

# Social Science and Monitoring Needs for Puget Sound Recovery

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**PUGET SOUND INSTITUTE**

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## Executive Summary

In October 2013, the Puget Sound Institute hosted a workshop to identify social science and monitoring needs for Puget Sound Recovery. Seventeen regional social scientists from public agencies, universities and consulting firms participated to:

- 1) Compile existing social research and monitoring related to Puget Sound recovery
- 2) Identify social research and monitoring gaps in Puget Sound recovery

Existing research and monitoring as well as important gaps were identified across the fields of governance, economic, psychological, physical, social, and cultural wellbeing as well as human behaviors and infrastructural impacts (Appendices I-IV). Overarching themes related to conducting and incorporating social science into recovery planning were also identified. A short list of research gaps is provided here, with a full list attached as an appendix (III):

### Example research gaps

Puget Sound specific ecosystem service valuation.

Economic and cultural research on corporate ownership of natural resources and corporate culture and practices. This includes an exploration of related strategic opportunities.

Evaluation of decision-making tools and frameworks that integrate social and ecological science and maximize stakeholder participation with the goal of ecosystem recovery.

Analysis of the roles of local elected officials and technical staff in implementing recovery actions.

Human behavior research emphasizing landowners, landowner incentives and the political context for behavior change.

Natural resource use patterns and connections to human health.

Contaminant impacts on human health and ecosystem services that support human wellbeing.

The relationship between ecosystem recovery and human wellbeing and how to apply this in indicator and strategy selection.

Meta-analysis of existing social science research.

## Background

The Puget Sound Partnership (PSP) is gradually integrating social research and monitoring in the overall action plan for restoring the Puget Sound. In 2011, a social science subcommittee was developed to provide guidance to the PSP Science Panel. The first task of this committee was to organize a workshop to bring social scientists together with PSP staff to identify social research needs and, most importantly, initiate interdisciplinary communication (Wellman et al. 2011). As a result of this workshop, two network analyses were funded by the PSP and three social research projects focused on measuring

Puget Sound aesthetics, sense of place and recreation have been funded by the Puget Sound Institute (PSI). Also partially stimulated by this workshop, a recent effort supported by NSF, Stanford University and the Puget Sound Institute resulted in a conceptual model and framework for understanding the relationship of Human Dimensions and Human Wellbeing in recovery, intending to guide future research and monitoring and the integration of resulting data into recovery planning (Figures 1 and 2).

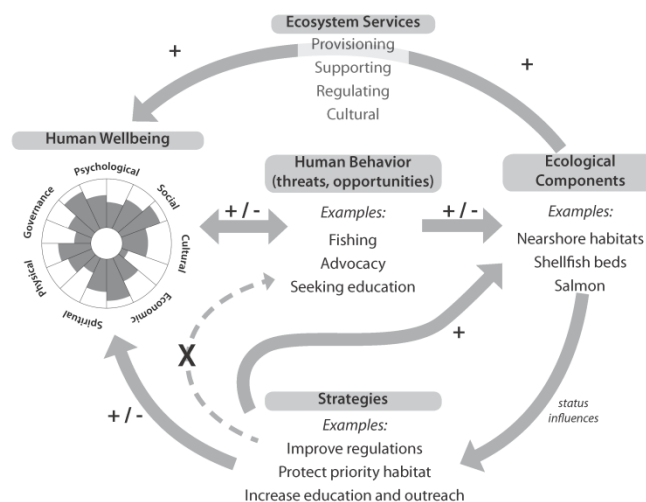


Figure 1. Conceptual model demonstrating the role of human dimensions in recovery

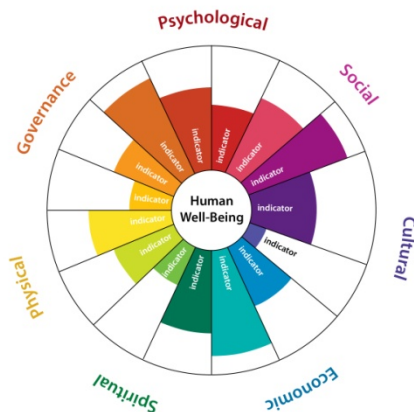


Figure 2. Framework identifying domains of human wellbeing relevant to Puget Sound recovery

The 2013 workshop summarized here intended to continue this conversation by bringing together a slightly larger group of social scientists representing a range of expertise from public natural resource agencies, universities, and private consulting. The goals were to share existing social research and monitoring that might inform Puget Sound recovery and to identify gaps in research that would respond to current and future PSP activities.

Current PSP activities and decisions for which social science and monitoring would be critical included:

- 1) Developing best management practices and identifying barriers to adoption
- 2) Developing human endpoints and pressure classes for the pressures assessment
- 3) Developing human wellbeing indicators for the Quality of Life vital sign

## Methods

In October of 2013, we conducted a five-hour workshop at the University of Washington with seventeen social scientists and two PSP staff. We used the human dimensions conceptual model (Figure 1) and the human wellbeing framework (Figure 2) to organize the discussion of what social research and monitoring exists and is missing in order to respond to Puget Sound Recovery priorities.

Prior to the workshop, we asked participants to share research projects and monitoring data that they were currently engaged in or knew about. To facilitate the categorization of information, we asked participants to classify research and data into any of the following types:

- Psychological health related to ecosystem recovery
- Physical health related to ecosystem recovery
- Economics related to ecosystem recovery
- Governance related to ecosystem recovery
- Social health related to ecosystem recovery
- Cultural health related to ecosystem recovery
- Human behaviors in the environment

These existing projects and data were compiled into a spreadsheet and posted on large posters by category on the day of the workshop.

We began the day of the workshop with introductory remarks and background presentations on existing PSP activities requiring social science and the conceptual model and framework. We then held a World Café, in which participants spent 40 minutes with 3-4 other participants at a “station”, discussing research and monitoring gaps and filling in existing research. Each station was facilitated by a single facilitator and focused on 1-2 of the above categories (Psychological and Physical; Economics and Governance; Social and Cultural; & Human Behavior). Any cross-cutting research or data were either highlighted or added at each station. When time permitted, priority research and monitoring were identified with stickers, stars or underlining; no formal priority defining process was implemented, however.

After two rotations of the World Café, we invited participants to spend 15 minutes individually visiting the other two stations or returning to a preferred station. The facilitators remained at their stations, but participants were encouraged to focus on filling in gaps they felt were particularly important. They were also requested to identify the topics that they would be most interested in pursuing and to note potential funding sources.

Each facilitator then presented the identified gaps in research and workshop participants were invited to clarify and recommend any topics for prioritization based on whether it needed to be completed prior to any other topic, or whether it was particularly relevant to existing PSP activities. The workshop finalized with a discussion of next steps for enhancing communication among social scientists and incorporating social research and monitoring into PSP planning.

## Results

### Overarching Research Needs

Workshop participants identified 42 research gaps and 24 monitoring gaps for Puget Sound (Appendices III and IV), representing a range of themes. During the open-ended group conversation about which topics should be prioritized, the following gaps were identified. Note that these are in no particular order, nor was there a formal prioritization process that resulted in this list.

#### **Economics:**

##### *Corporate ownership of natural resources*

The impact of large corporate ownership of natural resources and related opportunities was a major theme for economics research. This includes an overview of the larger economic picture as it affects Puget Sound natural resources, opportunities for improvement and the alternatives to standard corporate processes. Interestingly, corporations and corporate structure came up in every topic but are not being studied in Puget Sound that we are aware of.

##### *Ecosystem Service Valuation.*

A valuation of ecosystem services specific to Puget Sound, using local data and analyses, was identified as an important research gap.

#### **Governance:**

##### *Decision making tools and frameworks.*

There are two highlighted research gaps in the governance category. The first is research on the science-policy interface, specifically investigating decision making tools and how they integrate natural and social science research and information, and the relationship between scientists, decision makers and funders. The second noted gap is research on decision-making frameworks and stakeholder participation and how to get to successful recovery via change in behavior.

#### **Human Behaviors:**

##### *Landowner behavior and incentives and the political context for behavior change.*

Four human behavior research gaps were emphasized: a) an audience segmentation of shoreline landowners; b) private landowner stewardship behavior and/or incentive programs; c) large and/or corporate landowner incentives; and d) the policy context for behavior change.

#### **Psychological and Physical Health:**

##### *Natural resource use patterns and connections to human health and the relationship between ecosystem recovery and human well-being.*

Three research gaps were specified: a) non-tribal natural resource use by environmental justice communities; b) psychological and physical health related to the informal resource economy; c) understanding of human well-being connections to ecosystem recovery, values and application to indicator selection and strategy development.

#### **Social and Cultural Dynamics:**

##### *Corporate Culture*

Similar to the discussion in the Economic workgroup, participants in this group highlighted the need to research corporate culture, behavior, and practices related to natural resource ownership and use.

### *Social Science meta-analysis*

Considering the current breadth and depth of social science research related to recovery, this workgroup also recommended a meta-analysis of current social science research and surveys.

### **Other Potential Categories of Research:**

#### *Humans in the Environment*

While there was mostly support for the topics of the World Café groups in facilitating the discussion, there was some concern that the conceptual model (Figure 1) may not capture the way the external environment influences humans and thus should be highlighted to better elicit related research. Some specific considerations related to humans in the environment included:

- Creating “built environment” as a separate category of research because it brings different people to the table. Others felt that built environment is one aspect of the spectrum on a scale of “environment” and its influence on people.
- Modifying the conceptual model to highlight social structure & infrastructure as a sphere within which human well-being and human behaviors act

### **Selection and Implementation of Future Social Research and Monitoring**

Finally, participants highlighted key concepts and considerations that apply to social science research generally. This covers aspects of how the research should be prioritized, designed, and implemented, in the following points:

**Environmental and Social justice must be prioritized.** Always disaggregate across demographics (race, class, gender) and look to understand diverse relationships, opportunities, impacts and risk from strategies.

**Prioritize research** by potential impact, ability to build upon existing work, or ability to directly inform current activities and decisions.

**Scale should be considered.** We should look at temporal, institutional, societal, and spatial scales for problem analysis and research design. The project design must be at the right scale for the decision. In addition, when selecting a research project, consider scaling up from a pilot study that is designed for broader application..

**Communication of results needs to be prioritized.** This should be a part of any future research contracts & proposals.

**Participatory research** is important and a critical aspect to adaptive management

**The structured decision-making approach** is an important tool to incorporate different values into the discussion.



## Next Steps

The group identified several next steps they would like to pursue to continue supporting social science research and monitoring for Puget Sound recovery. These included the development and dissemination of this report, the creation of an online social science community of practice through the Encyclopedia of Puget Sound, the organization of an environmental social science conference, the presentation of the results from this workshop to the PSP Science Panel, Ecosystem Recovery Board and Leadership Council, and the discussion with PSP staff about how to incorporate these priorities into the biennial science plan and overall Partnership planning. In bullet form, next steps were to:

- Develop a workshop report
- Identify potential collaborative research opportunities among workshop participants and other regional social scientists
- Create a social science community of practice within the Encyclopedia of Puget Sound
  - Data hubs and data dictionary
  - Abstracts of existing research
  - Look for a graduate student from UW information school to help design a format
- Present major outcomes and themes of the workshop to PSP Science Panel, Ecosystem Coordination Board, and Leadership Council
- Develop an environmental social science conference, potentially at the Salish Sea Conference, that covers:
  - Strategies for communicating research results
  - Developing white papers from research
- Meet with Puget Sound Partnership staff to discuss how to incorporate these priorities into science plan and overall planning

## APPENDIX I: EXISTING SOCIAL SCIENCE RESEARCH IN PUGET SOUND

Primary Research Category	Topic	PI (Individual or Organization)	Reference
Economic	Economic impacts of shellfish aquaculture in Washington State	K. Wellman et al.	Wellman, K.F. et al. (2013). Economic Impacts of Shellfish Aquaculture in Washington State. Submitted to Marine Resource Economics October 2013
Economic	Valuation of killer whales, Chinook, and alternative MPA solutions	R. Williams et al. (Scottish Oceans Institute & UBC)	<a href="http://www.mypugetsound.net/index.php?option=com_docman&amp;task=doc_view&amp;gid=1957&amp;Itemid=238">http://www.mypugetsound.net/index.php?option=com_docman&amp;task=doc_view&amp;gid=1957&amp;Itemid=238</a>
Economic	Ecosystem services supported by eelgrass in central Puget Sound	M. Plummer, C. Harvey, et al.	Plummer et al., The Role of Eelgrass in Marine Community Interactions and Ecosystem Services: Results from Ecosystem-Scale Food Web Models, <i>Ecosystems</i> (2013) 16: 237–251, DOI: 10.1007/s10021-012-9609-0
Economic	Economic impacts of restoration	G. Robbins and Perez-Garcia	
Governance	Decision-maker response to visualization of cultural service data	B. Schwartz & K. Biedenweg	<a href="http://www.tacoma.uw.edu/center-urban-waters/psi-research-cultural-values-decision-making">http://www.tacoma.uw.edu/center-urban-waters/psi-research-cultural-values-decision-making</a>
Governance	Network analysis of Puget Sound scientific community	P. Christie et al.	<a href="http://www.mypugetsound.net/index.php?option=com_docman&amp;task=cat_view&amp;gid=621&amp;Itemid=238">http://www.mypugetsound.net/index.php?option=com_docman&amp;task=cat_view&amp;gid=621&amp;Itemid=238</a>
Governance	Network analysis of Puget Sound environmental organizations	C. Thomas and T. Scott	<a href="http://www.mypugetsound.net/index.php?option=com_docman&amp;task=cat_view&amp;gid=621&amp;Itemid=238">http://www.mypugetsound.net/index.php?option=com_docman&amp;task=cat_view&amp;gid=621&amp;Itemid=238</a>
Governance	Public perceptions of environmental management in the Puget Sound region	T. Safford et al.	<a href="http://scholars.unh.edu/carsey/184">http://scholars.unh.edu/carsey/184</a>
Governance	Collaboration, legitimacy, and awareness in Puget Sound MPAs	C. Hard et al.	<i>Coastal Management</i> 40, no. 3 (2012): 312-326
Governance	Integrated water and fisheries management in Puget Sound	T. Safford et al.	<a href="http://dx.doi.org/10.1016/j.jenvman.2010.10.024">http://dx.doi.org/10.1016/j.jenvman.2010.10.024</a>

Governance	Stakeholder input to guide nearshore restoration decision-making	R. Lipsky	Coastal Management 39, no. 6 (2011): 577-597
Governance	Civic science and salmon recovery planning	E.P. Weber et al.	doi: 10.1111/j.1541-0072.2010.00360.x
Governance	Smart growth incentives	R. Margerum et al.	Journal of Transport and Land Use 6, no. 2 (2013): 21-32.
Governance	Environmental stewardship footprint in Puget Sound	K. Wolf et al.	<a href="http://www.fs.fed.us/pnw/pubs/journals/pnw_2011_wolf001.pdf">http://www.fs.fed.us/pnw/pubs/journals/pnw_2011_wolf001.pdf</a>
Governance	Mayor climate protection agreement signatory cities	A.T. Wessels	Urban Studies, 50(7), 1368–1385.
Governance	Policy interventions in municipal climate action	A.T. Wessels	
Governance	Public process of Shoreline Master Program in Tacoma, WA	A.T. Wessels	
Governance	Looking at urban waterfront design through a critical social science lens	A.T. Wessels	
Governance	Inclusion of children in urban design	A.T. Wessels	
Governance	Sustainability indicators for Pierce County municipalities	A.T. Wessels	
Governance	Evaluation of MPA collaborative planning in Puget Sound	P. Christie et al.	
Governance	Management effectiveness of 25 MPA's in Puget Sound.	P. Christie et al.	
Governance	Residential location choice on forested edge	J. Tilt, L. Cerveny and Robbins	
Governance	Institutional Analysis	N. Dolsak	
Governance	Institutional and economic requirements	Skagit SP4	
Governance	Producing edible landscapes	R. McLain and M. Poe, et al. 2012	McLain, R.J., M.R. Poe, P.T. Hurley, J. LeCompte-Mastenbrook, and M. Emery, M. Producing edible landscapes in Seattle's urban forests. Urban Forestry and Urban Greening. <a href="http://www.fs.fed.us/pnw/research/gcr/pdfs/McLain_etal2012_Article.pdf">http://www.fs.fed.us/pnw/research/gcr/pdfs/McLain_etal2012_Article.pdf</a>
Governance	Tenure and access of wild foods in the city	M. Poe, R. McLain and S. Charnley	<a href="http://www.fs.fed.us/pnw/research/gcr/pdfs/UrbanForagingGatheringandSt">http://www.fs.fed.us/pnw/research/gcr/pdfs/UrbanForagingGatheringandSt</a>

			<a href="#">ewardshipofNon-TimberForestProducts.pdf</a>
Governance	Clam aquaculture tenure and commons governance	E. Pinkerton	Pinkerton, E. and J. Silver (2011). "Cadastralizing or coordinating the clam commons: Can competing community and government visions of wild and farmed fisheries be reconciled?" <i>Marine Policy</i> 35(1): 63-72.
Governance	Fishing community profiles for the U.S. West Coast	NWFSC; K. Norman et al.	<a href="http://www.eopugetsound.org/sites/default/files/features/resources/NOAA%20Community%20Profiles.pdf">http://www.eopugetsound.org/sites/default/files/features/resources/NOAA%20Community%20Profiles.pdf</a>
Governance	Comparative salmon governance (Puget Sound and Columbia River)	N. Dolsak	Nives Dolsak and Julianna Mandler. "Collaborative Governance for Solving Complex Marine Problems: An Evaluation of Puget Sound Partnership." (under review)
Governance	Land use planning and resource use in exurban areas of King County (SR 169 corridor)	J. Tilt and L. Cerveny	
Human Behaviors	Rapid ethnographic assessment of Snohomish septic industry	T. Murphy	Washington and Oregon." Principal
Human Behaviors	Wildlife monitoring using traditional ecological monitoring in Snohomish	T. Murphy	<a href="http://ssrn.com/abstract=2181128">http://ssrn.com/abstract=2181128</a> .
Human Behaviors	Ethnography of Jetty Island in the Salish Sea	T. Murphy	<a href="http://ssrn.com/abstract=2177737">http://ssrn.com/abstract=2177737</a>
Human Behaviors	Forest land conversion in WA state	G. Bradley et al., for USFS	<a href="http://www.ruraltech.org/projects/fwa/f/final_report/pdfs/05_study4_landconv.pdf">http://www.ruraltech.org/projects/fwa/f/final_report/pdfs/05_study4_landconv.pdf</a>
Human Behaviors	King County environmental behavior survey	King County	<a href="http://your.kingcounty.gov/dnrp/measures/documents/pdf/King-County-Environmental-Survey-07-25-11.pdf">http://your.kingcounty.gov/dnrp/measures/documents/pdf/King-County-Environmental-Survey-07-25-11.pdf</a>
Human Behaviors	PSP Sound Behavior/Social Capital Index	PSP	<a href="http://www.psp.wa.gov">http://www.psp.wa.gov</a>
Human Behaviors	Recreation mapping	K. Chan et al.	
Human Behaviors	Public health behavior	King County	

Human Behaviors	Recreation patterns and community satisfaction in the exurbs and suburbs (I-69 and I-90 corridors)		
Human Behaviors	Residential choices, community satisfaction and outdoor behavior in King County exurbs (HH survey)	J. Tilt & L. Cerveny	
Physical	Community-Focused exposure and risk screening tool (Tacoma Beta tests)	EPA	<a href="http://www.epa.gov/heads/c-ferst/">http://www.epa.gov/heads/c-ferst/</a>
Physical	Fish consumption rates in tribal and non-tribal communities (amounts, associated values)	J. Donatuto; Tulalip Tribe and Squaxin Island Tribe, EPA	Donatuto, J. and Harper, B. L. (2008), Issues in Evaluating Fish Consumption Rates for Native American Tribes. Risk Analysis, 28: 1497–1506. doi: 10.1111/j.1539-6924.2008.01113.x <a href="http://onlinelibrary.wiley.com/doi/10.1111;">http://onlinelibrary.wiley.com/doi/10.1111;</a> <a href="http://www.deq.state.or.us/wq/standards/docs/toxics/tulalipsquaxin1996.pdf/j.1539-6924.2008.01113.x/full">http://www.deq.state.or.us/wq/standards/docs/toxics/tulalipsquaxin1996.pdf/j.1539-6924.2008.01113.x/full</a>
Physical	Impact assessment of alternatives to exposure (issues with integrating and addressing different world views, tried to go beyond EPA exposure/risk assessment, future work could build on HIA approach)		
Physical	How to take general metrics and make them culturally relevant (e.g. approaches to studying alcoholism); research on traditional foods	Indigenous Wellness Research Institute	
Physical	Heavy metals in residential gardens	K. Murphy's Masters Thesis	<a href="http://depts.washington.edu/hortlib/student_research/2009/Murphy_UrbanAgSoil.pdf">http://depts.washington.edu/hortlib/student_research/2009/Murphy_UrbanAgSoil.pdf</a>
Physical	Duwamish Community Health Impact Assessment	Duwamish River Cleanup Coalition Technical Advisory Group	<a href="http://duwamishcleanup.org/programs/duwamish-community-health-initiative/the-duwamish-river-cumulative-health-impacts-analysis/">http://duwamishcleanup.org/programs/duwamish-community-health-initiative/the-duwamish-river-cumulative-health-impacts-analysis/</a>

Physical	Food access mapping, health equity, and many epidemiology studies	Urban Indian Health Institute	<a href="http://www.uihi.org/projects/">http://www.uihi.org/projects/</a>
Physical	Traditional and indigenous foods links to health	E. Krohn, V. Segrest, and others	<a href="http://www.nptao.arizona.edu/RIDGE_UPDATE/NWIC%20Final%20Report.pdf">http://www.nptao.arizona.edu/RIDGE_UPDATE/NWIC%20Final%20Report.pdf</a>
Physical	Ashborer/Human health study	G. Donovan	<a href="http://www.ncbi.nlm.nih.gov/pubmed/23332329">http://www.ncbi.nlm.nih.gov/pubmed/23332329</a>
Physical	Bioaccumulation of toxic metals in edible fungi	E. Cline	Cline, Erica. 2013. "Metals Uptake by Edible Mushrooms in Biosolids Treated Forests" presentation at Northwest Science meeting spring 2013. for more info: <a href="mailto:ecline@uw.edu">ecline@uw.edu</a>
Physical	Related to empowerment, wild foods and health	M. Poe et al.	Poe, M; McLain, R; Emery, M; Hurley, P. 2013. "Urban Forest Justice and Rights to Wild Foods, Medicines and Materials in the City," Human Ecology Vol 41(3) 409-422. <a href="http://www.fs.fed.us/outernet/pnw/research/gcra/pdfs/Poe_et al2013_UrbanForestJustice.pdf">http://www.fs.fed.us/outernet/pnw/research/gcra/pdfs/Poe_et al2013_UrbanForestJustice.pdf</a>
Physical	Recreation and water quality in Puget Sound	Kreitler et al.	<a href="https://doi.org/10.1371/journal.pone.0056670">doi:10.1371/journal.pone.0056670</a>
Psychological	Aesthetic, recreation & sense of place monetary and non-monetary mapping	K. Chan et al.	<a href="http://www.mypugetsound.net/index.php?option=com_docman&amp;task=doc_view&amp;gid=1957&amp;Itemid=238">http://www.mypugetsound.net/index.php?option=com_docman&amp;task=doc_view&amp;gid=1957&amp;Itemid=238</a>
Psychological	Values and psychological benefits of forest experiences/existence	S. Asah and USFS PNW Research Station	
Psychological	Differential experiences of children and exposure to the natural environment in influencing a world view and relationship to nature		
Psychological	Psychology of behavior change	D. McKenzie-Mohr, J. Kassirer, and A. Andreason (UM)	
Psychological	Perception of risk studies	P. Slovic, R. Kasperson	
Social and Cultural	Political Ecology of Salmon Recovery	S. Breslow	

Social and Cultural	Institutions/Forest Management	J. LeCompte-Mastenbrook	
Social and Cultural	Ethnographic of Septic Industry	T. Murphy	
Social and Cultural	Archaeology of Puget Sound	UW Archaeology	
Social and Cultural	Stewardship Study	K. Wolf, D. Blahna, Brinkley	<a href="http://www.fs.fed.us/pnw/research/gcra/projects.shtml">http://www.fs.fed.us/pnw/research/gcra/projects.shtml</a>
Social and Cultural	Forest Practice Research as a Whole (Ethnographic Use)		
Social and Cultural	Social Capital Index	D. Ward	
Social and Cultural	Value of non-consumptive use of forest resources	USFS PNW Research Station	
Social and Cultural	Social network studies	A. Kolwalshi (MBARI networks); P. Christie (Science Community in Puget Sound); K. Starbird ("Twitter-Verse" and DH Oil Spill)	
Social and Cultural	Quinault tribal wellbeing and salmon	S. Amberson and K. Biedenweg	
Social and Cultural	Large body ethnoecological research	N. Turner et al.	
Social and Cultural	Urban ethnoecology plant and mushroom gathering in Seattle	M. Poe et al.	Poe, M; McLain, R; Emery, M; Hurley, P. 2013. "Urban Forest Justice and Rights to Wild Foods, Medicines and Materials in the City," Human Ecology Vol 41(3) 409-422. <a href="http://www.fs.fed.us/outernet/pnw/research/gcra/pdfs/Poe_etal2013_UrbanForestJustice.pdf">http://www.fs.fed.us/outernet/pnw/research/gcra/pdfs/Poe_etal2013_UrbanForestJustice.pdf</a>
Social and Cultural	Mountain huckleberry cultural importance	J. Lecompto et al.	
Social and Cultural	Historical ecology Camas oak prairie	L. Storm	
Social and Cultural	Intentional urban communities-sustainable living and social justice	R. Rivera	
Social and Cultural	Second home development	R. Rivera et al.	
Social and Cultural	Ex-urban recreation	R. Rivera, L. Cervery, J. Tilt	
Transdisciplinary	Communities Count social and health indicators	King County	<a href="http://www.communitiescount.org">http://www.communitiescount.org</a>
Transdisciplinary	PSP General Opinion Survey	D. Ward, PSP	<a href="http://www.psp.wa.gov">http://www.psp.wa.gov</a>

Transdisciplinary	Hood Canal human wellbeing indicators	K. Biedenweg et al.	<a href="http://blog.pugetsoundinstitute.org/wp-content/uploads/2013/09/Background_Hood-Canal-Human-Wellbeing-Workshops-.pdf">http://blog.pugetsoundinstitute.org/wp-content/uploads/2013/09/Background_Hood-Canal-Human-Wellbeing-Workshops-.pdf</a>
Transdisciplinary	Olympic Peninsula landscape values mapping	L. Cervený et al.	<a href="http://blog.pugetsoundinstitute.org/wp-content/uploads/2013/09/Background_Hood-Canal-Human-Wellbeing-Workshops-.pdf">http://blog.pugetsoundinstitute.org/wp-content/uploads/2013/09/Background_Hood-Canal-Human-Wellbeing-Workshops-.pdf</a>
Transdisciplinary	Happy Counts - Gross National Happiness survey	Happy Counts	<a href="http://www.happycounts.org">http://www.happycounts.org</a>
Transdisciplinary	Ocean Health Index Puget Sound case study	B. Halpern et al.	<a href="http://blog.pugetsoundinstitute.org/2013/04/scoring-puget-sound-recovery/">http://blog.pugetsoundinstitute.org/2013/04/scoring-puget-sound-recovery/</a>
Transdisciplinary	Community wellbeing related to shellfish	J. Donatuto et al.	<a href="http://www.mypugetsound.net/index.php?option=com_docman&amp;task=doc_view&amp;gid=1957&amp;Itemid=238">http://www.mypugetsound.net/index.php?option=com_docman&amp;task=doc_view&amp;gid=1957&amp;Itemid=238</a>
Transdisciplinary	Equity, opportunity and sustainability in Central Puget Sound	Kirwan Institute and PSRC	<a href="http://www.kirwaninstitute.osu.edu/reports/2012/05_2012_PugetSoundOppMapping.pdf">http://www.kirwaninstitute.osu.edu/reports/2012/05_2012_PugetSoundOppMapping.pdf</a>
Transdisciplinary	Human Wellbeing Indicators for the Puget Sound	M. Plummer & M. Schneidler	
Transdisciplinary	Ecosystem valuation study plan	T. Leschine et al	
Transdisciplinary	Economic valuation of Puget Sound Services	Earth Economics	



## APPENDIX II: EXISTING SOCIAL MONITORING IN PUGET SOUND

Primary Category	Source	Data types
Demographics	UW Center for Studies in Demography	Demographics
Economic	US Bureau of Labor Statistics	National, state, MSA employment
Economic	US Bureau of Economic Analysis	GDP by nation, region, state, MSA and industry
Economic	Federal Reserve Bank	Market interest rates and other banking data
Economic	WA State Department of Revenue	Gross business income, taxable retail sales, local tax distributions
Economic	WA State Dept of Employment Security	Employment/unemployment, occupations, industry trends, wages
Economic	NWFSC	Cost and net revenue for Pacific Coast trawl fisheries
Economic	Fisheries Statistics Division/National Marine Fisheries Service	Fish trade
Economic	Puget Sound Regional Food Policy Council	Food production and distribution
Economic/Governance	WA forest parcel database	
Economic/Governance	Department of Energy Public Utilities	
Economic/Governance	Cedar River Stakeholder Assess Project	Stakeholder Assess Information
Governance	Robin Gregory, Compass (D. Olson), and Ecoplan International (W. Trousdale)	Decision making frameworks and stakeholder participation-how to get to successful recovery via change in behavior
Governance	Policy Agendas Project	US policy issues, institutions, and federal budget
Governance	Google Analytics	General trends for communication and stakeholder knowledge
Governance	GSS	
Governance	Pierce County Indicators	
Human Behavior	TESC	Curriculum for the bioregion
Human Behavior	PSP	Tree planting, shoreline practices, vessel traffic in San Juan Islands and related impact on marine mammals
Human Behavior	PSP/Seattle Tilth	Residential pesticide use
Human Behavior	Pierce County	Heating Source Use
Human Behavior	WDFW/DNR	Recreation use
Human Behavior	King County	Recreation preference ethnographic research
Human Behavior	UW (Kathy Wolf)	Stewardship behavior
Human Behavior	National Visitor Use Monitoring Program	Values and uses of national forests
Human Behavior	PNW/USFS	Access to national forests and public lands (Mt. Baker Snoq N.F.-PNW/USFS, Use of forest road-PNW)
Human Behavior	Texas A&M Transportation Institute	Traffic congestions

Human Behavior	WA State Department of Transportation	Mileage, collisions and traffic data
Human Behavior	King County Environmental Behavior Survey	
Human Behavior	PSP Sound Behavior Survey	
Human Behavior	VMT (Transportation Data)	Transportation Choices/Satisfaction
Human Behavior	Solid Waste Data (proxy for behavior)	By counties
Human Behavior	Stormwater Data (municipalities)	Audience research
Human Behavior	American Gardening Association	
Human Behavior	RTI	
Human Behavior	Vegetation Index/Deforestation	County permit data
Human Behavior	Fertilizer/Pesticide Use (PSP)	Barriers/Motivators research
Human Behaviors	Mapping public use of forest roads in Mt. Baker-Snoqualmie NF	
Human Behaviors	Mapping public values and recreation behaviors in Mt. Baker-Snoqualmie NF	
Human Behaviors	Mapping outdoor opportunities and access to parks, open spaces and public lands in King County exurbs (I-90 and SR 169)	
Physical	CDC-BRFSS	Disability, physical activity, obesity/overweight, tobacco use
Physical	Healthy Youth Survey	Risk & protective factors in youth, youth obesity/overweight, youth physical activity, youth tobacco use
Physical	WA Department of Health	Infectious diseases, injury and trauma, maternal and child health
Physical	US EPA Toxic Release Inventory	Emissions by industry, state, region
Physical	USGS	Industry chemical use at aggregate and industry levels
Physical	WA State Department of Ecology	Air, land and water monitoring
Physical	Public Health Departments (county and city)	
Physical	NWIFC	
Physical	NOAA Fisheries Information Networks and Databases	Networks and databases
Physical	WDFW Contamination in fill	
Psychological	Public Health Departments (county and city)	
Social and Cultural	Duwamish Community Action Network	

Social and Cultural	Grey Literature	Including: Thesis/Dissertations, Licensing Reports, Public Works Departments, Courthouse/Legal, Meeting Notes
Social and Cultural	Institutions Grey Literature	Shellfish Growers Association, Washington Business Association, Bureau of Labor and Statistics, Department of Archaeology, Primary Sources
Social and Cultural	Social Audience Research	Stormwater
Social and Cultural	American Community Survey (ACS)	
Transdisciplinary	Happy Counts	Gross National Happiness online survey, non-representative sample
Transdisciplinary	Communities Count Survey	Social support, emotional support with child rearing, coping with child rearing, neighborhood social cohesion, discrimination, stress, participation in life-enriching activities, participation in community service, involvement in community organizations, daily reading to children, daily story-telling to children, perceived neighborhood safety, satisfaction with commute time, satisfaction with access to public transit, ease of access to neighborhood amenities, child care arrangements
Transdisciplinary	US Census, ACS	Demographics, economic indicators, housing indicators, transportation choices (commuting)
Transdisciplinary	Puget Sound Regional Council	
Transdisciplinary	WA Office of Financial Management	State and county level budget, public policy and demographics: economy, labor force, criminal justice, health care, & education)
Transdisciplinary	Pac Fin and AKFin	Fisheries management
Transdisciplinary	NWFSC and AKFSC	Stock assessment for Pacific fisheries

## APPENDIX III: GAPS IN SOCIAL SCIENCE RESEARCH FOR PUGET SOUND

Primary Research Category	Social Science Research Topic
Economic	Puget Sound specific human wellbeing benefits and economic evaluation of benefits associated with the environment
Economic	Economic valuation of ecosystem services (local studies on Puget Sound)
Economic	Industry self-regulation (services and products, corporate-social responsibility, corporate green practices, when and why corporations set a good example)
Economic	Large corporate natural resource ownership impact and opportunities. Overview of the big economic picture and the alternatives to the standard processes
Economic	Recovery actions and economic consequences to people
Economic	Effect of changing market land values, as they create an incentive for development
Governance	Institutional enablers and barriers to connection to nature (i.e. paying for park access passes)
Governance	Institutional dimensions (depth needed, generalizable, operable, Puget Sound Scale)
Governance	Internal PSP institutional diagnostic analysis (how the agency is functioning internally and with external relationships; includes broader lead organizations)
Governance	Energy, renewables, and utilities and the relationship to Puget Sound.
Governance	Floodplain by Design as an area to test or explore different governance structures to negotiate trade-offs between multiple objectives (salmon, flood control, etc.)
Governance	Local elected officials and understanding how they effectively implement recovery actions in their local watersheds
Governance	Local technocrats (technical people within local governments)-better understanding of their role, what they are doing and why?
Governance	Science-policy interface. Decision making tools and how they integrate natural and social science research and information, and the relationship between scientists and decision makers and funders
Governance	Policy analysis and program evaluation (e.g. identifying conflicting mandates and identifying available tools and "policy levers")
Governance	Decision making frameworks and stakeholder participation. How to get to successful recovery via change in behavior. Robin Gregory, Compass (D. Olson), and Ecoplan International (W. Trousdale)
Human Behaviors	Forest/land/zoning conversion data for other counties
Human Behaviors	Audience segmentation of shoreline landowners
Human Behaviors	Wildlife existence value
Human Behaviors	Children's behavior
Human Behaviors	Private landowner stewardship behavior/incentive programs
Human Behaviors	Large and/or corporate landowner incentives
Human Behaviors	Application of Public Health data to natural resources (behavior change)
Human Behaviors	Policy context for behavior change
Human Behaviors	Unanticipated behavior analysis in response to policies
Human Behaviors	How built form influences behavior (eco-districts combining green building design and community social values, salmon districts? )
Human Behaviors	Suburbanization of poverty
Psychological and Physical	Tribal psychological and spiritual health specific to the natural environment

Psychological and Physical	Non-Tribal spiritual/psychological benefits associated with the experience of the natural environment; rituals; cultural traditions
Psychological and Physical	Contaminants/Quality of upland resources (deer, birds, other edible natural resources; urban foraging)
Psychological and Physical	Connecting emergent contaminant research to physical health and behaviors
Psychological and Physical	Better understanding of what is meaningful, to better understand how to motivate people to adopt behavior (tied to spiritual)
Psychological and Physical	Relationship between wellbeing and relevant behaviors, with breakouts by demography (perhaps by combining PSP surveys to allow for these analyses)
Psychological and Physical	Application of McKenzie-Mohr and Anderson research to Puget Sound Recovery
Psychological and Physical	Better understanding of sense of empowerment, particularly of children (can we make a difference?)
Psychological and Physical	Non-Tribal natural resource use (food, etc.) by environmental justice communities; informal resource economy (research on their psychological and physical health)
Psychological and Physical	Better understanding of human wellbeing/quality of life and links to ecosystem recovery (what do people value? How can this inform indicator choices and strategy development)
Psychological and Physical	Clarifying scale of research and questions (individual to family to community)
Psychological and Physical	Psychology of built environments
Social and Cultural	Corporate Culture (behaviors, incentives, cultural v. economic, participation and stewardship, strategy, ethnography, communication, philanthropic options)
Social and Cultural	Meta-analysis of research and surveys (sample range, comparisons, synthesis)
Social and Cultural	Place-dependence

## APPENDIX IV: GAPS IN SOCIAL MONITORING FOR PUGET SOUND

Primary Category	Data types
Economic	Data on willingness to pay for ecosystem restoration
Governance	Recreational statistics on Puget Sound (residents and visitors)
Governance	Access to the marine environment
Human Behavior	Economics/The 2nd Paycheck Concept
Human Behavior	What is upstream of improved behavior
Human Behavior	Recreation activity trends and dynamics
Human Behavior	Impacts of environmental education
Human Behavior	Alternatives to toxics/Motivations for behavior
Human Behavior	Household practices with water quality impacts
Human Behavior	Harvest practices (shellfish, foraging)
Human Behavior	Early adopters (Who? Why? Recruit to be champions?)
Human Behavior	Built form shapes behavior (What are development configurations that promote positive behavior?)
Physical	Regular monitoring of fish consumption that's not covered by NOAA
Physical	Children-environment relationships
Physical	Infrastructure related to recreation/harvest access, facilities, opportunities and conditions; and connection across landscape contiguity (e.g. bike commuting trails)
Psychological wellbeing	Viewscapes
Social and Cultural	Problem Analysis
Social and Cultural	Diverse cultural groups and their relationship to Puget Sound
Social and Cultural	Endpoints geared towards humans
Social and Cultural	Household practices and impacts on Puget Sound
Social and Cultural	Local knowledge
Social and Cultural	Harvest practices
Social and Cultural	HWB indicators-beyond Hood Canal & monitoring
Social and Cultural	Community organizing

## Appendix V: Participants

<b>Name</b>	<b>Affiliation</b>	<b>Role</b>
Kara Nelson	Kara Nelson Consulting	Primary facilitator
Kari Stiles	Puget Sound Partnership	World café facilitator & Participant
Haley Harguth	Puget Sound Partnership Hershman Fellow	World café facilitator
Sophia Amberson	Formerly UW School of Marine & Env. Affairs	World café facilitator
Joel Baker	Puget Sound Institute	Introductory remarks
Jennifer Arnold	Bonneville Environmental Foundation	Participant
Kelly Biedenweg	Puget Sound Institute	Participant
Sara Breslow	NOAA NWFSC	Participant
Louise Carter	Public Health Seattle/KC Communities Count	Participant
Lee Cerveny	USFS PNW Research Center	Participant
Jamie Donatuto	Swinomish Tribe	Participant
Richard Gelb	King County DNRP Performance Management	Participant
Lily Hsueh	NOAA NWFSC & NRC	Participant
Tom Leschine	UW SMEA	Participant
Tom Murphy	Edmonds Community College	Participant
Karma Norman	NOAA NWFSC	Participant
Melissa Poe	NOAA NWFSC and Seagrant	Participant
Scott Redman	Puget Sound Partnership	Participant
Alicia Robbins	University of Washington	Participant
Tyler Scott	UW Evans School	Participant
Dave Ward	Puget Sound Partnership	Participant
Katharine Wellman	Northern Economics, Inc.	Participant
Kathy Wolf	USFS PNW Research Station and UW SEFS	Participant

## **Appendix VI: Workshop Agenda**

**Social Science for Puget Sound Recovery Workshop**  
October 29, 2013  
10:00 am- 3:00 pm  
University of Washington, HUB Room 332, Seattle, WA

### **PRIORITY MEETING OUTCOME**

To identify social research and monitoring priorities related to Puget Sound recovery

### **AGENDA**

- |                |  |
|----------------|--|
| 10:00-10:20am  | Welcome and Introductory Remarks<br>Professor Joel Baker (Puget Sound Institute, UW Tacoma)<br>Kara Nelson (Workshop Facilitator)  |
| 10:20-11:00 am | Background on the Puget Sound Partnership and Social Science Regionally<br>Dave Ward (Puget Sound Partnership)<br>Dr. Kelly Biedenweg (Puget Sound Institute, UW Tacoma) |
| 11 am-12:30pm  | Identifying Gaps in Research and Monitoring for Puget Sound Decisions  |
| 12:30-1:00pm   | Lunch (provided)   |
| 1:00-2:30 pm   | Reviewing and Prioritizing Research and Monitoring<br>- Connecting to decisions and funding  |
| 2:30-2:45 pm   | Highlighting our Interests for Moving Forward  |
| 2:45-3:00 pm   | Next Steps to Develop a Social Science Strategic Plan and Closing  |