

EVALUATING SENSE OF PLACE AS A DOMAIN OF HUMAN WELL-BEING FOR PUGET SOUND RESTORATION

We all grew up around here, it's our life, it's our way of living. It's what we understand. Maybe you understand university, maybe you understand your church, you know? [These beaches] are our universe, that's our church. See what I'm saying? —tribal member interviewee

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Executive Summary

This report communicates findings of a social science study conducted between July 2013 and December 2014 on a focal domain of human well-being: *sense of place*.

Purpose

The purpose of this research is to examine the connections between sense of place¹ and human well-being for Puget Sound residents in the context of shoreline activities: primarily, though not exclusively, shellfish harvesting. While it is generally agreed that a healthy Puget Sound is central to overall human well-being, there is a lack of understanding about how sense of place influences and is influenced by human actions and human well-being. We chose to investigate these influences through the lens of shellfish harvesting and other shoreline activities, with the hypothesis that people who are active in the shoreline area will have a stronger place attachment². Elucidating sense of place as a domain of human well-being improves understanding of why people support or reject restoration activities, as well as illustrates how and why sense of place could be strengthened in planning and policy. Our hope is that by building a better understanding of the place-based practices, histories, and diverse values that form sense of place for Puget Sound denizens, Puget Sound Partnership will be poised to be in the vanguard of marine socio-ecological system management by placing human well-being as a central objective.

Methodology

In this study, we use interdisciplinary methods from anthropology, human geography, public health, and the decision sciences to assess the interrelated ways that sense of place, shellfish harvesting, and other shoreline activities contribute to human well-being in Puget Sound. We used two main methodological tools to empirically assess the relationships between sense of place, well-being, and activities in the nearshore (i.e. areas near the shore): in-depth semi-structured interviewing; and, data verification and values elicitation workshops. In combination, these methods produced new insights into the multi-dimensional characteristics of sense of place for diverse communities. Further, they illuminated the differing challenges that various groups face in trying to maintain or restore a desired quality of life in connection with maintaining and restoring the Puget Sound.

¹ “Sense of place” is defined here as peoples’ connections to specific geographic areas, created and maintained via individually-held and/or community-wide meanings and values. A place is more than the sum of its material parts; it is marked by individual biographies, social histories, and relations, as well as its aesthetic qualities and biogeographic characteristics. See page 8 for more information.

² We use “sense of place” and “place attachment” interchangeably. See page 11 for more information.

We conducted this study in two geographic regions of Puget Sound: South Puget Sound and the Skagit Estuary. We conducted semi-structured interviews (n=54) with three subpopulations in each region: tribal harvesters, non-tribal harvesters, and non-tribal non-harvesters. We then conducted four community-based workshops (total n=43) to verify initial analyses and rank place values before examining potential metrics of place-based well-being. We used grounded-theory and AtlasTi™ qualitative data analysis software to identify dimensions of place attachment and social phenomena affecting quality of life in the nearshore. The workshops provided participatory confirmation of place attachment analysis and led to the construction of preliminary scales of place-based well-being.

Key Findings

Our findings show that sense of place is multi-dimensional; it is not simply one category or indicator, but instead spans at least four key dimensions: harvesting and other activities (*activity*); cultural and familial heritage (*heritage*); personal emotional and cognitive experiences (*personal*); and social connections (*social*). Each dimension is associated with specific attributes to exemplify a community-bounded understanding of particular place values. We also discovered a number of other important factors that enable or constrain sense of place. These factors include the ability (or not) for each participant group to find substitutes for important places and resources; their future hopes and worries; and how concurrent contexts such as social and economic factors affect sense of place. In addition, we found that three phenomena aid in creating, maintaining and enriching sense of place: access, ecological integrity and knowledge, we term these “enabling contexts” (Figure 1).

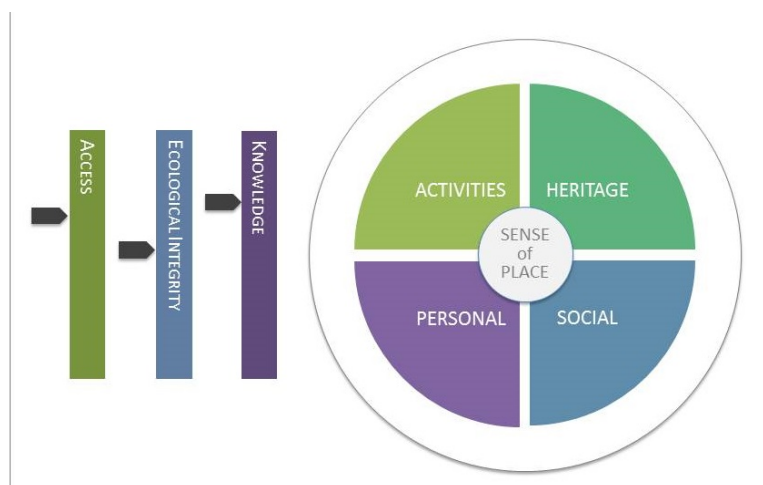


Figure 1: Conceptual diagram of sense of place and enabling contexts

The strength of place attachment followed a continuum from surface values (i.e. weaker place attachment) to embedded values (i.e. strong place attachment). Embedded values

were built on deep ancestral ties to the land (heritage), being regularly active over longer periods of time in the nearshore (activity), having strong social ties connected to the activities (social, and robust emotional bonds and cognitive connections (personal) that stem from those activities, memories, and/ or social connections. We found that people who are continuously active on the landscape for many years (and over generations), and whose activities are an important part of their social network, had the strongest embedded values. Surface values arose out of current actions, feelings, and values held by an individual, while embedded values included linkages to the past and often on a familial or community scale as well as individual scale. Following this continuum, we found that strength and complexity of sense of place differed between our three population groups (tribal, non-tribal harvester, non-tribal non-harvester). The majority of people with strong, embedded senses of place were multi-generational shellfish harvesters (tribal and non-tribal). We also found distinctions among non-harvesters that related to their degree of active engagement on the beach. More recent Puget Sound arrivals (residents for less than a generation) who recreationally harvest displayed “surface values” as did some of the nontribal non-harvesters who are otherwise actively engaged in the nearshore, but lacked other sense of place dimensions (e.g., heritage and/ or social) held by multi-generational residents who are active in the nearshore. In sum, sense of place grew stronger as social connections, personal and family histories, and place-based experiences became more embedded with longer-term engagement on the landscape, engaging all four key place attachment dimensions.

One way we ascertained strength of place attachment was through the analysis of (non)substitutability of places and/or resources. Considering substitutability is important for evaluating sensitivity to change and measuring trade-offs in restoration that directly or indirectly affect sense of place as outlined in this research. It’s not enough to evaluate whether sense of place would be improved or degraded by change; what is crucial is to evaluate both how sense of place is affected, and importantly, for whom. The same changes may not be evaluated the same by all groups. When considering the mechanisms of place attachment, substitutability must be accounted for. Failure to consider (non)substitutability in sense of place metrics may have important environmental and social justice implications.

Embedded values and strong place attachment fostered stewardship ethics and practices. Thus, to strengthen place attachment for human well-being and stewardship outcomes, we recommend focusing improvements on three primary enabling contexts: access, ecological integrity, and knowledge. While each may be improved upon independent of the others, place attachment is most improved when all three are enhanced together.

With additional input from diverse stakeholder groups and key experts, the fledging metrics presented here could be employed as building blocks to be tested, expanded, and amended to refine sense of place indicators and improve human well-being vital sign assessments. We recommend using structured decision making as tool to build constructed scales for sense of place measures. Constructed scales of sense of place as defined here can also be used to evaluate current place attachment strengths and provide insights to improving human well-being in restoration projects. Unlike many other generalizable PSP Vital Signs indicators, the indicators and scales for evaluating status and trends in sense of place will vary, especially when tailored to the diverse social contexts that characterize most socio-ecological systems, Puget Sound included. Surveys, when administered at appropriate scales and accommodating diverse place values, could also be a tool to monitor change.

Summary

People foster unique stewardship ethics grounded in place-based practices that are not otherwise acknowledged or reflected in current ecosystem assessment and restoration approaches used in Puget Sound. The integration and examination of more complex measures of sense of place is important precisely because of the role of relational- and practice-based place attachments in developing stewardship and restoration ethics for people. Since the overarching goal of PSP is restoration, this fuller understanding of sense of place deserves stronger centrality in policy, monitoring, and action. Our results suggest the importance of understanding and improving the conditions (e.g., access, knowledge, and ecological integrity) that enable the continuum of place attachments, for ecological improvements as well as human well-being and quality of life.

Introduction: Evaluating Sense of Place as a Domain of Human Well-Being for Puget Sound Restoration

A healthy Puget Sound ecosystem is central to overall human well-being. Residents and visitors to Puget Sound value a diverse set of benefits that come from interactions with the larger socio-ecological system. Recognizing this, the Puget Sound Partnership includes placeholders for measuring quality of life and healthy human populations in its restoration program. However, an incomplete understanding of these benefits and how they manifest has made it difficult to monitor changes to, or adapt restoration actions for, human well-being.

This report communicates findings from a social science study conducted between July 2013 – December 2014 on one focal domain of human well-being: *sense of place*³. Puget Sound Partnership (hereafter, PSP) recognizes that Puget Sound’s ecosystem contributes to a sense of place and also serves as a venue for recreation, including recreational shellfish harvesting. However, harvesting and sense of place are not currently evaluated through an integrated analytic lens. Nor is it clear how sense of place will be assessed and weighted as part of quality of life as measured by PSP. Currently, these valued ecosystem and cultural services largely remain in separate silos, if considered at all.

Sense of Place

Peoples’ connections to specific geographic areas, created and maintained via individually-held and/or community-wide meanings and values. Place values are inscribed onto particular sites through practices and social engagement, where history is alive on the landscape with the ongoing presence of human communities. A place is more than the sum of its material parts; it is marked by individual biographies, social histories and relations, as well as its aesthetic qualities and biogeographic characteristics.

The purpose of this research is to examine the connection between sense of place and human well-being as derivative of shellfish harvesting and other shoreline activities. Our hope is that by building a better understanding of the place-based cultural practices, histories, and diverse values of the denizens of Puget Sound that form sense of place, PSP will be poised to be in the vanguard of marine socio-ecological system management by placing human well-being as a central objective.

³ We refer to sense of place as peoples’ connections to specific geographic areas that are created and maintained via individually held and or community-wide meanings and values (Tuan 1977). That is, values inscribed onto particular sites or beaches where harvesting occurs; social gatherings are held; and also where history is alive on the landscape with the ongoing presence of human communities. Through these histories and practices, Puget Sound becomes more than the sum of its material parts; it becomes marked by individual biographies, social histories, and relations, as well as its aesthetic qualities and biogeographic characteristics.

Background

Shellfish such as clams, oysters, crabs, geoducks, mussels, and other intertidal species have been important to the cultural and economic well-being of tribal communities living along the shores of the Puget Sound region of the Salish Sea for millennia. These shellfish are considered traditional foods, and the acts of harvesting, preparing, storing and consuming them are central to Coast Salish cultural continuity. Traditional foods are connected to other key facets of the community such as food sovereignty, knowledge transmission, and important cultural institutions such as winter and spring ceremonials, witnessing of events and decisions, as well as the transfer of land, names and titles -- all of which play important roles in creating and maintaining the health and well-being of the community (Donatuto et al. 2011; Salmón 2012; Turner et al. 2008).

Many non-tribal residents of the area also value and harvest shellfish (including both commercial and non-commercial users) and enjoy recreational and cultural benefits associated with coastal ecosystems and the services they provide. Shellfish harvesting is recognized as an especially popular activity along the shores of Puget Sound. A 2006 recreation survey indicated that increasing numbers of residents are interested in participating in shellfish harvesting (Outdoor Recreation Survey 2006). In light of predicted changes in ocean temperatures and chemistry, the social, cultural, and economic values of shellfish in the Puget Sound face increasing challenges and pressures.

The lack of a clear connection between sense of place and well-being as derivative of shellfish harvesting and other shoreline activities stems in part from conventional but inadequate definitions of shellfish harvesting as a recreational or provisioning activity; meanwhile sense of place is subsumed under “wilderness experience,” that links people to a setting in non-material ways (MEA 2005). Following these conventions, harvesting is de-linked from culturally-rooted and socially experienced sense of place and well-being; as well, sense of place is rendered non-material, non-social, and atemporal. These definitions are misleading for at least two reasons: first, they tend to assume what the basis of place attachment ought to be (e.g., wilderness appreciation) rather than using empirical evidence from different human communities; second, they tend to valorize human well-being using difficult to defend properties and measures in ecosystem-based management. For example, a prominent index to emerge in recent years is the Ocean Health Index⁴, which defines sense of place as the cultural, spiritual, and aesthetic benefits of a region, yet measures these qualities by the protection of iconic species and protected areas using metrics that reflect no interaction between humans and ecosystems. Such approaches in contexts like

⁴ http://www.oceanhealthindex.org/Goals/Sense_of_Place

Puget Sound, where shellfish harvesting is an important cultural practice, may actually undermine coastal communities' sense of place and quality of life by reducing access to harvesting (for example, see Ayers 2012 for study of a First Nation's perspective on MPAs in Salish waters of British Columbia.) Moreover, poorly defined sense-of-place targets provide little policy guidance for tracking, protecting or improving the conditions that make healthy harvesting possible for Puget Sound residents (tribal and non-tribal alike). This suggests the need for locally-defined and relevant understandings, and methods for tracking changes in status, of sense of place and other well-being values, as well as other cultural ecosystem values more broadly.

Measuring Sense of Place: a place-making framework

Together with citizens, governments, tribes, scientists, businesses, and nonprofits, the Puget Sound Partnership sets priorities, implements actions, and monitors recovery toward identified targets. Monitoring progress toward targets is often accomplished through the use of indicators. Indicators are intended to communicate and measure status and trends of focal ecosystem components. The preponderance of indicator monitoring activity has focused on biophysical indicators of ecological health; recently PSP started actively developing targets and indicators for human well-being and quality of life, including "sense of place" as a candidate attribute of human well-being (Biedenweg 2014).

Social scientists from diverse disciplines (e.g., landscape architects, sociologists, economists, archeologists, anthropologists, landscape ecologists, geographers, psychologists) approach the study of sense of place in myriad ways, using a plethora of methods and measures. For example, landscape architects create assessments primarily based on philosophies of design, while archeologists focus on histories invoked by the material properties of a site (Stephenson 2008). Resource economists often measure place using hedonic pricing and contingent valuation methods, which calculate economic value (e.g., increases in property values and associated costs and benefits) or willingness to pay for proximity to an environmental amenity such as views or recreational sites (DeGroot et al. 2002). While these metrics are useful for translating some ecosystem values into market equivalents, they do not account for the full array of important values and they are particularly poor at capturing the links between actual physical or material places and activities (e.g., shellfish harvesting) and the valued immaterial or extra-material cultural services they provide (Satterfield et al. 2013).

To date, PSP only has examined sense of place through the psychological measure of "place satisfaction", or judgment about the qualities of a setting (2012 General Public Opinion

Survey⁵). The Puget Sound Partnership (2012) General Public Opinion survey found that the top reason why respondents value the Puget Sound is for its scenic beauty. Although survey questions sought information about respondents' activities, the results did not reveal how various activities help to form and maintain place attachments⁶ nor did results explain how these activity-based place attachments contribute to respondents' quality of life. Our concern is that tracking place satisfaction only, rather than *practice-based* and *meaning-based* place attachments, could enable a high sense of place as an aesthetic ranking otherwise unlinked to both material status (e.g., water quality and environmental health) and social relationships crucial to forming and maintaining sense of place. In doing so, sense of place measures risk becoming disassociated with access, education and ecological health that render place-attaching activities (e.g., being in the nearshore and consuming from it) safe and possible.

In this study, we use a *place-making framework* to guide the methodology and analysis of our research (Kruger and Shannon 2001; Pierce et al. 2011). Place-making builds from interdisciplinary methods in anthropology, human geography and community well-being that examine the ways that sense of place is *practice-* and *meaning-based*, created through an interplay of biophysical and social worlds (Beckley et al. 2007; Davenport and Anderson 2005; Poe et al. 2014). Tuan's (1975) concept of place provides a starting point: biophysical *spaces* (such as shorelines, beaches, and bays) become *places* when they are imbued with meaning through lived experience. As Ingold (2000:192) notes: "a place owes its character to the experiences it affords to those who spend time there – to the sights, sounds and indeed smells that constitute its specific ambience. And these, in turn, depend on the kinds of activities in which its inhabitants engage. It is from this relational context of people's engagement with the world, in the business of dwelling, that each place draws its unique significance." In this vein, practice-based place attachments are important to a person and community's sense of belonging, and to the place-specific narratives and histories that form the basis of cultural identity (Basso 1997). Together, these express and give purpose and quality to one's life (Davenport and Anderson 2005). These practice-based attachments to place are heterogeneous and layered with meanings that tend to accumulate across time, often accompanied by site-specific skills, environmental learning, spiritual connections, and social relationships (Ingold 2000). As a result, activities such as shellfish harvesting are understood as far more than provisioning activities only, but instead are integral to the way place is made through diverse experiences with nature, and becomes tied to people's sense of belonging, to their identity and to overall continuity of a desired life.

⁵http://www.mypugetsound.net/index.php?option=com_docman&task=doc_download&gid=1619&Itemid=172

⁶ Scholars elsewhere have debated the nuances between the definitions of "sense of place" and "place attachment" (c.f., Farum et al. 2005 for a summary of those deliberations). While we do not dismiss that there may be different intonations between the two terms, we use them interchangeably here.

What follows below are the results of this project, which seek to characterize the meaning and relative importance of sense of place in such a way as to link it to both its generative activities (e.g., what practices both represent and strengthen place attachment) and the broader set of ecosystem services and environmental changes that enhance or degrade well-being. Our work builds on more than a decade of indicator-development work at the Swinomish Indian Tribal Community with project investigators Drs. Donatuto, Satterfield and Gregory (2011) as well as with indigenous and non-indigenous communities in both the US and Canada by project investigators Drs. Poe, Gregory and Satterfield (e.g., Gregory et al. 2012; Poe et al. 2013; 2014; Satterfield et al. 2013).

Methods

Using a place-making framework, we examine practice-based ‘sense of place’ and its links to community well-being. Detailed below, our mixed-methods, predominantly qualitative approach identified locally-defined variables and attributes of place through the use of interviews, workshops and narrative-based evaluation techniques (Satterfield et al. 2013). In this section, we discuss our methods to establish community partnerships; our sample frame and recruitment strategies; steps taken to develop and conduct semi-structured interviews (n=54) with three subpopulations in two regions (6 groups); analytical approach used with interviews; and the design of four community-based workshops to verify initial analyses, rank place values, and examine potential metrics of place-based well-being.

Techniques drawn from anthropology, geography, structured decision making, cognitive psychology, applied ecology, and behavioral economics were all used to focus not on what is readily measureable or easily quantifiable but, instead, on things that matter to the people living in potentially impacted and marine-based communities (Gould et al. 2014; Gregory et al. 2012). The combination of these approaches allowed for an investigation of the multiple social and cultural benefits of shellfish harvesting and other shoreline activities, to well-being, sense of place, and to a variety of other nonmarket and recreational benefits enjoyed by residents of Puget Sound. It also enabled us to provide empirically-grounded measures of well-being reflective of the aforementioned cultural ecosystem services and quality of life benefits. Below we describe these methodological steps in chronological order.

Step 1: Establish community relationships

The project sought to work with communities grouped in two distinct Puget Sound regions (South Puget Sound and the Skagit Estuary) in order to provide detailed information about residents' values and beliefs specific to each area. Because this work was expressly focused on shellfish harvesting as a key and multi-valenced practice in the region, we also sought candidate geographic communities based on: (a) their location on or near the shores of Puget Sound; (b) locations adjacent to a Coast Salish tribal community interested in participating; and (c) being adjacent to one or more open public shellfish beds.

Within each region, we chose to focus our attention on three population subgroups that we anticipated would have, and represent well, distinct values of place: (a) tribal harvester group, (b) non-tribal harvester group, and (c) non-tribal non-harvester group.⁷ We selected these subgroups to test the heterogeneity of people who live in the same geographic community, yet whose place attachments and cultural values were expected to differ.

We chose the Skagit Valley estuary region, labeled "North," as the first area because the project was awarded to the Swinomish Indian Tribal Community (Swinomish), residents of this area. We then chose South Puget Sound and the Mason County section of Hood Canal area as the second region, labeled "South." While the bodies of water in this larger Southern area are relatively separate, the land area between Hood Canal and the many shorelines along the inlets of the South Puget Sound estuary where people live, are geographically tied. The inlets of this area of South Puget Sound are home to the Squaxin Island Tribe, formal partners and participants in the research (Figure 1: Regional map).

⁷ While these are the three primary populations in our study, there are variations within the non-tribal groups that we explored in the results and analyses. For example, we distinguished between non-tribal non-harvesters who were active and engaged on the landscape, and those who were not. Additionally, there emerged a distinction between multi-generational non-tribal harvesters, and more recent arrivals.

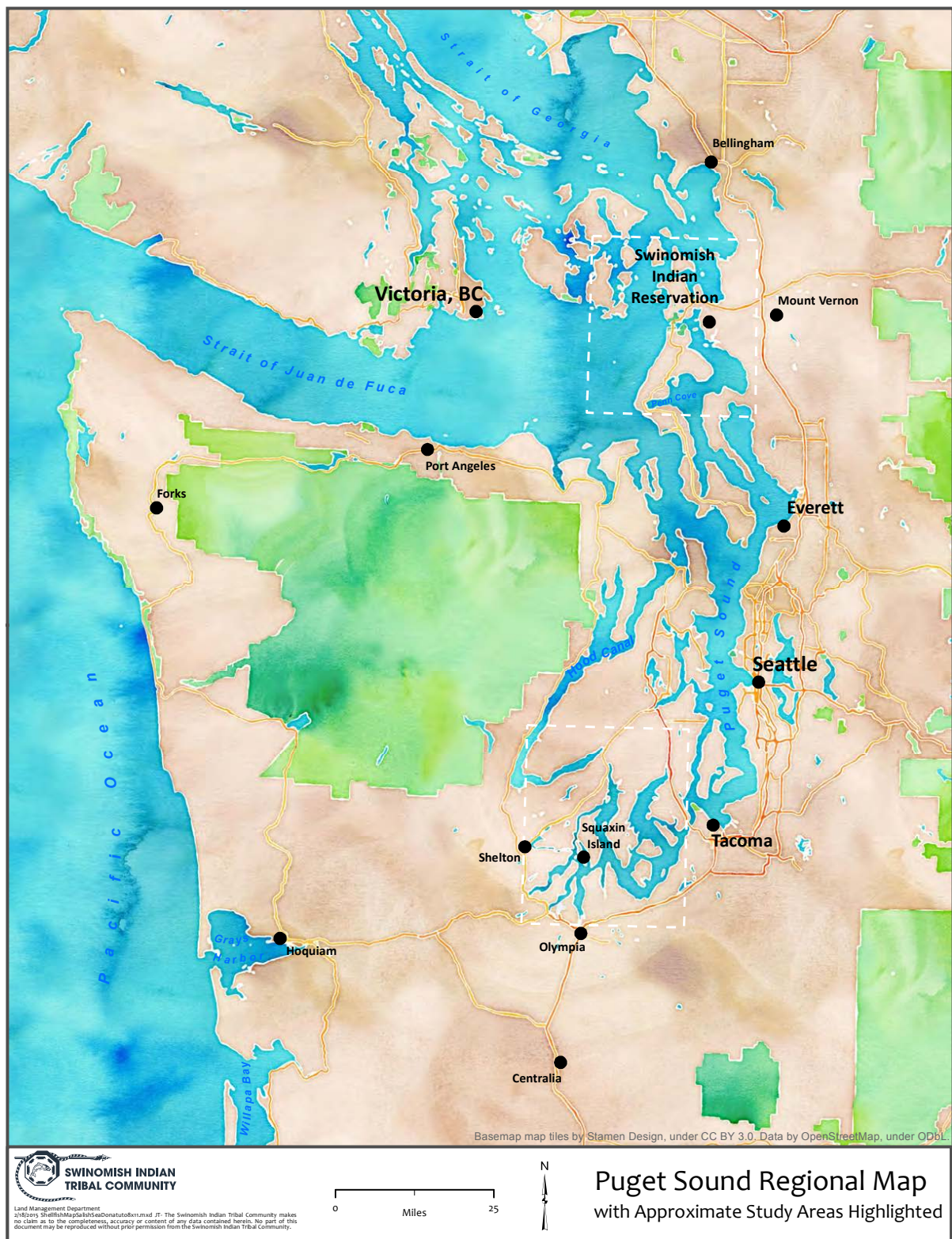


Figure 1: Regional map

Formal partnerships and agreements were established between the Swinomish Tribe, the Squaxin Island Tribe, and the University of Washington, via a materials and data sharing agreement. This agreement, which outlines how data and materials gathered during the project will be used, who has access, who owns the data, and review processes, is a legal document signed by the Swinomish Tribe, the Squaxin Island Tribe, and the University of Washington. Material and data sharing agreements are an important additional step to many conventional Institutional Review Board (IRB) protocols when working with Indigenous communities, who have additional needed protections at the community-level (e.g., location of sacred sites, proprietary knowledge) (Harding et al. 2012). Once the data sharing agreement was signed we worked to identify and hire a Squaxin Island Tribal liaison to aid in the tribal interviews and workshops in the South. Project researchers are committed to follow established community-engagement practices when working with tribal communities. Doing so helps to avoid histories of misunderstood tribal needs and priorities, and misuse of data by ‘outside’ researchers, which have created a climate of research hesitancy. In addition, we cannot stress enough the importance of ensuring and building upon long-standing research relationships in lieu of one-off, “helicopter” research. These include: establishing partnerships at the onset of a project, continued communication and collaboration throughout the project, review of all data and materials before public release and active follow-up once project is complete including pursuing additional funding for projects based on the Tribe’s stated priorities (Lassiter 2005).

Step 2: Develop interview instrument

We developed two interview guides: one for harvesters and one for non-harvesters. The interview instruments were intentionally semi-structured (known as ‘grand-tour’ questioning) with open-ended questions to encourage the interviewee to think about and articulate ideas in meaningful ways (e.g., memory recollection), to allow discourse in ways most comfortable to the individual (e.g., narrative or expository forms); and so avoid producing results that were overly-crafted or informed by the structure of specific questions. Questions focused on key components theorized to contribute to a sense of place, place attachment and identity, belonging, shellfish and other near-shore harvests, and social attributes of intertidal ecosystems such as spiritual and religious values, cultural heritage, recreation and ecotourism, cultural and knowledge transmission, food security and cultural food practices, educational values, aesthetic values, concerns regarding social relations, and issues related to trust and marginalization of the community. We provided area maps at each interview (one for North and one for South), widely used as a proxy for field visits or to prompt discussion about particular places including their range and changes as well as peoples’ connections to sites both visited and no-longer visited or avoided.

Interview guides, methods, and consent forms were reviewed and approved by the Swinomish Tribe's Institutional Review Board (Northwest Indian College project #2013-11) (interview guides are found in Appendices A and B).

Step 3: Recruit participants and conduct interviews with 3 groups of participants in two regions

Participant recruitment was multifold. With the help of tribal liaisons and other community leaders, we identified and contacted potential participants with connections to harvesting among the two tribal communities (Davis and Wegener 2003). We also used local leaders in the non-tribal communities to help identify potential participants who were either harvesters or had some other unique tie to the study area. The research team developed and posted recruitment flyers in local community centers, markets, and newspapers and a created one-page summary of the project to hand out to potential participants at tribal and non-tribal community gatherings, along with an interview invitation letter (Appendices C and D). Invitations were made in person, by phone, and via email.

We interviewed 8-10 people in each group (tribal harvester, non-tribal harvester, non-tribal non-harvester) per region (North and South) (n=54), between April and the beginning of October 2014 (Table 1). The sample size follows recommendations found in Gould et al. (2014) for interview numbers, based on Maxwell's conclusion (2005) that the majority of concepts interviewees touch on begin to repeat after 20-30 interviews have been conducted. The interviews included one researcher, one participant, and in the case of tribal interviews, a tribal liaison. In a few interviews, a college student intern was also present, as a silent observer. Interviews took place in various locations, ranging from tribal offices, to a coffee shop, work offices, public library, outdoors, a private home, and even aboard a boat or two. Interviews lasted between 45 – 120 minutes. Interviews were audio recorded and stored by the research team using a unique code to protect participants' identities. Signed consent forms were collected at each interview. Interviewees received a gift card honorarium, valued at \$10. At the end of each interview, we talked about the project's next steps and invited Interviewees to participate in an upcoming workshop. We hired two transcriptionists to transcribe the audio-recorded interviews in preparation for coding.

Table 1: Interview Demographics (n=54)

Interview grouping	Age Range	Gender
North tribal (harvester) (n=10)	30-69	F=6 M=4
North non-tribal harvester (n=9)	30-79	F=2 M=7
North non-tribal non-harvester (n=10)	18-79	F=7 M=3
South tribal (harvester) (n=9)	20-89	F = 3 M = 6
South non-tribal harvester (n=8)	20-69	F = 4 M = 4
South non-tribal non-harvester (n=8)	30-79	F = 7 M = 1

Tribal harvesters included tribal members who harvest currently or did so previously, as well as individuals who are connected to the act of harvesting (e.g., cultural harvest knowledge holder; community cook, etc.) We include a broader array of people associated with harvesting, as we found that harvesting is not a stand-alone act; rather, it is integrally connected with other nearshore activities, as well as preparation and use of the harvest and associated meanings.

Step 4: Code and analyze interview data

We assigned identifiers to each interview that retained the anonymity of individuals, yet allowed us to sort and characterize the information in each interview based on the interview categories we developed for the project.

Using grounded theory (inductive methods), the project researchers employed Atlas.ti™ software to code the interview data into dimensions relating to “place attachment” and other observations about social and ecological contexts relative to place and well-being in the nearshore. By ‘grounded theory’ we mean coding approaches that permit classification and interpretation derived directly from interviewees’ ideas (i.e., “open coding”), less so from a priori coding schemes or theoretical-propositional tests (i.e., “selective coding”). For example, if the interviewee spoke about how she felt about the closure of a shellfish bed, that would be coded in reference to her emotional attribution, and if she talked about going with uncles and cousins, it would be coded as social connections or heritage qualities as

well. You can apply multiple codes to a single quote. This allows for additional analysis, co-occurrence of codes, and so avoids assignments of meaning that are too heavy-handed (colloquially speaking: more about the researcher than the researched topic).

We created higher and lesser order code groups, referred to within this report as “dimension” typologies, with associated “attributes” (see below in results section); each is derived from recurrent topics in interviews. Four major place-attachment dimensions emerged, glossed herein as: (1) activity, (2) heritage, (3) personal, and (4) social. Within each dimension group are attributes (e.g., within activity: shellfish harvest, other harvest, walking, wildlife watching, boating, etc.). The dimensions and attributes were used as the backbone for the workshop design.

Step 5: Develop and conduct workshop instruments for 2 groups of participants in two regions

The goals of the workshops were to: (1) verify or ‘ground truth’ the place attachment dimensions and attributes derived from interview data; (2) determine the importance of each of the key dimensions to well-being from the workshop participants’ perspectives; (3) begin to develop constructed scales of measure for one or more of the dimensions determined to be most important by workshop participants; and (4) use a local restoration project as a scenario to test whether there may be ways to modify that restoration project in order to improve one or more aspects of well-being⁸.

We conducted two workshops in each of the aforementioned North and South areas (4 workshops total). In each region, one workshop comprised tribal members and one comprised ‘non-tribal’ participants (n=43). Ideally we would have liked to host three workshops in each area—one for tribal members, one for non-tribal harvesters and one for non-tribal non-harvesters. However, time and resources limited us to two workshops per area. After much discussion, we decided to group the non-tribal harvesters and non-tribal non-harvesters together because we found that many tribal members were resistant to voicing opinions in workshops with unfamiliar attendees. One disadvantage of combining non-tribal harvesters and non-harvesters was that it limited our ability to distinguish how workshop responses may have differed across these two subgroups.

The workshops involved the following steps: (1) dimension verification/ classification; (2)

⁸ We used the term well-being in the workshop instead of “sense of place” or “place attachment,” because we found these two latter terms to be too “academic” for most interviewees, who didn’t grasp the concept of the terms. When we described the terms in the context of being part of overall well-being, most people understand well-being and that there are many aspects that comprise the term.

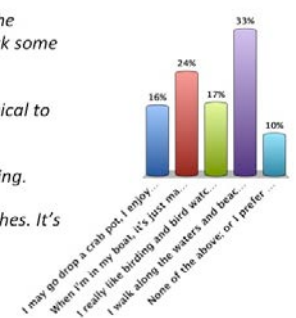
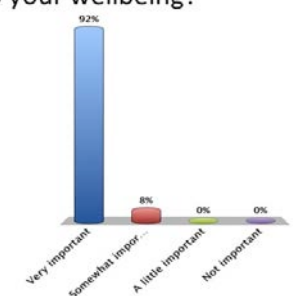
ranking of dimensions using constructed scales (see sidebar on constructed scales); and (3) developing indicators and measures of most highly ranked dimension(s). The fourth step, done in three of the four workshops, evaluated a restoration activity for the potential to modify the project in order to improve one or more of the key dimensions. Table 2 describes each step in the workshop.

In step 1, the participants chose a quote that was most representative of each of the four place attachment dimensions. This enabled the researchers to present preliminary findings directly from the interviews using the language and terms from each group, and allowed the workshop participants to collectively rank the fit of the chosen quotes to their experiences. This first step also provided an opportunity for workshop participants to refine key place-attachment variables, as needed. The workshop was designed to build sequentially from this first step toward steps 2-4, described below, to create scales for place indicators and evaluate how changes in Puget Sound intersect with select aspects of their well-being

In order to provide representative quotes for each key dimension in step 1, we collated all of quotes coded for each dimension from the interviews by group. For example, for the first workshop—with the South Sound tribal participants—we collated all of the quotes from the Squaxin Island tribal interviewees coded for “activity,” “social,” “personal,” and “heritage” in 4 “bins”. From the quote lists, we chose representative quotes that depicted the broad range of the interviewees’ responses related to each of the 4 key place attachment dimensions (e.g., activities in the nearshore). Once the lists were whittled down to approximately 10 quotes per key dimension, we asked the other project personnel to vote on their top three choices for quotes that best reflected, for example, common activities and also a wide range of activities. For the first workshop, we chose three quotes per key dimension. For the three subsequent workshops, we chose four quotes per key dimension to better depict the diversity of interviewees’ activities, social connections, personal connections and heritage.

In step 2, we asked the participants to determine the importance of each key dimension to their overall well-being. This step is important because it introduces the use of constructed scales to the workshop attendees; verifies whether the key dimensions are priorities for well-being (i.e., if a key dimension was not a priority, it would be given a low ranking); and, allows for comparisons of priorities between the tribal and nontribal groups, and to a lesser extent between the non-tribal harvester and non-harvester groups.

Table 2: Workshop steps

Step	Description	Example												
1. Provide key results from interviews and use quotes from results to validate the constructs derived from the interviews regarding how connections to nearshore areas contribute to sense of place and/ or well-being.	We chose 3 or 4 quotes from the interviews that we felt were representative of each of the four major dimensions and asked workshop participants to vote on which quote, if any, best represented their values/ beliefs related to that dimension.	<p>Task 1: Which quote below best describes how you enjoy your time at the water? Your key activities?</p> <p>A. I may go drop a crab pot, I enjoy the shrimp, the prawn fishery. I'll shuck some oysters and get clams.</p> <p>B. When I'm in my boat, it's just magical to me, to be out on that water.</p> <p>C. I really like birding and bird watching.</p> <p>D. I walk along the waters and beaches. It's just a wonderful</p> <p>E. None of the above; or I prefer ...</p>  <table><caption>Task 1: Which quote below best describes how you enjoy your time at the water?</caption><thead><tr><th>Quote</th><th>Percentage</th></tr></thead><tbody><tr><td>A. I may go drop a crab pot, I enjoy the shrimp, the prawn fishery. I'll shuck some oysters and get clams.</td><td>16%</td></tr><tr><td>B. When I'm in my boat, it's just magical to me, to be out on that water.</td><td>24%</td></tr><tr><td>C. I really like birding and bird watching.</td><td>17%</td></tr><tr><td>D. I walk along the waters and beaches. It's just a wonderful</td><td>33%</td></tr><tr><td>E. None of the above; or I prefer ...</td><td>10%</td></tr></tbody></table>	Quote	Percentage	A. I may go drop a crab pot, I enjoy the shrimp, the prawn fishery. I'll shuck some oysters and get clams.	16%	B. When I'm in my boat, it's just magical to me, to be out on that water.	24%	C. I really like birding and bird watching.	17%	D. I walk along the waters and beaches. It's just a wonderful	33%	E. None of the above; or I prefer ...	10%
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2. Rank each of the four dimensions based on highest priority using Likert scales of importance.	Participants determined how important each key dimension was to their well-being.	<p>How important are the sights, smells, quietness and your feelings when you are at the beach to your wellbeing?</p> <p>A. Very important</p> <p>B. Somewhat important</p> <p>C. A little important</p> <p>D. Not important</p>  <table><caption>How important are the sights, smells, quietness and your feelings when you are at the beach to your wellbeing?</caption><thead><tr><th>Ranking</th><th>Percentage</th></tr></thead><tbody><tr><td>A. Very important</td><td>92%</td></tr><tr><td>B. Somewhat important</td><td>8%</td></tr><tr><td>C. A little important</td><td>0%</td></tr><tr><td>D. Not important</td><td>0%</td></tr></tbody></table>	Ranking	Percentage	A. Very important	92%	B. Somewhat important	8%	C. A little important	0%	D. Not important	0%		
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C. A little important	0%													
D. Not important	0%													
3. Develop scales for the top “key dimensions” of well-being	Based on the highest ranked quotes and dimensions from steps 1 & 2, we chose a high ranking dimension and worked toward articulating scales of what enhances or degrades an important aspect of that dimension (i.e., attribute), as determined by workshop participants.	<p>Questions asked:</p> <ul style="list-style-type: none">• What would the key dimension look like when it is in excellent condition or shape?• What about when it is in the worst possible condition?• What would it look like to be between best and worst?												
4. Discuss the implications of the topics covered for restoration: What could be done to modify a restoration project in order to improve the well-being/ sense of place?	This exercise was done in 3 out of 4 workshops. We chose one or two restoration projects in the area and talked through how inclusion of consideration of one or more of the dimensions would change the project.	<ul style="list-style-type: none">• South Sound tribal workshop: shoreline restoration in a local bay and septic system repairs• South Sound non-tribal workshop: the Henderson Inlet community shellfish restoration project• North Sound non-tribal workshop: septic system repairs• North South tribal workshop: (none chosen; Step 3 discussions centered on a local beach)												

The purpose of step 3 was to better understand and articulate the key place attachment dimensions, and begin developing metrics for the most highly ranked dimensions. We applied rankings to the dimensions voted most important in step 2 as well as the highest percentages of votes for quotes in step 1. We described the meaning and purpose of constructed scales used for developing metrics to the workshop participants (see Constructed Scales Text Box). We then asked the participants to choose one or two dimensions or attributes on which to focus scale development.

In step 4, we evaluated key dimensions in the context of a restoration scenario. Researchers chose a local restoration project thought to be already known to the majority of workshop attendees and presented basic information about the restoration. Then facilitators opened the discussion by asking how the restoration could be modified to improve the outcome of one or more of the key dimensions. As an example, we hypothesized that if we chose a restoration project that created a reserve to improve habitat quality, but the area was no longer open to harvest, participants could, hypothetically, state that if harvest were reinstated to some degree, it would improve the “activity” key dimension, which would improve overall well-being.

Each workshop had 7-15 participants and lasted 3-4 hours. Depending on the time of day the workshop occurred, lunch or dinner was included to thank participants for their time. In the tribal workshops, we held a raffle for clam digging gear as part of the incentive for interviewees to attend. In all workshop settings, keeping participants hydrated and nourished is important; in tribal communities, serving food is a cultural norm. Without food included in the workshop, participants would feel slighted.

We created a PowerPoint presentation with TurningPoint™. TurningPoint™ is a combination polling technology and software that is useful in workshop settings for capturing responses. It allows the researcher to pose a series of interactive questions within the PowerPoint presentation, which then can be answered by participants using wireless, handheld, polling devices called “clickers.” For example, the researcher who wants to find out the color preferences of participants could insert a slide with several colors listed, each with a letter beside the color option (Figure 2). The researchers then ask the participants to vote for their favorite color using the clickers by pressing the number that corresponds with their top ranked color, then pressing the number that

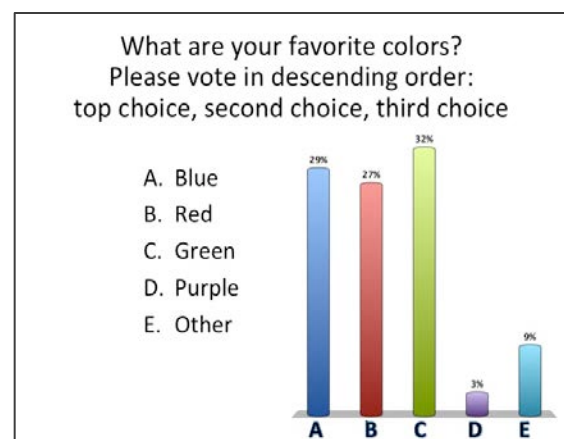


Figure 2: Example of workshop ranking slide

corresponds with their second favorite color and so on. As soon as the researchers close the voting, a graph, pie chart or other visual appears on the PowerPoint slide, depicting a summary of the answers.

Constructed Scales

Constructed scales, also called descriptive scales, are one of three main types of measures used to capture important values and their attributes. The other two types of scales are natural and proxy, described below (from Keeney and Gregory 2005):

- *Natural measures* are direct measures in general use. An example is the goal to “maximize profits,” naturally measured in dollars; the concern to “minimize the loss of habitat” may use the natural indicator “hectares of lost habitat.”
- *Proxy measures* are indirect measures used as an alternative to natural measures. An example is using “percentage of community participation in ceremonies” as a proxy for cultural importance, or “dead and diseased trees per hectare” as a proxy for forest health.
- *Constructed metrics* are used when no locally-applicable or widely accepted natural or proxy scale exists and/or when it remains crucial to represent ideas in people’s own language and terms. An example is a scale to measure community support for a proposed management action. Because no natural scale exists to measure support, a scale (e.g., 1–5) is created, with each rating denoting a different level of support. Scales can translate qualitative information into quantitative scores, but without losing key interpretive meaning or information. Behind a summary rating of ‘2’ for example, can reside narratives, oral testimony, and scientific information relating to an anticipated level of impact or performance

All three types of scales provide a means for distinguishing among different levels of impact, capture the full range of possibility expressed across all points on the scale, and enable the user to distinguish the desirable direction (up or down) captured by the scale. Although creating appropriate metrics remains difficult, the development of an explicit performance measure can help to highlight progress toward a desired environmental or cultural endpoint (Turner et al. 2008; Donatuto et al. 2011; Satterfield et al. 2013).

Results

In this section we first present the results from the interviews analyses. We group the results by four key dimensions⁹: activity, heritage, personal and social. We present overall findings for each dimension from all interviews together, and we highlight instances where there are notable differences between the study groups (e.g., tribal and non-tribal, harvester and non-harvester). We then provide workshop results (South Sound tribal workshop, South Sound non-tribal workshop, North Sound non-tribal workshop, North Sound tribal workshop). Taken together, interviews and workshops constitute the project dataset, and the basis for discussion about implications for Puget Sound restoration.



Figure 3: Place Attachment Dimensions

Interviews

Through semi-structured interviews, we garnered an exceptional breadth and complexity of information on sense of place, revealing the depth and diversity of knowledge and values. We carefully reviewed each interview and systematically coded the interviews by emergent topics, then sorted the coded quotations into key place attachment dimensions. We found four key dimensions specific to people's sense of place and their attachments to place (broadly focused on Puget Sound, as well as finer resolutions at the beach and

⁹ We recognize that human well-being frameworks developed by Biedenweg (2014) uses a typology of domains, attributes, and indicators, where sense of place is one *attribute*. However, we found that sense of place spanned several attributes as defined in this work, so we refer to sense of place as a *domain* of well-being, comprised of multiple dimensions, each with attending attributes.

nearshore scales). The four place attachment dimensions are: *activities*, *heritage*, *personal*, and *social* (Figure 3). Within each dimension are several attributes. Sorting and grouping people’s ideas across the four dimensions, their respective attributes and associated enabling contexts was an iterative process. We found many of the attributes difficult to place in one “bin”, as they often spanned two or more (Figure 4: example of the complex connections between the four key dimensions). For example, several participants across all three groups discussed cherished memories of being with family in the nearshore. Those memories tie into all of four dimensions—whether the memory was of a harvest or another activity, whether the memory was from childhood, with knowledge being transmitted inter-generationally, whether the memory brought feelings of bonds to a beach or a specific emotion attributed to that place, and whether the memory centered on gatherings with family or friends.

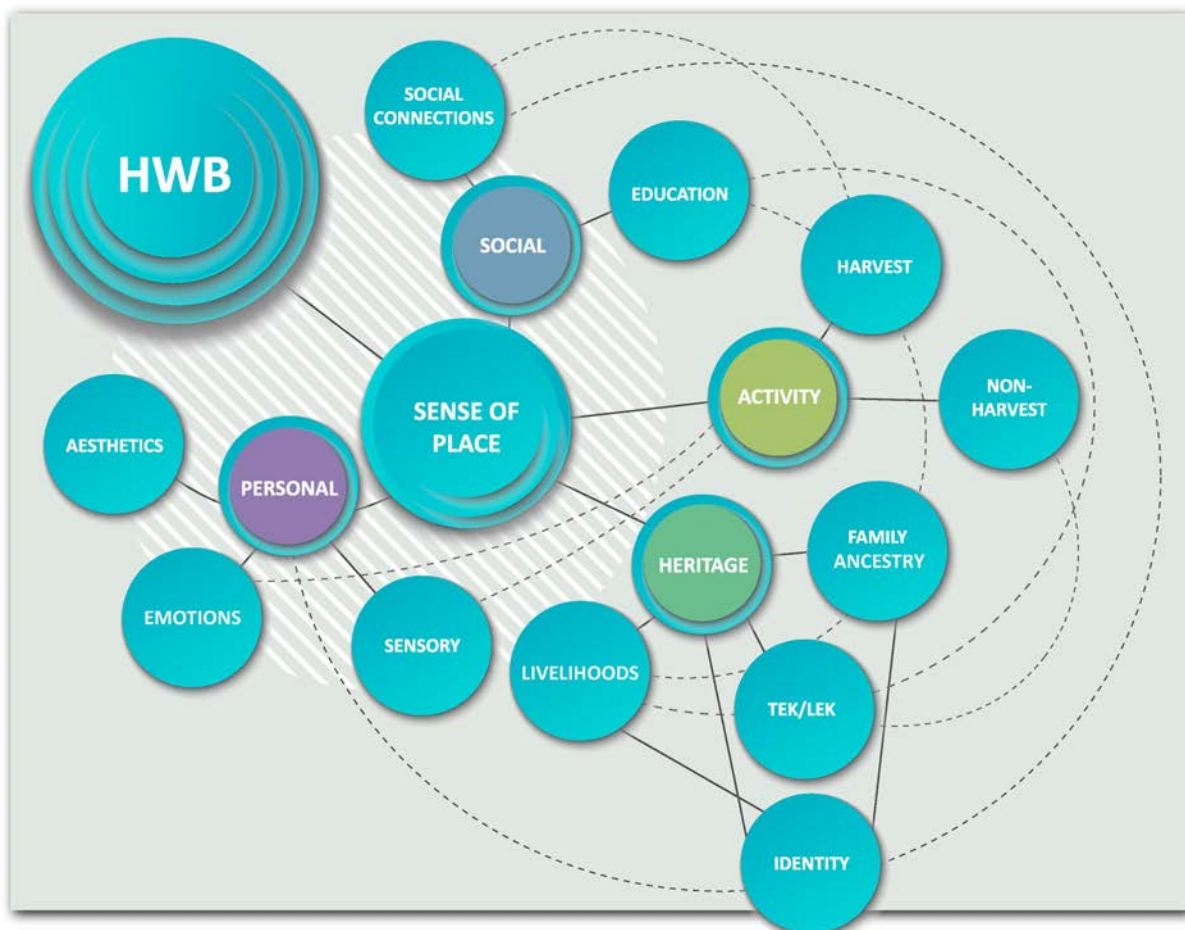


Figure 4: example of the complexity and interconnectedness of the four key place dimensions; solid lines reflect our conceptual model of Sense of Place and the attributes of each dimensions, dotted lines depict some (but not all) of the ways that attributes are cross-linked.

We developed typologies for each sense of place dimension as described during interviews, with associated tables showing the ranges of variables (Tables 3-8). We provide descriptions and quotations to further clarify why and how each dimension constitutes a form of place attachment. Our typologies reflect patterns similar to other sense of place/place attachment studies (see Galliano and Loeffler 1999; Ryden 1993; Williams and Patterson 1999).

Interview analysis also unearthed a number of other important topics, providing an opportunity to examine factors that enable or constrain sense of place. The emergent topics include the ability (or not) for each participant group to find substitutes for important places and resources; their stewardship practices; and their future hopes and worries; as well as many important contexts (e.g., policy, ecological conditions, access, social conditions) that enable participants to experience a “quality of place” through the diverse practices and values articulated in this research. We describe these issues and contexts after the place attachment dimension typologies in the section below.



Place Attachment: Activity Dimension

In this research, we set out to examine how the activities in the nearshore area of Puget Sound created unique place attachments. We initiated this project with a focus on the nearshore activity of shellfish harvesting, but through the interviews found that harvesting shellfish was just one of many shoreline-based activities that helped forge strong place attachments. In the results below, we focus on the types of activities interview participants described engaging in. These activities are divided into two classes: harvesting activities and all other non-harvesting activities that people enjoy and practice at the beaches, on the water, and in the watershed in North and Sound Puget Sound (see Table 3). Non-harvesting activities include walking, boating, beach combing, among other activities described below.

Shellfishing is a type of harvesting that takes place at the beach, often with other people, and generates experiences that go beyond the beach, which travel into kitchens, and then become food for sustenance, festivals, and especially for tribal participants, winter and spring ceremonies, among others. The variety of shellfish in Puget Sound that people harvest is considerable. One tribal harvester detailed,

When I would go out clam digging, I would always try to bring some clams home, and we would steam the clams and there would be good dinner and we had different

saucers we'd put them in, and sometimes it would just be the clams. And the clam nectar, it's the water after you steam the clams. To our people, and our family, it was an important part of the overall feast of the clams. With the oysters, and the clams, our people always have them for celebrations, and also for memorials for people. The oysters, our people love to have them fried, sautéed, my best-- I love those. And then of course, the steamed oysters, and again the nectar from the oysters is important for the tribal people, I love oyster and clam nectar. Geoduck, our people love geoduck, we love our geoduck sautéed, or fried, or deep fried and also love it in chowder, and I love the steaks, and I love the chowder too. And fritters, oh my goodness! I love geoduck fritters. Then of course, the cockles, I still really like cockles a lot. ...I love mussels, my mouth is watering.

Harvesting for the plate and subsistence was one of the only ways that harvesters would procure shellfish, this is true for tribal and non-tribal participants alike. For example, when asked if he ever purchased oysters, one non-tribal harvester replied: *"No, no, no. Not on your life... I don't think I've ever eaten an oyster from a grocery store."*

Although we focused on shellfish harvesting activities in this project, we also learned that many people engage in other types of harvesting, such as fishing, gathering and hunting. The reasons people harvest were to procure food for themselves or others, and also to create opportunities for recreation, to spend time with loved ones and teach children, and in the case of tribal participants, to practice Treaty rights.

In addition to harvesting, we discovered that other shore and water-based activities were place-attaching experiences. Activities and interactions with the beach spanned a range from various forms of exercising, to wildlife viewing, relaxing, artistic endeavors, boating and camping, to experiential education-related activities. Similar to harvesting, the reasons people engaged in these activities included recreation and livelihood¹⁰ purposes, as well as family time and opportunities to teach and learn. Additionally, participants described activities with purposes specific to environmental conservation and restoration work.

Both harvesting and non-harvesting activities had a range of frequencies and seasonal considerations with regard to how often, how consistent, and when interactions took place.

¹⁰ We define livelihood as a way of life through which people generate and maintain the means of living. Livelihoods include the capabilities of accessing and using tangible resources (fisheries, shellfish, etc.) through claims, rights, and tenure; as well, livelihoods include the capabilities from intangible assets such as knowledge, skills, orientation, and social systems that sustain a person or community. Livelihoods are not simply the "ends" (e.g., a job or income), but also the "means" (way of life, identity, practices, and relationships). Livelihoods include subsistence, household, and commercial productive activities in both formal and informal economic spheres (Allison and Ellis 2001; Capistrano and Charles 2012; Chambers and Conway 1992).

These ranges spanned from every day, a few times a week, once per week, twice per month, few times a year, to seldom anymore. Given the seasonal nature of many wild foods (crab, shrimp, salmon, mushrooms, ducks, berries), harvesting was something that often marked the year with particular time. For example, one non-tribal harvester described having a “shrimp alarm” that went off in his head each year at the beginning of April.

Table 3: Place Attachment: *Activity Dimension*

Attribute	Range
Harvesting	<i>Type:</i> Shellfishing (clams: littlenecks/manilas, butter clams, geoducks, cockles, horse clams; shrimp/prawns, oysters, mussels, sea cucumber, sea urchins, limpets, Dungeness crab), beach seining (pinks); Fishing (king, coho, sockeye, chum salmon, cutthroat, dolly varden, halibut, smelt); gathering (seaweed, pickleweed/salicornia, berries, cedar, mushrooms); hunting (deer, elk, ducks)
	<i>Reasons:</i> for food/subsistence, ceremonial foods, procure foods for family and elders, gifts/trade/share, livelihood, recreation, to practice treaty rights, to teach younger generations; getting back into a tribal cultural way of life after being away
Non-harvesting	<i>Type:</i> Beach combing, walking, hiking, dog walking, bird watching and wildlife viewing, water viewing, sitting at/visiting beach, relaxing, thinking/reflecting, meditating, boating (row boat, kayak, power boat, sailing, canoe pulling and canoe journey), water skiing, jet skiing, scuba, tubing, waterboarding, canoe journey, ceremonies, visiting ancestors, tell stories, reading, campfire, camping, swimming, biking, wading, picnics, photography, draw/ paint, playing with kids, skip rocks, clam/ mussel bake, shellfish farming; doing citizen science and beach natural history
	<i>Reasons:</i> recreation, livelihood (restoration, tourism, cooking, teaching), family time, remember heritage, teach and learn, travel, for environmental conservation and restoration work



Place Attachment: Heritage Dimension

A second major category of place attachments took shape and was coded as “heritage.” These heritage-based place attachments included comments and memories shared by interviewees about their family ancestry and the biographies of their families as they related to place; the ways that places contribute towards one’s identity (e.g., “*the shoreline is part of me, it’s in my blood.*”); traditional and local ecological knowledge developed and transmitted through stories and experiences with parents, grandparents and ancestors regarding relationships and protocols for respecting, using and sharing resources; and work heritage and histories that linked personal, family and local maritime livelihoods with sense of place.

Family ancestry: childhood and family biographies.

In reflecting on place attachments and their biographies, tribal participants spoke about their deep historic ancestral ties to beaches and inlets in the whole area. Memories of being out on the beach and water as a child, with elders, learning stories reaching back generations, forming enduring connections with the land and water:

Because our way of life of fishing and harvesting, we have good memories to our people. And those memories go not just one generation or two generations, but it goes back many generations, cause we hear the stories of our dad, and he would tell about his great-grandfather, and then we'll hear about how his great-grandfather told this story, and generations upon generations, there's that connection to the land, to the marine waters, that is so important to our characteristics that we carry today as tribal people.

Most tribal interviewees had spent time out on the beaches as children, harvesting, visiting, picnicking and camping with parents, grandparents, cousins, extended family (see Table 4). With grandfather, shared one participant,

We'd go down and sort oysters and open oysters and talk [...] it was a childhood that you couldn't pay me a million dollars to do anywhere else. Some of the fondest memories are right there.

Other past experiences during childhood and with family included discovering beach environments and interacting with marine life and traditional foods together, and in some cases, experiencing major life events (e.g., birth and death).

Tribal participants also spoke about the importance of connections to and health of the water for future generations, grandkids and their grandkids. Harvesting and time at the beach and on the water was described as keeping family cohesive: *"I'm happy that all four of my generations that I have on this earth have been there with me harvesting traditional foods in that area."* Places were described as important sites for visiting ancestors and graves, and to keep alive the histories of important longhouses, potlatches, and clam bakes.

Non-tribal participants, harvesters and non-harvesters alike, also described heritage-based attachments to place. Places where parents and grandparents lived, and where individuals grew up, were described as very important.

Since I was two, I've lived on the water... I'm very used to living with the tide going in and going out. ... that's where I spent my formative years, and I think it's part of who you are when you have been raised with it. The water is very important to people who really connect with it.

These attachments were expressed most strongly by interviewees who descended from families who had been in the Puget Sound area for multiple generations and those who grew up in Puget Sound. “*South Sound is home for me, I'm 5th generation*”, shared one participant whose great-great grandparents had settled along the beach prior to statehood. We interviewed non-tribal residents whose family histories were represented in place names – such as the name of a point along the shore or a passage. These are places where some of our non-tribal interview participants were born and where their parents and grandparents died. Shellfish harvesting was among the activities that formed connections with shorelines; but family heritage, in particular, played a strong role in sense of place: “*oysters [are] obviously a big part of life ... in general, I'm connected to this place because of my family.*” As with many tribal participants, a few of our non-tribal harvesters also described the combined linkages of family and harvesting as part of their sense of place. One participant told about her family tradition of celebrating important events (e.g., birthdays, Thanksgiving, and Christmas) by harvesting and feasting on shellfish and shrimp from nearby waters. Others attribute heritage-related attachments to place not in their own family biographies, but those of the area: “*the history of Puget Sound and Hood Canal, and the people that lived here, it's important to me. And I think people should know what went on here, how it got to be the way it is.*”

Several non-tribal participants maintained heritage connections to nature and activities, but not specifically tied to Puget Sound. These included participants who grew up in a fishing family, or spent their childhood near the beach, in locations outside of Puget Sound. These family and childhood heritage variables contributed to the formation of new place attachments in Puget Sound and were often part of the draw to move here. In addition, some non-tribal participants were raised learning to respect nature (in the broadest sense) from their family, but not necessarily in nearshore environments or specific to Puget Sound and shellfish harvesting. Non-local heritage considerations outside these fields of reference create senses of place that can perhaps be substituted with other places, geographies, and other activities. We discuss “substitutability” factors in a section below.

Table 4: Place Attachment: *Heritage Dimension*, Biographies: childhood and family history

Attribute	Range
Biographies: childhood and family history	<i>Tribal</i> : deep historic ancestral ties and stories about way of life stretching back many generations; histories of important longhouses, potlatches, and clam bakes, traditional foods; childhood on beaches harvesting, visiting, picnicking and camping with parents, grandparents, cousins, extended family; family memories that create connections to a place, land, and marine waters; family cohesion; visiting ancestors; major life events; healthy ecosystems for future generations; livelihoods
	<i>Non-tribal</i> : several generations of family from the area; formative years: born and raised here; memories of childhood activities on the beach; future generations growing up here; family names as place names; annual extended family shellfish celebration dinners; the place of parent's death; maritime livelihood history of place and ways of life in South Sound (fishing, timber, agriculture industries and Native American tribal histories); come from a fishing family (not local); born and raised near the beach (not local); raised learning to respect nature from family (not local)

Livelihoods and Heritage

In addition to the family and ancestral heritage that produce strong place attachments to Puget Sound described above, we also learned from interview participants about the types of heritage-based place attachments that stem from livelihoods and maritime histories: *“this is a maritime community that is attached with the water specifically through the shellfish.”* Work and livelihoods became associated to Puget Sound and its resources in various ways. For example, in South Sound, both tribal and non-tribal participants have worked in the business of shellfish harvesting for decades and longer. The shellfish-based livelihood activities ranged from harvesters, shucking and processing, beach guards (to prevent poaching and encroachment), water and shellfish quality assessors, small-scale shellfish farm owner/operators, and professional teaching about both commercial operations and ecological integrity.

Many intertidal areas in South Sound were described as working tidelands, and the presence and rhythms of small-scale commercial shellfish activities created part of the character of the shoreline, as well as linked people to its shellfish-working history:

There's no such thing as a waterfront property owner that has this beach view that isn't a working beach on Totten [...] out here everything is -- whether it's at night- you see the headlamps on the beach and that's a pretty good indicator, you see the oyster

scows or the barges moving around. It's just an opportunity that everybody's taking advantage of.

Both tribal and non-tribal harvesters noted that when your livelihoods and food sources depend on Puget Sound, the concern for ecological health of the natural resources takes on unique importance: *"if we don't have clean water then I need to find a new job."*

Identity

Personal and community identities are tied to places and water resources of Puget Sound in many important ways. While this is true for both tribal and non-tribal participants, places and resources shape tribal identit(ies) in distinct ways (Table 5). As one tribal participant identified, *"we are People of the Water ... when it comes to our sense of place on these waters, it's very, very strong."* The identity of place also came from the resources, as another tribal participant described: *"shellfish and me are one in the same."* This is a reminder that to know place, requires that we also know its people. Indeed, as another pointed out:

[This place is] known for its clams, which are important for celebrations and feasts, during funerals, and all occasions; the well-being of the shellfish is part of the well-being of people, because the cultural-ecosystem is the same.

Another type of identity tied to place, which is unique to Coast Salish communities, has to do place-based indigenous relationships with the land. These relationships encompass expansive pre-colonial settlement areas and resources that form part of Coast Salish communities' long-term (many millennia) place-based identities. Indigenous place-based identities are intimately tied to cultural practices and resource use. Tidy property boundaries seldom map onto these culturally and historically specific relationships to the land and water. Moreover, the reservation as a community territory constitutes a relationship to place and "property" that is culturally-distinct, as noted by one participant:

The reservation is considered home, not just a little piece of property...the [reservation] is home to all of its membership, versus where you actually live... you feel like you have no boundaries, you feel like you've been built in part of the beach.

Some described tribal connections to place as something that would never go away, even if a person left. As one participant clarified, place is *"a pull, you're never gonna' get away from it, you can take the Indian off the rez but you can't take the rez out of the Indian."* As stable as place-based tribal identity is, for another tribal interview participant who grew up away from the Tribe in a nearby town also on the shore of Puget Sound, it wasn't until as a young

adult he returned to the cultural practices of the Tribe –incorporating shellfish and the water into his whole life– that he was able to strengthen his identity. He described the importance of harvesting in his journey to “get back into culture.”

Going to school [in town] was terrible because I was different. Heck I barely knew I was Indian, I always got treated different than anybody else, I always got beat up and pushed around ... then I started finding out where my roots were: my Tribe. Started figuring out about the fishing and digging clams.

The active cultural practice of shellfishing and being at the water enabled a renewal of cultural and place identity. It’s something that requires ongoing practice, another person emphasized: *“Its’ part of us. We can’t let this part die down. We got to bring it back and be proud of it.”*

Place and resources also shape the identities of non-tribal participants. This was especially true for those who descended from multiple generations living in Puget Sound. As one participant put it, “I am a South Sound girl,” where the shoreline and place, are a “part of me.” A person’s identity might also come from shellfish themselves, not simply place, as a South harvester described:

That’s who you are, that’s what you’re built from, that’s what you talk about when you go to your family’s house, you talk about where you went clam digging, and where you went and picked this.

Participating in harvesting wasn’t the only way that shellfish became associated with place identity. South Puget Sound is world-renowned for shellfish whose bays are part of the shellfish’s name (e.g., “Totten oysters” and “Little Skookums”, or simply “Oyster Bay”.) This last point illustrates the ways that place itself carries identity, which is in turn internalized to those who live in and associate with the place: *“I associate myself with oysters, they’re a part of my identity.”*

Table 5: Place Attachment: *Heritage Dimension*, Identity

Attribute	Range
Identity	<i>Tribal</i> it’s in my blood; it doesn’t go away; its’ part of us; people of the water; fishing and clamming is being culture in place
	<i>Non-tribal</i> who you are; what you’re built from; part of me; oysters are a part of my identity; South Puget Sound know for shellfish; “I am a South Sound girl”; we are a maritime community

Local Ecological Knowledge

A second heritage aspect of place attachment relates to ecological knowledge that is developed over generations, principally through engagements with nature and family. There is a vast body of literature on traditional (TEK) and local ecological knowledge (LEK). Here, we are not presenting a comprehensive discussion of TEK/LEK, rather we feature those ecological knowledges that specifically relate to the ways that heritage and knowledge join together in creating place attachments as discussed in interviews (Table 6).

Tribal participants indicated that they learned about proper harvesting, sacred places and other connections to the land through ancestors, elders and family, as well as technical skills developed by doing and being together. Such traditional knowledge was transmitted within the family while spending time together on beach, engaging in activities such as harvesting, cooking, living: *“as a child I knew every eddy and undertow.”* Tribal interviewees described family and heritage-based TEK as being handed down within families since time immemorial, creating connections to beaches: *“reminds me of my late great aunt and she always told me, ‘you know my voice is gonna’ echo in your mind for a lifetime... I’ve already given you everything that you need to know.”* Through family-based TEK, participants learned important cultural views on respect, for example, taking “only what you need” in the proper way, at the proper time, by appropriate knowledge holders. Learning in this way was also important for teaching youth about their ancestors, heritage and way of life, including for future generations. As explained by one tribal participant:

I only hope that this will be around, you know, after my lifetime, my children and their children’s lifetimes, that it’ll still be there for them. They’d still be able to go to these shores and do the things that I remember doing growing up, you know, the teaching that was handed down orally from our grandparents, parents, aunts and uncles, that it’s there for them.

Non-tribal harvesters also shared a heritage-based local ecological knowledge handed down through the family. Like tribal participants, learning to fish and shellfish happened “by doing” and was often passed down from parents and grandparents. One non-tribal participant described the importance of teaching his grandchild about the beach through experiencing it together. Pointing to the ocean, the rocks, the sand, he said: *“that is how you teach them, you show them. ‘Ocean’ was one of her first words.”* However, deep ancestral knowledge was not something that non-tribal harvesters spoke of. Another distinction in the local ecological knowledge held by non-tribal participants from tribal harvesters was the lack of mention about respect, proper protocols, sacred family teachings, ceremonies and the importance of sharing in the community.

Table 6: Place Attachment: *Heritage Dimension*, Local Ecological Knowledge

Attribute	Range
Local and traditional ecological knowledge	<p><i>Tribal</i></p> <p>Learning about harvesting, sacred areas, connection to the area through ancestors/ family; learn specialized skills (e.g., “cooking Indian foods” and other techniques and protocols) through family; connected to area, resources through family; memories of those who have passed on and their teachings; family handed down family teachings; learn by doing knowledge comes with connection to land; how to honor harvest; how to prepare properly; not to overharvest, how to share in community, teach youth about their ancestors, heritage and way of life into the future</p>
	<p><i>Non-tribal</i></p> <p>Learning by doing—from parents, pass to children; earliest childhood memories with grandparents, learning to fish and shellfish; learn from nature itself “listen to birds, look at the sky, at the water”; teach children</p>



Place Attachment: Personal Dimension

The third place attachment dimension that emerged through interview coding was “Personal.” This dimension relates to the perceptions, feelings and interpretations that people have about places that form part of their sense of place. We broke this larger dimension into two constituent parts: *aesthetic characteristics/sensory experiences* of place and the *emotional feelings* and bonds that people maintain with place(s) (e.g., “I feel a sense of calm near the water”). The full range of how people described these experiences of place is listed in Table 7.

Aesthetics/Sensory

Among the more common ways that sense of place has been described in the literature is through the *aesthetic perceptions* of a place, including for example the sense of beauty and wilderness. Indeed, the beauty of Puget Sound is something that people described as making it special. This includes not only the beauty of the water, but also the mountains, forests, and the wildlife.

The beauty of these areas is so indescribable, all the words that I could say through this whole day wouldn't fully describe the beauty of these particular areas. I've watched sunrises and sunsets in these areas, and I've heard the different birds, I've watched different animals as they've come down to the beaches, so I know the

grandeur of these areas and the marine waters, and it is a very wealthy area, a wealth of beauty.

The appreciation of this beauty was felt strongly by all three participant groups (tribal, non-tribal harvester, and non-tribal non-harvester) in our study. Yet some also noted that a broadly perceived surface beauty of Puget Sound could mask some of the ecological health challenges:

People love this area because it's so beautiful. And because it's so beautiful, sometimes they don't see that there are issues –ocean acidification, water quality problems– it seems like it's so beautiful from the surface.

Interview participants described a range of diverse *sensory experiences* associated with their special places in Puget Sound, from senses that were aesthetic and kinesthetic in nature, to senses that connected more to the ways certain interactions with and characteristics of places brought about a state of being, or psychological experiences. The sensory experiences ranged from some of the more powerful and personal connections described as smell (e.g., the smell of the low tide), to other bodily sensory experiences such as sights (e.g., sunset views), sounds (e.g., “murmur of sea”), taste (e.g., the flavors of fresh seafood that one harvests themselves), touch (e.g., getting in the mud and feeling rocks under feet), and breathing (e.g., clean fresh and moist air). In some cases, it was the absence of sensory input that brought positive connections to Puget Sound, for example, the quietness (absence of sound), as one tribal harvester remarked,

It's so quiet down there and so peaceful. That's a place that I go if I've had a tough day at work, or to gather my thoughts, and I start feeling better, because it's such a beautiful, peaceful, serene area and there's something about it that just brings joy to me.

Many times these senses were experienced in bundles that together created the feel of place, as one non-tribal harvester from South Sound captured,

A little marine layer, the sound of the waves, the smell, the birds, the seagulls. The seals splashing in the middle of the night when it's dead calm. I mean all of that stuff is part of the experience and part of the specialness and part of what feels like home.

Direct kinesthetic sensory experiences were described by one participant as bringing a closeness or immediacy to her surroundings, a feeling that she was not separated from the water, in the way one might be when viewing the water from afar (e.g., from a house on a hill overlooking the water, she described.) Strikingly, the sense of smell seemed to be one of

the more powerful ways that participants connected their experiences to sense of place and way of life. One tribal harvester described,

The smell of the bay, that smell of the mud when the tide goes out, that reminds me of clam digging. It doesn't matter where I'm at, if I smell that mud, I'm like, "Oh! Clam digging on a nice summer day!" I really truly think it's the memories tied into a place that make a place special.

Senses and other observations helped interview participants, particularly those who engaged in activities on the water and at the shoreline, navigate changing weather and tidal patterns and seasonal shifts. Some aspects of ecological knowledge were derived through the senses and helped with decisions such as when to prepare for harvest (e.g., triggered by the smell of smelt or salmon coming in, or low tide and the time to harvest seaweed). When these sensory experiences returned, it brought joy and reinforced a visceral connection between people and place. Take for example, an experience described by one non-tribal harvester,

I'll be down there and I go, "Oh, the smelt are running!" you can definitely smell the changes in it. I don't know if it's just because I've been here so long, but I can go down there smell the smelt coming.

Senses also helped people on the water respect the unique risks associated with weather patterns. For example, one tribal harvester shared, "*when you're out on the marine waters and you're subjected to the tides and to the wind, you have a different respect. And you have a different awareness and ability to listen and watch, because if you're not respectful to the changes that are happening on the water, or in the weather systems, you're gonna' be in trouble.*"

Emotional and Affective Attachments to Place

Participants' feelings about places were expressed in both pleasant and unpleasant terms. Emergent positive or pleasant emotional and affective topics were organized into four attributes: enjoyment, sense of peace and calm, emotional bonds, and associated spiritual dimensions. Negative or unpleasant feelings included those related to loss and longing, fear, and safety-related issues for which participants might avoid certain places. These pleasant and unpleasant psychological dimensions are detailed in the following paragraphs and the table.

Enjoyment-related feelings, such as those described as "fun" and "happy" were applied to a

range of activities, including harvesting, being at the beach, and sharing experiences with family. Others described generally feeling more alive and energized when being at the shore. A non-tribal non-harvester described feeling reinvigorated by the realization of nonmaterial abundance of being outside.

Being near the water brought several participants a feeling of peace, as one non-tribal harvester who lives on the waterfront remarked, *“you can look at the water and find peace, because the tide goes in and out, and there’s animals and there’s things going on, and life goes on, and it doesn’t stop.”* The cycles of life reassured this participant. Likewise, another participant described feeling calm and relaxed, *“there’s nothing else that quite compares with that release of the world.”*

Emotional ties to place were also described through idioms of love. As one non-tribal harvester shared, *“the whole area is my place, and that includes the waterways, the shorelines, the lakes, the mountains, the rivers, all of those things. I’m here because I love what here is.”*

These connections brought meaning and stability to some participants. Another participant, a tribal harvester, also described the connections with nature as part of a “cultural ecosystem,” one where shellfish themselves are good indicators of human and ecological health, stating,

To our tribal people, we’re part of that ecosystem, we realize that. We know that we’re part of it, and whatever happens to the salmon is going to happen to us [...] and the shellfish are good indicators of good water quality, or bad water quality, and our health as tribal people.

Other emotional bonds were attributed to feeling connections with places, ancestors, the beach, wildlife and nature in general. For example, one non-tribal harvester articulated,

I feel when you connect with the ocean, or you put even a hand in the ocean, you connect with the whole planet, you feel completely together with nature, with God and surroundings.

Many additional positive emotional and psychological place attachments tied directly with spiritual dimensions. For tribal participants in particular, we learned about the importance of water and the shoreline for their use in prayer, described as places and resources important for cleansing the spirit and healing the soul, providing comfort, washing away sorrows, and restoring clarity of mind. Shellfish and other resources found in the intertidal

areas also make up “first foods¹¹”, which in several tribal participants’ experiences, were known to strengthen the body and the mind. Non-tribal participants also experienced spiritual dimensions:

Being on the water is, beside recreation and fun and all that kind of stuff, it’s a renewing thing. It’s a spiritual thing. Watching the sunset or watching the sunrise, sitting on the boat at an anchorage and looking at the moon come up, it’s soothing and restores my faith that the world is actually worth living in.

This last comment, suggesting that the world might otherwise not be worth living in, illustrates the importance of sense of place to human well-being. Being connected to coastal places and resources is one way that quality of life is enhanced. Nevertheless, there are some aspects about places and things that transpire there that were described as negative. These negative concerns applied, for example, to places where one had experienced negative interactions with other people. These included conflict with upland owners, as well as violent interactions on the water. One tribal participant recalled,

Part of the fear that I felt out there, is that I’ve heard the gun shots, and I’ve heard bullets ricochet on the water because people I think were shooting at us tribal people, and they were trying to scare us off the water, so I did have that fear, but I also had that determination that these were secured rights from my ancestry, and I wanted to keep continuing fishing out there, because it is a way of life that to me, it’s not an easy way of life, but the beauty that’s there on the water and a certain sanctity of the water was very important to me.

Other negative associations with places highlighted concerns regarding pollution and areas where shellfish is not safe to consume owing to sewage outfall and other contaminants. Some participants also viewed altered beaches as negative, particularly along developed shorelines. Not only was the loss of wild beach a concern, but shoreline development at times cut people off from accessing the water.

While not all beaches and shorelines are developed, polluted, or otherwise inaccessible, the possibility that participants might not be able to go to and experience their special places in the future was very disturbing. “Part of my spirit would just die and shrivel up,” continued one tribal participant,

¹¹ First foods, also called traditional foods or country foods, are local natural resources that are deeply tied to tribal cultural beliefs, values, and practices. More than a source of calories, these foods are considered integral to tribal well-being (c.f., Garibaldi and Turner 2004).

I think it would be like someone saying “we’re gonna’ have to take your legs and maybe your arms.” It would be that devastating, and maybe it would even be worse, if they told me I could never be by the water, it would be like the end of the world to me, I would, it would be probably the deepest grief I could never get over.

The imagined grief and sadness of such a possibility was tied to expressions of lost opportunities to be with family and ancestors, and disruption from cultural heritage, particularly for the tribal participants for whom such a loss was anticipated to unravel all kinds of social and ecological relations in the community, with cascading negative implications. Such an event indeed happened one year in the late 1980s when there were very few salmon. One participant likened the feelings about the absence of salmon to the kind of grief that comes after a death, crying,

As a person, as a tribal member, I witnessed the sorrow, not so much for finances, but it was the activity that we enjoyed as people, we couldn’t exercise because it wasn’t there ... not having the salmon there was almost like we had just lost a loved one.

The loss of salmon resulted in economic impacts, depression and impacted family relationships, this participant shared. By looking at loss of place and resources –whether imagined or experienced– we learn about their inherent importance to community well-being.

Table 7: Place Attachment: Personal

Attributes	Range
Aesthetic & Sensory	kinesthetic; smells of salt water, bay, mud, tide, shellfish, fish, and seaweeds; tastes/flavors; sounds of water and sea birds; quietness; air quality: clean fresh air; feeling of the wind, moist air; touch/feel of water; feel of mud, rocks under feet; plants; rhythms of paddling/rowing; marking time by the tides; seasonality of harvest; observations of the weather, wind and currents; views of nature/natural surroundings; sunsets; beauty of nature, water; diversity of waterways and inlets; wilderness
Emotional and Affective	<p><i>Positive</i> enjoyment; joy; fun; excitement; happy; a cool thing; energized; feel more alive; appreciation; peacefulness; calm; safe; protected; solitude; relaxation; therapy; reflection/ meditation; free; connected with nature, wildlife, place, ancestors/ heritage, beach; love; prayer; cleanse the spirit; heal the soul; provide comfort; wash away sorrow; clarity of mind; first foods strengthen the body and the mind; water strengthens the individual; sanity; balancing; grounding; feeds my spirit; renewing; spiritual; restores faith that the world is worth living in</p> <p><i>Negative</i> developed shorelines; industrial areas; areas that “look” dirty or ugly; near sewers or leaking septic tanks; closed beaches; polluted/ contaminated areas; heavily used areas; busy areas; swift currents; difficult to get to; places that feel isolated when alone; places important to heritage but have undergone change; private property; areas with lots of houses; places with negative memories; places where there is conflict with upland owners.</p>

	<p><i>If I couldn't go to these places I'd feel: anger; sadness; depression; confusion; lost a piece of self or heritage; disrespect of ancestors; miss my loved ones; heartbroken, grief that children cannot go and learn about cultural heritage; the clams would miss us; unravels relations in community</i></p>
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Place Attachment: Social Dimension

Places are experienced individually as well as socially. Many of the activities, emotional bonds, and other attachments to place described above are formed through, and enhanced and reinforced by social connections. In this section, we focus on the range of social connections related to place attachments described in interviews. Many of these are also elaborated in, or are meant to highlight the social connections of, the place attachment dimensions above. The heritage section above is distinctly social in nature. Here we share additional social dimensions of place attachments described by tribal participants that were not specific to family connections, but involved friends or larger community social ties beyond the family. We also include here a discussion of education as it relates to social dimensions of place attachment.

Social Connections

While some aspects of place attachment are individual (e.g., many of the sensory dimensions that are personal in nature in the previous section), a preponderance of place attachment phenomena (particularly heritage, but also to a large extent, activities and some personal psychological experiences) are social in nature. Place-based activities and psychological aspects of place also affect social relationships themselves. Places and resources are important for tribal participants, for example, for their role in sharing the harvest as gifts to community elders, as well as use in and location of ceremonies important to the communities. On other occasions, tribal participants detailed annual weekend trips taken with other tribal friends, where they would “live off beach,” camping and eating only wild traditional foods harvested on site. Non-tribal participants also enjoyed food, harvesting, and socializing. One illustration of the linkages between seafood, social ties and place came from a non-tribal harvester who described a “seafood extravaganza”,

My friend in Potlatch, we decided we were gonna' have a seafood extravaganza party ... we went camping down in Ocean Shores the night before and we got on a razor clam tide and we both got our limits worth of razor clams. Left there, drove to his

grandfather's house on Hammersley Inlet and we dug a bunch of steamer clams. We went out to his place on the canal and we picked a bunch of oysters, and we had purchased shrimp from the Tribe the night before. And we were fishing down in Ocean Shores too, so we brought a couple of salmon up with us, we purchased the shrimp, and then we dropped a crab pot. We had a heck of a seafood party! The only thing we purchased was gas and the shrimp from the Tribe. I mean we had 30, 40 people over there and everybody got fed well.

Social connections also mediated access for people to beaches and shellfish beds. For example, often better beaches and shellfish beds were private ones. Public beaches were degraded or difficult to get to because of parking, location, and lack of knowledge or infrastructure. Such is the case described here by a non-tribal harvester,

The public beaches are not worth the time we go to. A lot of us have friends that have beaches and so we go to their beaches, a lot of us have friends that are in the shellfish industry ya know. And we can work out a deal with somebody in the shellfish industry. Buying, trading, whatever the case may be.

Education

Although some people learn individually through observation and experimentation, education (broadly defined as learning, teaching, and information availability) is by and large a social phenomenon. Here, we focus on such instances. Education takes place in nearshore environments and on the water in various ways. Interview participants described learning from friends and family, through volunteer beach naturalist teachers, and during organized programs of citizen science. Participants engaged in beach naturalist, restoration, and citizen science activities specifically noted the importance of making and maintaining social connections through these activities.

Table 8: Place Attachment: Social & Community Connections

Attribute	Range
Social & Community Connections	<i>Tribal:</i> sharing harvest and ceremonies important in tribal communities to maintain social connections; annual weekend trip “living off beach” with group of friends; relating with animals
	<i>Non-tribal</i> Harvesting as recreation with friends (ex: seafood extravaganza); other recreation activities with friends; a sense of community; visiting with friends who also live along shore; boating clubs; community restoration; love of the water is shared (with spouse, children, friends); socially-mediated access to better beaches and shellfish (public beaches degraded or difficult to get to)

Education	beach naturalists, citizen science, showing visitors; knowledge about place and ecology reinforced by community and multiple teachers; research, education/outreach; learning about the wildlife, tides, water, teach children about marine life; teach/learn about history and cultural ways
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All interview participants described some connection to place through one or more of the four dimensions, although the strength of that connection varied across the three interview groups (non-tribal non-harvesters, tribal harvesters and non-tribal harvesters). We found that overall, the tribal members we interviewed had the strongest, most complex sense of place, followed by non-tribal harvesters with multigenerational family history in the local area, followed by non-tribal harvesters who are more recent arrivals to the area, followed by non-tribal non-harvesters who engage in non-harvesting activities in the nearshore, and lastly non-tribal non-harvesters who do not engage in nearshore activities. The strength of connection exhibited by the groups is presented in the discussion section.

Enabling Contexts, Substitutability, and the Future

The interview results reported above detail the four place attachment dimensions found through systematic coding. We discovered additional topics about sense of place and community well-being through interview analysis and coding. In the following sections, we focus on three important ones: enabling contexts; the (non)substitutability of place and resources; and imagined futures. We coded for additional phenomena at the intersection of place, harvesting, and well-being, however these three focal topics were selected for their significance in demonstrating the processes, conditions, and distinctions that facilitate degrees of place attachments and affect associated experiences of well-being.

Enabling contexts

Enabling contexts include the many variables that allow, inhibit or otherwise impact the place attachment dimensions being discussed. These contexts can be of an institutional, social, political, ecological, economic, historical, or psychological nature. The two most talked about enabling contexts were: access and ecological conditions¹². As an example, an interviewee might be talking about a place she used to harvest a few years ago, but the beach has since been closed due to pollution, so that quote would be co-coded as activity, ecological conditions, and access. We examine access and ecological conditions in this section.

¹² Other enabling contexts we coded include: development & population, food source, health, lacking/abundance/not enough, policy, risk, social conditions, stewardship and care, and other.

Access

Access is the bundle of conditions and opportunities that make it possible for people to experience a flow of benefits (Ribot and Peluso 2003). In project interviews we heard specifically about how conditions of access enabled or inhibited opportunities that allow for place-related well-being. Most often we heard interviewees talk about restricted access to a site or resource due to any number of the following conditions: limited tenure, ownership, or usufruct; physical access (e.g., existence and condition of trails); distance from an access point; expenses of access (e.g., gas, boats, cars); access via employment in a natural resources industry; access to information about ownership, ecological conditions, etc.; and finally, access to social networks as conduits to the flows of benefits. More than two-thirds of the interviewees mentioned access as a concern.

Interviewees repeatedly provided stories illustrating lack of information or else misinformation about public areas and access points. One non-tribal harvester explained the many hours he spent trying to discover where he could dig clams,

I knew there was public beaches in Penn Cove, but they even had signs up that said private beach, so that's why I got familiar with the assessor's office. Started mapping areas, talking to DNR, find out, you know, where the public accesses are, unless the beaches were surveyed, in a lot of cases, DNR really didn't know where the boundaries are.

Other people told stories about how far they were willing to go in distance and physical limits to find an open beach:

Early on we could drive all the way in there. And then when they put the gate there, we parked out front and walked down the road, and then eventually, through a couple ownerships... everybody was cut out, no access to it. So that's when the diggers, pretty much the only access they had was down that steep hill. ...I've been down it a couple times when it's wet out, and you slip and you fall, and I was younger and stronger, I have no desire to do that now.

For tribal members, the issue of access has several additional facets. One is the Federally-protected treaty right to harvest in their tribe's usual and accustomed fishing places¹³, regardless of what local or state authorities thought was allowable.

¹³ A series of treaties negotiated in 1854-1855 by Isaac I. Stevens, then Governor of Washington Territory, reserved the tribes' "right of taking fish at all usual and accustomed grounds and stations..." See, for example,

I remember [two tribal members] went out there on the east side, and they went out there digging by the slough, and the state was right there in no time. Made them dump their clams out.

Another important access issue for tribes is how restricted access impacts the four key dimensions, most notably heritage and social. As one tribal member points out, they had limited ways to show their unhappiness when a place that has held a strong place attachment for many generations was cut off,

It almost seems too like, we resent the fact that after they leased that [land] we had asked permission. To go out to our own place, and I know we used to torment those guys quite a bit when we used to drink. But that was our own silent rebellion you know, civil disobedience of, lot of us quit just going out there when we had to ask for permission to go out there to a place that was extremely important to us.

In many tribes, access for members such as elders is supposed to come through familial sharing networks. Several elder tribal interviewees lamented that they no longer have access to local seafood, either through family or at community gatherings, “*you don’t get any fried clams, you don’t get oysters, you don’t get clams, you may get crab or fish you know...but mostly canned ham and turkey now.*” That access to traditional foods is integral to tribal health and well-being (see *fn 8*).

Both of the above conditions of access (physical and psychological access to heritage places, and family share networks) are important to non-tribal harvesters as well. Multi-generational harvesters talked about their traditions of bringing shrimp and oysters to parents and extended families, as well as friends. Social connections are important not only for gifting and exchanging of seafood, but for accessing the shellfish beds. For example, some non-tribal harvesters described accessing the private beaches of friends and neighbors to harvest oysters. These individuals do not harvest at public beaches, which they describe as too difficult to get to or as having poor quality product. Thus, while private property in tidelands is often thought of as a barrier to access, in some cases, private well-managed tidelands have increased access to good quality shellfish for some individuals. Moreover, while there may be good quality public shellfish beaches, there was an access concern regarding lack of knowledge about where these are located or how to get to them.

Article V, Treaty with the Dwamish, Suquamish, Etc. 12 Stat. 927 (1855)(Treaty of Point Elliott). A landmark decision by U.S. District Judge George Boldt confirmed and enforced these treaty fishing rights, and explained that “[t]he words ‘usual and accustomed’ were probably used in their restrictive sense, not intending to include areas where use was occasional or incidental.” *United States v. Washington*, 384 F.Supp. 312, 356 (W.D.Wash. 1974), *aff’d* 520 F.2d 676 (9th Cir. 1975), *cert. den.* 423 U.S. 1086 (1976)

Ecological Conditions

All interview groups voiced concern about ecological conditions; more than 80% talked about degraded ecological conditions at one or more locations. A few interviewees spoke positively about ecological conditions. One interviewee mentioned restoring juvenile salmon habitat in an estuary; another talked about how the company she works for strives to maintain a healthy, functioning ecosystem. A few other interviewees believed that ecological conditions had neither degraded, nor improved. The majority of interviewees, however, talked about pollution, erosion, climate change impacts and impacts from development. These impacted ecosystems negatively impacted well-being vis-à-vis harvesting. A few illustrative quotes:

There are places that our tribal people would, could harvest in the ancestral time, today cannot because of the pollution that is put into the water from marinas, or maybe it's outflow, or it could be a mill, it could be something else. Yeah, some of the areas are no longer fit for human consumption, so we do not harvest there.

If you walk down to the edge of the water during, when it's low water, that's nothing but clay. We never had clay when I was growing up. There was no clay like that, just, clay just took over that area to where you can't even dig, you can't even put your fork in that clay.

But the one time they had a sewage spill there, we went out in the night time and you could just smell it all over the beach. So we didn't dig, we just said 'well,' I said 'we better not dig, because you could see the toilet paper all along the water's edge, or the, where the water would end up on high tide.' I told them 'well look at all the toilet paper, I think we'd better leave!'

Harvesting is often characterized in ecosystem management as an “extractive” activity that creates anthropogenic pressure on ecosystems. Yet, harvesters in our study, who have vested interests in long-term sustainability of shellfish resources, often saw ecological benefits from harvesting. For example, tribal harvesters spoke of poor ecological conditions for clams when they are not harvested “*in the proper way*.” While overharvesting was mentioned several times, three harvesters said that when clam diggers were denied access to areas traditionally harvested, the clams in those areas did not thrive but instead got smaller and started to die off. One harvester lamented, “*the clams missed us*.”

Ecological conditions clearly affect the well-being that comes from one key place-attachment dimension, Activities. They also contribute to the social connections, heritage and personal dimensions in parallel ways to access described above. One interviewee

clearly demonstrates the interplay of ecological conditions with the personal place attachment dimension: *“The emotions of what we’ve done to this planet. The plastic island in the ocean, the bottles I see floating everywhere. It really affects me.”*

On the Non-Substitutability of Place Attachment

Another important topical area that emerged through the interview analyses centered on the issue of substitutability: place substitutability, resources substitutability, and other substitutability. By substitutability we mean whether an interviewee feels that a particular place or resource can be substituted for another.

Place

For many of the non-tribal harvesters, place was begrudgingly substitutable. For example, a non-tribal harvester described going from place to place over the past thirty years as his ability to clam dig diminished owing to beach closures, stating:

I think I dug down at [this bay] on a regular basis for like thirteen years. When that got cut off, it was like, ‘crap, oh well, I can go over here’. And then you start going over there, and then the resource starts to deplete, now where will I go? Then you go up to [that point], and so on.

Non-tribal harvesters often talked more about the act of harvesting and less about being tied to a particular location.

I would be probably upset about that [my favorite beach closing], yeah, if it weren’t- if I weren’t able to [clam dig] at all. If I had to substitute other places for the places that I’ve been going you know I think it would be more mild disappointment.

Non-tribal non-harvesters spoke of the area’s uniqueness and preferences for the views, the water, climate, and natural scenery that the Puget Sound affords over other locations. In this way, although the non-tribal non-harvesters in our study experienced attachments to place, for many of them, substitutes (going elsewhere or doing other things) could be found.

In contrast, a place substitute was not a possibility for most of the tribal interviewees, who have connections to specific places that have been passed down for generations. As one interviewee lamented, when asked how she would be impacted if no longer able to visit the

shore where she, her family and tribal community have always lived: *“if they told me I couldn’t be by the water, it would be like the end of the world ... it would probably be the deepest grief I could never get over with.”*

Resources

In the North Sound, only tribal members talked about resource (non)substitutability, asserting that you cannot substitute one resource for another, and in some cases, you cannot substitute the same species that is harvested from a different location or using different methods. As one tribal member has said publicly during debates about water quality standards, fish consumption rates, and substitution, *“There are no substitutions for our traditional foods. Even if it’s poisoned, I am going to eat it; it may poison the body, but it feeds the spirit.”* As discussed earlier (see fn 4), shellfish and other traditional foods are an integral part of tribal well-being; there are no substitutes for these foods, and when access to them is diminished, the ramifications are felt throughout the community and reflected in all four key dimensions. For example, these resources play important roles in the social key dimension as part of the sharing networks.

The community is not cohesive, because we have a lack of food they share. You go to a funeral, I hate using this as an example, but you go to a funeral, and there was never, when I was younger, even up till like thirty years ago, there was always fish on the table, always fish, always clams, always ducks. You don’t see one duck ever hit that table anymore. You don’t see one clam, or maybe you might see one, but it’s gonna’ be grabbed by the first person that heads by. And you might see a couple crab legs, but it’s painful to watch.

When interviewees talked about not being able to harvest themselves anymore, we asked whether they ever purchased the seafood. Tribal interviewees considered purchasing shellfish only from other tribal harvesters (e.g., at the dock, from the seafood bar at the tribal casino supplied by tribal harvesters) as secondary option to getting it themselves or from family. North Sound non-tribal harvesters expressed willingness to purchase shellfish from the store or a commercial shellfish grower, and also in South Sound where fresh shellfish counters made procurement of high quality seafood easier. However in South Sound, one non-tribal harvester rejected the thought of ever purchasing oysters, *“Not on your life!”* We examine the implications of substitutability in the discussion section below.

Imagining Place Futures

We asked interview participants their thoughts on what the future holds for nearshore areas in their area of Puget Sound. We coded and analyzed their responses according to the following schema: hopeful future, uncertain future, worry about the future, idea/vision for the future. Of the North Sound interviewees who spoke about the future, the majority worried about the future, followed by uncertainty. Worry and uncertainty were fairly even across the 3 groups (tribal harvester, non-tribal harvester, and non-tribal non-harvester). Only two interviewees, both tribal members, were hopeful. One said, *“I, I hope they change [current access and ecological conditions], cause I want to know that my grandson will be able to go down and dig a bucket of clams, you know, the way I used to.”*

Worries and uncertainties about the future included both ecological and social changes. Concerns ranged from ocean acidification and associated impacts to communities and foodwebs to loss of opportunities to harvest for personal/community use with increases in commercialization; and concerns about development and urbanization.

Hopes included signs of increased awareness of and actions to mitigate point-source pollution (e.g., septic and fertilizer runoff) and improve water quality, along with the hope that these would translate to greater availability of healthy shellfish, local jobs, and good quality of life for youth and future generations. Hopefulness was expressed about the collaborative possibilities of communities working together, a “rising tide lifts all boats” metaphor was used. Some spoke about their hopes as a way to envision the future.

The overwhelming majority of ideas and visions about the future shared by interviewees concentrated on the need for increased education and more restoration. Tribal harvesters, non-tribal harvesters and non-tribal non-harvesters all expressed the same general sentiments about the importance of increased education to help protect and restore Puget Sound, yet each group had their own particular focus. Many non-tribal harvesters spoke of increasing awareness about pollution and pollution prevention: *“I think they need to infuse some money in this Puget Sound... better sewage restrictions, better, tighter restrictions on industry, and we gotta’ do something about what we’re putting in the bay.”* Non-tribal non-harvesters often spoke in more general terms about protection of the shoreline,

The idea is to protect it, to respect it, to- I know you have to make concessions at times but to make sure that those decisions are made in the most considerate manner for the preservation of the shorelines. And if there can be- well, definitely no development except keep it as natural as possible.

The tribal harvesters primarily spoke in terms of children and future generations:

So, rather than bring your group of people, your children, to somewhere off the reservation, bring them down to the beach. You know, remind them this is the air that we breathe, this is the beach that we were raised on. Or maybe if it wasn't their beach that they were raised on, it was their beach that their mother or their grandparents lived on. Bring them to that, and you know, let them have those moments, and maybe it'll reopen a connection that they need to our beach.

Opening up access to areas with high heritage value for tribal members was also highlighted, even if only for ceremonial and subsistence harvest and associated practices such as clam bakes. One tribal harvester also recommended active reseeded of the Tribe's commercial shellfish harvest areas. A non-tribal non-harvester imagined a Puget Sound once again teeming with salmon. We discuss the linkages of future conditions, human well-being, and ecological restoration in the next section on workshop results.

Interview analyses presented above provide important stand-alone empirical information about people's sense of place and the various conditions that affect it. In this project, we took a second methodological step building from initial interview analyses. We held workshops to verify analyses, rank variables, construct scales for select variables, and reflect on restoration interactions on select place values. Workshop results are described in the following section.

Workshops Results

Upon completion of interviews, we returned to the communities in South and North Puget Sound to verify analysis, evaluate how place attachment affects or could affect human well-being, and elicit and construct scales for a dimension selected by participants. We also discussed the linkages between a sample restoration project in Puget Sound and well-being. This section summarizes the results from the four workshops (see Table 9). Workshops consisted of 7-15 participants, ranged in time from 3-4 hours (see methods section above for the progressive series of steps taken during workshops).

Table 9: Workshop Results Overview

Workshop	Top ranked place attachment dimension(s) with representative quote	Metric(s) selected for place attachment & well-being	Selected restoration topic(s) to evaluate for well-being
South tribal	<p>Activity</p> <p><i>"To me, there's nothing better than on a day like today to go to the Island, and as the tide's going out, you build the fire in the pit, and then go down and dig clams."</i></p> <p>Heritage</p> <p><i>"We are people of the water. Water is one of the important parts of ceremonies for our tribal people."</i></p> <p><i>"We're part of it, and whatever happens to the salmon and the clams is gonna to happen to us"</i></p>	<p>Harvest quality scales for shellfish beds (1-5):</p> <ul style="list-style-type: none"> location of harvestable clams quality of clams consistency of beaches cultivation status of beaches quality of water cultural heritage of shellfish beds 	<p>Local estuary restoration</p> <p>Mason County septic system repair program</p>
South non-tribal	<p>Activity</p> <p><i>"I walk along the waters and beaches. It's just a wonderful way to get out, have fun, get exercise and have these encounters with the sea life and the beach."</i></p> <p>Personal</p> <p><i>"The whole area is my place and that includes the waterways, the shorelines, the lakes, the mountains, the rivers, all of those things. I'm here because I love what here is."</i></p> <p>Social Connections</p> <p>Added: People engaging in citizen science together; Close community with neighbors built over 40 years</p>	<p>Access - necessary for each high ranked place attachment dimension (scale: excellent to poor):</p> <ul style="list-style-type: none"> physical access to beaches ecological integrity information and education 	<p>Henderson Inlet Community Shellfish Restoration</p>
North non-tribal	<p>Personal</p> <p><i>"A sense of peace and relaxation when I go [to the shoreline]... when I'm there on my own time, I feel relaxed, I feel at home."</i></p>	<p>Activity (Low-High Scales):</p> <ul style="list-style-type: none"> walking on the beach <p>Personal:</p> <ul style="list-style-type: none"> feeling relaxed, at peace 	<p>Septic system repairs</p>
North tribal	<p>Personal</p> <p><i>"A couple of the things that I do with my children is walk on the beach, spend the afternoon there, just good, good quality time"</i></p>	<p>Activity: teaching kids in a heritage place, scale (1-5)</p> <ul style="list-style-type: none"> combo of all 4 key dimensions 	<p>Management of local beach</p>

For step 1, the participants were presented with a matrix of quotes from their own interviews that displayed a range of statements for each of the four place attachment dimensions. Participants were asked to select the quote that best represented that place attachment dimension. These are summarized in Table 9 (see Appendices E-H for a full list of quotes used in each workshop).

Importance of place attachment to overall well-being by community

In step 2, we asked participants in each workshop to rank the importance of each of the main place attachment dimensions to overall well-being (options were on a Likert scale: “very important,” “somewhat important,” “a little important,” and “not important.”) (see Table 10 for the rankings by community.)

Table 10: Importance of place attachment to overall well-being by community

	Activity	Social connections	Personal	Heritage
South tribal	100% very	86% very 14% somewhat	71% very 29% somewhat	100% very
South Non-tribal	100% very	100% very	100% very	83% very 17% somewhat
North Non-tribal	79% very; 14% somewhat 7% a little	77% very 15% somewhat 8% a little	93% very 7% somewhat	50% very 29% somewhat 14% a little 7% not
North tribal	90% very 0% somewhat 10% a little	83% very 17% somewhat	92% very 8% somewhat	73% very 18% somewhat 9% a little

Constructing scales for place attachment as human well-being

In step 3, we asked participants to choose a sense of place dimension or attribute and create metrics using constructed scales. Each workshop group approached developing scales differently (see Table 9). We did not go in with a preconceived notion of what we wanted the scales to look like—we allowed the workshop attendees to construct scales in a way that made sense to them based on their priorities. While the community-based approach makes it difficult to neatly compare and contrast across the four workshops, we were able to ascertain patterns shared by participants in all four workshops. Open discussions during scale development in each of the workshops circled back to all four key

place attachment dimensions. We focused the scale-development exercise on “Activity” dimensions, and in each of the workshops, participants described how this activity was mediated primarily by access, and also how ecological integrity and knowledge play important roles (Figure 5).



Figure 5: “Activity dimension” example of scale development topics addressing access, ecological integrity and knowledge.

The metrics developed during the workshops can be considered provisional, but not representative of the full range of sense of place priorities for all residents of Puget Sound. Limited in number and time, these four workshops and the scales developed demonstrate the beginning of sense of place indicator development.

Restoration and sense of place

Participants were asked to talk about how actual restoration projects in Puget Sound are linked to their sense of place and well-being, with a focus on one or more place attachment dimensions (Table 9). This final step in the workshop was an open-ended discussion exercise. Each workshop group raised important considerations with regard to various aspects of their sense of place and well-being. Here we highlight these considerations by workshop group.

In the South Sound tribal workshop, two restorations projects were evaluated: an estuary restoration in a local bay and Mason County septic system repair funding programs. For the estuary project, discussion focused on how restoration could be improved in the context of the Heritage dimension. Participants talked about including traditional plants in the restoration planting and providing access to them for use in ceremonies. *“Bringing back natural wetland plants such as cattail, horsetails, eelgrass and first food plants in a wetland area, which are cleansing species.”* Some people suggested that the longhouses that used to

stand in that location could be rebuilt for future ceremonial use, or placing a marker where ceremonies could be held was another suggestion. Participants hoped,

The restoration would allow us to hold feasts in our territory again. A huge clam bake out there. What better spot! Everything's there-- [the Creek with salmon], shellfish, cherry, apple, basket bark (red cherry), apple pie. We could use traditional place names. There are customs in the place names, such as the place to stop at the spot right before [the Creek] to drink from the spring/water for a blessing.

For the septic repair restoration scenario, people spoke of how they would like to see efforts concentrated at Oakland Bay, Johns Creek, as well as Budd Inlet, Olympia: *"those are the worst areas."* Participants looked forward to having more uncontaminated shellfish. Indicators for restoration with cultural well-being variables could be: testing *quality* of beaches; *types* of shellfish growing (with preferences); are the shellfish reproducing?; and, acres of *good* clams, not just open shellfish beds (as measured now in the PSP Action Agenda). Participants defined good clams as "not striped or black shells."

In the South Sound non-tribal workshop, participants were asked to talk about how the Henderson Inlet Community Shellfish Restoration project is linked to their well-being. Henderson Inlet is one of five inlets that form the southern end of Puget Sound, located between Budd Inlet and Nisqually Reach. Declining water quality closed the area to shellfish harvesting from 1985 to 2004. Thurston County, the city of Lacey, shellfish growers, and upland property owners worked together to improve water quality in the Inlet. Since 2010, 340 acres have been upgraded to "approved" or "conditionally approved" for shellfish harvest.

Workshop attendees struggled with the step 4 questions, which asked them to think about how the Henderson Inlet project could improve human well-being in the context of each of the four key dimensions. Some of the attendees were not familiar with the project, and others had conflicting information about access and educational opportunities. Some said that the area was not open to the public for recreational harvesting--the area was maintained by Washington State University, and one must participate in a class to have access to the shellfish beds (which ran counter to others' beliefs that it was open for shellfish harvest). The workshop attendees decided to employ their newly formed Access Scale to evaluate the project, using the assumption that the community shellfish farm was not open to the public. Participants gave the project a "fair to good" rating, stating that the project achieved improved ecological functioning and was largely successful due to extensive education efforts about the need to clean up septic systems and providing outreach for operation and maintenance of septic systems. Positive messaging and collective action were important components. However, since access is limited, the project cannot be given a higher ranking.

In the North Sound non-tribal workshop, we chose a loan program to repair the septic systems as the restoration project, because failing septic systems are well known in the area for causing shellfish bed closures and water contamination. The purpose of the septic repair local program is to improve water quality and reopen shellfish beds and beaches to public access. For this exercise, we polled the workshop participants using a constructed scale of: very positively affected; somewhat positively affected; not affected; somewhat negatively affected; and, very negatively affected. Participants responded:

- Activity: 60% very positively affected; 40% somewhat positively affected
- Social connections: 70% very positively affected; 10% somewhat positively affected; 20% not affected
- Personal [Sensory/ Aesthetics/ Feelings]: 42% very positively affected; 42% somewhat positively affected; 8% not affected; 8% somewhat negatively affected
- Cultural heritage: 38% very positively affected; 38% somewhat positively affected; 23% not affected

When workshop facilitators asked why participants answered the way they did, participants stated that they struggled with the questions. When facilitators asked why someone voted “somewhat negatively affected” for Personal [sensory/ aesthetics/ feelings], the individual who cast the vote told a story about how he used to fish on a local slough but then the cannery on the slough was cleaned up and the waste that it was dumping was stopped. The participant believed that the waste was a food source for fish in the slough; once the waste was no longer present, the fish in the slough disappeared and the individual was unhappy that the “restoration” project eliminated a prime fishing location.

The workshop ended with an open discussion about the pros and cons of restoration projects in the area. One participant voiced distrust of beach closures and public health officials’ notices of “negative health impacts” from fecal coliform and red tide. He stated that he has been eating shellfish from these beaches all his life and has never been sick. Other participants spoke more positively about restoration projects, and placed a high priority on restoration projects looking as natural as possible. They mentioned removing riprap (concrete shoreline armoring) because it leads to erosion problems. One workshop attendee spoke of Ruby Beach on the coast--that its natural shore and erosion are “beautiful,” and that his well-being increased knowing that Ruby Beach exists (existence value, based on aesthetics, sensory), and that he could take family and friends to visit it (access, social connections, feelings, activity).

People talked about how restoration can build community by involving local people and increasing their understanding of the resources they're trying to protect, raising awareness of the pollution of Puget Sound. People believed that education and stewardship are important for both kids and adults, but stated that if kids are learning in school that may be better off in the long run for increasing awareness and stewardship than working with adults. Several people mentioned that making clear connections between humans and the environment is important—people understand that wildlife need a healthy environment but many do not make the connection that it is important for people too.

Finally, in the *North Sound tribal workshop*, we spent time talking about a culturally important local beach, what it was like in the past, what it is now in the present, and what people desired for the future. The future visioning exercise can be considered a discussion of a restoration project. In the ideal future vision, the beach would be solely in the Tribe's control, which people thought would significantly improve tribal members' access to harvest there as their ancestors did, bringing youth to teach them about the area while harvesting. The beach and surrounding area were once central summer "village" spots for tribal members, with prized shellfish beds, excellent beach seining, and easy access. Several North Sound interviewees spoke of this area—the histories and cultural heritage imbedded here; it was the most referenced area when people talked about identity, heritage, social connections and, most recently, loss. Although tribal members can still access this beach, there is a gate and they must now ask for permission from a non-tribal entity, which upset many tribal members. No tribal members camp there in the summers as their families had previously done for countless generations. In addition, some areas are no longer open for clam digging. The restricted access cultivates sadness and avoidance by tribal members.

Participants felt that tribal members' sense of place, particularly for the younger generations, could improve with more culturally-relevant educational opportunities, for example, (a) youth program visits with an elder who could tell stories and preserve traditions, and (b) education at community events (e.g., clam bakes) to teach children about digging the pits and cooking the shellfish. Also, better access to the beach to allow tribal members to come and go freely would improve place attachment. The opportunity for occasional clam digs, even if to give the clams to the Elders Center, getting kids more actively involved in harvests, and more tribal representation at beach (e.g., the tribal flag or emblem on signs so that kids see that their tribe is a part of the area) would help foster place attachment. Finally, more information and outreach regarding the beach and emphasizing that it is (still) open to tribal members, with schedule of events and activities published in the tribal monthly newsletter.

Discussion

In this research, we assessed the interrelated ways that sense of place, shellfish harvesting, and other activities contribute to human well-being in Puget Sound. Specifically, we examined the unique place attachments that emerge through people's interactions with nearshore environments and with each other to enhance their quality of life. We used two methodological tools to empirically assess the relationship between sense of place, well-being, and activities in the nearshore: in-depth semi-structured interviewing, and data verification and values elicitation workshops. In combination, these methods produced new insights into the multi-dimensional characteristics of sense of place for diverse communities, and illuminated access as a primary limiting factor. In addition, we discovered a set of important enabling contexts related to challenges that shape how people pursue a quality of life, in connection with maintaining and restoring the Puget Sound.

Analysis of empirical data from interviews and workshops in two distinct regions of Puget Sound resulted in four key dimensions central to sense of place: activity, heritage, social, and personal. In addition, we examined three phenomena that aid in creating, maintaining and enriching sense of place: access, ecological integrity and education. We refer to these phenomena as enabling contexts, which are socio-ecological systems domains in their own right. Below we elaborate emerging patterns from interviews and workshop analyses and propose a conceptual model to think about, measure, and ideally improve place-related well-being for people in Puget Sound. We recommend next steps toward incorporating sense of place in restoration activities toward the coupled goal of socio-ecological health in Puget Sound.

Sense of place as embodied by activities, heritage, personal connections and social connections

Sense of place is embodied through four key types of place attachments: *activity*, *heritage*, *personal*, and *social*. We initiated this project with a focus on the nearshore activity of shellfish harvesting, but through the interviews found that harvesting shellfish was just one of many shoreline-based activities that helped forge strong place attachments. Our findings show that sense of place is multi-dimensional; it does not fit neatly into one simple place category, but instead spans at least four key dimensions. Yet many sense of place metrics omit the majority of the place value dimensions we have elucidated here, and tend to focus exclusively on aesthetic qualities such as scenic beauty and existence value (e.g., the PSP General Opinion Survey 2012, Ocean Health Index). Using this narrow view, sense of place has been represented as a single "service" that flows from ecosystems to people, such that

the interactions between social and biophysical dimensions in creating sense of place remain unexamined. Digging deeper into the place connections that people have with the nearshore, we found much more than aesthetic references to its beauty; people think about, feel, and engage with the nearshore in interactive, social, and psychological ways (e.g., harvesting, spending time with family, stewardship). These interactions demonstrate a way that sense of place can more tangibly drive ecological restoration planning in Puget Sound.

A continuum of multidimensional place attachment

The strength of place attachment, we found, follows a continuum from surface values (i.e. weaker place attachment) to embedded values (i.e. strong place attachment), as developed by Stephenson (2008, Figure 6).

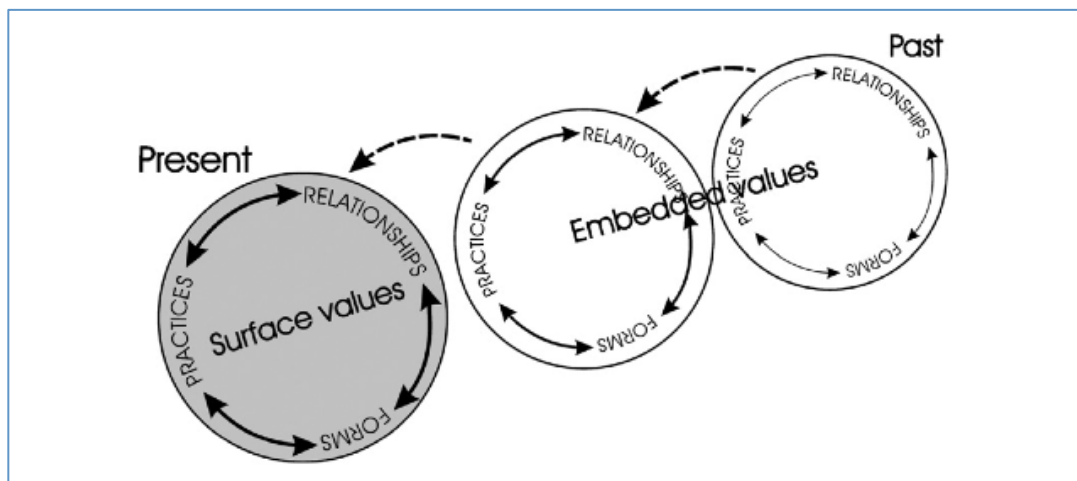


Figure 6: Stephenson's (2008) cultural values model

For the four key dimensions, embedded values are built on deep ancestral ties to the land (heritage), being regularly active over longer periods of time in the nearshore (activity), having strong social ties connected to the activities (social), and robust emotional bonds and cognitive connections (personal) that stem from those activities, memories, and/ or social connections. We found that people who are continuously active on the landscape for many years, and where those activities are an important part of their social network, have the strongest embedded values. Surface values arise out of current actions, feelings, and values held by an individual, while embedded values include linkages to the past as well (Stephenson 2008). Tuan (1997), Stedman (2002) and many others generally agree that repeated experiences on the landscape reinforce a connection to place. This is particularly so over multiple generations, and in the case of many Native American Tribes, countless generations.

We found that strength of connection to place and sense of place complexity (number of dimensions involved) differed between our three population groups (tribal, non-tribal harvester, non-tribal non-harvester). The majority of people with strong, embedded senses of place were multi-generational shellfish harvesters (tribal and non-tribal). We also found distinctions among non-harvesters that related to their degree of active engagements on the beach. Using Stephenson's Cultural Values Model (2008, Figure 6), tribal members had the strongest "embedded values," longtime non-tribal residents (harvesters especially, and to a lesser degree non-harvesters) with family history shared some of these embedded values. More recent Puget Sound arrivals who recreationally harvest displayed "surface values" as did some of the non-tribal non-harvesters who are active on the landscape. In sum, sense of place strengthened as social histories, values, and place-based experiences grew more complex, engaging all four key place attachment dimensions.

One way we ascertain strength of place attachment is through the analysis of (non)substitutability. Considering substitutability is important for evaluating sensitivity to change and measuring trade-offs in restoration that directly or indirectly affect sense of place (as outlined in this research). It's not enough to evaluate whether sense of place would be improved or degraded by change; what is crucial is to evaluate both *how* sense of place is affected, and importantly, *for whom*.

When interview participants mentioned that there are no other physical locations that hold the same value for them, and/or the resources in those locations could not be substituted without intense personal or community impact, these represent the strongest place attachments. When considering the mechanisms of place attachment, substitutability must be accounted for. For example, increased access to a place that has no ancestral ties is not a sufficient replacement to a place with strong ancestral ties that no longer allows access. Failure to consider (non)substitutability in sense of place metrics may have important environmental justice implications. Whose sense of place and well-being suffers? Moreover, what are the cascading ecological costs when place attachment dimensions that motivate stewardship are inadvertently eroded through unaccounted losses?

Access, knowledge, and ecological integrity enable place attachments

We highlighted three important phenomena as primary mechanisms for enabling strong place attachments: access, knowledge, and ecological integrity. Access is a primary enabling mechanism of place attachment. Access goes beyond the physical ability to arrive at a desired location or procure resources, access includes several attributes: economics (such as gas money and equipment), policies (such as permit restrictions), social networks (such as friends who own tidelands), technological skills (such as diving for geoducks), and

cognitive skills (such as knowing how to identify and process oysters) (Charnley et al., in review). Access is a central mediating factor in how people think and make decisions about the benefits they receive (Hicks and Cinner 2014). In the context of restoration, if people perceive more benefits from increased access, then they may be more likely to support and participate in stewardship.

Along with access, we found ecological integrity to be a fundamental aspect of enabling place attachment. As some workshop participants pointed out, finding a balance between access and ecological integrity can be tricky, but feasible (e.g., workshop participants talked about a goal of having a mix of easily accessible beaches near cities with less accessible and more remote areas that may be open only parts of the year as one example of how to balance physical access and ecological integrity).

Knowledge can help facilitate the desired balance between access and ecological integrity. Many spoke of the need to better educate people about why it is important to take care of and respect places. Teaching the history of places and peoples' longstanding connections between them, is important for both tribal and non-tribal people (albeit for different reasons). Tribal participants often spoke of sense of place in both past and future tenses—stressing the importance of past harvesting and how to teach future generations; these conversations illustrate the close connections between activity, social, personal and heritage relationships. While it can be argued that knowledge is part of access, we separate it here to highlight its importance as a way to strengthen place attachment, and motivate people to explore and experience the nearshore, form surface values (and, ideally, eventually form embedded values over generations), and aid in increased understanding and appreciation of Puget Sound.

Multidimensional sense of place as a pathway to human well-being and ecosystem recovery

The complex interactions that form a multidimensional sense of place are important drivers of stewardship in integrated cultural-ecological systems such as Puget Sound. As one participant illustrated:

“Healthy habitats happen because of a history of people in that place. Conservation tells a cultural story. There are nice places left, but that’s because people have been there and care about the place to protect it and steward it. This includes long history, tribal and cultural, as well as newcomers.”

Thus, strong place attachment is not only important for human well-being it also motivates stewardship for the health of ecosystems.

To strengthen place attachment, we recommend looking to the three primary enabling contexts. While each (access, ecological integrity, knowledge) may be improved upon independent of the others, place attachment is most improved when all three are enhanced together. Figure 6 illustrates the multidimensional sense of place and illustrates how the status of the three enabling contexts influences the strength of place attachment.



Figure 7: Conceptual diagram of sense of place and enabling contexts

Moving forward: including sense of place in well-being assessments and ecosystem recovery

The purpose of this project was to examine the importance of sense of place in relation to nearshore areas, and potential measures for restoration planning and implementation. Our results demonstrate the need to include the triad of access, ecological integrity, and education in order to effectively evaluate sense of place. With additional input from diverse stakeholder groups and key experts, the fledging metrics presented here could be employed as building blocks to be tested, expanded upon and amended. All with the goal of

these becoming useful indicators of sense of place to complement human well-being vital sign assessments, as well as evaluate human well-being in other restoration activities.

We recommend using structured decision making as tool to build constructed scales for sense of place measures. Once a set of metrics for sense of place is created, they may be useful in a variety of work. One application, for example, is to adapt the Puget Sound General Opinion Survey question about sense of place to better capture multi-dimensional place attachments, and to evaluate substitutability. Constructed scales of sense of place can also be used to improve human well-being in restoration projects.

Our findings can complement other work in the Puget Sound area to bolster current well-being indicators through more accurate and encompassing sense of place measures. For example, Biedenweg (2014) recently forwarded comprehensive recommendations for human well-being domains, attributes and indicators that are meant to complete the PSP vital sign indicators of health human populations and human quality of life. Sense of place is under the psychological domain in these recommendations; however, we have shown that sense of place clearly encompasses social, cultural, physical and psychological aspects. Furthermore, we urge that assessments of sense of place attend to the access, ecological integrity and knowledge contexts that enable sense of place (Figure 7). PSP also produced a Sound Behavior Index to assess stewardship. We suggest that sense of place be part of this index because our findings demonstrate that people care about areas because of place attachment, and the greater the place attachment, the more people care. In other words, optimizing access, education and ecological integrity strengthens sense of place over time. As people go from surface values of sense of place to embedded values, their motivation for stewardship and ecological restoration increases.

Reporting and Dissemination of Results

Review results with community groups, request approval to share tribal group results

In the case of the two tribal communities, obtaining written approval was required from each tribe before results were released. Following the agreed upon Materials and Data Sharing Plan (see Step 1), project personnel presented findings to the tribal partners, followed recommended amendments, and were granted approval to publish the results. This approval is a significant benchmark for project. Approval for public release of the information, in this sense, means that the communities found the research in some way helpful, or at a minimum, believe that sharing results will aid other efforts at advancing the use of cultural ecosystem services indicators.

Disseminating results:

- Co-PI Dr. Donatuto presented the project purpose, objectives, methods and initial results at the ACES (A Community of Ecosystem Services) conference in Washington DC, December 2014.
- Final report will be distributed to the participating community groups, and local, state and federal agencies charged with managing intertidal ecosystems in the Puget Sound.
- Summaries of the final report will be submitted to tribal newsletters, available via the Swinomish website and linked to other websites such as the PSP, Puget Sound Institute, Washington Sea Grant, and Encyclopedia of Puget Sound.
- Co-PI Dr. Poe presented results at the Society for Applied Anthropology meeting in Pittsburgh, PA, March 2015
- Researcher team presented findings to the Puget Sound Institute and Puget Sound Partnership in a Social Science research presentation in Tacoma, WA in April 2015.
- Researcher team plans to present findings at the Plummer Symposium at NOAA Northwest Fisheries Science Center in June 2015.
- One peer-reviewed publication is planned for submission.

Project participants will receive a copy of the results. The written report will be available to any other interested parties and the public upon request.

Summary/Conclusions

An overarching finding is that sense of place and people's attachments to places are multidimensional and have much to do with the interactions that unfold in spaces. Here, we identify four key ways that sense of place manifests, is realized or practiced: harvesting and other activities; cultural and familial heritage; personal emotional and cognitive experiences; and social connections. We identify degrees of sense of place across a continuum of surface to embedded characteristics, which thicken and strengthen as the four key place attachment dimensions combine and accrue. As a result, sense of place varies across social groups owing to cultural- and practice-specific histories and experiences in places.

This suggests that while ecosystem-based restoration monitoring tools (e.g., the PSP Vital Signs and indicators of human well-being, among others) might include general categories for sense of place, the indicators and scales for evaluating status and trends will vary, especially when tailored to the diverse social contexts that characterize most socio-ecological systems, Puget Sound included.

Crucially, overlooking the multiple dimensions of place values can lead to the acceptance and reinforcement of an impoverished understanding of sense of place and its importance to well-being. People foster unique stewardship ethics grounded in place-based practices that are not routinely acknowledged or reflected in current restoration approaches. The integration and examination of more complex measures of sense of place is important precisely because of the role of relational- and practice-based place attachments in developing stewardship and restoration ethics. Since the overarching goal of PSP is restoration, this fuller understanding of sense of place deserves stronger centrality in policy, monitoring, and action. Our results suggest the importance of understanding and improving the conditions (e.g., access, knowledge, and ecological integrity) that enable the multiple forms of place attachments (activity, heritage, social, and personal), for ecological improvements as well as human well-being and quality of life.

About the Principal Investigators

The research, analysis and work that went into preparing this report was shared equally among the Principal Investigators.

Dr. Jamie Donatuto is an environmental health analyst at Swinomish Indian Tribal Community. Her research focuses on providing a more equitable framework for Indigenous peoples to define and prioritize health and well-being themselves.

Dr. Melissa Poe is an environmental social scientist at Washington Sea Grant (University of Washington) and liaison with NOAA Northwest Fisheries Science Center. Her research focuses on cultural dimensions of marine ecosystems.

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We wish to thank all of the North and South Puget Sound interview and workshop participants for sharing their insights, memories and place-inspiration with us. We also acknowledge the Swinomish Indian Tribal Community and the Squaxin Island Tribal Community, partners in this research. Others who contributed and for whom we are grateful, include Leslie Robertson, Myk Heidt, Aleta Poste, Charlene Krise, Jeff Dickison, Swinomish GIS and Communications Staff, tribal cooks who prepared meals during workshops, Jeff Abrams, Heidi McCutcheon, Wendy Ecklund, Emma Fox, Barbara Clabots, Mira Klein, Lara Muffley, and Heather Mills.

A special thank you to Swinomish Elder Larry Campbell for providing guidance and insight throughout the project, from crafting the tribal interview questions to interpreting the tribal results and giving the welcome prayer at the North Sound workshops.

Three social scientists with diverse training in applied environmental social science provided careful reviews of a draft version of this report. Their comments have been considered in making revisions to improve this final report, and we are grateful for their constructive and helpful feedback.

The scientific results and conclusions, as well as any views or opinions expressed herein, are those of the authors and do not necessarily reflect those of NOAA or the Department of Commerce.

The views expressed in this report do not necessarily represent the views of any participating tribe.

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Appendices

Appendix A: Interview Guides for non-harvesters

PSI Project, Sense of Place

Interview Guide, updated May 14, 2014

FOR NONHARVESTERS:

Introduction – project description to bound purpose of research and possible connection between well-being and sense of place. An area map should be available that outlines the study area – what we refer to in the interviews as “the region” -- but the extent to which the map is used or referred to is up to the person being interviewed, some people may rely on the map quite a bit whereas others may largely ignore it.

1. Can you describe some of the places most important to you in the region and why?
2. Sometimes people say they have a ‘strong connection to a particular place.’ Is that something you feel yourself? If so, can you describe what you personally mean by that or what kinds of experiences you’ve had that connect you to that place?
3. What is it about those places in the region to which you have a strong connection that makes them special? Can you describe for us any specific traits or characteristics of these places, for example that might be connected to the ways in which they are used or to their histories as special places?
4. Think about some of the places here that you think are particularly beautiful: What makes them beautiful? Is it about how they affect particular senses, such as smell or sound, wind, light, or something else?
5. Are there parts of your own or your family’s history that are connected to places in the region? Are these places quite common –in the sense that they are generally found throughout the region– or are they very specific or unique?
6. If for some reason you were no longer able to experience the places that are important to you, how would you, your family or your community be impacted? *[if it’s too difficult to imagine, prompt with examples: say, for example if your important place was leased to an aquaculture business and you could no longer access it, or if there was a beach closure, or if the access road was removed...]*?

7. Given what you've already said can you imagine leaving this area and, if so, why might you move? If you did move, are there special places in this region that you expect you would miss? How about the possibility of finding substitutes for these places somewhere else – would this be difficult or relatively easy?
8. Thinking about the places you've mentioned as being special, is this a feeling unique to your experience? Or do you think a lot of other people also regard these same places as special? Why? Why not?
9. Are there places that you think about negatively? [*if pause, prompt with: this could be because of the physical look of a place, or because of events that occurred there, or some other reason*]
10. Are there places that you make a habit of visiting regularly? Why? What about places you mean to go to or intend to go to – you don't necessarily get to these places but you know about them and like the idea that they are there?
11. What about the opposite – are there places you intentionally don't go to or actively avoid? Why?
12. Can you speak to me about the kinds of things you do in this area that are near the shore or near-shore? [If already provided above, just ask to list.] Can you make a list of some of these places?
13. Next, please choose one or two of the most important ones to you on the list – why do you go there? How often? Do you go to other places outside this area for similar activities? How often?
14. Are these things you do by yourself or with others? If with others, who joins you? [family, friends, young, old]?
15. What kinds of things do you wish you could do more of?
16. Are there things that you did or experienced in these places in the past that you no longer do now? If so, what? Why did you stop?
17. Have the places that are important to you changed over time? What kinds of changes are most obvious? How quickly or over what time periods did those changes occur?

18. Thinking into the future, say the next 25 years, what kinds of changes do you imagine might take place? These could be things you hope for or worry about (including prompt 'no change' as needed) [if needed, prompt with hopes? Worries?]
19. Ok, let's pick one of the changes you mentioned, say xxx. Recalling the things you were saying earlier about being connected to a place, have these/would these changes impact your connection to this or these places?
20. Demographic Questions
- a) Which age group do you fit it (circle one)? Under 20, 20-29?, 30-39?, 40-49? 50-59? 60-69? 70-79? 80-89? Over 90?
 - b) And your gender?
 - c) What is the name of the community where you live?
 - d) How long have you lived there?
 - e) (If not lived here whole life) have you lived outside of the Puget Sound area?
 - f) What do you do for work?
21. Before we end, is there anything you wanted to add that we haven't already talked about?
22. Given what this interview has covered, can you recommend any other people that we might talk to?

Appendix B: Interview Guides for harvesters

PSI Project, Sense of Place

Interview Guide, updated May 14, 2014

FOR SHELLFISH HARVESTERS:

Introduction – project description to bound purpose of research and possible connection between well-being and sense of place. An area map should be available that outlines the study area – what we refer to in the interviews as “the region” -- but the extent to which the map is used or referred to is up to the person being interviewed, some people may rely on the map quite a bit whereas others may largely ignore it.

23. Can you describe some of the places most important to you in the region and why?
24. Sometimes people say they have a ‘strong connection to a particular place.’ Is that something you feel yourself? If so, can you describe what you personally mean by that or what kinds of experiences you’ve had that connect you to that place?
25. What is it about those places in the region to which you have a strong connection that makes them special? Can you describe for us any specific traits or characteristics of these places, for example that might be connected to the ways in which they are used or to their histories as special places?
26. Think about some of the places here that you think are particularly beautiful: What makes them beautiful? Is it about how they affect particular senses, such as smell or sound, wind, light, or something else?
27. Are there parts of your own or your family’s history that are connected to places in the region? Are these places quite common –in the sense that they are generally found throughout the region– or are they very specific or unique?
28. If for some reason you were no longer able to experience the places that are important to you, how would you, your family or your community be impacted? *[if it’s too difficult to imagine, prompt with examples: say, for example if your important place was leased to an aquaculture business and you could no longer access it, or if there was a beach closure, or if the access road was removed...]*
29. Given what you’ve already said can you imagine leaving this area and, if so, why might you move? If you did move, are there special places in this region that you expect you

would miss? How about the possibility of finding substitutes for these places somewhere else – would this be difficult or relatively easy?

30. Thinking about the places you've mentioned as being special, is this a feeling unique to your experience? Or do you think a lot of other people also regard these same places as special? Why? Why not?
31. Are there places that you think about negatively? [*if pause, prompt with: this could be because of the physical look of a place, or because of events that occurred there, or some other reason*]
32. Are there places that you make a habit of visiting regularly? Why? What about places you mean to go to or intend to go to – you don't necessarily get to these places but you know about them and like the idea that they are there?
33. What about the opposite – are there places you intentionally don't go to or actively avoid? Why?
34. Can you speak to me about the kinds of things you do in this area that are near the shore or near-shore? [If already provided above, just ask to list.] Can you make a list of some of these places?
35. Next, please choose one or two of the most important ones to you on the list – why do you go there? How often? Do you go to other places outside this area for similar activities? How often?
36. Let's discuss seafood and shellfish harvesting in the area.
 - a) What kinds of things do you harvest?
 - b) How often do you harvest?
 - c) Are there particular times of year or seasons?
 - d) Do you harvest more than one thing at the same time? [*prompts – seaweed, pickleweed or sea beans ..*]?]
37. What kinds of things do you wish you could harvest more of or harvest more often?

38. Are these things that you harvested in the past that you no longer harvest now? If so, what? Why did you stop?
39. Do you keep everything that you harvest for your own household or do you share it? For example, do you give any away to family or friends, for celebrations, gatherings, or gifts? *If so*, what percentage would you say you keep versus share?
40. How important to your diet are seafoods or shellfish? [*may want to prompt for quantity, nutrition, cultural preferences...*] Is this for the entire year or in a particular season or time of year? For example, are there certain celebrations or gatherings that call for having shellfish?
41. How far do you travel to harvest or get shellfish for personal subsistence use or for special gatherings? How do you travel?
42. Do you eat seafoods or shellfish from other sources besides what you harvest, such as from the grocery store or from other harvesters that you know
43. Let's imagine a different scenario – what if someone said to you, what's the difference between store bought and shellfish that you harvested? Can one substitute for the other? Why/Why Not? What's lost?
44. How do you know that the shellfish or seafoods that you harvest or eat are safe?
45. When you harvest do you typically go by yourself or with others? If with others, who goes with you? Relationship? Young? Old? [*Getting at knowledge transmission...*]
46. Are there specific things that you can only get at certain beaches (no need to say where)? Do you detect any differences from one beach to the next as to how the same food species looks? Tastes? Other differences?
47. Has the quality of your harvesting sites changed over time? What kinds of changes are most obvious? How quickly or over what time periods did those changes occur?
48. [*if not already addressed, see Q7, then ask...*] If for some reason you were no longer able to harvest in this area, how do you imagine that would change your feelings about this place? How would it impact you, your family or community?

49. Thinking into the future, say the next 25 years, what kinds of changes do you imagine might take place? These could be things you hope for or worry about (including prompt 'no change' as needed) [if needed, prompt with hopes? Worries?]
50. Ok, let's pick one of the changes you mentioned, say xxx. Recalling the things you were saying earlier about being connected to a place, have these/would these changes impact your connection to this or these places?
51. Before we end, is there anything you wanted to add that we haven't already talked about?
52. Given what this interview has covered, can you recommend any other people that we might talk to?

[Optional additional questions if there is time and interest]

53. What about harvesting for personal use while part of commercial activities – is this something you do or are able to do? If so, how often do you harvest commercially versus non-commercially?
54. How do you prepare what you harvest? -- do you then eat the foods immediately (fresh/raw)? freeze or jar/store?
55. Demographic Questions
- g) Which age group do you fit in (circle one)? Under 20, 20-29?, 30-39?, 40-49? 50-59? 60-69? 70-79? 80-89? Over 90?
 - h) And your gender?
 - i) What is the name of the community where you live?
 - j) How long have you lived there?
 - k) (If not lived here whole life) have you lived outside of the Puget Sound area?
 - l) What do you do for work?

Appendix C: Invitation Letter to Participate

[DATE]

Dear [NAME]:

We would like to invite you to participate in an interview about well-being in connection to sense of place and/or shellfish harvesting in your community, as part of a research project funded through the University of Washington, Puget Sound Institute. The interview should be completed in approximately 1-1.5 hours.

The objectives of the project are to: (1) contribute additional knowledge and refine science-based strategies for protecting and improving both ecosystem services and well-being for Puget Sound residents; (2) develop a set of quality of life indicators related to cultural ecosystem services; (3) produce methods that can be used as decision-support tools to: (a) help provide accountability and build partnerships with communities, (b) assess community priorities, and (c) develop quality of life targets; and, (4) help to establish procedural and analytic guidelines to evaluate and incorporate community place-based values. These four objectives align with the four “key ideas” described in the Puget Sound Partnership Action Agenda (2013).

We will ask your opinions about well-being in your community and how it relates to shellfish harvest and/ or your connection to the Puget Sound shoreline area near your home. We will take notes without identifying who you are—your answers will be anonymous. We will summarize your results along with other interviewees and present them as a summary in a workshop, to which you will be invited to participate as well. You will be given a copy of the consent form for the individual interview and a separate consent form for the workshop.

In appreciation for your participation, you will receive a \$10 gift card for the interview. If you chose to participate in the workshop, you will receive another \$10 gift card and lunch (the workshop will last up to 3 hours, including lunch).

We value your opinion and we sincerely hope that you will be interested in participating.

If you have any questions, please contact the project’s Principal Investigators; their contact information is below.

Thank you; your participation is greatly appreciated!

Sincerely,
Dr. Jamie Donatuto
Environmental Health Analyst
Swinomish Tribe
jdonatuto@swinomish.nsn.us
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Dr. Melissa Poe
Environmental Social Scientist
Washington Sea Grant, Univ. of Washington, and
NOAA Northwest Fisheries Science Center
melissa.poe@noaa.gov; (206) 861-7610

Appendix D: Flyer



Swinomish Indian Tribal Community

A Federally Recognized Indian Tribe Organized Pursuant to 25 U.S.C. § 476
11404 Moorage Way
LaConner, Washington 98257-0817



Evaluating Community Wellbeing in Relation to Shellfish as a Place-Based Cultural Ecosystem Service of the Puget Sound Region of the Salish Sea

Purpose: A healthy Puget Sound is central to a number of culture ecosystem services and overall quality of life. Although many cultural ecosystem services are widely acknowledged, they are often neglected as part of ecosystem management. The purpose of this project is to develop a tool to define and assess community wellbeing and its relationship with shellfish harvesting and sense of place in Puget Sound. We define wellbeing as a combined measure of the many unique nonmarket, subjective and experiential qualities linked to places and activities, known to include quality of life and cultural ecosystem services.

Expected Outcomes: Results are intended to improve understanding of the relationship between community wellbeing, sense of place and shellfish harvesting in such a way that enables Puget Sound ecosystem managers to account for diverse cultural values, and place-based practices and histories in the region. This project also supports the effort to develop a set of quality of life indicators and methods for assessing them that can be used as decision-support tools to: (a) help provide accountability and build partnerships with communities, (b) assess community priorities, and (c) develop quality of life targets. Finally, this project helps to establish procedural and analytic guidelines to evaluate and incorporate community place-based concerns in Puget Sound ecosystem management.

Methods: We use mixed-methods social science. Methods include qualitative interviewing and simple quantitative ranking. Via facilitated group workshops, we will test indicators of community wellbeing. The proposed indicators will be developed through a two-step process: identified by key community representatives through semi-structured interviews, then refined and tested in group workshops as a series of narrative descriptions of values and ranking tasks. The qualitative and quantitative data will be collected through the use of intuitively simple scales via wireless polling devices, allowing for both spatially explicit and relative ranking of key metrics.

Place-based Communities: This project takes place in two geographic areas: *North Puget Sound* (with the Swinomish Indian Tribal Community and adjacent non-tribal communities in the Skagit River watershed intertidal area) and *South Puget Sound* (with the Squaxin Indian Tribe and adjacent non-tribal communities in the South Puget Sound area). Within each of these geographic areas, we work with three population subgroups: (a) tribal shellfish interest group, (b) nontribal harvester group, and (c) nontribal non-harvester group.

Collaborators and Funding: This project is supported by a collaborative team from Swinomish Indian Tribal Community, Squaxin Island Tribe, Washington Sea Grant of the University of Washington, NOAA Northwest Fisheries Science Center, and University of British Columbia. Funding comes from the Puget Sound Institute, University of Washington (Subcontract #752491).

For more information, please contact Principal Investigators:

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Appendix E: South Sound Tribal Workshop quotes for Step 1 with top rankings (*)

Activity	Social Connections	Personal/ Psychological	Heritage/ Culture
A. <i>* To me, there's nothing better than on a day like today to go to the Island, and as the tide's going out, you build the fire in the pit, and then go down and dig clams.</i>	<i>During the summer we looked forward to those clam digs because we got to see all of our cousins, it was really exciting.</i>	<i>* The smell of the bay when the tide goes out reminds me of clam digging. It doesn't matter where I'm at, if I smell that mud, I'm like oh! clam digging on a nice summer day.</i>	<i>* We are people of the water. Water is one of the important parts of ceremonies for our tribal people.</i>
B. <i>I'm getting my boat ready and I plan on going down the Island that's just pleasure there.</i>	<i>When I was a child my father would take us out to the beaches and we would spend hours out there as little kids, and these beaches were full of life.</i>	<i>* It's tranquil, the fresh air sets your mind at ease, just being out there. It doesn't matter where you go on the water.</i>	<i>The water at times will speak to us if we're gone too long, others have a sense that the water's calling them back to come and visit, and pay our respects.</i>
C. <i>We usually go out and camp on the Island for weeks at a time and just enjoy being away from everything.</i>	<i>* When we go out there, there is that sense of community on the beaches. When we're harvesting, people are helping each other out, cracking jokes, and socializing together.</i>	<i>I know the grandeur of these areas and the marine waters. It is a very wealthy area, a wealth of beauty.</i>	<i>* We're part of it, and whatever happens to the salmon and the clams is gonna happen to us.</i>
None of the above; I prefer... <i>(1) kayaking to the island, it's a pray place. When out digging, I start out praying to the creator to get my limit. (2) I just like to paddle around the Island, & climb the trees around the points. When we're out digging, I enjoy the Island seasonally. (3) It would be better if we had more activities going on the Island, like drum group gathering. (4) Clam digging for me, the smell is home. Not just the Island, but where our people's villages are. I feel our people have traveled the Sound, the beach and water.</i>	<i>All elders should be able to be at every clam dig. ... for exercise, to be out there and connect, to earn a \$50 bucket.</i>	<i>(1) at the beach/water I feel "at home" and safe and calm. When we get lost, if we go to the water, we can always find our way. (2) one emotion is financial worry. Because there are not always enough clams in recent years (past 8). This should be improved, through more rapid seeding of beaches, and successive seeding. Clams grow every 4 years.</i>	<i>(1) we are people who came from the clams – it's one of our origin stories, for us not to invest in where we came from is asinine. If Taylor's can do it, why can't we? (2) preservation of all shellfish for future generations and their income. We are "hard working treaty harvesters." All include: geoduck, crab, shrimp, ling cod, flounder, ... for commercial, subsistence, ceremonial, trading with other tribal resources, etc.</i>

Appendix F: South Sound Non-tribal Workshop quotes for Step 1 with rankings*

Activity	Social Connections	Personal [Sensory/ Aesthetic/Feelings]	Heritage/Culture
<i>I may go drop a crab pot, I enjoy the shrimp, the prawn fishery. I'll shuck some oysters and get clams</i> 16%	<i>One of the most wonderful things to see is when families are down on the beach digging clams. You see that connection. We can take our children down to the beach, and gather up some driftwood, cook the oysters, cook the clams, cook smores, and you are creating a memory.</i> 18%	<i>The biggest thing for me is the smells of the salt water, that I really enjoy.</i> 19%	<i>Shellfish is the identity of this place. This is a maritime community that is attached with the water specifically through the shellfish.</i> 15%
<i>When I'm in my boat, it's just magical to me, to be out on that water.</i> 24%	<i>I'm not so much connected to place, even though I really like the northwest, but it's the people that I get connected to more than the place.</i> 10%	<i>It's very beautiful. The marine population, the shorebirds, the seals, the eagles-- it's really stunning, it's really a beautiful place on earth.</i> 26%	<i>I like local history and there's a lot of local history here, logging, boating, oyster farms. The history of Puget Sound and Hood Canal, and of the people that lived here, it's important to me.</i> 41%
<i>I really like birding and bird watching.</i> 17%	<i>I'm always providing oysters whether it's family gatherings, I'm grabbing oysters off the beach and providing them in some way shape or form.</i> 10%	<i>Being by the water is a great place to just reflect, and it often is a place where it's quiet, and at certain times of the day, it's very peaceful.</i> 24%	<i>I'm very used to living with the tide going in and going out. You can look at the water, there's animals and there's things going on. It's part of who you are when you have been raised with it.</i> 17%
<i>I walk along the waters and beaches. It's just a wonderful way to get out, have fun, get exercise and have these encounters with the sea life and the beach.</i> 33%	<i>A group of us go out on evening sails overnights or we get together and have potlucks and talk about boats.</i> 17%	<i>The whole area is my place and that includes the waterways, the shorelines, the lakes, the mountains, the rivers, all of those things. I'm here because I love what here is.</i> 31%	<i>I love all of the lower south sound. My primary connection is my long family history. Future generations are growing up here, playing on the beach. It's a very strong connection for me, where my roots are.</i> 9%
<i>None of the Above, I prefer^ Driving around to see the view; looking at the water at different times of day; looking at the marine life; doing citizen science; swimming/ diving</i> 10%	<i>People engaging in citizen science together; have close community with neighbors built over 40 years; participating in economic development that builds stronger social bonds</i> 45%	<i>The sound of the water; the quality of life here; the feeling of the wind and the different breezes; the quality of the light here</i> 0% (all voted for one of the above options)	<i>I was not raised here... but it is now part of who I am, connected to the tides. Tides give a sense of place, people start tuning into the tides, see changes, many things in life are unpredictable but the tides are always there. A lot of people don't know what a tide is, don't have a sense of THIS place.</i> 18%

*The percentages are rounded off to whole numbers; therefore they may not add up to exactly 100%

^It is voluntary to comment; the comments for option E cannot be assumed to be comprehensive.

Appendix G: North Sound Non-tribal Workshop quotes for Step 1 with rankings*

Activity	Social Connections	Personal [Sensory/ Aesthetic/Feelings]	Heritage/ Culture
Harvesting is the most fun. When you crab, clam, or oyster. It's exciting. 17%	<i>Just being with the kids and teaching, being able to enjoy [the beach] with them and learn with them.</i> 25%	<i>Being able to see the island formations and the mountains just is amazing. Every time I see them I feel like I am in a vacation spot.</i> 22%	<i>There are other places that have similar views, but don't have the same ties to memories of people I've been there with or times I've been there, so that makes here unique.</i> 24%
Hanging out on the beach and watching wildlife... like the eagles. 28%	<i>I'm not so much connected to place, but it's the people that I get connected to.</i> 10%	<i>A sense of peace and relaxation when I go [to the shoreline]... when I'm there on my own time, I feel relaxed, I feel at home.</i> 31%	<i>[My parents] taught us a lot about the ocean, we were on the ocean constantly. We're hardcore fisherman, so I think about my ancestors, their methods, how that's how they subsisted where they lived.</i> 17%
When I'm in my boat (or kayak), I love seeing the shorelines, being out on the water. 15%	<i>Boating, walking on the beach... I love to go with friends and family. It's a social activity.</i> 34%	<i>My energy goes up when I walk on the beach. When you connect with the ocean, you put your hand in the ocean, you're connected with the whole planet.</i> 25%	<i>I've just been here all my life and so it's always been home.</i> 21%
I just love to walk the beach and pick up whatever I can find and look at it... rocks and shells. 34%	<i>Sharing with people...we took visitors clamming; the most exciting part was to be able to make a meal with what we harvested.</i> 21%	<i>That low tide smell, it doesn't bother me. I love it, it just reminds me of home and positive memories.</i> 17%	<i>I moved here and found this fantastically beautiful wonderland that has so many things to offer... I want people to come visit and show them these places ... it makes me really proud and happy to call this my adopted home.</i> 30%
None of the Above, I prefer[^] Swimming 7%	<i>Drinking beer with friends</i> 10%	<i>(No comments.)</i> 5%	<i>(No comments.)</i> 8%

*The percentages are rounded off to whole numbers; therefore they may not add up to exactly 100%

[^]It is voluntary to comment; the comments for option E cannot be assumed to be comprehensive.

Appendix H: North Sound Tribal Workshop quotes for Step 1 with rankings*

Activity	Social Connections	Personal [Sensory/ Aesthetic/Feelings]	Heritage/ Culture
I was born and raised down by the beach, and we lived off that reef, all the clams. Sea urchins, Chinese Caps, we used to eat those things all the time. We lived off the land. 28%	And when my dad would do a mussel bake, we'd go out there and pick two or three gunny sacks full of mussels and invite people to come and eat with us. 4%	Just to relax, drift away. You feel at peace. Down at the beach you knew you were at home and you were at peace. I enjoyed that part of it. 23%	Rather than bringing your children somewhere off the reservation, bring them down to the beach... remind them this is the air that we breathe, this is the beach that we were raised on... it was the beach that their mother or their grandparents lived on- let them have those moments, and maybe it'll reopen a connection that they need to our beach. 12%
I still like to go down there. Go down there and have picnics just go down there to spend the day. Brings back old memories. 21%	Even the little kids had jobs, when the nets would come in, they'd wade out in the water and pull the cork line up from the fish when they came. And the kids would spend all summer in the water. 21%	I have good memories of these places, beaches from when I was young. My family handing down family teaching. Seeing these places—I remember the teachings, the memories flood back. 28%	We need to remind the children that they have to continue to be in this special place, so we can continue these traditions that we've been raised with, because the traditions never change. They might go away but that's because we've neglected them, and we need to bring those traditions back. 43%
Elders would sit on a log and talk, and the young guys dig. 11%	Just gather together and be a family and sit on the beach and talk and tell stories and just feel the nature. What we're doing, it's freedom. And it's memories and it's sharing. 24%	Taste. When you're getting close to the beach, you could taste it. And you could smell the seaweed in the air, and taste it the same. You go to a different beach, has a different smell, taste. 35%	The gathering of the clams is just as important as the cooking... you prepare it the right way and you take care of it in the right way if you are cooking for a ceremony. 23%
A couple of the things that I do with my children is walk on the beach, spend the afternoon there, just good, good quality time. 33%	Families, beach seining crews, and the elders out there cooking for the crew. And each individual family that was there. There's nothing more than barbequed salmon that's cooked on the beach, crabs that are cooked on the beach, clams that are cooked on the beach. 44%	The fond memories of that beach are just unimaginable. But, the fact that we couldn't go there anymore for so many years, it's heart breaking. 6%	We understand how important it is to eat these foods, the clams, crab, salmon, for our health, for feeding the spirit. 16%
None of the Above, instead^: (no comments) 7%	"I went to a wedding down at the beach, real touching and spiritual." 6%	(no comments) 6%	(no comments) 6%

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