

**WSP**  
**Strategy 3 Implementation**  
**Approach**

**Operations Committee**

**K. Hyatt**

**Sept 27, 2009**



- **Identify origins and intent of ecosystem-based management (EBM) elements under Strategy 3 of Canada's Wild Salmon Policy (WSP).**
- **Identify general approach and progress in defining Strategy-3 content.**
- **Identify next steps for EBM development and implementation under WSP.**

## Presentation Outline

1. Background – policy direction
2. Proposed implementation approach
3. Next steps

## Wild Salmon Biodiversity

**Salmon play a key role in natural ecosystems, nourishing a complex web of interconnected species.**

**Pacific Salmon and Diversity:** Protecting diversity<sup>2</sup> is the most prudent policy for the future of wild salmon and the ecological processes that depend on them (WSP, p. 2).

**Maintenance of “habitat and ecosystem integrity”<sup>3</sup>** Serves as one of three fundamental objectives that “must be fulfilled” “to achieve the outcome expressed in the policy goal for wild salmon” (WSP, p. 9).

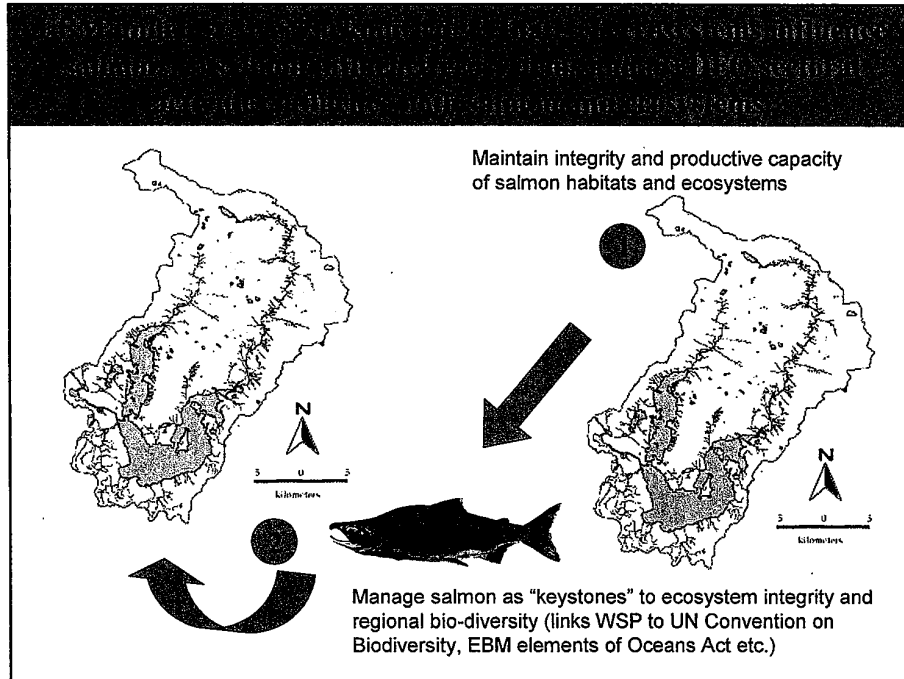
**WSP Ecosystem “Values”** include the biodiversity of wild salmon, the species that depend on them and the “integrity<sup>3</sup>” of the ecosystems they rely on.

**DFO’s Commitment** is to “progressively consider ecosystem values in salmon management.” Strategy-3 will “provide the scientific understanding and technical capacity to include ecosystem values over time” (WSP, p.23).

1. An ecosystem is defined as “a community of organisms and their physical environment acting as an ecological unit” (WSP 2005 p. 38).

2. Defined as per the 1992 UN Convention on Biodiversity.\*

3. Ecosystem “integrity” is undefined in the policy but involves physical, chemical and biological elements along



### Step 3.1 of WSP: Identify indicators to monitor status of freshwater ecosystems.<sup>1</sup>

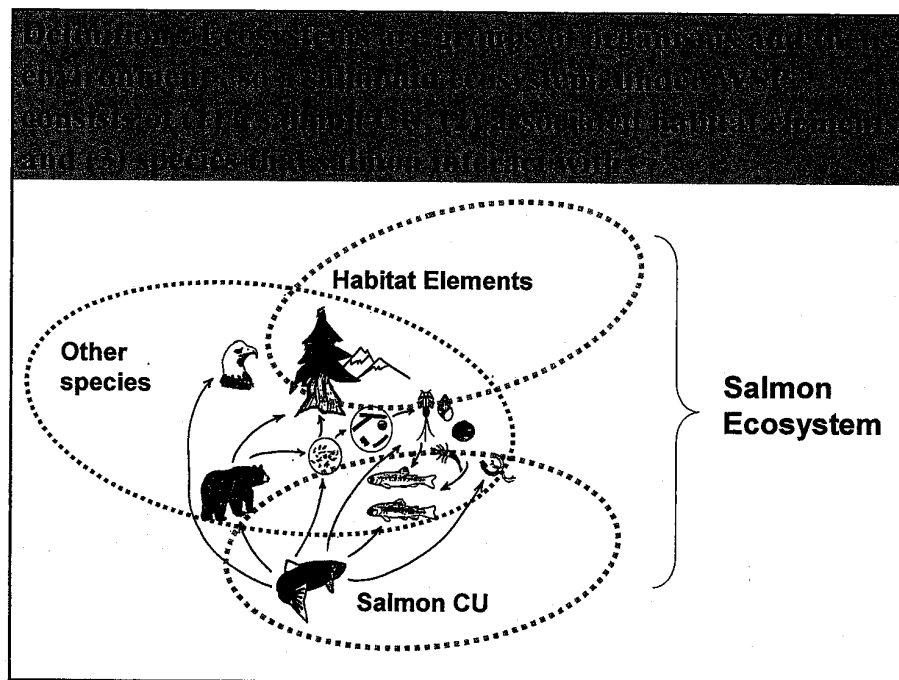
- Identify key indicators (physical, chemical, biological) of the current and potential state of lake and stream ecosystems (diversity of organisms, productivity etc.).
- Integrate content and assessment frameworks for WSP Strategies 2 (habitat) and 3 (ecosystem values and indicators).
- Implicitly, integrate monitoring under Steps: 1.3 (CU status), 2.3 (habitat), 3.1 (freshwater ecosystem status) and 3.2 (marine conditions).
- Identify knowledge gaps requiring further research.<sup>2</sup>

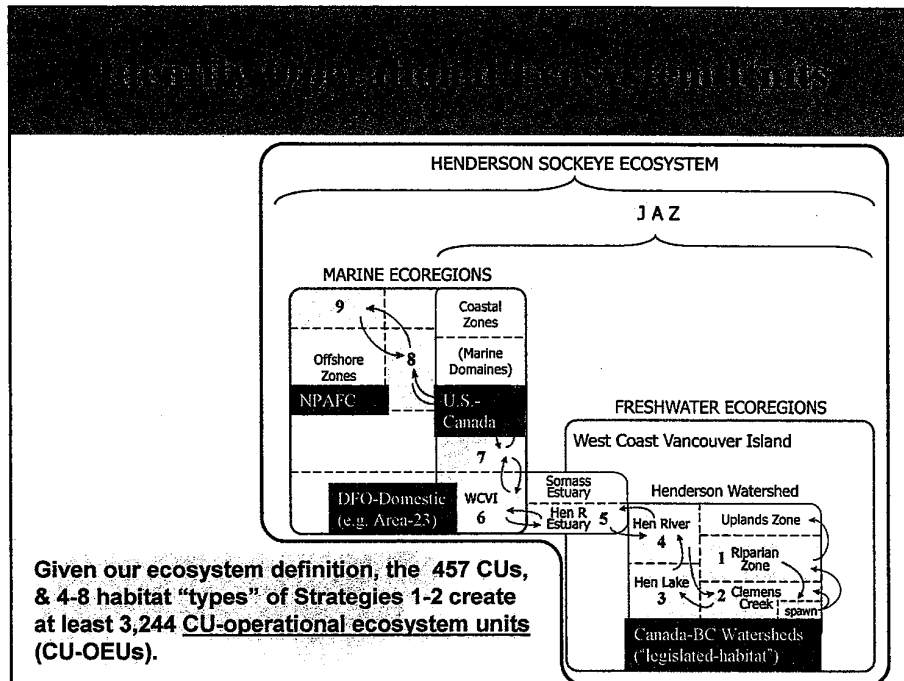
### Step 3.2 of WSP: Integrate climate and ocean ecosystem information into annual salmon management processes.<sup>3</sup>

- Integrate the freshwater monitoring program from 3.1 "with programs investigating variability in climate and ocean conditions to understand the consequences (of variations in freshwater and marine ecosystems) for salmon production".

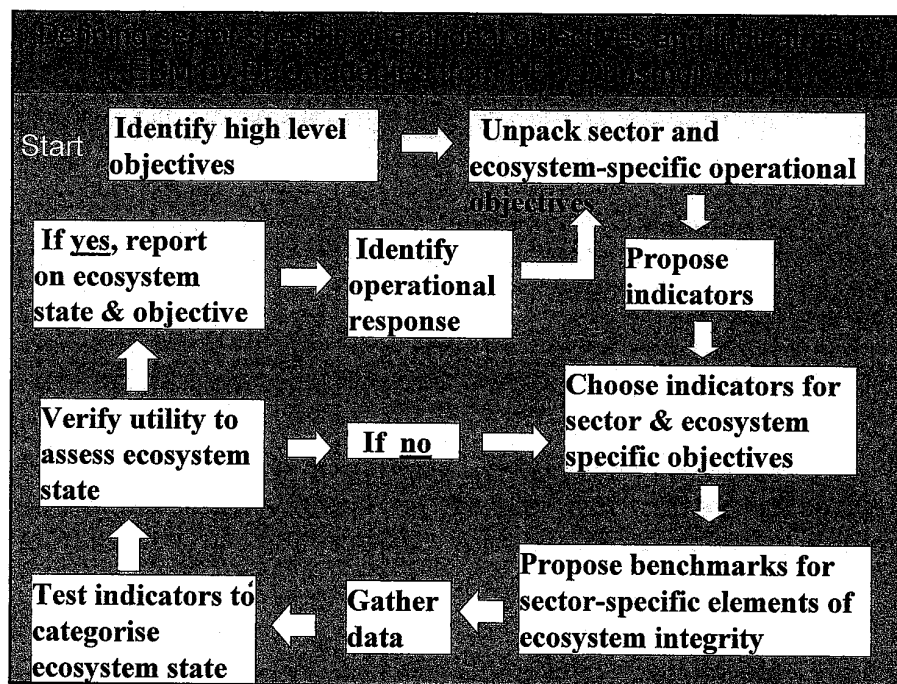
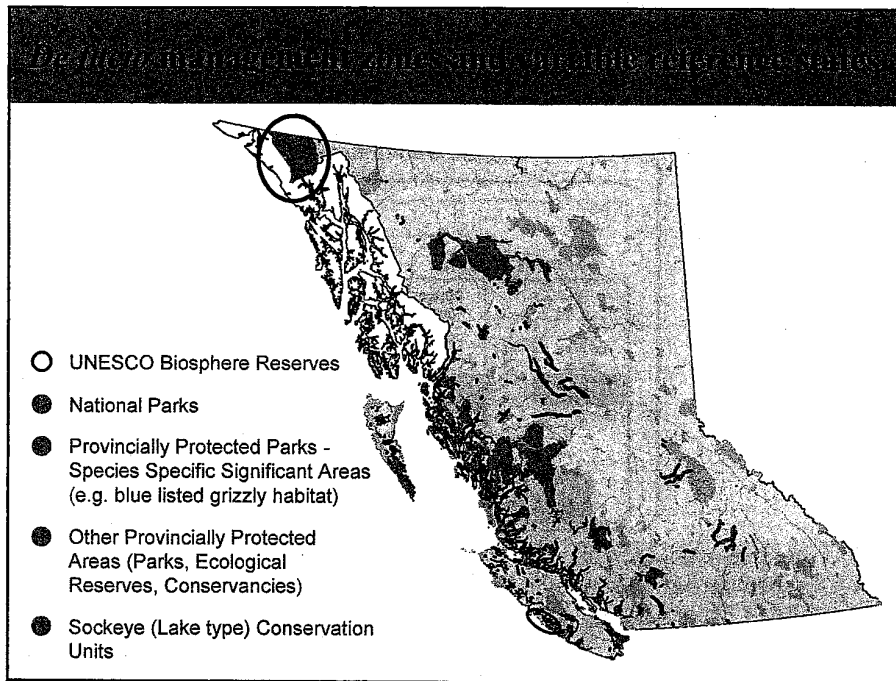
## Approach to developing Ecosystem Objectives and Indicators

1. Define operational ecosystem units
2. Determine reference state
3. Identify sector specific ecosystem objectives with Sectors, FN and Stakeholders
4. Develop Indicators
5. Develop Monitoring plan

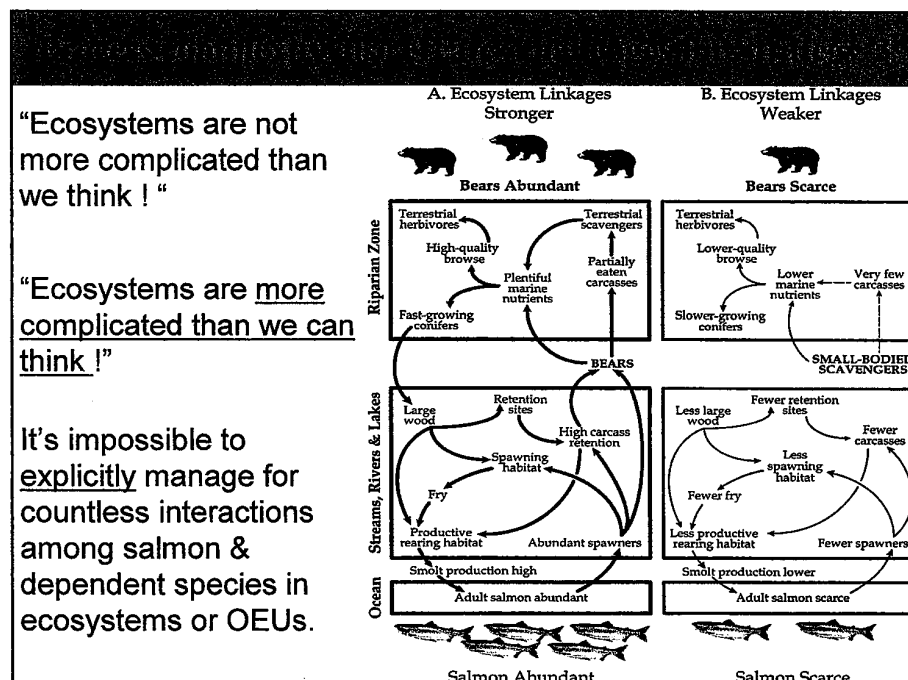


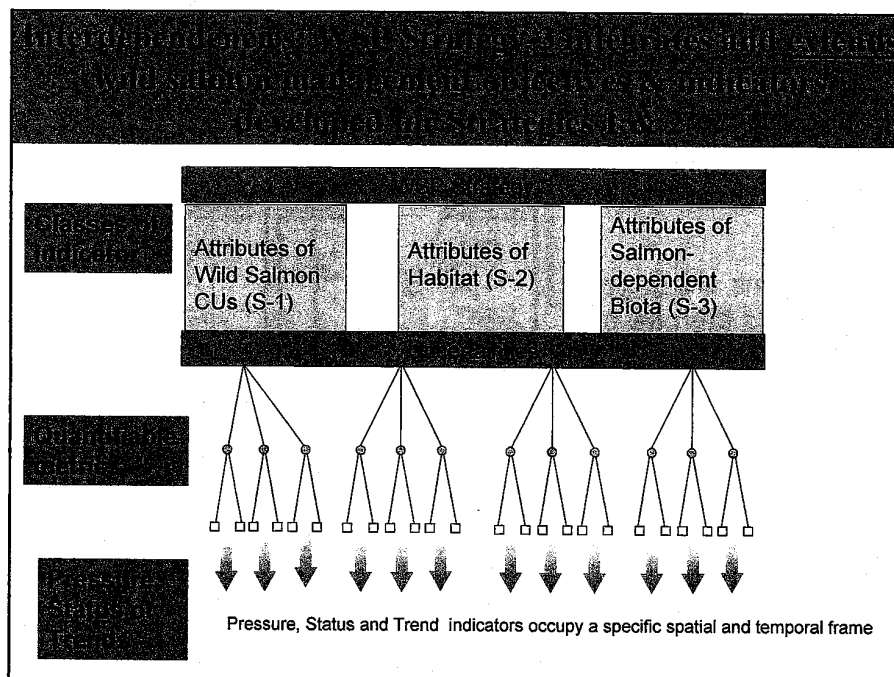
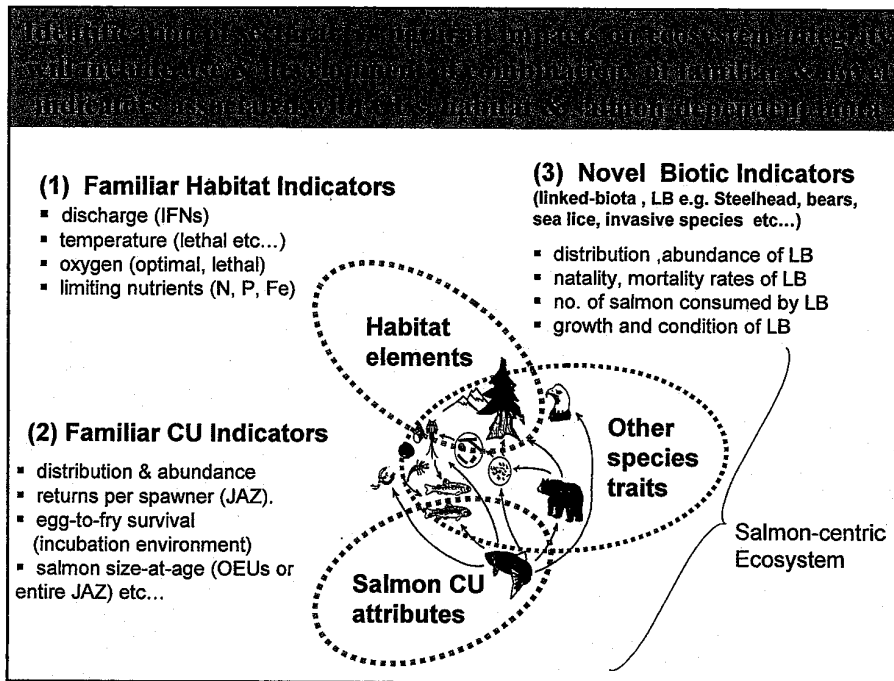


- **Historic, "natural" ecosystem:** state characterized by "unimpaired," pre-industrialized conditions (< 1900s, e.g. Gwaii Haanas National Park).
- **Current, but altered, ecosystem:** a current state exhibiting an acceptable range of desirable conditions (e.g. Barkley Sound ecosystem).
- **Future, altered ecosystem:** state reflecting movement towards a more desirable range of conditions than the current state (e.g. Okanagan sub-basin).

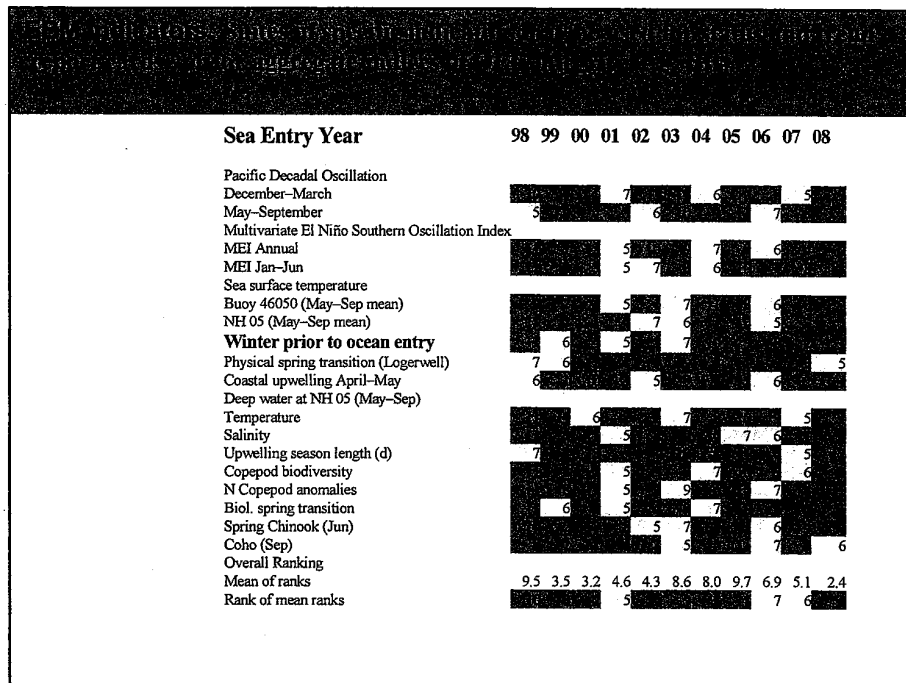


Hatchery Operational Objectives	Potential Indicators
1.0 Conserve ecosystem structure by managing distribution, abundance and production of hatchery-origin salmon so ecosystem structure remains within a <u>specified</u> * (i.e. "preferred") reference range.	1.0 Number and locations of hatchery facilities, adult salmon taken for brood-stock and numbers of juvenile salmon released (pressure and/or response indicators).
2.0 Conserve ecosystem biophysical and biochemical structure by managing hatchery activities and practises so hydrologic and water quality conditions supporting wild salmon near a given hatchery site remain within a desirable reference range	2.0.1 Diversions/withdrawals of water relative to mean annual discharge and base-flow for hatchery-associated stream(s).  2.0.2 Hatchery effluent quality (temperature, nutrient content, pathogen titre) relative to upstream and downstream surface water conditions (BACI design).









- Is “evolutionary not revolutionary” but does represents a shift in thinking for DFO staff
- The approach builds on existing monitoring and management approaches.
- The number of indicators will be practical and affordable.
- The approach is consistent with requirements of Marine Stewardship Certification.
- The approach has First Nation and ENGO support based on consultations to date.
- May be additional opportunity in the Skeena to implement watershed governance which could include outside funding.

To engage DFO in “progressively considering ecosystem values in salmon management” & “providing scientific understanding & the technical capacity to include ecosystem values over time” we will:

- complete an EBM discussion paper & a peer review workshop (Jan 2010).
- develop/test/refine WSP-EBM concepts\* in “pilot” areas to focus on area-specific sectoral objectives and priority freshwater CU-OEUs (e.g. Barkley Sd sockeye and Chinook).
- identify suites of simple or aggregate indices as informative and affordable indicators of progress in meeting EBM objectives in priority CU-OEUs (e.g. in the BkSd pilot & a 2010 workshop to integrate ocean factors into salmon survival predictions).
- identify information gaps impeding effective EBM and research