

THE SALISH SEA: MSP IN PUGET SOUND COUNTRY

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UNIVERSITY OF WASHINGTON

Salish Sea added to our watery lexicon

10/31/01

BY LYNDA V. MAPES
Seattle Times staff reporter

OLYMPIA — Local tribes called it Whulge. George Vancouver named it for his buddy Peter. And now yet another name for Puget Sound is nearly official: the Salish Sea.

SALISH SEA

WASHINGTON STATE BOARD ON GEOGRAPHIC
NAMES APPROVED THE NAME TO
**ACKNOWLEDGE THE ECOLOGICAL
CONTINUUM THAT SPANS THE
INTERNATIONAL BOUNDARY BETWEEN
CANADA AND THE UNITED STATES.**

SALISH SEA AS AN APPROVED NAME FOR THE BODY OF WATER ENCOMPASSING PUGET SOUND, THE STRAIT OF JUAN DE FUCA, THE STRAIT OF GEORGIA AND THE MANY WATERY CONNECTIONS IN BETWEEN.

Mountain

and the south end of Puget Sound



WHAT'S IN A NAME?

“WE ARE THE SHORELINE AND SALMON PEOPLE, MANY OF OUR SONGS, TRADITIONS, AND ANCIENT NAMES AND CEREMONIES ARE TIED TO THE WATERS OF THE SALISH SEA”

BRIAN CLADOOSBY, CHAIRMAN OF THE SWINOWMISH TRIBE – Seattle Times
10/30/09

WHAT'S IN A NAME

“IT’S AN ECOLOGICAL VICTORY. WE TALK ABOUT PLACE-BASED CONSERVATION, BUT HOW DO YOU DO THAT WITHOUT A NAME FOR THE PLACE OR A SENSE OF PLACE? THE BORDER DOESN’T MEAN ANYTHING FOR THE KILLER WHALES OR THE PACIFIC SALMON THAT CROSS IT EVERYDAY.”

**J. GAYDOS, SEADOC SOCIETY – The Seattle Times
10/30/09**



Puget Sound ecosystem management: Illustrating the potential of IEAs

Ecosystem goal for Puget Sound

A healthy Puget Sound supports sufficient quantity and quality of habitats to provide ecosystem goods and services upon which all species, including humans, depend (PSP 2006)

Now it's MSP!

FOR BETTER OR WORSE

Step 1	Defining need and establishing authority
Step 2	Obtaining financial support
Step 3	Organizing the process (pre-planning)
Step 4	Organizing stakeholder participation
Step 5	Defining and analyzing existing conditions
Step 6	Defining and analyzing future conditions
Step 7	Developing and approving the spatial management plan
Step 8	Implementing and enforcing the spatial management plan
Step 9	Monitoring and evaluating performance
Step 10	Adapting the marine spatial management process
Ehler et al. 2009 --IOC	

**Observation: IOC Steps Are Important
Elements of MSP but the Sequence...**

IT AIN'T NECESSARILY SO

PORGY AND BESS

1. Defining need and establishing **authority**

PUGET SOUND PARTNERSHIP ACT

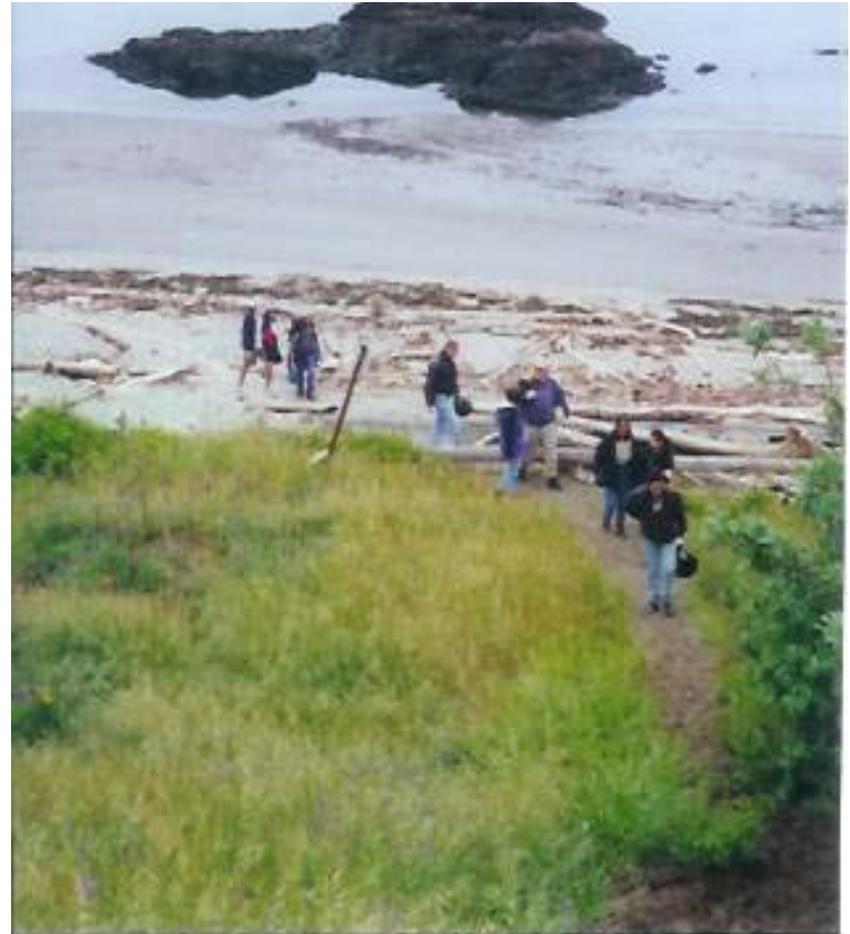
60th Legislature
2007 Regular Session

PUGET SOUND PARTNERSHIP

EFFECTIVE DATE: 07/01/07

Passed by the Senate April 20, 2007

YEAS 43 NAYS 4 SENATE
YEAS 86 NAYS 12 HOUSE



PSP = WHAT?

The Puget Sound Partnership is a community effort of citizens, governments, tribes, scientists and businesses working together to restore and protect Puget Sound.

Goal is to make Puget Sound healthy again

PSP is Coordinating Agency [not a Regulatory Agency]

The PSP Action Agenda will prioritize cleanup and improvement projects, coordinate federal, state, local, tribal and private resources, and make sure that we are all working cooperatively.

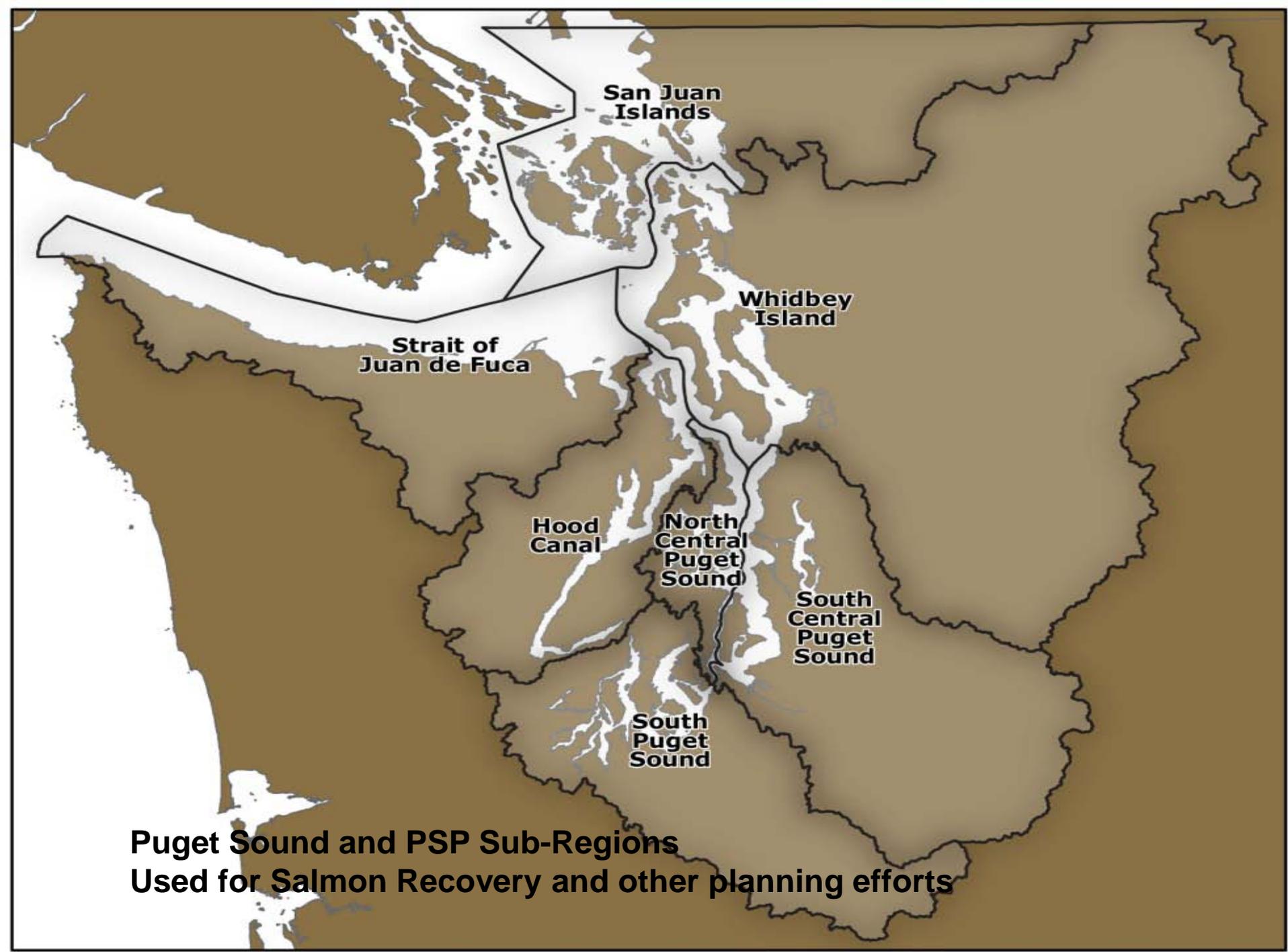
PSP is basing decisions on science, focusing on the actions that have the biggest impact and will hold people and organizations accountable for results.

[PSP Strategic Plan 2009-2015]

PSP Leadership Council

Serves as the regional salmon recovery organization for Puget Sound [and Hood Canal] to implement the Puget Sound Salmon Recovery Plan [based on the Shared Salmon Strategy].

This integrates watershed approach with nearshore and Puget Sound-wide priority setting. [Note spatial extent – next slide].



**San Juan
Islands**

**Strait of
Juan de Fuca**

**Whidbey
Island**

**Hood
Canal**

**North
Central
Puget
Sound**

**South
Central
Puget
Sound**

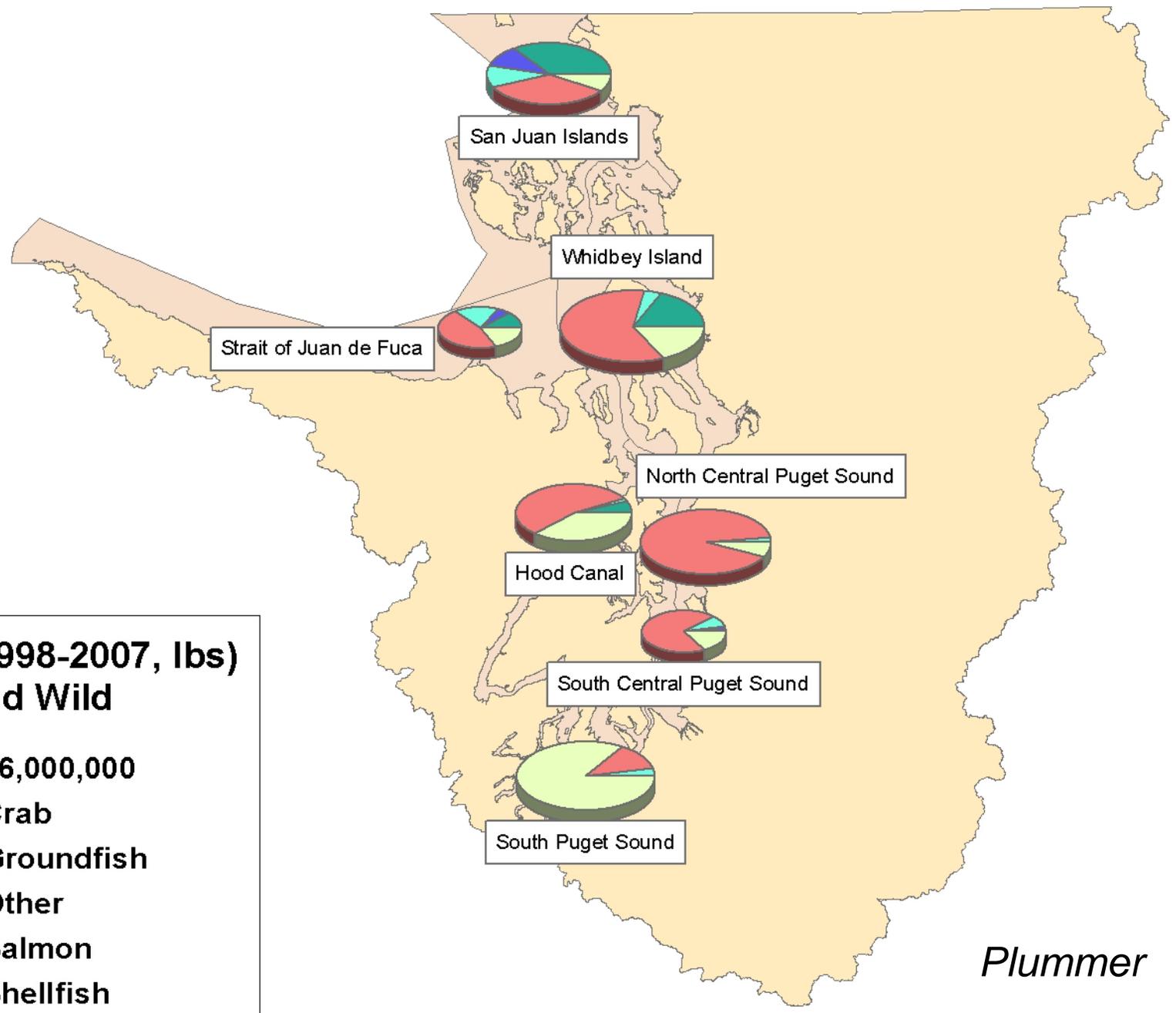
**South
Puget
Sound**

**Puget Sound and PSP Sub-Regions
Used for Salmon Recovery and other planning efforts**

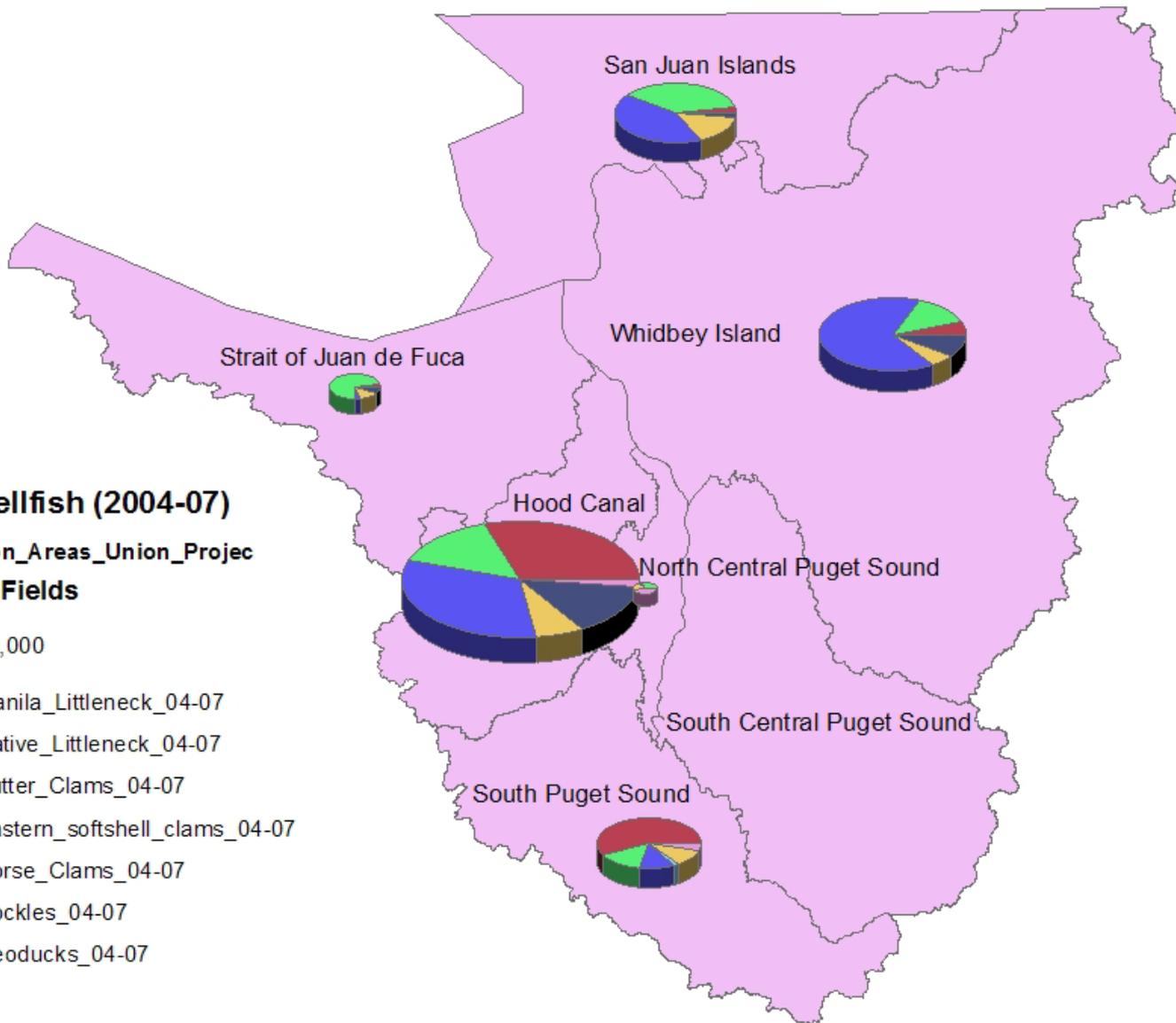
**Harvest (1998-2007, lbs)
Farmed and Wild**

26,000,000

- Crab
- Groundfish
- Other
- Salmon
- Shellfish



Plummer



RecShellfish (2004-07)

PS_Action_Areas_Union_Projec

Sum of Fields



- Manila_Littleneck_04-07
- Native_Littleneck_04-07
- Butter_Clams_04-07
- Eastern_softshell_clams_04-07
- Horse_Clams_04-07
- Cockles_04-07
- Geoducks_04-07

PSP Designated Lead under EPA's NEP

PSP is designated at the lead entity for integrating estuary and watershed protection programs for Puget Sound under the National Estuary Program [Clean Water Act sec. 320]

2. Obtaining **financial support**

- **Most funding from on-going state management efforts, Dept. Ecology, Dept. Natural Resources**
 - **Significant federal funding for ESA listed Salmon**
 - **EPA National Estuary Program**
 - **Special allocations, e.g., \$4,000,000 from EPA.** "From within the funds provided, \$4,000,000 is included for the Puget Sound Ecosystem Research Initiative at the University of Washington's College of the Environment. These funds are to conduct, coordinate, and disseminate scientific research to inform policy decisions necessary to carry out the Puget Sound Action Agenda." **November 2009**
 - **Leveraging expected**
 - **ARRA Restoration Funding**
- Lesson: No cost estimate. No defined budget. Series of negotiations. Prioritization of action.**

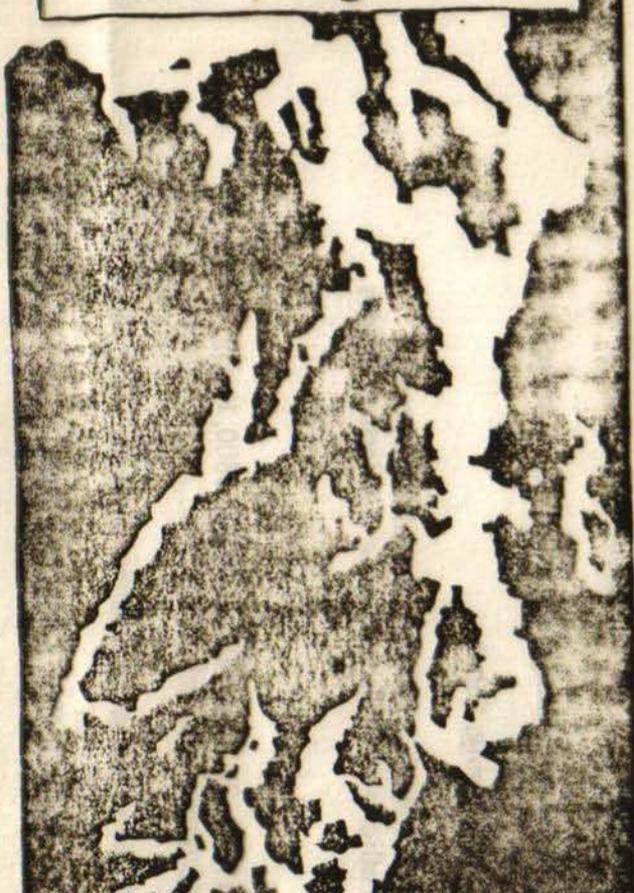
Post-Intelligencer

he voice of the Northwest since 1863

APPROXIMATELY 1986

Publisher: Virgil Fassio
Executive Editor: J.D. Alexander
Editorial Page Editor: Charles J. Dunsire
Managing Editor: Thomas A. Read
Business Manager: William R. Cobb

THE TASK:
Clean up Puget Sound



THE TOOLS:

HORNEY
©1989 SEATTLE
POST-INTELLIGENCER



3. Organizing the process (**pre-planning**)

PSP builds off of:

PSWQA /Puget Sound Action Team efforts 1983-2007

Shared Salmon Recovery Strategy 2007

Puget Sound Nearshore Assessment

Northwest Straits Initiative

PSP incorporates and coordinates across programs [Using IEA approach].

[Cooperation with British Columbia, Canada not discussed here]

Lesson: MSP is joining the fray mid-stream. Not an abstract process. Success will come if can capture momentum and add depth to processes

THE USE, STUDY AND MANAGEMENT OF PUGET SOUND



PROCEEDINGS
March 23–25, 1977
University of Washington

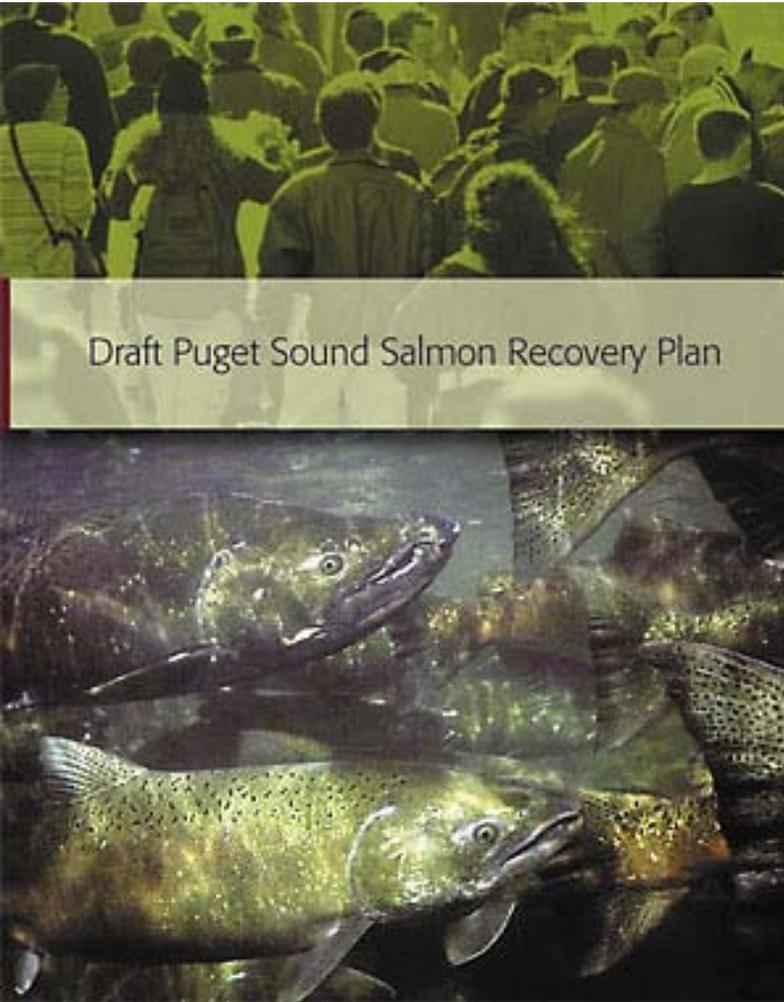
GOVERNING PUGET SOUND

ROBERT L. BISH

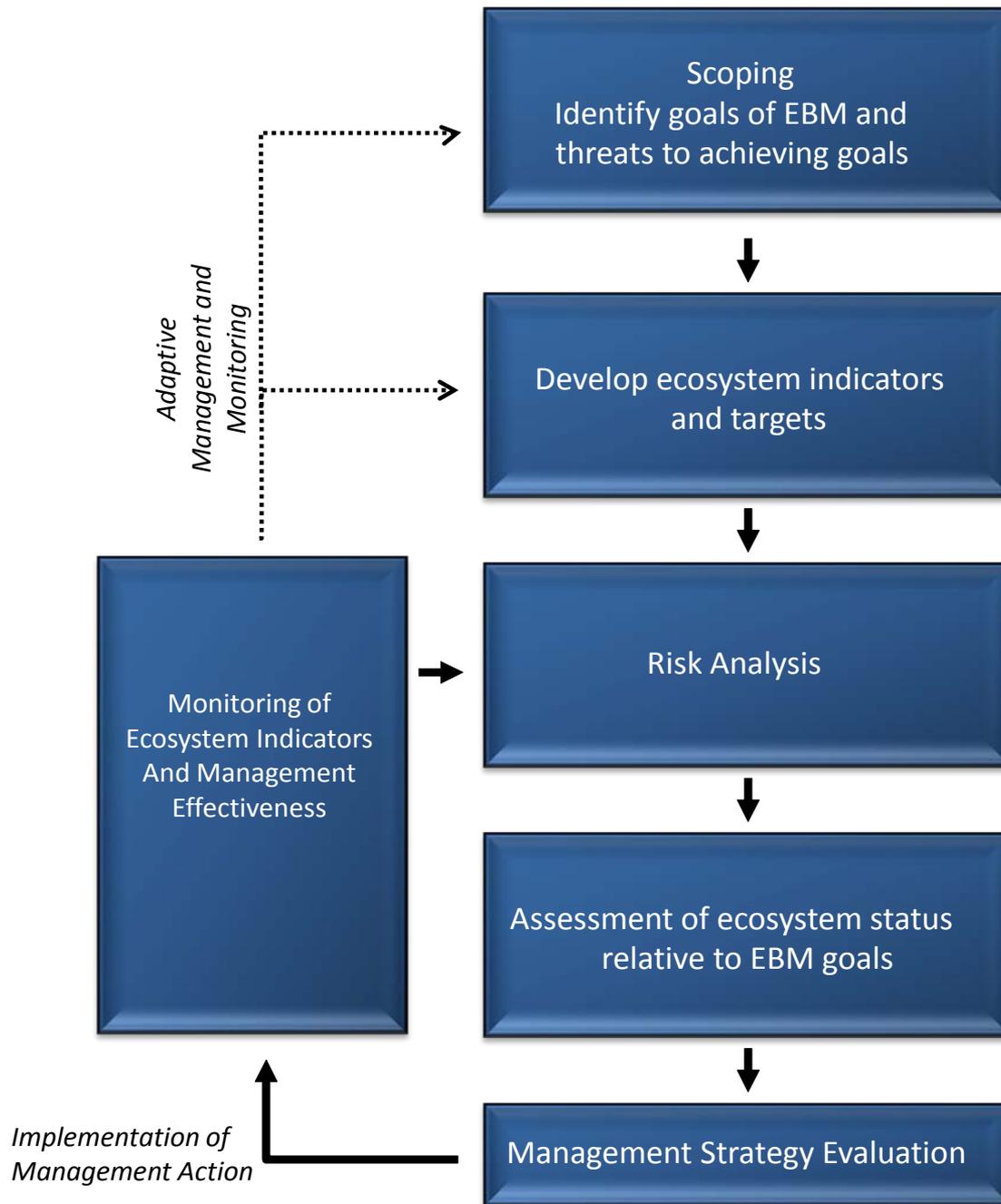
feudalism/1066/common law/1215/Magna Carta/liberty/due process of law
freedom of speech/trial by jury/freedom of religion/appearance of fairness/colonies
Articles of Confederation/taxation without representation/American Revolution
U.S. Constitution/federal system/separation of powers/sovereignty/enumerated powers
property rights/taking/citizen rights/executive branch/legislative bodies/courts
treaties/interstate commerce/international trade/public lands/Bill of Rights
general welfare/power to spend/preemption/public trust/riparian rights
territorial sea/navigable waters/jurisdiction/submerged lands/executive branch
bureaus/agencies/departments/implementation/regulation/statutory law
legislative branch/authorization/appropriation/interest groups/equal footing
treaties/Washington State Constitution/popular sovereignty/Declaration of Rights
initiatives/referenda/recall/Washington Administrative Code/general elections
open primaries/nonpartisan elections/nominees/coalitions/majority/minority
party platform/constituencies/stalemate/mitigation/master permit/complex framework
coordinating processes/trade-offs/interdepartmental negotiation/pluralistic structure
populism/open and flexible/responsive/Puget Sound/anadromous fish/water quality
navigable waters/military reservations/commercial fishing/recreational boating
dredging/diking/waste disposal/transportation/irrigation/highways/bridges
ferry system/shorelands/first class tidelands/submerged lands/second class tidelands
harbor lines/aquaculture/wildlife refuges/parks/ports/sewage/flood control
water supply/planning/zoning/municipal codes/property taxes/petitions
common problems/emergency services/citizen involvement/home rule/citizen access
appearance of fairness/jurisdictions/metropolitan municipal corporations
county government/city government/port districts/special districts/statewide associations
information exchange/lobbying/treaties/equal protection/reservations
civil and criminal jurisdictions/assimilation/allotment policy/fishing rights
tribal hatcheries/resource allocation/Point Elliott/Medicine Creek/Point No Point
court decisions/usual and accustomed/in common with/shoreline management
biological uses/human impacts/natural processes/economic development/public access
recreation/shoreline use/statewide significance/conservation/historical uses/guidelines
cultural aspects/master program/federal consistency/identification of boundaries
definition of uses/energy facility siting/full participation/national concerns
interdependency/consult/compromise/seek solutions/debate/legislate/adjudicate
adaptive capacity/coalitions/bias/veto/rigidity/accommodation/nullification/multiplicity
redundancy/multiple decision points/legal system/institutional arrangements
choice making/governance/knowledge/access/trade-offs/decision-making costs
adaptive capacity/certainty/innovation/fairness/maintenance of natural environment
effectiveness/efficiency/responsiveness

Shared Strategy Salmon Recovery plan

January 207



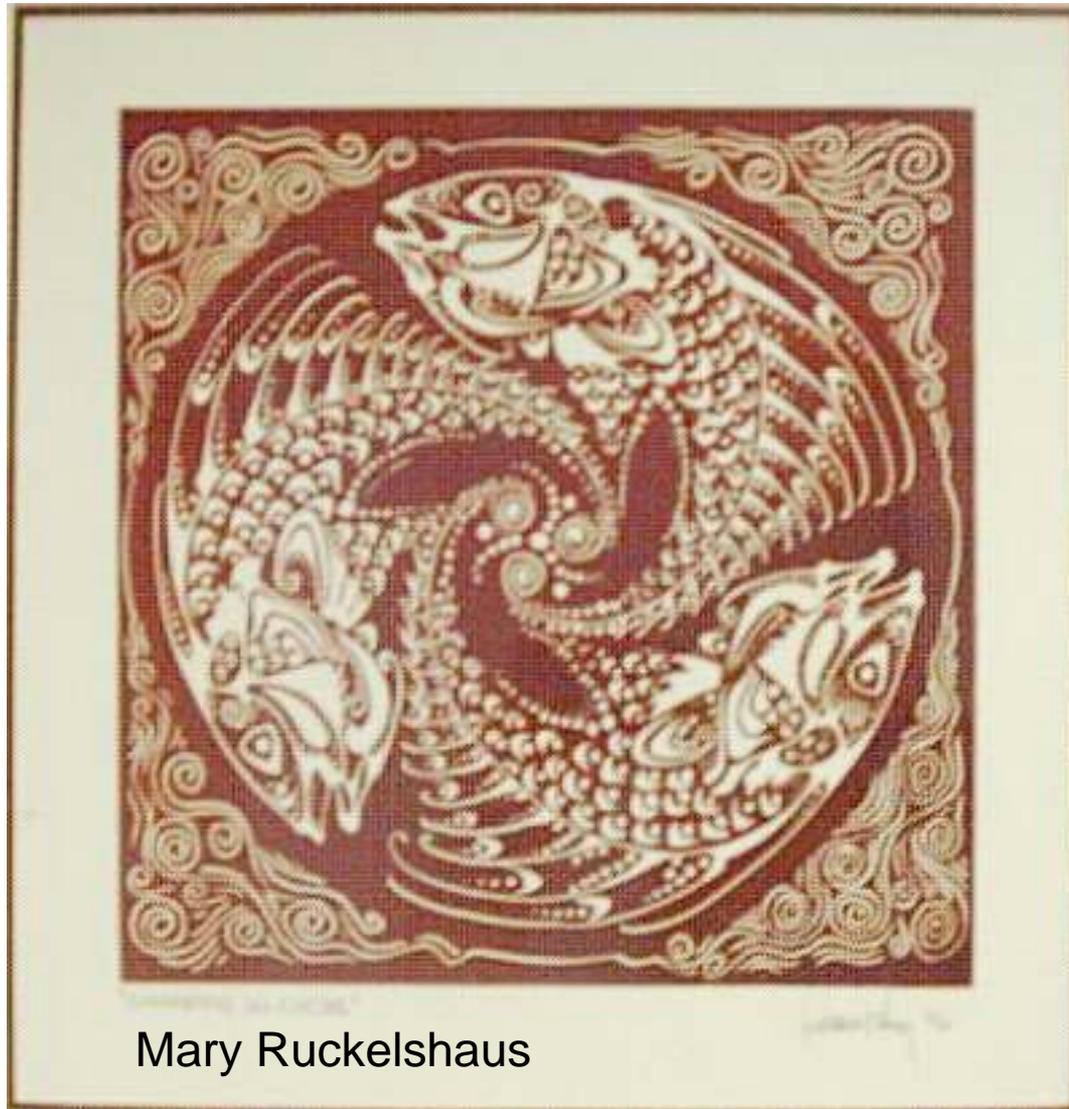
Integrated Ecosystem Assessment



Levin et al. PLoS Biology 2009

Incorporating the work of Sainsbury,
Smith and probably others

Iterating science into decision frameworks



Mary Ruckelshaus

4. Organizing **stakeholder participation**

- **Stakeholders – state, tribes, federal, local, users [ports, fisheries, aquaculture, environmental NGOs, private sector, science [one seat at table]**
- **Maintains watershed stakeholders orientation of Shared Salmon Strategy**
- **Incorporates input from multiple processes**

Lessons: Stakeholders engaged much before PSP.

Science not the driver but the arbiter? Stakeholder process must be done from the start [not step 4].

Outreach and education

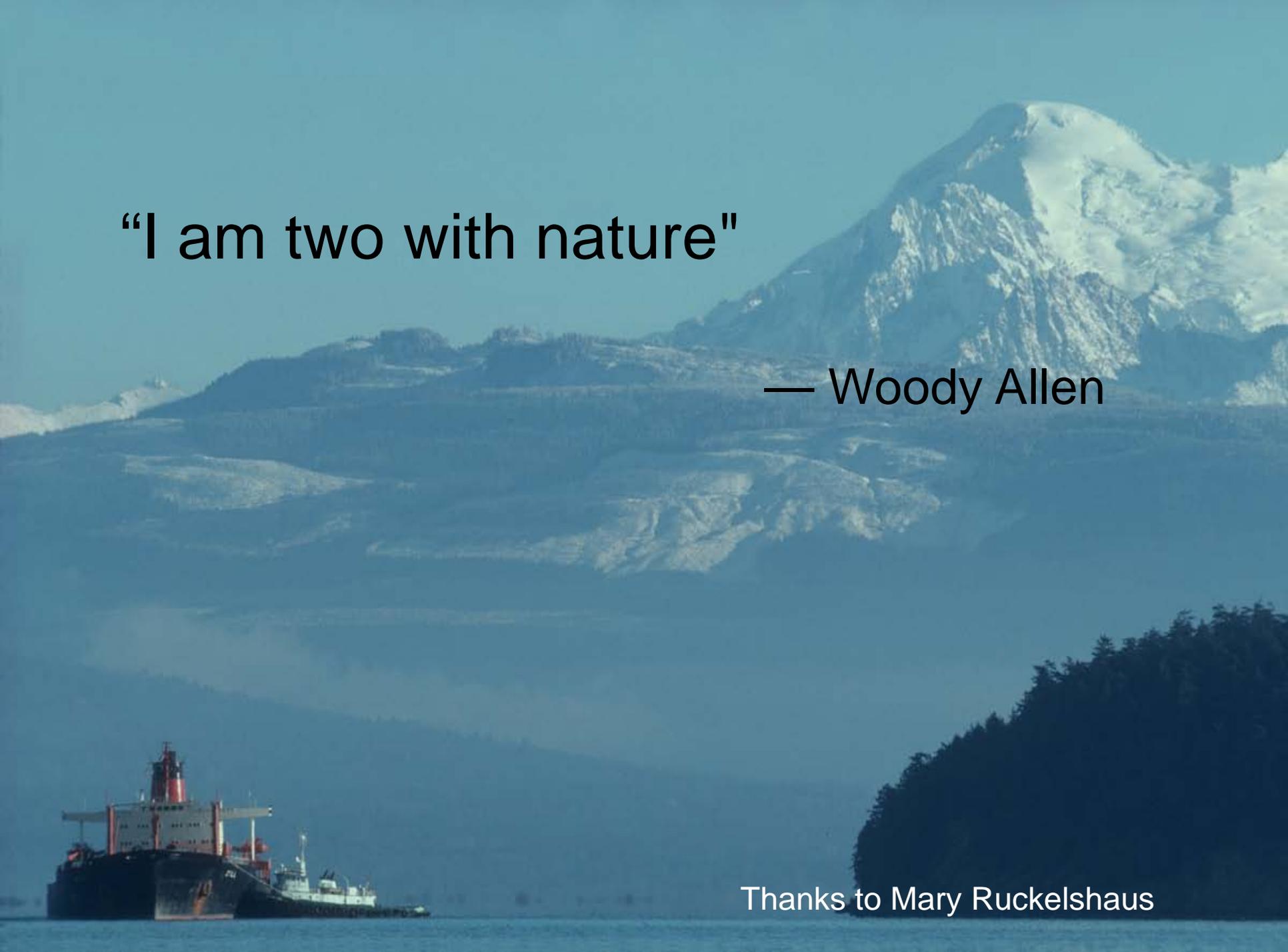
COGNITIVE DISCONNECT

- **95%** OF POPULATION OF PUGET SOUND REGION REGARDS PUGET SOUND AS AN ASSET/PART OF QUALITY OF LIFE
- **25%** AGREE THAT PUGET SOUND IS IN TROUBLE AND ARE WILLING TO SPEND MONEY TO SUPPORT RESTORATION

[RECENT POLL INDICATES SUPPORT MAY BE BUILDING
95% value Puget Sound/45% willing to spend PSCG
November 2009]



Thanks to Mary Ruckelshaus



“I am two with nature”

— Woody Allen

Thanks to Mary Ruckelshaus

PUGET SOUNDS

A CONCERT FOR THE MARINE ENVIRONMENT

SPONSORED BY
SURF & SAUF

RECENT AD FOR
CONCERT SUPPORT
FOR PUGET SOUND
IN *THE STRANGER*



5. Defining and analyzing **existing conditions**

SYNTHESIS REPORTS

Sound Science 2007

describes 'what we know' about the interactions between all the components of the ecosystem of the Puget Sound region and identifies likely future threats.

State of the Sound 2009 [every two years]

are detailed 'status and trends' reports on the health of the Puget Sound ecosystem produced earlier by the Puget Sound Action Team now PSP.

Puget Sound Salmon Recovery Plan (Shared Strategy), the Guidance for Protection and Restoration of the Nearshore 2007

Ecosystems of Puget Sound (PSNERP), and the Puget Sound Conservation and Management Plan (PSAT)

provide recommendations for management actions needed for individual species or habitats. Each of these documents provides a separate piece of the foundation of ultimate comprehensive management and research plans for Puget Sound.

Threats (Risk assessment)

- Agriculture & Livestock Grazing
- Air Pollution & Atmospheric Deposition
- Aquaculture
- Climate Change
- Dams, Levees & Tidegates
- Derelict Gear & Vessels
- Dredging & Dredged Material Disposal
- Invasives - Terrestrial
- Invasives - Freshwater
- Invasives - Marine
- Large Scale Timber Harvest
- Military Exercises
- Mineral / Gravel Mining
- Non-Point Source Loading & Runoff
- Oil & Hazardous Spills
- Onsite Sewage Systems
- Point Source Pollution
- Recreational Activities
- Recreational Marinas
- Residential, Commercial, Port & Shipyard development
- Roads, Transportation & Utility Infrastructure
- Shoreline Armoring
- Unsustainable Fishing / Harvesting
- Vessel Traffic & Interaction
- Wastewater Treatment Plant Discharge & CSOs
- Water Withdrawals & Diversions
 - Fire Suppression
 - Renewable Energy & Resources
 - Excess Energy

** As identified in the Action Agenda (Ch. 3) and through the Open Standards steps*

6. Defining and analyzing **future conditions**

Other trade-offs to come...

What kinds of coastal management and fishery policies will give us the best returns for sustainable fisheries, shoreline protection and recreation?



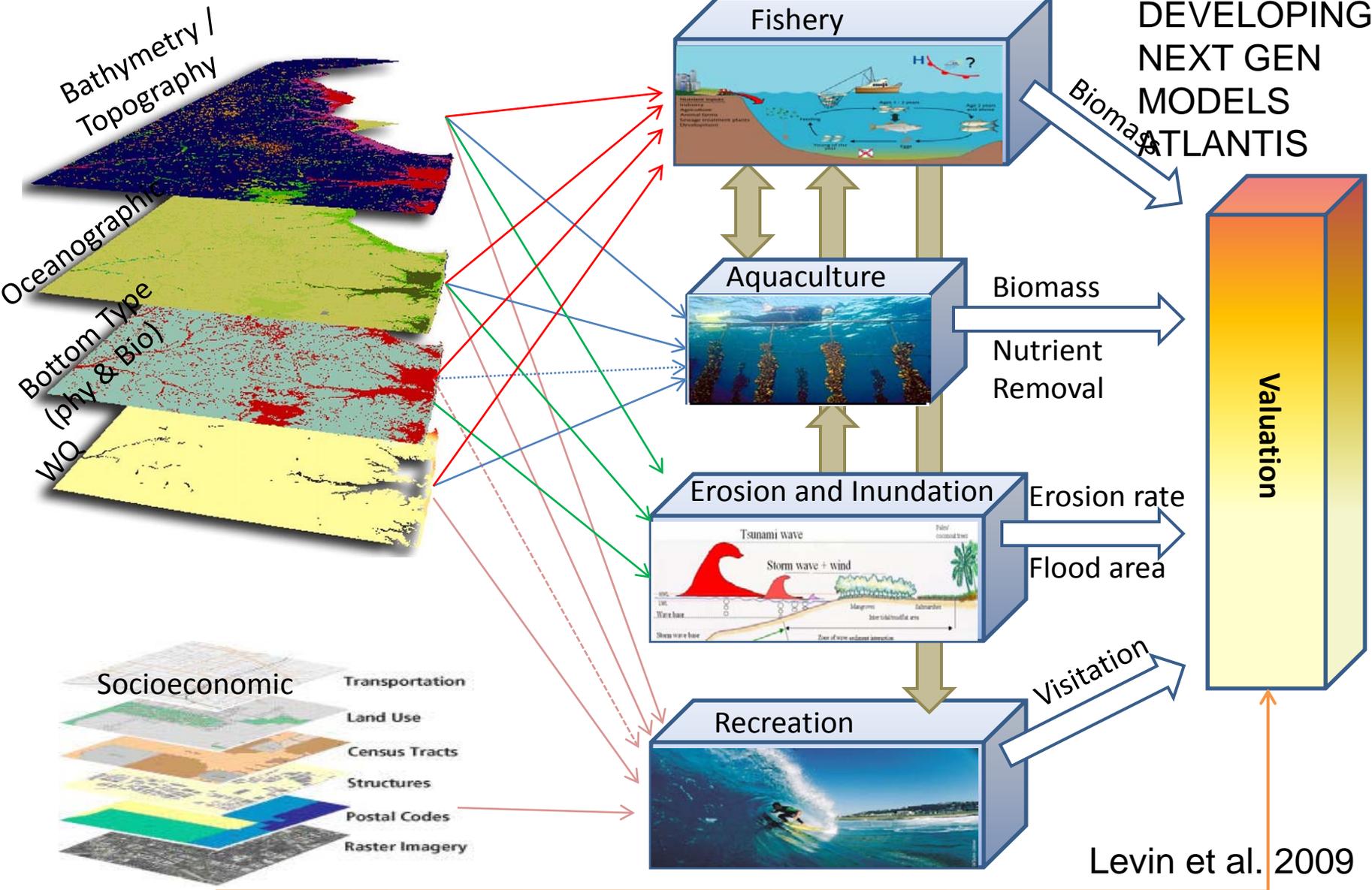


- food from fisheries and aquaculture
- transformation and sequestration of wastes
- shoreline stabilization and protection
from inundation
- opportunities for recreation
- draw for tourism
- cultural values

Input Data Layers

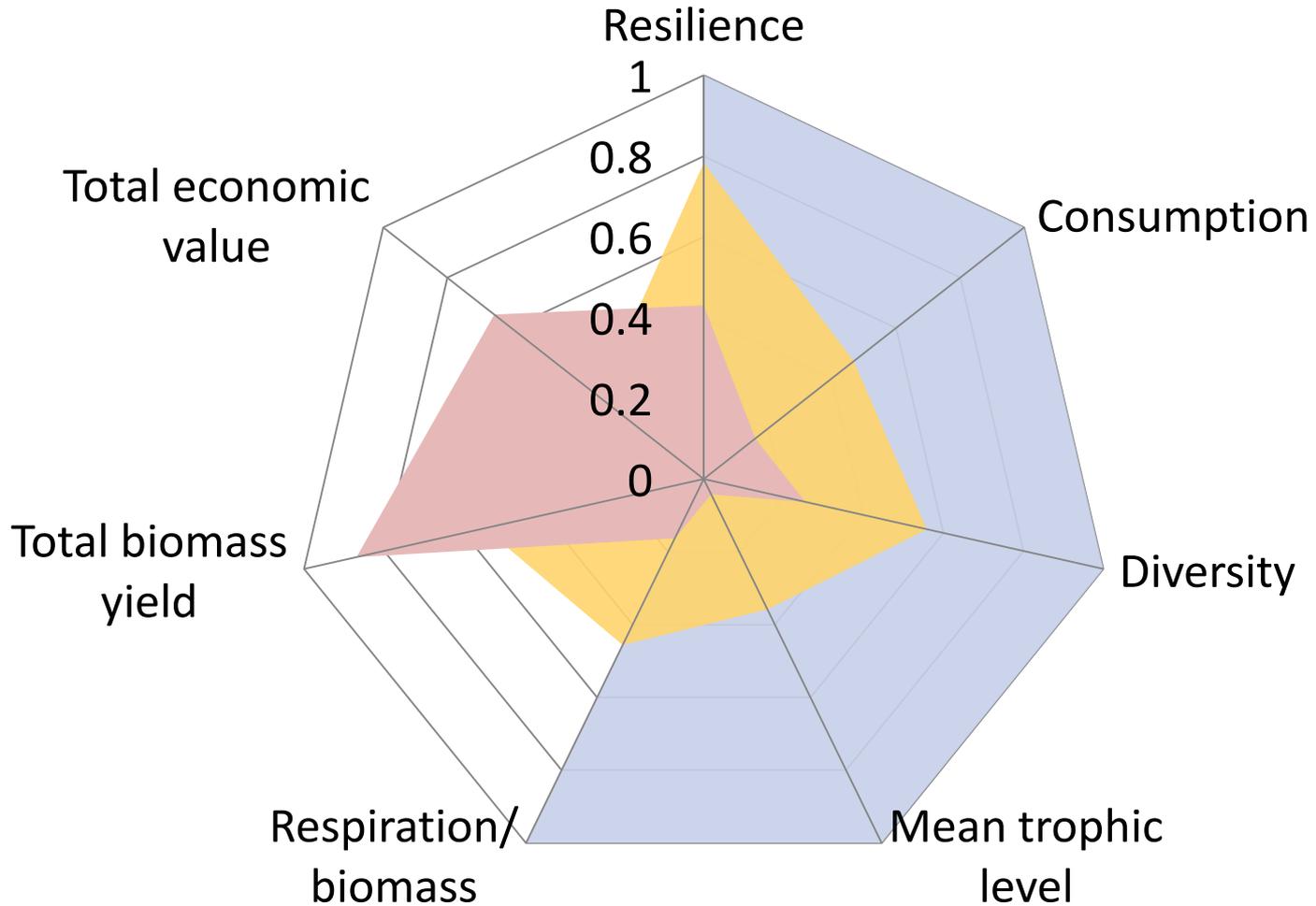
Models

DEVELOPING
NEXT GEN
MODELS
ATLANTIS

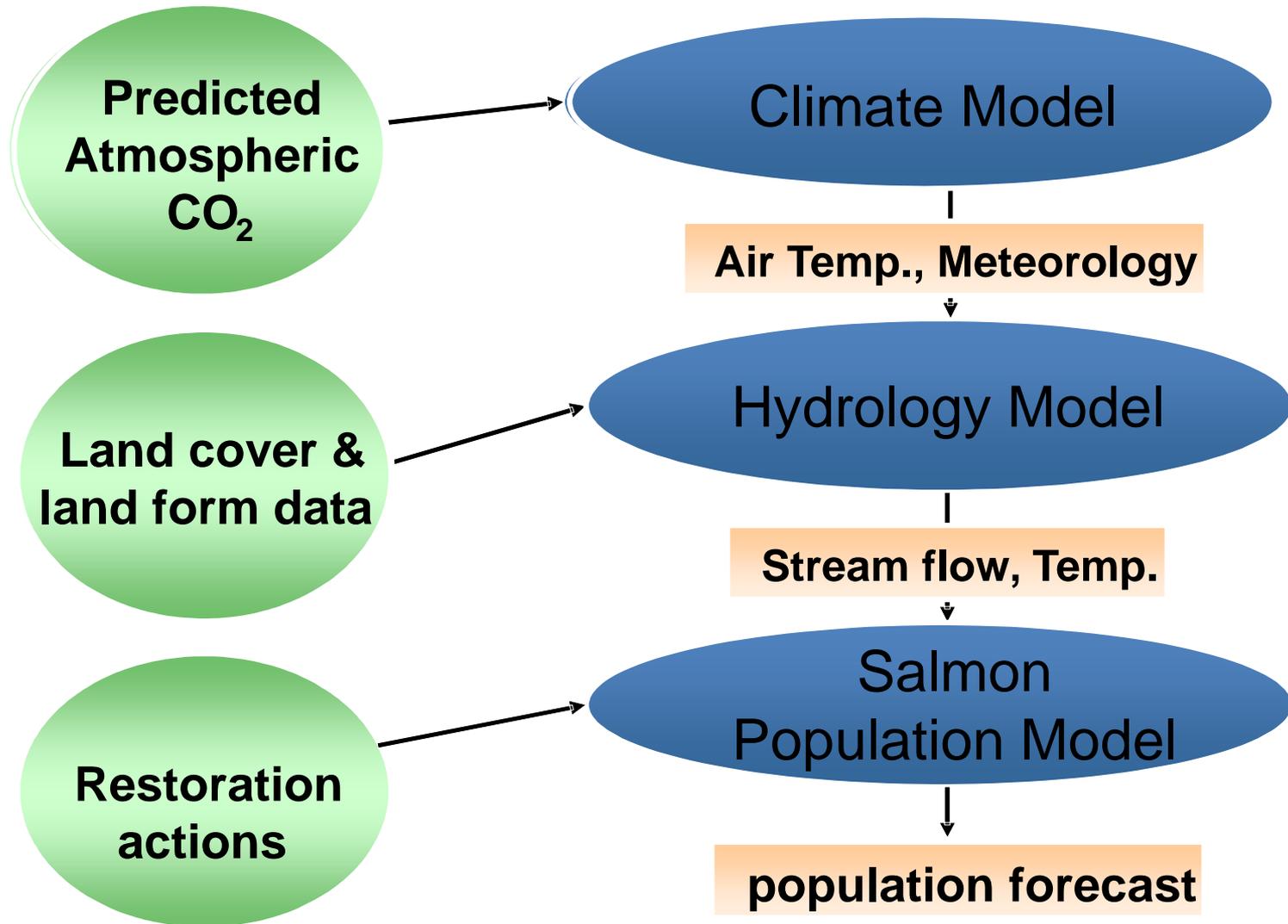


Levin et al. 2009

■ No Fishing ■ Trophic level threshold ■ All ecological thresholds



Model Structure



Resilience for Social-Ecological Systems: Evolving Definitions

- The ability of either system to withstand or adapt to “shocks” to itself or to other systems to which it is linked (after C.S. Holling 1973)
- The capacity of governance systems to accommodate change in ways that support societal development and environmental linkages for generations to come (Folke 2006, Robards and Greenberg 2007)

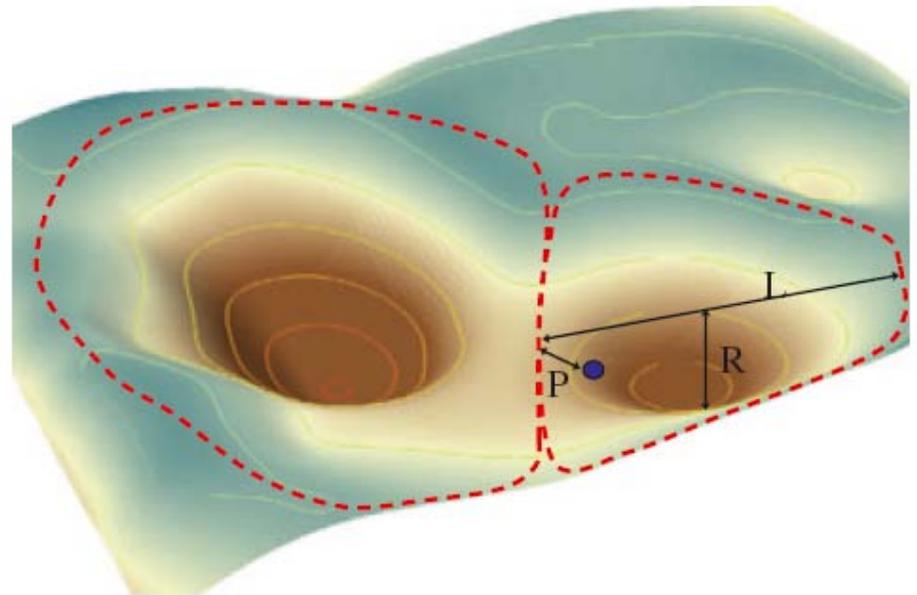


Figure 4 State space as represented by a three-dimensional stability landscape. Basins of attraction are areas within this space where a system tends to remain. I

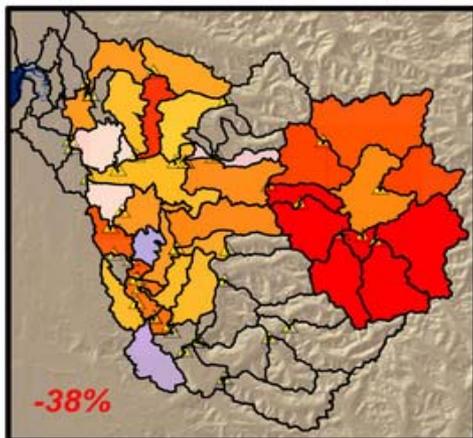
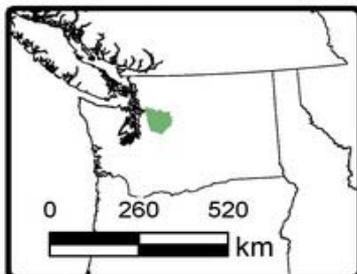
-From Robards and Greenberg, *Global Constraints on Rural Fishing Communities: Whose Resilience Is It Anyway?* (2007).

Evaluating watershed scenarios under future climate: Chinook

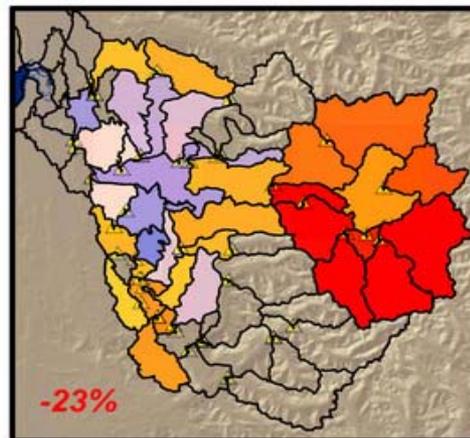
Current

Restoration

Snohomish River: Climate and Landuse Change Impacts by Subbasin, Year 2050



Change from Current with 2050 Climate and Business-As-Usual Landuse: GFDL



Change from Current with 2050 Climate and Restoration Landuse: GFDL

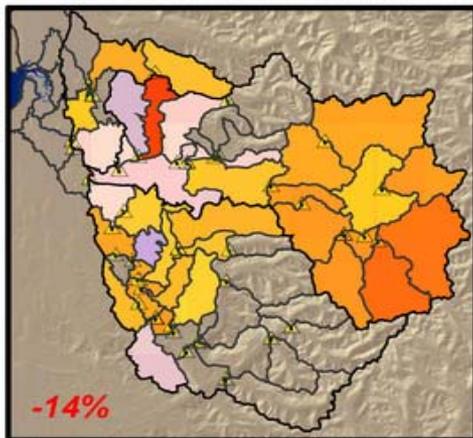
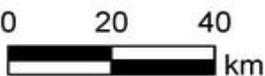
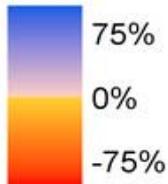
GFDL

Change in Mean Number of Returning Spawners

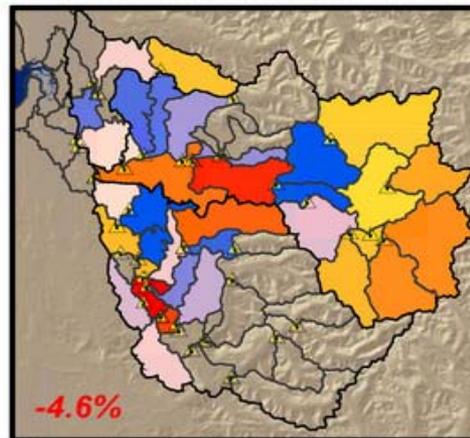
+1% Basinwide average value

▲ Analysis Location

Value



Change from Current with 2050 Climate and Business-As-Usual Landuse: HadCM3

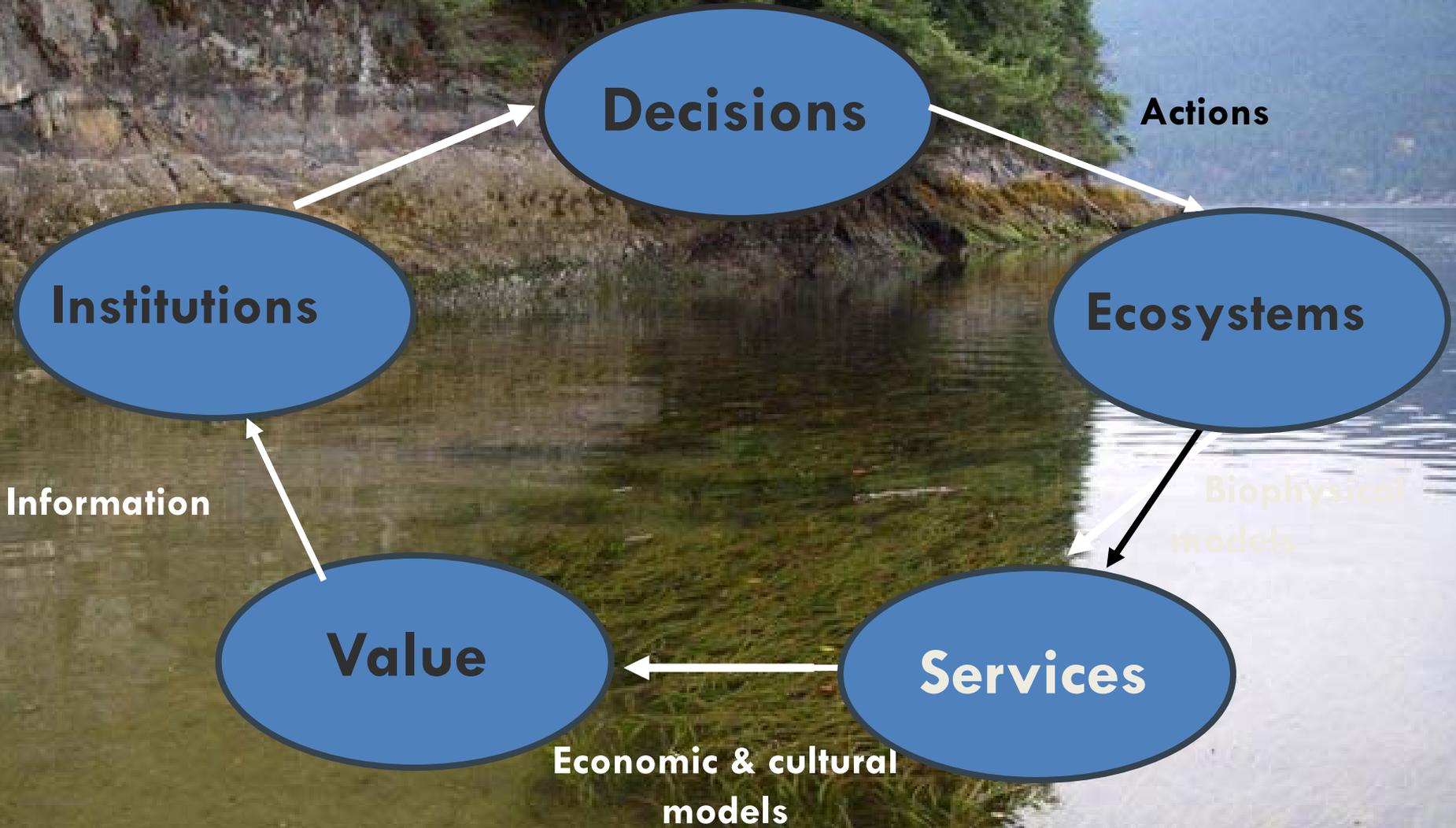


Change from Current with 2050 Climate and Restoration Landuse: HadCM3

Hadley

7. Developing and approving the spatial management plan

CONCEPTUAL APPROACH TO DEVELOP ACTION PLAN





South Sound Action Area

KEY ECOSYSTEM BENEFITS

-  Nisqually River is largest undeveloped delta in Puget Sound, important for salmon and wildlife; largest National Wildlife Refuge in Puget Sound
-  Nursery area for multiple Chinook populations
-  Areas of intact shoreline
-  Unique prairie habitat with endemic species
-  Some forest lands
-  Nationally renowned shellfish; one of the largest shellfish producing areas in state
-  Recreation: clamming, crabbing, Mt. Rainier National Park, kayaking, boating
-  Numerous commercial and residential centers
-  Center of government
-  Hydropower for City of Centralia and City of Tacoma
-  Regional leadership in reclaiming municipal wastewater
-  Ports of Olympia and Shelton
-  Homeland security: Fort Lewis & McCord Air Force Base

LOCAL PRESSURES (KEY THREATS IN BOLD)

- Habitat Alteration**
 -  Nearshore alterations: 40% shoreline armored; ___ miles of BNSF rail along eastern shoreline, Loss of riparian and estuary habitat, some intertidal alterations
 -  Blocked habitat: dams on Deschutes and Nisqually Rivers; fill for I-5 on Nisqually.
 -  Loss of prairie habitat through land conversion
 -  Loss of hydrologic function from existing and expanding impervious surface
- Pollution**
 -  Industrial pollution in bays and contaminated sediments: Oakland Bay, Chambers Bay, Budd Inlet
 -  Pollutant loading leads to low dissolved oxygen: Budd Inlet, Case Inlet, Carr Inlet
 -  Bacteria and pathogens from human and animal waste
 -  Poor air quality due to particulate pollution (wood smoke, diesel emissions, etc.)
- Surface/Groundwater Impacts**
 -  Low flows in WRIA 12; flow issues in WRIA 13

Invasive Species

Need to identify

Artificial Propagation

-  Potential ecosystem impacts related to some aquaculture practices
-  High proportion of hatchery salmon in South Sound nearshore and marine waters have unknown impacts on wild salmon

Harvest

Need to identify

Localized climate change impacts

 Sea level rise: Significant loss of estuarine beaches potentially sooner than other areas of Puget Sound; inundation of tidal flats; flooding at downtown Olympia

Population/Other

-  Conflicting use values of marine shorelines
-  Increase in population by 2030: 33%; more than 310,000 people, in Thurston, Pierce, Mason counties

Symbols courtesy of the Integration and Application Network (ian.umces.edu/symbols), University of Maryland Center for Environmental Science sources: 1. Initial Discussion Draft Paper, Land Use/Habitat Protection and Restoration in Puget Sound 4/14/2008 2. South Puget Sound Action Area Profile (DRAFT), Ann Seiter, 5/19/2008 3. South Puget Sound Action Area Action Agenda Basis, 5/2008 4. The Nature Conservancy Ecoregional Assessments, Willamette Valley-Puget Trough-Georgia Basin (3/2004), East and West Cascades (6/2007) 5. NOAA Status Assessments (DRAFT) 5/2008

PSP AND SPATIAL MANAGEMENT

- **PSP AT THIS STAGE IS NOT COMPREHENSIVE SPATIAL PLANNING OR ZONING [e.g., Massachusetts]**
- **PSP LINKS WATERSHEDS, COASTS AND PUGET SOUND [ESA Driver]**
- **PRESENT EMPHASIS IS PRIORITIZING PLACE-BASED ACTIONS TO ACHIEVE GOALS THROUGH PARTNERSHIPS –**
- **Down-Payment on MSP?**

8. Implementing and enforcing the spatial management plan

PSP IMPLEMENTING/ ENFORCING

- **Without a MSP per se this Step is premature**
- **PSP is required to report to Legislature, Governor and public on progress – projects and programs under the Action Plan and scientific assessment of progress toward a Healthy Puget Sound**
- **PSP is working toward comprehensive and transparent tracking and reporting process**

9. Monitoring and evaluating performance

Establishing Baseline

Interim indicators for *State of the Sound*

Species & Food Webs

- Marine mammals
- Marine birds
- Marine fish
- Marine invertebrates
- Salmon
- Terrestrial birds
- Food webs (later)
 - Marine
 - Freshwater
 - Terrestrial

Habitats

- Eelgrass area
- Intertidal wetlands
- Upland habitat conversion

Human Health

- Safety of seafood
- Safety of water

Human well-being

- Working resource lands & industries
- Nature oriented recreation

Water quantity

- Stream flow of major rivers
- Hydrologic alteration from urbanization

Water quality

- chemical contamination in marine env.
- Hypoxia in marine env.
- Freshwater quality index

10. Adapting the marine spatial management process

Other Initiatives

- **Northwest Straits Commission**
 - **County Marine Resource Committees, e.g., San Juan County – Voluntary Marine Stewardship Area]**
- **Puget Sound Nearshore Ecosystem Restoration Project**
- **Orca Pass?**
- **The Big Eddy**

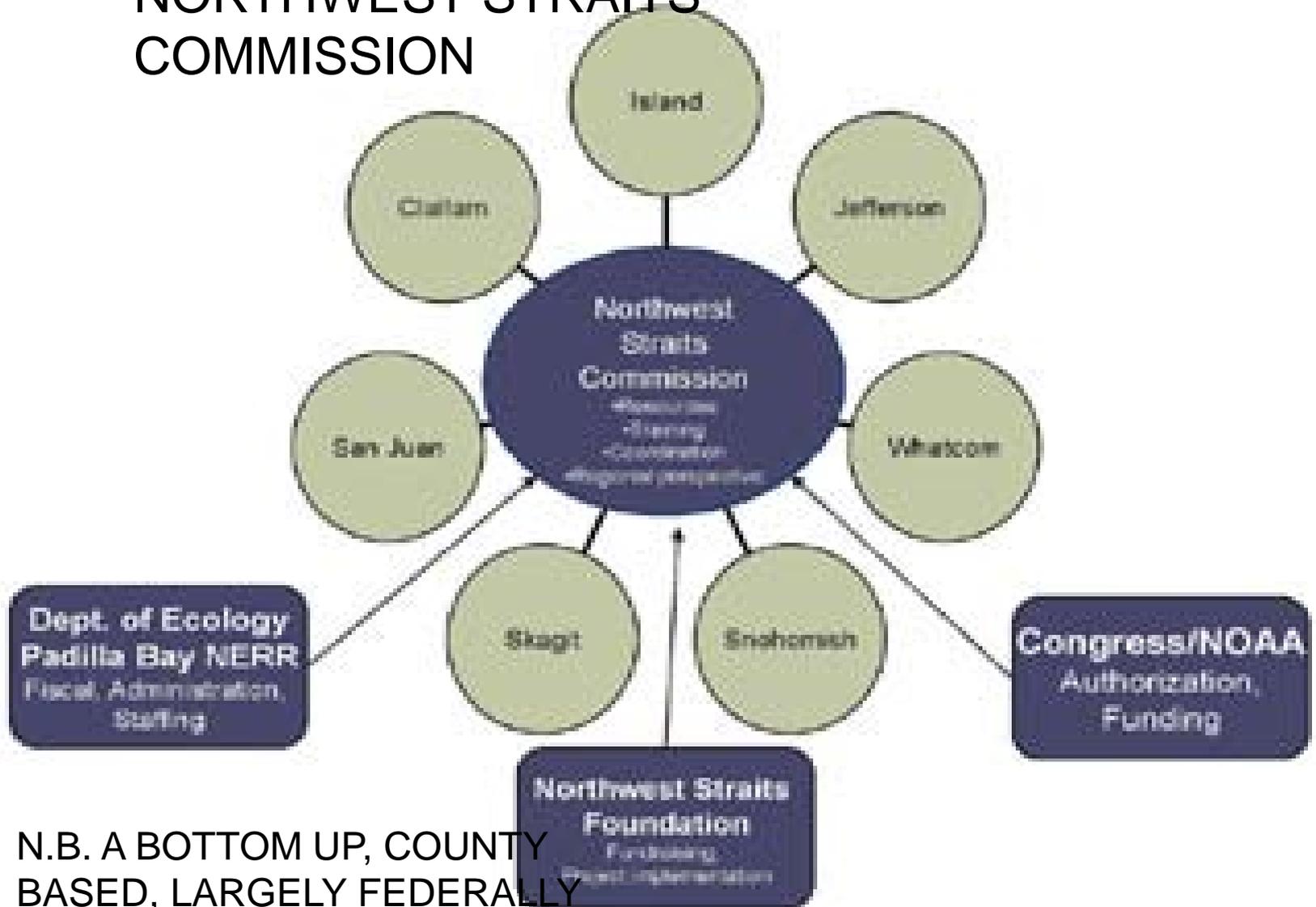
Adapting

- **Clear intent of PSP to be Adaptive**
- **Iterative process**
- **Learn as process continues**
- **Adjust with new knowledge and circumstances**
- **Stay tuned!**

SALISH SEA -- WHAT'S IN A NAME?

- **The discourse on Puget Sound is changing**
- **Drivers of change are concerns over Endangered and threatened species, adaptation to climate change, quality of life, etc.**
- **Institutions are evolving to coordinate across watersheds, coasts and marine ecosystems**
- **We're not there yet – but are on the way**

NORTHWEST STRAITS COMMISSION



N.B. A BOTTOM UP, COUNTY BASED, LARGELY FEDERALLY FUNDED INITIATIVE



Whatcom

San Juan

Victoria

U.S.-Canada Boundary

Skagit

Island

Snohomish

Clallam

Jefferson

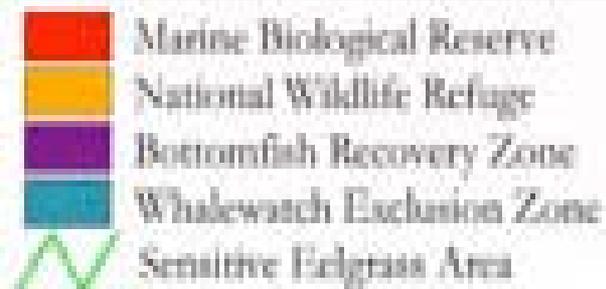
Pacific Ocean

SAN JUAN COUNTY MARINE STEWARDSHIP AREA

- **Marine Stewardship Area [MSA] is to foster a stewardship ethic in residents and visitors. In 2008, the Marine Resource Committee hosted experts to present at MRC meetings, published three newsletters and a stewardship guide, helped coordinate and financially supported the work of local educational and citizen volunteer organizations, and provided training and guidance for the technical skills needed to carry out effective stewardship.**
- **Effective stewardship of marine resources will only occur through broad participation of citizens who understand and embrace their capacity to shape a sustainable path into the future. In 2008, the MRC had resources that enabled us to provide coordination and financial support for several local organizations that offer outstanding mentorship for citizen science and engagement, including WSU Beach Watchers, Soundwatch, the SanJuan Nature Institute and Kwiaht. [MRC 2008]**

N.B. THIS IS A VOLUNTARY, BOTTOM UP APPROACH

SAN JUAN COUNTY MARINE RESOURCE COMMITTEE STEWARDSHIP AREA



N.B. A SCIENCE DRIVEN PROCESS

PUGET SOUND
nearshore
ECOSYSTEM RESTORATION PROJECT



The Puget Sound Nearshore Ecosystem Restoration Project is a large-scale initiative that affords a unique opportunity to tackle some of the foremost habitat restoration needs in Washington State's Puget Sound basin. Nearshore Project goals are to identify significant ecosystem problems, evaluate potential solutions, and restore and preserve critical nearshore habitat. We represent a partnership between the U.S. Army Corps of Engineers (Corps), state, local, and federal government organizations, tribes, industries, and environmental organizations.