

Developing a Needs Assessment Framework for Marine Resources Committees in Washington State

**Daniel J. Evans School of Public Policy and Governance
Evans Consulting Lab
University of Washington**

**Authored by: Isabel Baird, David B. Clark, Chara Lynch, and
Diana Rucavado Rojas**

Prepared for the Northwest Straits Commission

May 27th, 2024



Developing a Needs Assessment Framework for Marine Resources Committees in Washington State

Daniel J. Evans School of Public Policy and Governance
Evans Consulting Lab
University of Washington

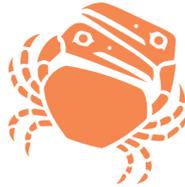


EVANS SCHOOL
OF PUBLIC POLICY & GOVERNANCE

UNIVERSITY of WASHINGTON

Authored by: Isabel Baird, David B. Clark, Chara Lynch, and
Diana Rucavado Rojas

Prepared for the Northwest Straits Commission



Snohomish County
Marine Resources
Committee

This project has been funded wholly or in part by the United States Environmental Protection Agency under Assistance Agreement CE01J97401 to Puget Sound Partnership. The contents of this document do not necessarily reflect the views and policies of the Environmental Protection Agency, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.



Positionality Statement

Our group has had the incredible opportunity and privilege to study at the University of Washington. While embedded in the Evans School, we have fully embraced their mission to educate leaders of today and tomorrow, generate knowledge, and host communities to co-create solutions to pressing societal problems.

Our team is made up of two white women, a Costa Rican woman, and a white man who have all had the privilege of living and attaining higher education in the United States. These identities and experiences have shaped how we approach this project, and we acknowledge that our epistemological assumptions and inherent biases influence the outcomes of any work we produce.

We are committed to intentional conversations about race, gender, immigration status, and what it takes to push the status quo in promise of a more equitable and just future. Our team's identities do not represent the full experiences of those community members, scientists, and public administrators working with the Northwest Straits Commission or in Snohomish County. Though our team has come together in Washington State, our experiences in our own communities across North America and beyond are intrinsically part of our lived experiences.

We do not claim to holistically represent the views and needs of the Puget Sound, Salish Sea, and most specifically, the Snohomish County MRC communities. Our work has been structured through our education, experiences, and most notably the Snohomish County MRC's direct experiences with marine resource management.

Over the course of this project we did our best to fully listen to all input and suggestions throughout the engagement process. We understand that as four graduate students living and studying in Seattle, we began this project as students and outsiders. In addition, we approached this project as consultants who are not employed by Northwest Straits Commission. We present this report and our recommendations with the hope that the Northwest Straits Commission and Snohomish County MRC's future frameworks can consistently and exponentially move towards comprehensive, equitable, and just marine management practices for all.

Table of Contents

Positionality Statement.....	3
Acronym List.....	7
Executive Summary: Developing a Needs Assessment Framework for Marine Resources Committees in Washington State.....	8
Introduction.....	8
Research Methods.....	8
Key Findings.....	9
Recommendations.....	9
One Pager: An Overview of Interview Framework Guidelines.....	10
Chapter 1: Project Summary.....	11
1.1 Introduction.....	11
1.2 Purpose.....	12
1.3 Research Question.....	12
1.4 Methods.....	12
Chapter 2: Literature Review.....	14
2.1 Zooming in on the Puget Sound Basin.....	14
I. Marine Ecosystem Services.....	14
II. The Northwest Straits and the Puget Sound: a threatened marine ecosystem.....	16
III. Climate Change: An Aggregated Pressure.....	20
IV. Marine Collaborative Governance.....	21
2.2 A History of the Northwest Straits Marine Management.....	22
I. Program Evaluation.....	23
II. 2022 Snohomish County MRC Report Highlights.....	24
2.3 Marine Resource Management in Puget Sound and Beyond.....	26
I. Introduction.....	26
II. Marine Management Approaches in the Puget Sound.....	27
2.4 Understanding Needs Assessments.....	28
I. Needs Assessment Definition	28
II. Historical Background.....	29
III. Needs Assessments in the Environmental Sectors.....	30
IV. Needs Assessment Guide Examples.....	31
V. Community Needs Assessment - Environmental Case Studies.....	32
2.5 Major Takeaways.....	34
Chapter 3: Research Methods.....	36
3.1 Qualitative Methodology.....	36
3.2 Secondary Sources Analysis.....	36
3.3 Pilot Study.....	36
I. Interviews.....	37

II. Sampling and Recruitment.....	37
III. Post-interview Memos.....	38
IV. Post-interview Coding.....	38
V. Stakeholder Engagement.....	41
Chapter 4: Framework Analysis.....	42
4.1 Answering the Research Question.....	42
4.2 Framework Development.....	42
4.3 Interview Scheduling.....	42
4.4 Sampling: Interviewee Demographics.....	43
4.5 Post-interview Memos.....	44
I. Volunteer Memos.....	44
II. UW Team Memos.....	45
4.6 Interview Results.....	46
I. Interview Themes.....	46
II. Interview Probing.....	48
III. Additional Interview Questions.....	49
4.7 Presentation to the Snohomish County MRC.....	50
4.8 Limitations.....	52
I. Sampling Methods: Representativeness of Interview Participants.....	52
II. Sample Size and Interview Methodology.....	53
III. Subjectiveness: Memos and Coding.....	53
Chapter 5: Recommendations.....	54
5.1 Outline MRC Specific Goals.....	54
5.2 Specify Target Populations.....	54
5.3 Modify the Needs Assessment Framework.....	54
5.4 Expand Sampling Methodology.....	56
5.5 Gather Demographic Data.....	57
5.6 Conduct Interviews.....	57
5.7 Next Steps.....	58
I. Interview Framework.....	58
II. Other Needs Assessment Instruments.....	59
Chapter 6: Furthering the Conversation.....	60
6.1 Analysis on Interviewees' Responses on Snohomish County MRC's Work.....	60
6.2 Familiarity with the MRC.....	60
6.3 Projects in which respondents would like the MRC to become involved.....	61
6.4 Marine Environment Meaning (General).....	62
6.5 Snohomish County's Marine Environment Meaning.....	64
6.6 Snohomish County Marine Environment Changes.....	66
6.7 Issues (short term).....	69
6.8 Issues (long term).....	71
6.9 Solutions.....	72

6.10 Institutions.....	74
6.11 Stewardship Activities.....	76
6.12 How to Communicate Marine Issues.....	77
6.13 Conclusion.....	79
References.....	81
Appendices.....	86
Appendix A: Snohomish County MRC 2022 Annual Report Excerpts.....	86
Appendix B: NOAA's Needs Assessment Guide.....	88
Appendix C: DOE's Needs Assessment Guide.....	89
Appendix D: Interview Guide.....	90
Appendix E: Volunteer Training PowerPoint.....	94
Appendix F: Participant Contact Form Questions.....	97
Appendix G: Recruitment Email to Potential Participants.....	99
Appendix H: UW Team Post-Interview Memo Questions.....	100
Appendix I: Volunteer Post-Interview Memo Questions.....	101
Appendix J: Codebook and Child Code Descriptions.....	102
Appendix K: Number of questions and probes by interview.....	103

Acronym List

Acronym	Name
DOE	Department of Energy
WDFW	Washington's Department of Fish & Wildlife
DNR	Washington's Department of Natural Resources
EPA	Environmental Protection Agency
LISS	Long Island Sound Study
NEPA	National Environmental Protection Act
MPA	Marine Protected Area
MRC	Marine Resources Committee
NW Straits	Northwest Straits
NWSC	Northwest Straits Commission
PCB	Polychlorinated biphenyl
PBDE	Polybrominated diphenyl ether
RQ	Research Question
UW	University of Washington

Executive Summary: Developing a Needs Assessment Framework for Marine Resources Committees in Washington State

Introduction

In 1998, the Northwest Straits Citizens Advisory Commission, convened by U.S. Senator Patty Murray and U.S. Representative Jack Metcalf, delivered a report warning about the deterioration of the Northwest Straits' marine ecosystem. They recommended "establishing a network of local, county-based Marine Resources Committees" (MRC) to protect and conserve the Northwest Straits' resources. Since then, seven MRCs were established in the Northwest Straits region – each representing a distinct geographic county – with the mission to advise their respective counties on marine resource issues by identifying local marine protection priorities, implementing science-driven projects that benefit marine resources, and engaging the local communities to enhance governance of the local marine environment.

This project developed a needs assessment framework to support MRCs in collecting community perspectives on local marine resources needs. Conducting these needs assessments at a county level will help MRCs to identify needs in the community that may otherwise not have been identified, helping provide additional guidance to leadership as to which projects should receive funding, in addition to strengthening relationships between the individual MRCs and their community leaders and members.

The Snohomish County MRC was used as a pilot to test the effectiveness of the framework. This report provides feedback and recommendations from the pilot study on how to improve and use the framework for future needs assessments for all seven MRCs.

Research Methods

Throughout the current project, the UW Team responded to the following research question (RQ): *How can MRCs assess their local communities' concerns and priorities related to the marine environment and its resources?*

To answer the RQ, the UW Team conducted a literature review, executed a pilot study with the Snohomish County MRC, analyzed interview results from the pilot study, and put forth a series of recommendations for conducting future needs assessments. The pilot study consisted of developing an interview guide, providing qualitative training to MRC staff and volunteers, conducting 11 interviews with marine experts in Snohomish County, and analyzing interview data through a detailed qualitative analysis process. The interviews focused on gathering information from participants about their knowledge of the marine environment and MRC, marine challenges and changes, solutions and communication methods to identify challenges and changes, and relevant stakeholders.

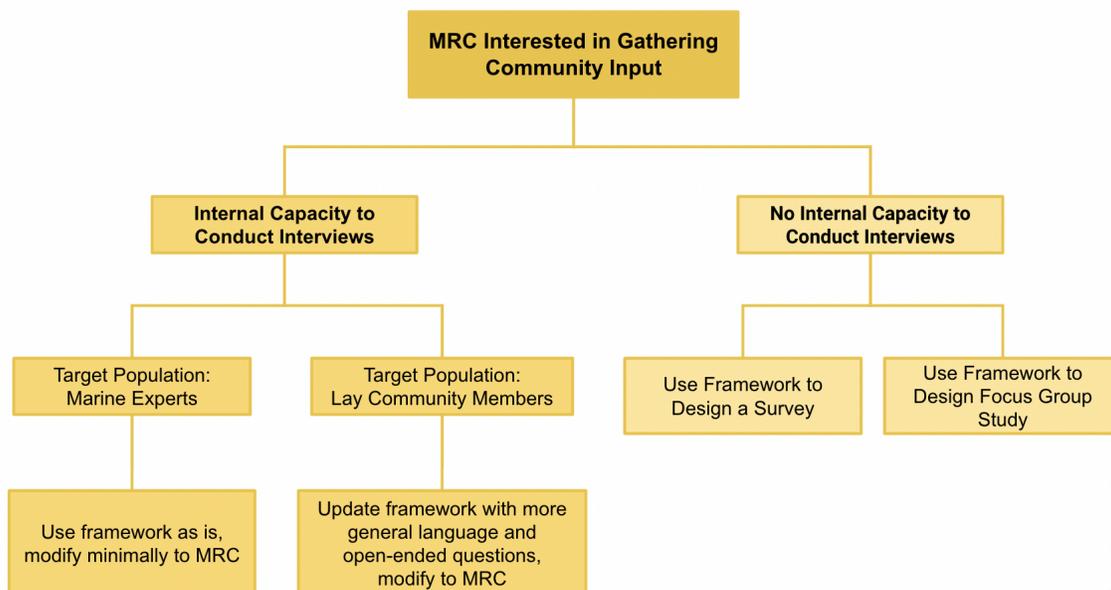
Key Findings

The pilot study was used to determine the validity and usefulness of the interview framework, as well as the processes to construct and utilize the framework, developed by the UW Team. Key findings from this process include:

- The interview guide is best suited for interviewing marine experts, rather than those with limited knowledge of the marine ecosystem.
- A larger and more diverse sample can provide a more comprehensive look at local communities' marine priorities and concerns, which would require adjusting the framework.
- Within the pilot study, many interviewees highlighted the Snohomish County MRC's potential to do more outreach, implement different communication strategies, and collaborate with other stakeholders on the issues mentioned.
- Interviews yielded important responses on participants' priorities and concerns regarding Snohomish County's marine environment. For example, the most salient theme in current pressing issues is stormwater, while many mentioned partnerships as being critical when thinking about solutions.

Recommendations

Using insights from the Snohomish County MRC pilot study, the UW Team developed the following flowchart to guide recommendations and action items for both the Snohomish County MRC and six other MRCs interested in gathering community input. The flowchart depicts when the interview framework should be used to conduct a needs assessment and how the interview framework should be used to guide the needs assessment.



For a more detailed overview of the recommendations, see [Chapter 5](#) of the present document.

One Pager: An Overview of Interview Framework Guidelines

For those MRCs that have the capacity to conduct one-on-one interviews, as determined by the options depicted in the flowchart, this one pager serves to provide a brief overview with information on frequently asked questions (FAQs), as well as a holistic view of the needs assessment process.

The below information provides answers to questions about why MRCs should utilize an interview framework and what the process should entail.

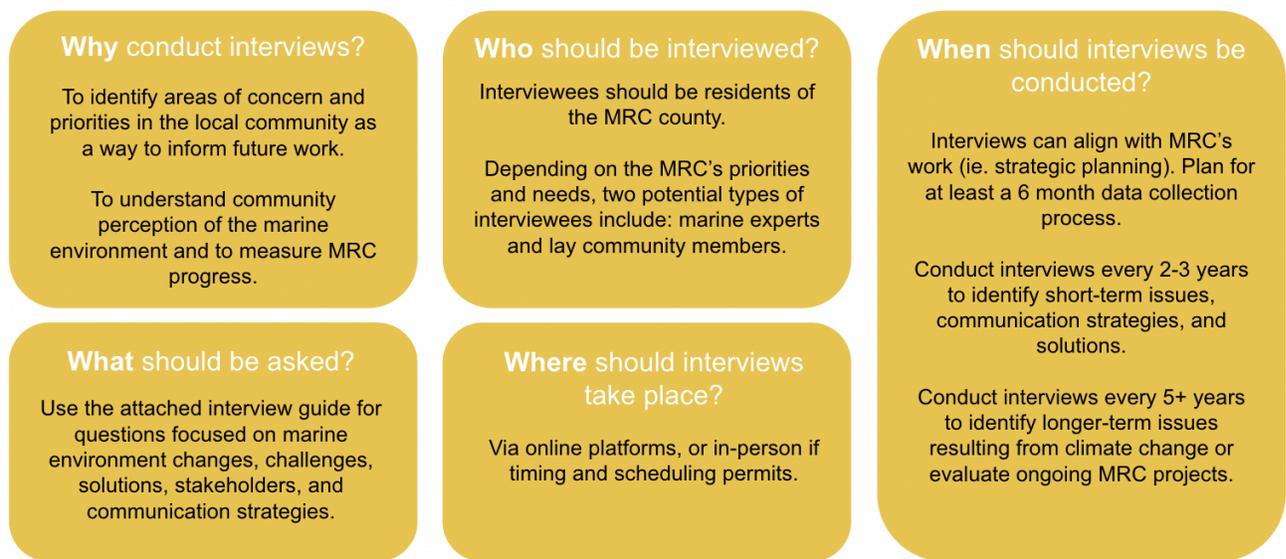


Figure 1. Answers to FAQs about the interview framework

The below sequence of steps scopes the overall process of using an interview framework as a needs assessment tool to gather community input. MRCs can expect to follow this series of steps.



Figure 2. Recommended Interview Framework Steps

Chapter 1: Project Summary

1.1 Introduction

In 1998, the Northwest Straits Citizens Advisory Commission, convened by U.S. Senator Patty Murray and U.S. Representative Jack Metcalf, delivered a report warning about the deterioration of the Northwest Straits' marine ecosystem, and recommended "establishing a network of local, county-based Marine Resources Committees" (MRC) to protect and conserve the Northwest Straits' resources (Murray-Metcalf Northwest Straits Citizens Advisory Commission, 1998).

Since then, seven MRCs were established in the Northwest Straits' region, each representing a distinct geographic county: Clallam, Island, Jefferson, San Juan, Skagit, Snohomish, and Whatcom. These committees are composed of volunteers who represent a variety of community stakeholders. Their mission is to advise their county on marine resource issues by identifying local marine protection priorities, implementing science-driven projects that benefit marine resources, and engaging the local community to enhance governance of the local marine environment (Washington Department of Fish and Wildlife, 2012; Northwest Straits Initiative, n.d.). These MRCs receive base funding through grant agreements with the Northwest Straits Commission (NWSC) to accomplish priority restoration and protection work in their local areas. The NWSC was created simultaneously to serve as the regional coordinating body by providing funding, training, and support to all seven MRCs. The following map shows the Northwest Straits region, with the MRCs and counties covered by the NWSC:



Figure 3. Northwest Straits Region and the 7 MRC counties

1.2 Purpose

The Northwest Straits Region, which includes the U.S. marine waters of the Strait of Juan de Fuca, the San Juan Islands, and northern Puget Sound reaching from the southern borders of Snohomish and Jefferson counties to the Canadian border, is currently facing numerous marine challenges, with many challenges often specific to each region. As such, governance should be focused on regional development. Community-led governance has been shown to lead to more effective marine governance and help streamline change at a structural level. The work of MRCs is critical; understanding each unique communities' marine resource management concerns helps the MRC achieve their mission of representing these issues at a county level. This is a complex task since individual MRCs rely on volunteer work and can be time and resource constrained. MRCs are composed of a variety of people who come from different technical backgrounds. This makes it imperative to gain a comprehensive and well rounded understanding of community priorities. By focusing on the most salient areas of opportunity, the MRCs themselves can best prioritize their projects and efforts over the next three to five years.

The NWSC is therefore interested in developing a needs assessment framework¹ to support MRCs in collecting community perspectives on local marine resources needs. Conducting these needs assessments at a county level will help MRCs identify needs in the community that may otherwise not have been identified, helping provide additional guidance to leadership as to which projects should receive funding, in addition to strengthening relationships between the MRC and community leaders and members. The outcomes of the needs assessment will help each MRC develop strategic planning and prioritize projects and activities based on community input.

1.3 Research Question

At the onset of the project, the UW Team developed a research question (RQ) to guide all research activities and project outputs. This question was approved by the NWSC and Snohomish County MRC. As such, the UW Team responded to the following RQ: *How can MRCs assess their local communities' concerns and priorities related to the marine environment and its resources?*

1.4 Methods

The research project design to answer the RQ consisted of a mixed method approach, using qualitative methods to analyze primary and secondary data sources:

1. *Primary and secondary data:* gray literature was used to outline MRCs and background; academic literature was used to explore community-based organizations, specifically in the marine conservation context, and to explore other needs assessment processes.

¹ The interview framework is a needs assessment tool and refers to the entire process, including stakeholder communication, outreach to participants, development of an interview guide, conducting interviews, and data analysis. The interview guide is the document that interviewers used to conduct interviews; this document includes a narrative, questions, and probes (see Appendix D).

- a. An extensive literature review was conducted with a focus on marine issues in the Northwest Straits region, current trends in marine resource management and collaborative governance, and existing needs assessments practices. This review is a common practice in the research space and informed the development of this project's framework.
2. *Pilot study*: to ensure the proposed framework is the appropriate instrument for assessing communities' needs, a pilot study was conducted which consisted of 11 semi-structured interviews with community members from Snohomish County. There was also a post-interview analysis conducted (Davies et al., 2022).
 - a. *Interview guide development*: insights and best practices from the literature review and existing case studies were integrated into the guide to inform interview question framing and flow. MRC staff and volunteers reviewed the guide and provided input prior to it being utilized in interviews.
 - b. *Trainings*: MRC staff and volunteers participated in a training on qualitative research and how to conduct interviews by reviewing the finalized framework and materials detailing interview best practices (see Appendix E for the training).
 - c. *Interview process*: MRC staff and volunteers developed a list of individuals in Snohomish County to contact for interviewing. An emailed form was used to gather demographic information and to schedule interview dates and times. The UW Team monitored the form and contacted the respondents to schedule the interview. Once scheduling was finalized, the UW Team coordinated with an MRC volunteer and staff member to participate in the interview as well.
 - d. *Post-interview analysis*: following data collection through the interview process, interview transcripts were analyzed abductively, using both inductive and deductive qualitative coding. This means that codes emerged from the data, but also that some codes were introduced beforehand according to the RQ and project goals. A set of codes were developed in an initial codebook, based both on the interview guide and on the first round of interviews. After the final round of interviews, the codebook was finalized, and two team members coded the same interview to compare levels of agreement across the team. After, each person coded five interviews from other members of the team using a qualitative analysis software called NVivo. Codes were analyzed according to the RQ and project's goals which were included in the final report.
3. *Recommendations for future assessments*: following the pilot study data gathering and analysis process, best practices and lessons learned were extrapolated. These were used to adjust materials, if necessary, and inform recommendations that can be applied to all seven MRCs for future needs assessments.

Chapter 2: Literature Review

2.1 Zooming in on the Puget Sound Basin

I. Marine Ecosystem Services

A. Definition

Managing the ocean is not an easy task. We call our planet “earth”, but in reality, its surface is composed of 71% water, and only 29% land. The ocean itself contains 97% of the Earth’s total water (IPCC, Special Report, 2019). It is no surprise, then, that governments have struggled to establish an effective system of governance that allows them to administer their waters, resulting in a general deterioration of the marine ecosystems (Ryan Enright and Boteler, 2020).

Ecosystem services lack a common definition. Daily (1997) defines them as,

The conditions and processes through which natural ecosystems, and the species that make them up, sustain and fulfill human life. They maintain biodiversity and the production of ecosystem goods [...]. The harvest and trade of these goods represents an important and familiar part of the human economy. In addition to the production of goods, ecosystem services are the actual life-support functions, such as cleansing, recycling, and renewal, and they confer many intangible aesthetic and cultural benefits as well (p. 3).

The Millennium Ecosystem Assessment (2005) defines them as “the benefits people obtain from ecosystems” (p. 3), and categorizes them into provisioning, regulating, cultural, and supporting services. Boyd and Banzhaf define “final ecosystem services” as “components of nature, directly enjoyed, consumed, or used to yield human well-being” (p. 619). Fisher et al. (2009) defines them as “the aspects of ecosystems utilized (actively or passively) to produce human well-being” (p. 645). Ruckelshaus and McClure (2007) define them as “the ‘outputs’ and experiences of ecosystems that benefit humans, and are generated by the structure and function of natural systems, often in combination with human activities” (p. 6). Therefore, it can be established that ecosystem services: i) come from natural ecosystems; ii) are essential for human welfare and health; and iii) can be enjoyed both passively and actively by human beings.

The ocean, a large natural ecosystem, provides essential services for sustaining life on earth. Through carbon dioxide absorption, heat and water redistribution, photosynthetic oxygen production, and carbon sequestration, it helps regulate the climate system and global weather patterns (Cooley et al., 2022). It also provides coastline protection, nutrition, and economic opportunities for human prosperity, aside from the aesthetic and cultural resources (Cooley et al., 2022). Therefore, oceans are critical for the functioning of Earth’s ecosystem, as well as for human well-being (FAO, 2020). Oceans not only provide an important source of food and nutrients, but they also are a source of employment for a large portion of the population, with calculations estimating that “about 600 million livelihoods depend at least partially on fisheries and aquaculture” (FAO, 2022, xvi).

B. Ecosystem Services of the Salish Sea and the Puget Sound Basin

The Salish Sea encompasses both the Strait of Georgia and the Puget Sound, therefore, indicators for the ecosystem health of the Salish Sea are applicable to the Puget Sound as well. It is “the largest inland sea on the west coast of Canada and the United States” (Butler, 2021, p. 46) and it is also considered to be “among the preeminent estuaries of North America” (Webber, 2021, p. 42). According to Webber,

Estuaries are four times more productive than terrestrial grasslands, are twenty times more productive than the open ocean, and rival the most productive terrestrial crop, sugar cane, in terms of biological productivity. Like forests, grasslands, and intensively cultivated agriculture lands, estuaries produce a high amount of organic material (p. 42).

The ecological characteristics of the Salish Sea explain its diverse wildlife, since it is composed of “marshes, mudflats, rocky shores, mixing of ocean currents, tides, and river flow” (2021, p. 46). This diverse seascape results in numerous ecosystem services that the Salish Sea provides. Butler (2021) mentions services such as tourism (e.g. bird watching and whale watching), food (e.g. salmon), recreation (e.g. water activities), home (“millions of people reside along its shores” (p. 46)), cultural (for indigenous peoples), and jobs (e.g. fisheries).

The Puget Sound region, following the characteristics mentioned above for the Salish Sea, is made of “a complex estuarine system of interconnected marine waterways and basins” and “includes the second largest estuary in the United States” (State of our Watersheds 2020, p. 30). Because of its varied topography, diverse wildlife communities have adapted to the region’s “specialized habitats”, while also presenting high sensitivity to multi-source disturbances, such as human and natural activities (Ruckelshaus and McClure, 2007, 1). These authors detailed some of the services provided by the Puget Sound, which are presented in the following table according to the Millennium Ecosystem Assessment’s classification scheme:

Provisioning Services	Regulating Services	Cultural Services	Supporting Services
<ul style="list-style-type: none"> • Food and fiber (salmon, shellfish, pulp) • Fuel (wood, coal) • Fresh water • Genetic resources • Biochemicals, natural medicines, and pharmaceuticals (from marine invertebrates and medicinal plants) • Ornamental resources 	<ul style="list-style-type: none"> • Air quality maintenance • Climate regulation • Water regulation • Erosion control • Water purification and waste treatment • Regulation of human diseases • Biological control • Pollination • Storm protection 	<ul style="list-style-type: none"> • Recreation and ecotourism (whale watching, hiking) • Cultural diversity (tribal, rural and urban, Asian) • Spiritual and religious experiences • Knowledge systems (traditional and formal) • Education • Inspiration • Aesthetic experience • Social relations • Sense of place • Cultural heritage values 	<ul style="list-style-type: none"> • Primary production • Production of atmospheric oxygen • Soil formation and retention • Nutrient cycling • Water cycling • Provisioning of habitat

Table 1. Puget Sound’s Ecosystem Services. Source: Ruckelshaus and McClure, 2007

Following Ruckelshaus and McClure’s approach, Batker et al. attempted to monetize the ecosystem services of the Puget Sound Basin, establishing a direct relationship between its “natural capital” and “the built economy and people’s quality of life” in the region (2008, p. 7). Acknowledging limitations and data gaps, the authors calculated that the Puget Sound Basin’s ecosystem provides “between \$7.4 and \$61.7 billion in benefits to people every year” (Batker et al., 2008, p. 5). Additionally, they calculated the economic asset value of the Puget Sound basin’s natural capital between \$243 billion and \$2.1 trillion.

II. The Northwest Straits and the Puget Sound: a threatened marine ecosystem

In 1998, the Murray-Metcalf Northwest Straits Citizens Advisory Commission warned about the deteriorating status of the Northwest Straits (NW Straits) marine ecosystem and the decline of some marine resources. At the time, they stressed the fact that current policies were neither reversing these trends nor slowing them down, urging for a different approach to managing the NW Straits (UW Washington Sea Grant Program, 1998).

The report mentioned several issues affecting the Puget Sound and NW Straits, such as depletion of marine resources, lack of scientific information on causes for degradation, and lack of effective governance and management (UW Washington Sea Grant Program, 1998). There was also a lack of clarity on what could be done to reverse these trends. Nine years later, in 2007, Ruckelshaus and McClure presented the Sound Report that also warned about the degradation of the Puget Sound ecosystem due to habitat loss and modification. They mentioned “human actions” as the main driver of change, including resource extraction (fishing and timber harvest), shoreline armoring and development, increased pavement and consequent clearing of vegetation, dams (water diversions), introduction of non-native species, recreational activities, changes to hydrology, watershed development, transportation, and pollution from toxins and pathogens (Ruckelshaus and McClure, 2007).

Twenty-five years later, several reports have followed the ones mentioned above, with updated information that provides a clearer picture of the ecosystem’s status. The Puget Sound Partnership released the State of the Sound report in 2023, detailing the progress on what they call “vital signs”, which measures the Puget Sound’s marine ecosystem’s health (Puget Sound Partnership, 2023, p. 20).

The following table summarizes the indicators that are worsening or those that raised concern in the past and have not improved (no trend).

Indicator	Status	Notes
Local Foods: dungeness crab for personal use	Getting worse	Low crab populations have caused harvest closures in South and Central Puget Sound since 2015
Air Quality: exposure to impaired air quality	No trend	85% of Puget Sound’s population exposed to impaired air quality, mainly due to wildfires
Drinking Water: nitrate concentration in source water	No trend	Higher nitrate levels in groundwater supply in Whatcom and Island counties compared to other Puget Sound counties
Local Foods: bivalve harvest for personal use	No trend	The 2021 heat wave caused some beaches to reduce harvest opportunities
Orcas: number of Southern Resident killer whales	Getting worse	The Southern Resident killer whale population continues to decline, currently there are 75 Southern Resident orcas
Birds: abundance of terrestrial bird populations	Getting worse	Forest interior species have declined since 1968

Salmon: number of natural-origin Chinook salmon on spawning grounds	No trend	Chinook spawner abundance population remains well below the recovery planning targets
Salmon: number of natural-origin Puget Sound steelhead on spawning grounds	No trend	Puget Sound steelhead spawner abundance population remains well below the recovery planning targets
Beaches and marine vegetation: floating kelp bed area	Getting worse	There is documentation of significant declines or concern of declines of kelp populations in some areas of the Puget Sound
Streams and floodplains: summer low flow in streams and rivers	Getting worse	The occurrence of below-normal summer flows is increasing in streams and rivers across Puget Sound (p. 40)
Toxics in aquatic life	Below target	PCB levels remain high in aquatic life in the different habitat types monitored in Puget Sound (river-estuary, benthic, and open waters). Monitoring over the last 20 years indicates that PCB levels are not decreasing and are actually increasing in some urban benthic habitats (p. 45)

Table 2. Indicators that show worsening, no trend, or are below target. Source: Puget Sound Partnership (2023)

In 2021, the Environmental Protection Agency (EPA) released the Health of the Salish Sea Ecosystem Report. In general, the EPA's report reinforces the Puget Sound Partnership's findings regarding Chinook Salmon ("Salish Sea Chinook salmon populations are down 60% since the Pacific Salmon Commission began tracking salmon abundance in 1984") and Southern Resident Killer Whales ("Since 2006, the population has generally declined and has not shown signs of recovery, with only 74 individuals as of December 2020") (EPA, 2021). It also mentions the decline in stream flows during the summer and the persistence of polychlorinated biphenyls (PCBs) and polybrominated diphenyl ethers (PBDEs) in some habitats and species (EPA, 2021).

On the other hand, the report deepens on other indicators that are a source of concern. For example, it found that the "total number of marine species at risk in the Salish Sea has doubled from 2002 to 2015" (EPA, 2021). Regarding the quality of the marine waters, the report highlights that dissolved oxygen levels have been declining "gradually and consistently over the past 70 years" (EPA, 2021). Overall, the Marine Water Condition Index Scores for 12 Regions of the Puget Sound show decreasing water quality for all regions since 1999 (EPA, 2021).

Western Washington University's Salish Sea Institute published "The State of the Salish Sea Report" in 2021. This report focuses more on the causes for the Salish Sea's ecosystem health's degradation. These factors can be summarized as following:

1. Increased population has led to increased development of infrastructure along the coast of the Salish Sea, resulting in fragmentation and habitat loss, which threatens the ecosystem's functioning.
2. Land use practices that harm the watershed – such as urbanization, industry, and agriculture – have impacted the estuary's biogeochemistry, flora, and fauna, coupled with weak regulation and lack of enforcement.
3. Replacement of vegetated land with pavement has a negative impact on hydrology since it prevents seepage of water into the soil, resulting in for example more flooding.
4. Past and current logging operations have reduced streamflow in forested watersheds, consequently impacting riparian vegetation and estuarine organisms negatively.
5. Excess sediment from erosion caused by construction and logging can lead to localized flooding and suffocate invertebrates that form the base of the ecosystem's food web (e.g. estuarine crustaceans and insects), disrupting ecological processes.
6. Shoreline hardening and armoring has led to loss of riparian vegetation and beach and disruption of biological and physical processes.
7. Increased presence of Contaminants of Emerging Concerns (CECs) will probably impact fish and wildlife, yet more studies are needed.
8. Population density has caused increased discharge of sewage by wastewater treatment systems with yet unclear consequences for wildlife.
9. Increase in ship traffic poses risks to marine life, for example because of threats of oil spills, ship strikes to killer and humpback whales, or underwater noise.
10. Continuing and emerging extractive industries pose risks to the estuarine ecosystem and the magnitude is yet unknown (for example, tidal energy projects or illicit harvesting).
11. Urban stormwater not only alters the hydrological flow regimes in watersheds, but also impacts water quality of streams, rivers, estuaries, and the Salish Sea, impacting aquatic and marine species.
12. Derelict fishing gear, although subject to numerous removal programs, have a negative impact on marine habitats and animals.

The Northwest Indian Fish Commission have highlighted similar issues found by the Salish Sea Institute's report, specifically those that limit salmon recovery, because of the significance it has in their culture. In the State of our Watersheds 2020, the Commission finds that the main factors hindering salmon recovery are habitat loss and degradation, caused by shoreline armoring, increase in impervious surface, loss of forest and riparian cover, fish-blocking culverts, water quality, well installations, and the presence of European Green Crab (State of our Watersheds 2020, p. 31). The Report emphasizes how ensuring preservation and restoration of habitat is the only way to recover salmon population.

III. Climate Change: An Aggregated Pressure

Besides presenting the different pressures posed to the Puget Sound and Salish Sea by human activities, all reports mention the increased impact of climate change in the region, and the projected effects it will have on the marine ecosystem. For example, threatening the recovery of the Puget Sound are climate change's impacts on stream flows and its temperatures, air and water temperatures, sea level rise, modification of weather patterns such as storms and precipitation, timing of biological events, water cycles, quality, temperatures, and salinity, reduced snowpack because of diminishing of glaciers, increased flows of winter floods, changing ocean chemistry, and increased wildfires, which affects essential habitats for human and species' well-being (Puget Sound Partnership, 2023; EPA, 2021; State of our Watersheds, 2020; Mauger et al., 2015). Despite this, according to the Puget Sound Partnership's report, there are currently only 46 programs addressing climate change (vs. 129 and 83 addressing habitat and water quality, respectively), and only \$160 million allocated to them (vs. \$1.423 and \$483 million allocated to habitat and water quality, respectively) (Puget Sound Partnership, 2023).

Climate change has disturbed coastal rivers' streamflow and temperatures, which directly impacts salmon and steelhead populations (State of our Watersheds, 2020). These species are facing risks in an already "lowered resilience of [salmon] ecosystems to climate change" (EPA, 2021), such as "lower levels of dissolved oxygen, more sediment in streams, greater susceptibility to disease, competition from warm-water species, and changes to the type and availability of prey" (State of our Watersheds, 2020, 25). Changes in water temperatures, for example warmer streams, significantly impact salmon's patterns of migration, growth, and resiliency to diseases (EPA, 2021; Mauger et al., 2015). Sea level rise is also damaging salmon habitat, and increased ocean acidification and decreasing water quality will likely have negative impacts on this population (Mauger et al., 2015).

Reports present a grim scenario for the Salish Sea's marine water quality. For example, climate change could increase water stratification (known as hypoxia) and decrease coastal waters' oxygen levels, leading to an increase in "dead zones" (EPA, 2021; Sobocinski, 2021; State of our Watersheds, 2020; Mauger et al., 2015). Toxicity of harmful algal blooms (or "red tides") could also increase, as well as coastal upwelling, considered a "major driver of changes in salinity, oxygen, and nutrients in Puget Sound" (Mauger et al., 2015, 7-2). Additionally, climate change is accelerating the loss of species, in some cases due to the reduction of species' habitats, such as wintering marine birds, which have been in decline since 1990, wolverine habitat or northern spotted owl habitat (EPA, 2021; Sobocinski, 2021; Mauger et al., 2015). Because of loss and transformation of habitats, marine species' abundance and diversity will be impacted (Mauger et al., 2015). How species are distributed will also be affected by changes in the climate, with some species expanding and others contracting or migrating due to changes in their geographic ranges (Mauger et al., 2015).

Human communities will also suffer from the climate crisis, and not equitably (Sobocinski, 2021; Mauger et al., 2015). For example, crops and livestock are likely to be affected by heat, low water availability during the summer, pests, and flood risks (Mauger et al., 2015). Tribal infrastructure and health are at increased risk because of sea level rise, floods, threatened

salmon and shellfish, impacts on ecosystems they rely on, and ocean acidification (State of our Watersheds, 2020; Mauger et al., 2015). Heatwaves, flooding, increased precipitation, and wildfires are all extreme weather events that are likely to impact the built environment in the Puget Sound region, including “transportation, drinking water, wastewater, and energy systems that serve the region’s population” (Mauger et al., 2015, ES-7). The shellfish industry and commercial fisheries in general are also being impacted by the increase in harmful algae bloom events (Mauger et al., 2015). Existing public health challenges will aggravate due to climate-related hazards, and new risks and diseases may appear (Mauger et al., 2015). Floods, heatwaves, and wildfires are expected to increase demand for medical services and hospitalizations (ibid). Also, even though more research is needed, climate-related events could impact people’s mental health, especially affecting vulnerable populations (ibid).

These reports stress that climate change impacts are happening within an already degraded and threatened marine ecosystem (Puget Sound Partnership, 2023; State of our Watersheds, 2020; EPA, 2021; Sobocinski, 2021; Mauger et al., 2015). Changes of the climate are coupled with a growing population and urbanization that exacerbates the effects mentioned above (State of our Watersheds, 2020; Sobocinski, 2021). What is more, understanding of the impacts of climate change in organisms and ecosystems processes and interactions, both today and in the future, is still incomplete (Sobocinski, 2021). There is an “associated uncertainty” on the projected impacts, “but climate models and empirical observations from recent years provide confidence in the general trends seen to date and expected in the future within the Salish Sea ecosystem” (Sobocinski, 2021, 132). Nevertheless, a variety of “potential outcomes” must be considered, and projections will be constantly updated as more information is made available (Mauger et al., 1-2).

IV. Marine Collaborative Governance

It is projected that the Puget Sound’s population will increase to 6 million by 2040 (State of our Watersheds 2020). Therefore, important action is needed to implement measures that ensure the sustainable development of the region, so the impacts on the marine ecosystem are reduced. Questions of how to best govern the marine ecosystem have haunted marine planners and academics for a long time, given the increased complexity and costly resources required.

Juda and Hennessy define governance as “the formal and informal arrangements, institutions, and norms which structure: (a) how resources and environment are utilized, (b) how problems and opportunities are evaluated, (c) what behavior is deemed acceptable or forbidden; and (d) what rules and sanctions are applied to affect the pattern of use” (2005, p. 44). The more people and institutions are involved in governing marine space, the more *collaborative* this governance is. For Soma et al., marine governance “involves interaction between, on the one hand, institutions operating at several levels, and on the other hand, state actors, market parties, supranational organizations and civil society” (2015, p. 5). These authors mention how increasing interaction and integration leads to “a sharing of competences among different and new actors”, which is expected to positively influence cooperation, “needed for policymaking to govern activities at sea and to control their consequences” (ibid).

Marine governance, according to Soma et al., must be based on “the principles of good governance”: accountability, legitimacy, responsibility, representation, and transparency (2015, p. 9). Within the marine governance realm, Marine Spatial Planning (MSP) has gained prominence because of its “ecosystem-based management approach” (Smythe and McCann, 2018, p. 228). These authors define MSP as “a comprehensive planning approach that considers all of the natural resources, processes, and human uses of a given area of marine space with the goals of identifying areas appropriate for specific uses, resolving user-user and user-environment conflicts, and achieving a range of conservation, development and other objectives” (2018, p. 228). For Flannery et al., MSP has been “promoted as a means of addressing the democratic deficit within marine governance by providing a mechanism through which all those with a stake in marine management can participate in related decision-making processes” (2019, p. 202).

To ensure MSP policies’ success and durability, stakeholder engagement, including communities, and interinstitutional cooperation, that is, collaboration between agencies and organizations, have been deemed critical (Tonino, 2018; Tafon et al., 2023; Smythe and McCann, 2018; Soma et al., 2015; Van den Burg et al., 2023). These elements are part of what the scholarship has termed as “collaborative governance”, which can be defined as “a collective decision-making process that allows diverse sets of actors who share an interest or stake in a policy or management issue to work together toward mutually beneficial outcomes” (Gerlak et al., 2013, p. 1). Collaborative governance has emerged as an alternative for delivering services, developing policies, and implementing management plans, since they are “seen as better able to address local problems” (Koontz and Thomas, 2021, p. 313; also, Gerlak et al., 2013). For example, by sharing knowledge on the local environment, people’s understanding of the marine ecosystem increases, and thus value it more (Poe et al., 2016).

How much stakeholders participate depends on the different degrees and levels of engagement, and what benefits and/or outcomes are expected (Morf et al., 2019). Ensuring effective and meaningful stakeholder participation in marine governance is crucial due to its complexity and intense resource requirements (Morf et al., 2019). In general, it is recommended that stakeholders are included in the early stages of a process that follows transparency and openness (Smythe and McCann, 2018). More specifically, mechanisms for engaging stakeholders include collaborative scientific efforts (joint fact-finding, citizen science), institutional arrangements for co-decision making and co-management (advisory councils/committees, management boards), and partnerships for control and coordination (Smythe and McCann, 2018; Morf et al., 2019).

2.2 A History of the Northwest Straits Marine Management

In the late 1990s, the NW Straits region in Washington State faced a concerning decline in its marine resources, prompting a proposal for a National Marine Sanctuary. However, local resistance, fueled by fears of a top-down approach, led to the abandonment of the sanctuary idea.

Amidst this setback, a resilient commitment from diverse leaders emerged; in 1997, U.S. Senator Patty Murray and U.S. Representative Jack Metcalf established the Murray-Metcalf Commission, tasked with exploring alternative models for marine resource protection. The Commission unanimously recognized the serious trouble facing the NW Straits marine ecosystem. Their year-long research culminated in the Report to the Convenors, which laid the foundation for the Northwest Straits Initiative.

Acknowledging the need for a coordinated effort blending science with grassroots consensus building, the Northwest Straits Marine Conservation Initiative (“the Initiative”) was born. Authorized by Congress in 1998, the Initiative stands as a testament to the region's commitment to a community-driven approach for the preservation of its precious marine resources. While federal and state regulations existed for NW Straits, there was a crucial need to tap into the energy and expertise of local citizens. This unique approach sought to engage local residents actively in the restoration and protection of marine resources.

Through the Initiative, three different subgroups were created: the NWSC, the MRCs, and the Northwest Straits Foundation, which are all essential components of the overarching Initiative. Given that the scope of this project falls within the NWSC and MRCs components, this paper focuses on the NWSC and MRCs.

I. Program Evaluation

The Murray-Metcalf report mandated that the Initiative undergo a thorough, independent program review at the end of its initial six-year term. To comply, a panel chaired by Bill Ruckelshaus evaluated the Northwest Straits Initiative in 2004. The eight-person NW Straits Evaluation Panel held four days of hearings. The panel found that the Initiative had achieved success in key areas, including:

- Mobilizing broad citizen support for marine conservation
- Bringing people together to work cooperatively on issues
- Increasing voluntary compliance with conservation goals
- Tapping local energy to generate on-the-ground projects
- Contributing to scientific understanding of the marine ecosystem
- Spreading innovative ideas between counties
- Creating a model of marine governance that can be adapted to other locations

The evaluation panel's recommendations included:

- Congressional reauthorization for 8-10 years
- Increased federal funding to \$1.6 million
- Replication of this model elsewhere
- Establish strategic priorities for the future

The evaluation panel encouraged the Commission to review and modify the current benchmarks and take on focused strategic planning. In 2005, the Commission and the MRCs finalized a set of revised goals and benchmarks.

In Snohomish County, the NWSC plays a crucial role as the regional coordinating body for local MRCs, ensuring a united front in the ongoing efforts to safeguard and revive the marine environment. The "Marine Resources Committee 2022 Annual Report" for Snohomish County highlights the MRC's efforts in restoring, conserving, and educating the community about marine resources. Parts of the report will be included throughout this section.

The 2023 Chair, Natasha Coumou, highlighted the key role the MRC plays in the following message:

"Natasha Coumou acknowledges the dedication of volunteers and Surface Water Management staff in managing natural resources, emphasizing partnerships with local entities and tribes for effective stewardship."

II. 2022 Snohomish County MRC Report Highlights

The Marine Resources Committee 2022 Annual Report reflects a comprehensive overview of the MRC's activities, showcasing a commitment to environmental stewardship, community engagement, and ongoing efforts to protect and enhance marine resources in Snohomish County. See Appendix A for excerpts from the report.

A. Finance

The Report provides details on the MRC's annual budget sources, including utility charges, grants, and volunteer hours, showcasing the cost-effective implementation of projects. Much of the MRC's work is provided through volunteer hours, which totaled over 1,000 hours in 2022 alone. Volunteers supported a myriad of activities, such as providing a forum to mobilize citizen engagement.



Figure 4. Estimated Value of a MRC Volunteer Hour

B. Restore

The Report highlights various projects aimed at restoring marine habitats, including the Meadowdale Beach Estuary Restoration Project, derelict vessel removal, and forage fish

spawning surveys. The restoration projects serve as opportunities for community engagement and building networks and relationships between one another. Consequently, they have positive impacts on the community, fostering enthusiasm and encouraging citizens to participate in restoration efforts. The projects involve collaboration with tribes, local citizens, and volunteers, showcasing a collective effort to achieve common goals in restoring shellfish populations.

David G. Gordon produced a progress report on the Northwest Straits Initiative, titled “Citizen-based marine restoration and protection in action” in 2003. This report highlights shellfish restoration projects, including the efforts to restore native Olympia oysters in the NW Straits, which have faced challenges due to overharvesting and habitat degradation.

Restoration initiatives involve planting juvenile Olympia oysters in specific locations, such as tidelands under abandoned railroad trestles in Fidalgo Bay and along the shoreline of Discovery Bay. It also mentions the importance of collaboration with various entities, including tribes, nonprofit organizations like the Puget Sound Restoration Fund, and funding support from entities like the Shell Puget Sound Refinery and NOAA's Community-Based Restoration Program.

C. Conserve

The report highlights the MRC's efforts in conserving marine habitat, particularly focusing on kelp monitoring, marine vegetation studies, and the Caged Mussel Water Quality Study.



Figure 5. Spotlight of the MRC Bull Kelp Monitoring Program

D. Educate

The report outlines educational initiatives, including the Plastic Free Salish Sea campaign, crabber education and outreach, and citizen science through the MyCoast App.

E. Monitoring and Health Assessment

The reports emphasize the importance of monitoring the health of shellfish beds, including monitoring for paralytic shellfish poisoning and other health-threatening effects of harmful algal

blooms. The data collected from monitoring activities support decisions related to the reopening of high-quality clamming beaches after decades of closure (Gordon et al., 2003).

2.3 Marine Resource Management in Puget Sound and Beyond

I. Introduction

Marine resource management encompasses a multifaceted approach aimed at the sustainable utilization, conservation, and equitable distribution of resources within marine ecosystems. It is an interdisciplinary field that integrates principles from marine biology, ecology, economics, policy, law, and social sciences to address the complex challenges facing the world's oceans.

At its core, marine resource management seeks to balance human needs and activities with the preservation of marine ecosystem services and biodiversity. To be effective, planning efforts must understand the dynamics of marine ecosystems, including the interactions between species, habitats, and human activities such as fishing, shipping, tourism, and pollution.

Key components of marine resource management include:

1. **Resource Assessment:** This involves monitoring and assessing the status of marine resources, including fish stocks, marine mammals, nearshore estuaries and eelgrass, and other habitats. Scientists use various techniques such as stock assessments, biodiversity surveys, and remote sensing to gather data on the abundance, distribution, and health of marine resources.
2. **Regulatory Frameworks:** Effective management of marine resources requires the development and implementation of policies, regulations, and management strategies at local, national, and international levels. These frameworks aim to prevent overexploitation, minimize environmental impacts, and promote sustainable use of marine resources. Examples include catch limits, marine protected areas, zoning regulations, and ecosystem-based management approaches.
3. **Stakeholder Engagement:** Given the diverse interests and stakeholders involved in marine resource management, including governments, industry, non-governmental organizations, and local communities, effective engagement and collaboration are essential. Stakeholders often participate in decision-making processes, contribute local knowledge, and help shape management strategies that are socially acceptable and culturally relevant. The myriad of stakeholders clearly requires a comprehensive look at the varying interests and priorities of siloed entities that could greatly benefit from collaboration.

The general public is a major stakeholder but is, for sake of this assessment of marine resource management, represented by the numerous individuals who have historically been involved in the work and decision-making processes that determine which projects

move forward and when. Due to the scope of this project, there is no meaningful way to list any stakeholders as being exclusively symbolic of the marine resource community.

4. **Economic Considerations:** Economics plays a significant role in marine resource management, as decisions about resource use often involve trade-offs between short-term economic benefits and long-term sustainability. Economic tools such as cost-benefit analysis, market-based incentives, and payment for ecosystem services are used to evaluate the economic implications of management decisions and promote sustainable practices.
5. **Adaptive Management:** Recognizing the inherent uncertainty and complexity of marine ecosystems, adaptive management approaches are increasingly employed to address dynamic and evolving challenges. This involves iterative processes of monitoring, learning, and adjusting management strategies based on new information and feedback from stakeholders.

Overall, effective marine resource management requires a holistic and integrated approach that considers ecological, social, economic, and governance dimensions. By promoting sustainable practices and conservation efforts, marine resource management aims to ensure the long-term health and resilience of marine ecosystems while supporting the livelihoods and well-being of present and future generations

II. Marine Management Approaches in the Puget Sound

Washington State's marine ecosystem is managed by the State's Department of Ecology (DOE), Department of Fish & Wildlife (WDFW), Department of Natural Resources (DNR), and various counties and cities that border or contain marine shoreline. Marine resources can be managed centrally, by using community-based approaches, through informal management, traditional management or through a mix of those approaches – what is best for a particular ecosystem is dependent on local social, political, and ecological contexts.

A. Centralized Management

As mentioned earlier, marine protected areas (MPAs) are an example of a centralized management approach. Research has promoted them for the purpose of biodiversity conservation and to support sustainable fish harvests (Levine et al., 2015).

Washington State has 127 MPAs which are managed by federal, state, and local agencies and contain “over six million feet of shoreline” and cover “approximately 644,000 acres.” The MPA Work Group, which reports to the State Legislature, was formed in 2008 and is chaired by the WDFW (Van Cleve, 2009). WDFW categorizes these MPAs across three types:

- Conservation Areas where the harvest of all marine resources is prohibited.
- Marine Preserves where the harvest of some marine resources is prohibited.

- Sea Urchin and Sea Cucumber Exclusion Zones where the harvest of only these species is prohibited.

Another centralized approach used in Washington are aquatic reserves, which are managed by the DNR. There are eight such reserves in the state which were established to “protect important native ecosystems on state-owned aquatic lands” (DNR, n.d.). DNR identifies the following benefits of an aquatic reserve designation:

- Conserve and enhance native habitats
- Protect and restore natural functions and processes of the shoreline and intertidal zones
- Promote stewardship of aquatic habitats and species in collaboration with citizens, tribes, resource managers, and other stakeholders

B. Community-Based Management

The MRC approach followed by the NWSC is an example of a community-based management scheme. These MRCs empower local residents and stakeholders to participate in decisions around the best management of their community’s marine ecosystem. There was a time when researchers feared that community-based marine resource management – which originated in the Pacific Islands – was on the decline, but the approach has resurged in popularity (Johannes, 2002). This design is particularly effective, as the volunteer members of the committees act as perception experts, who can reflect the desires, concerns, and opinions of individual stakeholders at decision-making meetings (Beyerl et al., 2016).

2.4 Understanding Needs Assessments

I. Needs Assessment Definition

The main goal of a needs assessment is to identify, define, and understand gaps, specifically “between what is happening and what is desired” or “what currently is and what should be” (NOAA Office for Coastal Management, 2023; Altschuld, 2014). Once this has occurred, needs are analyzed in relation to one another, and ultimately placed in order of priority to guide decision making processes and target efforts. (Altschuld, 2014; Sorian, 2013). More concisely, needs assessments can be thought of as an approach to determining priorities for future actions. It is important to note that needs assessments are usually solely focused on identifying gaps, rather than identifying “wants” or possible solutions (Altschuld et. al, 2014).

Determining the reasoning behind completing a needs assessment, and whether it is internally or externally driven, is key to successful planning and execution. Common motivations for conducting needs assessments include: justifying funding, complying with regulations or laws, informing resource allocation and decision making to make the most of limited resources, assessing specific, underserved populations, and contributing to program evaluations (Sorian, 2013).

While conducting needs assessments can be spurred by a program evaluation, there is a distinction between the two. Needs assessments are often completed prior to designing and implementing a new idea or program, whereas program evaluations are often completed to gain information prior to *and* following the design or implementation of a program. If done properly, needs assessments can be embedded in each stage of a program evaluation. Additionally, needs assessment results – that is, the gaps that exist – can be used in conjunction with other evaluation findings to drive solutions and interventions (Soriano, 2013; Altschuld et. al, 2014).

Investing in needs assessments has the ability to convey that an organization is utilizing a more “open-minded approach” to make decisions. This requires true engagement with communities and a variety of stakeholders, as well as internal commitment, to successfully executing a needs assessment (Soriano, 2013). During this process, it is critical for organizations to give ownership to communities, allowing for gaps to “be perceived and acknowledged as a need by a community” themselves (Reviere et. al, 1996). With this approach, community input is regarded as a valuable contribution that can lead to more novel solutions (NOAA Office for Coastal Management, 2023; Soriano, 2013).

II. Historical Background

Given the broad nature of needs assessments, there has been much evolution in the space since assessments first gained popularity in the 1960s. The history of needs assessments can be broken into three main categories: development, criticism, and redevelopment.

- a. *Development, 1960s – 1980s:* The Elementary and Secondary Education Act was passed in 1965, which aimed to define education goals and needs. This work adapted previous work done around psychology needs to the education sector. As such needs assessments were widely applied to public schools and school districts throughout the United States (Altschuld et. al, 2014).
- b. *Criticism, 1980s – 2000s:* Once needs assessments became a more commonplace practice, though still occurring predominantly within the education sector, criticisms began emerging. Criticisms highlighted that a “top-down” and “outside-in” approach was guiding best needs assessment practices, arguing that it was in turn limiting the ability to gather community input and excluded a more human perspective (Altschuld et. al, 2014).
- c. *Redevelopment 2000s – Present:* Needs assessments have been shaped by time, legislation, and academics, and are still experiencing a transformation process (Altschuld et. al, 2014). Literature is continuing to emerge about best practices and new mandates are appearing in other sectors. For instance, the Affordable Care Act (ACA), passed in 2010, mandates nonprofit hospitals to conduct community health needs assessments. With this mandate, nonprofit hospitals must conduct a community health needs assessment every three years and integrate community needs into implementation strategies (Cain et. al, 2016). While needs assessments are not mandated in every sector or for every organization, many are now viewing community input as a beneficial practice that can identify needs that may have otherwise gone unidentified (NOAA Office for Coastal Management, 2023).

III. Needs Assessments in the Environmental Sectors

Currently, there is no needs assessment mandate, or even widespread assessment or community engagement guidance, in the environmental or marine sectors. The majority of needs assessments and corresponding literature is focused on the education and health spaces, and while these have valuable takeaways, there is no specific guidance for environmentally related organizations.

The National Environmental Protection Act (NEPA) was passed in 1970 with the goal to standardize environmental review procedures for federal agencies. As a result, NEPA requires federal agencies to review environmental impacts through categorical exclusions, environmental assessments, and environmental impact statements. Throughout these review processes, federal agencies are encouraged to communicate with the public, but are not mandated to involve the public or local communities (Alexander, 2007). While NEPA is a prominent environmental act in the United States, the limited opportunity for stakeholder engagement and lack of ability to integrate community knowledge into environmental review processes limits NEPA's ability to effectively engage with communities (Ulibarri, 2022).

Given that there are no mandates for needs assessments in the environmental sector, they are conducted at the discretion of individual organizations. Additionally, while needs assessments may not specifically be conducted, community engagement has become a more commonplace practice.

The Oceans and Human Health discipline is an example of a sector that has historically incorporated little community input into its work, but is working to increase engagement with community partners as marine ecosystems decline at a rapid pace. As such, Oceans and Human Health updated its framework to center focus on community outreach, specifically noting the importance of initiating this process at the beginning of a participation practice and continuing it throughout (Caron et. al., 2022).

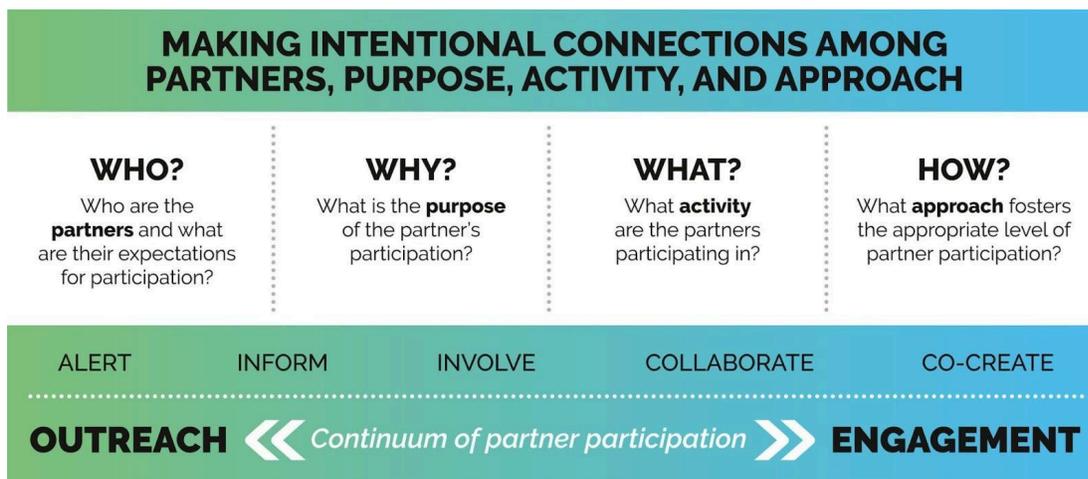


Figure 6. Strategic Framework for Oceans and Human Health Community Outreach and Engagement

These community engagement techniques can be used as a guide for best practices and adapted when conducting needs assessments.

IV. Needs Assessment Guide Examples

There is no one correct way to conduct a needs assessment, however there are guiding steps and considerations that can lead to the execution of a successful needs assessment. It is important to acknowledge there is not extensive literature or guidelines in existence for organizations to utilize as they develop their own needs assessments. Rather, the following examples provide broad, overarching best practices and are relatively representative of other existing resources.

For the purpose of this section, two different guidebooks are analyzed. The first is NOAA's "Needs Assessment Guide: Overview" and the second is the U.S. Department of Education's (DOE) "Needs Assessment Guidebook" (NOAA Office for Coastal Management, 2023; Cuicco, 2018).

a. Guidebook Analysis

NOAA and DOE categorize action into specific phases and steps or considerations. NOAA outlines three phases, including planning, data collection, and reporting, while DOE outlines five phases, including planning, collecting and organizing data, interpreting information, determining priorities, and connecting to implementation. These actions span the entirety of the needs assessment process and guiding steps, such as outlining priorities, specifying target populations, determining sampling methods, and conducting stakeholder outreach. Additional information can be found in Appendices [B](#) and [C](#).

Each guidebook also provides guiding questions specific to each respective industry. The below table outlines example questions provided by NOAA and DOE, highlighting the similar goals embedded in each question, yet also how each specific industry impacts needs assessment design and questions.

Phase	NOAA Questions	Example	DOE Example Questions
Planning	In the coastal community, region, or state (or geographically affected area), is this issue or problem of high priority or concern among stakeholders (i.e., likely to have greater traction)?	Why are we engaging in the needs assessment (beyond compliance)? What are we hoping the impact will be at the classroom, building, and system levels?	Who are the key stakeholders who need to be engaged and at what points in the process?

Data Collection	Have pre- and post-data collection procedures (e.g. appointments for interviews and follow-up with participants) been addressed?	Which data will be provided to districts or schools, and which data must be added or collected at the local level? How can all data be presented in a way that is easily understood by stakeholders?
Interpret/ Analyze Data	Are the perspectives and information needs of stakeholders clear, especially those who will make decisions based on the results? In what format does the audience prefer to receive and process information?	Are there places in which the various stakeholder voices disagree with one another or present a different perspective than your own? How can the underlying causes of these differences be explored? How can we articulate what we have learned in language that is specific to our community yet does not cast blame?

Table 3. Questions from NOAA and DOE Guidebooks

b. Guidebook Comparisons

Both guidebooks acknowledge that needs assessments are complex tasks, but that the structured approach in each respective phase and step can help facilitate the process. NOAA and DOE communicate that a thorough planning phase focused on determining issues and creating an extensive outline is a key step in the process. Another important element emphasized by both organizations is that a motivated, knowledgeable team is also critical. Teams determine who will be included in the process, which is essential to accurately identifying community needs. Teams also determine which steps may require more focus than others and can alter the effectiveness of the entire process. As conveyed in the steps, this should be done at a local context using as much local knowledge and input as possible.

Furthermore, rigorous data collection and data analysis methods should be utilized. This includes using high-quality, diverse data that collects multiple viewpoints. To achieve this, both NOAA and DOE articulate the need for stakeholder engagement during all phases of the needs assessment process. DOE greatly emphasizes how stakeholder engagement and communication helps gather diverse viewpoints, while also building relationships and trust as a means to increase long-term investment from as much of the community as possible.

V. Community Needs Assessment - Environmental Case Studies

Now that a baseline for understanding what needs assessments seek to achieve and the steps to identifying gaps has been established, this section highlights specific needs assessment case studies. These case studies are specific to the environmental sector and provide examples as to how to conduct a successful needs assessment as related to this specific project.

The different case studies highlighted below isolate various parts of the needs assessment process. The first case study, the Long Island Sound Study (LISS), outlines a comprehensive planning phase of a needs assessment. That is, the steps required to scope and perform a community-driven needs assessment. The second case study, conducted by the Ohio Department of Natural Resources Office of Coastal Management, outlines how outreach was conducted, with example focus group questions highlighting how input was gained.

a. New York Sea Grant and Long Island Sound Study

The LISS is a national estuary program composed of federal and state agencies, user groups, organizations, and individuals dedicated to restoring and protecting Long Island Sound in Connecticut and New York. In 2022, LISS conducted a regional needs assessment “to better understand the environmental threats and hazards that they are most concerned about, what communities may already be doing to address these issues, and what barriers they are facing when it comes to implementing projects and taking action.” To achieve this, LISS scoped their needs assessment and developed five tasks to guide the needs assessment. These tasks mirror the phases presented by NOAA and DOE, including:

1. Conduct Exploratory Phase: identify overburden communities, summarize initial findings
2. Design the Study Methods: form community engagement, draft methodology
3. Draft the Study Questions
4. Study Implementation and Data Collection
5. Draft EJ [environmental justice] Needs Assessment Reports and Presentations

Following these tasks, LISS had 300+ conversations with stakeholders and produced a needs assessment report in April 2023. This report identified top environmental threats to Long Island Sound, such as sea level rise, extreme weather, water quality, and coastal erosion. Specific barriers to implementing sustainability and resiliency initiatives, as well as identified next steps. Here, LISS identified gaps and used new information to provide a path forward. Additional information about study results can be found [here](#) (Long Island Sound Study, 2023).

b. Lake Erie Shore Erosion Management Plan: Local Community Needs Assessments

In 2007, the Ohio Department of Natural Resources Office of Coastal Management conducted a local community needs assessment to gather information relevant to creating an erosion management plan. To achieve this, the office outlined specific objections of the needs assessment and subsequently organized a focus group. The office viewed the needs assessment as achieving two goals: gaining community input to help draft the plan and establishing long-term community relationships.

Focus group questions included:

1. How has erosion of the Lake Erie shore affected you or someone you know?
 - a. When is Lake Erie erosion a problem?
2. What causes Lake Erie shore erosion?

3. What can be done about Lake Erie shore erosion?
4. What are some of the best management practices related to shore erosion?
5. What are some benefits of adopting the best management practices to reduce Lake Erie shore erosion?
6. What prevents people from adopting the best management practices to reduce Lake Erie shore erosion?
7. What would increase adoption of best management practices to reduce Lake Erie shore erosion?
8. What additional knowledge and skills would help people better manage Lake Erie shore erosion?
 - a. Who needs knowledge and skills?
 - b. What are the specific knowledge and skills?
9. How would you like to receive information?
 - a. Workshops, seminars, fact sheets, technical guidance, web-based information, etc.?
 - b. What are the best locations, times, lengths of services or sessions?
10. What technical assistance is needed on Lake Erie shore erosion?
11. Is there anything else?

Focus groups identified four target groups: lakefront property owners, community officials, engineers, and contractors. After conducting focus groups, the office analyzed responses and identified three common themes. These themes represented findings from the entire needs assessment process, providing deeper insights into community perceptions of government, in addition to insights about erosion specific issues. Both the outreach and execution of the focus groups provided the office with valuable information from a community perspective.

2.5 Major Takeaways

The literature review helped the UW Team familiarize themselves with Snohomish County's marine environment and the history of the NWSC, while also providing broader insights into marine management and needs assessment best practices. This information guided the overall project, including crafting the RQ, developing the needs assessment, and creating the codebook.

Section	Use
2.1 Zooming in on the Puget Sound Basin	Scoped the project; created RQ; developed codebook
2.2 NWSC and the Snohomish County MRC	Scoped the project; created RQ; developed codebook
2.3 Marine Resource Management in Puget Sound and Beyond	Guided overall project development

2.4 Needs Assessments	Scoped the project; created RQ; developed interview questions; analyzed results; crafted recommendations
-----------------------	--

Table 4. *How the literature review informed the pilot study*

Sections 1 and 2 served a twofold purpose: developing the interview questions and the codebook. With baseline knowledge of the challenges and changes within Puget Sound and Snohomish County, the UW Team was able to better understand the purpose of the project and develop a RQ that honed in on community concerns and priorities. When creating the codebook, the UW Team used the existing services and indicators from Section 1 to create parent and child codes. Parent codes are standalone codes that contain the full description of a procedure, while child codes are indented codes that contain the same information up to a semicolon, followed by different options that apply to the parent code. Section 2 also provided insights as to Snohomish County specific activities or concerns, such as derelict vessel removal and kelp monitoring, which were also used to inform parent and child codes.

Section 3 provided insights into the MRC’s work and the purpose of this pilot study, with components such as stakeholder engagement and adaptive management acting as guiding principles throughout the duration of the project and pilot study.

Section 4 highlighted best practices and case studies from the needs assessment section, which aided the UW Team as they crafted interview questions. Specifically, the Lake Erie Shore Erosion Management Plan focus questions provided in-depth examples of well thought out questions to ask interview participants for this project’s pilot study. The NOAA and DOE needs assessment guides provided steps for the UW Team to follow during the data collection, analysis, and recommendation phases of the pilot study as well.

Overall, this literature review played a large role in informing the UW Team about local marine issues, scoping the overall project, executing a successful pilot study, and developing relevant recommendations for future use of needs assessments.

Chapter 3: Research Methods

3.1 Qualitative Methodology

The present project aimed to address the RQ: *How can Marine Resources Committees (MRCs) assess their local communities' concerns and priorities related to their marine resources?* To answer this question, the UW Team adopted a mixed-methods approach, consisting of primary and secondary sources analysis, and using qualitative methods such as conducting interviews and coding.

According to Johnson, qualitative research “focuses on stories and observations, seeking in-depth understanding based on first-hand experience of people and their environment” (2015, 12). Understanding local communities' concerns and priorities requires connecting with people to seek their input on a specific topic, in this case, the marine environment and its resources. Given the characteristics of qualitative research, the team considers this is the most adequate method to collect this data, since it is less structured and allows for conversations with community members that will provide “a more nuanced understanding” of the topic (Hoggard et al., 2002, 65).

3.2 Secondary Sources Analysis

To update the existing community needs assessment framework developed previously by and for Island County, the UW Team relied on existing resources to develop new questions and modify some existing ones. This required conducting an in-depth literature review on a series of topics to allow for a comprehensive revision of the existing framework. Gray literature and academic journals were reviewed on the following topics: the current state of the Salish Sea and the Puget Region, threats posed by climate change and human activities, marine collaborative governance, best practices for community engagement, frameworks to develop needs assessments, and effective marine resources communication. Given that the project has a pilot study component, we collected information on Snohomish County's unique climate risks, geography, economy, demographics, and community attitudes.

3.3 Pilot Study

Research has shown that pilot studies are key for supporting research conducted using mixed methods. Pilot studies can help researchers refine research instruments, assess research and recruitment protocols, collect preliminary data, preempt possible challenges in data collection and analysis, increase confidence in conducting qualitative research, and secure funding (Williams-McBean, 2019). Ultimately, pilot studies can inform where changes need to be made in questions or procedures to ensure that quality data is collected and are a critical component of conducting qualitative research (Malmquist et al, 2019).

As such, this project used the Snohomish County MRC to pilot an interview guide, volunteer training, and contact form that were developed by the UW Team (see Appendices [D](#), [E](#), and [F](#)

for these materials). This allowed the UW Team to glean insights and lessons from the trainings and interviews, and update the materials. This method allows for improved technique moving forward, both as used by the Snohomish County MRC for future interviews and with the remaining six MRCs. Allowing other MRCs to utilize the framework is a key component of this project, which is why conducting a pilot study and ensuring materials are sound is critical.

I. Interviews

Interviews are one of the most common data collection methods in qualitative research because they allow for a “close-encounter” between researchers and participants (Hoggart et al., 2002). For this project, the UW Team aimed to understand community members’ concerns and priorities on a specific topic, marine resources, which requires asking questions that go beyond “yes or no” answers. The reflection that is required from the participant can be better addressed through asking open-ended questions, rather than asking people to complete forms or surveys (Hoggart et al., 2022; Johnson, 2015). Interviews can be structured, semi-structured, or a combination of both. Given the topic in question, the team chose to work with semi-structured interviews, aiming for a more fluid conversation between researchers and interviewees, that allows respondents to answer without predetermined constraints (Johnson, 2015). This approach opens the opportunity to gain rich data on what are the communities’ general concerns and priorities regarding marine resources.

Semi-structured interviews require developing a series of data collection instruments, such as pre-interview forms and interview guides. An interview guide contains the general topics that will be covered, the main questions the researcher must ask to answer the RQ, probes for each question to encourage conversation, and extra questions to be asked if there is time, as well as a general script for the introduction and conclusion (Rossi et al., 2015). The guide is generally “used to guide researchers through the key topics that need to be covered” during the interview, ensuring that there is consistency across all interviews, especially in cases where more than one researcher is doing field work (Rossi et al., 2015, 189).

The pre-interview form is meant to collect the potential participant’s demographic information, as well as the best time to contact them in order to conduct the interview. This approach allows the research team to skip asking these questions during the interview, and still be able to collect demographic data for the final sample’s characterization.

II. Sampling and Recruitment

The RQ required seeking community members within a specific county to learn about their priorities and concerns. Therefore, the UW Team used a nonrandom purposive sampling approach to interview community members within the counties. Purposive sampling consists of establishing “specific, predetermined criteria” for the people to be interviewed, considering the RQ and purpose of the study (Johnson, 2015, 156).

Once defined the sampling method, the team contacted representatives of the Snohomish County MRC and asked for a list of possible interviewees to recruit for the interview process.

This allowed us to examine the “best cases,” specifically individuals within the community with a basic or expert knowledge on marine issues (Rossi et al., 2015). To recruit possible participants, an initial email was sent with a link to a contact form that allowed participants to choose the best means for contact, as well as provide options for dates and times for the interview (See Appendix [G](#)).

III. Post-interview Memos

Following each interview, the UW Team and accompanying MRC staff or volunteers completed a post-interview memo to capture any thoughts, reactions, and comments about the interview. The goal of post-interview memos is to record ideas that may not be capturable through audio recordings or transcripts, such as participant tone, body language, and reactions. Post-interview memos are generally brief, as they act as an aid to create space for interviewers to debrief immediately after completing an interview.

Two memos were created, specific to the UW Team and MRC staff or volunteers (See Appendices [H](#) and [I](#)). Both memos focused on capturing general thoughts and comments, and the UW memo included additional questions specific to the interview guide and post-interview coding work. For example, the UW Team brainstormed relevant analytic codes to support the development of the codebook, which is discussed in more-depth in the following section.

Post-interview memos were reviewed after completion and any feedback related to framework improvement was incorporated in real time. As such, subsequent interviews utilized the updated interview guide. Upon the completion of all interviews, the UW Team and MRC staff or volunteer post-interview memos were analyzed separately to understand main takeaways from each group of interviewers.

IV. Post-interview Coding

Interviews were recorded and transcribed for further analysis. Using an abductive approach, the UW Team developed an “analytical framework and a coding scheme” (Johnson, 2015, 162). The abductive approach consists of developing a framework with previously assigned codes based on the RQ, but also allowing for “emergent coding frameworks that identify codes directly from the data” (Rossi et al., 2015, 562). Consequently, the analytical framework, or codebook, was constantly evolving once the analysis of the interviews began, since the purpose is to “look for common words, themes, and patterns” that emerge from the transcripts (Ibid, 163).

For illustration purposes, the following figure shows the concept of analytical framework:

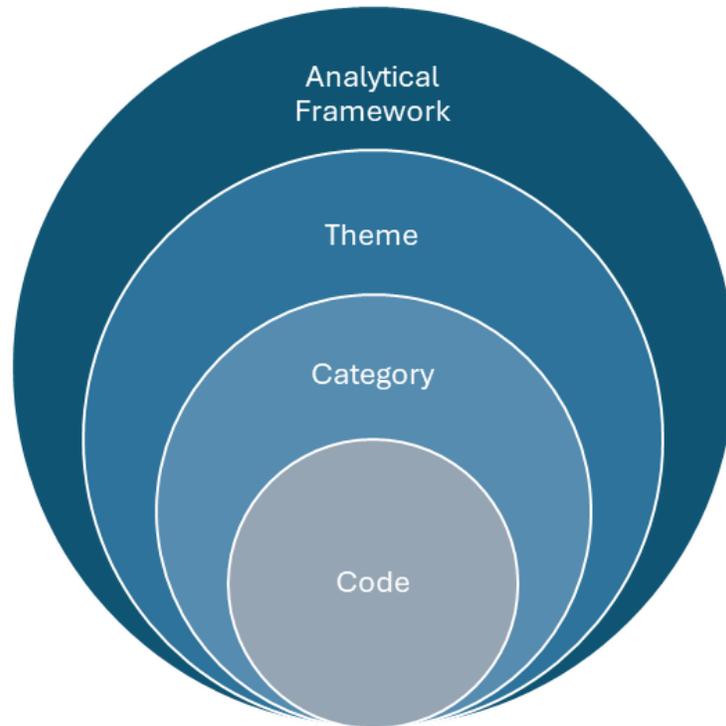


Figure 7. *Codebook concept*

Rossi et al. provide the following definitions for the concepts illustrated above (2015, 564).

- Code: “descriptive word or phrase that is intended to describe a fragment of data.”
- Category: “incorporates a collection of codes that relate to the same issue, topic, or feature in the data.”
- Theme: “the outcome of categorizing and reflection by the evaluator on salient patterns in the data.”

Using the interview guide as the basis, the UW Team developed the codebook with the parent and child codes. This is a method where a hierarchical relationship is developed between main themes (parent) and secondary themes (child). This allows researchers to group certain topics discussed into general, bigger subject areas. The following table contains the parent/child codes developed by the team:

Parent/Child Codes						
MRC	Solutions	Challenges	Changes	Stakeholders	Communication	ME Meaning
Describes any reference to the Snohomish County MRC's work	Describes actions being taken to solve current challenges or issues, as well as specific institutions involved in those actions	R ² describes both issues or challenges noticed in the marine environment, both current and in the future, as well as external factors impacting negatively the marine environment	R refers to any change or transformation suffered by the marine environment from a personal perspective	R mentions other stakeholders as parties interested/working for the marine environment	R responds to last question (12) and mentions strategies for communicating marine issues	For questions 3-4, and for any reference to the significance or importance of the marine environment for R
Familiarity	MRC facilitator	Wildlife loss	Pavement	State	Events	Sense of place
Direct work	Other institutions	Climate Change	Sea walls	Federal	General communication	Public access
MRC positive	Individual action	Enforcement	Infrastructure	Nonprofit		Recreation
MRC negative	Education	Institutional Coordination	Reduced Species	Private		Aesthetic
Internal challenges	Outreach	Flora Loss	Other	Education institution		Human nature interaction
General	Monitoring	Water Issues		Tribes		Food
	Policy intervention	Transportation		Private landowners		Negative connotation
	Social Media	Invasive species		Youth		Quote
	Partnerships	Pollution		County		
	Citizen science	Erosion		City		
	Restoration	Infrastructure				
	Events	Institutional resources				
		Boundaries				
		Population growth				

Table 5. Codebook developed by the UW Team

² R denotes "Respondent" throughout Table 5

For a full description of each child code, see Appendix [J](#).

These codes were included in NVivo, a software for qualitative data analysis. Once the interviews were completed, they were run through Otter.ai and Fireflies.ai, softwares that transcribe audio to written documents. Interview recordings were reviewed by the UW Team to ensure these softwares correctly transcribed interview recordings and corrections were made where necessary. These were then uploaded to NVivo to be coded by two members of the team. To ensure there was agreement between these two members and their coding, they both analyzed the same transcript and compared their results. As part of this process, they revised the codebook to ensure that the codes developed responded to the topics and themes touched during the interview. Once they compared their coding, they updated the codebook with new codes, and did a second round of coding of the same transcript. Given that during the second round of coding there was near consensus between the two, they finalized the codebook and used it to code the remaining transcripts in NVivo.

V. Stakeholder Engagement

The team engaged in consistent communication and engagement with two main stakeholders throughout the duration of the project: the NWSC and Snohomish County MRC (note: stakeholders do not include interview participants). Research materials, including the interview guide, contact form, and volunteer training guide, were shared, reviewed, and revised with both of these stakeholders. The revision process included direct feedback and editing from the NWSC and MRC on all of the aforementioned documents before they were finalized and distributed to other stakeholders (See Appendices).

Stakeholder	Role	Involvement
UW Team	Researchers	Scoped project; developed RQ; developed research materials; conducted interviews; analyzed interview data; made recommendations; presented results to MRC
NWSC	Client	Scoped project; reviewed & edited research materials; reviewed report drafts
Snohomish County MRC	Pilot Study Organization	Reviewed & edited research materials; provided interviewee contacts; conducted interviews; reviewed report drafts

Table 6. Stakeholder roles and relationships

Chapter 4: Framework Analysis

4.1 Answering the Research Question

This chapter analyzes whether the original RQ was answered in the context of the effectiveness of the data collection tool used: *How can MRCs assess their local communities' concerns and priorities related to the marine environment and its resources?*

Using the literature review and previous needs assessments as the basis, the UW Team developed and tested an interview framework to assess a particular community's concerns and priorities and determine the usefulness of this tool as a mechanism to assess other MRC's communities needs, thus answering the RQ. As such, Chapter 4 analyzes whether the team developed questions that elicited responses regarding people's concerns and priorities about Snohomish County's marine environment.

4.2 Framework Development

The process carried out by the UW Team to develop the framework followed a participatory approach that allowed for a diversity of perspectives and inputs into the questions that were asked to the interview participants. Once the UW Team developed the questions to be asked in the interview guide, it was sent to the Snohomish County MRC and the NWSC for feedback. The UW Team received comments and suggestions that were incorporated into the guide, and the final product was presented during the training on qualitative research methods to the Snohomish County MRC staff and volunteers (hereinafter "members"). This process proved to be beneficial given that it permitted some familiarity to develop between the MRC members, the interview framework, and the overall process. This enabled MRC members to participate more actively in their "shadowing role" during the interviews, both explaining the MRC's work, but also probing for more questions depending on the responses given.

4.3 Interview Scheduling

Over a three week period, from 3/11/2024 to 3/29/2024, the UW Team conducted interviews with 11 individuals in Snohomish County. Interviewees were contacted by a MRC staff member and asked to complete a form with interview date preferences, as well as provide demographic information. Once the form was completed, a UW Team member contacted the interviewee to schedule a date and time for the interview. Afterwards, the UW Team member contacted a Snohomish MRC member to participate in the interview. The UW Team found this to be an effective process that allowed for fast, effective communication with those who completed the form.

4.4 Sampling: Interviewee Demographics

10 of the 11 interviewees provided most or all of the demographic information requested in the pre-interview contact form (see Appendix E for questions asked and response options). The omission of one of the participant's information accounts for 9% of the total demographic data.

A majority of the interviewees, six people, identified themselves as 55 years of age or older, accounting for 55% of the interview pool. One interviewee was between 18 and 34 years of age (9% of responses) and three were between 35 and 54 years of age (27% of responses). Men comprised a majority of the interviewees, with six individuals accounting for 55% of the pool. 36% percent of interview participants were women (four people total) and one participant declined to provide this information.

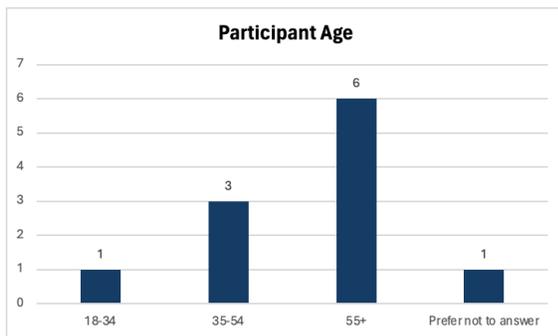


Figure 8. Participant age

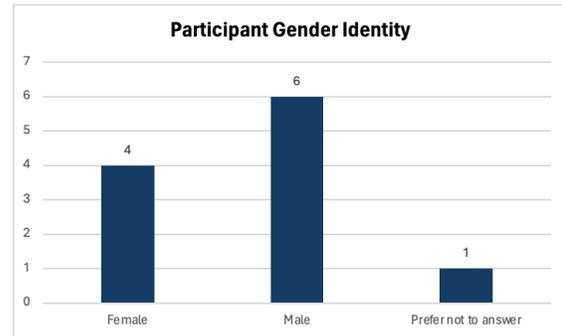


Figure 9. Participant gender identity

82% percent of the individuals that were interviewed identified themselves as White or European-American (nine total) while 18% of interviewees declined to provide this information (two total).

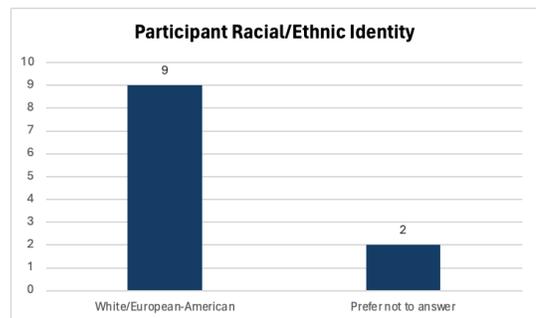


Figure 10. Participant Racial/Ethnic Identity

Interviewees identified themselves as either employed (eight people) or retired (three people). Interview participants were also asked to identify themselves as people who lived in Snohomish County, people who worked in Snohomish County, both, or other. Six people identified as both (55% of the pool), two work in Snohomish County (18%), two others – both of whom identified as retired - live in Snohomish County (18%), and one has a home in Snohomish County but shared that they “live most of the time” in another county (9%). Interview participants did have the option to select more than one of these options, but none did, demonstrating that the inclusion of the “both” and “other” (with text entry) options were sufficient to understand the relationship of interview participants to the County and MRC.

If participants identified themselves as employed, retired, or other, they were asked to share the sector where they work or worked. Four participants, or 36% of the pool, identified as current or former private sector employees; public sector and academic institutions were represented by

two participants each, for an 18% share. The UW Team interviewed one participant from the Tribal government sector, one from the non-profit/NGO sector, and one who selected “other”, representing 9% shares for each in the total pool of interviewees.

Finally, participants were asked their annual family income in 2023. Two participants did not share this information, accounting for 18% of all responses. Five participants identified their household as having had an annual income between \$100,000 and \$199,999 (45%) and four identified their households as having had an income of \$200,000 or higher in 2023 (36%).

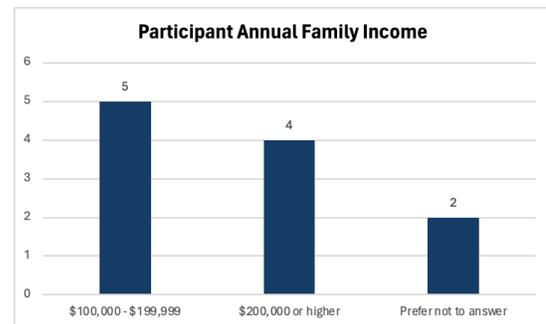


Figure 11. Participant Income (2023)

4.5 Post-interview Memos

I. Volunteer Memos

As part of the data collection process, three Snohomish County MRC members shadowed the UW Team during the interviews. This allowed them to explain in further detail the work done by the Snohomish MRC and their current projects, while also contributing to the conversation throughout the interview, for example by asking clarifying questions, or focusing on the role of the Snohomish MRC in the issues mentioned by the respondent.

In general, the members did not account for terms that were difficult to understand for the interviewees. In 10 out of 11 interviews, the members described the interviewees as being “extremely well-informed”, “acquainted”, “very familiar”, “familiar”, and “extremely knowledgeable” about the MRC. Two of the members used the memo as a space to write reflections on the questions, for example, one member wondered how to better formulate questions so that responses would focus more on the Snohomish marine environment or on the MRC’s current projects.

Five member memos described interviewees mentioning communication as an important matter. They noted interviewees talking about the role of the MRC to raise visibility and educate the public about the marine environment’s issues, finding ways to communicate these issues to the general public, as well as actively communicate the MRC’s activities and results to a variety of stakeholders, and how the MRC needs to reach a more diverse and younger audience.

The different notes provided by the members show the importance of having participation from active members of the Snohomish MRC, given that they were able to appreciate and take note of aspects of the interview that the UW Team might have missed or deemed not as important. Both UW Team and MRC members noted responses on issues and challenges faced by the marine environment, which will be further analyzed in the section about interviews’ results.

II. UW Team Memos

Each member of the UW Team also completed a post-interview memo. This memo included the same questions as the volunteer post-interview memo, plus three additional questions to elicit responses more specific to the interview guide. See Appendix [H](#) for a list of questions included.

Overall, the UW Team reported that interviews were conducted smoothly and that the guide was effective. In regard to the terminology used in the guide, UW members relayed that interviewees were able to understand all of the questions asked. Specifically, 100% of memos reported that there were not any terms the interviewee did not know or understand. 100% of memos also reported that there was enough time to ask the questions in the guide. For some, this included asking all twelve questions and for others this included only asking the nine main questions, as it was determined that enough information had been gathered or there was not enough time to ask the “extra” questions. It was anticipated that interviews would last between 30 - 40 minutes, and the majority of interviews did fall within this timeframe, with the exception of one that lasted 23 minutes and two that lasted 37 minutes.

The post-interview memos helped the UW Team capture common descriptors or characteristics of the interviewees. For instance, 9 out of the 11 memos described interviewees as “knowledgeable,” “informed,” or “technical experts.” Eight out of 11 memos identified descriptors that may not have been identified solely from the interview analysis process, with interviewees characterized as “passionate,” “emotional,” or “caring.”

The memo also allowed space for the UW Team to reflect on questions that did or did not work well. The team noted that clarifications were sometimes needed in regard to location (ie. specifying Snohomish County) and topics (ie. specifying marine resources).

The UW Team also noted questions that were asked during interviews, which were not originally included in the guide, but rather arose naturally. Questions include:

- How long have you [the participant] lived in Snohomish County?
 - *Note:* this is an addition to question 5 asking if Snohomish County’s marine environment has changed and was incorporated into the guide.
- How can the MRC break down silos and work together?
- What should the MRC do with the data it has collected?

One of the interview memos provided important information regarding the application of the interview guide on participants who are not experts in marine issues, but participate in marine-related volunteering activities. The UW Team member mentioned how the interviewee “did not possess technical knowledge about Snohomish’s marine environment” and how they were “very self-conscious about the lack of ‘technical’ knowledge on marine issues”. The UW Team member described how it proved to be difficult for the interviewee to answer some general questions, such as the personal meaning of the marine environment. The UW Team member also mentioned how for people who are not experts or have technical knowledge on marine

issues, it proved to be challenging for the interviewee to answer the general questions. This is further considered in [Chapter 5](#), specifically whether the guide should be modified accordingly.

These post-interview memos elicited valuable information about the structure of the framework, quality of the interview questions, and overall success of the interview. This type of feedback proved to be important for informing future iterations of the framework.

4.6 Interview Results

I. Interview Themes

Each interview’s transcript was coded and analyzed in Nvivo, a qualitative analysis software, using a codebook developed by the UW Team. The goal of this exercise was to determine if the interview questions sufficiently elicited answers related to “concerns and priorities related to the marine environment and its resources,” as outlined in the RQ. Consequently, this section’s analysis is related to the RQ and effectiveness of the framework, rather than results providing an in-depth analysis of the content of each interview.

After performing an extensive analysis of the transcripts, the UW Team found that 100% of the interviewees talked about the major themes and categories developed. This is an important finding given that the themes and categories were developed based on both the literature review and the interest of the Snohomish MRC to understand the community of expert’s perspectives on different topics. Nevertheless, how much each interviewee dedicated to each topic varied. The following table provides an overview of how much each theme was covered across the eleven interviews.

The columns represent that amount of coverage while the rows show each topic :

Code	Minimum Coverage	Maximum Coverage	Average
Stakeholders	2.92%	46.01%	22%
Solutions	7.84%	54.49%	34.66%
MRC	5.08%	29.79%	14.27%
ME Meaning	2.03%	51.13%	12.93%
Communication	6.21%	16.46%	12.65%
Changes	1.53%	11.34%	4.74%
Challenges	13.02%	46.19%	27.70%

Table 7. Coverage of themes across the pilot study’s eleven interviews.

The theme that had the most coverage was “solutions,” with 34.66%, followed by “challenges,” with 27.70%. These themes can also be thought of as “priorities” and “concerns,” which is the aim of this particular community needs assessment. Therefore, these findings are crucial in determining the usefulness of the interview guide in responding to the RQ, but also in providing information to the Snohomish MRC on this particular community’s perspectives.

For example, it is important to note that the themes with least coverage were “changes,” 4.74%, and “communication,” 12.65%. These results could help determine whether future needs assessments need to be revised to include more questions or probes on specific topics, depending on the MRC’s interests and the community of people they will be interviewing.

Within each category, the saliency of the child codes was analyzed, depicting the prominence of each sub-topic:

Code	Three most salient	Three least salient
Solutions	MRC_facilitator, partnerships, restoration	other_institutions, social_media, citizen_science
Stakeholders	state, nonprofit, tribes/county	youth, education_inst, private_landowners
MRC	familiarity, MRC_positive, direct_work	general, internal_challenges, MRC_negative (0)
Challenges	water_issues, pollution, transportation	inst_coordination, population_growth, erosion
ME Meaning	sense_of_place, recreation, public_access/other	negative_connotation, food, aesthetic
Communication	general_comm, events	N/A
Changes	other, infrastructure, reduced_species	sea_walls, pavement (0)

Table 8. *Saliency of child codes across the pilot study’s eleven interviews*

Analyzing the level of prevalence of the child codes in the interviews shows which topics were discussed the most with interviewees. For example, 100% of the interviews mentioned water issues as their concern, with some mentioning stormwater as the biggest, most pressing issue the marine environment is currently facing. On the other hand, the fact that no interviewee mentioned pavement as a change they have seen in Snohomish County’s marine environment tells us how the interviewees interpreted the concept of “change”, and which to them were more noticeable.

“If you don’t fix stormwater, nothing else matters. So, I mean, it’s probably the most important issue that we have.”

II. Interview Probing

Part of the interview analysis included looking at which questions required probing from interviewers. Probing is a key component of qualitative research, as it helps draw out relevant, complete, and detailed responses to interview questions (Robinson, 2023). During the interviews, the UW Team probed participants when they struggled to answer a question or needed more guidance to provide a full answer. Probing is different from asking follow-up questions, and understanding where probes were used can provide insight into the quality of the interview guide and questions. The UW Team analyzed how much probing occurred and if there were questions that consistently required probing in interviews as a means to determine if there were certain interview questions that should be modified to increase clarity.

When analyzing the success of the guide, it is important to recognize that some interviewees required no probing, while others required a substantial amount of probing. For instance, four interviewees did not need any probing as they immediately provided substantial response to questions. However, one interviewee required six probes, one interviewee required five probes, and three interviewees required four probes. Given this variability, there is the possibility that probing was more dependent on the interviewee and their level of marine knowledge, rather than the question asked. See Appendix [K](#) for how many questions each interviewee was asked and how many probes each interviewee required during their interview.

The question that required the most probes (5) across interviews was, “What does the marine environment mean to you?” Interviewees often provided very short responses or responses with limited detail, such as “it’s the heart and soul of the Pacific Northwest. Worth dedicating one’s life to improve,” prompting the interviewer to probe for more specific information. It is worth noting that this is the first question of substance asked in the interview and participants may not have felt as comfortable or “warmed up” in providing detailed responses. It is also possible that this question did not resonate with interviewees with more of a technical background.

Three other questions required three probes overall, specifically about pressing issues, solutions/actions to the identified pressing issues, and stewardship activities, suggesting that these questions may need to be modified for clarity.

The questions with the least amount of probes asked if participants had heard about the MRC (one probe), about pressing issues over three - five years (zero probes), and who should be working on solutions (one probe). In regard to the question about issues over three - five years (zero probes), this was a follow up question to current pressing issues (three probes), which could mean that participants felt primed to answer the second question more so than the first one.

Question	Number of times the question was asked during interview	Total number of probes per question
So, the first thing I would like to know is have you heard about the [MRC Name] MRC?	11	1
Have you been aware of the work the MRC has been doing recently?	11	2
What does the marine environment mean to you?	11	5
When you think about [County name]'s marine environment, what comes to mind?	11	2
Do you feel [County name]'s marine environment has changed? If so, how? And if you don't mind sharing, how long have you been living in [County name]?	11	2
What do you think are the most pressing issues regarding [County name]'s marine environment at the moment?	11	3
And what do you think will be the most pressing marine issues in [County name] the next 3 to 5 years?	11	0
Are there solutions or actions that you can think of for these issues you just mentioned?	11	3
Do you see yourself getting involved in stewardship activities supporting the marine environment?	10	3
When thinking about marine environment management, what organizations come to mind?	10	2
Who do you think should be working on the examples of solutions you provided earlier?	7	1
How do you think marine issues and solutions should be communicated?	9	2

Table 9: Number of probes by interview question

III. Additional Interview Questions

Analysis of the interview transcripts also allowed the UW Team to note any questions that were asked by the MRC staff or volunteers who attended the interviews. The below questions were not part of the interview guide, but were asked in interviews and yielded insightful responses from interviewees. Questions included:

- *So my question is, do you have a specific thought or recommendation on the issues and solutions that you've talked about that the MRC the Snohomish MRC should specifically focus on? What can we do to address some of these issues and opportunities that you mentioned?*
- *With all this information and activity that the MRC is participating in, what should we do with that?*
- *We've talked about a lot of the varying issues and challenges and you've been very articulate about that. I'm curious what you think the MRC can and should do to address some of these things. It's great to monitor but what can the MRC do to affect change?*

A common theme to the above questions is about what specific action the Snohomish County MRC can take to address the issues identified by the interviewee. Current interview guide questions ask about solutions and communication tactics generally, but the above questions convey that MRC staff or volunteers felt some questions needed to be more explicitly related to the MRC.

4.7 Presentation to the Snohomish County MRC

Using the above findings, the UW Team developed a summary of the project to be presented in the Snohomish County MRC's monthly meeting. The UW Team invited all interview participants to attend the meeting, and the client shared the Zoom link and agenda with other MRCs who would like to attend given the projected use of the framework for communities' needs assessments.

The UW Team developed a presentation that was shared in advance with the Snohomish County MRC's coordinator and with the NWSC. The time allotted for the presentation was 30 minutes. The UW Team presented for around 20 minutes, and responded to questions and comments from the audience for 15 minutes. The conversation after the presentation was very dynamic. Many comments centered around the quality of the presentation and the analysis conducted by the UW Team, with positive feedback on the results of the UW Team's work. The below table outlines questions asked by audience members, and includes both the context in which they were asked and responses from the UW Team.

Question	Context	Response
What did we mean by "infrastructure"?	Specifically referred to the analysis of the interview content where we mentioned infrastructure as a category within changes in the Snohomish marine environment and	Because interviewees generally mentioned the railway infrastructure as an issue/change, we referred to this and other man-made infrastructure, such as buildings or sea walls, as "infrastructure" generally. It is important to highlight that the definition used by the UW Team to

	<p>short-term issues mentioned by interviewees.</p>	<p>conceptualize this category can be found in the codebook in Chapter 3.</p>
<p>How do we suggest targeting and recruiting participants for interviews or surveys/focus groups?</p>	<p>This was asked in reference to our key takeaway regarding the sample, and our recommendation to broaden the sample to include knowledge from lay people.</p>	<p>We recommended using two approaches. First, the snowball sampling, where after doing a first round of contact and sampling, the person is asked whether they know other people who might be interested in completing the interview or survey, or participating in the focus group. Second, reaching out to specific institutions or organizations, and getting a list of people that the MRC can contact for the purpose of performing a needs assessment.</p>
<p>What would be a good approximate timeline to reach out to the sample and solicit participation?</p>	<p>This question came from one of the volunteers who shadowed several interviews, and felt that we were all working under a tight timeline.</p>	<p>We recommended an approximate of 6 months, highlighting the importance of working in teams. Therefore, a group of people can work simultaneously at each stage: determining the sample, reaching out to the participants, carrying out the data collection methodology (interviews, surveys, or focus groups), and analyzing data.</p>
<p>Why did you make the recommendation to modify the framework for lay people? What keyed you in for the need to do this change?</p>	<p>In light of our recommendations, and the different pathways presented depending on who the MRC is targeting as the sample for the needs assessment.</p>	<p>Our recommendation stems specifically from one interviewee who was not a marine expert and struggled to respond to some of the questions that were asked. Additionally, the UW Team analyzed the number of probes used per question, determining that concepts such as “the marine environment,” “short and long term issues,” or asking about solutions for the challenges mentioned required the most probing; as such these questions could be modified to provide more context or use other words for better understanding, as outlined in Section 5.3.</p>

<p>Do you have a suggestion on how frequently to do a needs assessment? As in what time frame do you think answers will likely change in their patterns?</p>	<p>This was a general question given the timeline we worked on, and interest in future needs assessments.</p>	<p>The UW Team recommended aligning the frequency of the needs assessments with the MRC’s work and interests. Additionally, we recommended looking at the specific issues the MRC could address in the long-term vs the short-term. It would be worth asking every 2-3 years about short-term issues, communication strategies, and possible solutions, whereas long-term issues, such as climate change, could be strategized to be tackled in 5+ years. This could also allow the MRC to evaluate their projects and programs, and how much progress has been made addressing communities’ priorities and concerns.</p>
<p>Would this process take as long if the MRC did not use a rigorous analysis process such as the one used by the UW Team?</p>	<p>This question was posed in regards with the analysis presented of the interviews content, and an overview of how the analysis was developed.</p>	<p>The UW Team explained the mechanism followed to develop the analysis of the interviews content, and reassured this was done without using any qualitative software but rather reading each transcript and looking for repeated themes across all the interviews, as well as highlighting the differences in responses. This allowed us to pull out themes and categories, using both the interview guide and the responses as the framework of analysis. A brief explanation of this process can be found in Chapter 6.</p>

Table 10. Audience questions and UW Team responses

4.8 Limitations

The UW Teams acknowledge that there were limitations present in this pilot study, including:

I. Sampling Methods: Representativeness of Interview Participants

The decision to interview a community of experts (“best cases”) came from the Snohomish County MRC. Therefore, the MRC sent a list of people to contact to the UW Team, so there was no opportunity to reach out to a different audience. This proved to have both benefits and drawbacks: on one side, the UW Team was able to test the framework and interview guide with

a group of people who were knowledgeable on the marine environment, providing in-depth responses to the different questions and probes made by the interviewers. On the other hand, the UW Team is not able to confirm the usefulness of the framework for people without such technical knowledge, given that this was not the focus of the sample. Therefore, recommendations will be made regarding how to adjust the framework and interview guide to better suit other types of audiences/communities.

II. Sample Size and Interview Methodology

The interview guide directed interviewers to ask nine questions, with the opportunity to ask three additional questions if time. As a result, each interview varied in the number of questions asked, ranging from nine to twelve. This variation in questions made it more difficult to extrapolate consistent results when analyzing probing and interview content. A small sample size of 11 participants also contributed to these difficulties; while insightful analyses were produced, a smaller sample size (n=11) and sample of majority marine experts affect the ability to extrapolate confident analyses and thus generalizable recommendations.

III. Subjectiveness: Memos and Coding

As Orwen et al. mention, “the ideal coder is totally unbiased and expert in the content area, but such a coder is difficult to find” (2009, 177). Therefore, it is important to acknowledge that coders face a series of situations that call for subjectivity when deciding which code to use when looking at an idea or statement in the transcripts they are analyzing. These situations or difficulties can be the need for judgment calls, coder bias (sourced from the coder’s opinions, backgrounds, etc), and coder mistakes (such as incorrectly applying coding criteria) (Orwen et al., 2009). The UW Team put into practice a series of methods to reduce coding errors, such as pilot testing the coding protocol and comparing the same coded transcript between the two coders, revising the coding protocol after the testing, and using coder consensus (ibid). Nevertheless, it is still important to acknowledge that coder bias and coding errors could be present in the findings and results.

IV. Student Researchers

The UW Team is composed of four graduate students at the Evans School and our subject matter expertise for this project was informed by extensive research, ongoing guidance from Snohomish County MRC and NWSC staff, our coursework, and professional experience. We do not claim to fully represent the views and needs of the Puget Sound, Salish Sea, and most specifically, the Snohomish County community. The interview framework and this report should be understood as the work of student consultants with deep knowledge and emerging expertise in this type of work.

Chapter 5: Recommendations

The UW Team puts forth the below recommendations with the intention for these to be adopted by both the Snohomish County MRC and the six other MRCs. These recommendations span the entirety of a needs assessment process and it is encouraged that steps be followed in the order they are listed.

5.1 Outline MRC Specific Goals

Regarding the goal of the needs assessment, the UW Team invites MRCs to reflect on how interviewees' responses will help inform future work and how it will impact planning. It is recommended that all MRC members, both staff and volunteers, participate in this process.

While the UW Team developed seven main themes (parent codes) to be analyzed, MRCs could decide they are only interested in learning about respondents' perspectives on challenges and solutions, and leave out how familiar people are with the MRCs work, or what changes they have observed. For example, when asked about changes in Snohomish County's marine environment, some interviewees discussed current challenges they were seeing, rather than pointing to specific transformations they had experienced.

Therefore, if MRCs want to gain a more detailed understanding of the changes happening in their counties, the UW Team recommends modifying, eliminating, or adding questions, or including more specific follow-up questions and probing, so that the conversation can be directed towards responses that yield more nuanced information on this matter. More information about how to do this is provided in [Section 5.3](#).

5.2 Specify Target Populations

The framework worked well with the community interviewed as it was composed of a majority of participants who had a substantial baseline level of knowledge about marine resources and ecosystems. For future capstone projects or uses of this framework, it is recommended that if MRCs identify marine experts as their target populations for interviews, this framework should be utilized.

If MRCs determine that their goal for target populations goes beyond marine experts, such as members of the general public who do not have professional or technical knowledge of the marine ecosystem, then questions should be modified to provide more background or context, and be more general and open-ended, which is further discussed in the section below.

5.3 Modify the Needs Assessment Framework

The UW Team recommends that each County MRC modify the current framework depending on each MRC interest. For example, during the framework development phase, the Snohomish County MRC's staff and volunteers provided input and recommendations to the questions

developed by the UW Team. This collaborative approach was important to tailor the framework to the specific needs of the MRC. With this in mind, the UW Team recommends all MRC members also participate in any modification of the interview guide questions.

During the modification process, the UW Team also recommends that future use of this framework include all of the questions contained in the interview guide, without excluding the questions categorized as “extra”, which were instructed to be asked only if there was sufficient time available. Important information was collected by asking these questions, which elicited comprehensive responses on how to better communicate marine issues to the general public, or which institutions come to mind when thinking about the marine environment, and consequently, who should be working on solutions. The UW Team was able to ask all 12 questions, including the “extra” questions, in seven out of eleven interviews; interviews lasted on average 36 minutes, with the longest interviews (two) taking 47 minutes. Asking these questions will help MRCs gather important insights on how to better communicate marine issues and who should be working on the solutions proposed by the participants.

Additionally, given that the interview framework is intended to be a living document that can be modified, it is recommended that the following questions be added to future iterations of the guide as follow-up or probing questions. The below questions were identified by the UW Team in post-interview memos, or asked by the Snohomish County MRC members during interviews, as these questions also yielded valuable information.

- *What can the MRC do to affect change?*
- *Of the issues and opportunities that you mentioned, what should the MRC specifically focus on?*
- *What should the MRC do with all of the information and data it collects?*
- *How can the MRC break down silos and work together?*

Including additional questions could require a slightly longer time commitment for interviews, such as 45-60 minutes rather than the 30-40 minutes the team aimed for in this study. If additional questions are included, it is recommended that the interviews be advertised as lasting around 45 minutes in length.

Finally, the UW Team considers it important to provide some examples of modified questions that could be used in interviews with non-marine experts, such that MRCs can use or adjust to their convenience. The below questions were modified if they required 3 or more probes throughout the interview process, as detailed in [Section 4.6](#).

Original Question	Modified Questions
What does the marine environment mean to you?	What do you value the most about the ocean and its beaches?
	What activities do you enjoy doing at sea or at the beach?
	What comes to mind when you think about the ocean, the beach; its animals and plants?
What do you think are the most pressing issues regarding [County name]'s marine environment at the moment?	What concerns do you have regarding the [County name]'s ocean and its surrounding areas? For example, beaches, shoreline, etc.
	In your opinion, what challenges is the [County name]'s ocean currently facing?
Are there solutions or actions that you can think of for these issues you just mentioned?	Do you have any recommendations on how these problems you mentioned could be solved?
	Can you think of things you or another institution could do to address the problems you mentioned?
Do you see yourself getting involved in stewardship activities supporting the marine environment?	Are you currently participating in any activities that involve the beach or ocean?
	Do you volunteer or see yourself volunteering in the future for any organization that does work involving the beach or the ocean?

Table 11. *Examples of modified questions for lay interview participants*

5.4 Expand Sampling Methodology

While there were limitations to the sampling method used for this pilot study as detailed in [Chapter 4](#), future studies can address these and as such the UW Team puts forth the following sampling recommendations.

It is recommended that future studies target diverse participant samples. This is an especially important consideration given the makeup of each county. For instance, in 2022 Snohomish County was 51% male, had a median age reported to be 38.8, had a median household income of \$101,532, had an unemployment rate of 4.3% (19,932 people), and had a population that was 64.3% white and non-Hispanic, 4.2% Black or African-American, 1.6% American Indian and/or Alaska Native, 11.6% Hispanic or Latinx, 14.2% Asian, 0.7% Native Hawaiian and other Pacific Islander, and 5.4% of the population identified as two or more races. Yet, the Snohomish County MRC pilot study sample was not reflective of the makeup of the County.

To remedy this lack of representation and set other MRCs up for more representative results, the UW Team recommends that future MRC studies in the County:

- Prioritize interviews with non-white communities by oversampling racial and ethnic minorities.
- Prioritize interviews with unemployed individuals to understand how these residents feel about the marine environment, compared to those who are employed or retired.
- Prioritize interviews with residents who have a household income of less than \$100,000 and less than \$50,000.

To achieve this, the UW Team recommends implementing a snowball sampling methodology, where the interview ends with the question “who else should we talk to?” By integrating this tactic into interviews, MRCs can expand their reach to individuals who they may not have identified previously and scope deeper into communities, in turn engaging with a more heterogeneous sample.

5.5 Gather Demographic Data

Given the usefulness of the pilot study survey results, the UW Team highly recommends each MRC use a pre-interview survey as a mechanism to collect participants’ information on demographics. This will allow the team in charge of the needs assessment to check on the sample’s characteristics during the implementation of the process, and adjust to include people from other communities and backgrounds to have a more diversified sample. Collecting this data will also help inform future interactions of outreach, helping to determine where to focus efforts, as specified in [Section 5.4](#).

5.6 Conduct Interviews

The UW Team found that the one-on-one interviews served as a good data collection method. This method provided rich information about people’s perceptions of challenges and changes in Snohomish County’s marine environment, and yielded informative responses about potential solutions and stakeholder involvement.

However, the team recommends that MRCs conduct interviews to gather information to inform current and future work, such as strategic plans, only if there is a large enough MRC team to conduct interviews. In order to have a representative sample, it is recommended that at least 20 interviews be conducted.

While interviews provide high-quality data, they are time consuming and often difficult to coordinate, especially for larger samples. Given this, if MRCs are unable to coordinate larger scale interviews, the UW Team recommends collecting data via other methods, such as surveys or focus groups. Although this pilot study framework was developed to conduct one-on-one interviews, it can be utilized to inform the development of surveys or focus group questions.

5.7 Next Steps

The UW Team has put forth recommendations to aid MRCs in conducting needs assessments in their respective counties, as depicted in the below figure.

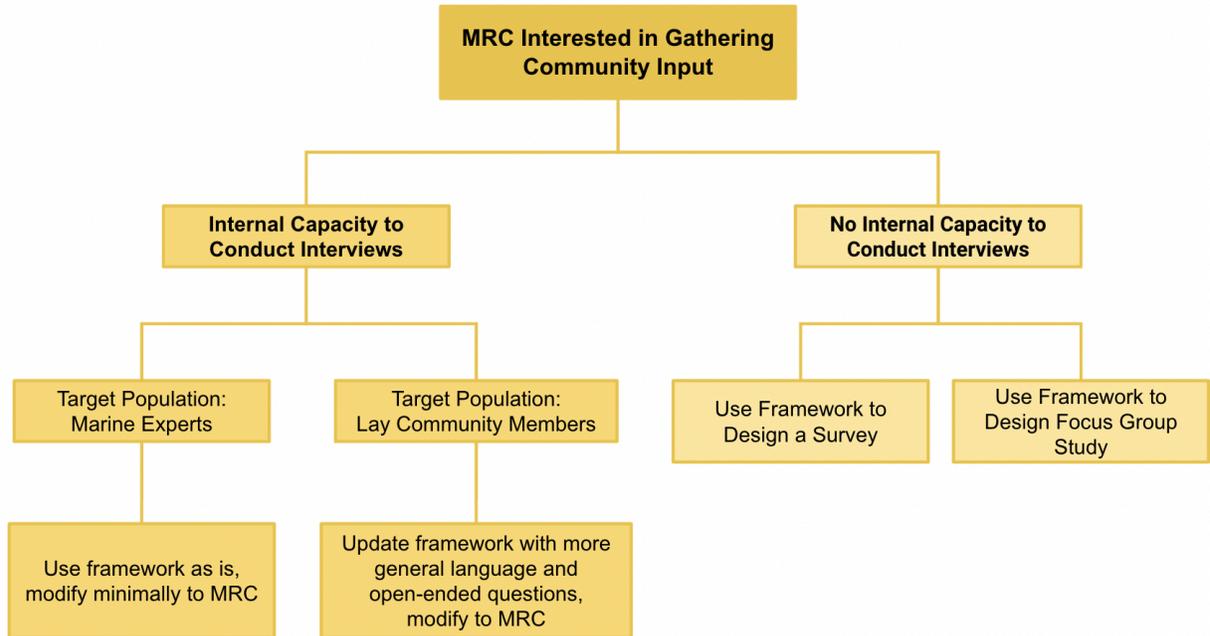


Figure 12. Flowchart depicting the path to determining needs assessment uses

I. Interview Framework

For MRCs that wish to use the interview framework, the UW Team encourages that the above recommendations are followed in order to ensure that all steps of conducting a needs assessment are addressed:



Figure 13. Recommended Interview Framework Steps

The UW Team recommends that the Snohomish County MRC conduct further interviews with marine experts to expand the sample size and representativeness, and increase confidence in the results from a larger, more diverse sample. Future work at all seven MRCs, whether internally or through capstone projects, could also include modifying the interview framework specifically for lay populations and subsequently conducting a secondary pilot study with marine experts to ensure the framework is effective for that population.

II. Other Needs Assessment Instruments

For MRCs that do not have the internal capacity to conduct interviews, the interview framework can be used to inform other data collection methods, such as surveys or focus groups. Developing other data collection methods may also be suitable for future capstone projects.

Overall, the UW Team found the Snohomish County MRC pilot study to be extremely informative, both for informing the validity of the needs assessment and for providing specific insights to inform the county's strategic plan.

Chapter 6: Furthering the Conversation

6.1 Analysis on Interviewees' Responses on Snohomish County MRC's Work

The purpose of this project is to ensure that the framework for implementing needs assessments yields responses with sufficient depth and content that allows MRCs to develop a work plan that incorporates respondents' priorities and concerns. As explained in the methodology, the UW Team used Snohomish County MRC as the pilot study to assess the usefulness of the framework developed. Therefore, the UW Team considers it important to provide this MRC with some content analysis on the interviewees' responses regarding their priorities and concerns of the marine environment.

To develop this section, the UW Team did not use coding or software to analyze the interviews. Rather, the UW Team considers that, given that the MRCs will likely not have access to NVivo or other data analysis software, an alternative to these methods is to read each transcript carefully, pull out themes depending on the different categories of interest for that MRC, and extract and categorize the information into each theme/category. In this case, the UW Team divided the analysis into 11 categories: MRC Familiarity, projects they would like the MRC to work on, changes, marine environment meaning, Snohomish County marine environment meaning, issues (short term), issues (long term), solutions, institutions, stewardship activities, and communication.

6.2 Familiarity with the MRC

Given that the interview sample was composed of a community of experts, most respondents (9/11) had worked directly with the MRC, either occupying some role within the organization (5/9) or being involved in collaborative projects with the MRC (4/9). Nevertheless, for the former, some years had passed since they had undertaken that role, and so were not aware of current projects the MRC was working on. For the latter, given the projects they were involved in, it was sometimes difficult for them to mention other projects that the MRC was working on outside of their scope.

Seven interviewees had a general idea of the MRCs current projects, with four indicating they could not mention any specific projects or were not sure that the ones they were thinking of were done by the MRC. Of those aware of MRCs project, the most mentioned ones were the derelict boat removal work (6/7) and the Meadowdale Beach Project (6/7). Others mentioned by two or three interviewees were the mussel watch program (3/7), the crabber outreach (2/7), and the forage fish monitoring (2/7). At least one interviewee mentioned the advocate efforts for the beach nourishment at Howarth Park, the water quality projects, kelp bed measuring work, research to inform policy decisions, and beach clean ups.

Category	Representative Quote	Occurrences
Occupied some role within the MRC	Well, I would say I'm very familiar with it since I was on the MRC for nine years, termed out in beginning of 2023. So well aware of what it's been doing. (INT 105)	5
Is involved in a collaborative project with the MRC	[...] Part of our contract from the County is to coordinate with the Snohomish County MRC to do... work and help assist the MRC with their work, and they help us with our work (INT 104).	4
Knows current projects the MRC is working on	Well, I'm aware the MRC has been supporting the derelict boat removal work. So I think that's really great, tangible, tangible, you know, project in the marine environment. I'm aware of the forage fish monitoring. I think that's really important, especially down at the Meadowdale beach project, you know, to see how the restoration is affecting the near shore beach. (INT 102)	7

Table 12. *Participants' mentions and quotes of the Snohomish County MRC*

6.3 Projects in which respondents would like the MRC to become involved

Some respondents mentioned issues in which they would like to see the MRC more involved. For example, advocacy was mentioned by three interviewees, specifically on regulation and enforcement. Other issues that respondents want the MRC involved in are shoreline restoration projects, more engagement with the population – with one specifically mentioning youth engagement – setting up MPAs, and policy intervention.

Category	Representative Quote	Occurrences
Advocacy work	<p>But, you know, is there, is there things that the MRC could advocate for that would not be as controversial? Like, hey, we'd like to see... The county has, I believe, one enforcement staff for the entire county. Could the MRC advocate for three enforcement staff in future years? So it's kind of like you're getting at the edges. You're not really saying like, oh, County, thou shalt enforce, but you, like, put some capacity behind it. (INT 102)</p> <p>Tires are a big issue I wish the MRC would pick that up and advocate and tell our county that we should do something about getting rid of that, those chemical components in those tires that end up in our watersheds. (INT 107)</p>	3

Table 13. *Participants’ mentions and quotes of MRC involvement*

6.4 Marine Environment Meaning (General)

The UW Team asked interviewees what the marine environment meant to them, first as a standalone question and then more specifically about the Snohomish County marine environment.

For many, the marine environment’s meaning has to do with the recreational aspect of it, with mentions to scuba diving, snorkeling, kayaking, and “tide pooling” with their kids. Others mentioned having a deeper connection with it, seeing it as their sense of place, with some referring to it as the “heart and soul of the Pacific Northwest” or the “lifeblood of this place”. A few interviewees described it more literally, defining it as a place that has to have “salt in the water”, and highlighting different components within the marine environment, such as “the surrounding beach”, the “critters”, the “plants”, and so forth. For some, the meaning of the marine environment is more aesthetic, mentioning the “joys” it brings to just “look out and watch”.

Category	Representative Quote	Occurrences
Recreational	<p>To me directly, marine environment is a function of a place where I can go scuba diving. (INT 103)</p> <p>[...] Tide pooling, taking my kids to the beach, kayaking, catching Dungeness crab, eating them if they're legal size, enjoying the seafood, shellfish, clams, mussels, smelling the salty air, looking forage fish, picking up rocks and looking for baby crab, and counting how many are under one rock (INT 102)</p>	3
Aesthetic	<p>[...] The joys of a marvelously complex ecosystem, a resilient one that sometimes referred to as fragile, I think it's more resilient. (INT 100)</p> <p>I sit in front of a window, whether it's here on my property on Camano Island, and I just look out and I watch. (INT 107)</p>	2
Sense of Place	<p>I, you know, I grew up here. So, you know, this kind of lush scenery, and mountains and streams and water and green everywhere, is something I grew up with (INT 101)</p> <p>Personally, it's one of my favorite places on the planet, down on the beach. So, you know, that kind of that sense of place is really, really important to me and to my family. (INT 104)</p>	5

Composition	<p>[...] The marine environment means some degree of salt in the water. Right. So I think that's like kind of critical. (INT 106)</p> <p>To me, it means the surrounding beach ... [long pause] the critters that live in the water... [pause] the plants? [...] I just think of the whole the whole, the whole ecosystem as the marine environment, the creeks leading into the water, into the beach (INT 108)</p>	2
--------------------	--	---

Table 14. *Participants’ mentions and quotes of the marine environment.*

6.5 Snohomish County’s Marine Environment Meaning

When asked about Snohomish County’s marine environment and its meaning, interviewees’ responses were mixed. The two most mentioned themes when asked this question were the shoreline/beach access (5/11) and the interconnection between the marine environment and their families, or between the water and man made structures (5/11). Three respondents thought about challenges when asked about Snohomish County’s marine environment, and two mentioned positive projects. Finally, two interviewees mentioned marine wildlife as part of their response.

Category	Representative Quote	Occurrences
Shoreline/Beach Access	<p>I wish we had more public access to beaches here in Snohomish County, it's a little bit limited, but the ones we have are wonderful and certainly other places in sound. (INT 105)</p> <p>It's primarily for me, it's public access on our beaches and how do we get there? (INT 107)</p>	5

<p>Challenges</p>	<p>Lack of beach access. Needing improvement on water quality, sampling beaches to make sure they're safe for swimming and wading. Decline of kelp beds. The railroad, the ferries. (INT 102)</p> <p>Oh, it's everything we got going on in Everett, everything we got going on in Edmonds, everything that's not natural, is the part that you think about. I wish I could tell you that I only see the beauty parts. (INT 107)</p> <p>I think one of the first things that comes to mind unfortunately, are a lot of the issues that we have, the negative issues that we have, that impact the marine environment and negatively, like the shoreline armoring, that runs pretty much the entire length of the coastline in Snohomish County with a few exceptions. [...] negative pollution issues, stormwater waste issues, issues that impacts the marine life negatively... (INT 104)</p>	<p>3</p>
<p>Positive projects</p>	<p>Some cool restoration projects that the MRC has been involved in, like Meadowdale and the Howarth Park project. And still a really, um, beautiful marine environment. (INT 102)</p>	<p>2</p>
<p>Marine Wildlife</p>	<p>You've got the snow geese, you've got the western hemisphere of international significance with the, you know, 20 to 40,000 shorebirds migrating through. You've got the cool owls, the short-eared owls, the brant's geese. You know, you really get into a special, unique place. (INT 102)</p>	<p>2</p>

Interconnection	<p>So I think, you know, that whole that whole, you know, the, what happens in your backyard and the watersheds was really sort of eye opening to me and it was thought it was incredible. (INT 105)</p> <p>So it's always interesting to me to see how much traffic there is at the connection to where, where land meets water. And it's critical that we don't take any of that for granted. So, for me, that marine environment is - sure, it can be the water that it's pouring down through my gutter into the drain, but it is really where that interacts, where that stormwater interacts with the marine environment that's the issue. (INT 7)</p>	5
------------------------	--	---

Table 15. *Participants' mentions and quotes of the Snohomish County marine environment*

6.6 Snohomish County Marine Environment Changes

When asked about how the marine environment in Snohomish County had changed, interviewees mentioned different things, both positive and negative. For example, four mentioned the positive changes such as “holding the line” or specific restoration projects, and other five pointed out the loss of marine flora, especially kelp beds. Five mentioned industries, infrastructure, and buildings as one of the biggest changes. One interviewee mentioned the rise of sea temperatures as a driver of change, citing its impact on sunstars. Other changes mentioned by single respondents were the loss of wildlife and pollution.

Category	Representative Quote	Occurrences
Restoration projects	<p>A positive change is I think that just happened recently is some of the conservation work and restoration work is being done in Snohomish county, including the renovating and restoring the Meadowdale Beach Park, to a pocket estuary (INT 104)</p> <p>I think in the last 20 years, Snohomish County has held the line, which is progress. To have held the line is actually progress. And I think some of it has to do with, you got a county executive who is focused on the near shore in a way that it's that interaction with our, in a way that we haven't had (INT 107)</p> <p>But also, like positive changes that have been happening is, you know, beachfront properties, changing their, you know, hardscape, to softening, taking out bulkheads, that kind of thing. So that's going to be a positive improvement. (INT 108)</p>	4

<p>Marine Flora</p>	<p>I saw the decline of the kelp beds happening, like with my own eyes in the kayak. Like when we first started the citizen kelp monitoring. Then we would go back out and over a period of two years, almost 80% of the kelp beds were gone. (INT 102)</p> <p>We haven't seen bull kelp around for a while. In 15 years ago, bull kelp was all over the place, and then it just kind of went away. And we're just real glad to see some of it coming back. We do have some eel grass. And we protect that. (INT 103)</p> <p>[...] Changes in you know, marine vegetation trends, you know, related to kelp and eelgrass, and some of those not moving in directions that would be ideal, invasive species, forage fish. (INT 101)</p>	<p>5</p>
<p>Infrastructure</p>	<p>I think climate change is having its impacts, you're seeing more bulkheads, you know, being washed away, needing to get repaired. (INT 106)</p> <p>There's obviously much more hard pavement now than there was when I was a child. So, I'm sure I can only assume that the amount of runoff is significantly increased. (INT 108)</p> <p>So I wasn't tremendously aware about how impactful railroads were to beaches until I lived in Mukilteo and I'm like wait a minute, why is everything gulch? Everything in Mukilteo is called a gulch now? (INT 110)</p>	<p>5</p>

<p>Loss of Species</p>	<p>Well we've got the global warming going on. And at the risk of being a cliché, we've seen the effects of a change in water temperature. We had a virus come through that basically killed off all of the sunstars and they're an apex predator and you know, when they died if it really changed the topography. (INT 103)</p> <p>I've been here, I don't know, 35 or 37 years, I guess now, in the Puget Sound area, and, you know, not seeing some of the things that I used to be able to see and enjoy in terms of wildlife, you know, birds seem to be way down and, and, you know, being able to see salmon going through the stream, it's not nearly as prevalent as it used to be. (INT 105)</p>	<p>2</p>
<p>Pollution</p>	<p>The contaminants of emerging concern in the ground up mussel samples have really been, I mean, honestly, I would say scary. Some of the samples had a full, one of the mussel samples in Snohomish County had a full dose of chemotherapy in it. There were so many chemicals in the mussel cages from sitting them out for three months. (INT 102)</p>	<p>1</p>

Table 16. *Participants' mentions and quotes of Snohomish County marine changes*

6.7 Issues (short term)

The UW Team asked interviewees what they thought the most pressing issues for Snohomish County's marine environment were. Eight interviewees mentioned water issues, specifically stormwater (5/8), water quality (2/8), pollutants or toxins in the water (1/8), and water dissolved oxygen standards (1/8), as the most pressing issues in the short term. Two interviewees mentioned the threat posed by the European Green Crab, two pointed out infrastructure issues, and two referred to education. One scuba enthusiast mentioned the lack of safe spaces to scuba dive without having to "worry about being run over by an outboard motor".

Category	Representative Quote	Occurrences
Water Issues	<p>I had no idea how toxic stormwater pollution was for the marine environment. And so I think that is the single largest source of pollution in the Puget Sound from what I remember. (INT 104)</p> <p>So we're looking at it, though, not just from fecal coliform like E. Coli issues, but also toxics. The Chinook salmon that are living in the Snohomish estuary now have, in some cases, a lethal level of PBDE. (INT 102)</p> <p>[...] Leaking septic systems you know, sending their sewage straight out to the sea or into the groundwater. That's a problem. (INT 108)</p> <p>But I think, you know, my, sort of my line of work is I'm an environmental consultant and and stormwater is a big issue for for us and I think, you know, nonpoint stormwater pollution is probably one of the biggest issues that we have to address as a, as a society here in Puget Sound and elsewhere. (INT 105)</p>	8
European Green Crab	<p>[...] Another pressing issue that I'm directly involved with is the European Green crab invasive. It's an invasive species that's been spotted in the Salish Sea in the Puget Sound. And so that's some work that I've been involved with directly. And it's very concerning from a marine ecologist, marine scientist standpoint, about how damaging that species could potentially be to the Puget Sound and how damaging it has been to other ecosystems, similar ecosystems worldwide. (INT 104)</p>	2

<p>Infrastructure</p>	<p>I think one thing that has always been a concern for Snohomish County is the railroads in the proximity because I feel like if and when a, you know, a catastrophic rail crash happens, it could be really detrimental to our shorelines in the south, you know, in the South County, in particular. (INT 109)</p> <p>I guess building more on the beach fronts, expanding our suburban streets and taking, you know, taking habitat for our own use. (INT 108)</p>	<p>2</p>
<p>Education</p>	<p>[...] Things in the short term are, are trying to educate people on, you know, what their impacts are to the watershed, and what that causes and what they can do to help, you know, prevent some of those impacts, you're not going to eliminate them, but you can, you know, sort of minimize them as much as you can. (INT 105)</p>	<p>2</p>

Table 17. *Participants’ mentions and quotes of short term marine issues in Snohomish County*

6.8 Issues (long term)

Another question asked in the interview framework had to do with the most pressing issues in the next three to five years. This question aimed to inform the long-term planning of the MRCs work and what the focus should be. There was one interviewee who could not respond to the question. Interestingly, this was an interviewee who lives most of the time outside of Snohomish County, which could likely show the relationship between living in the county and knowing what the most pressing challenges are (INT 100).

Three interviewees continued thinking about water issues as a long-term challenge. Five interviewees mentioned climate change as a long-term issue, either directly, or mentioning the effects of climate change, such as sea level rise. One interviewee mentioned being worried about the “shoreline development master plan” and another one mentioned salmon recovery linked with habitat restoration as a long-term challenge.

Category	Representative Quote	Occurrences
Climate Change/Sea Level Rise	<p>[...] When we talk about climate change drivers and impacts. So making sure that we are looking at what threshold temperatures are going to impact forage fish, for example. Salmon development. So temperatures in the marine waters, and I think this is why we have this contract with the county, the county recognized the gap in looking at what's happening in this system, by not knowing what's going on in temperature. (INT 110)</p> <p>I think that's a really big issue for people who are living near the shoreline in Port Susan, because you could have the sea level rise combined with the septic tank wouldn't be able to work once salt gets into it and kills the organisms that are chomping on the, um the wastewater. (INT 102)</p>	5
Water Issues	<p>Mostly water issues. Are we going to continue to have the flow of fresh water that we've had in the past into the sound? The water temperature going to continue to rise? And because of it, are we going to see new species arriving? And how are we going to deal with the new species? (INT 103)</p> <p>Well, I think, in stormwater, I kind of throw that it's there sort of connection between that and, and even all of the stream restoration projects that we're doing in the culvert replacements, I mean, it's kind of all managing surface water, right. (105)</p>	3

Table 18. *Participants' mentions and quotes of long term marine issues in Snohomish County*

6.9 Solutions

An important element of the interview guide had to do with whether the interviewees could think of solutions to the issues they had mentioned. In general, these responses were scattered and almost no one single solution can be pointed out. Nevertheless, for six interviewees,

partnerships are an essential component of working on the different challenges they came up with. Other themes that were mentioned at least by two interviewees were research and monitoring, outreach efforts, restoration, and education. The rest of the themes were mentioned individually: having a ban season for fishing, creating more marine protected areas, ensuring compliance, pursuing policy intervention, and implementing nature-based solutions.

Category	Representative Quote	Occurrences
Partnerships	<p>I'd love to see a joint effort with the MRCs and programs like mine to see what we can do together. I think I could do more with cooperation and guidance. Being kind of a voice for what are the next habitat projects take a lot of time but I think that's a goal. Keep banging the drum. (INT 101)</p> <p>[...] So I feel like that is something that could get done with not a lot of money, but just making people talk to each other better. And I think that is more significant than people give credit for. (INT 106)</p> <p>[...] There be certain spaces or certain ideas where the MRC teams up with the LIO that it has, like two citizen groups? Like maybe the LIO brings in, some scientists - say, from having a panel discussion on source control for toxics, and then the MRC is kind of being the citizen voice of that and even bringing in, you know, potentially, you know, doing some joint projects or looking at prioritizing locations for finding and fixing toxic hotspots. (INT 102)</p>	6
Research/ Monitoring	<p>[...] what would need to be done if you did decide to set up like, you know, a monitoring site, the MRC maintained [...] collecting like the baseline data... (INT 109)</p> <p>[...] A lot of the research informing policy decisions in the Snohomish county region is I think, paramount. (INT 104)</p>	2

Outreach	I think outreach in general is always great, like community outreach, it was getting the public to know about any of the things that the MRC is working on, and like what I've talked about is like things I feel, are of concern to the shorelines, like the crab are outraged, or, or whatever, I think is all really, really great. (INT 109)	2
Education	[...] The more that we link kids to the outside natural world, the better their life is, the better their anxiety is, the less time they are on social media. And so to me, it has to have this very strong education link, to be able to send these stories out and have students connect to this place by getting them outside. [...] why getting kids outside is important? because then they start to care about a place and it's that classic quote by the Senegalese forester, you know, the only places that you care about are the places that you have learned about, and then those that facilitates the connection and preservation. (INT 110)	2
Restoration	[...] Focus on dealing with our... local watersheds, dealing with habitat, you know, continuing with the programs of doing the habitat restoration projects (INT 105)	2

Table 19. *Participants' mentions and quotes of solutions to identified challenges*

6.10 Institutions

Two questions from the interview guide asked interviewees about institutions that came to mind when thinking about the marine environment, as well as which institutions should be working on the solutions they proposed. The questions elicited a variety of responses. Seven interviewees mentioned NGOs when thinking about the marine environment, such as Puget Sound Restoration Fund, Washington State Beach Watchers, the Nature Conservancy, and Puget Sound Keepers. Six interviewees mentioned the MRCs and eight highlighted the tribes as doing work on the marine environment. The Northwest Straits Foundation and Commission – indistinguishable for some – were referenced by four respondents. Five interviewees pointed to state agencies such as DNR and WDFW. NOAA and the EPA were mentioned by three respondents each. Citizens and residents were emphasized by three respondents. The University of Washington and Army Corps were mentioned by one interviewee each.

Category	Representative Quote	Occurrences
Tribes	And then there's a bunch of tribal entities that are also partnering with, with the governmental agencies to do that work with the local tribes in the area (INT 104)	8
NGOs	Well, certainly the MRC and the Washington State Beach Watchers and I look at Adopt a Stream. I feel like they're doing some good work. (INT 105)	7
State Agencies	I think of the state agencies, WDFW, DNR, managing the aquatic lands. And I think they did some kind of big designation in Snohomish for the protection of kelp beds. (INT 107)	5
Citizens residents /	All the citizens who, all the residents and citizens who participate, you know, in the stewardship programs, like doing the beach water quality monitoring and forage fish monitoring (INT 102)	3
Northwest Strait Initiative Commission /	So there's a lot, there's a lot of different organizations that are working, and the kind of the parent organization of MRC the Northwest Straits Foundation, or Northwest Straits Commission (INT 104)	4
MRCs	The MRC is a big one for me. I kind of view the MRC as the first stop. [...] I generally think of the MRC and the greater Northwest Straits Initiative. I'm super impressed. Again, if I had some issue I was thinking about that's where I would go first. They have great resources. One thing that is really cool are the different marine ecosystem practitioners there. It seems to me to be very strong. A strong community there. Folks know each other and know their stuff. I also know there are other agencies but my mind goes to the MRCs and NW Straits. (INT 101)	6

Table 20. *Participants' mentions and quotes of institutions*

6.11 Stewardship Activities

One of the important aspects of the interviews was understanding what activities people interested in the marine environment would be willing to engage in, which were conceptualized as “stewardship activities”. For some interviewees, given that they already work on marine issues, volunteering did not seem like an appealing option. As one respondent pointed out, “I mean, sometimes, you know, when you do a job like this, you don't want your whole life to be that [...] even though [...] I liked the idea of the MRC, it's just that I just wanted to have a little space sometimes between what I do and, and other things” (INT 106). Others mentioned that they were already involved in some type of work, or would be willing to get involved in the future such as beach watching (2/11), beach cleanups (3/11), monitoring (2/11), and outreach (1/11).

Category	Representative Quote	Occurrences
Beach Watchers	I support the work for sure. And I check out beaches in my available free time. (INT 102)	2
Beach Cleanups	The organization I work with sees itself as a partner, an equal partner in that stewardship and helping protect the marine environment, and one of the ways that we do that is through the beach cleanups where we partner with the Marine Resource Committee four times a year to do whole beach cleanups, which one of which is like a highly scientific process that we measure all of the trash that's in particular area on the beach. (INT 104)	3
Monitoring	I think the citizen science stuff is great. And there's lots of opportunity for that because I think a lot of the actual like, the science part of it, like the data collection is fairly straightforward with some of those things and doesn't really require somebody with like a master's degree to be you know, going out and doing any of that but you get lots of good data anyways. (INT 109)	2

Outreach	But we're also involved with outreach as well, like we go to farmers markets, to sort of let people know about the issues. I feel like a lot of people don't really understand. You know, how our stormwater system works. And people assume that all that runoff goes into our water treatment facilities. And they're usually pretty, pretty shocked when they find out it doesn't. So I actually really like doing that kind of outreach. Because so many people don't understand and then I think when you understand that, it kind of makes you think about it differently. (INT 108)	1
-----------------	--	---

Table 21. *Participants' mentions and quotes of stewardship activities*

6.12 How to Communicate Marine Issues

One of the main takeaways from the interviews relates to respondents' ideas on how to better communicate marine issues. The two major recommendations had to do with planning more events, including public forums (4/11) and implementing focused outreach (4/11), with other interviewees mentioning additional means of communication such as articles, social media, and more “hands-on” communication. Nevertheless, it is important to note that throughout the interviews some references to communication aspects were mentioned outside of this specific question. Outreach, for example, was mentioned as a possible solution to some of the issues discussed by interviewees, as well as something the MRC should be working on for example by talking with “your electeds” and “your staffers.” As noted in the section above, it was even mentioned as a stewardship activity on which one interviewee is currently engaged.

Category	Representative Quote	Occurrences
Events / Public Forums	<p>I would encourage the MRC to ask, where are our local stewards and how do we continue to bring them forth - either as guest speakers to our meetings, to highlight their work, to talk about what they do, you know, to become a clearinghouse for marine resource activities, have them come talk to you, have them come update you. (INT 107)</p> <p>[...] Maybe there's some interesting way that the MRC could be, like, the citizen voice and, like, planning some big events and teaming up and bringing in, you know, panel discussions or looking at movies. (INT 102)</p> <p>So, you know, for that kind of thing it almost needs to be, I think, you know, from different angles, in person like it at events where people can talk, you know, to visitors and explain different issues. (INT 108)</p>	4
Focused outreach	<p>[...] It depends on who you're communicating those issues to. And you're gonna communicate very differently depending on who you're communicating to. For instance, if you're communicating to a federal agency, or if you're communicating the state legislatures help inform policy versus if you're communicating to the general public, and just to kind of get the word out about a particular issue or a particular topic and inform them, versus if you're really getting to school aged children. And even when you're talking to the general public, it varies greatly on how informed they are. (INT 104)</p> <p>We started outreach last year, we asked folks directly what they care about. What they do. What things they want to learn more about. This is how we're framing things we're doing now. (INT 101)</p>	4

Hands-on communication	But the... I think getting out there and showing you, [...] trying to do something on a local level and saying why it's important. And, and showing people that, yeah, you can get involved in these things. (105)	2
-------------------------------	--	---

Table 22. *Participants' mentions and quotes of communication methods*

6.13 Conclusion

The present analysis is important for the Snohomish County MRC's present and future. A majority of respondents have heard about the MRC and could name specific projects it is currently working on, with the derelict boat removal and the Meadowdale Beach Project being the most popular. The fact that at least four interviewees mentioned restoration projects the MRC has worked on as a positive change in Snohomish County's marine environment is a positive signal of the kind of work that could be prioritized in the future. Other aspects to pay attention to relate to interviewees' responses on loss of flora and wildlife as a big change in this environment. Responses regarding the marine environment's meaning to participants are insightful in understanding the differences between the marine environment as a whole, and the specific Snohomish marine environment. For example, from the interviewees' responses it is interesting to see how much emphasis is placed on shoreline and beach access when thinking about Snohomish County's marine environment, or how some went immediately to think about the many challenges that it is facing.

A crucial aspect of the interviews was understanding respondents' priorities and concerns regarding Snohomish County's marine environment. Results show that most responses circle around water issues, with stormwater occupying first place in most participants' concerns. Long-term, respondents are aware of the threats posed by climate change, and other responses might be insightful in other types of projects on which the MRC could engage. As for solutions, building partnerships was the most mentioned by respondents, with varieties of outreach as the second most mentioned, either as education efforts, policy actions such as looking at current regulations or advising elected politicians on marine topics, or outreach itself. Related to the partnership recommendation, interviewees were in general knowledgeable of the web of actors and institutions that are working on marine issues. The most mentioned actors were the MRC, Tribes, NGOs, and state institutions, while others such as the NWSC, NOAA, and the EPA were less mentioned. When asked if they would be interested in participating in stewardship activities, respondents were in general open to collaborating in activities such as beach watching, cleanups, and monitoring, and some were already involved in those and outreach efforts.

Finally, in general interviewees had a very positive perspective on the MRC's work. Many recommendations had to do with their desire to see the MRC even more involved in policy actions, or pushing for specific topics of interest to the interviewees. There was a strong focus on communication recommendations relating to doing more events, both in person and virtual, as well as public forums, as spaces that would allow an exchange of ideas and opinions to a

broader audience, in an effort to expand current participants. Interviewees also invited the MRC to think about more focused outreach, where the audience they are communicating to is considered, as well as the means of communication, and how to ensure the message resonates with whom they are communicating.

Overall, Chapter 6 captures the wide breadth of detailed, rich information provided by interviewees. The Snohomish County MRC can use the identified changes, challenges, solutions, and stakeholders outlined above to identify tangible action items or guide internal conversation around further areas for exploration; information can also be used to inform the MRC's strategic plan and other planning processes. Looking forward, this information also helps provide a baseline as to how Snohomish County residents view the county's marine environment, which is especially important if the MRC conducts future interviews, surveys, or focus groups.

References

- 2020 State of Our Watersheds State of Our Watersheds: A Report by the Treaty Tribes in Western Washington. (2020).
https://files.nwifc.org/sow/2020/state-of-our-watersheds-sow-2020-final-web.pdf?_gl=1*uuq5y7*_ga*ODcwODkyODE1LjE3MDcxNzk2OTY.*_ga_XGZ6DS8QV6*MTcwNzE3OTY5NS4xLjAuMTcwNzE3OTY5NS4wLjAuMA..#page=1
- Alexander, Kristina. (April 2007). "CRS Report for Congress: Overview of NEPA Requirements." Congressional Research Service.
https://www.everycrsreport.com/files/20070410_RS20621_a338a50852f4e214ea859991b26f305694b29da8.pdf
- Altschuld, J. W., & Watkins, R. (2014). A primer on needs assessment: More than 40 years of research and practice. *New Directions for Evaluation*, 144, 5–18.
<https://onlinelibrary-wiley-com.offcampus.lib.washington.edu/doi/epdf/10.1002/ev.20099>
- Aquatic Reserves | WA - DNR*. (n.d.). <https://www.dnr.wa.gov/aquatic-reserves>
- Batker, D., Swedeen, P., Costanza, R., Torre, I. D. L., Boumans, R., & Bagstad, K. (2008). A New View of the Puget Sound Economy: The Economic Value of Nature's Services in the Puget Sound Basin.
<https://www.sierraclub.org/sites/default/files/sce-authors/u591/AI-Puget-Sound-Economics.pdf>
- Boyd, J., & Banzhaf, S. (2007). What are ecosystem services? The need for standardized environmental accounting units. *Ecological Economics*, 63(2), 616-626.
<https://doi.org/https://doi.org/10.1016/j.ecolecon.2007.01.002>
- Cain, Cindy L., Orionzi, Dimpho, O'Brien, Mollie, and Trahan, Lovel. (April 2016). The Power of Community Voices for Enhancing Community Health Needs Assessments. *Health Promotion Practices*.
https://journals.sagepub.com/doi/full/10.1177/1524839916634404?casa_token=H0bhMg4l0WIAAAAA%3AsClmylqWDAuzOfj7hVsO6lJUwTBqYQTYy_dY30gbqHRokD9Q4TXTSpfPvXBaPcOWb1ypPXkt5lom#bibr1-1524839916634404
- Caron, Margaret A., Doberneck, Diane M., Hart, Zac, Kelsey, Heath, Pierce, Jennifer Y., Porter, Dwayne E., Richlen, Mindy L., Schandera, Louisa, and Triezenberg, Heather A. (April 14, 2022.) "A Strategic Framework for Community Engagement in Oceans and Human Health." *Community Science*. <https://onlinelibrary.wiley.com/doi/full/10.1029/2022CSJ000001>
- Cooley, S., D. Schoeman, L. Bopp, P. Boyd, S. Donner, D.Y. Ghebrehiwet, S.-I. Ito, W. Kiessling, P. Martinetto, E. Ojea, M.-F. Racault, B. Rost, and M. Skern-Mauritzen. (2022). *Oceans and Coastal Ecosystems and Their Services (Climate Change 2022: Impacts, Adaptation and Vulnerability, Issue. C. U. Press.*

Cuicco, Cary & Husby-Slater, Marie (May 2018). Needs Assessment Guidebook: Supporting the Development of District and School Planning Needs Assessments. https://oese.ed.gov/files/2020/10/needsassessmentguidebook-508_003.pdf

Daily, G. C. (1997). Introduction: what are ecosystem services. *Nature's services: Societal dependence on natural ecosystems*, 1(1).

Davies, A., Hoggart, K., & Lees, L. (2002). *Researching Human Geography* (1st ed.). Routledge. <https://doi.org/10.4324/9780203770177>.

Ecosystems and Human Well-being: Biodiversity Synthesis. (2005). (Millennium Ecosystem Assessment)

Fisher, B., Turner, R. K., & Morling, P. (2009). Defining and classifying ecosystem services for decision making. *Ecological Economics*, 68(3), 643-653. <https://doi.org/https://doi.org/10.1016/j.ecolecon.2008.09.014>

Flannery, W., Clarke, J., & McAteer, B. (2019). Politics and Power in Marine Spatial Planning. In J. Zauha & K. Gee (Eds.), *Maritime Spatial Planning: past, present, future* (pp. 201-217). Springer International Publishing. https://doi.org/10.1007/978-3-319-98696-8_9

Gerlak, A. K., Heikkila, T., & Lubell, M. N. (2012). The Promise and Performance of Collaborative Governance.

Gordon, D. G. (2003). *Citizen-based marine restoration and protection in action: a progress report from the Northwest Straits initiative*. <https://repository.library.noaa.gov/view/noaa/45623>

Health of the Salish Sea Ecosystem Report. (2021). <https://www.epa.gov/salish-sea>

Hennessey, L. J. T. (2001). Governance Profiles and the Management of the Uses of Large Marine Ecosystems. *Ocean Development & International Law*, 32, 43-69.

<https://iwlearn.net/resolveuid/cc19a79645c10c04270e177d4ef6f434>

History of the Northwest Straits Initiative. (n.d.). <https://www.nwstraits.org/about-us/history/>

IPCC Special Report on the Ocean and Cryosphere in a Changing Climate. (2019). C. U. Press.

Johannes, R. E. (2002). The Renaissance of Community-Based Marine Resource Management In Oceania. *Annual Review of Ecology and Systematics*, 33(1), 317-340.

<https://doi.org/10.1146/annurev.ecolsys.33.010802.150524>

Koontz, T. (2019). Cooperation in Polycentric Governance Systems. In A. Thiel, D. Garrick, & W. Blomquist (Eds.), *Governing Complexity: Analyzing and Applying Polycentricity* (pp. 115-132). Cambridge University Press.

Levine, A. S., Richmond, L., & Lopez-Carr, D. (2015). Marine resource management: Culture, livelihoods, and governance. *Applied Geography (Sevenoaks)*, 59, 56-59.

<https://doi.org/10.1016/j.apgeog.2015.01.016>

Lichtkoppler, Frank and Archer, Tom. (February 2007). "Lake Erie Shore Erosion Management Plan: Local Community Needs Assessment." Ohio State University Extension, Sea Grant.

Long Island Sound Study. (April 2023). "A Regional Needs Assessment to Help Build a Sustainable & Resilient Long Island Sound."
https://longislandsoundstudy.net/wp-content/uploads/2023/04/SRC-NA-fact-sheet_final_checked.pdf

Mauger, G. S., J.H. Casola, H.A. Morgan, R.L. Strauch, B. Jones, B. Curry, T.M. Busch Isaksen, L. Whitely Binder, M.B. Krosby, and A.K. Snover. (2015). State of Knowledge: Climate Change in Puget Sound. <https://doi.org/10.7915/CIG93777D>

Morf, A., Kull, M., Piwowarczyk, J., & Gee, K. (2019). Towards a Ladder of Marine/Maritime Spatial Planning Participation. In J. Zaucha & K. Gee (Eds.), *Maritime Spatial Planning: past, present, future* (pp. 219-243). Springer International Publishing.
https://doi.org/10.1007/978-3-319-98696-8_10

Murray-Metcalf Northwest Straits Citizens Advisory Commission. August 20, 1998.
https://nwstraits.org/media/1258/nwsc-1998-mm_report.pdf.

"New York Sea Grant and Long Island Sound Study Request Proposals for an Environmental Justice Needs Assessment for the Long Island Sound Watershed." (2022). New York Sea Grant.
<https://www.seagrantsunysb.edu/Images/Uploads/PDFs/LISound-EnvironmentalJustice-Needs-Assessment-0722.pdf>

NOAA Office for Coastal Management. (November 15, 2023.) "Needs Assessment Guide: Overview." NOAA. <https://coast.noaa.gov/needsassessment/#/>

Northwest Straits Initiative. "A local approach to marine conservation".
<https://www.nwstraits.org/get-involved/marine-resources-committees/>.

Orwin, R. G., & Vevea, J. L. (2009). Evaluating coding decisions. *The handbook of research synthesis and meta-analysis*, 2, 177-203.

Puget Sound Partnership. (2023). *State of the Sound: Report 2023*.
<https://stateofthesound.wa.gov/>

Reviere, Rebecca, Berkowitz, Susan, Carter, Carolyn C., and Ferguson, Carolyn Graves. (1996). "Needs Assessment: A Creative and Practice Guide for Social Scientists." Taylor and Francis.
<https://books.google.com/books?hl=en&lr=&id=cy4VAgAAQBAJ&oi=fnd&pg=PR11&dq=needs+assessments+target+populations&ots=x5JOefpNil&sig=4LwVY-BiGZD0-B06eFYVPJqqjE#v=onepage&q=needs%20assessments%20target%20populations&f=false>

Robinson, Oliver C. (2023). "Probing in qualitative research interviews: Theory and practice." Taylor and Francis.
<https://www.tandfonline.com/doi/epdf/10.1080/14780887.2023.2238625?needAccess=true>

Ruckelshaus, M. H. M., M. (2007). Sound Science: Synthesizing Ecological and Socioeconomic Information about the Puget Sound Ecosystem.
<https://digital.lib.washington.edu/researchworks/bitstream/handle/1773/38399/2007-14.pdf?sequence=1&isAllowed=y>

Ryan Enright, S. B., Ben. (2020). The Ecosystem Approach in International Marine Environmental Law and Governance. In T. G. L. O'Higgins, Manuel; DeWitt, Theodore H. (Ed.), Ecosystem-Based Management, Ecosystem Services and Aquatic Biodiversity: Theory, Tools, and Applications. Springer.

Smythe, T. C., & McCann, J. (2018). Lessons learned in marine governance: Case studies of marine spatial planning practice in the U.S. *Marine Policy*, 94, 227-237.
<https://doi.org/https://doi.org/10.1016/j.marpol.2018.04.019>

Snohomish County Marine Resources Advisory Committee. (2022). *Marine Resources Committee 2022 Annual Report*. Northwest Straits Commission.
<https://www.nwstraits.org/media/3387/sno-annualreport-2022.pdf>

Snohomish County Marine Resources Advisory Committee. (2021). *Marine Resources Committee 2021 Annual Report*. Northwest Straits Commission.
<https://www.nwstraits.org/media/3198/snocomrc-annual-report-2021-final.pdf>

Snohomish County Marine Resources Advisory Committee. (2020). *Marine Resources Committee 2020 Annual Report*. Northwest Straits Commission.
<https://www.nwstraits.org/media/3085/snoco2020annualreport.pdf>

Snohomish County Marine Resources Advisory Committee. (2019). *Marine Resources Committee 2019 Annual Report*. Northwest Straits Commission.
https://www.nwstraits.org/media/2988/sno-2019_annual-report.pdf

Snohomish County Marine Resources Advisory Committee. (2018). *Marine Resources Committee 2018 Annual Report*. Northwest Straits Commission.
https://www.nwstraits.org/media/2757/2018-nwsi_annual-report_lo-res.pdf

Sobocinski, K. L. (2021). State of the Salish Sea.

Soma, K., van Tatenhove, J., & van Leeuwen, J. (2015). Marine Governance in a European context: Regionalization, integration and cooperation for ecosystem-based management. *Ocean & Coastal Management*, 117, 4-13.
<https://doi.org/https://doi.org/10.1016/j.ocecoaman.2015.03.010>

Sorian, Fernando I. (2013) "Conducting Needs Assessments: A Multidisciplinary Approach." *Cal State University*.
<https://books.google.com/books?hl=en&lr=&id=JhZzAwAAQBAJ&oi=fnd&pg=PP1&dq=needs+a>

ssessments+&ots=nPgCz22CGG&sig=Jv5ImjRf3mQFKbuVOflJsYG_RFo#v=onepage&q=need
s%20assessments&f=false

Tafon, R., Armoskaite, A., Gee, K., Gilek, M., Ikaunieca, A., & Saunders, F. (2023).
Mainstreaming coastally just and equitable marine spatial planning: Planner and stakeholder
experiences and perspectives on participation in Latvia. *Ocean & Coastal Management*, 242,
106681. <https://doi.org/https://doi.org/10.1016/j.ocecoaman.2023.106681>
The State of World Fisheries and Aquaculture 2020. Sustainability in action. (2020).
<https://doi.org/10.4060/ca9229en>

The State of World Fisheries and Aquaculture 2022. Towards Blue Transformation. (2022).
<https://doi.org/10.4060/cc0461en>

Thomas, T. M. K. C. W. (2021). Improving the use of science in collaborative governance. In J.
W. Meek (Ed.), *Handbook of Collaborative Public Management* (pp. 512). Edward Elgar
Publishing Limited. <https://doi.org/10.4337/9781789901917.00034>

Tonin, S. (2018). Citizens' perspectives on marine protected areas as a governance strategy to
effectively preserve marine ecosystem services and biodiversity. *Ecosystem Services*, 34,
189-200. <https://doi.org/https://doi.org/10.1016/j.ecoser.2018.03.023>

Ulibarri, Nicola, Figueroa, Omar Pérez, and Grant, Anastasia. (November 2022). "Barriers and
opportunities to incorporating environmental justice in the National Environmental Policy act."
Environmental Impact Assessment Review.
<https://www.sciencedirect.com/science/article/pii/S0195925522001469>

Van Cleve, F. B., Bargmann, G., Culver, M., & The MPA Work Group. (2009). *Marine Protected
areas in Washington: Recommendations of the Marine Protected Areas Work Group to the
Washington State Legislature*. Washington Department of Fish & Wildlife.
<https://wdfw.wa.gov/publications/00038>

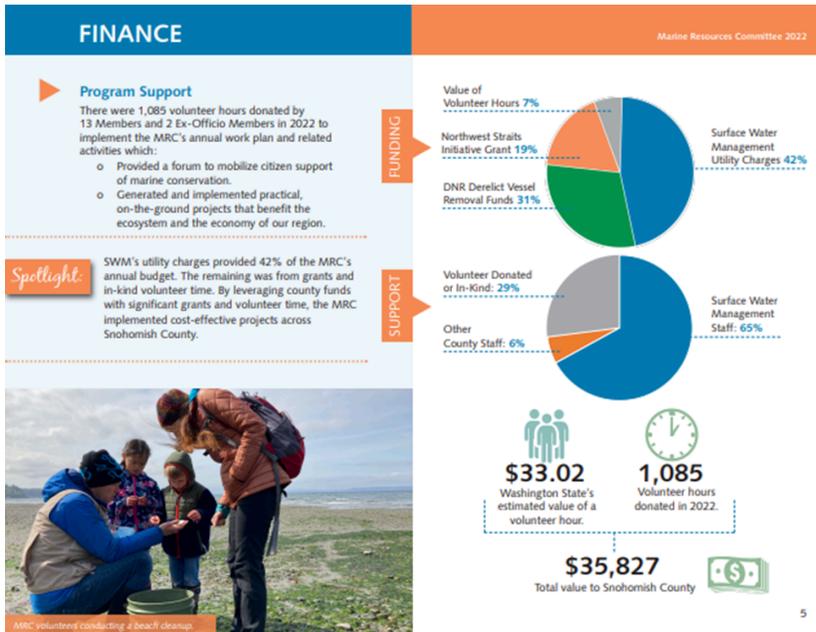
Van Den Burg, S. W. K., Skirtun, M., van der Valk, O., Cervi, W. R., Selnes, T., Neumann, T.,
Steinmann, J., Arora, G., & Roebeling, P. (2023). Monitoring and evaluation of maritime spatial
planning – A review of accumulated practices and guidance for future action. *Marine Policy*, 150,
105529. <https://doi.org/https://doi.org/10.1016/j.marpol.2023.105529>

Washington Department of Fish and Wildlife. "Coastal Marine Resources Committees Program:
2012 Report to the Legislature". 2012.
<https://wdfw.wa.gov/sites/default/files/publications/01495/wdfw01495.pdf>. Accessed 01/28/2024.

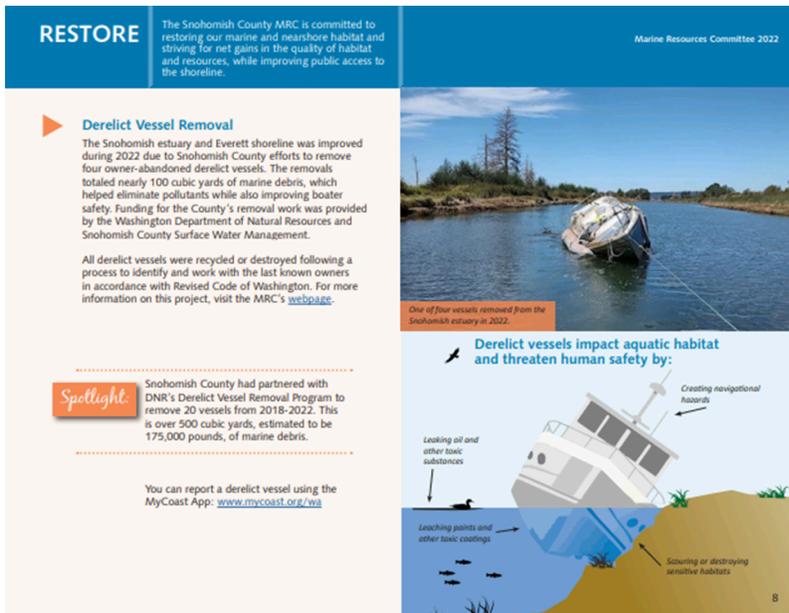
Washington State Tribal Reservations and Draft Treaty Ceded Areas. (2010, May 12).
Washington State Department of Ecology.
<https://goia.wa.gov/sites/default/files/public/WATribalReservationTreatyCeded2010.pdf>

Appendices

Appendix A: Snohomish County MRC 2022 Annual Report Excerpts



5



8

CONSERVE

Sometimes the easiest way to conserve vulnerable habitat is to protect it. This involves knowing how much habitat you have in order to measure its decline or recovery. The Snohomish County MRC assists state and federal agencies by helping collect baseline and monitoring data for species or habitats of concern.

Marine Resources Committee 2022

Kelp Monitoring

In response to concerns about declining bull kelp populations in some parts of the Puget Sound, and mounting interest in kelp restoration, the MRC gathered data for the Northwest Straits Commission's regional kelp monitoring project. The MRC [kayak surveys](#) cover the Snohomish County nearshore between Everett and Edmonds and around Hat Island.

- Watch the [Kelp Monitoring Video](#) on the MRC website to learn more.
- Read the [Puget Sound Kelp Conservation and Recovery Plan](#), which includes kelp data from around the Puget Sound.
- Explore Puget Sound's Kelp Forests with this [interactive storymap](#) highlighting the Puget Sound Restoration Fund's 2021 Kelp Expedition.



MRC members use kayaks to monitor kelp by taking notes, photos and adding GPS tracking details.

Spotlight

Bull Kelp is the largest of the 23 native species of large brown algae reaching 60' or more.

The kelp monitoring done by MRC volunteers and staff show an important trend in kelp canopy and beds over time. This information can help lead to science-based decisions on how to manage this resource, and has been used to inform regional kelp planning and conservation efforts. It is important to continue this monitoring effort annually.

Bull kelp forests provide food and shelter to dozens of species in our marine ecosystem, including rockfish.

UP TO 60' LONG



10

EDUCATE

The Snohomish County MRC provides education on key issues relating to our 123 miles of shoreline, including best management practices for shoreline landowners, recreational fishermen, and other interested citizens.

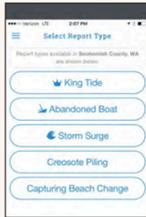
Marine Resources Committee 2020

MyCoast

Citizen Science with the MyCoast App

The MyCoast App is a free smartphone app and webpage that can be downloaded by anyone who wants to participate in an MRC project. The MRC created "forms" which users can fill out to participate in MRC Projects. These projects include:

- Storm Surge Monitoring Project
- Report derelict vessels
- Report creosote pilings
- Document king tides
- Capture beach change



In 2020, 183 MyCoast reports were generated in Snohomish County using the smartphone app.



A king tide at Howarth Park in Everett.

14

Appendix B: NOAA's Needs Assessment Guide

NOAA's Needs Assessment Guide: Overview

Phase	Steps					
1: Planning	1a: Describe the issue and target population	1b: Create the planning team, with a focus on local knowledge	1c: Gather existing data and information	1d: Characterize the target population, including existing assumptions	1e: Clarify certain data is missing and identify data to collect	1f: Select collection methods (ie. qualitative vs quantitative approaches)
2: Data Collection	2a: Determine sampling strategy and allow for generalization about larger populations	2b: Design test questions and pilot instrument on a small scale	2c: Gather and record data			
3: Reporting	3a: Analyze data, with consideration for who will use there results in making decisions	3b: Manage data (ie. format, management, access, storage length)	3c: Synthesize and report the problem and causes, and recommend solutions to address the need			

Appendix C: DOE’s Needs Assessment Guide

U.S. Department of Education’s Needs Assessment Guidebook					
Phase	Key Steps and Considerations				
1: Plan	1a: Define the purpose and intended outcomes in a local context	1b: Determine guiding questions	1c: Establish actions, timelines, and responsibilities	1d: Identify relevant stakeholders, plan for their involvement, and invite them to participate	1e: Articulate the content, process, and presentation
2: Collect and Organize Data	2a: Compare data sources to guiding questions and frameworks.	2b: Disaggregate data to identify areas of need that otherwise may not be apparent;	2c: Engage stakeholders in data collection and display data in easy to interpret ways.	2d: Consider stakeholders to engage in phase 3.	
3: Interpret Information	3a: Look for trends within data and identify cross-cutting themes.	3b: Highlight outcomes and contributing factors.	3c: Consider individuals, groups, and organizations that have not been engaged in the past.	3d: Select a skilled facilitator to lead a collaborative process.	
4: Determine Priorities	4a: Ensure priorities reflect areas that will have measurable and lasting impact on inputs and outcomes.	4b: Use strong data from multiple data sources and voices to create a full picture of the issue.	4c: Gather input from stakeholders responsible for identifying needs.	4d: Consider how identified needs impact each other; outline short and long term goals.	
5: Connect to Implementation	5a: Connect implementation to existing work and focus on a core set of driving principles.	5b: Plan for further examination of data and research.	5c: Communicate the results to stakeholders and engage in identifying next steps.	5d: Include strategies for progress monitoring.	

Appendix D: Interview Guide

[MRC name] MRC Needs Assessment Interviews

Person being interviewed: _____

Date: _____

Interviewer: _____ Volunteer: _____

Introduction

Thank you for taking the time to meet with me. My name is *[name]* and I am a member of the *[MRC name]* Marine Resources Committee. I am joined today by *[volunteer name]*, who is a volunteer at *[MRC name]* MRC. We use the acronym MRC to refer to our Marine Resource Committees.

There are seven MRCs located in the Northwest Straits Region. Each MRC is a committee made up of local volunteers from a variety of backgrounds with the shared goal of protecting and restoring our local marine resources. The MRCs were created as a way to capture and address the unique needs of each county in the Northwest Straits Region. This interview is one method we use to understand the needs of our local community. We serve as an advisory body to the county and also carry out monitoring, restoration, and outreach projects driven by the needs of the local communities.

Purpose of interview

Our conversation today is part of a series of conversations we are holding with community members to help this MRC focus our efforts over the next 3-5 years.

Interview process

This interview will last between 30 to 40 minutes. We have a list of nine questions that touch on our community and how our *[MRC name]* MRC can address your concerns and the priorities related to marine resources and ecosystem you feel are most important. If there's time, we have some additional questions, so we should have plenty to talk about throughout the interview. There aren't any right or wrong answers – we're just trying to understand how the MRC can best fulfill our role within your community. We will be mindful of time, so even if we don't get to go through all the questions, the time you're dedicating to us today is very valuable and your responses will help our MRC better plan in the future.

As mentioned in the introductory email, your responses will be anonymously compiled with all other responses we receive in our interviews. If you believe it would be helpful to identify yourself or your organization as the source of a comment, please let me know.

Do you have any questions about the interview process or how your responses will be used?

Consent

I'd like to record this interview so I can focus on what you're saying rather than taking notes. We will avoid using your full name on the audio tape and use a numbered code to save the audio file unless you give us permission otherwise.

Is it okay for me to start the recording?

[If no, please let the person know you will be taking notes during the interview]

If yes: Great! I will hit record now and say a few things for record-keeping purposes before we get into questions.

[This is *[interviewer name]* with the *[MRC name]* for the 2024 Needs Assessment. It is *[Date, Time]* and I am with interview participant *[number]*.

Background Questions

- 1) **So, the first thing I would like to know is have you heard about the *[MRC Name]* MRC?**
 - a) If so, how familiar are you with the MRC's work?
- 2) **Have you been aware of the work the MRC has been doing recently? If yes,**
 - a) What activities are you aware of?
 - b) What of the MRC's work do you value most?
 - c) What comments do you have about current projects?
 - d) What recommendations or requests do you have for future MRC work?

About the MRC

The MRC collaborates with other local organizations and volunteer groups to research, protect, and restore our local marine habitats and species. Some of our work includes: (*choose one(s) that relates to you/your interviewer*)

[Insert examples of work specific to MRC]

You can also learn more about the MRC through our website.

- 3) **What does the marine environment mean to you?** [Let the respondent answer unaided to allow for unidentified issues to surface. If needed, probe for more: e.g. What do you enjoy or value the most?]
- 4) **When you think about *[County name]*'s marine environment, what comes to mind?** [Let the respondent answer unaided to allow for unidentified issues to surface. If needed, probe for more: For example, do you think about its beaches, the water quality, wildlife, protection, water sports, pollution?]

- 5) **Do you feel [County name]'s marine environment has changed? If so, how? And if you don't mind sharing, how long have you been living in [County name]?** [Let the respondent answer unaided to allow for unidentified issues to surface. If needed, probe for more e.g. Is this a change you perceive from what you have heard from the community or that you have seen directly?]
- 6) **What do you think are the most pressing issues regarding [County name]'s marine environment at the moment?** [Let the respondent answer unaided to allow for unidentified issues to surface. If needed, probe for more: e.g. species loss, erosion, sea level rise, climate change, water quality, floods, habitat fragmentation]
- 7) **And what do you think will be the most pressing marine issues in [County name] the next 3 to 5 years?** [Let the respondent answer unaided to allow for unidentified issues to surface. If needed, probe for more: e.g. species loss, erosion, sea level rise, climate change, water quality, floods, habitat fragmentation]
- 8) **Are there solutions or actions that you can think of for these issues you just mentioned?** Let the respondent answer unaided to allow for unidentified issues to surface. If needed, probe for more: e.g. habitat restoration projects, protection of wildlife and their habitats, education outreach, ocean/beach cleanups]
- 9) **Do you see yourself getting involved in stewardship activities supporting the marine environment?** If yes, what type of activities? If not, probe for why that might not be the case.

If there's time:

- 10) **When thinking about marine environment management, what organizations come to mind?** Let the respondent answer unaided to allow for unidentified issues to surface. If needed, probe for more: e.g. private companies, non-profit organizations, local/state/federal government agencies and departments, individual citizen groups, etc.
- 11) **Who do you think should be working on the examples of solutions you provided earlier?**
- 12) **How do you think marine issues and solutions should be communicated?**

That's it! To wrap up:

Thank you very much for your comments and your time. We will use your responses to inform our MRC's work for the next 3- 5 years. Our goal is to listen to community needs and integrate

them into our work to protect our marine resources.

Please be mindful, the MRC may not be able to address everything you have raised but we will review and consider all comments as we plan our work. We assess all new project ideas or requests in relation to the MRC's mission and capacities.

Let us know how we might be of assistance. We are staffed through *[name of organization]* and contact information for *[name and position/role]*, can be found on our website. Thank you for your time. It's been a pleasure to talk with you.

Appendix E: Volunteer Training PowerPoint

Intro to Qualitative Methods: Interviews

Diana Rucavado, Isabel Baird, David B. Clark, Chara Lynch

Evans School of Public Policy & Governance - Capstone



Before we begin: what exactly is an interview?

A method of qualitative analysis and research

- It is used to gather **stories** and **perceptions** about complex topics and processes, also for exploratory research
- **Strengths:** personal, rich data, allows for probes and clarifications, can veer off script, easy to develop, no limit on responses
- **Weaknesses:** time-consuming, no counts, expensive, requires skilled interviewers, potential bias (Johnson, 2015)
- Provides detailed data on the **views** and **experiences** of individuals

UNIVERSITY of WASHINGTON

What makes an interview “strong”?

The **depth** of detail from respondents that each interview reveals

Good interviews:

- Capture basic and sometimes deep levels of meaning
- Are richly detailed
- Consist of a respectful and protected dialogue
- Feels like a conversation
- Focuses on selected topics
- Are strategically organized and planned

UNIVERSITY of WASHINGTON

Before the Interview (for general knowledge)

- **Interview Guide:**
 - Is meant to provide instructions for the facilitator (interviewer)
 - Is **not** meant to be a survey
 - Should serve as guidance for key topics, questions, and probes
 - Questions should follow a sequence, but also a balance between easy and hard questions
 - Overall, the interview guide developed should allow to answer the research question

UNIVERSITY of WASHINGTON

Before the Interview

- **Developing questions:**
 - It is not strict - questions can be changed, as long as they follow best-practices
 - Questions should be open-ended and use simple, familiar words and syntax; they should be short and specific
 - **Avoids** questions that are yes/no or leading/loading
- **Review the interview guide before the interview**
 - Know your questions
- **Review time**
 - Don't make the interview too long or too short
- **Remember:** a good interview design will improve your data!

UNIVERSITY of WASHINGTON

During the interview

- **Follow Best Practices:**
 - Listen more, talk less: follow and concentrate both on what is and isn't said
 - Avoid interrupting the respondent
 - Limit your comments on responses
 - Avoid providing counsel
 - Show respect, preserve the integrity of meeting someone new, embody detached concern

UNIVERSITY of WASHINGTON

During the interview

- **Introduction**
 - Purpose of the study (with a bit more detail)
 - Topics of the interview to be discussed
 - Get consent to be recorded
 - Start recording and remember to say identifiable information for your script (this is (name), it is (date), and I'm with interview participant (number/code))

UNIVERSITY of WASHINGTON

During the interview

- **Questions**
 - Ask one question at a time
 - Tolerate silence: silent probes are important, especially in sensitive questions
- **Follow-up**
 - Use probes to uncover meaning: "Would you tell me more about that?", "What was that like?", "That's interesting, can you describe what you mean?", "Can you help me understand what you're saying?"
 - Ask for concrete details
 - Ask for a story to exemplify/clarify

UNIVERSITY of WASHINGTON

During the interview

- **Wrap Up**
 - End on a positive note: "cool down questions"
 - If possible, provide details on what's coming next (e.g. the assessment will be published by...)
 - Ask if they have any questions
 - Thank them for their time

UNIVERSITY of WASHINGTON

Post Interview

- **Send a thank you note**
 - Conveys additional respect and preserves a field and method of inquiry for others to follow
- **Write notes immediately after the interview**
 - Fill out the post-interview memo with all the information you feel is relevant and that the audio will not be able to capture

UNIVERSITY of WASHINGTON

Interview Guide/Framework

Divided in

- **Background Questions**
- **Main Questions, and**
- **"If there's time" Questions**

Let's take a look at the Guide and the Post-Interview Memos

UNIVERSITY of WASHINGTON

Appendix F: Participant Contact Form Questions

1. Name
2. What's the best way to contact you?
3. If email, please provide your email address.
4. If phone, please provide your phone number?
5. What would be the best time to schedule an interview with you, between March 11th and March 31st?
 - a. Weekday Mornings (8:00 am to 12:00 pm)
 - b. Weekday Afternoons (12:00 pm to 5:00 pm)
 - c. Weekday Evenings (5:00 pm to 8:00 pm)
 - d. Weekends
6. The team would like to record the interview to focus on what you'll be saying instead of taking notes. We will avoid using your full name on the audio tape and use a numbered code to save the audio file. Would you be comfortable with this?
 - a. Yes
 - b. No
 - c. Maybe
7. Which of the following terms apply to you:
 - a. Live in Snohomish County
 - b. Work in Snohomish County
 - c. Both
8. What is your current employment status?
 - a. Student
 - b. Employed
 - c. Unemployed
 - d. Retired
 - e. Other
9. Which sector do you work/employ for?
 - a. Private
 - b. Public
 - c. Non-profit/NGO
 - d. Academic institution
 - e. Tribal Government
10. Are you involved with any organization/institution that works on marine and coastal issues?
 - a. Yes
 - b. No
11. If yes, which one?
12. What is your age?
 - a. 18 - 34
 - b. 35 - 54
 - c. 55+

- d. Prefer not to answer
13. What is your gender identity?
- a. Female
 - b. Male
 - c. Non-binary
 - d. Prefer not to answer
14. What is your racial and/or ethnic identity? (check all that apply)
- a. Black/African-American
 - b. Hispanic/Latinx
 - c. Middle Eastern/North African
 - d. White/European-American
 - e. Asian/Asian-American/Asian-American Pacific Islander
 - f. Prefer not to answer
15. What was your annual family income in 2023?
- a. Less than \$50,000
 - b. \$50,000 - \$99,999
 - c. \$100,000 - \$199,999
 - d. \$200,000 or higher
 - e. Prefer not to answer

Appendix G: Recruitment Email to Potential Participants

The Snohomish County Marine Resources Committee (MRC), in partnership with the Evans School Consulting Lab, is inviting you to participate in an **interview** to better understand the needs of our local community and how we can plan our work for the future use and management of our marine resources.

The interviews will be arranged and conducted by Evans School's students, on behalf of the Snohomish County MRC, and Snohomish MRC members will also be taking part in the interviews. Interviews will take place between **March 11th - March 31st** and are expected to last between 30 to 40 minutes on Zoom. You can access Zoom from a computer, your cell phone, or a landline.

Purpose

The purpose of this interview is to gather community members' views and perspectives related to the marine environment and its most pressing challenges or issues. These interviews will be conducted by a group of students from the University of Washington (UW), alongside some of our own MRC volunteers.

Why Did I Receive this Email?

You are receiving this invitation to participate in an interview because the Snohomish County MRC has identified you as someone who would be interested in having a conversation about this topic. We are interested in hearing what you have to say about the future of our marine environment and its resources.

Privacy

The information collected in this interview will be kept confidential and will be viewed by UW students only.

Next Steps

If you're willing to participate, please fill out this [form](#) to provide the UW Team with additional information and allow the UW students to contact you for scheduling purposes. Your answers will be seen by the UW Team only.

Questions?

If you have questions about this interview, please reply to this email or for more information about the study, contact Diana Rucavado or Isabel Baird, University of Washington, at drucav@uw.edu or jpb14@uw.edu.

Appendix H: UW Team Post-Interview Memo Questions

1. Take two minutes to summarize the interview you just had.
2. How does the interviewee view the marine environment/ecosystem?
3. Did the interviewee have enough information about MRCs?
4. Are there any terms the interviewee did not know or understand?
5. Did you have enough time to ask the questions?
6. Did any question pose issues for the interviewee to respond?
7. What question do you think prompted the most engagement with the interviewee?
8. During the interview, did other questions come to mind?
9. Any comments on the interview in general?
10. Do any analytic codes come to mind from this interview?

Appendix I: Volunteer Post-Interview Memo Questions

1. Take two minutes to summarize the interview you just had.
2. How does the interviewee view the marine environment/ecosystem?
3. Did the interviewee have enough information about MRCs?
4. What question do you think prompted the most engagement with the interviewee?
5. During the interview, did other questions come to mind?
6. Any comments on the interview in general?

Appendix J: Codebook and Child Code Descriptions

MRC		Solutions		Challenges	
Describes any reference to the Snohomish MRC's work		Describes actions being taken to solve current challenges or issues, as well as specific institutions involved in those actions		R describes both issues or challenges noticed in the marine environment, both current and in the future, as well as external factors impacting negatively the marine environment	
familiarity	R refers to their familiarity (or not) with the MRC's work	MRC_facilitator	R refers to MRC as a facilitator of solutions, including advocacy work, for the current challenges that the marine environment is facing	wildlife_loss	Use for all references to wildlife or species loss, including specific references to: orcas, salmon, fish
direct_work	R is or was involved with MRC's work directly	other_institutions	R refers to other institutions that are working on solutions to the challenges that the marine environment is facing	climate_change	Use for all references to climate change, including: impacts, sea level rise, water temperature, heat waves, habitat loss, etc.
MRC_positive	R refers to the MRC's work in a positive manner	individual_action	R mentions being involved or wanted to get involved in stewardship activities that support the marine environment, or any action an individual can take (includes mentioning of volunteering)	enforcement	R refers to issues in enforcing laws or regulations that result in damage of the marine environment
MRC_negative	R refers to the MRC's work in a negative manner	education	Use for descriptions of educational programs or education in general as part of the solutions	inst_coordination	R refers to lack of coordination between institutions to attend current issues in the marine environment
internal_challenges	R refers to how the MRC faces internal issues with resources, partnerships, capacity, jurisdiction	outreach	R refers to methods of communication to individuals or organizations	flora_loss	Use for all references to loss of flora, such as: kelp beds, algae, mangroves, forest
general	Any non-specific reference to the MRC	monitoring	R refers to scientific or technical actions of vigilance of specific marine areas or species	water_issues	Use for all references to water issues, such as: water quality, stormwater issues, changes in temperature, red tides
		policy_intervention	R mentions interventions that could be taken by a government or other organization to address a specific issue through specific action like legislation, public comment, or rulemaking	transportation	Use for all references to means of transportation as a root cause of issues, such as: rail roads, tire dust, ships, ferries, derelict boats
		social_media	R mentions an online application, including Instagram, Facebook, Twitter, for sharing information or solutions	invasive_species	R describes invasive species as a current or future issue for the marine environment (e.g. green crab)
		partnerships	R refers to external collaborations with other organizations, including nonprofits, governments, tribes	pollution	R mentions different sources of pollution as an environmental issue, including: oil spills, plastics, stormwater runoff
		citizen_science	R refers to how the general public or individuals can contribute to marine projects or monitoring	erosion	R mentions erosion as an issue [say more]
		restoration	R refers to any projects or areas that need to be restored or are undergoing work to restore	infrastructure	R mentions sea walls, bulk heads, ports, or any other related infrastructure issue as a challenge for the marine environment
				institutional_resources	R mentions issues with resources, capacity, budgets, or funding for any organization or level of government, does not include the MRC
				boundaries	R refers to geopolitical boundaries as an issue for pollution, monitoring, partnerships
				population_growth	R mentions an increasing number of people as a threat or challenge to an area or the marine environment

Changes		Stakeholders		Communication		ME Meaning	
R refers to any change or transformation suffered by the marine environment from a personal perspective		R mentions other stakeholders as parties interested/working for the marine environment		R responds to last question (12) and mentions strategies for communicating marine issues		For questions 3-4, and for any reference to the significance or importance of the marine environment for R	
pavement	R describes increased use of pavement as a change on the marine landscape	state	E.g. Department of Ecology, Department of Commerce	events	R refers to hosting events as a way to communicate/educate about the marine environment and engage the public	sense_of_place	Use for when R describes the marine environment as their home, significant place, [add more]
sea walls	R mentions sea walls as a change in the marine landscape	federal	E.g. EPA	general_comm	R refers to communication strategies or initiatives for marine issues	public_access	Use for when R refers to the possibility to access the marine environment as significant
infrastructure	R mentions increased infrastructure (buildings, roads, rail roads, ports) as a change in the marine landscape	nonprofit	Any non-governmental institution (NGO) that is not education-focused			recreation	Use for when R refers to the marine environment as a place to recreate, e.g. sports, take a bath, walk on the beach/forest, [add more]
reduced_species	R refers to reduced species as a change in the marine environment	private	Mention to private organizations e.g. businesses			aesthetic	Use for when R describes the marine environment with words such as beautiful, pleasure, [add more]
other	Use for any part of the interview that does not capture any of the existing changes codes	education_inst	Any institution that works in education			quote	Use for responses that could be included as quotes in the final project
		tribes	Any tribal institution			other	Use for any part of the interview that does not fall within any of the existing codes
		private_landowners	Any individual or entity owning any amount of land, including those with beach access			human_nature_interaction	R mentions any ways that people and the marine environment relate, connect, or overlap
		youth	Any mention of young people, typically middle-school aged to college aged			food	R mentions the consumption of marine food
		County	Any mention of County level work or a specific County			negative_connotation	R refers to the marine environment in a negative manner
		City	Any mention of city level work				

Appendix K: Number of questions and probes by interview

Interview Number	Number of Questions Asked	Number of Probes Required*
1	10	1
2	12	4
3	12	4
4	11	5
5	12	0
6	11	0
7	12	0
8	12	2
9	12	6
10	9	4
11	10	0

*The number of probes were calculated per question. For instance, 4 probes means 4 questions required probing, rather than 1 question requiring 4 probes.