

# 2009 Puget Sound Georgia Basin Ecosystem Conference

## Conference “Calls to Action”

### **I. Research, Monitor, and Implement**

#### Ecosystem Based Management, Modeling and Monitoring

- Link ecological monitoring program to broader regional efforts in the Salish Sea (e.g., Gulf Islands National Park Reserve)
- Use modeling to develop informed regulatory policies and to understand how changes may affect the system. Puget Sound Partnership (PSP), National Oceans and Atmospheric Agency and the Department of Fisheries and Oceans work together to integrate the ecosystem modeling approaches being developed and applied in Puget Sound and the Strait of Georgia.
- Parks Canada Agency continues to develop a sustainable community-based ecological integrity monitoring program for the Gulf Islands National Park Reserve that links to the broader regional initiatives in the Salish Sea ecosystem, and integrates local and First Nations traditional ecological knowledge and successfully tracks the status and trend of core ecological measures over the long term (50-100 years).
- Incorporate risk management principles into land management. Don't trade sustainable practices for unsustainable ones.
- Establish (or continue) water quality monitoring programs, to collect data including benthic and biological cycling.
- Seek continued funding for monitoring so that it is consistent.
- Seek funding for integrated research and monitoring across the Skagit Delta landscape “footprint of Skagit Delta” (land use impacts).
- Examine the experiences of Issaquah in applying a watershed based approach to prioritizing restoration and protection actions.
- Hire a coastal geologist at universities to promote research.

#### Ecosystem Services

- Develop a comprehensive theory and practice for quantifying ecosystem services, their value and their relationship to human well-being. Find opportunities to apply this learning with Salish Sea ecosystem services and bring it back to the next Conference to see how it is used as a planning tool.
- Support primary research in the urban ecosystem service valuation to help with urban development design.
- Form a Salish Sea ecosystem services research partnership.

#### Indicators

- Seek broad regional agreement on scientific and public guidelines for selecting indicators.
- Inventory and evaluate indicators in the region to generate a list of “recommended available indicators” before development of new indicators. These will serve as a

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tangible starting point for further discussion between policy and science to reach broad regional agreement on the final suite of ecosystem indicators.

- Move beyond single species indicators to those that inform us on status of ecosystem structures and functions. Phase 2 of Puget Sound Partnership indicator development will take this focus.
- Link indicators to targets and use sectors and geographic sub-regions for attributing responsibility and establishing short-term and intermediate outcomes.
- Avoid divorcing indicators from monitoring; constitutional support of indicators is needed for monitoring.
- Convene transboundary indicators workshop(s) (Environment Canada, EPA and Puget Sound Partnership) to elaborate on a system of ecosystem indicators that incorporate human elements, treaty rights and traditional ecological knowledge.
- Develop human well-being indicators related to treaty rights. Get Coast Salish Tribes and First Nations to the table to develop these.
- Apply a statistically based water quality index in Puget Sound that aligns with the Canadian CCME Water Quality index.
- Incorporate an understanding of toxics’ dynamics and thresholds at the appropriate scale (ex. population level) to maximize the efficacy of indicators for ecosystem management.

### Collaboration

- Conduct a Salish Sea research and management audit in collaboration with the ECC council.
- Integrate new science with historical or existing science.
- Plan, monitor, implement and report together based on a set of shared ecosystem goals and objectives for the Salish Sea. For example, look at the Salish Sea Action Plan and State of the Salish Sea report, a transboundary monitoring project.
- Ensure that scientific information findings are translated as appropriate for management recommendations.
- Develop a collaborative approach to monitoring in the Salish Sea focusing on two key projects: Canoe Journeys and the Boundary Bay Ambient monitoring program.
- Use the Boundary Bay Ambient monitoring program to partner Washington agencies, First Nations and Tribes and non-governmental organizations.
- Puget Sound Assessment and Monitoring Program will work together with the Shared Waters Alliance and Metro Vancouver to align their ambient monitoring programs in Boundary Bay, Drayton Harbor and Birch Bay.
- Puget Sound Stormwater Work Group will look at sharing stormwater monitoring program with municipalities cross boundary.
- Puget Sound Partnership can provide LIDAR mapping of watersheds to support local agencies.
- United States Geological Survey (USGS) will dedicate staff time to work on integrating Puget Sound invasive species monitoring work with efforts in Canada.

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### Tribal Involvement

- Increase coordination with First Nations about location and timing of monitoring (e.g., beach closures).
- Use traditional ecological knowledge to inform and shift baselines and possibly desired end state.

### Air Quality, Climate Change and Energy

- Implement visibility and air quality pilot projects in Canada via the British Columbia Visibility Coordinating Committee.
- Strengthen the transboundary prioritization of air quality and visibility through the Salish Sea International Airshed Strategy.
- Research warming trends in the Strait of Georgia and Puget Sound.
- Build long-term management to address ocean acidification.
- Develop a framework for assessing environmental impacts of tidal energy projects in the Salish Sea, perhaps using small pilot projects.
- Develop a risk-based approach to identify the most probable impacts from tidal energy. Include robust baseline and monitoring studies.

### Derelict Gear, Fisheries and Nearshore

- Increase research to understand impacts of derelict gear and other marine debris.
- Build an ongoing transboundary commitment to hydrodynamic modeling and monitoring of nearshore fisheries.
- Increase research in Canada on nearshore fish and salmon.
- Support and fund a large-scale research project on groundfish and salmon in the nearshore.

### Marine Mammals

- Promote technological changes to develop quieter engines and propellers to protect Orca habitats.
- Fill in data gaps on when, where, and what prey limits are for Orcas.
- Perform critical habitat mapping and planning for orcas.

### Restoration and Shoreline Management

- Plan a meeting between planners and scientists to determine how to best use existing tools and prioritize restoration and protection.
- Move dirt intelligently; integrate science with restoration projects.
- Complete large-scale restoration projects (or several smaller projects in the same area).
- Increase monitoring of biological effectiveness to develop better estimates of restoration efforts.

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- Scientists and local government planners meet to look at how the Puget Sound Nearshore Ecosystem Restoration program (PSNERP) analytical methods and tools can be applied in decision-making on restoration and protection priorities on watershed level.

### Toxics

- Pursue local, national and international strategies to improve chemical design to decrease pollutants (toxics) entering the environment.
- Develop and implement a toxics-based biological observing system showing how toxics impact ecosystems and species.
- Collect additional data to both inform models and understand external loading to marine waters.

### Stormwater and Low Impact Development

- Encourage low impact development to retrofit urban areas and reduce combined sewer overflows.

### Water Resources

- Explore the feasibility of reclaimed water use in addressing impacts on fragile ecosystems.
- Study nutrient loading in septic systems (non-sewer areas are not well understood).
- Improve understanding of impacts of ‘nanotechnology’ on wastewater systems.
- Determining the role of groundwater in controlling migration pathways (i.e. salinity/temp) for salmon.

## **II. Govern**

### Ecosystem Based Management, Modeling, and Monitoring

- Develop a unified transboundary definition, both conceptual and operational, of Ecosystem Based Management.
- Mandate scientific scrutiny for extensive land use planning.
- Perform a regulatory overlay to identify duplication/gaps in jurisdiction for the Salish Sea.
- Manage nearshore areas by drift cell.

### Ecosystem Services

- Use ecosystem services as a central analysis for land use and policy.
- Form a local ecosystem services partnership and an integrated ecosystem services market place for Puget Sound. Participate in the EPA’s Ecosystem Services Research Partnership.
- Adopt policy and funding proposals currently in the Washington State legislature for Transfer of Development Rights, Climate Benefit Districts and In-Lieu-Fee projects.
- Explore government adoption of technology tools that are ready to implement for mitigation and permit streamlining. For example, marketplace pilot in King County.

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- Develop permitting processes that embrace innovation.
- Expand watershed characterization/assessment and mitigation approaches piloted in places like Birch Bay.
- Change how regulators think about mitigation sequencing.
- Coordinate between transboundary entities to implement market mechanisms for ecosystem protection.

### Collaboration

- Collaborate more effectively at all levels of government and across international borders.
- Identify legislation which differs significantly between Canada and the U.S., i.e. marine transportation laws, to determine impacts on the environment. Opt to adopt the more ‘protective’ legislation.
- Build partnerships to capitalize on existing databases. Create a transboundary data partnership to better integrate data systems and provide better info for all (e.g., International Coastal Atlas Network).
- Revitalize state and provincial collaboration through BC-Washington Coastal and Oceans Task Force associated transboundary workshops. Capitalize on Green Shores coastal development certification program and experts workshop on sea-level rise being planned for 2009.
- Set up regional (action area) state natural resource offices that include staff from the Washington Departments of Ecology, Natural Resources, Fish and Wildlife, and the Puget Sound Partnership to improve coordination and efficiency.
- Engage local governments in transboundary collaboration. The Boundary Bay Shared Waters Alliance and the Northwest Straits Commission Marine Resource Councils are two examples of effective collaboration with local governments.
- Build Salish Sea relationships at a social, working and political level. Ensure that “critical links” are there to support relationship building including capacity (volunteer, First Nations and Tribal and local/state/provincial and federal), technology and ability to travel.
- Increase access between the San Juan Islands and Gulf Islands; increase Salish Sea identity and use as a test area for transboundary cooperation. Increase the frequency and number of ferry routes connecting San Juan Islands to the Gulf Islands and Vancouver Island.
- Explore a Salish Sea trust fund to support and facilitate transboundary collaboration. Coordinate between the Coast Salish Gathering, the Northwest Straits Foundation, Islands Trust and others to share ideas and experiences about how a non-profit and/or foundation could facilitate ecosystem wide initiatives.
- Include the business community to support information management. They have the tools.
- Take a transboundary approach to identifying the best possible locations for pilot projects.
- Provide tax incentives to change packaging materials (i.e. recycled cardboard vs. Styrofoam).

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### Tribal Involvement

- Include tribes in Water Quality Standards review and other policy reviews.
- Ensure Marine Protected Areas are protected under the treaty rights of First Nations. Look into leveraging First Nations treaty rights to create marine protected areas.
- Gather Traditional Ecological Knowledge to put into GIS mapping. Incorporate this data into management discussions, along with local knowledge.
- Adapt water quality standards and Model Toxics Control Act levels to reflect non-suppressed fish consumption rates experienced by tribal and First Nations people.
- Use the 13 moon calendar as a guideline for management, harvest, and other activities.
- Move evaluating traditional ecological knowledge to the forefront.

### Human Well-Being

- Create a Salish Sea “Manhattan” project to develop human dimension form and framework.
- Advocate for human dimensions policy monitoring in addition to project monitoring.
- Work together cooperatively to make food security (access to food) a top priority.

### Air Quality, Climate Change and Energy

- Discuss the port clean air project collaboratively in both Canada and the U.S.
- Conduct a comprehensive EIS as a first step in a cost/benefit analysis for tidal energy.
- Survey Tribes and First Nations on potential sites for tidal energy projects.

### Shipping/Vessels and Oil Spills

- Bring issues related to shipping into the transboundary forum, as there are multiple ecosystem impacts from this activity including: oil spills, underwater noise, invasive species in ballast water, and air pollution and climate change impacts.
- Implement common standards for cruise ships and freighters passing through the Salish Sea.
- Stabilize funding for oil spill prevention and risk management.
- Determine how much oil spill prevention capacity is “enough” (policy makers).

### Derelict Gear, Fisheries and Nearshore

- Prioritize funding for removal of gear in areas with the greatest impacts to habitats/species.
- Develop partnerships with commercial fishermen to facilitate gear removal.
- Develop a policy of leaving the biggest and healthiest game, fish and other resources in order to build up stocks.
- Quantify nearshore resources and include their value in land use decisions.
- Provide Puget Sound Partnership leadership for nearshore science, policy, and strategy.
- Increase marine protected area enforcement.
- Create a biosphere reserve for the Salish Sea to recognize unique species.

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- Ensure nearshore restoration programs provide shallow water habitat for foraging juvenile salmon.

### Marine Mammals

- Reduce boater speed, increase distance, and influence boater traffic to protect Orcas.
- Create marine reserve areas where Orcas are protected from vessel traffic and other human activities.
- Discuss killer whale protection at the International Court of Justice.
- Use United States Fish and Wildlife Service and Canadian legal protections of orcas as a model for future transboundary protected areas.
- Recognize critical killer whale habitat with legislated support in the transboundary Salish Sea; either use SARA or create a new legal entity.
- Use killer whale endangered species listing and recovery as a model for transboundary recovery of other endangered species.

### Restoration and Shoreline Management

- Increase Puget Sound Partnership role in principles and logic train needed for setting priorities for restoration and protection
- Develop incentives for property owners without bulkheads to keep shores unarmored.
- Stop exempting residential bulkheads in the nearshore to protect juvenile salmon.
- Develop more stewardship related tools as well as regulatory tools.
- Decrease shoreline development.

### Toxics

- Work to eliminate creosote logs from the Salish Sea.
- Focus on reducing external loads of toxics, and prioritize source control.
- Coordinate loading studies among agencies (domestic and international).
- Develop global/international regulations for PDBEs, and create legislation to prevent them.

### Stormwater and Low Impact Development

- Implement impact fees for developers (i.e. for increasing impervious surfaces).
- Encourage new ideas and technologies / tools for regional stormwater management and develop an approval path for these facilities.
- Increase density in areas already degraded to protect more pristine areas and reduce urban sprawl.
- Prioritize stormwater storage and infiltration to improve water quality and improve hydrology.
- Institute rebate programs for appropriate technologies (e.g. composting toilets).

### Water Resources

- Hold agencies accountable for “maintaining biotic integrity” per Clean Water Act.

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- Identify resources from wastewater treatment for utilities to use to generate revenue.
- Encourage developers to build in on-site wastewater treatment with municipal tax support (not hindrance).
- Manage surface and groundwater as a single resource – collaborate across the border.
- Mitigate local watershed disturbances.
- Work on quantifying economic benefits and results of source control vs. end-of-pipe.
- Consider wastewater improvement as a closed system (i.e. no “new” freshwater).
- Prioritize emerging contaminants.
- Couple land use regulations with oxygen levels in Hood Canal.
- Continue to understand the effects of policies on water quality and focus on effects-based management.
- Increase availability of organic fertilizer (from synthetic).

### **III. Educate and Involve**

#### General

- Encourage young people to stay or come home, engendering a place-based culture.
- Build general outreach and communication capacity. Identify different public audiences, recognizing that there is no such thing as “general public”.
- Develop a strategic communications plan to raise awareness of the state of the Salish Sea, the importance of action, and efforts underway so that there is a basic literacy by the public or the relevance and context.
- Capitalize on current attention to environmental issues to affect people’s behavior.
- Expand education, outreach and citizen participation opportunities to stakeholders not typically involved (stop preaching to the choir; celebrate diversity; address social justice issues).
- Perform stewardship through the general public, not just through educational non-profit organizations.
- Ensure that outreach is targeted to young school age students, not just college students.
- Expand Washington State University Beach Watchers program.
- Increase funding for citizen advocacy groups.
- Ensure citizens/residents are aware of projects in their region/neighborhood.
- Educate citizens about how science works and build appropriate expectations.
- Promote the attitude of “Less me, more we.”
- Focus on the observation and comparative lines of inquiry for citizen science – not the correlative.

#### Ecosystem Based Management, Modeling and Monitoring

- Use maps in planning and communication materials that do not show jurisdictional boundaries and identify the shared ecosystem through the use of the term Salish Sea ecosystem.

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- Identify and support broad scale citizen science collaboration for the Salish Sea where many observers are needed (ex: PlantWatch/Budburt, COASST). Explore new partnerships with businesses that have the capacity to support ecosystem collaboration through new technology, in particular in the area of shared data and information management and networking. For example, a website called ‘Our Place’ could include a directory of everyone working on ecosystem science and management in the Salish Sea.
- Organize an educational workshop on historical ecology and communicate the outcomes of research.

### Ecosystem Services

- Educate on the economic value of ecosystem services.
- Increase knowledge of who is bearing the costs of active and inactive services.

### Collaboration

- Build a local, citizen-driven partnership with scientists on both sides of the border which builds capacity for area residents.
- Build an organization that focuses and coordinates citizen science (connection, data, build capacity). Create an inventory/catalog of available projects (scientists) and available volunteers (clearinghouse). Build a centralized line of communication, such as a Web site, for citizen science projects.
- Value citizen science and use data collected. Build a feedback loop so scientists, citizens, and policymakers all benefit, and understand how data is used.
- Develop shared protocols in the Salish Sea for citizen science and a central depository for data and existing citizen science projects.
- Identify centers of excellence for citizen science – like Seattle Aquarium.
- Train scientists to involve citizens through effective communication.

### Tribal Involvement

- Convene religious leaders to learn the traditional ecological knowledge about the sacred trust and alliance between humans and the environment.

### Human Well-Being

- Work with granting authorities (EPA, etc.) to develop/require human dimensions to grant programs and funding opportunities. Require applicants to clearly outline public outreach work.

### Air Quality, Climate Change and Energy

- Seek unconventional partners to build awareness of air quality and health issues. Create community demand for a cleaner airshed.
- Raise public awareness about the development and status of tidal energy technologies.

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### Shipping/Vessels and Oil Spills

- Develop and coordinate an approach for use of volunteers in oil spill response scenarios.

### Derelict Gear, Fisheries and Nearshore

- Invest in behavior change education and build the volunteer workforce.
- Create Marine Protected Area ambassadors, which will increase compliance and decrease enforcement through educational projects.
- The University of Washington School of Marine Affairs is developing a student case book on science and policy integration for Puget Sound, showcasing a new way to teach the future leaders in marine science policy. This case book will be presented at the next Puget Sound Georgia basin Ecosystem Conference in 2011.
- PSNERP will organize meetings in late spring and early summer 2009 in each of the counties around Puget Sound and go over the tool and make data available for all to use.
- Encourage citizen scientists to collect biological data in the nearshore.
- Increase science and knowledge of the pelagic zone life history. Increase theory supporting accurate integrated ecosystem assessment models. Create and maintain a common meta database.

### Water Resources

- Showcase the Abbotsford-Sumas aquifer as an exemplary pilot project for transboundary research combining policy and community outreach.
- Develop guidelines for farm plans for nutrients. Ensure that each farm has a plan.
- Develop guidelines for maintenance/sighting of septic systems (outreach tool).
- Develop guidelines for disposal of drugs and prescription drugs.
- Educate about impacts of flushing personal care products and medications.
- Improve knowledge of septic tanks and their impacts on groundwater.
- Change approach to wastewater: educate people to result in a paradigm shift about wastewater use and reuse, instead of focusing only on projects.