

Priority 2:

The Legal Foundation for Ecosystem Recovery in the Salish Sea

Audrey E. Nelson, Oregon State University for Puget Sound Partnership

Introduction:

As a transnational body of water, the Salish Sea spans two countries (Canada and the United States), multiple major waterways (Puget Sound, the Strait of Georgia, and the Strait of Juan de Fuca), and is managed by five primary entities (federal, state/provincial, tribal, local, non-governmental), creating challenges for recovery and management efforts. Ecosystem recovery efforts are in part based on legislation implemented at different levels of government, and thus success is primarily dependent on the cognizance and compliance of the public. With multiple (often disjointed and inconsistent) governmental bodies, different information sources, and varying levels of enforcement efforts, fulfilling the intended goals of environmental policy can prove challenging.

In this report, I will discuss the current ecosystem recovery policies and mandates in effect in the Salish Sea, the challenges of collaborating across jurisdictions (socially, politically, physically), and consider institutional barriers. Additionally, I will explore the demographic and social factors that influence peoples' perceptions of and compliance to environmental legislation. While collaborating across multiple levels and actors and across government lines, each with different priorities and responsibilities, unified efforts can prove challenging. Furthermore, the media, research organizations, personal history, and social networks play a strong role in shaping

how people understand and react to different efforts being executed, furthering the challenge to achieve environmental goals.

This paper is organized into three main sections: current legislation, institutional designs and barriers, and social perceptions and barriers; each discussing an aspect of ecosystem recovery with consideration to human dimensions. The resulting report is an unexhaustive synopsis of five pieces of literature relating to the second of five top priorities identified by the Social Science for the Salish Sea 2019 report: “Is the legal framework for ecosystem recovery working?” in an effort to identify barriers and enhance legislative efforts for successful ecosystem recovery. All articles discussed are local to the Salish Sea region, with most addressing some aspect of social sciences.

Current Legislation:

In 2010, the region encompassing the Strait of Georgia in British Columbia and Puget Sound in Washington State, was officially re-named the Salish Sea as the result of collaborative efforts from both countries (Clauson and Trautman, 2015). The name bears cultural significance as it references the historical cross-border inhabitation and traditions of Indigenous peoples and suggests cooperation across political divides for the health of an important and interconnected network of ecosystems (Clauson and Trautman, 2015). This symbolic change is the result of the diminishing health of the Salish Sea and its inhabitants, putting forth a prompt for joint recovery efforts (Clauson and Trautman, 2015).

In their 2015 report, Clauson and Trautman thoroughly catalog the relevant policy actors within Canada, the U.S., nongovernmental, and local tribal governance as well as formal

government transboundary organizations with relevance to the Salish Sea. While this report exhaustively lists all current pertinent policies and legislation, as well as sixteen key challenges in environmental management, I will not detail them in this review. Instead, I will focus on one significant transboundary agreement, the Environmental Cooperation Council, as assessed by Kyla Wilson (2020).

In Wilson's 2020 publication, "Governing the Salish Sea," she argues that despite major steps forward towards collaborative governance, including the development of the Environmental Cooperation Council (ECC) in 1992 between Washington State and British Columbia, current governance structure still exhibits challenges in recognizing and adapting to a changing environment. Relying on a "Marine Science Panel" the council's primary objective is to identify Salish Sea ecological indicators and trends for the development of scientific-based policy, minimizing the importance of human dimensions in ecological systems (Wilson, 2020). Around this time, the Integrated Water Resources Management (IWRM) arose, integrating both environmental and human elements by incorporating social, cultural, and political (e.g., natural resources, water quality, human health) context into this ecological boundary, and encouraging unified efforts across political borders for a shared ecosystem (Wilson, 2020).

While the IWRM's intentions may be to secure the inclusion of local communities in the ecosystem recovery, Wilson (2020) points out that reframing governance is not a guarantee for public participation. Additionally, it is vital to include local stakeholders and Indigenous Nations throughout the decision-making and management process, helping to recognize and empower diverse values and viewpoints (Wilson, 2020). While Indigenous involvement has greatly increased in recent years due to the annual Coast Salish Aboriginal Gatherings (as of

2005) and the recognition of the First Nations in Salish Sea management efforts, the Coast Salish still lack the executive power of federal Canadian and American agencies in governance (Wilson et al., 2020). The ECC fails to recognize the Council as a distinct governmental body within the joint Canada-U.S. agreement, symbolically prohibiting equitable leverage in the decision-making process (Wilson, 2020).

Current policies rely heavily on scientific data and indicators despite efforts to include Traditional Ecological Knowledge (TEK) in ecosystem health reports (Wilson, 2020). In some instances, policy not only fails to recognize, but opposes TEK, revealing a lack of collaboration and understanding between public and Indigenous wellbeing indicators and knowledge, and natural science indexes being pushed by federal governance. In the case of Marine Protected Areas (MPAs) currently being organized in Canada, the Hul'qumi'num peoples from the Strait of Georgia actively oppose the implementation of permanent no-take zones, citing that while temporary limitations could benefit overfished stocks, traditional knowledge demonstrates that active, sustainable harvesting increase clam bed yields (Wilson, 2020).

With an emphasis on current scientific data and environmental conditions, the ECC falls short in preparing for future climate change scenarios. Current efforts attempt to address challenges as they arise, instead of preparing for the future through promoting socially and ecologically resilient and sustainable systems, leaving local communities vulnerable to impending changes rather than prepared (Wilson, 2020). Furthermore, despite the joint governmental identity of the ECC, the U.S.' EPA and Environment and Climate Change Canada still exist as separate entities, creating barriers to public engagement (Wilson, 2020). While the

U.S.' decentralized system provides pathways for public input, Canada's ECC lacks a channel for policy suggestions (Wilson, 2020).

Wilson (2020) suggests several potential adaptations to current management plans, including increased efforts to educate students about ecological systems to support the early development of sense of place and cultural association; inclusion of the Coast Aboriginal Council as a signatory body for the ECC; and providing avenues for diverse voices and viewpoints (including local and Traditional Ecological Knowledge) within the decision-making and management systems. While Wilson (2020) analyzes the efficacy of one trans-jurisdictional body (the ECC), Clauson and Trautman (2015) intentionally omit an in-depth investigation of policy effectiveness in their thorough policy inventory, highlighting the need for further consideration in subsequent research. Clauson and Trautman (2015) suggest examination of factors such as funding and public support that influence policy implementation, as well as resulting policy effects.

Institutional Designs and Barriers:

Lack of collaboration between governments and organizations, often the result of a faulty institutional fit, can lead to environmental setbacks due to miscommunication or conflicting goals. Sayles and Baggio (2016) define these "government silos" as isolated groups which safeguard their knowledge and tactics rather than sharing them to benefit the greater effort. Governance networks can improve collaboration by encouraging interactions among previously isolated actors and increasing shared knowledge and resources towards a common goal (Sayles and Baggio, 2016). The nature of these relationships (funded, shared interest, or mandated) is

highly influential in the success of these collaborations, with mandated networks exhibiting the lowest productivity (Sayles and Baggio, 2016).

In assessing the salmon recovery network structure of the Salish Sea's Whidbey Basin, Sayles and Baggio (2016) report a large number of acting organizations including state and federal organizations, tribal organizations, citizen groups, country, state, city and town organizations, public utilities, educational districts, nonprofits, watershed groups, and businesses. Overall, the authors suggest that fairly high levels of collaboration are occurring, with state, federal and tribal governance maintaining highest levels of participation (Sayles and Baggio, 2016). Specifically, the majority of collaborating organizations participate strongly with state and nonprofit entities and to some extent with federal and district organizations, while collaborating to a very limited extent with educational organizations, public utilities and businesses, but often exhibiting little to no interaction with other organizations (Sayles and Baggio, 2016). Additionally, there were no observed collaborations between state and education organizations with businesses or cities and towns (Sayles and Baggio, 2016).

The success of these networks is highly influenced by personal interactions and relationships, as well as motivations and geographic relation between different organizations, both of which are lacking in available literature (Sayles and Baggio, 2016). Sayles and Baggio (2016) suggest the potential use of multilevel network methods in future analysis of natural resource governance structure, which would allow concurrent assessment of interactions among individuals and companies, but this method has yet to be used for government silos. Next steps require identifying the correlation between ecological and social progress and network

collaboration composition to improve the effectiveness of knowledge-sharing and unified efforts for ecosystem recovery.

Social Perceptions and Barriers:

Human dimensions play a vital role in the effectiveness of developing and implementing ecosystem recovery policy as representation of diverse viewpoints and values, clear communication of goals and reasoning, and individual compliance to regulations are essential for success. In this sense, human dimensions pertain to the scope in which humans reciprocally interact and connect to natural systems (Puget Sound Partnership, n.d.). Examples of these interactions range from a psychological connection to sense of place, to construction of man-made infrastructure.

In Hoelting et al.'s (2013) study, the authors suggest that individual support for environmental regulations can be the result of self-interest or personal costs/benefits, level of trust in governance, ethical motivations, or personal beliefs and traditions. Additionally, well-defined guidelines and expectations, valid reasoning, and community or personal significance can go a long way in garnering support. Perhaps most significantly, community engagement in the decision-making process is considered vital to the success of environmental protection efforts (Hoelting et al., 2013).

Marine Protected Areas (MPAs), regions with limited harvest or recreational access for conservation efforts, within Puget Sound are one such example of environmental regulations which face challenges at both the developmental and enforcement level (Hoelting et al., 2013). With at least 127 MPAs established in Washington state, understanding how people perceive and

respect these policies is vital to local conservation success (Hoelting et al., 2013). Due to their extensive and often remote locations, enforcement efforts are difficult to enact, leaving the success of MPA's largely to the endorsement of local communities. Hoelting et al. (2013) assign three levels of compliance to MPAs: active support through direct involvement in the development process; supportive behavior through following implemented guidelines; and psychological acceptance.

Public support for MPAs is largely influenced by interest groups, as revealed in Hoelting et al.'s 2013 study with self-purported highest level of support coming from individuals associated with conservation organizations, and the lowest level of support reported by commercial fishers. These findings align with related studies that suggest recreational and commercial fishers are typically the strongest opponents to implementation of MPAs as individuals in this category are directly affected (economically and recreationally) by harvest limitations (Hoelting et al., 2013). Additionally, awareness of ecological costs, meeting attendance, and gender (male) were negatively associated with MPA support (Hoelting et al., 2013). The latter is believed to be associated with interest group demographics, with all fisher respondents being male and all conservationist respondents being female (Hoelting et al., 2013).

Alternatively, support for MPA implementation is positively correlated with respondent opinion that current fishing practices are unsustainable or result in damage to the environment, and the belief that MPAs are beneficial to local ecosystems and (in the long-term) to human wellbeing (Hoelting et al., 2013). In a study by Safford et al. (2014), Puget Sound residents reported feeling knowledgeable about the local ecosystems but were unable to accurately describe concerns such as salmon declines and pollution, additionally, they were often unable to

draw a connection between environmental regulations and these concerns. In the same study, nearly one-third of Puget Sound residents stated they felt current environmental regulations implemented by the National Oceanic and Atmospheric Administration (NOAA) resulted in negative or neutral community outcomes, despite the majority supporting the organization's efforts (Safford et al., 2014). This suggests that further education on the connections between policies and their intended benefits for wildlife and natural resources may be necessary to increase support and compliance.

Further factors influencing MPA support include adequate integration of data in the decision-making process, diverse representation of viewpoints and values, and the perception that regulations are reasonable (Hoelting et al., 2013). Opponents to MPAs often cite a lack of explicit precautionary goals and lack of tangibility, suggesting that further education efforts may be required to inform individuals of the long-term effects of conservation efforts, as supported by the above data (Hoelting et al., 2013). Noted by Safford et al. (2014), individual's perceptions of past or current regulations are also a major driving factor for or against support for new ones.

While much of the variation among support for MPAs can be explained by demographic differences examined in this study (interest group, gender, etc.), Hoelting et al. (2013) conclude that these differences are not enough to account for this disparity, suggesting other variables are at play. Therefore, future research is required to fully understand the incentives for support for or against MPAs. Potential variables to consider in future research are length of residency in Puget Sound (to determine level of connection to place), education level, cultural values (e.g., First Foods, recreational resources), and occupation.

As cultural, social, and personal factors are major influencers in MPA perception and compliance, in addition to the influence of process legitimacy and inclusion, diverse stakeholder and Indigenous peoples involvement in the decision-making process is vital. Challenges towards successful stakeholder and Indigenous participation include doubts or incomprehension of available data or ecological systems, financial barriers, and hesitation from Indigenous Nations (Hoelting et al., 2013). The latter in part due to lack of recognition of decision-making power in current structure (which positions all stakeholders as equal contributors), despite treaty rights and Indigenous entitlement to natural resources and their management (Hoelting et al., 2013). This suggests that investigation into current decision-making configuration needs to be evaluated to ensure that Indigenous voices receive due recognition in policy development in respect to their authority over natural resource management and as holders of Traditional Ecological Knowledge (TEK). Additionally, local community members and stakeholders should be provided the resources to make educated decisions regarding Marine Protected Areas, while keeping meetings accessible and affordable to all who choose to attend.

Like MPAs, marine mammal distance regulations (MMDRs) and speed limitations surrounding endangered marine species in the Salish Sea are highly dependent on individual compliance rates. In addition to pollution and sound contamination from marine vessels which can reduce fitness in affected species, potential collisions pose a huge threat to the survival of humpback whale (*Megaptera novaeangliae*) and southern resident and Bigg's killer whale (*Orcinus orca*) populations (Fraser et al., 2020). Chronic exposure to boating vessels can also result in changes in cetacean foraging, resting, and diving patterns, and social functions (e.g., communication), contributing to potential future population declines (Fraser et al., 2020). Both species are considered endangered under the U.S. Endangered Species Act (ESA) and Canada's

Species at Risk Act (SARA), while the Salish Sea region is designated critical habitat for the Southern resident killer whales (SRKW) population (Fraser et al., 2020). Minimum distance regulations range from 100-400 meters depending on a variety of factors including the species, jurisdiction (Canada or U.S.), season, and vessel type (recreational or commercial), with other variable factors including legislative amendments and a growing number of vessels on the water (Fraser et al., 2020).

Roughly 500,000 people interact with cetaceans annually, with compliance incongruity arising across human demographics (user groups) and species (Fraser et al., 2020). In Fraser et al.'s (2020) 2018-2019 survey, overall compliance measured just under 80% (79.9%), with much higher violation of vessel distance restrictions around killer whales. This difference in species-specific violations could possibly be attributed to the multiple amendments made on killer whale MMDRs since their initiation, while humpback whale distance requirements have remained fixed (Fraser et al., 2020).

Violations were primarily focused near coastal communities, with most humpback encounters occurring in the Strait of Juan de Fuca, and killer whale encounters occurring near Victoria, San Juan Island, the Pender Islands, and other popular whale-watching locations (Fraser et al., 2020). Recreational boaters were overall less compliant to distance regulations than commercial vessels, and violations did not appear to vary temporally (by time of day or day of week), implying that most of these encounters are opportunistic versus organized (Fraser et al., 2020). Additionally, compliance did not vary across years (2018-2019) despite amended (increased) legal viewing distances, indicating an overall recognition of MMDRs while suggesting a decline in compliance among commercial vessels (Fraser et al., 2020).

The dissimilarity between recreational versus commercial boater compliance is likely explained by variability in knowledge and experience level, perceived responsibilities (e.g., accountability), and incentives, while individual variance (not examined at length in this study) is likely the result of differing moral codes, expectations, cultural differences, motivations, and other demographic and personal factors (Fraser et al., 2020). Commercial vessel operators are economically dependent on whale interactions, requiring viewing opportunities (which could influence potential distance violations) to obtain tips and favorable reviews for the survival of their business, but this financial dependence could also positively influence compliance by ensuring they retain their business license (Fraser et al., 2020). Additionally, advertising techniques such as using images that suggest whales within close range can influence captain and crew behavior to ensure the happiness and return business of their clients by violating legislation (Fraser et al., 2020).

In a relevant study by Seeley et al. (2017), 61% of recreational boat operators reported being unaware of MMDR regulations, providing explanation for the much higher variation in approach distances of recreational versus commercial boaters. Amending regulations appears to not be a sufficient means of increasing compliance without the incorporation of additional tactics such as increasing boater education requirements and enhancing enforcement presence (Fraser et al., 2020). Fraser et al. (2020) recorded only 3 occurrences during their 101 days on the water in which government enforcement officers were visibly present, a factor which has been proven to substantially increase vessel compliance to MMDRs. This lack of perceived repercussions could prove highly influential in the compliance rates of recreational boaters.

Further complicating the situation are markedly varied distance regulations by different governments across the transboundary waterways, each imposing different distance regulations for vessel types, ecotypes, and species (Fraser et al., 2020). As cetaceans cross these intangible borders at will, boaters often unknowingly cross into different jurisdictions paired with a new set of regulations. Similarly, recreational boaters frequently follow commercial whale viewing vessels hoping to benefit from their experience, oblivious that each vessel type has different distance specifications (Fraser et al., 2020). Fraser et al. (2020) suggest that integrated governance efforts and standardized MMDRs across all jurisdictions would greatly simplify the situation, making it easier for vessel operators to understand and comply with regulations, while allowing for more straightforward educational methods.

Fraser et al. (2020) also propose homogenous regulations for both killer whales and humpback whales, citing higher compliance rates for humpbacks which could be correlated with closer permitted viewing distances. Another factor that could influence this difference is the frequent revisions to killer whale MMDRs, which can create confusion for recreational boaters (Fraser et al., 2020). Finally, both recreational and commercial viewing vessels should adjust their marketing tactics to be more realistic to compliancy, considering the observation distance, type of species and predicted behaviors, reducing the pressure for operators to violate MMDRs to satisfy guests' expectations (Fraser et al., 2020).

This recent (2020) study is one of only a handful of such available research on vessel compliance rates in the Salish Sea, suggesting the need for further investigation to fully understand the dynamics at play. While this article provides valuable insight into potential factors influencing compliance variations between recreational and commercial vessels, all

inferences were derived from observation or literature analysis, lacking insight into individual perceived factors that could influence these differences. Future research should focus on demographic and cultural factors, personal motivations and ethics, level of environmental awareness, and other personal factors that could influence one's compliance to regulations. A social survey process would provide invaluable insight that cannot be provided through pure observation.

Conclusion:

Legislation is a vital instrument for ecosystem recovery, developing mandates and policies which aim to protect and restore declining resources and ecosystems. Human dimensions not only greatly influence the development and outcome of these efforts (through varying levels of compliance) but are also significantly affected by the outcomes. Varying factors ranging from level of reliance on natural resources (financially, culturally, or for sustenance), level of knowledge and understanding of local ecosystem functioning, and attachment to place influence one's perception of and support for these policies.

As the Salish Sea is a region managed by multiple governmental and non-governmental bodies, collaboration is key for ecosystem recovery efforts. Governmental siloes, or lack of coordination across organizations, is an institutional barrier which proves challenging to restoration efforts as it prevents recognition and respect of diverse values, creates conflicting messages, and slows progress towards a shared goal. This subject is generally lacking in local available literature, and while Sayles and Baggio's (2016) article is insightful into current natural resource management networks, it fails to investigate motivations at a personal level (versus

organizational), in which individual relationships among members influence trust and sharing of information among institutions. Future research should address these interactions, as well as consider the effectiveness of various levels of network collaborations in terms of ecological management results.

While Clauson and Trautman's (2015) comprehensive policy inventory proves extremely beneficial in creating a baseline for current ecosystem recovery policy, as noted by its authors, these policies will change over time and extra research is required to maintain up to date records. Additionally, while the report covers the objectives of implemented legislature, there is no further research into the effectiveness of these policies, emphasizing a knowledge gap which requires further research. Further investigation should also consider, as suggested by Clauson and Trautman (2015), factors that sway policy development (e.g., funding, public support), in addition to resulting ecosystem impacts.

In Hoelting et al.'s (2013) study, the authors assert that community involvement throughout the decision-making process is vital to garnering support for environmental protections. Additionally, support can be swayed by interest group (e.g., fisheries, conservation) and thus economic and recreational ties, in addition to level of understanding of ecosystem functioning and the effects of overharvest on fishery health (Hoelting et al., 2013). While these factors can in part describe the differences in support for MPAs, future research should consider personal incentives such as sense of place (length of residency in Puget Sound), cultural values (e.g., Indigenous First Foods), and occupation (i.e., dependence directly or indirectly on the Salish Sea financially).

Similarly, in Fraser et al.'s (2020) article, differences in knowledge and experience level and financial incentives (e.g., upholding a business license) were recognized as potential sources of variance between commercial and recreational compliance levels to MMDRs. While noted by the authors, this survey clearly lacks a social context as data was collected solely through observation. By conducting a social survey, demographics and personal factors such as cultural values, morals, motivations, and level of environmental concern could be analyzed to help discern various aspects that influence compliance to environmental regulations.

While increased communication and data gathering across jurisdictions has greatly increased, much in part to the ECC, and many health indicators (air quality, freshwater quality, food web toxins) show signs of improvement, other Salish Sea health factors continue to decline (EPA, 2019). Marine water quality and stream flow indicators continue a steady declining trend, the result of an increasing human footprint (EPA, 2019). New at-risk marine species continue to be identified (with 23 new species being added to the list between 2008-2011), and Chinook salmon and Southern Resident Killer Whale (SKRW) populations continue to nose-dive (EPA, 2019). These results show that current efforts may not be enough to restore the health of the Salish Sea, requiring greater efforts to curb overharvesting, pollution, and habitat loss. This translates into greater inclusion of social sciences in policy development (including diverse stakeholder and Indigenous representation), greater enforcement efforts, and increased collaboration networks.

Salish Sea ecosystem recovery efforts result from different levels of collaboration among jurisdiction levels and the public to benefit the unique and indispensable species and natural resources that live within its waters, and the wellbeing of the humans who rely upon them.

Cooperation and inclusion is essential for positive outcomes in both the decision-making process and implementation of these policies to ensure diverse values and viewpoints are respected, and to ensure compliance to the resulting mandates. While a multitude of influences factor into ecological outcomes resulting from these regulations, human dimensions undeniably play a vital role, and understanding these connections is key to recovering the Salish Sea.

Literature Cited:

- Clauson, C. and Trautman, L. (2015). An Inventory of Policy Actors and Instruments Relevant to the Salish Sea. *Western Washington University*.
- Fraser, M.D., McWhinnie, L.H., Canessa, R.R. and Darimont, C.T. (2020). Compliance of small vessels to minimum distance regulations for humpback and killer whales in the Salish Sea. *Marine Policy*. 121. <https://doi.org/10.1016/j.marpol.2020.104171>
- Hoelting, K.R., Hard, C.H., Christie, P. and Pollnac, R.B. (2013). Factors affecting support for Puget Sound marine protected areas. *Fisheries Research*. 144, 48-59.
<https://doi.org/10.1016/j.fishres.2012.10.006>
- Puget Sound Partnership. (n.d.). *Social science research and efforts*. [Puget Sound Partnership - Public Opinion Research \(wa.gov\)](https://www.pugetsoundpartnership.org/public-opinion-research)
- Safford, T.G., Norman, K.C., Henly, M., Mills, K.E., and Levin, P.S. (2014). Environmental awareness and public support for protecting and restoring Puget Sound. *Environmental Awareness*. 53(4), 757-768. DOI 10.1007/s00267-014-0236-8.
- Sayles, J.S. and Baggio, J.A. (2017). Who collaborates and why: assessment of diagnostic governance network integration for salmon restoration in Puget Sound, U.S.A. *Journal of Environmental Management*. 186(1), 64-78.
<https://doi.org/10.1016/j.jenvman.2016.09.085>
- Seeley, E., Osborne, R.W., Koski, K., and Larson, S. (2017). Soundwatch: eighteen years of monitoring whale watch vessel activities in the Salish Sea. *PLoS One*. 12(12).
<https://doi.org/10.1371/journal.pone.0189764>
- United States Environmental Protection Agency (EPA). (2019). *Health of Salish Sea ecosystem report*.
- Wilson, W. (2020). Governing the Salish Sea. *Hastings Environmental Law Journal*. 26(1), 168-182.

