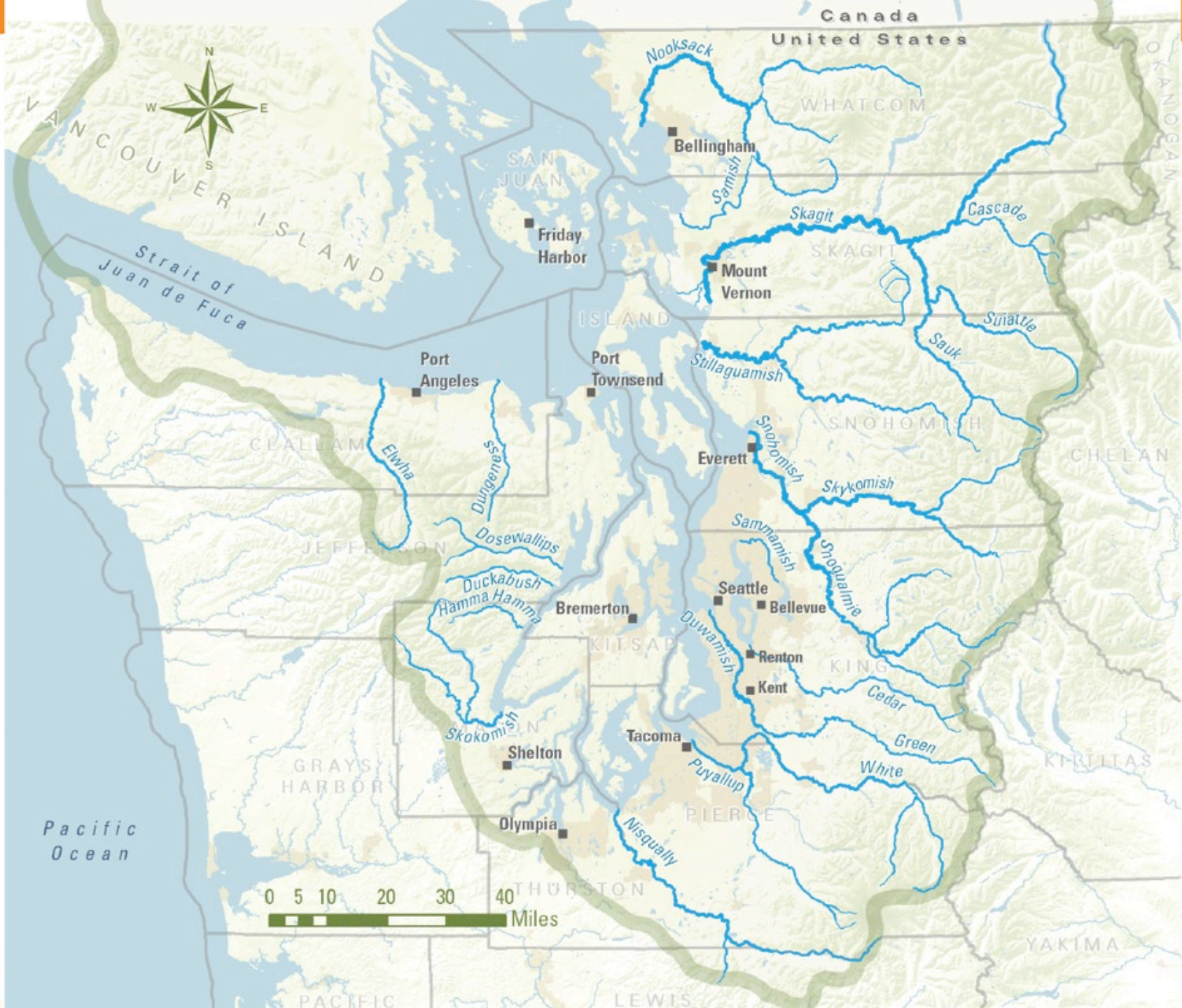


# Puget Sound Partnership Human Wellbeing Framework: Integrating Ecosystem Services & Human Wellbeing in Puget Sound Recovery



Leah A. Kintner  
Regional Manager, Ecosystem Recovery Team  
Puget Sound Partnership





# Puget Sound Estuary

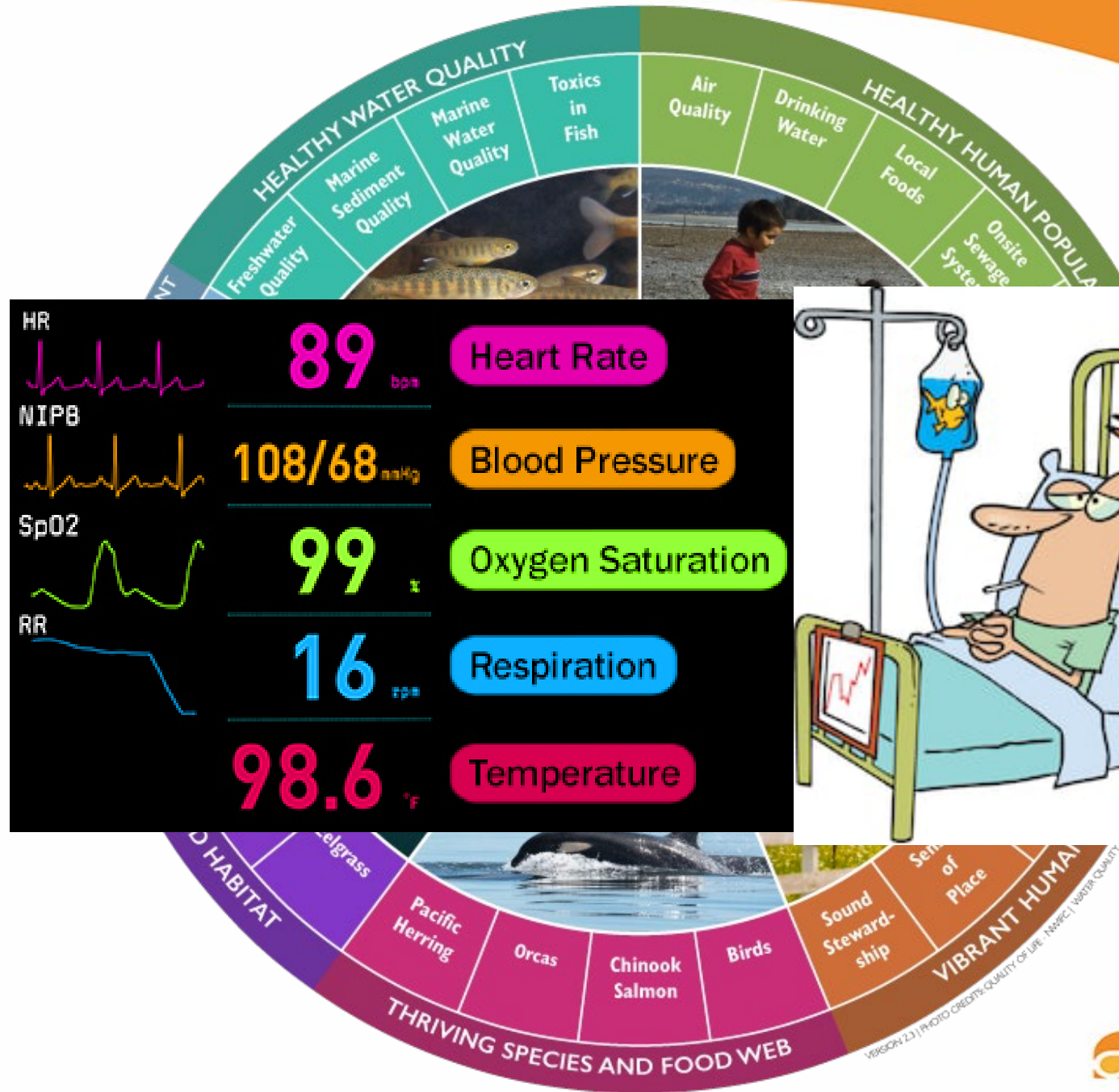


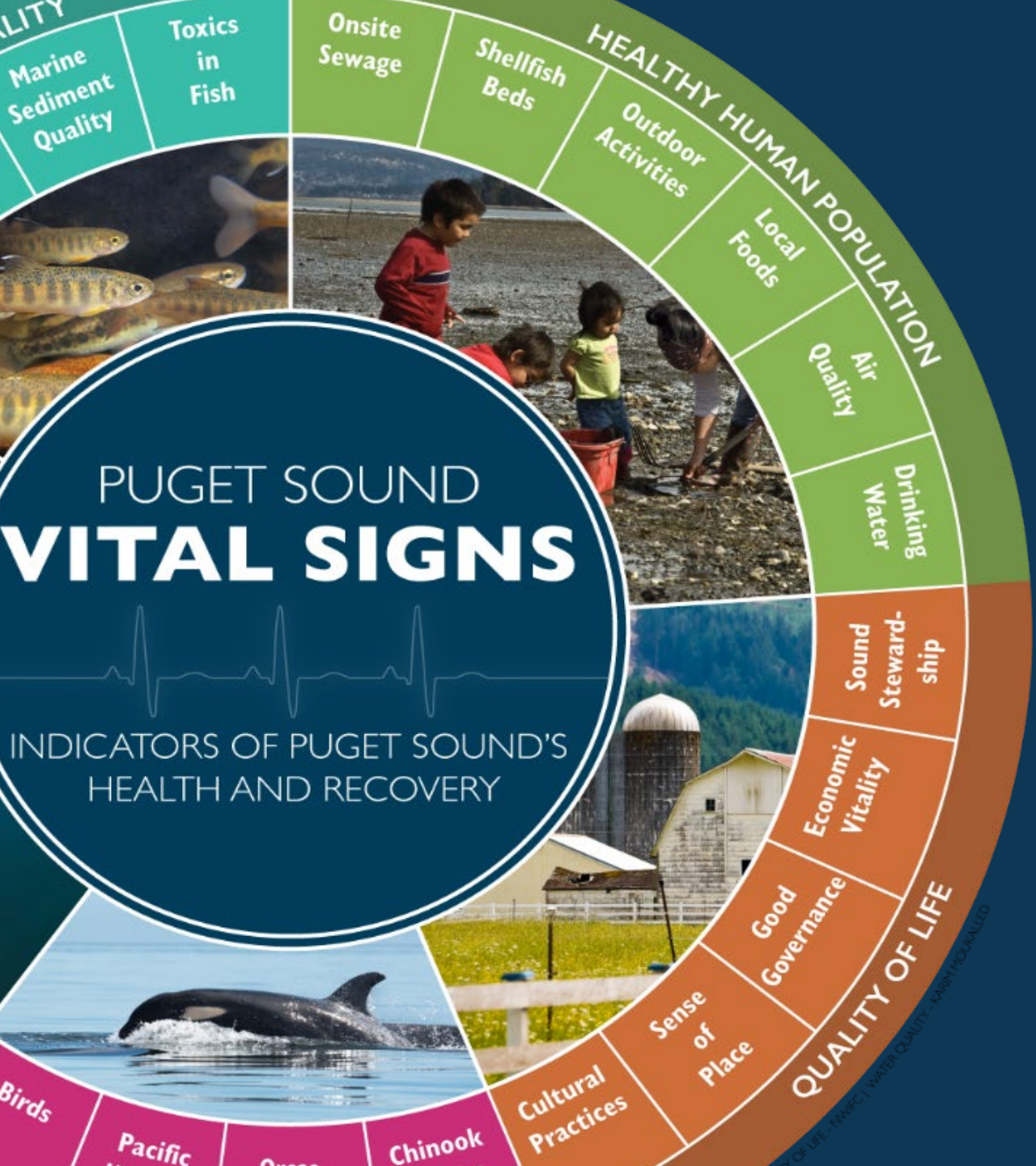
*Snowcaps to Whitecaps ...  
with a focus on the watery bits*

Water Quality  
Water Quantity

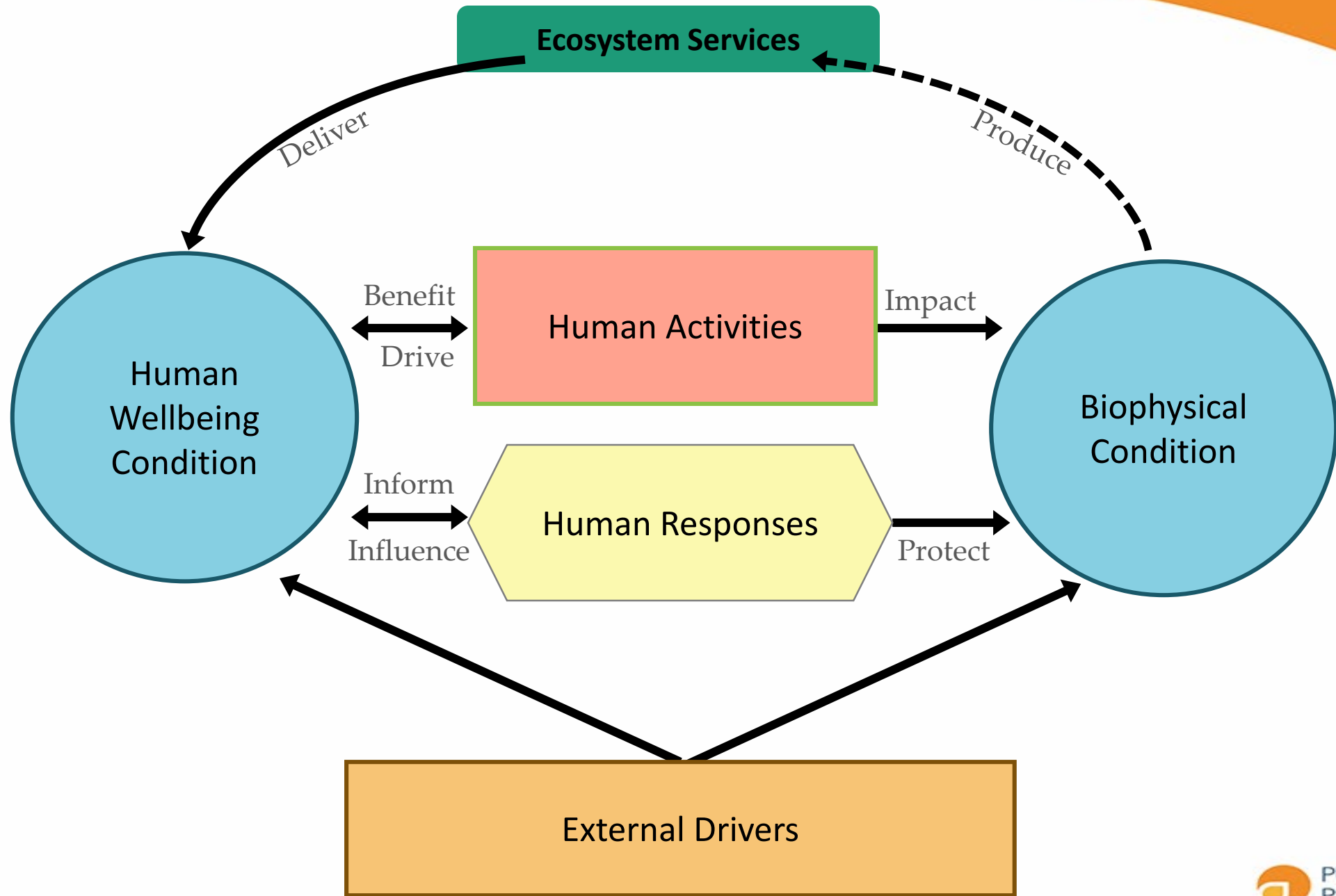
Habitat  
Species

Human Health  
Human Wellbeing





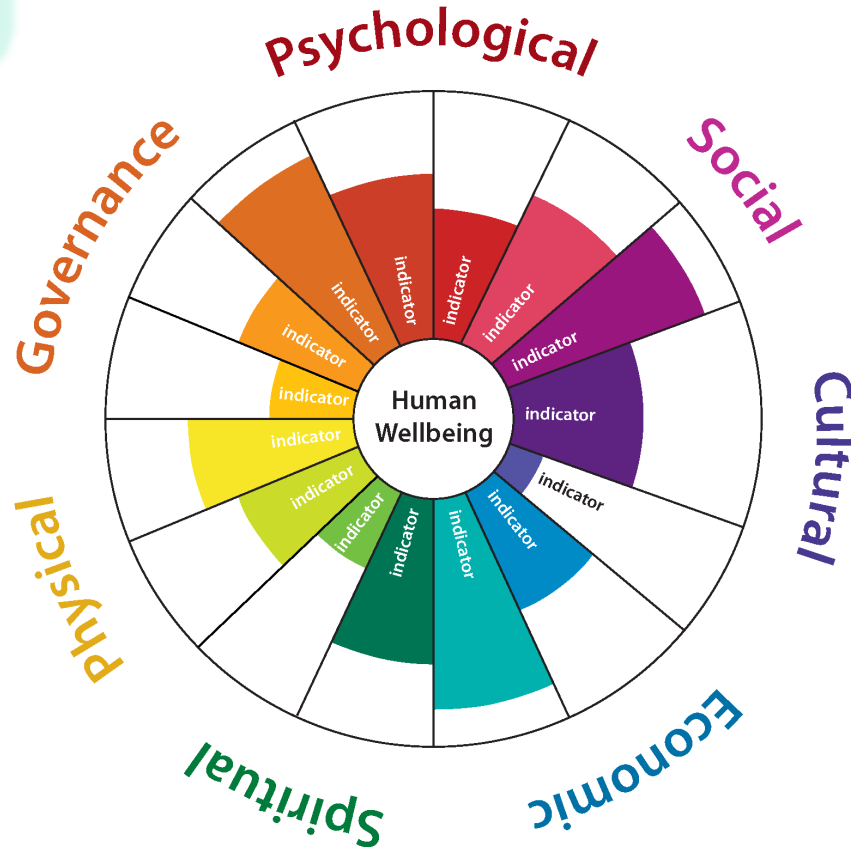
# Human Wellbeing Framework



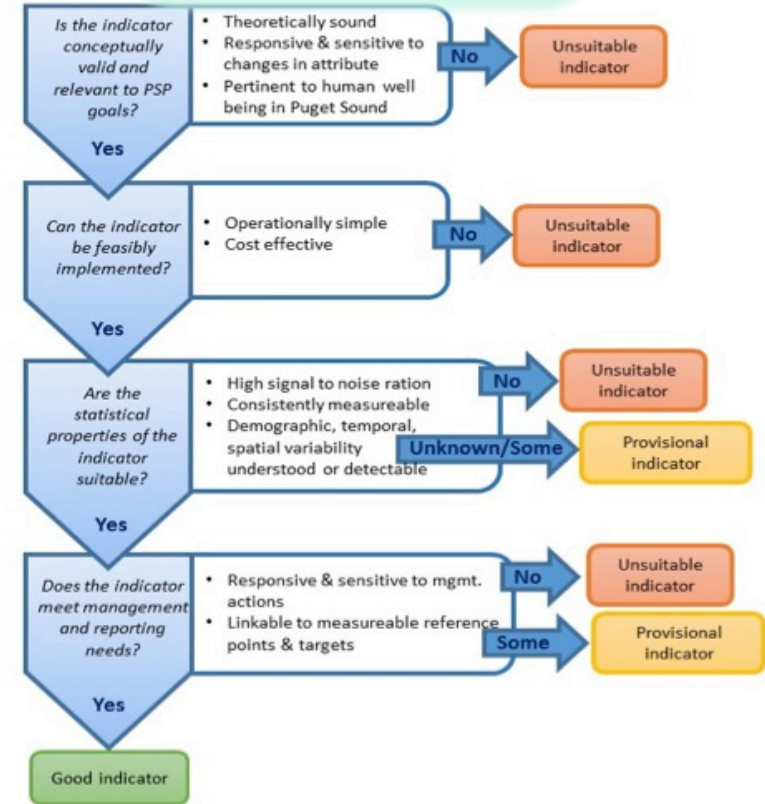
# HWB Indicator Development

Local Documents  
(n=120)

Local Stakeholders  
(n=160)



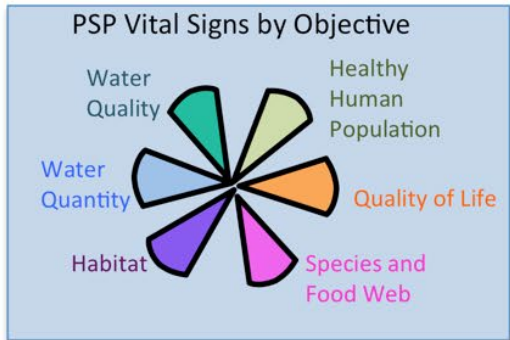
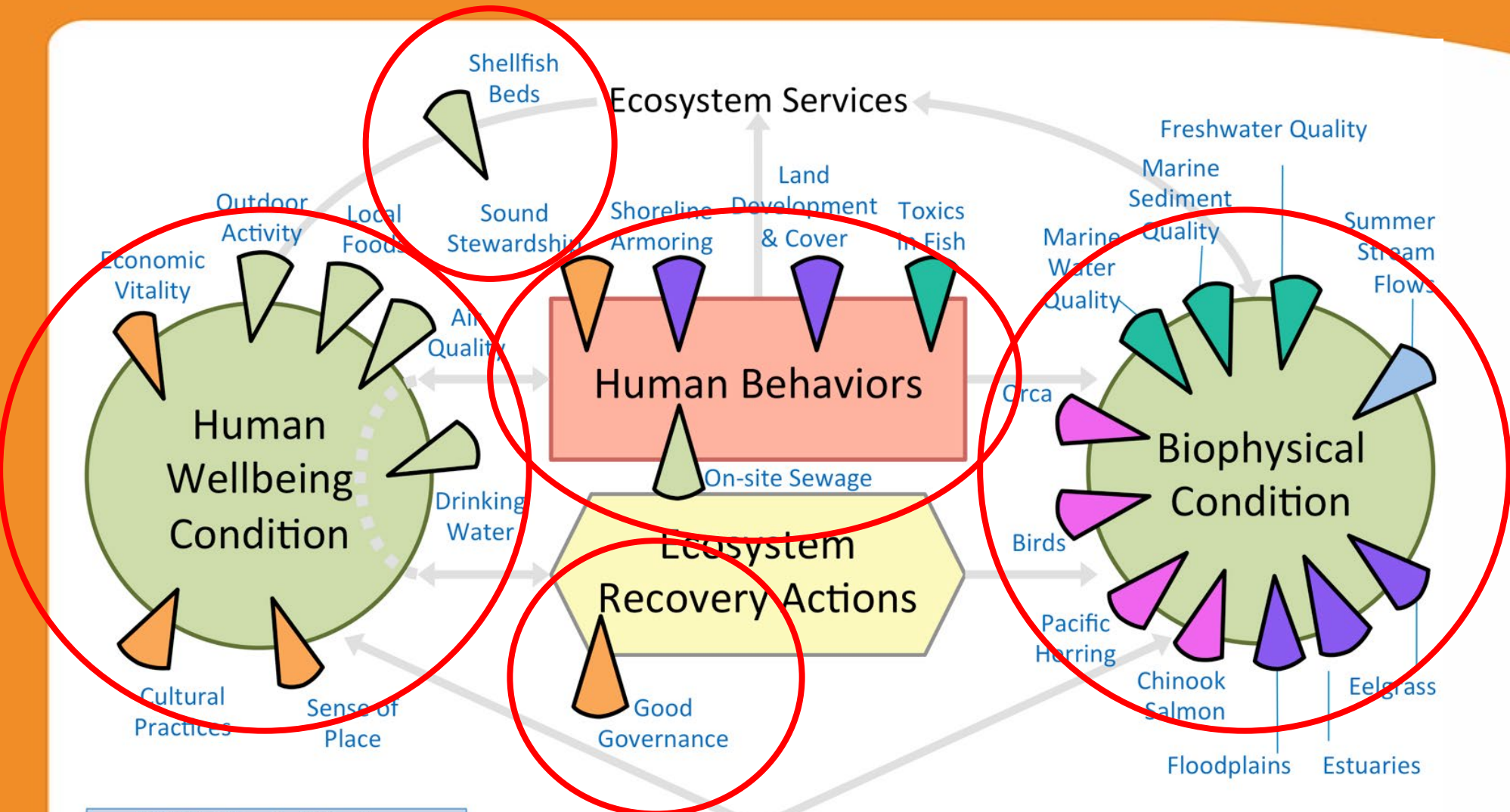
## Social Scientists



## Policymakers

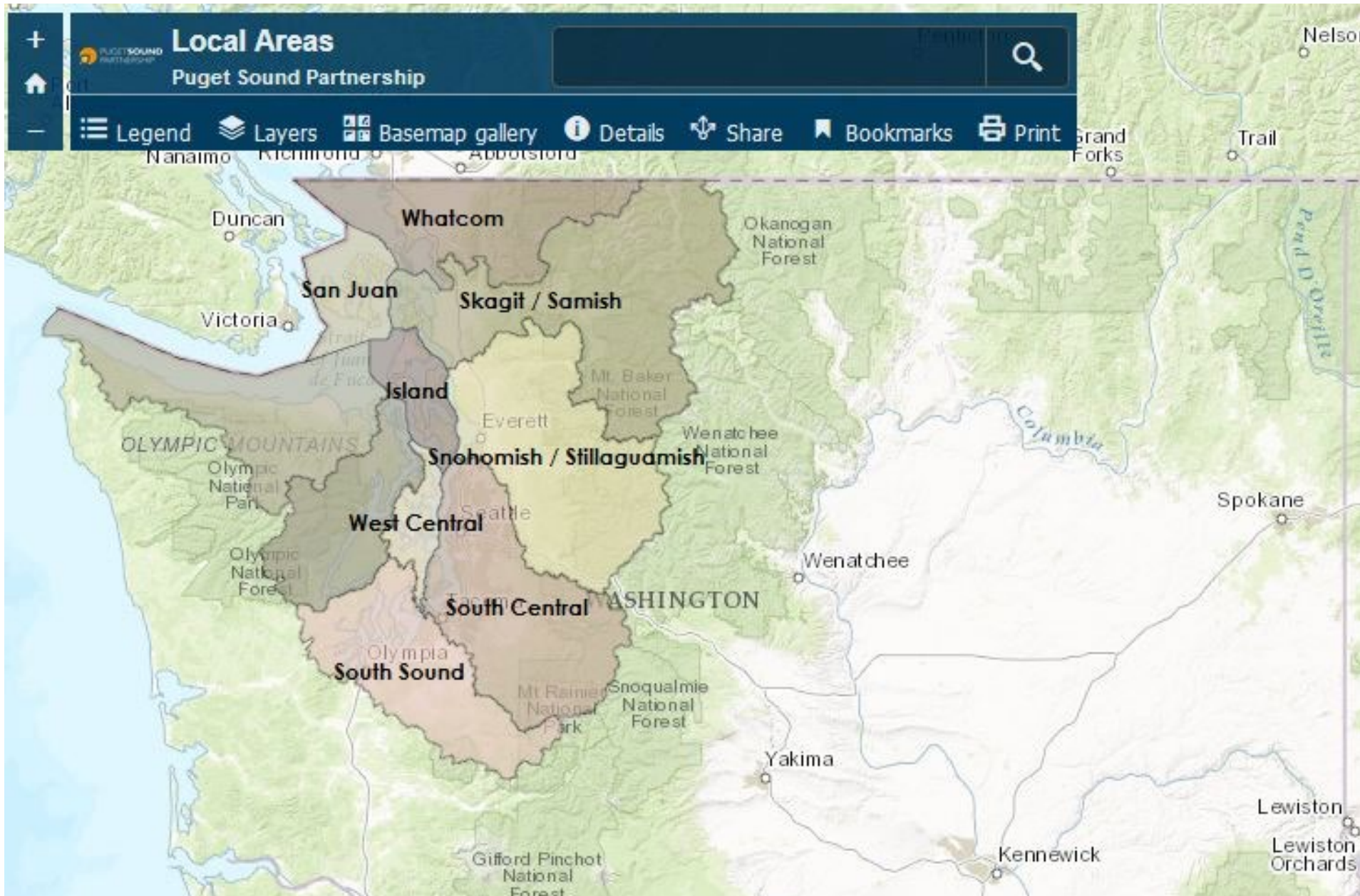
Indicator 1: Participation in Natural-Environment Inspired Cultural Activities	Low	Medium	High	Very High
Relevance to Puget Sound	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Importance to representing human wellbeing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Relevance to management concerns	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communication power	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Progress assessment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>





Post 2015

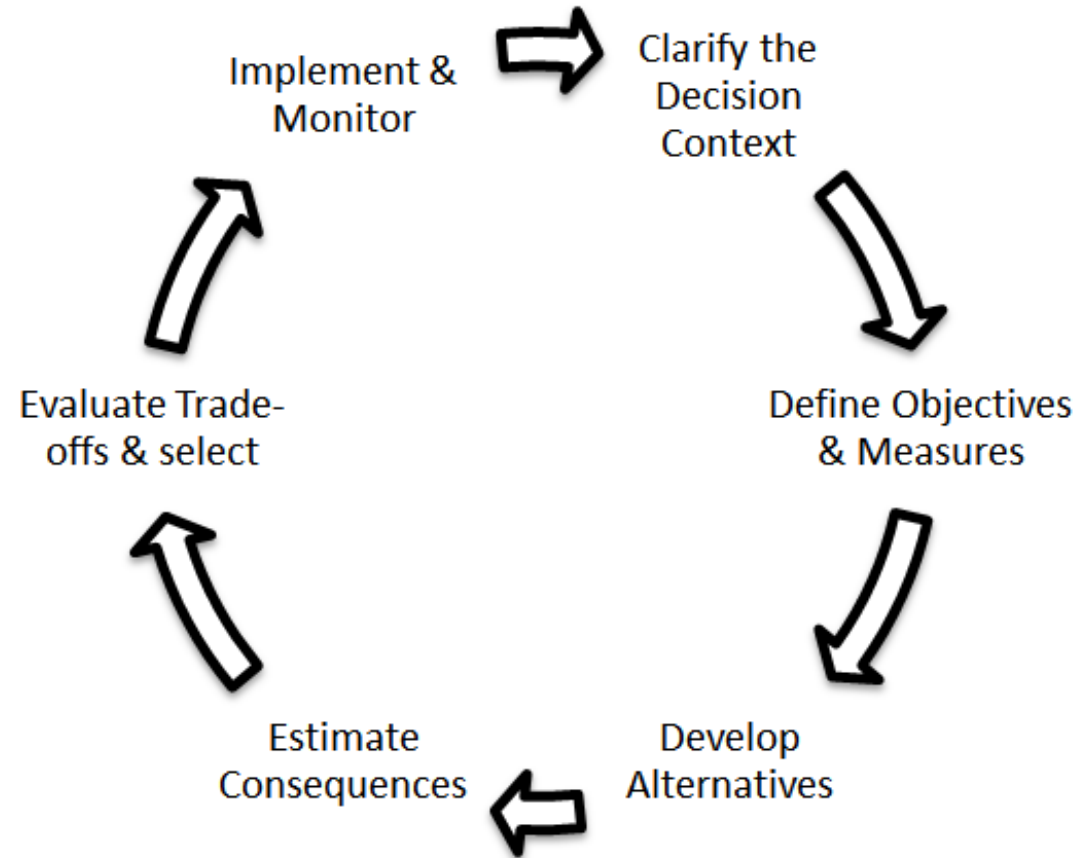
# The scale of planning – Local Integrating Organizations



# Integrating Human Wellbeing and Ecosystem Services

...how??

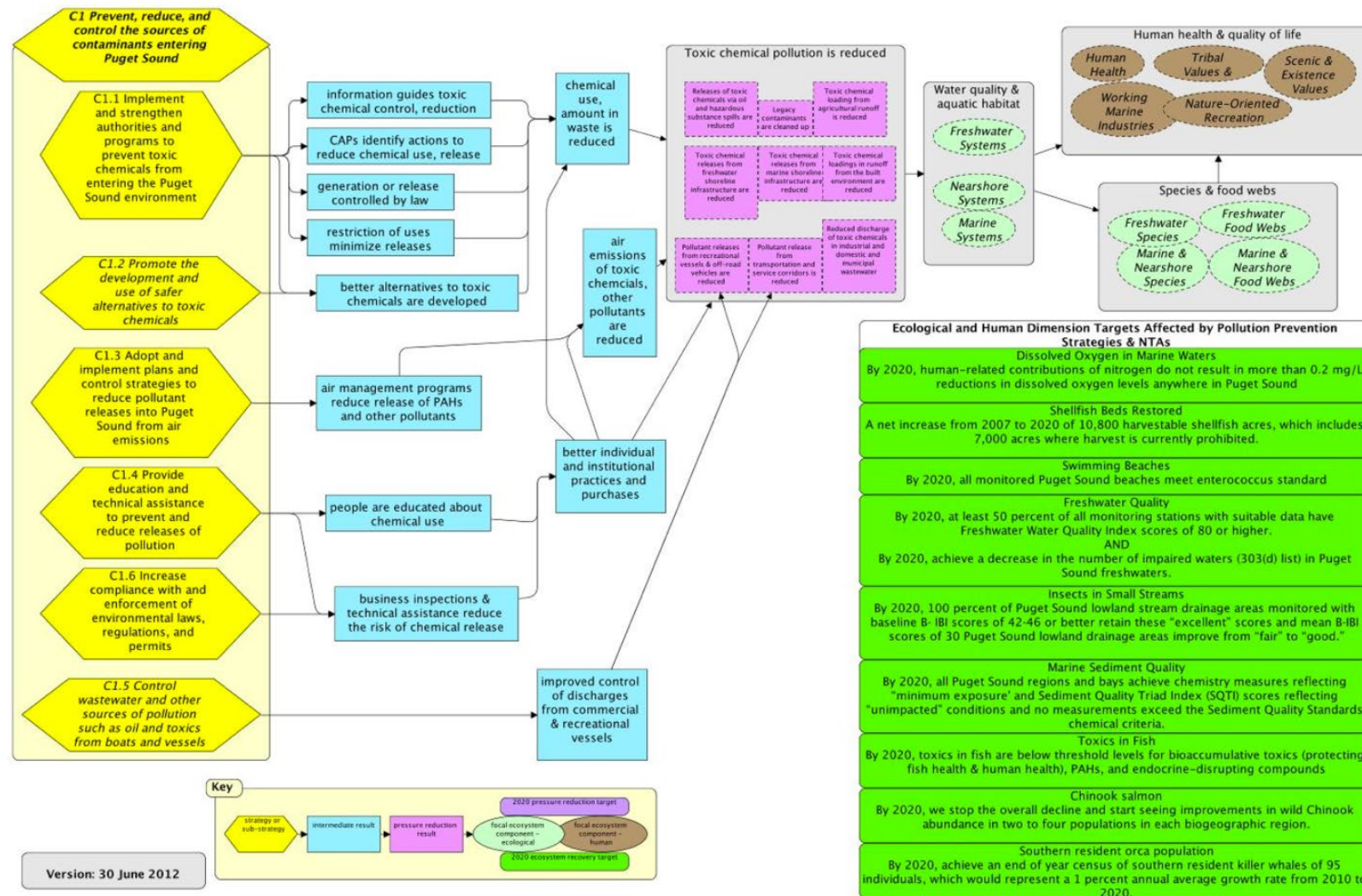
- Open Standards Logic Models
- Cost-benefit Analysis
- Public surveys
- Consequence Tables
- Bayesian Belief Networks
- Spatially-explicit impact overlays
  
- Structured Decision-Making!



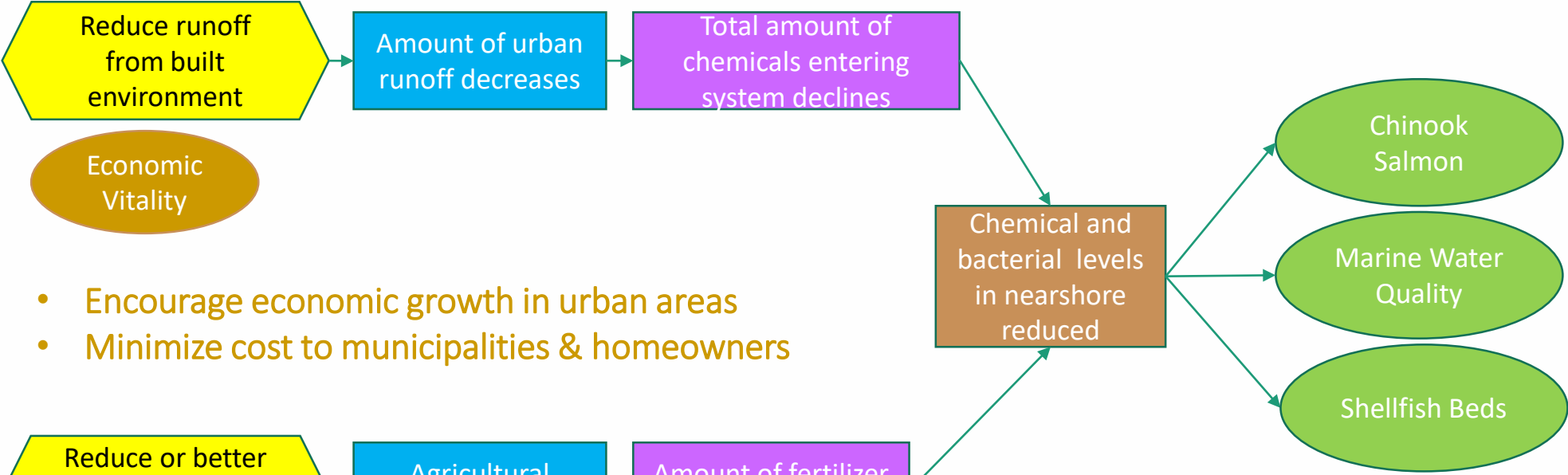
# Integrating Human Wellbeing and Ecosystem Services

## • Open Standards Logic Models

### C1. Prevent, reduce, and control the sources of contaminants entering Puget Sound

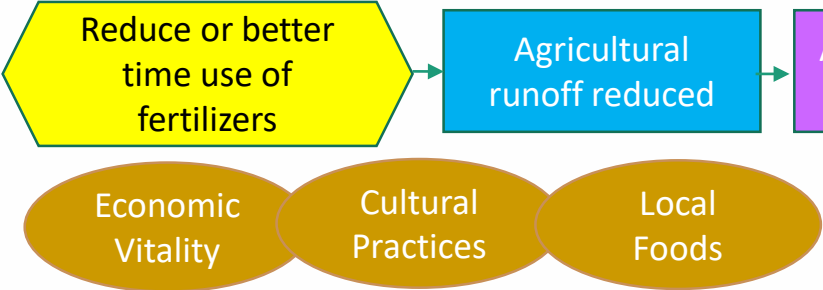


# Theory of change



Economic Vitality

- Encourage economic growth in urban areas
- Minimize cost to municipalities & homeowners



Economic Vitality Cultural Practices Local Foods

- Maintain viable agriculture in region
- Increase opportunities for local food harvesting in watersheds

Objective: Pollution entering aquatic ecosystems decreases

- Indicator 1: Fecal coliform concentrations
- Indicator 2: Jobs in natural resource industries
- Indicator 3: Opportunities to gather local foods

# Integrating Human Wellbeing and Ecosystem Services

- Open Standards Logic Models
- **Cost-Benefit Analysis**



# Integrating Human Wellbeing and Ecosystem Services

- Open Standards Logic Models
- Cost-Benefit Analysis
- **Public survey**

28%



**PUGET SOUND HUMAN WELLBEING SURVEY**  
IMPORTANT QUESTIONS TO UNDERSTAND YOUR EXPERIENCES  
A STUDY COMPLETED COOPERATIVELY BY:  
**PUGET SOUND PARTNERSHIP** 326 East D Street  
Tacoma, WA 98421  
**Oregon State University** 204 Hoveland Hall  
2700 SW Campus Way  
Corvallis, OR 97331

**PUGET SOUND VITAL SIGNS**  
UNDERSTANDING ECOSYSTEM HEALTH

The circular diagram is divided into several segments representing different areas of focus:

- HEALTHY WATER QUALITY:** Includes Freshwater Quality, Marine Sediment Quality, Marine Water Quality, Toxics in Fish, and Air Quality.
- HEALTHY HUMAN POPULATION:** Includes Drinking Water, Local Food, Outdoor Recreation, and Mental Health.
- VIBRANT HUMAN QUALITY OF LIFE:** Includes Cultural Wellbeing, Economic Wellbeing, Good Governance, and Sense of Place.
- THRIVING SPECIES AND FOOD WEB:** Includes Sound Stewardship, Chinook Salmon, and Birds.
- PROTECTED AND RESTORED HABITAT:** Includes Estuaries, Wetlands, and Forests.
- ABUNDANT WILDLIFE:** Includes Salmon, Wetlands, and Wetlands.



Thank you for participating in this survey of human wellbeing in the Puget Sound, funded by the Puget Sound Partnership. It should take less than 10 minutes of your time. Please complete the brief survey and return it to the researcher using the pre-paid envelope. Participation is voluntary, and your responses are completely confidential.

If you have any questions about the survey, please contact Principal Investigator Kelly Biedenweg by e-mail at [Kelly.biedenweg@oregonstate.edu](mailto:Kelly.biedenweg@oregonstate.edu).

The results of this survey will be reported in the Puget Sound Partnership's State of the Sound in 2019. Please visit the following website for more details: <http://www.w.psp.wa.gov>

# Integrating Human Wellbeing and Ecosystem Services

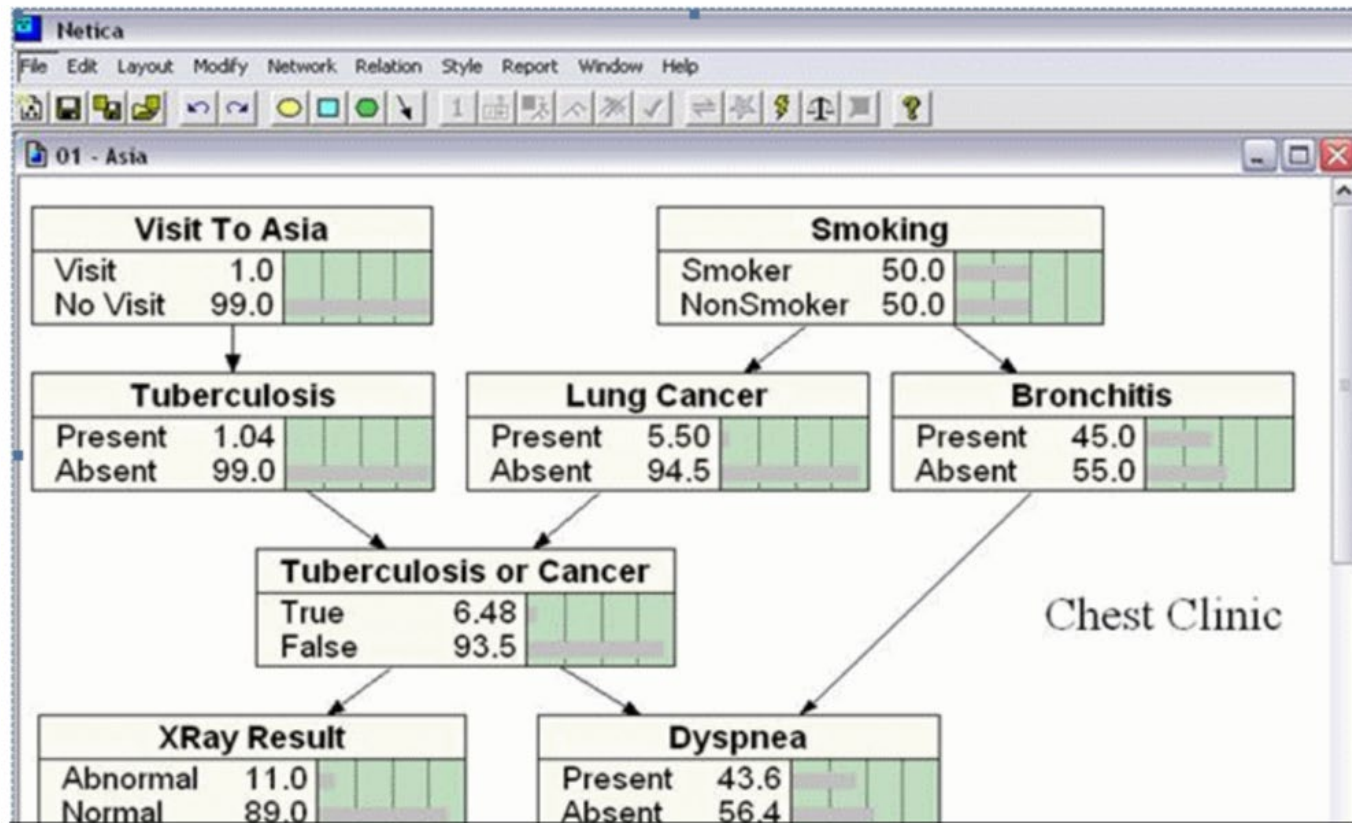
- Open Standards Logic Models
- Cost-Benefit Analysis
- Public survey
- **Consequence Tables**

Vital Sign	Strategy A	Strategy B
Chinook Salmon	200x	100x
Economic Vitality	\$5.4 million	\$8.7 million
Land Cover Change (Forests)	same	-1,000 ha
Cultural Wellbeing	increase	same



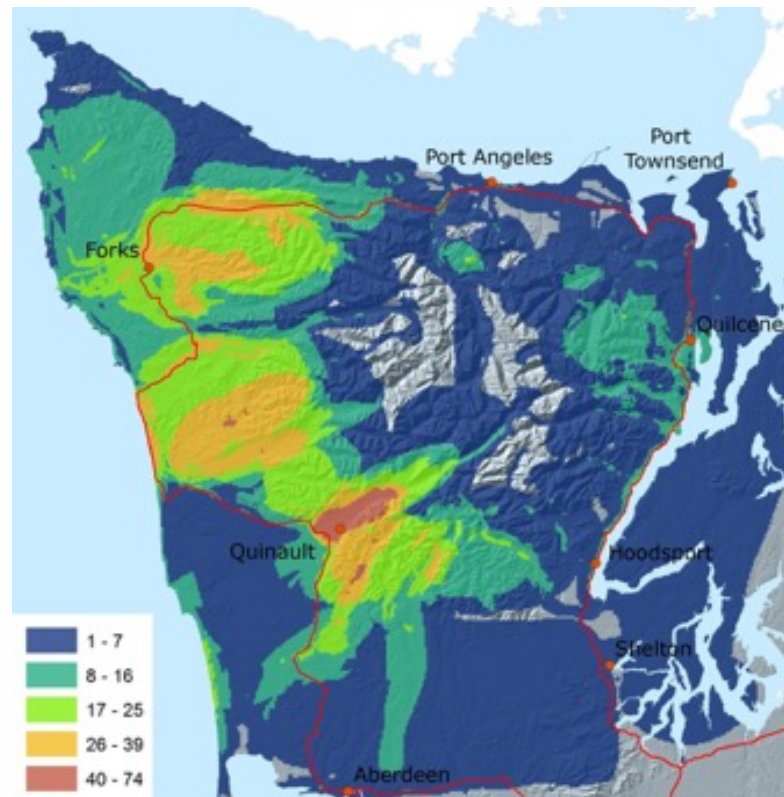
# Integrating Human Wellbeing and Ecosystem Services

- Open Standards Logic Models
- Cost-Benefit Analysis
- Public survey
- Consequence Tables
- **Bayesian Belief Networks**



# Integrating Human Wellbeing and Ecosystem Services

- Open Standards Logic Models
- Cost-Benefit Analysis
- Consequence Tables
- Bayesian Belief Networks
- **Spatially-explicit impact overlays**



# Structured Decision Making

## REVIEW

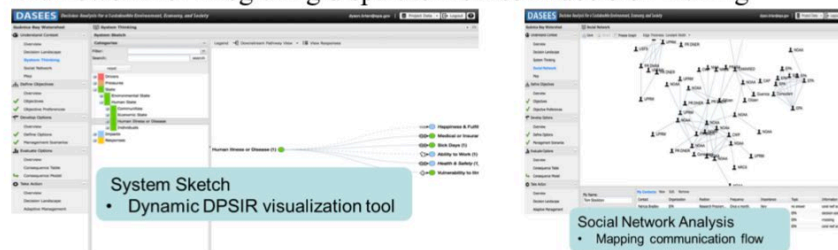
### Decision Support Frameworks and Tools for Conservation

Mark W. Schwartz<sup>1</sup>, Carly N. Cook<sup>2</sup>, Robert L. Pressey<sup>3</sup>, Andrew S. Pullin<sup>4</sup>, Michael C. Runge<sup>5</sup>, Nick Salafsky<sup>6</sup>, William J. Sutherland<sup>7</sup>, & Matthew A. Williamson<sup>1</sup>

**Actionable Science for Communities**  
**DASEES**  
(Decision Analysis for a Sustainable Environment, Economy, and Society)  
**HC 1.61 – Decision Science and Support Tools, Task 5 – Next Generation Tools**  
Brian Dyson, National Risk Management Research Laboratory

#### Highlights

- Web-based functionality allows geographically dispersed groups to work on a problem at the same time.
- Progress Tracking provides a “TurboTax” user experience
- Project-based implementation scope is flexible across multiple scales, locations, and issues
- Common platform for documenting, and sharing decision data and records
- Integrated, easy to use, system visualization tools
- Framework for integrating disparate metrics in decision making



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Dr. Kari Stiles  
Adaptive Systems Manager

Dr. Nathalie Hamel  
Vital Signs Reporting Lead

Dr. Scott Redman  
Science & Evaluation Director

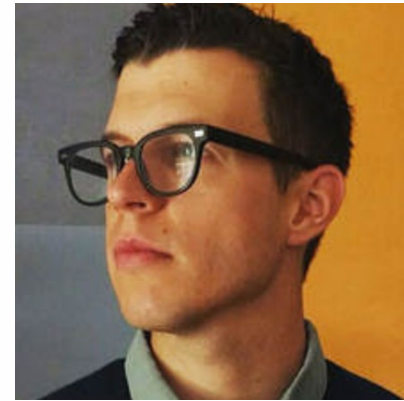
**Local &  
Regional**



Dr. Kelly Biedenweg  
Principle Investigator



Dr. Katharine Wellman  
Economist



Dr. David Trimbach  
Project Manager



Whitney Fleming  
PhD student

**Practitioner  
& Academic**

# Thank you!

Leah Kintner

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December 6, 2018



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Hood Canal Coordinating Council  
Bonneville Environmental Fndn