

Developing Human Wellbeing Indicators for the Hood Canal Watershed

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Kelly Biedenweg, Ph.D., Stanford University and Puget Sound Institute
Adi Hanein, UW School of Marine and Environmental Affairs

PUGET SOUND INSTITUTE



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Executive Summary:

The Puget Sound Institute (PSI) and Stanford University collaborated with Hood Canal Coordinating Council (HCCC) to develop a process for selecting human wellbeing indicators relevant to natural resource management in the Hood Canal watershed. The purpose of these indicators will be to monitor the state of Hood Canal communities and to inform and evaluate integrated watershed strategies for key social impacts.

The process involved several steps of compiling, creating, rating and refining potential human wellbeing indicators that related the values of Hood Canal residents to the health of Hood Canal ecosystems (Figure 1). These steps included 1) a review of all social indicators being collected or intended to be collected in the Puget Sound region, 2) an analysis of values of Hood Canal residents related to the environment from interviews and literature review, 3) a merging of existing Puget Sound indicators with Hood Canal values, and 4) three ranking processes with the project team, Hood Canal stakeholders, and regional social scientists.

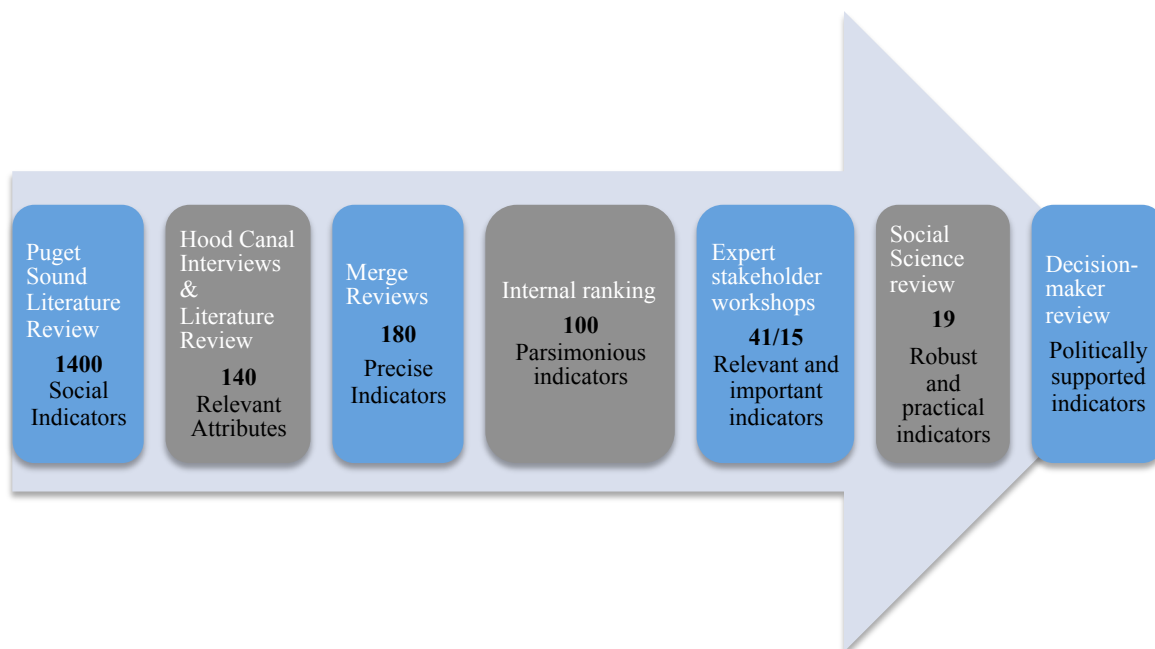


Figure 1. Primary phases of the Hood Canal human wellbeing indicator development process. Each phase builds off the outcomes of the prior.

Indicators were developed to represent six domains of Human Wellbeing: Psychological, Physical, Cultural, Social, Economic and Governance. In the stakeholder workshop phase, 100 indicators were presented to 32 workshop participants in three workshops (Belfair, Port Gamble and Quilcene). From this initial list of 100, 41 were highly rated for relevance and importance in at least two workshops. This list was then sent to social scientists outside of Hood Canal to determine practicality and robustness. A summary table of 26 potential indicators is provided that includes the 15 indicators that were highly rated in all three workshops and the 19 indicators that were highly rated by social scientists (Table 1) – 10 were highly ranked by both. Two additional indicators are included that were recommended by social scientists because they respond to commonly expressed gaps throughout the indicator development process.

Data for some of these indicators are available from regional and national sources. Many, however, will require a regular household survey of Hood Canal residents or independent analyses of existing data. The HCCC, in consultation with partners and member governments, will need to make decisions about how often these indicators are measured and how the information will be collected.

It is important to remember that:

- All indicators must be disaggregated by demographic variables to understand equity issues, one of the most important aspects of human wellbeing
 - Socioeconomic status
 - Age
 - Gender
 - Time living in Hood Canal
 - Ethnicity or Tribal/Non-tribal
- Indicators are not targets. They are a measure of the status of a specific aspect relevant to human wellbeing associated with the environment
- Consequently, it is not necessarily desirable that the unit of measure of an indicator increases. The measure *only* demonstrates the status of the indicator. It is still up to people to analyze the implications of that measure. For example, if residents are increasingly eating larger quantities of shellfish, we would need to know the relationship of this indicator to shellfish population to then determine appropriate policy responses.

Table 1. Human Wellbeing indicators highly ranked by all three workshops and by social scientists.

| Domain | Attribute | Indicator | Highly rated in all 3 workshops | Highly rated by social scientists (an overall score of at least 4/5) |
|---------------|----------------------------------|--|---------------------------------|--|
| Physical | Exercise | Approximate number of hours residents engage in outdoor activities (divided into work that involves outdoor physical activity, swimming, hiking, walking, running, mountain biking, human-powered watercraft, skiing, scuba, home care (garden, yard), & other motorcraft) per week ¹ | X | X |
| | Exercise | Percent of swimming beaches that meet safe swimming standards at all times during the summer | | x |
| | Access to Local Food | Availability of commonly harvested species (e.g. hardshell clams, crabs, shrimp, salmon, deer, elk, mushrooms, rose hips, willow, cedar, other plants or animals) | X | X |
| | Safe Drinking Water | Drinking water testing results from Community Groups and wells | | X |
| | Safe Food | Toxin levels in shellfish harvest areas, commercial and recreational: PSP, crypto, giardiasis, vibriosis, notovirus ² | X | X |
| | Air Quality | Number of days during the calendar year that air quality was good, moderate, unhealthy, very unhealthy, or hazardous (must include pollutants from smoke) ³ | X | X |
| Psychological | Positive emotions | Percent of residents who describe experiencing positive feelings/emotions from being in nature in Hood Canal, such as awe, inspiration, fulfillment, appreciation, solitude, relaxation, sense of peace and reflection | X | X |
| | General subjective wellbeing | Percent of residents who express high life satisfaction or happiness and percent who express living in Hood Canal as a contributor to this | | X |
| | Place Identity | Percent of residents who express a positive connection to the region | | added |
| Governance | Access | Percent of shoreline that is publicly accessible or owned ⁴ | X | x |
| | Access | Percent of residents who are satisfied with their access to public shorelines | | added |
| | Communication | Percent of Hood Canal residents who have learned about resource management or recreation issues through different media this year: newspaper, radio, website, printed media, mobile app, educational resources for school aged children, word of mouth; include source | x | X |
| | Trust in government | Number of Hood Canal residents who report trust in experts and local and state government and collaborative government efforts | | X |
| | Effectiveness of Public Policies | Percent of identified PIC failures with corrective action initiated within "x" weeks ⁵ | | X |
| | Stewardship | Percent of participants engaging in a natural resource stewardship activity/year | X | |

¹ May want to analyze by ability to engage in outdoor activity (elderly and handicapped)

² May want to consider toxics more generally instead, using data from WDFW

³ May want to combine this with regional asthma rates

⁴ This may not be informative as there will likely be little change, but it was widely seen as important

| | | | | |
|----------|---------------------------------|--|---|---|
| Cultural | Cultural Events | Percent of residents who participate in natural-resource inspired cultural activities ⁶ | X | |
| | Traditional resource practices | Proportion of residents who say that they would like to regularly access traditionally/commonly harvested natural resources and are able to do so as much as needed | X | X |
| | Rural Character ⁷ | Distribution and quantity of urban, rural, agriculture, forest, mineral resource, conservation and stewardship lands. | | X |
| Social | Trust | Percentage of residents who trust people in their surrounding community ⁸ | X | |
| | Strong Families and Friendships | Average number of days/year participate in outdoor activities with family members and/or friends ⁹ | X | |
| | Strong Communities | Percent of residents who have worked with other residents to manage resources, prepare cultural events, solve community challenges, or share harvested goods in the past year ¹⁰ | | x |
| Economic | Jobs | Number of jobs and living wages per worker by resource-based employment/industry categories and economic clusters by county, and unemployment rates at subarea level matching state database | | x |
| | Jobs | Number of new jobs created by natural resource employment sector/year | X | |
| | Industry | Percent of economic activity that is from natural resource-based small business ¹¹ | | x |
| | Industry | Percent of revenue to local economy from agriculture, commercial shellfish, commercial fishing, timber, non-timber products and tourism | X | x |
| | Industry | Number of local supporting businesses to industry, by natural resource sector | x | x |

⁶ May need to provide specific examples to orient survey participants

⁷ There was significant discussion about the title for this attribute as Rural Character may not be a value for all

⁸ May be too vague, see Footnote #6

⁹ Can be a component of the exercise indicator; could add process, share, eat or use harvested food, medicine or materials

¹⁰ Potentially more important than the general trust indicator as it is more specific and can act as a proxy to trust

¹¹ No consensus that small businesses are more important than large businesses

Introduction

Human wellbeing (HWB) is multi-faceted and can be enhanced, or negatively affected, by our daily experiences, such as the quality of our work life and personal relationships, our engagement in physical activity and adherence to a healthy diet, and opportunities to participate in cultural activities. Many facets of wellbeing are directly related to the health of the natural environment such as the ability to release stress in a peaceful forest or a thriving local economy derived from sustainable shellfish harvesting. The status of our wellbeing can influence the way we make decisions that affect the environment and the status of those resources, in turn, can affect our wellbeing. In many cases, this perspective is left out of ecosystem recovery.

Because of a growing understanding of the relationship between HWB and the status of natural resources, planning for and monitoring human wellbeing as a component of ecosystem recovery is a growing trend. Within the Puget Sound specifically, the Puget Sound Partnership has a placeholder for quality of life indicators and the Hood Canal Coordinating Council (HCCC), a watershed-based council of governments, has identified nine human components of interest for their Integrated Watershed Plan, a coordinated strategy to guide natural resource-based actions. The actual incorporation of human wellbeing into these types of policies has been limited, however, because of a lack of guidance for developing indicators to begin addressing HWB in practice.

The Hood Canal is a 60-mile long fjord in the western Puget Sound (Figure below). The HCCC has been leading a community-based process to develop an Integrated Watershed Plan based on visioning, establishing goals and selecting priority strategies for the health and wellbeing of Hood Canal ecosystems and residents. The Puget Sound Institute collaborated with the HCCC to develop a process for selecting HWB indicators related to the health of Hood Canal natural resources. This report summarizes the methods and results of a pilot process for HWB indicator



development in the Hood Canal. The data from the process is intended for the HCCC to incorporate into their Integrated Watershed Plan so that future management strategies can take into consideration the effects on HWB and the aspects of HWB that are driving the actual status of environmental health.

Methods

We adapted methods from several international efforts to incorporate social, economic and cultural indicators into coastal and watershed planning processes (e.g., Tipa 2009; Day and Prins 2013). The process involved iterative phases of gathering and refining potential attributes and indicators with soliciting feedback from local and scientific experts in participatory, on-line, and one-on-one formats.

PREPARING POTENTIAL INDICATORS

To begin the process, we conducted a review of social indicators that were being measured or intended to be measured by government and non-government organizations in the Puget Sound region (Hanein & Biedenweg 2012) (Figure below). This resulted in 1400 indicators that were coded into one of seven common HWB domains (Social, Cultural, Spiritual, Psychological, Physical, Economic and Governance), as well as relevant attributes within those domains.

We then compiled existing data about Hood Canal resident values. These data came in various formats from diverse projects, including the human ecology mapping project (McLain et al. 2013), conceptual modeling workshops held by the HCCC with diverse stakeholders, social marketing assessments from Washington State University Extension, and reports describing the proceedings of visioning workshops for the Hood Canal Coordinating Council (Appendix I). We also reviewed two edited compilations of news stories (Brody 1991 and Sande 2010) and one 15-minute video summary of a prior process that assessed the relationship of people to the Hood Canal ecosystems (Hood Canal Community Circle 1996).

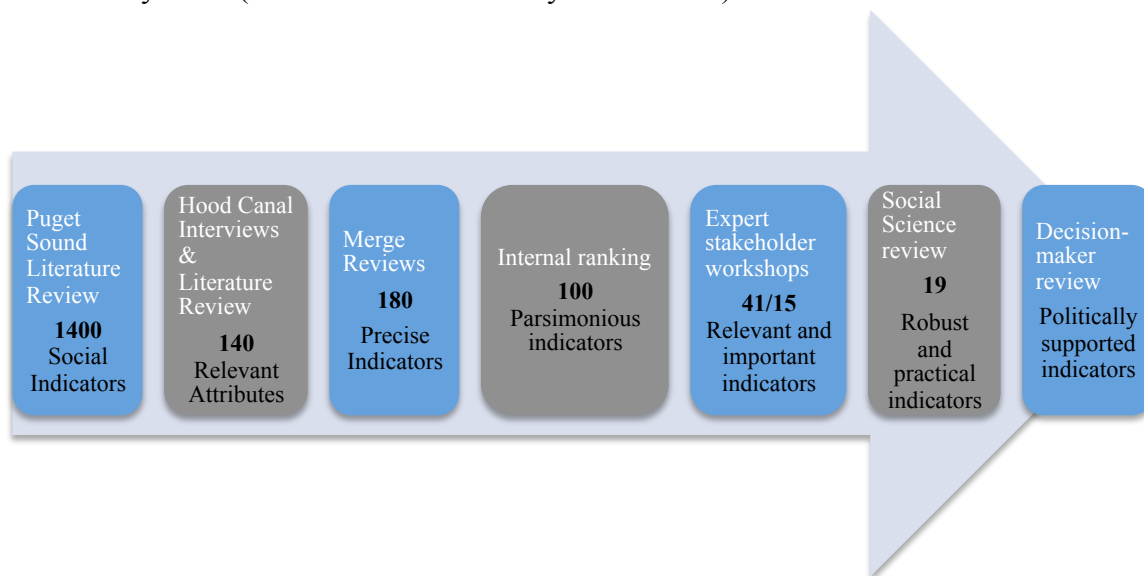


Figure 1. Primary phases of the Hood Canal human wellbeing indicator development process. Each phase builds off the outcomes of the prior.

To complement existing Hood Canal data, we conducted nineteen open-ended interviews lasting from 15-90 minutes focused on the question “How does living in the Hood Canal contribute to your wellbeing.” Participants were recruited using a snowball sampling procedure. We started with a short list of tribal and non-tribal residents who had engaged in previous discussions about the management of Hood Canal. We then asked these participants to recommend other community members who thought differently than they did about the determinants of wellbeing in the Hood Canal. We stopped at nineteen interviews after we saw strong trends in wellbeing attributes across the majority of participants.

We coded the Hood Canal interviews and existing data into one of the seven human wellbeing domains. As we did so, we created attributes (a more specific category to the domain, but not yet a measurable indicator) that best represented the concept and potential indicators that would measure the specific aspects of the attributes. Example attributes include “exercise” and “safe food” for the physical domain, which could be measured by the indicators “number of hours spent in outdoor activity per week” or “level of toxins in commonly harvested species,” respectively. Two of the authors worked on this process, resulting in 132 potential attributes spread across the seven domains.

To come up with specific indicator wording for the 132 attributes, and ideally indicators for which data was already regularly collected, we filtered the initial Puget Sound social indicator database (Hanein & Biedenweg 2012). First, we removed all indicators and attributes that were not related to natural resources or were duplicated in the data set. Second, we removed indicators that were not applicable to the Hood Canal region because they were specific to urban areas or other regions. This resulted in a set of 386 specific indicators. In order to merge these indicators with the list of 132 derived Hood Canal attributes, we searched the set of 386 indicators for each of the 132 attributes. Based on this merge, a total of 241 potential indicators were selected.

REFINING AND RANKING INDICATORS

To reduce this list to a more manageable set of indicators, we used a three-phased process to refine and rank the potential indicator list based on:

| Relevance | Importance | Robustness | Practicality |
|---|--|--|--|
| <ul style="list-style-type: none"> •How well the indicator represents the issues of Hood Canal | <ul style="list-style-type: none"> •How important the indicator is in relation to the other indicators to provide a complete representation of the domain | <ul style="list-style-type: none"> •How well the indicator measures the intended attribute and domain | <ul style="list-style-type: none"> •How feasible it would be to get data for the indicator, assuming a household survey is feasible |

Criteria used in the indicator selection process.

These four criteria were selected to enhance the robustness of the selection process and are a subset of criteria used in other indicator ranking processes (i.e., Kurtz et al. 2001; Kershner et. al 2011; and Day and Prins 2013). The first ranking phase was an internal review of the potential indicators. Our research team ranked each indicator on a scale of 1-5, resulting in a list of 100 potential indicators. The primary outcome of this first step was to remove redundant and irrelevant indicators.

The second phase included three stakeholder workshops with participants who had regional expertise in measurement or first-hand-knowledge of one of the seven domains. A list of potential participants was put together based on recommendations from county commissioners, HCCC representatives, county representatives, and active community members. A total of 32 participants from the 161 invited attended the workshops representing each of the three counties and two tribes (Appendix II). Fourteen participants attended the Belfair workshop, 11 participants attended the Port Gamble S’Klallam workshop and 7 participants attended the workshop in Quilcene. While we acknowledge the small group size, this is a common size for specialized working groups comprised of people with the most regional understanding of a topic. These 32 participants represented diverse perspectives as tribal members, public health scientists, economic development representatives, and active citizens in economic and cultural activities.



Workshop at the Port Gamble S’Klallam Longhouse

Each participant was assigned to one of four small groups focused on 1 to 3 of the domains. They were informed of their group placement and provided the indicator list prior to their attendance at the workshop (Appendix III). Examples of Economic group participants included representatives from economic development, private businesses and marketing; the Social/Cultural/Spiritual group had representatives from tribal nations, religious organizations, social researchers, and long-term residents; the Governance group included representatives from tribal nations, long-term community activists, non-profits, and researchers; and the Psychological/Physical group had representatives from county health departments and recreation groups. Each group was provided 22-27 indicators from which they were asked to refine and prioritize to less than ten to facilitate the narrowing of indicators to the most relevant.

We asked workshop participants to complete two steps to refine and rank potential indicators.

Step 1

The first step was to independently rate each indicator for relevance to the region, placing green (good indicator), yellow (potentially good but needs modification), and red (not relevant) sticker dots on poster-sized printouts of the indicators for their domain. This first step allowed participants to see where they had some agreement and allowed the second step to proceed more efficiently.



Step 2

In the second step, each group worked with a facilitator to refine their list of indicators to less than ten based on relevance and importance. In this step they were also welcomed to add any indicator or attribute that they perceived as critical. Although we recommended methods for doing this, each group chose a different path to accomplish this task. Some approached this step by discussing the potential indicators (yellow stickers), trying to refine these so they better filled a gap or choosing to eliminate them altogether. Other groups looked primarily at the good indicators (green stickers) and asked participants to rank those. Each group was facilitated by a member



of the research team who kept detailed notes of the conversations either in an Excel spreadsheet or directly on the printouts of indicators. Results from all three workshops were compiled; indicators that were prioritized in at least two workshops were retained and new indicators were created based on stakeholder comments if the concepts were discussed in at least two workshops. This resulted in 41 indicators that reflected stakeholder input on the most relevant and important measures for each domain.

Finally, in the third phase of refinement we received input from seven social scientists on this list of 41 indicators. The scientists were sent an Excel datasheet with a 2-page background document and were requested to rank each indicator on a scale of 1-5 for robustness, practicality and importance. We selected scientists with social science experience in the Puget Sound region, although not necessarily Hood Canal, who were familiar with existing datasets and data collection methods and therefore would contribute their topical expertise while ensuring the final list of indicators were both scientifically rigorous and consistent with existing monitoring when possible.

Recommended Indicators

We present a list of 26 HWB indicators that stakeholders and social scientists believed to be relevant, practical, robust and important. Fifteen of these indicators were highly ranked in all three stakeholder workshops. Nineteen of these indicators were highly ranked by social scientists. Two were added based on social science recommendation because they responded to concerns about gaps throughout the indicator process. Of the 26 indicators, 10 were the top rated among all stakeholders and scientists.

The indicators represent six domains of HWB and are specific to the way residents interact with natural resources in the Hood Canal watershed. This includes upland, freshwater and estuarine ecosystems. Footnotes are provided for many of the indicators based on comments from regional social scientists. These footnotes highlight potential considerations when choosing to monitor a specific indicator. Any or all of these indicators may be officially selected by the HCCC to become part of the Integrated Watershed Plan, but consideration should be given to the fact that participants have already selected based on the importance of each indicator to measure the domain.

It is important to remember that:

- All indicators must be disaggregated by demographic variables to understanding equity issues, one of the most important aspects of HWB
 - Socioeconomic status
 - Age
 - Gender
 - Time living in Hood Canal
 - Ethnicity or Tribal/Non-tribal
- Indicators are not targets. They are a measure of the status of a specific aspect relevant to HWB associated with natural resources
- Consequently, it is not necessarily desirable that the unit of measure of an indicator increases. The measure *only* demonstrates the status of the indicator. It is still up to people to analyze the implications of that measure. For example, if residents are increasingly eating larger quantities of shellfish, we would need to know the relationship of this indicator to shellfish health and population status to then determine appropriate policy responses.

**Highly Ranked Indicators of Human Wellbeing related to Natural Resource Health
by Hood Canal Stakeholders and Social Scientists**

| Domain | Attribute | Indicator | Highly rated in all 3 workshops | Highly rated by social scientists (an overall score of at least 4/5) |
|---------------|------------------------------|--|---------------------------------|--|
| Physical | Exercise | Approximate number of hours residents engage in outdoor activities (divided into work that involves outdoor physical activity, swimming, hiking, walking, running, mountain biking, human-powered watercraft, skiing, scuba, home care (garden, yard), & other motorcraft) per week ¹ | X | X |
| | Exercise | Percent of swimming beaches that meet safe swimming standards at all times during the summer | | x |
| | Access to Local Food | Availability of commonly harvested species (e.g. hardshell clams, crabs, shrimp, salmon, deer, elk, mushrooms, rose hips, willow, cedar, other plants or animals) | X | X |
| | Safe Drinking Water | Drinking water testing results from Community Groups and wells | | X |
| | Safe Food | Toxin levels in shellfish harvest areas, commercial and recreational: PSP, crypto, giardiasis, vibriosis, norovirus ² | X | X |
| | Air Quality | Number of days during the calendar year that air quality was good, moderate, unhealthy, very unhealthy, or hazardous (must include pollutants from smoke) ³ | X | X |
| Psychological | Positive emotions | Percent of residents who describe experiencing positive feelings/emotions from being in nature in Hood Canal, such as awe, inspiration, fulfillment, appreciation, solitude, relaxation, sense of peace and reflection | X | X |
| | General subjective wellbeing | Percent of residents who express high life satisfaction or happiness and percent who express living in Hood Canal as a contributor to this | | X |
| | Place Identity | Percent of residents who express a positive connection to the region | | added |
| Governance | Access | Percent of shoreline that is publicly accessible or owned ⁴ | X | x |
| | Access | Percent of residents who are satisfied with their access to public shorelines | | added |
| | Communication | Percent of Hood Canal residents who have learned about resource management or recreation issues through different media this year: newspaper, radio, website, printed media, mobile app, educational resources for school aged children, word of mouth; include source | x | X |
| | Trust in government | Number of Hood Canal residents who report trust in experts and local and state government and collaborative government efforts | | X |
| | Effectiveness of Public | Percent of identified PIC failures with corrective action initiated within "x" weeks ⁵ | | X |

¹ May want to analyze by ability to engage in outdoor activity (elderly and handicapped)

² May want to consider toxics more generally instead, using Jim West data

³ May want to combine this with regional asthma rates

⁴ This may not be informative as there will likely be little change, but it was widely seen as important

⁵ An appropriate time period should be determined with agency representatives; might be too specific to be informative, but it was an attempt to measure government response

| | | | | |
|----------|---------------------------------|--|---|---|
| | Policies | | | |
| | Stewardship | Percent of participants engaging in a natural resource stewardship activity/year | X | |
| Cultural | Cultural Events | Percent of residents who participate in natural-resource inspired cultural activities ⁶ | X | |
| | Traditional resource practices | Proportion of residents who say that they would like to regularly access traditionally/commonly harvested natural resources and are able to do so as much as needed | X | X |
| | Rural Character ⁷ | Distribution and quantity of urban, rural, agriculture, forest, mineral resource, conservation and stewardship lands | | X |
| Social | Trust | Percentage of residents who trust people in their surrounding community ⁸ | X | |
| | Strong Families and Friendships | Average number of days/year participate in outdoor activities with family members and/or friends ⁹ | X | |
| | Strong Communities | Percent of residents who have worked with other residents to manage resources, prepare cultural events, solve community challenges, or share harvested goods in the past year ¹⁰ | | x |
| Economic | Jobs | Number of jobs and living wages per worker by resource-based employment/industry categories and economic clusters by county, and unemployment rates at subarea level matching state database | | x |
| | Jobs | Number of new jobs created by natural resource employment sector/year | X | |
| | Industry | Percent of economic activity that is from natural resource-based small business ¹¹ | | x |
| | Industry | Percent of revenue to local economy from agriculture, commercial shellfish, commercial fishing, timber, non-timber products and tourism | X | x |
| | Industry | Number of local supporting businesses to industry, by natural resource sector | x | x |

⁶ May need to provide specific examples to orient survey participants

⁷ There was significant discussion about the title for this attribute as Rural Character may not be a value for all

⁸ May be too vague, see Footnote #6

⁹ Can be a component of the exercise indicator; could add process, share, eat or use harvested food, medicine or materials

¹⁰ Potentially more important than the general trust indicator as it is more specific and can act as a proxy to trust

¹¹ No consensus that small businesses are more important than large businesses

Collecting Data on Indicators

Many of the indicators selected during the process require direct data collection from Hood Canal residents. The easiest way to collect such data is with a randomized phone, mail, or Internet survey. We can ensure that the data represent the overall population by comparing respondent demographics with overall demographics of the region. Any demographics with low representation can be weighted, if desired, to better represent the Hood Canal stakeholders.

Other indicators, however, already have data being collected for them by other agencies. In the table below, we have noted whether a new survey would be required (“Survey”) or the name of a specific data source that could provide such data if Hood Canal responses are disaggregated or aggregated.

| Domain | Attribute | Indicator | Data Source |
|---------------|------------------------------|---|---|
| Physical | Exercise | Approximate number of hours residents engage in outdoor activities (divided into work that involves outdoor physical activity, swimming, hiking, walking, running, mountain biking, human-powered watercraft, skiing, scuba, home care (garden, yard), & other motorcraft) per week | Partially in PSP General Opinion Survey |
| | Exercise | Percent of swimming beaches that meet safe swimming standards at all times during the summer | Survey |
| | Access to Local Food | Availability of commonly harvested species (e.g. hardshell clams, crabs, shrimp, salmon, deer, elk, mushrooms, rose hips, willow, cedar, other plants or animals) | Survey |
| | Safe Drinking Water | Drinking water testing results from Community Groups and wells | WA State Water Quality Drinking Program |
| | Safe Food | Toxin levels in shellfish harvest areas, commercial and recreational: PSP, crypto, giardiasis, vibriosis, notovirus | WA State Department of Health |
| | Air Quality | Number of days during the calendar year that air quality was good, moderate, unhealthy, very unhealthy, or hazardous (must include pollutants from smoke) | Puget Sound Air Control Agency |
| Psychological | Positive emotions | Percent of residents who describe experiencing positive feelings/emotions from being in nature in Hood Canal, such as awe, inspiration, fulfillment, appreciation, solitude, relaxation, sense of peace and reflection | Survey |
| | General subjective wellbeing | Percent of residents who express high life satisfaction or happiness and percent who express living in Hood Canal as a contributor to this | PSP Social Capital Survey |
| | Place Identity | Percent of residents who express a positive connection to the region | PSP General Opinion Survey |
| Governance | Access | Percent of shoreline that is publicly accessible or owned | Separate analysis |
| | Access | Percent of residents who are satisfied with their access to public shorelines | Survey |
| | Communication | Percent of Hood Canal residents who have learned about resource management or recreation issues through different media this year: newspaper, radio, website, printed media, app, educational resources for school aged children, word of mouth; include source | Survey |
| | Trust in government | Number of Hood Canal residents who report trust in | PSP Social Capital |

| | | | |
|------------------------|----------------------------------|--|---|
| | | experts and local and state government and collaborative government efforts | Survey |
| | Effectiveness of Public Policies | Percent of identified PIC failures with corrective action initiated within 2 weeks | Survey |
| | Stewardship | Percent of participants engaging in a natural resource stewardship activity/year | Survey |
| Cultural | Cultural Events | Percent of residents who participate in natural-resource inspired cultural activities | Survey |
| | Traditional resource practices | Proportion of residents who say that they would like to regularly access traditionally/commonly harvested natural resources and are able to do so as much as needed | Survey |
| | Rural Character | Distribution and quantity of urban, rural, agriculture, forest, mineral resource, conservation and stewardship lands. | Puget Sound Regional Council |
| Social | Trust | Percentage of residents who trust people in their surrounding community | PSP Social Capital Survey |
| | Strong Families and Friendships | Average number of days/year participate in outdoor activities with family members and/or friends | Survey |
| | Strong Communities | Percent of residents who have worked with other residents to manage resources, prepare cultural events, solve community challenges, or share harvested goods in the past year | Survey |
| Economic ²³ | Jobs | Number of jobs and living wages per worker by resource-based employment/industry categories and economic clusters by county, and unemployment rates at subarea level matching state database | Washington State Employment Security Department |
| | Jobs | Number of new jobs created by natural resource employment sector/year | Puget Sound Regional Council |
| | Industry | Percent of economic activity that is from natural resource-based small business | Survey, maybe Bureau of Economic Statistics |
| | Industry | Percent of revenue to local economy from agriculture, commercial shellfish, commercial fishing, timber, non-timber products and tourism | Survey, maybe Bureau of Economic Statistics |
| | Industry | Number of local supporting businesses to industry, by natural resource sector | Survey, maybe Bureau of Economic Statistics |

²³ For the economic indicators, there may be national sources (e.g., IMPLAN Group LLC, Bureau of Economic Statistics or Bureau of Labor Statistics) but there may be issues with aggregation of different sectors. Otherwise, data can be collected with a survey.

Next Steps and Potential Uses of Indicators

These 26 recommended indicators are presented to the HCCC for their consideration. A consultant has been contracted to facilitate the process of adopting all or some of the indicators, with the goal of facilitating pathways to select and incorporate the indicators into the Integrated Watershed Plan and future strategic planning.

Once indicators have been selected and data have been collected, this information can be used in a variety of ways. Some examples include:

- 1) **Assessing the state of HWB related to the environment in Hood Canal residents.** This can be done at a single instance or compared over time. Numerical measures for each indicator can be presented at time “x” and change over time can also be explored to demonstrate increasing or decreasing trends in HWB.
- 2) **Monitoring the impacts of recovery strategies.** Once we calculate if any indicators are changing over time, we can run statistical models and collect qualitative data to test whether any changes in indicator status (increases or decreases) are likely results of recovery strategies in the recent past. For example, we may find that the local income from timber harvests has increased over six years. We can test if this could be due to a strategy that reduced regulations on timber harvest, or if it is more likely due to other factors.
- 3) **Prioritizing scientific research.** When we see that HWB indicators are changing over time, we might question why that is so. And how is it related to the health of the environment? We can use data collected for HWB in the Hood Canal and data collected about ecological indicators to test relationships that we hypothesize, but haven’t been able to test for before because of lack of data. For example, to what extent do positive emotions vary with the health of forests, shellfish beds, or the presence of seals? We can answer this question fairly easily if we have data about both positive emotions and the ecological status of these systems or species.
- 4) **Assisting the selection of recovery strategies that are most appropriate to enhance or at least not harm the current status of HWB.** When we are considering potential ecosystem recovery strategies, we want consider the potential impacts on HWB. This is because we want to enhance HWB while we enhance ecosystem health. It is also because we want to implement strategies that will address, and not exacerbate, human pressures on ecosystems. To do so, we will need to model these potential relationships between HWB and the environment. For example, we may learn through our research that people are more likely to engage in outdoor family activities in public parks closer to towns than further away, all other factors being equal. If we are faced with budget cuts and must close a certain number of public parks, then, we may choose to close those further from town centers. There are at least three details to consider when trying to prioritize strategies that enhance both ecological and human wellbeing:

- a. **Prioritizing regions or demographics of Hood Canal in order to address specific HWB needs.** Selecting recovery strategies that also benefit HWB might include prioritizing regions based on their specific HWB status. Disaggregated data by region and demographics can be used to aid decision-making about where to prioritize strategies that might benefit specific regions or demographics. For example, if governance of natural resources is considered strong in one county but weaker in another, we may choose to prioritize strengthening governance in the weaker county.
- b. **Prioritizing strategies that most likely influence multiple domains of HWB.** Another aspect of selecting recovery strategies that benefit both ecology and human wellbeing is to use research data about the relationship of HWB indicators to specific ecological components to choose strategies that are most likely to enhance a variety of HWB domains. For example, enhancing the population of salmon is likely to enhance all aspects of human wellbeing, from cultural practices to natural resource-based income.
- c. **Understanding HWB tradeoffs.** A critical piece to selecting strategies that benefit ecosystems and HWB is to understand any potential tradeoffs among HWB domains. For example, while natural resource based jobs and income might go up, family outdoor time might decrease. We would need to use scientific data or expert-driven decision-making processes to consider how to handle this tradeoff when selecting a recovery strategy.

Conclusions & Lessons Learned

This multi-step process for developing HWB indicators for the Hood Canal provides an example of how to combine scientific evidence with local knowledge to develop indicators. We have recommended indicators that are more specific than components developed in prior HCCC stakeholder meetings and more relevant than indicators developed for other regions. For this reason, we are satisfied with the results of the process fulfilling both scientific and public engagement goals.

We believe that the success of the project is due to the iterative steps that included compiling existing indicators, matching them to local values, and refining them based on both stakeholder and scientific input. This was greatly enabled by the partnership of scientists, planners, and staff from the HCCC to develop a process that was both scientifically robust and locally supported. This process took about nine months; having one 50% FTE dedicated to indicator preparation and workshop organization was important for maintaining continuity and flow.

Most of our lessons, as usual, were learned during the stakeholder workshop process. Key aspects that enabled success at the workshops included significant preparation of materials in advance, having diverse people at the table, providing a small number of indicators, starting with an individual ranking exercise, and facilitating small-group decision-making. After the first workshop, we realized we had not provided enough background information prior to participant

arrival, although we had provided the potential indicator sets. For the next two workshops, we provided greater detail in the logistics email. At both these workshops, participants engaged more quickly in the tasks and their exit surveys showed a higher opinion that the activities were effective and easy to complete (Appendix IV).

During the workshops, we first asked participants to individually rank the indicators on poster-sized sheets. This was a critical piece to getting people on the same page; the indicators were fresh on everyone's mind, they had personal time to process the meaning, and group members could visually assess their initial agreement or disagreement with the indicators. This step greatly facilitated the following discussion. We also found that the number of indicators we provided each group (22-27) for ranking and discussion was sufficient enough to represent the diversity of the domains but not so large as to result in fatigue.

Refining and ranking indicators is not an easy task no matter how it is presented, but it appears that this deliberate process was helpful in making the process reasonable. In fact, from a list of 15 potential positive and negative adjectives to describe the workshops, participants most often selected interesting (78% of respondents) and stimulating (70%) (Appendix IV). They also selected challenging (70%) and rated the ease of completing the ranking tasks a 6.7 out of 10 (N=24). Thus, although the ranking and rating tasks were cognitively difficult, when organized and facilitated, they can become a positive experience. Some participants, however, still had a difficult time representing ideas outside of their immediate work sphere.

For those considering conducting a similar process at a similar scale, we recommend the following:

- Carefully select a small team (3-5 people) of scientists, policymakers and/or active citizens that is willing to champion the project and work together throughout the process.
- Work with the agency/organization that will adopt the indicators to learn what type of product is most useful or adaptable to them.
- Look carefully for existing data about why residents value your watershed and use this data to inform the initial set of potential indicators.
- Start early in identifying potential workshop participants – look for these in county, state and federal agencies as well as academic institutions and research-based non-profit and for-profit organizations.
- When inviting workshop participants, look for a balance in representation across the six domains.
- You will need to repeatedly email and call potential participants. Plan for this amount of time.
- Carefully prepare information for workshop participants and scientific reviewers. A 1-2 page handout is helpful, and clear, detailed emails are important.

For developing HWB indicators at a larger scale, such as the Puget Sound basin, we are still determining next steps. We hope to conduct a similar process in at least one other watershed to get a better sense of common indicators that are appropriate across the region. After that, we will decide if we want to conduct one large process where workshops are attended by stakeholders from throughout the Puget Sound, or whether we will continue with several

watershed-scale processes and summarize the set of indicators that are the same across the watersheds.

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Appendix I: Sources for Hood Canal Values Review

| Source | # of respondents | % Female | Age distribution (N) | Years in Hood Canal Area (N) |
|--|------------------|----------|--|---|
| USFS Values Mapping Project | 62 | 45% | 18-40 = 5 40-65 =33 Over 65 = 20 | 0-5 =9 6-10 =7 11-20 =15 Over 20 =27 |
| WSU Extension Survey of Households in Hood Canal Area | 167 | Unknown | 18-35 = 32 35-65 =113 Over 65 = 35 | 0-5 =12 6-10 =24 11-20 =55 Over 20 =75 |
| WSU Shoreline Property Owner Interviews/Focus group | 15 | 60% | Unknown | 0-5 =1 6-10 =2 11-20 =7 Over 20 =5 |
| WSU Social Marketing Survey for Environmental Practices | 354 | 45% | 60% over 60 | 56% more than 15 years |
| Building a Community within a Watershed VHS | 23 | 26% | Unknown | Unknown (all long term) |
| Human Wellbeing Interviews | 19 | 58% | 18-40 = 2 40-65 =9 Over 65 = 8 | 0-5 =2 6-10 =1 11-20 =4 Over 20 =10 |

Appendix II: Stakeholder Workshop Participants

Mason County Workshop: August 15, 2013 at Theler Community Center, Belfair, WA

| Participant Name | Organization | Stakeholder Type |
|------------------|------------------------------------|-----------------------------------|
| Terry Oliver | New Community Church Union | Cultural and Spiritual and Social |
| Pam Volz | Harmony Hill Retreat Center | Cultural and Spiritual and Social |
| Dave Ward | PSP | Cultural and Spiritual and Social |
| Pat McCullough | Selah Inn | Economic |
| Terri Jeffreys | Commissioners | Economic |
| Erik Hagan | WSU Extension - Mason County | Economic |
| Kim Klint | Mason Matters | Economic |
| Dave Herrera | Skokomish Tribal Nation | Governance |
| Herb Gerhardt | Retired | Governance |
| Tamra Ingwaldson | United Way of Mason County | Governance |
| Cammy Mills | WSU Extension - Mason County | Physical and Psychological |
| Heidi Iyall | Mason County Public Health | Physical and Psychological |
| Stan Graham | Mason County Historic Preservation | Physical and Psychological |
| Norm Reinhardt | Kitsap Poggie Club (Dave). | Physical and Psychological |
| Total = 14 | | |

Kitsap County Workshop: August 27, 2013 at Port Gamble S'Klallam Longhouse, WA

| Participant Name | Organization | Stakeholder Type |
|--------------------|---|----------------------------|
| Patty Charnas | Kitsap County Department of Community Development: Planning and Environmental Programs Division | Economic |
| Lynn Wall | Naval Base Kitsap, Bremerton | Economic |
| Patricia Graf-Hoke | Graf-Hoke Inc. | Economic |
| Leslie Banigan | Kitsap Public Health | Governance |
| Phil Best | Hood Canal Environmental Council | Governance |
| Melissa Poe | NOAA NW Fisheries | Governance |
| Siri Kushner | Kitsap County Health District | Physical and Psychological |
| Rory O'Rourke | Port Gamble S'Klallam Tribe Natural Resources Department | Physical and Psychological |
| Don White | Puget Sound Anglers | Physical and Psychological |

| | | |
|----------------|-----------------------------------|---------------------------|
| Beth Lipton | Kitsap County Health District | Social/Cultural/Spiritual |
| Jamie Donatuto | Swinomish Indian Tribal Community | Social/Cultural/Spiritual |
| Total = 11 | | |

Jefferson County Workshop: August 28, 2013 at Masonic Lodge, Quilcene, WA

| Participant Name | Organization | Stakeholder Type |
|------------------|---|----------------------------|
| Stacie Hoskins | Jefferson County - Dept of Community Development - Development Review Division | Economic |
| Bill Dewey | Taylor Shellfish Company | Economic |
| George Yount | former Port Commissioner; environmental mediation; retired; party chair of Democratic party | Governance |
| Dana Fickeisen | Jefferson County Public Health | Physical and Psychological |
| John Austin | Jefferson County Commissioner | Physical and Psychological |
| Kathleen Kler | | Social/Cultural/Spiritual |
| Tami Pokorny | Jefferson County Public Health | Social/Cultural/Spiritual |
| Total = 7 | | |

Facilitator Information:

| Facilitator Name | Organization | Belfair | Port Gamble S'Klallam | Quilcene |
|-------------------|---|---------|-----------------------|----------|
| Adi Hanein | UW School of Marine and Environmental Affairs | X | X | X |
| Kara Nelson | | X | X | |
| Kari Stiles | Puget Sound Partnership | X | X | X |
| Katharine Wellman | Northern Economics, Inc. | | X | X |
| Kelly Biedenweg | Puget Sound Institute & Stanford | X | X | X |
| Julie Horowitz | HCCC | | | X |
| Stacy Vynne | Puget Sound Partnership | X | X | |

Appendix III: Initial Indicator Sets Provided at Stakeholder Workshops

Group 1: Physical and Psychological Domains

| # | Domain | Attribute | Indicator wording | Sources for Indicator wording |
|---|----------|--------------|--|--|
| | Physical | | | |
| 1 | | Exercise | Percent of residents who engage in outdoor activities (divided into swimming, hiking, walking, running, human-powered watercraft) per week/month | Schneider et al |
| 2 | | Healthy Diet | Availability of commonly harvested species (e.g. hardshell clams, crabs, shrimp, salmon), year-round, in quantities suitable for subsistence purposes for tribal members | San Juan County |
| 3 | | | Reported cases of E. coli 0157:H7, campylobacteriosis, giardiasis, salmonellosis, shigellosis, listeriosis, vibriosis, yersiniosis | Snohomish County |
| 4 | | | PSP toxin levels in shellfish from commercial areas | PSP |
| 5 | | | Amount of local collected food consumed | |
| 6 | | | Drinking Water | Community Group drinking water systems testing results |
| 7 | | Air | Annual number of days per year particulate matter or ground-level ozone determined the level of air quality | King County Communities Count |
| 8 | | | Annual number of days that air quality was unhealthy for sensitive populations due to fine particulate matter | King County Communities Count |
| 9 | | | Annual number of days that air quality was unhealthy for sensitive populations due to ozone concentrations. | County Health Rankings |

| | | | | |
|----|-----------------------------|----------------|--|---------------------------------|
| 10 | | | Annual number of exceedences of the National Ambient Air Quality Standards (NAAQS) for carbon monoxide and coarse particulate matter | County Health Rankings |
| 11 | | | Number of days during the calendar year that air quality was good, moderate, unhealthy, very unhealthy, or hazardous | Sustainable Seattle |
| 12 | | | Number of days fine particulates exceed the federal standard | Pierce County |
| 13 | | General Health | Percent of adults age 18 or older who report 14 or more days of poor mental health in the past month | San Juan and Snohomish Counties |
| 14 | | | Percent of residents who report a high level of overall health | Puget Sound Partnership |
| | Psychological | | | |
| 15 | Positive Emotions | | Percent of residents who claim high inspiration due to living in Hood Canal | |
| 16 | | | Percent of residents who regularly experience awe from the Hood Canal | |
| 17 | | | Percent of residents who describe their experience of living in Hood Canal as unique to any other place | |
| 18 | Restoration/ Therapeutic | | Viewshed analysis of scenic resources | Neuman, M. et al. |
| 19 | | | Percent of shoreline with intact shoreline vegetation | San Juan County |
| 20 | | | Noise along high volume roadways and arterials, by race/ethnicity and geography | King County |
| 21 | | | Percent of residents who describe opportunities for solitude | |

| | | | | |
|----|--|------------------------------|--|-------------------------|
| 22 | | Self-Actualization | Percent of residents who feel they are able to take care of themselves with the resources provided by the Hood Canal ecosystem | |
| 23 | | | Percent of residents who say they have learned new things about themselves or nature by observing/interacting with local natural resources | |
| | | | Percent of residents who say they have felt a sense of accomplishment or achievement by engaging in the environment through work or recreation | |
| 24 | | General Subjective Wellbeing | Percent of residents who express high life satisfaction or happiness | Puget Sound Partnership |
| 25 | | Sense of Place | Percent of residents who say that Hood Canal means a lot to them | Puget Sound Partnership |
| 26 | | | Percent of residents who feel that living in the Hood Canal says a lot about who they are | Puget Sound Partnership |
| 27 | | | Percent of residents who feel that the Hood Canal is a part of them | Puget Sound Partnership |

Group 2: Governance

| # | Domain | Attribute | Indicator wording | Sources for Indicator wording |
|----|------------|---------------------------------------|---|-------------------------------|
| 1 | Governance | Access to Natural Resource Extraction | Number of permits for west coast fisheries registered to individuals residing in the community | Schneider et al. |
| 2 | | | number of permits held for west coast fisheries by community and fishery | Schneider et al. |
| 3 | | | Number of federal state permits in the community/total number of permits | Schneider et al. |
| 4 | | | Number of forest passes sold | Neuman et al. |
| 5 | | | Number of fishing and hunting licenses used in Hood Canal | HCCC |
| 6 | | | Utilization trends of recreation facilities and programs | King County |
| 7 | | Access to Recreational Opportunities | Percent of swimming beaches that meet safe swimming standards at all times during the summer | Schneider et al. |
| 8 | | | Percent of shoreline that is publicly accessible or owned | Cassin et al. |
| 9 | | | Percent of residents that live within in 1/4 mile of a park, open space, or trail by race/ethnicity, income and geography | King County |
| 10 | | | Distance to the nearest park or open space | Puget Sound Resources Council |
| 11 | | Communication | Percent of Hood Canal residents who report availability of natural resource professionals to respond to questions | |
| 12 | | | Hits to natural resource management websites (SeaGrant, HCCC, county sites, WADFW, WADNR) | |

| | | | | |
|----|-------------|---------------------------------------|---|-------------------------|
| 13 | | | Percent of Hood Canal residents who report having learned about resource management issues through different media this year: newspaper, radio, website, printed media, app | |
| 14 | | | Percent of residents who agree that they have opportunities to influence decisions | King County |
| 15 | | Trust in government | Percent of Hood Canal residents who report trust in local and state government and collaborative government efforts | Puget Sound Partnership |
| 16 | | | Percent of Hood Canal residents who report trust in how moneys are spent by local, state and collaborative government efforts | |
| | | | Percent of residents who highly trust their community police | Puget Sound Partnership |
| 17 | | Effectiveness of Public Policies | The number of on site sewage systems that are fixed and inventoried | Puget Sound Partnership |
| 18 | | | Percent of identified PIC failures with corrective action initiated within 2 weeks | San Juan County |
| 19 | | | Percent of armored marine shoreline by county | B-Sustainable Project |
| 20 | | Stewardship | Percent of participants engaging in a natural resource stewardship activity/year | King County |
| 21 | | | Distribution/extent and content focus of stewardship efforts within a given ecosystem type | |
| 22 | Enforcement | Poaching enforcement (wording needed) | WDFW and Tribes? | |

Group 3: Cultural, Spiritual and Social

| # | Domain | Attribute | Indicator wording | Sources for Indicator wording |
|---|----------|--------------------------------|---|-------------------------------|
| | Cultural | | | |
| 1 | | Cultural Events | Mean number of outdoor events/festivals that residents participate in per year | |
| 2 | | | Percent of residents who participate in representative cultural activities associated with nature (tribal and non/tribal) | San Juan County |
| 3 | | Cultural Sites | Proportion of known heritage sites actively maintained | HCCC |
| 4 | | | Proportion of known heritage sites open to the public or interpreted by signs | HCCC |
| 5 | | Traditional resource practices | Percent of residents who say they are able to regularly access traditionally harvested species | San Juan County |
| 6 | | | Proportion of known tribal skills, beliefs, songs, traditions preserved/practiced in communities | HCCC |
| 7 | | | Availability of healthy, commonly harvested species (e.g. hardshell clams, crabs, shrimp, salmon), year-round, in quantities suitable for subsistence purposes for tribal members | San Juan County |
| 8 | | Rural Character | Number of residential lots per acre, permitted single family units per acre and permitted multi-family units per acre | B-Sustainable Project |
| 9 | | | Average Achieved Net Density, by Jurisdiction | Thurston County |

| | | | | |
|-----------|--|-----------------------------|--|-------------------------------|
| 10 | | | Net Residential Density by City and Unincorporated Urban Areas | Thurston County |
| 11 | | | Distribution and quantity of designated urban, rural, agriculture, forest, and mineral resource lands. This includes distribution of new issued permits by regional geography. | Puget Sound Resources Council |
| 12 | | | Percentage of residents who agree that Hood Canal has maintained an acceptable level of rural character | |
| Spiritual | | | | |
| 13 | | | Number of residents who express a spiritual connection to the region | |
| Social | | | | |
| 14 | | Trust | Percentage of residents who highly trust people in their surrounding neighborhood | Puget Sound Partnership |
| 15 | | | Percentage of residents who highly trust their immediate neighbors | Puget Sound Partnership |
| 16 | | Future and Past Generations | Percentage of privately owned rural acres with a stewardship plan or that is enrolled in an open space incentive program. | B-Sustainable Project |
| 17 | | | Acres in protected critical areas or conservation status | Edmonds |
| 18 | | | Acreage and Percent of rural land preserved from development | King County |
| 19 | | | Average number of days/year residents enjoy the outdoors with younger generations | |

| | | | | |
|----|--|--------------------|--|-------------|
| 20 | | | Average number of days/year residents enjoy the outdoors with older generations | |
| 21 | | Strong Families | Frequency of participation in outdoor activities with family members | |
| 22 | | Strong Friendships | Frequency of participation in outdoor activities with friends | |
| 23 | | Strong Communities | Percent of residents who have cooperated or worked with other residents to manage resources or prepare cultural events | Swinomish |
| 24 | | | Average level of neighborhood social cohesion | King County |

Group 4: Economic

| # | Domain | Attribute | Indicator wording | Sources for Indicator wording |
|----|----------|---------------------------------|--|-------------------------------|
| 1 | Economic | Community Supportive Job Sector | The percentage of all regional jobs that provide living wages within 15 minutes of travel time by automobile and 30 minutes via public transit | B-Sustainable Project |
| 2 | | | Living wage income compared to WA minimum wage and federal poverty level | B-Sustainable Project |
| 3 | | | Average Real Wage per Job | B-Sustainable Project |
| 4 | | | Number of living wage jobs by sector | Washington State |
| 5 | | | Percent of economic activity that is from small business | Washington State |
| 6 | | | Number of jobs and real wages per worker by employment/industry categories and economic clusters by county, and unemployment rates at subarea level matching state database. | ECONorthwest |
| 7 | | Development | Number of new jobs created by employment sector/year | ECONorthwest |
| 8 | | | Net number of new businesses (opened-closed)/year | Washington State |
| 9 | | | Number of businesses closed/year | Schneider et al. |
| 10 | | | Number of businesses opened/year | |
| 11 | | Agriculture | Acres of farmland in production by product in County Agricultural Production Districts | Schneider et al. |

| | | | | | |
|----|--|---|--|--|---|
| 12 | | | Average Farm Size | Schneider et al. | |
| 13 | | | Number of farms | Neuman et al. | |
| 14 | | | Actual acreage in production with WSDA Crop Mapping | | |
| 15 | | | Percent of total farm acreage and sales by type of organization | HCCC | |
| 16 | | | Average net income/acre in farms | Neuman et al. | |
| 17 | | | Ratio of average farm worker income to average non-farm worker income | PSRC | |
| 18 | | | Net cash return from agricultural sales divided by total number of harvested acres in the county | Communities Count | |
| 19 | | For each industry: Commercial Shellfishing Commercial Fishing Commercial Timber Non-timber forest products Tourism | | Percent of revenue to local economy | Thurston County |
| 20 | | | | Number of businesses/establishments | Schneider et al. |
| 21 | | | | Annual payroll of establishments | Schneider et al. |
| 22 | | | | Total number of employees | Schneider et al. |
| 23 | | | | Value of landed resource in the community | King County |
| 24 | | | | Revenue of resource in the community/total revenue of the resource | Puget Sound Resources Council |
| 25 | | | | | Number of local supporting businesses to the industry |

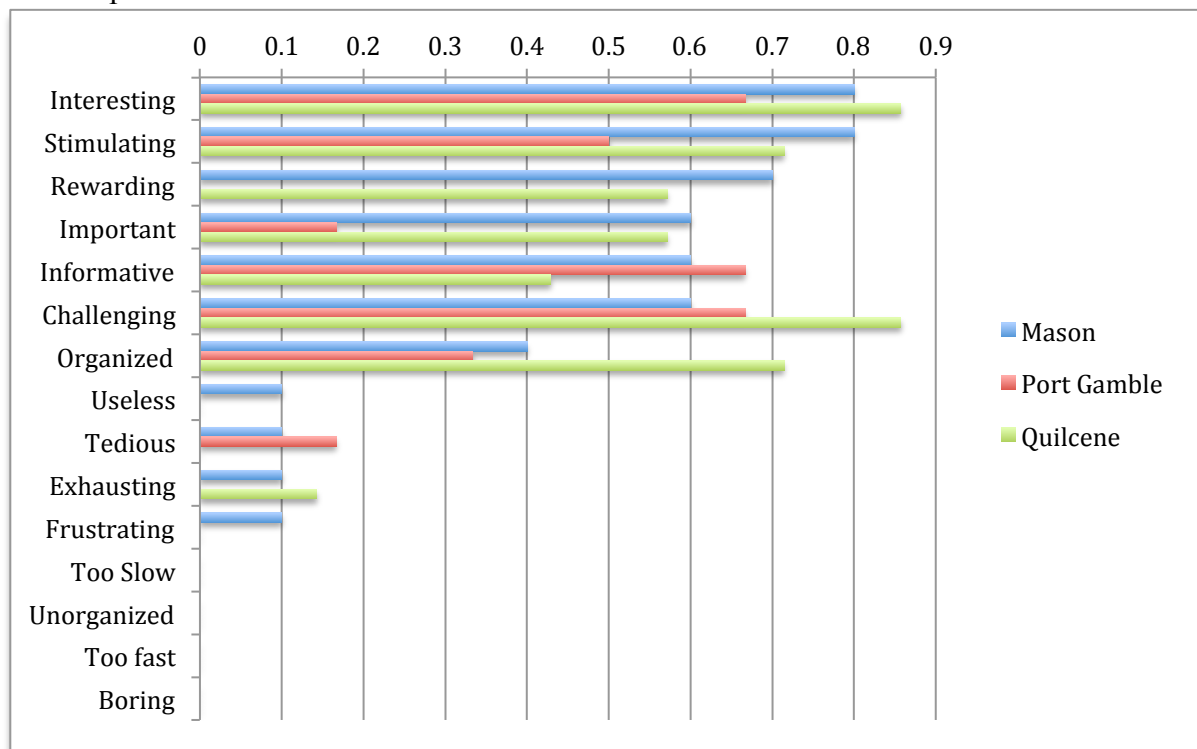
Appendix IV: Workshop Evaluations

We requested workshop participants to provide feedback about the indicator rating process. Below are the tallied results.

1) On a scale of 1-10 (10 is high), please rate... (mean responses), N=32

| | Belfair | Port Gamble | Quilcene | Average |
|---|---------|-------------|----------|---------|
| Importance of workshop | 8.68 | 8.00 | 8.50 | 8.39 |
| Ease of completing activities | 6.09 | 6.58 | 7.43 | 6.7 |
| Ability of workshop to help refine indicators | 7.40 | 7.58 | 8.57 | 7.85 |
| Quality of background Information | 5.36 | 6.67 | 7.17 | 6.4 |
| How well the workshop met expectations | 8.00 | 7.80 | 8.67 | 8.16 |

2) From a list of 15 descriptors, please circle the ones that most describe your experience in this workshop:



Percent of respondents who circled descriptor by workshop