, and working together to achieve a common goal. Parks Canada Agency staff's role in the clam garden eco-cultural restoration project is to be facilitators of the project, to coordinate logistics of transportation, tools, recruit volunteers, compensate traditional knowledge holders, and monitor ecosystem health of clam garden beaches. The two TKWGs were brought into this work to guide and manage the growth and direction of this project. One group is from Hul'q'umi'num First Nation & one from the WSÁNEĆ First Nation. With guidance from the project coordinator we chose to focus our efforts to capture the opinions and priorities of the WSÁNEĆ First Nation TKWG. During

restoration days the members of the TKWG would spend time catching up with one another and meeting the new people that had been brought to the beach. They would listen at the beginning of the day of what the Parks staff thought they should focus on and then provide the knowledge of how to carry out the task, by demonstrating the correct way through example. There are many ways people have come to be involved in this project, but one common thing is that they have been involved in this work for multiple years, and people who are there for the first-time plan to attend again.

The people identified to be involved in the clam garden eco-cultural restoration work were:

Parks Canada Agency Staff: Facilitators, Workers

“Listening to the Sea, looking to the future” community driven restoration project aims to engage WSÁNEĆ and Hul’q’umi’num First Nations’ to create a power structure that allows for traditional knowledge holders to guide, rather than impose, the work being done on their traditional sites. Other efforts include monitoring clam and algal species, sediments and other intertidal organisms, and to expand knowledge of the clam gardens and restoration events through social media and outreach activities. The clam garden restoration project staff provide the essential tools and supplies necessary for field work days, this includes shovels and pitch forks, transportation to and from the clam garden beaches, coordinate scheduling utilizing the lowest tides of the year and even provide lunch and snacks for the workers of the day.

WSÁNEĆ First Nation: Managers, Workers

The WSÁNEĆ First Nation TKWG is regarded as the co-leaders of this project and provide direction to the goals of the work. There are also non TKWG members who

are engaged in this work and serve as a catalyst for more people to get involved. The interview participants were asked a question about the roles people play during the restoration event, during the first interview one of the TKWG members described the role of the working group and volunteers during the work days as “we are more of the hardworking employees, worker bees, volunteers” [Interview 1, Participant 1], in responding, I stated that I believed it was more than just volunteering, and asked what else they contributed, Participant 1 responded “Knowledge, stories of back in day when the guys were clam digging when they were kids, and how it used to be, it’s nice hearing all the nice stories” [Interview 1, Participant 1].

Hul’q’umi’num First Nation: Managers, Workers

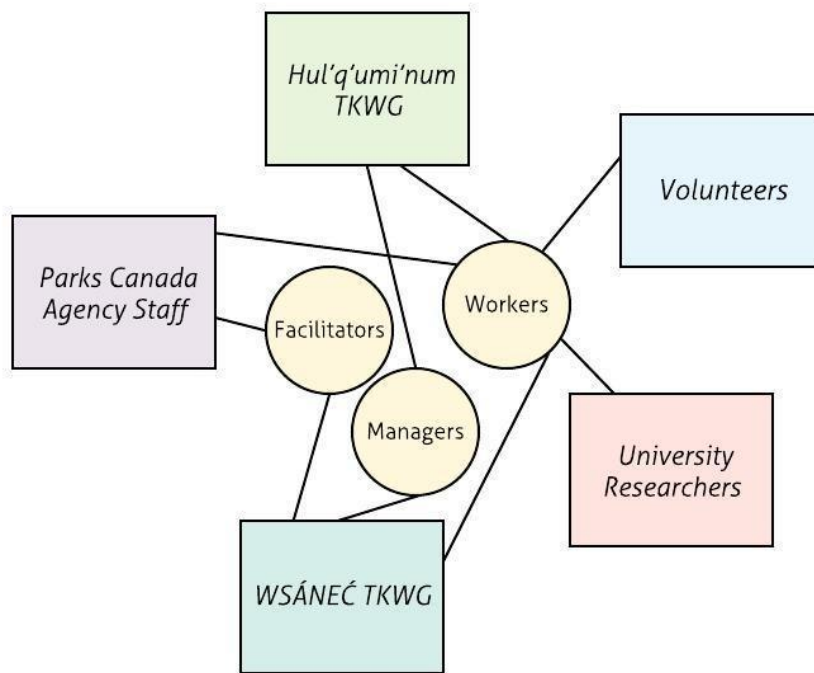


Figure 4: “hats in the ring”, representation of the groups of people involved in clam garden restoration and their roles

Hul’q’umi’num First Nation TKWG is regarded as the co-leaders of this project and provide direction to the goals of the work. Though they were not the focus of this

thesis research, they are still major leaders within this project along side with other community members and leaders involved in this project.

Volunteers: Workers

Word of mouth is the main way people get involved with this project, and the experience is enough for them to keep coming back. During the summer of 2018 eco-cultural restoration events, people found out about this project through community members, or through a project at a University but people who get involved stay involved in any capacity they can.

University Researchers: Workers

Researchers interested in clam gardens are required to obtain research permits to collect data, this ensures that the ownership over that data is correct and is contributing to the larger goals of Parks Canada Agency and First Nations TKWGs'. All levels of academics are engaged in this work, from tenured professors to interns in their first year of college. During my time involved in the clam garden eco-cultural restoration project I have seen participants begin involvement through a research project but continue to volunteer to stay involved. This was observed through planning of data collection logistics, observations during restoration work days.

Aim 2

Aims to better understand the social and cultural benefits, and motivations for the WSÁNEĆ Traditional Knowledge working group through their involvement with the clam garden eco-cultural restoration project through informal interviews and participant observations.

To achieve this aim, we captured the voices of four WSÁNEĆ TKWG members to better understand their motivations, and goals of being involved with the clam garden eco-cultural

restoration project. In combination with the primary data collected, and the relevant

literature used as a road map, a table was created to identify the unique qualities of the motivations and goals of a of select group of WSÁNEĆ TKWG members.

The following table shows all the attributes and associated qualities of clam garden eco-cultural restoration work taking place in the southern Gulf Islands of BC. The words chosen to express the attributes were chosen from reoccurring words that were said during participant observations and interviews.

Table 1: clam gardens create *spaces* and *opportunities* associated with the following socio-cultural attributes:

<p>Sharing</p> <p>Something that happens on clam gardens is <i>sharing</i>, people come together to share the space, stories, knowledge, time, laughter, and food. The sharing that happens is rooted in cultural practices of giving what you can and only taking what you need.</p>	<ul style="list-style-type: none"> • The working knowledge group with Parks • Working together, the work load • Stories of childhood and family • Networks and relationships • Knowledge of clam gardens and clam digging 	<p>I” want the next generation to do what I’m doing and eat what I am eating –don’t let it die”</p> <p>“This has been a place for teaching and learning and sharing “</p> <p>“Ancestors have gathered us here today and are here with us to help us”</p>
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	<ul style="list-style-type: none"> • Involvement of the project with community members 	
<p>Connections</p> <p><i>Connections</i> are made and solidified during this work, people make connections multi-dimensionally (ie research, academic, social, community)</p>	<ul style="list-style-type: none"> • Job opportunities • Community partnerships • Research • Family connections 	<p>“The more people the more work is gonna get done”</p> <p>Involve everyone, even the little ones</p> <p>this project opened a lot of doors for me, I have been able to talk and meet with people, he got a job from someone he met on the clam garden and now is going to Coast guard school to save people”</p>
<p>Work</p> <p>The <i>work</i> involved in clam gardening is physical and collaborative. It provides opportunity and space for people to work without other distractions. People all work different during</p>	<ul style="list-style-type: none"> • Observations of task done during work parties • Goal oriented • All ages are engaged and able to participate • Ability to grow into new tasks and jobs 	<p>“When people are working, reach out to them and actually take them</p> <p>“here, here’s a fork, you’re gonna find something to eat here” and they really liked it”</p> <p>People work together</p> <p>Everyone works together</p> <p>everyone is there working together to achieve a common goal, which was not exactly a set destination but a building upon</p>

<p>these work parties and contribute what they can.</p>		<p>of what was already there and building more from higher in the intertidal.</p> <p>Tides coming up quick but people are still working hard, trying to fill the last couple buckets</p> <p>“I’m looking for the right one [meaning a specific rock] the perfect one for the wall [as two females are filling their bucket]”</p> <p>“The more people the more work is gonna get done”</p>
<p>Knowledge</p> <p>All ways of knowing are respected and brought together during this work. The clam garden traditional technical <i>knowledge</i> has been revitalized through people being on the beach.</p>	<ul style="list-style-type: none"> • Built on previous experiences • Family originated • Shared • Always increasing through observation and experimentation • Honored, this way the knowledge will not be lost 	<p>“Learned from grandpa -Knowledge passed down through doing, going out and practicing these things”</p> <p>“Learning the culture and protocols by being involved and going out at a very young age</p> <p>Started going out with dad at very young age, now taking grandkids out, they already know that when the water is black that it is dangerous”</p> <p>“My thoughts are that back in the day, they wouldn’t have known if there was a red tide</p>

		so they could just see if they got sick or not, so I just go and do it and hope for the best”
<p>Alive</p> <p>This restoration project has brought people to the beach, brought songs, prayers, ancestors, language and knowledge, and in turn has brought <i>life</i> back to it.</p>	<ul style="list-style-type: none"> • By bringing people back to the beach, we have brought back life, not only in ecological species but with songs, and language and 	<p>“On Pender island we were using the butter clam shells as cereal bowls they were so big. We were also cooking clams and oysters on the beach”</p>
<p>Engrossed</p> <p>There are very few distractions from the work on the clam garden, people are not on their phones, or doing something else, the focus is on the task at hand [moving rocks, turning sediment etc.], there is room for</p>	<ul style="list-style-type: none"> • People always happy to participate • Little to no complaints from people working • Understanding that there is only so many hours that this work can be conducted 	<p>“Oh everyone works together like motivates each other, have conversations and have fun while you’re working, yeah everybody works together, no real complainers”</p> <p>The weather was very hot today so Skye and the team made sure everyone knew to take as many breaks as needed and left it up to them to know their limits. Making sure everyone practices self-care, drinking lots of water and getting a snack. It is very easy to</p>

<p>chatting and relationships to be made, they are made through work being done collaboratively.</p>		<p>forget to eat and drink on the garden when you start getting going</p>
<p>Commitment</p> <p>People involved in this project have been involved for multiple years, the community partners were identified and then decided to keep working [1 to 5+ years], volunteers and researchers come back for multiple events and stay involved even after the research project is over.</p>	<ul style="list-style-type: none"> • Involvement in the project goes beyond one event • Multi-dimensional, people are involved for many different reasons: Family, previous work on the ocean, culture, love of foods etc. • Recognition of projects is increasing • Identified that everyone would like the project to continue 	<p>“No red tide, No closures for harvesting, Harvest all the time when you need”</p> <p>Clean</p> <p>No trash or glass</p> <p>“Keep it clean- I was brought up this way, do it for the people who love the clams”</p> <p>“Being able to cook the oysters and clams right on the beach”</p>

<p>Intergenerational</p> <p>The stories are similar among people and once shared they are stronger. There is a task for everyone at any age or ability, this allows for more work to be done but also allows for someone to grow within the project, to increase the knowledge they have coming into it.</p>	<ul style="list-style-type: none"> • People of all ages engaged in work • Knowledge from youth brought into current work 	<p>“Can no longer harvest as much, have to buy them off people for the elders”</p> <p>“At 10 years old my dad took me to salt spring, used to take me to Ganges”</p> <p>“We got like 20 sacks to sell”</p> <p>“Learned from grandpa -Knowledge passed down through doing, going out and practicing these things”</p> <p>“Started going out with dad at very young age, now taking grandkids out, they already know that when the water is black that it is dangerous”</p> <p>“Clam digging for years, learned from grandfather”</p> <p>“Dad brought me out on the beach to help work so he could make money for our family I was the clam picker, since I was 8 or 9”</p> <p>“Dad used to take me to sit with the elders (I didn’t know what they were saying but I wish I would have learned the language) “</p> <p>“Get young people involved”</p>
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<p>Caring for the land</p> <p>The actions during clam gardening are meant to clean the beach and make it healthier. A role of responsibility is assumed to clear the beach of debris and maintain a level of ecosystem health.</p>	<ul style="list-style-type: none"> • Coming into the project with the experience of cleaning up debris from the beach • Goals to keep these ecosystems healthy • Common practice to clean the beach 	<p>“To teach not only clam harvest but to teach how to care for the beach/ turning over the beach”</p> <p>“There would be healthy shellfish, there would no red tides or closures, beaches would be open to harvest all the time, we would be able to harvest whenever we need to ceremony or funerals or whatever</p> <p>Back then all the clams were white-not black and polluted.”</p>
<p>Food</p> <p>The greatest gift from the clam garden is traditional foods. These foods are integral to culture and ceremony. With degrading ecosystems these foods are becoming scarcer.</p>	<ul style="list-style-type: none"> • “Our elders want it and can’t get it anymore” • “I’d like to see lots of clams” 	<p>“Goal is to teach them how to survive on the beach”</p> <p>“One day you’re gonna know you’re not gonna starve here”</p> <p>“Our elders miss it all the time, getting kinda scarce now and that’s why we’re doing this</p> <p>I want to leave behind a lot of clams, for First Nations people to harvest”</p>

Table 3: Identified attributes from relevant literature and thesis data, the last section of the table is the identified additions to be discussed in the body of the paper.

Poe et al., 2016		Donatuto et al., 2016	
Domain	Attributes	Domain	Attributes
Social	<i>Social connections</i>	Community Connection	<i>Work</i>
	<i>Education</i>		<i>Sharing relations</i>
Personal	<i>Sensory</i>		<i>Quality</i>
	<i>Emotions</i>	Natural Resource Security	<i>access</i>
	<i>Aesthetics</i>		<i>Safety</i>
Activity	<i>Harvest</i>	Cultural Use	<i>Respect/stewardship</i>
	<i>non-harvest</i>		<i>Sense of place</i>
Heritage	<i>Family ancestor</i>		<i>practice</i>
	<i>TEK/LEK</i>	Education	<i>The teachings</i>
	<i>Identity</i>		<i>Elders</i>
	<i>Livelihood</i>		<i>Youth</i>
		Self Determination	<i>Healing/restoration</i>
			<i>Development</i>
			<i>Trust</i>
		Resilience	<i>self esteem</i>
			<i>identity</i>
			<i>sustainability</i>

Breslow et al., 2016

Iadlock et al., 2019 [Similarities]

Constituents	Domains	Qualities	Attributes
Connections	<i>Tangible connections to nature</i>	Connections	Job and research opportunities
	<i>intangible connections to nature</i>		Community partnerships
Capabilities	<i>social relationships</i>	Work	Family connections
	<i>culture & Identity</i>		Observations of task done during work parties
	<i>Livelihood & Activities</i>		Governance & Management
Conditions	<i>Knowledge and technology</i>	Sharing	All ages are engaged and able to participate
	<i>freedom & voice</i>		Knowledge with everyone involved in project
	<i>Governance & Management</i>		Working together to achieve goal
Cross cutting	<i>health</i>	Intergenerational	Stories of childhood and family
	<i>Safety</i>		Networks and relationships
	<i>economy</i>		Knowledge of cg and clam digging
Resilience	<i>environment</i>	Caring for the Land	Involvement of the project with community men
	<i>Equity & Justice</i>		People of all ages engaged in work
	<i>Security</i>		Knowledge from youth brought into current wo
Knowledge	<i>Resilience</i>	Knowledge	Coming into the project with the experience of cleaning up debris from the beach
	<i>sustainability</i>		Goals to keep these ecosystems healthy
			Common practice to clean the beach
			Built upon personal and famial experiences
			Historically passed down
			Always increasing through observation and experimentation
			Honored, this way the knowledge will not be lo

Iadlock et al., 2019 [additions]

Qualities	Attributes
Alive	Bringing od people back to the beach we have brought back life, Songs Language
Engrossed	People always happy to participate Little to no complaints from people working Understanding that there is only so many hours that this work can be conducted
Commitment	Involvement in the project goes beyond one event Multi-dimensional Recognition of projects is increasing Identified that everyone would like the project to continue people are involved for many different reasons previous work on the ocean Family ties to place and practice Expressed desire for more traditional foods from community
Food	Sustainable source for community gathers Ensuring the next generation is able to feed themselves

Alive

This restoration project has brought people to the beach who were once removed, brought songs, prayers, language, and has ignited knowledge that was almost lost. With all of these intangible feelings of life that have been brought back through the restoration and management work. With the restoration and active management of these clam garden beaches it has brought more species abundance than when the project first started. The clam garden restoration project is gaining more recognition, with the Parks Canada CEO Special Awards Ceremony, the project was honored by the Parks CEO, and honored for the collaboration between First Nations Leaders and Parks Canada. Through this project there has been an ignition in interests in clam gardens

and the network that is has created. In turn bringing more people from different walks of life to the beach. Increasing the life that is there already.

“When we first started it took us four hours to get that many clams, but now we got that many in a few minutes!” (Interview 2, Participant 2)

Engrossed

It was observed that there are very few distractions from the work on the clam garden, people are not on their phones, or doing something else, the focus is on the task at hand [moving rocks, turning sediment etc.], there is room for chatting and relationships to be made, they are made through work being done collaboratively.

People always happy to participate

“Oh, everyone works together like motivates each other, have conversations and have fun while you’re working, yeah everybody works together, no real complainers”

(Interview 1, Participant 1)

“The weather was very hot today so Skye and the team made sure everyone knew to take as many breaks as needed and left it up to them to know their limits. Making sure everyone practices self-care, drinking lots of water and getting a snack. It is very easy to forget to eat and drink on the garden when you start getting going” (Field Notes, July 12,

2018)

Commitment

People involved in this project have been involved for multiple years, the community partners were identified and then decided to keep working [1 to 5+ years], volunteers and researchers come back for multiple events and stay involved even after the research project is over. Involvement in the project goes beyond one event, people

leave the clam garden beach and become advocates for the work. The reasons for being involved in this work is multi-dimensional, people are involved for many different reasons: Family, previous work on the ocean, culture, love of foods etc. One of the participants explained “I didn’t know about doing it [clam gardening] before it started, I didn’t know about all the rocks or anything. We would go all over clam digging, I didn’t know what I was getting into, I just went” (Interview 3, Participant 5)

“this project opened a lot of doors for me, I have been able to talk and meet with people, he got a job from someone he met on the clam garden and now is going to Coast guard school to save people” (Interview 1, Participant 1)

Food

Traditional foods are integral to culture and ceremony for Coast Salish peoples. With degrading ecosystems these foods are becoming scarcer and the affects can be felt by the community members. Every single participant, when asked, what they would like to see the project leave behind, is “lots of clams”. This goes to show that food is central to culture and a main benefit that is obtained from the clam garden beaches. When asked to describe an ideal clam garden, one participant answered “There would be healthy shellfish, there would no red tides or closures, beaches would be open to harvest all the time, we would be able to harvest whenever we need for ceremony or funerals or whatever” (Interview 1, Participant 1)

“Goal is to teach them how to survive on the beach, One day you’re gonna know you’re not gonna starve here.” (Interview 2, Participant 3)

“Our elders miss it all the time, getting kinda scarce now and that’s why we’re doing this I want to leave behind a lot of clams, for First Nations people to harvest”

(Interview 1, Participant 1)

“When people are working, reach out to them and actually take them, here, here’s a fork, you’re gonna find something to eat here, and they really liked it” (Interview 2, Participant 3)

“I want the next generation to do what I’m doing and eat what I am eating –don’t let it die” (Interview 2, Participant 4)

Aim 3

Explain the use of Indigenous Research Principles in this master’s thesis research, exploring the relationships during an eco-cultural restoration event.

By increasing social cultural qualities and attributes into ecosystem management and restoration projects, the more diverse methodologies and

space for innovation to the pressing problems of climate change. To achieve this aim, we worked collaboratively with the clam garden eco-cultural restoration project coordinator to ensure culturally appropriate protocols were followed and honored. This section outlines how Indigenous Research Principles were followed during the three phases of this master’s thesis research project.

“As we were circled up there was an eagle flying overhead and then swooped down to the water, this is very fortunate for us, the eagle is there to let us know we are not alone.” (Field Notes July 12, 2018)

I will now walk you through the three steps of this thesis research: Pre-data collection, Methods, Data Analysis. Then I will describe how each of Indigenous research principles was followed throughout the process. Figure 4 is an infographic of the principles associated with each step of the process.

Phase 1: Pre-data Collection

“Aboriginal people themselves approve the research and the research methods”

This principle was followed by participating in a preliminary meeting conducted with Parks Canada staff, the WSÁNEĆ First Nations community members, and knowledge holders to propose our project and gain informal approval to move forward with the project. This meeting was held at the Parks Canada office in Sidney, BC in the beginning of June of 2018. This meeting was a space for the team to tell the community members where we come from and what our intentions are for the research we planned to conduct. I also followed this by gaining permission every time I conducted participant observations. During restoration field day introductions I would ask for permission to observe the people on the beach that day, I would say “I will be here taking pictures and writing notes, but I promise I am not lazy, I will move some rocks as well”. Gaining permission from participants is crucial in quality data collection as I want to observe authentic interactions and work tasks. By being honest and open of what I was doing I was able to create trusting relationships with people involved in the clam garden restoration work. Before the participant interviews were conducted informed consent forms were signed by the participants and they were provided a copy of the question guide and told they did not have to answer any of the questions they did not wish.

“Acknowledgement and consideration of community and the diversity and unique nature that each individual brings to community”

Education of the context of the community and the history of how their current relationship with clam garden beaches have been shaped was obtained before the start of data collection. This was done by reflecting on previous clam garden research I have

conducted, and correspondence with the clam garden project coordinator. By engaging with the project coordinator to gain insight on the best language, timing, and mode of contact for the community members I was able to better shape my methods moving forward in the project.

“Research participants must feel safe and be safe, including respecting issues of confidentiality”

To ensure proper protocols were followed a CITI Program certification was obtained prior to the start of data collection. This was in part to satisfy and ensure Northwest Indian College IRB approval of research obtained prior to data collection. Using a Tribal College IRB ensures that the unique cultural context is accounted for and the researchers are held accountable to an Indigenous ran review board. Obtaining verbal consent from participants during observations on clam garden restoration work day and obtaining signed consent forms from all interview participants is also a space to discuss confidentiality, as it was expressed only approved collaborators would have access to the primary data and that this work would not be shared without prior consent from the community leaders. Data sharing agreement was put in place with University of Washington advisors so as the data did not become available without prior consent.

“An awareness and connection between logic of mind and the feelings of heart”

As an Indigenous researcher I am mindful to be sure I am listening and observing the self as well as in relationship to others, preparing oneself mentally and spiritually to prepare the research in a mindful way that is working towards common goals. Through restoration people have been able to add the feeling of heart to this project and there is a sense of pride and love for this place, this is personally felt as I have been involved in this work for 4+ years.

Phase 2: Methods

“Way of relating and acting within community with an understanding of the principles of reciprocity and responsibility”

Establishing rapport with the community participants allowed me to engage my own world view and cultural grounding to relate to the participants. Being intentional in not being an extractive researcher but allowing for natural exchange (reciprocity). The community participants chose a space they were comfortable with to conduct the interview, the engagement with community members took place on their own time by making myself available to their schedule. This was my responsibility as the researcher to meet the participants where they were at. Advice solicited from the project coordinator on best methods of engagement allowed me to go into the interview with background knowledge and provided cultural context to the community I was engaging with.

“A reflective non-judgmental consideration of what is being seen and heard”

In order to continue to build relationships and honor the time and knowledge shared, It was important to be engaged fully during the interviews, to do this I did not take notes during the participant interviews, I thought it would be considered rude and not be present in the moment. This allowed me follow the principle fully by not wearing an “academic researcher hat”, but a friendly hat enthusiastic of interacting with community members. After field days I also spent time writing essential notes immediately after the restoration day and describe the process of transcribing them- quote from note.

“Responsibility to act with fidelity in relationship to what has been heard, observed and learnt”

The goal of collecting this qualitative data is to Incorporate the voices of the participants as much as possible, to tell the story that was told and not what I want them to say. The other goal is make this information as useful to community members and Parks Canada to make sure that this research is beneficial to more than just satisfying master's thesis research requirements. Lastly I hold the moral responsibility to disseminate the findings to the community, even after the project is done. This ensures that the relationship is nurtured and sustained through continued communication and interaction.

Observations

“A non-intrusive observation, or quietly aware watching”

As stated previously, the steps taken pre-data collection were intentional by asking for permission to observe and be a part of the work during all restoration events. During the participant observations I was able to observe without disrupting the work flow of the restoration field days. This was done by allowing myself to be present in the moment and observe the actions that are happening. This was difficult as my first instinct was to participate and engage with the people on the beach but understanding my role in the primary data collection, it was important for me to sit back and absorb the events as they happened.

Interviews

“A deep listening and hearing with more than the ears”

Setting the intention at the beginning of the interview that this is a conversation and there are no wrong answers allowed the interview be conducted as a conversation. By not taking notes during the interview I was able to interact with the participant instead of

prepping my next question to them. I was able to adapt the question guide as the conversation unfolded. This means I did not dictate the direction of the conversation, rather tried to bolster by asking questions and sharing my own experiences. This is critical for me moving forward as a researcher as I need to allow for the participant to share and not feel the need to have the correct answer to the question being asked.

Phase 3: Data Analysis

“Having learned from the listening a purposeful plan to act with actions informed by learning, wisdom and acquired knowledge”

Having a purpose for this research and the intention that it serves a purpose more than a master’s thesis: contribution to the TKWG’s annual report, adding to the body of literature, contributing to the Parks Canada Agency in their final year. It was an honor to engage with the Traditional Knowledge Holders and in writing of this paper I hope to be able to inspire future researcher to reflect on their own principles of research and the context in which they plan to operate in.

“Acknowledgement that the researcher brings to the research his or her subjective self”

By identifying my role in the generation of this document as a researcher with tools to conduct qualitative data collection within a tribal context I was able to be intentional of the way I engage with the community participants. As an Indigenous scholar I carry the teaching of my family with me wherever I do and they guide my movements through this world, this also goes for conducting research.

In conclusion, by following these research principles I can confidently say that this work was done in a good way. This phrase is used a lot among Indigenous communities to describe how work is done. It means there is intention and meaning

behind the work and that is contributing to the larger community, not just one's self. The following graphic (Figure 4) is a depiction of the principles followed in each facet of this master's thesis research project.

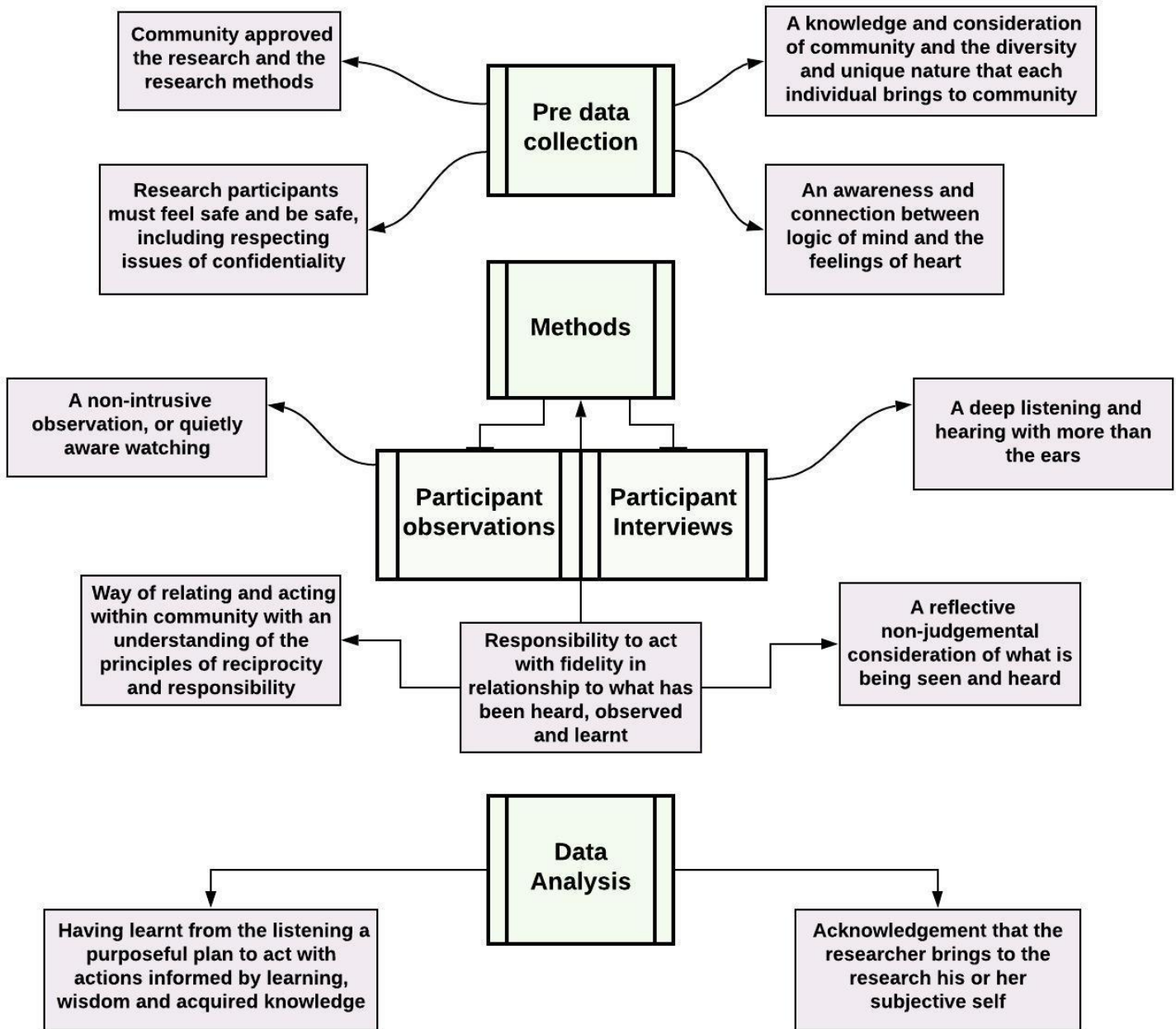


Figure 4 Indigenous Research Principles followed throughout this master’s thesis research process. Created with lucidchart.com

Conclusion and Reflection

As I stated in the introduction, the goal of this research was to better understand the relationship between humans and ecosystems and how focusing on how those relationships offer a model for success in restoration and management. This master's thesis research aimed to identify who is within the community of clam garden restoration work, better understand the social and cultural benefits and motivations for the WSÁNEĆ Traditional Knowledge working group through their involvement with the clam garden eco-cultural restoration project, and explain the use of indigenous research principles followed during this master's thesis research. The main finding in Aim 1 was the identification of the different roles people play during the eco-cultural restoration event and how they are rooted in shared goals. This is reflective of traditional work styles as each member of the clam garden community (researchers, First Nations peoples, volunteers, & Parks Canada Agency staff) contributes to the work in their own capacity, and even if someone moves more rocks than someone else everyone's work is representative of the common goal. This is important to the development of future restoration and management projects in identification of the roles that participants play, whether they are knowledge holders, facilitators or researchers. The main finding in Aim 2 is the commitment aspect identified through the interviews. This master's thesis work was an adaptation of a larger project of building a modern-day clam garden on the Swinomish Indian Tribal Community (SITC) reservation. When this was expressed to the participants (observations participants and interview participants), every single person said they would like to stay in contact and help in any way that they can with the building of a new clam garden beach for SITC. They would even like to host more people at the clam garden to create more opportunities for knowledge sharing amongst

all Coast Salish peoples in the Salish Sea. This just shows that people are deeply committed to this work and the benefits these structures have for community.

Having a set of principles to follow and honor allowed my interactions to be genuine and critical of the cultural context I was operating in. The piece that I believe needs to be emphasized is the pre-data collection portion, obtaining permission & approval from your community partners is crucial to ensure that you are honoring the sovereign status of Tribal and First Nations peoples. By setting this precedent of following these IRP, I believe future research will obtain better data, establish better long-lasting relationships with Tribal and First Nations communities, and empower the next generation of Indigenous Scholars to conduct research for their communities.

The aims were achieved to the best of my ability and will continue to serve as a foundation for qualitative data collection for clam garden restoration and management. This work will continue to be analyzed as it is disseminated to the community partners. The relationships built within this process will continue to be valued and nurtured to ensure that the expansion of the clam garden network continues. The relationships between Parks Canada and the First Nations is a novel approach to restoration and management practices. As the power is shifted to the First Nations partners as managers of the project, the governmental agency (Parks Canada) is seen as facilitators on the project and have an equal responsibility to all parties involved (Mcintosh, 2016). Even though this master's thesis research did not capture all voices, it was still impactful to all those involved.

Creating relationships with people from all different communities is healing, the act of being able to share foods, stories, and fresh air is what continues to fuel people to

fight for the health of mother earth and our communities. The people I have met throughout my involvement with the Parks Canada Agency clam garden restoration project are what I will always carry with me. This work is important to the health of Indigenous communities throughout the Salish Sea. Even if they were not traditional clam gardeners there is still value in adapting these traditional methods to solve modern day problems. These problems are to be discussed in a different context, but I believe they all stem from the loss of our relationship to place, traditional teachings, and loss of language. My favorite part of this experience was being able to bring my own mother to the clam garden and on a trip to visit with people. The feeling of having family and friends around while conducting research seems very natural in the clam garden setting. Being aware that sacred spaces and collaborative work truly bring people of all walks of life together during ecosystem management and restoration, as seen during the clam garden restoration project, other resource managers can be critical in creating relationships between humans and ecosystems and incorporate a focus on how those relationships offer a model for success in restoration and management.

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Appendices

Appendix A- Informed Consent Form

Restoring clam gardens: A research project to identifying socio-cultural aspects of Tribal coastal natural resource management

Informed Consent Form:

Purpose: The goal of research project is to identify socio-cultural attributes of clam gardening to help inform the Swinomish Indian Tribal Community of where to build a clam garden. This research will also be part of a University of Washington Master's thesis. This interview session will discuss the clam garden restoration work, your views on the process, its importance, how it could be done differently, and how clam gardens may connect to community health and well-being.

What: A group discussion that will last approximately an hour, you must be 18 years or older to participate.

Use, Storage and Access to the Information Collected Today: Your answers will be audio or video recorded on a device and transcribed. All data and notes will be kept on project personnel's secure computers and identifying information will not be shared outside of the project personnel. WSÁNEĆ Leadership Council will reserve the right to approve sharing of any First Nation information, including the information included in the Master's thesis publication. After the project is complete, copies of First Nation-specific data will be kept by the First Nation. You, as the interviewee will have the chance to review the interview transcription and remove or modify any of the information.

Confidentiality: Every effort will be made to preserve confidentiality. A potential harm is that someone may be able to identify you based on the opinions you share. Participants will not be identified by name in any reports or articles *unless you consent to have your real name used*. There may be potential benefits to participation: satisfaction of knowing that participation may help better understand connections between restoring clam gardens and improving community health and wellbeing and how these connections may be evaluated to help sustain or enhance them.

Contact: If you have any questions or desire more information about the research project, please contact Jamie Donatuto (360-466-1532; jdonatuto@swinomish.nsn.us) or Sonni Tadlock (509-475-1349; sonnit@uw.edu). If you wish to voice your concerns anonymously, you may do so after hours on the Swinomish telephone voicemail (also 360-466-1532). To report a grievance or concern, please contact the Northwest Indian College IRB at (360) 392-4224 or irb@nwic.edu. You will receive a copy of this consent form.

Consent: I, _____, understand that my participation in this project is entirely voluntary and I may withdraw from the project at any time. Knowing this, I agree to participate in today's discussion and to contribute my ideas.

Participant Signature

Date

If you would like to receive a summary of the project findings, please write your address or e-mail below.

Appendix B- Interview Guide Interview Guide

First Nations Clam Gardener

Created August 2018

Introduction: The purpose of this interview is to capture your perspective on the clam garden restoration project going on in the Southern Gulf Islands. These questions are meant to capture your opinion and point of view; you do not have to answer any of the questions you are not comfortable with. The information shared will not be made public and all identifying information will be removed. A final approval from WSÁNEĆ leadership council.

Questions:

What is you or your families experience working on the ocean, digging clams, harvesting seafood before you started the project?

Did you have any previous experience with caring for and tending the beach?

If so, where did you learn what you know about harvesting seafood, tending beaches, looking after the oceans, and traditional foods?

Why did you decide to get involved in the clam garden restoration project? Why have you decided to spend your time restoring clam gardens?

You've told me about your experiences and your families experiences. How have you and your family seen things change with shell-fishing, marine foods, and oceans over the years?

Does the clam garden project matter to your community more broadly? Do you feel like your community cares, is invested, and is supporting you in your role?

How do you share this work with your community?

What would you like to see the future look like for shell-fishing, harvesting, oceans etc. for your community?

How do you think doing work like this could best support your community, or better support your community?

What are your personal goals with being involved in this project?

In your own words, please describe what an ideal clam garden looks like.

Does it include people? What kinds of animals? How far into the water and up onto land are clam gardens connected?

In your own words can you describe the different roles played by community members during a restoration event? (Are these different roles played by different people?)

Are these roles different for elders, youth, volunteers or scientists?

Can you describe how people work together on the beach? Do community members of different ages work together on the beach? Why or why not?

With the rapid changes that we are seeing today (population increases, development, climate change) What benefits do clam gardens provide for the future?

Some Elders have mentioned the importance of specific cultural or spiritual practices that are important before and during clam gardening and shellfish harvesting work.

Are there any of these things that you can tell me about?

Have you been able to do these with the clam garden restoration project?

Why or why not? Do you think it matters?

As far as I understand it, the project is scheduled to end in 1 and a 1/2 years, what will you be able to take away from the project?

What would you like to see the project leave behind?

What have you learned through this project?

What have been the major challenges?

There are more and more Nations who are looking to your project for advice and guidance because they want to embark on a similar project. What advice or recommendations do you have for these communities?

That is all the questions I have, would you like to share anything else?

I will be transcribing this interview and writing up a summary, when would be the best time to connect to make sure I have correctly captured everything you have shared today?