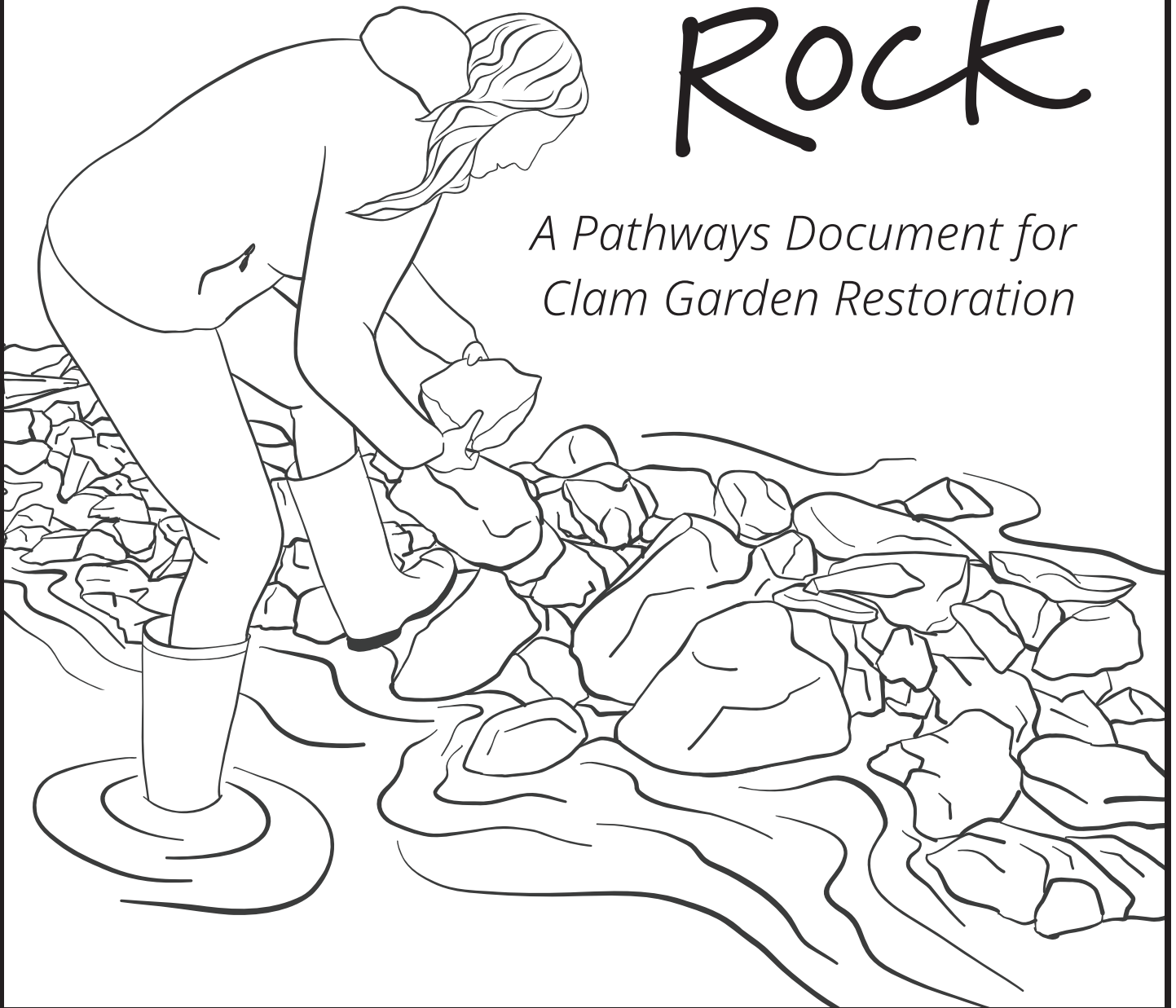


Before You Add a Rock

*A Pathways Document for
Clam Garden Restoration*



“The clams cared for the people, and the people cared for the clams. When the people were no longer able to access a beach where their ancestors had gone since time immemorial, the clams cried for the people, asking them to return. The clams missed the people.”

– Swinomish Elder Wanaseah Larry Campbell

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with generous intellectual and financial contributions by N̓anwaḵolas Council, Ha-ma-yas Stewardship Network, Tula Foundation’s Ocean Decade Collaborative Center for the NE Pacific, Parks Canada, Hul’q’umi’num’ Lands and Resources Society, Marine Plan Partnership for the North Pacific Coast - Northern Vancouver Island, Simon Fraser University, Swinomish Indian Tribal Community, University of Guelph, Western Washington University, W̱SÁNEĆ Leadership Council.

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Layout design by: Arianna Augustine

ACKNOWLEDGEMENTS

We recognize and are grateful to the ancestors for leaving us with the knowledge and legacies that enable us to continue caring for beaches in good ways, and to Kwaxsistalla Wathl'thla for awakening many of us to loxiwey. We are inspired by members of the Hul'q'umi'num', WSÁNEĆ and Swinomish communities today whose efforts have helped us recognize the power and importance of clam gardening resurgence. We are honoured to be able to highlight some of your pathways so that others can learn from your experiences.

The spark for this document was ignited by the N̓anwaḱolas Council (C. Everson and S. Harris) and MaPP-NVI program (S. Cargill) who approached colleagues within the Clam Garden Network (N. Smith) and the Tula Foundation's Ocean Decade Collaborative Centre for the Northeast Pacific (DCC-NEP, R. Martone) for guidance on clam garden restoration. As various members of the Clam Garden Network had increasingly been receiving requests from Indigenous communities across the coast for similar guidance, it was decided that a Pathways Document that could be used by all communities along the Northeast Pacific coastline would be of benefit. N. Smith took on the coordinating role of the document through the DCC-NEP and additional financial support was provided by N̓anwaḱolas Council (S. Harris) and Western Washington University (M. Hatch) to allow for unsalaried contributors to participate in the document's creation. Contributors offering in kind support come from many additional organizations and backgrounds as recognized in the contributors and affiliations sections above.

Alagamił N. Norris and hwsyun'yun S. Augustine guided the creation and organization of this document and have taken great care to ensure that the words are crafted for community first. B. DeRoy, E. Slade, H. Morris, Alagamił N. Norris and hwsyun'yun S. Augustine carried the section about the Sea Gardens Restoration Project, while C. Greiner with support from the Swinomish Tribe have provided insights from their new clam garden construction project. All contributors have provided text and reviewed the document. E. Shaver coordinated group writing and review sessions with the contributors. The N̓anwaḱolas Guardians and VIU First Nations Stewardship Technicians Training Program participants workshopped a draft version of the Pathways Document and provided valuable insights and suggestions to make the document stronger. Z. Chila (MaPP-NVI), H. Clermont (WATCH), C. Everson (K'ómoks and N̓anwaḱolas Council), E. Kelch (SGRP-GINPR), J. Williams (Swinomish) provided comments or editorial suggestions at various stages of document production. Photos provided by many above and Ogwi'low'gwa Kim Recalma-Clutesi. Arianna Augustine has brought these pathways to life through her inspiring graphic design.

We are incredibly grateful for everyone's thoughtful contributions. When we began this document, we were uncertain about the direction it would take but as often happens with clam gardens projects, the right people, circumstances, and timing emerged. We look forward to learning how communities use this document in the years to come.

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1.0

PURPOSE OF THE DOCUMENT

This document is for First Nations and Tribal members whose ancestors built and cared for the rock walled beaches along the coast and who are interested in reconnecting to their ancestral clam-tending practices.

Clam gardens¹ are built to feed the people and enhance the productivity of seafood and shellfish. They are a technology that has been shared up and down the coast and are found from Alaska to Washington State. However, the local ways of relating to these places through language, story, song, ceremony, and governance are unique to each place and culture.

One way we see this expressed is how we refer to these places whether that be clam garden, sea garden, rock walled beach, or the term in your local language like loxiwey in Kwakwaka. In this document, when speaking generally, we will use

the term clam garden to maintain consistency with previous publications and to honor the translation provided to English speakers by Clan Chief Kwax-sistalla Wathl'thla. When speaking about a local context we will use the preferred terminology from that place.

The document begins by highlighting some main points that are true for all clam garden projects we have witnessed.

Then, by highlighting two restoration projects, we share some pathways that Indigenous Peoples have taken to enable the resurgence of cultural stewardship practices within their territories.

Specifically, we will learn from the Sea Garden Restoration Project (SGRP), the first modern-day sea garden restoration project led by Hul'q'umi'num' and SENĆOŦEN - speaking Nations and Parks Canada.

¹ To learn more about clam gardens:
www.clamgarden.com

Speakers of Éy7á7juuthem have used the word wúxwuthin to refer to the piling up of rocks to create a barrier (wuxw) at the mouth (thin). Elders have described wúxwuthin as being “like a breakwater.”

In Kwakwaka the term loxiwey (lúx“xiwey) means “rolled together; low tide mark,” “where the stones roll,” “rolled rocks forming a wall.”

We then highlight how cross-cultural learning between the SGRP and relatives from across the border helped support our second case study, the Swinomish Indian Tribal Community’s clam garden project and the building of the first new modern-day clam garden.

Through these initiatives, Indigenous Peoples are reviving not only a food source but perhaps more importantly, a way of life – including a body of language and cultural practices. By reconnecting people to the spaces and relationships of their ancestors, Nations are re-establishing their presence and practices in their territories as an act of resurgence.

We recognize that the two case studies highlighted here may be very different from the pathways chosen by other Nations and families. We present these experiences in the hope that this document

A Hul’q’umi’num’ word for “rock wall” is smeentuxun where smeent (smaant) is “rock” and uxun is “wall.” Another word is stugnet which refers to the side of the rock wall where mussels, seaweed, etc cling to the wall.

can act as a starting point as Nations find their own pathways toward a resurgence of relationships with land and water, of relationships with each other, and with ancestral knowledge.

Finally, we will share some learnings for Indigenous communities to consider when restoring an existing rock wall or shellfish beach, or when revitalizing cultural stewardship practices. We also answer some common questions from Nations and Tribes interested in this work.

In a northern dialect of nuučaan̓ut, t’iimiik translates to “something being thrown” or “move aside rocks” and is a place name for a good clamming beach where clams were cultivated.

2.0

ABOUT THE AUTHORS

This document is written from the perspectives of people who have been facilitating and supporting clam garden restoration, research, and relationships. It has been reviewed and improved by many generous hearts and minds from Nān-wakolas Guardians and staff on the Northern Vancouver Island (NVI) MaPP program.

As the collective experiences of our authors has grown, so have the number and complexity of questions we receive. This document is a response to Nations who are looking to begin clam garden restoration in some capacity. We offer here a summary of the pathways we have followed in an effort to share some of our hard-won lessons and with the hope that your path may be a little better illuminated.

This document is based on our experiences working directly on the case studies highlighted and through conversations with other Nations,

knowledge holders, scholars, educators, and resource managers working on related topics across the coast.

The work and contributions of each author emerges from their own lineages of knowledge and experience, positionalities, and the biases that flow from those. Our authors' knowledge systems come from Coast Salish worldviews and academic disciplines of archaeology, ecology, environmental studies, ethnoecology, and geography. The writers are Indigenous knowledge holders and community members, Tribal or government employees, students, university professors, researchers, and settler descendants. Throughout the document there are places where we refer to “our” people, Elders, practices, etc. In these instances, we are prioritizing the voices of our Indigenous authors and collaborators, and “our” means Indigenous unless otherwise stated.



Your Elders, hereditary leadership, elected leadership, youth, and community members may have different perspectives and concerns than the ones shared in this document. Identifying the WHY (your communities' interests, needs, cultural practices, and priorities) for your project and the priorities of your community is highly encouraged.

We recognize that your path will likely be different from those highlighted here in scale, scope, resourcing, and purpose. We also recognize that our own pathways are changing too. What was true at the beginning of projects has shifted, and is continuing to shift, with time and as we respond to changes in environmental, political, climatic, and community conditions.

We understand this document is a snapshot in time, and that new versions may be necessary as voices grow, experiences around the coast evolve, and more Nations undertake this work.

“Clam gardening is at once about bringing back our foods, and also about restoring our relationship to our homelands, and our respective place in the cosmos. When we work together we have an opportunity to walk each other home.”

— Skye Augustine, Stz'uminus First Nation

3.0

MAIN THEMES AND COMMON TRUTHS

“The funding, that’s what gets the kids out there. That’s when we have a school on that beach. We can take all the people out and show them how to live, how to clam dig, how to dry clams... We do those things. We’re supposed to be teaching our own kids how to do that, but I would share with anyone that is willing to show the kids how to do that. The more people that know about what we do... the better off we’ll be.”

– August “Auggie” Sylvester, Penelakut

3.1 – Clam Garden Restoration is a Reconciliation with the Land, Water, and the Ancestors through Indigenous Knowledge.

- Observing and spending time in these ancestral places are important. They create opportunities for learning about the ancestral architecture, the interaction with the tides, and the benefits for all species who depend on these places. They create opportunities to reflect on what our landscapes looked like, sounded like, smelled like, and how it feels today to embody and remember our way of life.
- Within this quiet space of observation, we develop a deep connectedness to cellular memory that contains ancestral knowledge of understanding the value of these beaches, the way of life we are a part of, and how to continue the work in a good way.
- Embarking on this work is connecting to the Ancestors. The Ancestors were always preparing for future generations. Similarly, today's restoration efforts will benefit generations to come. The effects of today's restoration may not be immediate, but are in preparation for the future.
- The resurgence of language, practice, cultural knowledge and relationships to the land are likely to happen before you see ecological results such as increases in clams, especially if you include Elders who once spent time in these spaces.
- The timeline of commitment required to fully restore a sea garden goes beyond individual grants, funding cycles, and personal careers as the impacts will be seen by future generations to come.
- Supporting each other is not only important within our communities but as Indigenous Peoples. Collaborating with others who are interested can be one form of reconciliation.
- Nations' rights and responsibilities to lands, waters, and resources vary Nation to Nation and may be proprietary to family. Just as rights and responsibilities may be specific to a family, so are knowledge and stories ([see section 3.5](#)). One way we have respect for one another and between families and Nations is to recognize and state whose territory you're in and who holds governance authority with the beach.

3.2 – Clam Garden Work Needs to be Guided by Indigenous Knowledge Holders

- This document is designed to be a pathway for your community to identify your WHY and key priorities that will become the foundation for the renewal of these stewardship practices.
- This work needs to be led by Indigenous communities and cultures. Indigenous Elders, knowledge holders, local fishers, and clam diggers are critical for ensuring local Indigenous knowledge and priorities are guiding stewardship practices.
- Take into consideration that learning from your community takes time, trust, and patience.

Historical Truths

Why we need to restore these places and why it's taking so long

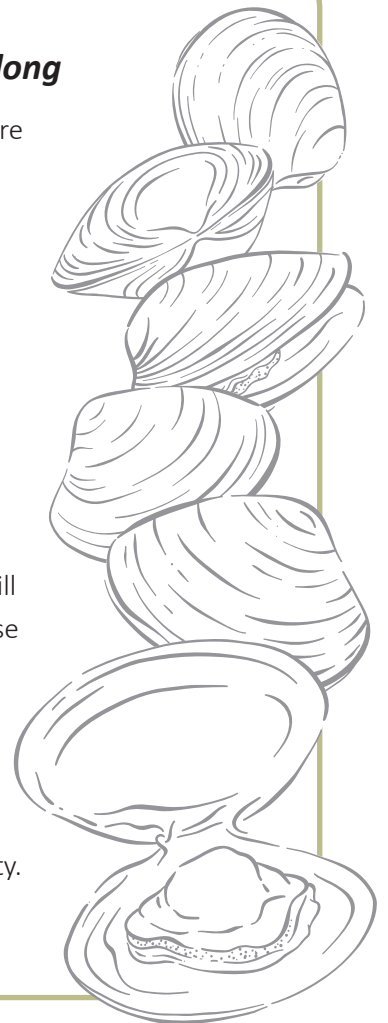
Our people were removed from our lands, waters and beaches. Our canoes were destroyed, many of our clam beaches were heavily harvested, and our oceans were polluted which has made our clams less reliably safe to eat.

Generations of our children were sent to residential and boarding schools during clam digging seasons, missing out on critical opportunities to learn ancestral practices from Elders. Many of our Elders and harvesters continue to fear being chased from ancestral beaches sometimes with dogs and guns.

Beaches are permanently closed to harvesting without being monitored or tested for biotoxins or contaminants to determine if the clams are safe to eat.

While some knowledge has been lost, in many of our communities there are still Elders who have experiences at clamming beaches, who carry stories from these locations, who know words that belong to these gardens and those caring for them. As Elders return to ancestral places and spend time together, parts of our languages are being revived, stories are remembered and important knowledge is reclaimed.

Returning to our gardens is our birthright. Feeding ourselves is our responsibility. Reclaiming our practices and our ways of life is our resurgence.



For Non-Indigenous Readers

Remembering our positionality when approaching sacred cultural work

- If you are non-Indigenous and interested in initiating restoration, please remember that it is essential that this work is led by Indigenous communities and knowledge holders. To build relationships with local Nations or Tribes, consider the ways you may be able to support their existing initiatives.
 - Non-Indigenous fisheries biologists and resource managers working directly for Nations or Tribes may be well positioned to support restoration initiatives when following the guidance of Indigenous governance holders and authorities.
 - Guidance and governance for restoration must be directed by those with governance rights pertinent to the setting.
 - Teachings for cultural sites and practices require cultural training unique to each community. Learning from or alongside the knowledge holders is key to doing this work in a good way.
 - The most successful projects will only move forward when local Indigenous leadership and community(ies) are in support and guidance of this cultural heritage work in terms of both where and how it is done.
 - These cultural practices are the intellectual property of the Indigenous Peoples whose ancestors created these innovations and should not be appropriated by non-Indigenous people.
 - If you're looking for guidance on how to work well with Indigenous communities and knowledge, there are many resources available.
- Here are some useful resources worth consulting:***
- [*Common Language Toolkit*](#)
 - [*OurUnlearning.ca*](#)
 - [*The Village Workshop Series*](#)
 - Recommended reading lists on Indigenous Nations sites such as [*www.wsanec.com/learn-settlers/*](http://www.wsanec.com/learn-settlers/)

3.3 – Caring for Beaches

Includes Tending to Cultural Safety

Cultural safety needs to be standard practice when cultural stewardship practices are carried out and at any time when bringing Indigenous Knowledge into conversation with other knowledge systems.

- Cultural safety includes the awareness that respect and humility are needed to create a safe and brave space for sharing the teachings delivered by Elders and knowledge holders.
- Cultural safety includes abiding by cultural teachings for working in ancestral places. For example, teachings may affect the time of day you work, when and where you eat, and who can visit safely. It is important to reach out to learn more about those teachings in your communities if you are not aware of them.
- Honouring, upholding, and privileging Indigenous science and leadership begins to correct existing power imbalances and allows for the co-existence of Indigenous and western knowledge systems.

“It's important to be aware of your surroundings day and night, not only in this physical world but in the spiritual world as well. You walk softly, you walk gently during those times”

– Hannah Morris, *WSÁNEĆ*

3.4 – Working Between Generations

Importance of Including Elders and Youth

- Clam gardens are places of learning. They have always been, and continue to be, our classrooms.
- We are benefactors of our ancestors' investments over many generations. By working on these places today we are investing in the generations to come.
- Bringing Elders and youth together in these spaces is an opportunity to bring old and new information forward and to pass along cultural teachings and stewardship practices.
- Language and memories are triggered by having Elders and knowledge holders on the beaches.
- Elders can also show us how to be on the beaches and how to connect with these spaces, developing our cultural lens, and our understanding of what these places mean.



SKYE AUGUSTINE

3.5 – Intellectual Property

- Knowledge shared by Elders and knowledge holders is the intellectual property of the person sharing, as is family knowledge, including stories and songs. Clam garden technologies are proprietary and are interconnected with teachings, practices, languages, engineering, and space.
- It is of utmost importance to both honor and acknowledge the intellectual property rights of knowledge holders, and the sacred knowledge they carry and share so generously.

For Non-Indigenous Readers

Traditional Indigenous knowledge is often mined for the development of academic careers and achievements while neglecting the intellectual property rights of the knowledge holders.

“Introducing a new way of learning to the fed government, all the things that WINETEM learn in university, our community members already know. Even in our own community, there is an opportunity to learn more about the traditions and practices from knowledge holders. We don’t learn in the same way at a computer or in an office. We need to be there in place to learn.”

– Hannah Morris, *WSÁNEĆ*

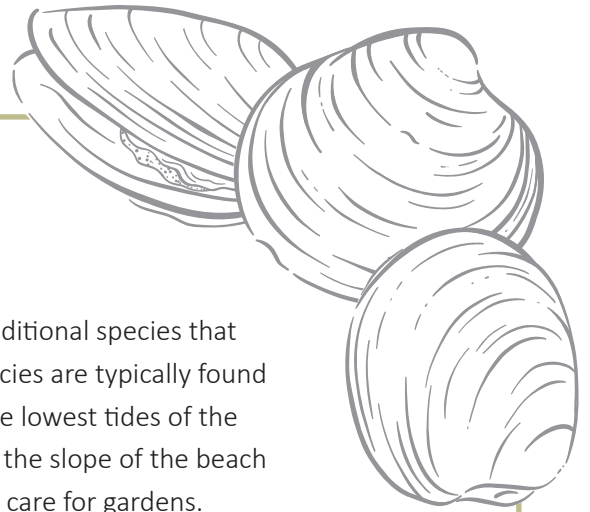
Notes on the Science

Clam Gardens Grow Great Clams

Littleneck clams, butter clams, horse clams and cockles are traditional species that have grown in clam gardens for thousands of years. These species are typically found in the lower intertidal. These clams can only be collected at the lowest tides of the year. The low tide rock walls common to clam gardens change the slope of the beach giving harvesters many more hours a year to collect foods and care for gardens.

All of these species are broadcast spawners who eject their eggs and sperm into the water column for fertilization. After sperm and egg meet, a swimming larva develops. After three to eight weeks a mature larvae settles and attaches to broken shell, gravel, or sand on the same or nearby beaches. Beaches with rock walls likely help retain larval clams and often have larger numbers of small clams than nearby beaches without walls. Clams are also filter feeders who eat small particles in the water. As clams grow, they take carbonate from the water and add it to their shell each season, creating rings in their shells that can be counted like growth rings on trees. Clam gardens can stabilize sediment temperatures by retaining water allowing clams to grow more quickly.

Manila clams are recent arrivals on this coast and have quickly become an economically important shellfish. The manila clam grows in the mid-tidal zone and can be dug on a medium tide, more often than butter clams that require very low tides to dig. Clam gardens were not built originally for manila clams. Where they overlap, there is some indication that manila clams may compete with native littleneck clams for space and food. Decisions about which clams to cultivate in your community for future generations may require careful consideration.



3.6 – Clam Gardens are Relational

They are About More Than Just Clams

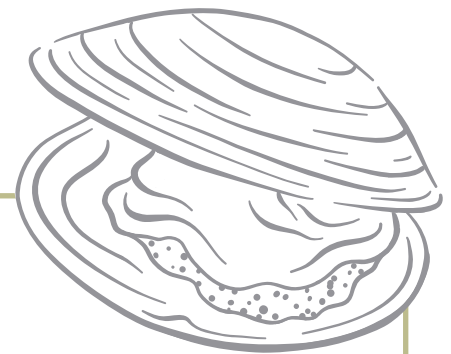
Clam gardens are more than just clams and a rock wall. They are about the living relationships between people, land, water, and all non-human kin who live within.

- Within some parts of the coast there are other species that make homes in the walls and terraces that are just as culturally important as clams. Some of these are also traditional foods. The most culturally important species will vary region to region.
- Clam gardens are ancestral places, and their power comes from revitalizing relationships with the ancestors, being present in these places again, and managing them for future generations. Restoration efforts need to be centered in cultural knowledge and community engagement, while recognizing that these places serve well beyond the provision of shellfish.
- The power of some places has been revived in part by restoring kinship and sharing networks between families and Nations.

Notes on the Science

Many of our long-ago ancestors built clam gardens when sea levels were different

Sea levels around the coast have changed over the past 14 thousand years. In some places, sea levels have been slowly rising over that time period, in others, sea levels have fallen. While in some, sea levels have barely changed. Our ancestors built and repositioned walls to match the sea level of the time.



3.7 – Different Beaches Require Different Types of Care

There are many ways to care for a beach, and not all beaches will require the same amount of work to be productive.

- Just because there is a wall, it doesn't mean that the beach and wall need a ton of work. The wall might be fine as it is, and maybe the beach just needs to be tended again.
- The beach might be regularly harvested already and in good health and all that is needed is for the community to fill in the cultural pieces. People who have been out harvesting and who learned from their family members know what beaches look like and can pass this knowledge to next generations.
- Clam diggers who know seasonal clues can often tell how healthy a beach is – how many seeds, when edible, how many other foods are present, who has been eating the clams and other foods.
- Strategies that communities have used to tend clam beaches include: digging for clams, turning over the sediment, removing seaweed, and building or rebuilding rock walls, transplanting species, adding gravels or shells. Work with knowledge holders to learn what is right for your beach.
- We are living in a time when environmental conditions and challenges are different than in the past when the walls were built. It is hard to predict how present circumstances will affect or be affected by restoration.
- Restoration activities will be redefined as time goes on and will develop the learning path for the community.

“...if we don't dig the beach and turn the mud, that beach is gonna die because we don't let it breathe.”

– August “Auggie” Sylvester, Penelakut

4.0

CASE STUDIES

The following two case studies are examples of large scale Indigenous clam gardening projects. Both are extremely well-funded and people-resourced projects connected to large organizations. Your project may not have access to the same resourcing and that is okay. There are many examples of clam gardens that can be (and used to be) maintained by single families. Remember that getting onto the beach with a few people is a success in itself. We highlight these case studies because they are two of the first clam garden restoration projects on the coast that illustrate various pathways and lessons learned that may be useful for projects of any size to consider.



GULF ISLANDS

SKYE AUGUSTINE



SWINOMISH

SKYE AUGUSTINE



SKYE AUGUSTINE

4.1 – Gulf Islands Sea Garden Restoration Project

Project Summary

What is it?

The Sea Garden Restoration Project is a collaborative initiative between Parks Canada and 10 Coast Salish Nations to restore two sea gardens in the Southern Gulf Islands of British Columbia. The project is led by Coast Salish Elders, knowledge holders, and community members from Cowichan Tribes, Halalt, Lyackson, Penelakut, Stz'uminus, Tsartlip, Pauquachin, Tseycum, Tsawout, and Malahat. Knowledge holders guide the restoration practices at four key clamming beaches (two sea gardens and two non-walled beaches) in the Gulf

Islands by rebuilding the rock walls, tending to the beach, and transplanting various species, while the resulting effects to ecological communities are monitored using both Indigenous and Western scientific methods. As work has deepened over the course of this project, we have come to recognize that the English language does not have an adequate word to describe these features. In the Southern Gulf Islands, the preferred English term is “Sea Gardens” as reflected here.

“This restoration effort is an act of reconciliation. It is government enabling the reconciliation of the original relationship between Indigenous people, and the original relationship with the land, water, life within those places and people.”

– Nicole Norris, Halalt First Nation

How did it begin?

The project grew out of conversations between members of Coast Salish Nations with ties to the Southern Gulf Islands and staff at Gulf Islands National Parks Reserve (GINPR), where Nations emphasized the importance of food security and access to shellfish beaches as priorities for communities. It took many years of planning and preparations before the restoration work officially began. During those initial years, there was a focus on baseline work to conduct outreach to communities, establishing the goals and scope of work based on community input. From that process came the creation of Indigenous Knowledge working groups, a project proposal which initially secured six years of funding, and payment mechanisms to compensate community members for their time, contributions, and knowledge. As part of this process, Parks Canada collected baseline

information on the status of clams both at the restoration sites and surrounding beaches. As the primary administrator of funding, and the only organization with staffed positions dedicated to the project, Parks Canada played a major role in getting this work off the ground. However, navigating the resurgence of Indigenous cultural and ancestral practices through a colonial, bureaucratic government system introduced barriers and challenges. It took time for Parks Canada to learn the importance of this work, open their hearts and minds, and adapt their processes and protocols to enable the work to take place in a way that honours Indigenous knowledge, enables cultural safety and humility, and protects the inherent rights of Indigenous people to care for and steward lands and waters within their territories.

“Originally [restoration] was all about the clam gardens, and then we started bringing in language to it... It was really amazing to have the Hul'q'umi'num' language on the beach.

– Kathleen Johnnie, Hul'q'umi'num' Working Group

Outcomes so far

Since 2014 WSÁNEĆ and Hul'q'umi'num' communities along with Parks Canada have gathered regularly at the various sea garden sites for restoration activities and multi-day camps focused on learning from the beaches and knowledge holders and practicing SENĆOŦEN and Hul'q'umi'num' languages. These events have resulted not only in substantial contributions to beach and wall restoration efforts, but also provide time and space to strengthen connections among youth and Elders as well as relations across communities and borders. The beaches are places to gather, share knowledge, harvest, and eat traditional foods. Indigenous knowledge holders and community members continue the sea garden restorative efforts and cultural gatherings, ensuring these knowledge systems will be passed down for generations. Every year there are more people coming out to the sea

gardens, bringing with them a wide array of outcomes in the form of reconnecting to place, practices, relations and traditional foods.

The project has also seen great success in sharing the story of clam gardens with growing and increasingly diverse audiences through media, outreach and educational programming including the annual Learning by the Sea Science and Culture camps for K-12 students that have run on beaches since 2014, hosting hundreds of students over the years. In turn this has resulted in an ever-expanding community of devoted volunteers, students, practitioners, researchers, community-members, youth, retirees and more who support the work in various capacities and have contributed not only to this project's success, but also to the growing coastal movement to bring beaches back to life through clam gardening.

What's Happening Now?

The Sea Garden Restoration Project is now in its second phase of funding (another 6 year cycle) and currently working hard to continue to build upon the progress made in phase 1. In 2019, project participants, working group members, Parks Canada staff, partner researchers and educators came together to discuss a vision for the work beyond the first cycle of funding. From this meeting, three central objectives were identified to guide this second phase of the project: 1) to continue restoring the sea garden system, reintroducing species that support its function; 2) to close the circle and eat the foods from the sea garden - creating more

opportunities to harvest safely from these places; and 3) to support the leadership of First Nations to continue carrying out this vision with sustainable, long-term funding sources. W̱SÁNEĆ and Hul'q'umi'num' Nations are continuing to lead the restoration of the sea gardens and Parks Canada is supporting new active management strategies, as well as facilitating more opportunities for safe harvest of shellfish at the sea gardens. A common goal we continually strive for across communities, is to try to be at the beaches for every low tide window each month

“I’m getting on in age, and I have a lot to share, but so little time, so I go wherever they ask me to go to share language and culture...”

– Luschiim (Arvid Charlie), Cowichan Tribes

“This collaboration has reunited cross-border families and reignited the knowledge sharing, laughter, and storytelling that are key to the longevity of the work”

– Leung 2022 in Augustine et al. 2023:42

What is happening in the future?

We hope to increase efforts to bring back the biomass, diversity and clam populations at the Sea Garden sites and other culturally significant beaches in the Southern Gulf Islands region by

- Increasing active management (beach tending, harvesting, seaweed and debris removal) at the sea garden restoration sites and beyond
- Employing strategies such as seeding the beaches with native clam species
- Increasing community and youth engagement with clam garden stewardship
- Supporting research into climate change mitigation strategies
- Supporting knowledge sharing up and down the coast with other communities looking to restore or build clam gardens in their territories.

“It's brought the elders on the working group a new opportunity to work out on the land and share their knowledge in place while working with Parks. The togetherness that the beaches bring; Nations and communities coming together to help each other and work towards a common goal. Opportunity for community members to reconnect with traditional foods and clams. I wouldn't have experienced this any other way. I wouldn't have been able to network and make new connections like I have working at WLC and with Parks.”

– Hannah Morris, WSÁNEĆ

Conclusion

The Sea Garden Restoration Project has been a tremendous effort on the part of so many people. It has been both an experiment and practice in co-learning, in working together and seeing with two eyes. The work will never be complete and there are many lessons yet to learn and many outcomes yet to be seen. What has been witnessed throughout this project - from the initial conversations, to the first site visits, to sharing space and lived experience in Nation to Nation sea garden restoration visits - is the portion of the language

that has come back to life, the teaching and learning of ancestral stewardship practices, and reliving the stories of the past through the Elders that share time and breath with all who come to participate there. This journey created an opportunity to welcome the relatives from Swinomish Tribe to come and re-learn about stewardship practices from the past, to stand in the place of their ancestors, and to carry this knowledge home to Swinomish.

Project Details

Unless otherwise stated, all project details summarized below are from Augustine et al. 2023.

How many people have been involved?

Each year over 1300 person-hours are spent at the sea gardens.

An average of 130 Indigenous stewards are involved in the project annually (2023:25).

How many young people have you reached?

By 2019, media stories about the project had reached over 100,000 people including at least 300 Indigenous Youth (2023:37). An average of 70 youth visited the sea gardens each year between 2014-2020 (2023:26).

Youth engagement has occurred primarily through family attendance at restoration and cultural events, and through school programming visits such as annual Science and Culture Camp events, started in 2014. At Science and Culture Camps, youth have the opportunity to visit a sea garden, where Indigenous Scientists and knowledge holders are highlighted, and youth are offered “the opportunity to learn and experience their history, culture, and technologies with pride” (2023:38) and to learn about science in culturally relevant ways.

Number of staff devoted to the project?

From 2014-2020 (phase 1 of funding), the project was run by two part-time positions, equivalent to 1.5 full time staff. They used their social capital to build longstanding partnerships with over 40 organizations. These partners supported the project in all stages, from the initial project proposal and development of the experimental design, to on the ground restoration (2023:45). Along the way, additional Parks Canada staff provided supplemental support to the project. The second phase is now staffed by 3 full-time positions, along with the expansion of in-community support with two part-time staff (2023:48).

How much beach or wall did you restore?

In the first 5 years of the project, over 320 m of rock wall was restored and over 11700 m² of beach was tended. The amount of beach tended is continuing to grow each year.

Sea levels have been rising in the Southern Gulf Islands for thousands of years, leaving previously-built walls below their optimal height in current conditions. Along with limited access, ongoing sea level rise, and maintenance in recent decades, there was a need to restore the walls. Along other parts of the coast, the walls may still be at a functional height and not need to be restored in the same way.

Are there scientific studies happening?

Not all restoration projects need a scientific component, however, since the project is federally funded and has developed a network of scientific collaborators and research agreements, we have been able to amplify the outputs of our work with over 30 research partnerships. Here are some valuable pieces of knowledge we've learned through these research partnerships:

- One of the sea gardens has likely been in use for at least 3500-4000 years.
- Following restoration, we've seen the density of juvenile clams (< 20 mm) increase on all sea gardens, and on the walled sites. We've also seen an increase in the densities of harvestable native butter, littleneck, cockle, and horse clams.
- In the southern Gulf Islands, many sea garden walls extend below chart datum because sea levels have been rising continually for thousands of years.
- Over 100 algae and invertebrate species have been recorded at the walled sites. Over 48 are culturally important species that are not commonly found on soft-sediment beaches without rocky reef habitat (2023:40).
- The current paralytic shellfish poisoning risk management system remains a critical barrier to the sustainability of this work. It is recommended that the Canadian Shellfish Sanitation Program increase meaningful collaboration with Coastal Indigenous Nations to improve environmental justice (Flemming 2019, DFO 2022, Armstrong 2023).
- Hul'q'umi'num' working group members are collaborating with SFU researchers to investigate how clam gardens, and their shell rich sediments, may buffer the impacts of heatwaves on clams (Spencer 2022).

**“When I saw the kids
and the scientists working on the
beach, and they learn a little more about the
scientific side of those things they were digging
out of the beach. I think that was important.”**

— JSINCTON, John Elliot, *WSÁNEĆ*

What lessons did you learn along the way?

These reflections are based on the experiences of Parks Canada staff and communications with community members. As the project was the first of its kind, we needed to navigate uncharted waters, and below are some hard won lessons. To build up community ownership and investment in the work, and to foster a space for learning, we invested in building strong, reciprocal relationships within our community. Through this process we learned the importance of:

Crafting a shared vision.

By deeply listening to community members and Elders, and learning what this project means to everyone, we crafted a vision collaboratively. This allowed everyone to see themselves in the work, increasing the pride and ownership people felt over the project (2023:47). The vision also created a shared purpose, bringing diverse groups together.

Valuing each other and showing up.

We spent time getting to know people we shared the beach with. We paid attention to individual preferences and needs and gave personalized gifts when possible. We supported families by organizing collections and attending memorials after people passed on. And of course, when this care is offered, it is almost always reciprocated (2023:51).

Standing alongside one another with compassion when we take risks.

New ways of working together require everyone to take risks – personally and within their organizations. Experimenting with new ways of working, investing in new forms of relationship and learning, all invariably include making mistakes and taking missteps. Centering this work on relationships meant offering compassion to ourselves and each other when that inevitably occurred (2023:51).

Telling the truth and listening deeply.

Engaging with difficult truths requires an ability to listen deeply and with empathy - in a way that allows the truth to influence your perspective, while simultaneously holding compassion for yourself in order to remain present to what is shared without defense (2023:51).

Involving boundary spanners to help facilitate equitable relationships between Indigenous communities and the federal government.

Boundary spanners are people who “live in two worlds” (Hatch et al. 2023) and in the case of this project, have the cultural agility and positioning to mediate communications and translate information between the federal government and Indigenous communities to reach mutual understanding and benefit. Being a boundary spanner is about walking in Indigenous spaces, cultures, traditions, and colonial systems, and navigating the cross over of those spaces so they can communicate with each other. These roles will be important in most work reviving traditional practices. The work to connect two worlds can be personally costly, and it is critical to acknowledge and support boundary spanners (Hatch et al. 2023). The involvement of several boundary spanners on the project has led to equitable collaborations and deeper and more trusting relationships between these parties, ultimately leading to the project’s success (2023:50).

Modifying timelines and budgets

Committing to doing work in a good way and following cultural protocol required the ability to adapt budgets and timelines to respond to shifting priorities. We suggest leaving space in timelines for unexpected workloads and to allow the flexibility to conduct work identified by community partners (2023:48).

Respecting the entire ecosystem

Throughout the project, working groups emphasized the importance of honouring all the species that interact with the beaches, and their role in maintaining healthy ecosystems. During the project, we learned that the term ‘clam garden’ does not reflect the teachings from the Hul’q’umi’num’ and WSÁNEĆ Nations as these gardens are designed to grow a large variety of food species. “Sea gardens” is a more apt English name for these places as they host a diversity of seafoods and the project was renamed accordingly (2023:40).

“...the rock walls are built at varying levels and this was to encourage different species. For example, subzero tide walls also encourage Black Katy Chiton, gumboot chiton, rock scallop, and seaweed; rock walls higher up encourage littleneck clams; mid-level rock walls on the beach encourage butters and oysters”

– Stutul’na’mut Report,
Hul’q’umi’num’ - GINPR Committee

What permits did you need?

The sea gardens that are subject of this case study fall within spaces managed by both provincial and federal agencies. As a project administered and resourced by a federal agency - Parks Canada - Gulf Islands National Parks Reserve applied for the following permits at the applicable stages throughout the project. As the project has shifted over time, so too have the permitting requirements. See [section 6](#) of this document for further discussion about permits and shifting political landscapes.

- **Department of Fisheries and Oceans Marine Scientific Research Permit**
Due to the experimental nature of this restoration project and the different types of monitoring that are conducted at the restoration beaches, it was necessary for Parks Canada (PC) to apply for federal research permits from both DFO and PC.
- **Parks Canada Research and Collections Permit**
Federal Permit to allow for the archaeological and ecological research, excavation and sample collection within the Park Reserve.
- **BC Heritage Conservation Act Site Alteration Permit**
Provincial Permit to allow for the alteration of two heritage sites which included the addition of rocks to the wall. PC applied for a site alteration permit from the BC Archaeology Branch under the Heritage Conservation Act. This allowed for a way to track work at the sites so that if future archaeological work were to happen at these sites, there would be a way to know what work had been done in recent times as opposed to in the deep past.
- **BC Heritage Conservation Act Investigation Permit**
Provincial Permit held under external archaeologist's name to allow for the intertidal and subtidal archaeological excavation and sample collection within the garden walls.
- **DFO Fish and Fish Habitat Assessment**
DFO requires projects that occur in or near fish habitat to undergo an assessment. The scope of activities and anticipated impact of the project influences the level of review that projects require.
- **BC Agriculture Permit**
Provincial permit for scientific monitoring or removal of macroalgal species



ALL PHOTOS ON PAGE: SKYE AUGUSTINE

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NORTHWEST INDIAN FISHERIES COMMISSION (NWIFC)

4.2 – Swinomish Clam Garden Construction

Project Summary

What is it?

The Swinomish Indian Tribal Community (SITC) clam garden is a community-based biocultural restoration and climate adaptation project co-led by the Fisheries Department and Community Environmental Health Program. The project aims to improve ecological conditions for clams and other biota within the greater nearshore environment, and promote the health and well-being of Swinomish tribal members by building and maintaining a new clam garden on Reservation tidelands.

“It means everything. It is a special gathering place for Swinomish. A place of harvest and abundance of love and relatives.”

— Swinomish community member

Specifically, the community goals for the project are to provide ceremonial and subsistence clam harvest, and create a teaching space to gather and share knowledge.

**“She stepped onto the beach and said,
Mom! I feel like I’ve been here before.”**

– Marcia Julius, Swinomish

How did it begin?

The impetus for the project came from reports of reduced native littleneck clam abundance from tribal clam diggers to the former Fisheries Manager, Lorraine Loomis ʔitəkwbiw , as well as community concern regarding climate change threats to clam harvests resulting in subsequent loss of cultural practices, education, and food sovereignty (SITC 2010). Lorraine became the main proponent of the project, always encouraging the work and supportive of the transboundary, community-based approach. In 2017, Fisheries staff attended a SGRP event to better understand clam gardening and learn directly from W̱SÁNEĆ and Hul'q'umi'num' communities and Parks Canada about their restoration efforts. First Nations members and Parks Canada staff were incredibly supportive of the Swinomish clam garden project and eagerly shared information and lessons learned. This initial visit has resulted in several transboundary trips which have inspired Swinomish tribal members and staff and provided essential knowledge that otherwise would have been difficult or impossible to gather.

The Swinomish clam garden project officially began in 2018 when SITC received a Washington Sea Grant award to support the development and implementation of a socio-ecological site selection process. We knew this step was going to be key to the long-term success of the project, so we created an extensive, transparent process that focused on

community values and participation and weaved together Indigenous knowledge and Western natural and social science (Greiner et al. in review). Our process included five main steps:

1. **Create a Technical Advisory Board of SITC tribal members, knowledge holders, and researchers to better understand clam gardening and advise the project;**
2. **Conduct a preliminary assessment of viable tidelands on the Reservation;**
3. **Complete intertidal surveys at targeted locations and rank the sites based on the ecological data collected;**
4. **Develop and conduct a Swinomish-specific intercept survey so community members could rank the top sites from step 3 and identify desired outcomes, uses, and benefits of a clam garden; and**
5. **Present the findings to the Tribal Senate for final site selection.**

In 2021, we completed the site selection phase, successfully identifying a location on Swinomish Reservation that both the natural environment and tribal community support. The site, located on Kiket Island, was blessed by the Swinomish Canoe Family. In the summer of 2022 we received our federal permit to build the clam garden wall.

Outcomes so far

- **New and strengthened relationships with other Coast Salish tribes and native communities in the Pacific engaged in Indigenous aquaculture**
- **Rekindling of stories, memories of Elders, and purpose**
- **Knowledge transfer between generations and communities**
- **Reconnecting between human and non-human beings**
- **Reengaging in active cultivation and stewardship**
- **Joy**

What's happening now?

The community is reconnecting with the historically traditional area. Since 2022, we have hosted over ten events where the community has gathered to tend the beach, add crushed shell, and share stories and food. This includes four wall building events where SITC and First Nations members, guests from native communities across the Pacific, and staff from various entities have moved large rocks from the upper to the lower intertidal zone by passing them hand to hand, carrying them in nets, and hauling them in hand trucks and carts. The rocks came from a local quarry and

were delivered by barge by a local marine contractor. The wall is currently ~61 m long. We are also conducting ecological and socio-cultural surveys to better understand changes that occur on the beach and within the community as the clam garden develops over time. The majority of the project has been grant funded.

What's happening in future?

We will continue to revive the practice and encourage participation within the Swinomish community as well as share lessons learned and support similar Indigenous aquaculture efforts in the region. Some activities include:

- **Host events for community members to tend the beach, continue constructing the wall, and gather on site to share food and stories**
- **Coordinate visits for community members to experience other clam/sea gardens projects**
- **Support other tribes and First Nations clam and sea gardening projects and research**
- **Seek funding as needed to support the project**
- **Continue conducting long-term ecological and socio-cultural studies**

Project Details

How do you share information about the project with the community?

We publish articles in the community newsletter, qyuuqs, as well as other media outlets (e.g. newspapers, radio programs, etc.), post event announcements on the Swinomish webpage and social media accounts, and attend community events.

Number of staff devoted to the project?

There are two tribal employees that oversee the project (in addition to other projects). One of these positions, Shellfish Community Liaison, was created specifically to assist the clam garden project. As a Swinomish tribal member, they directly communicate with the community on activities and information about the clam garden, are the lead host during community events, and are responsible for clam garden outreach with academic institutions and other parties interested in clam gardens, Indigenous aquaculture, and treaty fishing rights. This position has been essential to the project. At least seven employees that help execute events and surveys.

“I don’t know how to measure success of this magnitude”

– Joe Williams, Swinomish

Are there scientific studies happening?

The Fisheries Department and Community Environmental Health Program have started a Before-After-Control-Impact study to assess ecological changes on and off the clam garden and socio-cultural changes as the garden develops. Specific ecological metrics include juvenile clam abundance, adult clam biomass, macroalgae and invertebrate species diversity, beach elevation, water properties (e.g., temperature, salinity, pH), substrate composition, and local hydrodynamics. An intercept survey was developed by the Community Environmental Health Program to evaluate various metrics of engagement among participants. Surveys are handed out at community events.

What lessons did you learn along the way?

- Community-to-community exchanges are essential to share knowledge, build relationships, and uplift Indigenous-led restoration work
- Success includes the act of returning to the beach
- Work must be centered on community values and participation
- Timelines and expectations should be flexible

**“That garden
needs us as much
as we need it”**

– Joe Williams, Swinomish

What permits did you need?

Swinomish applied for:

- U.S. Army Corps of Engineers
Nationwide Permit 27 Aquatic
Habitat Restoration, Enhancement,
and Establishment Activities;
- Section 401 Water Quality
Certificate, and;
- Swinomish Shoreline and
Sensitive Areas Permit.

**“Healing that connection
to the land, and to our
ancestors is vital”**

– Marcia Julius, Swinomish

More information:

For additional information on the Swinomish clam garden, including videos and event announcements, please visit the Swinomish Indian Tribal Community Fisheries Clam Garden webpage.

www.swinomish.org



SWINOMISH FISHERIES TEAM (TOP LEFT AND RIGHT; CENTER RIGHT, BOTTOM LEFT), NORTHWEST INDIAN FISHERIES COMMISSION (CENTER LEFT), KATIE BASSFORD (CENTER, BOTTOM RIGHT)

5.0

QUESTIONS AND ACTIONS TO CONSIDER

For those communities considering a restoration project, here are some questions and actions to consider before starting your own restoration pathway.

“The government needs to open their hearts and listen, we need this ongoing. I really want this to carry on every year, keep bringing the kids out there, teach them, show them.”

– May Sam, Tsartlip First Nation

5.1 – Identify the “why” for your restoration project

It is important to understand why we are doing this work because when we are altering these systems, we will affect all the relationships active on these sites. By understanding what the project means to everyone involved, you can start to develop a shared vision to ground the work and bring everyone together on a path forward.

- What are your goals? Is it to revive a practice? To reconnect people with the place? To create a food source? To improve access to a beach? Will it lead to meaningful job creation? Economic development? Does your community have a shared vision for this place?
- Why do you want to restore this place? What foods does your community want to harvest? Degrees of interest will vary between parts of the community; harvesters, regalia makers, etc.
- Is this project of interest to all the people in your community or a specific family or families that may have responsibilities to particular beaches? This includes community members, Elders, hereditary leadership, elected leadership, youth, etc.
- What does this project mean to everyone involved?
- What is your Nation’s experience in aquaculture? This may affect your why.
- What are the consequences of your why?

It is important to talk with people in the community and overarching cultural governing bodies to learn about potential consequences of your why.

5.2 – Who from your community should be involved in the work?

- Who has the responsibility or governance responsibilities for the place you are considering future work?
- How would the community like to engage in the process? (E.g. Do you want to know when we are harvesting? Do you want regular updates at community meetings?)
- Are there family members well-suited to the work? (E.g. clam-digging families, fishing families)
- What are the cultural cautions on the beach? There may be cultural laws that dictate what we can and can't do in those spaces, as well as environmental and spiritual cautions. Is there a navigator or Elder who can teach you how to walk in this space?
- Who can guide this work? Is there a person who can be the leader of this work for your community? Are there knowledge holders, harvesters, and people with experience in aquaculture in your community?
- Is there someone in the community who can apply for grants to support this work on an ongoing long-term basis?

“The scale that the ancients worked at... For us to do it with modern technology is hard enough... That really amazes me and astonishes me. This wasn't just going on for a few years of a couple hundred years, it was going on for thousands of years in most cases.”

– Gary Drouillard, Hul'q'umi'num' Working Group

5.3 – What is the scale and scope of the project?

- Some clam gardens are very large and others very small. There are examples of clam gardens that can be maintained by individuals or single families. Getting on the beach with a few people is a success in and of itself. We all recognize that local and smaller-scale pathways can develop and offer incredible richness to communities as well.
- In this document, we've highlighted two extremely well-funded and people-resourced examples of restoration projects which may differ from your community's 'why'. We chose to highlight these case studies because they have allowed us to see what is possible.

5.4 – Where will you restore a clam garden?

- Your community may already have a beach or beaches in mind to restore. If not, let the ancestors' knowledge guide you in finding and choosing the best beach. They picked places for reasons so it's often good to start with a survey of your territory and identify the ancient walls.
- Use the [How to Identify and Record a Clam Garden](#) guide to help you find ancient walls and seafood gardens in your territory. If there are no, or very few, clam gardens in your territory then consider why this may be. Could sea level have risen and obscured the walls, or is there another reason why the ancestors may not have built them in the area? Are there modern-day disturbances or environmental concerns upland or nearby that may have affected the area?
- Once you've identified potential beaches, keep in mind that final site selection can take time, as the Swinomish case study suggests. Having a shared vision and understanding your 'why' will help guide this process.
- You may also wish to consider access. Who will be travelling to the beach? Is car and/or boat access important? Will the general public be able to visit?

5.5 – Reconnect with and remember ancestral places

- Is there a story from long ago that someone would like to share? Old stories of the beach may shape your pathway.
- Bringing Elders, youth, knowledge holders, language speakers, and community members out onto the beach together again and again, over multiple seasons, and tides, over the course of multiple years, will rekindle memories and reinvigorate the cultural knowledge held in your communities about these places. This can happen before any formal restoration activities.
- There can be an interplay between language holders and Elders. For instance, when they realize the connections between teachings and place, the meaning of words may gain depth, and the stories, songs, words, and technologies all come together in a holistic way.
- It will take time for people to reconnect and remember, especially in places or cultural knowledge areas that haven't been used in a while. With more visits, your community members will remember more and more.



Kwaxsistalla Wathl'thla (Clan Chief Adam Dick) in 2009 digging clams on the clam garden he helped maintain as a child while in seclusion. There, his grandparents and other chiefs taught him to care for this ancestral garden as part of his training to become a clan chief and holder of specialized traditional resource knowledge. We will always be grateful for his generosity of spirit and knowledge, contributing significantly to our understanding of clam gardening practices along the entire BC coast.

5.6 – Take care of everyone on beaches

To create comfortable places of learning where Elders can share their knowledge and youth can receive it, it is important that people's needs are being met and they feel a sense of belonging and warmth.

Here are some strategies we have found to help keep people engaged and returning during the next low tides:

- Learning what Elders need to be well cared for in order to participate. Do they need compensation? To be greeted with food and beverages? To be assisted on-site?
- You may need to bring chairs, blankets, fires, snacks people like, and hot drinks to keep people comfortable. Or, in the hot summer, you may need shade, cool water, and frequent breaks. These considerations will enable the learning and teaching between participants.
- Asking why people are not able to show up and removing those barriers when possible. This might mean offering reminders, rides, food, and welcoming children and family members.

5.7 – Who from outside the community could be involved in the work?

- Do you know of nearby Nations embarking on this work who you can reach out to for assistance?
- Who are the allies in Western science (e.g. Marine biologists, archaeologists, geomorphologists, engineers, planners , etc.) who you can engage with who will understand the gentle nuance of cultural experience and can help with planning, baseline studies or ongoing scientific monitoring? (see section 5.10 for more detail)
- Are there non-Indigenous communities or organizations, schools, health authority, etc. who may be able to support you?

5.8 – Are job creation and economic opportunities part of the “why” for your Nation? Here are some things you might want to consider...

There are potential economic opportunities that clam gardens present. While we have yet to see those recognized within projects to date, it is possible that communities may be interested in considering tourism or aquaculture applications, or other economic interests we haven’t yet considered.

If economic activities are of interest, do you have members trained in business or interested in learning? Are you able to invest in training community members in business?

Below we include some thoughts on tourism and aquaculture.



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Tourism

- Within the Clam Garden Network we are often contacted by groups (schools, eco-tourism, conservation, etc) interested in visiting clam gardens, and we can see how clam gardens could be a cultural tourism and educational opportunity.
- Is the community supportive of bringing outsiders to cultural sites? How could these visits happen in culturally safe ways? Who is able to do this work in a good way? What permissions and protocols need to be upheld?



SKYE AUGUSTINE

Aquaculture

If considering aquaculture perhaps consider questions like:

- Will you be seeding the beaches? If so, have you considered how seeding the beaches with native and/or non-native species will affect the beach and the surrounding area? Keep in mind these places weren't designed originally for non-native species. How will the tides impact the seeding efforts? Will they move the seeds? What will the greater impacts be to the ecosystem?
 - Some native food species include: butterclams, littleneck clams, horse clams, cockles.
 - Some non-native food species include: manilla clams, japanese oysters.
- Are there contaminants in the beach? Do the shellfish need to go to a depuration plant or relay beach, and do you have access to these? If so, you may need a joint venture contract with one of those plants. You may also consider sending samples to Canadian Food Inspection Agency or the testing agency in your area.
- How can we get shellfish to our community safely? How will the shellfish be transported and distributed to the community? It is possible that you may need a refrigeration truck to take the shellfish from the boat, to the depuration facility or relay beach, and back to your community.
- Will you sell some of your harvests to pay operational costs? These costs may include hiring harvesters to dig the clams, refrigeration trucks, fuel, vessels and maintenance, administration, etc.

5.9 – What information do you want before you begin?

Existing clam gardens are ancestral monuments. Before they are modified there is much to learn from them and the ancestors' wisdom. Initial baseline assessments, whether you are restoring an ancient feature or building a new one, can be useful so you can track changes over time. Initial baseline assessments can be useful so you can track changes over time. Initial assessments could include:

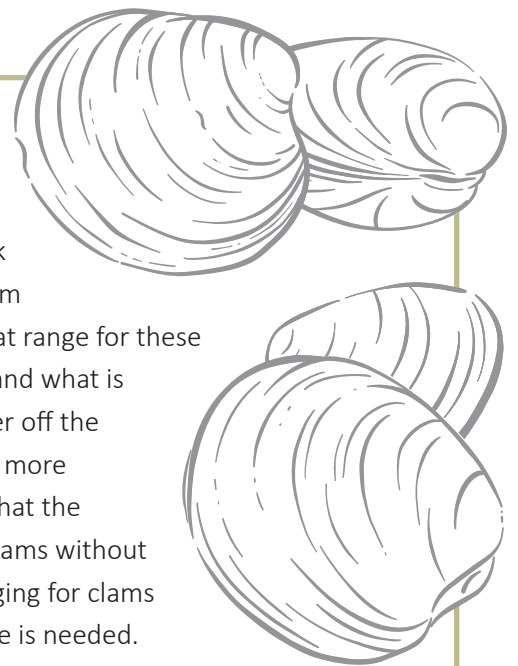
- Community knowledge (e.g. interviews with Elders, knowledge holders, language experts, clam diggers, review of place names and other cultural databases, etc),
- Archaeology (e.g. helps identify clam gardens, create site map, document wall height and shape, estimate age, background research and analysis of ancestral shellfish and seafood use from nearby shell middens, etc),
- Ecology (e.g. ecological surveys, what species present, different biological zones, native versus invasive species, potential ecological threats and opportunities, restoration priorities, conversations around biotoxins and harmful algal blooms, etc).

Logistics

How do we know if the wall is at the right height?

Many walled beaches intended for native butterclams and littleneck clams seem to function well within about 0-1.2 m above chart datum (zero tide), coinciding with the lowest low tide and the upper habitat range for these clams. As your community spends time at the beach you'll understand what is needed. A higher wall may extend digging time by keeping the water off the beach for longer. In areas of rapidly rising sea level a wall may need more rocks to make the wall high enough again. You may find, however, that the wall position is just fine and that it is possible to begin digging for clams without adjusting the wall at all. Adding rocks to the wall at times when digging for clams may already be part of your community's practice and nothing more is needed.

When deciding on target wall height and position it may be important to consider sea level change predictions specific to your region. If sea levels are predicted to rise substantially in the next hundred years, future proofing your wall will need to account for those anticipated changes.



5.10 – Will you want to monitor the beaches while the project unfolds? What information do you need while you are working at the site?

- Clam gardens have been harvested and cared for over generations. Would your community like to monitor progress while the project takes shape and over the years to come? Doing so can help you track your progress
- Some information that you may consider tracking throughout your project could include:
 - number of people and families involved in the project
 - stories shared
 - lessons or teachings for this place
 - areas of the beach tended
 - amount of clams harvested, planted
 - invasive versus native clams
 - elevations and changes to the rock wall and beach terrace over time
 - photographs and drone images to document place and people through time
- Ongoing monitoring benefits from initial assessments that you can refer to for comparison.

“When the project started, it took 16 people to get 20 clams for testing. Now just one person can get that in a little while. That’s how much our beaches are coming back to life. It’s work but it’s worth it, that’s our food. It was good to see the kids come out and learn.”

– Tom Smith, *WSÁNEĆ*

6.0

RED TIDES, RED TAPE

“These areas were closed off to us... the fact that they were willing to... allow us free reign on this beach to do as we’ve always done, I think was a really significant driving force behind my desire to be there. To be in the place where [our ancestors] used to walk and where they used to feast. When the tide’s out the table’s set... to be there was an inherent privilege and I felt obligated to participate, make sure it was done right.”

– Nicole Norris, Halalt First Nation

6.1 – When can we dig clams?

Digging for clams may be the only kind of restoration a clam garden needs. In some cases, the sediments haven't been turned over recently but there are still native clams living in the beach that may do better if the sediments are turned, the large clams harvested, and the smaller ones left to grow and reproduce. Remember though, shellfish can be toxic at different times of the year and we hear from Elders and knowledge holders that red tide is more frequent now than in the past. In fact, toxins can be present in some species at all months of the year.

There are naturally occurring biotoxins, and human or animal caused sanitary bacteria, that present risks to shellfish consumption. Shellfish sites are

not always tested adequately and efforts to clean up sanitary contaminants tend to be slow-moving. The strength of Indigenous leadership in directing and managing more testing and clean up efforts can be helpful to increasing safe access to shellfish. The Sea Gardens project in the Southern Gulf Islands has worked with the Canadian Food and Inspection Agency (CFIA) to set up a biotoxin monitoring station at the Clam Garden site to regularly ensure safety.

It is very important to make sure the clams are safe to eat before you dig.

Here are some resources:

Canada:

- [DFO Shellfish Harvesting Map](#)
- [Can you dig it app](#)
- [BCCDC Shellfish Map](#)
- [Pauquachin Shellfish Harvest](#)

Washington:

- www.fortress.wa.gov/doh/biotoxin/biotoxin.html

Alaska:

- www.seator.org

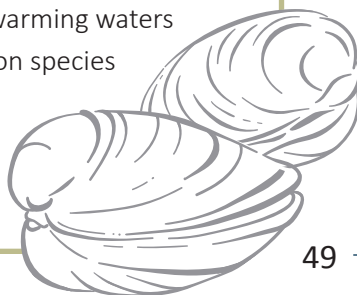
Learn more about toxins here:

- www.fnha.ca/Documents/FNHA-WATCH-Project-What-You-Need-to-Know-About-Shellfish-Toxins.pdf

Did You Know?

Harmful Algal Blooms (HABs)

are naturally occurring and produced by phytoplankton, some of which make toxins that accumulate in the tissues of shellfish and other animals. When present in high enough concentrations, these toxins can make people (and animals) sick when eaten and in worst case scenarios can be lethal. HABs are expected to continue to increase in frequency, duration, and intensity due to warming waters and new phytoplankton species that are now present in our waters.



6.2 – What are some Nations doing to learn more about biotoxins and changing ocean conditions in their territory?

There is a need to observe water quality and other environmental conditions, and consider climate change when we think about toxins and when to harvest shellfish. Just as knowledge holders observed and monitored the waters for toxicity in the past, Nations continue to do so today, with additional tools to identify harmful algae and new knowledge to help understand them in the context of changing ocean conditions and climate. Limited shellfish testing and blanket shellfish closures, have many communities wondering how best to proceed with harvesting clams.

Some Nations in British Columbia and Tribes in Washington and Alaska are regularly monitoring the species and numbers of toxin-producing phytoplankton (or harmful algae) in their waters to observe how they appear, multiply, and dissipate. These monitoring practices have contributed to the early detection of potential shellfish toxicity which can be shared with harvesters and others. Over time, through regular phytoplankton monitoring, observation, and deep knowledge of the waters in their territory, knowledge holders can

better predict when it is safe for the community to harvest (Clermont 2022). And, when these Tribal/Nation-based monitoring programs are linked with coast-wide networks, they have resulted in a better understanding of harmful algae in local waters and fewer coast-wide shellfish closures (Trainer and King 2023). With regular or on-demand laboratory testing, some communities can determine the levels of toxins in the shellfish just before they harvest or eat their catch. For example, the Sitka Tribe of Alaska has created SEATOR to help local Indigenous communities retain access to traditional seafoods by offering shellfish testing.

For more information visit: www.seator.org

Across the coast, several Nations are piloting phytoplankton monitoring programs; some are working with the “We All Take Care of the Harvest” project. If you are interested in learning more and participating in this network of observation, practice, and advocacy for seafood safety, security, and sovereignty, and to learn more about emerging biotoxin lab facilities and rapid field test kits, **Please contact:** watch.project@FNHA.ca

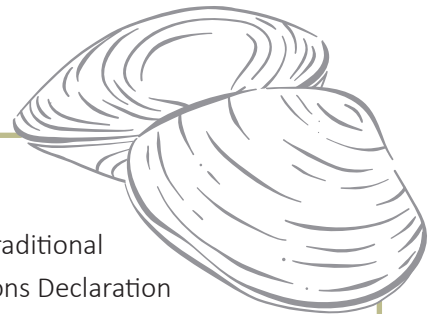
6.3 – What governance systems are most appropriate for a community to consider when doing restoration?

Clam gardens have been used and maintained for thousands of years and these spaces are integral parts of Indigenous lands, waters, and ways of life. Up and down the coast, we know that community members, elected leadership, and hereditary chiefs are having discussions about how to approach jurisdiction, protections, and permit applications as they plan to initiate or expand sea garden restoration and management projects. Often, non-Indigenous folks see different departments and layers of colonial government to be responsible for

things like permits and intertidal monitoring. We are not able to offer strategic or legal advice about whether, or how, Nations and Tribes should navigate the landscape of government permitting. Approaching and making decisions about permitting in a good way for one community might look different than it would for another; what we have shared in this document offers some preliminary information based on experiences that we know of to date.

Shifting Political Landscapes

Our understanding is that the contemporary management processes for traditional use sites such as clam gardens are still unfolding especially as United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), the repudiation of the Doctrine of Discovery, the Declaration on the Rights of Indigenous Peoples Act (DRIPA) (British Columbia), and the transformation of the Heritage Conservation Act (British Columbia) become better understood.



6.4 – What forms of protection from development and damage are available for clam gardens?

Most clam gardens were initiated many generations ago, and many communities and clam diggers have continued to use clam gardens into the present day. Clam gardens are living cultural features, requiring ongoing use, care and maintenance by Indigenous Peoples. They are not static structures but are intended to be flexible and used. Despite clam gardening being a widespread practice up and down the coast, colonization separated many families and communities from their clamming beaches. As a result, we do not know where all the clam gardens are located today.

The majority of clam gardens on the British Columbian coast likely predate A.D. 1846 in origin. Any human made structure in British Columbia older than A.D. 1846 is automatically protected by the Heritage Conservation Act (HCA), whether it is known about and recorded or not. That means, even if your community doesn't know about some clam gardens or other archaeological sites (older than A.D. 1846) in your territory, they are automatically protected. It can be easier to protect clam gardens from development or environmental damage if the locations are recorded. Some Nations have their own databases of cultural sites that they use for their own referral processes. It can also be beneficial to register sites with the

Provincial Archaeology Branch as awareness at the colonial government level may prevent disturbance from development activities such as foreshore development, dock construction, dredging, breakwaters, etc. in the planning stages.

Also, if you see someone damaging, tampering with, or altering a clam garden (or other archaeological site) you can call the RCMP or reach out to a Cultural Heritage Conservation Specialist with the Provincial Archaeology Branch and Compliance and Enforcement Branch by:

- **phoning 1-877-952-7277 the RAPP line (Report All Polluters and Poachers)**
- **or dialing #7277 on a cell phone**

Note that at the time of printing this document, the HCA is undergoing a review and transformation process. We are looking forward to seeing how contemporary cultural use sites with ancestral legacies, such as clam gardens, are considered in the revised act.

Other Forms of Protection to Consider:

Provincial legislation that may offer protections to clam gardens in British Columbia include:

- Forest and Range Practices Act (FRPA)
- Heritage Conservation Act
- Land Act
- Mineral Tenure Act
- Park Act

Seeking Protected Areas Designation may also offer protection such as

- *National Historic Site Designation*
- *National Marine Conservation Area Reserves*
- *Marine Protected Areas (including Conservancies)*
- *Wildlife Management Areas*
- *Indigenous Protected and Conserved Areas (IPCAs)*
- *Regional or Local Parks*

Non-Legislative Tools

- *Indigenous Guardians*
- *Notation of Interest (NOI) (in British Columbia)*

- *BC Ministry of Environment – Compliance and Enforcement*
- *BC Ministry of Waters, Lands, and Resource Stewardship – Compliance and Enforcement*
- *Cultural Heritage Conservation Specialist – 1-877-952-7277*
- *Establishing First Nations Guardian Programs to monitor the intertidal*
- *Gated Access to foreshore*
- *Signs/Info Kiosks/Educational Materials*
- *Park Use Permit Provisions*

Related resource:

- [Protecting Indigenous Cultural Heritage Resources on Private Land, Environmental Law Centre, University of Victoria](#)
- [Recommendations for Decolonizing British Columbia's Heritage-Related Processes and Legislation](#)

7.0

CLOSING – VISION MOVING FORWARD

What's next for clam gardens?

The case studies we shared are just two of many possible pathways for restoration. We can imagine the pathways being as diverse as the many cultures and various regions of the coast. Some pathways may be large in scale and scope like those profiled here, and others may be much smaller. All, however, will be important steps to reclaiming and reviving inherent rights, portions of languages, and ways of life that support learning together and feeding one another.

As our families and communities return to places that have been cared for us by our ancestors, and as we continue those investments for the next generations, we must keep an eye on the future. We know our future holds an increase in the occurrence and magnitude of extreme heat events. We also know that clam gardens can buffer against them. With human induced climate change also comes rising sea levels, increasingly corrosive

water, and more storm events. These are all things to consider when future proofing our clam gardens for those yet to come. Communities are experimenting with building new clam gardens at different tidal heights, at adding shell back into beaches to ensure shell-building materials for small animals, among other inspiring innovations.

The incredible effort and care that we have seen by communities and individuals who are taking on this work and dedicating themselves to creating a legacy of food sovereignty for their people in the future are inspiring hope among many. We cannot wait to learn of the many ways that clam gardens will continue to be celebrated and revitalized in coming years, and the creative innovations that practitioners will surely uncover.

Over the two plus years that it took to create and complete this document, we have heard from many communities who are initiating their own

In writing this document we realised a need for additional information that could guide communities and colonial governments as traditional clamming practices are revived, such as:

- A sister document for government outlining the legislative and policy barriers to traditional clam harvesting and clam gardening that would ideally be written with a lawyer familiar with these issues.
- A webpage dedicated to evolving and changing permitting and protections for clam gardens that is updated regularly
- A summary of techniques and “How-To” guides for Indigenous communities who are embarking on or doing restoration covering topics such as, assessing beach health, bivalve survey methods, beach care methods (tilling, shell hash additions, etc), seeding beaches, biotoxin testing (case studies: WATCH; Sitka Tribe), and baseline archaeological and ecological studies.

clam garden restoration projects. From them and our own experiences we recognize the need for community gatherings to bring communities together to share, learn from one another, and help each other with their projects.

We also recognize a great need for stable, long-term coast-wide funding to reconnect communities with beaches in a way that will not be interrupted or hampered by onerous annual reporting requirements or short term commitments.

We are grateful to the community of clam garden practitioners who have come together to craft this document. We look forward to learning from and alongside the many generous hands and hearts that are forging paths all around the coast. May our shorelines be full of abundant foods, important lessons, and steeped in the vibrant care of relatives and those yet to come.

**“Like our ancestors,
the work just keeps going
and going and going.”**

– Hul'q'umi'num' Working Group member

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