

Puget Sound Partnership
Steps to Adaptive Management and Monitoring Program
February 27, 2008

Purpose of March 3 Leadership Council Discussion

- Bring Leadership Council up-to-date on how a well designed program of adaptive management can help provide the essential scientific information (through monitoring and research) to address problems in Puget Sound
- Seek Leadership Council guidance on adaptive management, and the scope of monitoring and research as key components of the Action Agenda

Context & Overview

Why develop an Adaptive Management Program that includes an Integrated Monitoring Program??

- To be able to incorporate new and better information about the Puget Sound ecosystem and public priorities into our management
- To describe how the Partnership will “revise implementation strategies every two years and revise the Action Agenda as needed” [RCW 90.71.310(4)]
- To describe how the Partnership might design and use an adaptive management and monitoring program to support efforts to “determine whether implementing entities are taking actions consistent with the action agenda and achieving the outcomes identified in the action agenda” [RCW 90.71.350(2)]

What would a successful program offer?

A coordinated and integrated (across disciplines) system for collecting, analyzing, and managing relevant information (ecological, programmatic, and other) that:

- feeds the Partnership’s accountability system
- fuels adaptations to new knowledge and insights gained through systematic evaluation of the outcomes of management decisions that affect the Puget Sound ecosystem
- supports communication about the ecosystem (e.g., environmental goods and services, functions, status, trends, cause-effect relationships), e.g., through the publication of
 - State of the Sound Report, includes “findings arising from the assessment and monitoring program” – November 1, 2009 / biennial
 - Puget Sound Science Update – April 2010 / as needed, and
 - Many other forms of communication

Where are we now?

- Puget Sound Partnership's needs from a monitoring program are generally understood but specifics have not yet been fully articulated
- A number of relevant existing monitoring and research studies, information management, and coordination efforts may address some aspects of the Partnership's needs
- Comprehensive, ecosystem-based adaptive management plans and monitoring programs already exist for some sectors of the Puget Sound—such as watershed and forest health (on federal lands), salmon ecosystems, and nearshore
- Resources to develop the Partnership's adaptive management and monitoring program are available from (a) Science Panel; (b) NOAA's NW Fisheries Science Center integrated ecosystem assessment and indicators development projects; (c) Action Agenda management team and topic forums; (d) Puget Sound Monitoring Consortium; and (e) Partnership staff and contractors. We can also rely on the experiences of others (e.g., "lessons learned") and published literature.

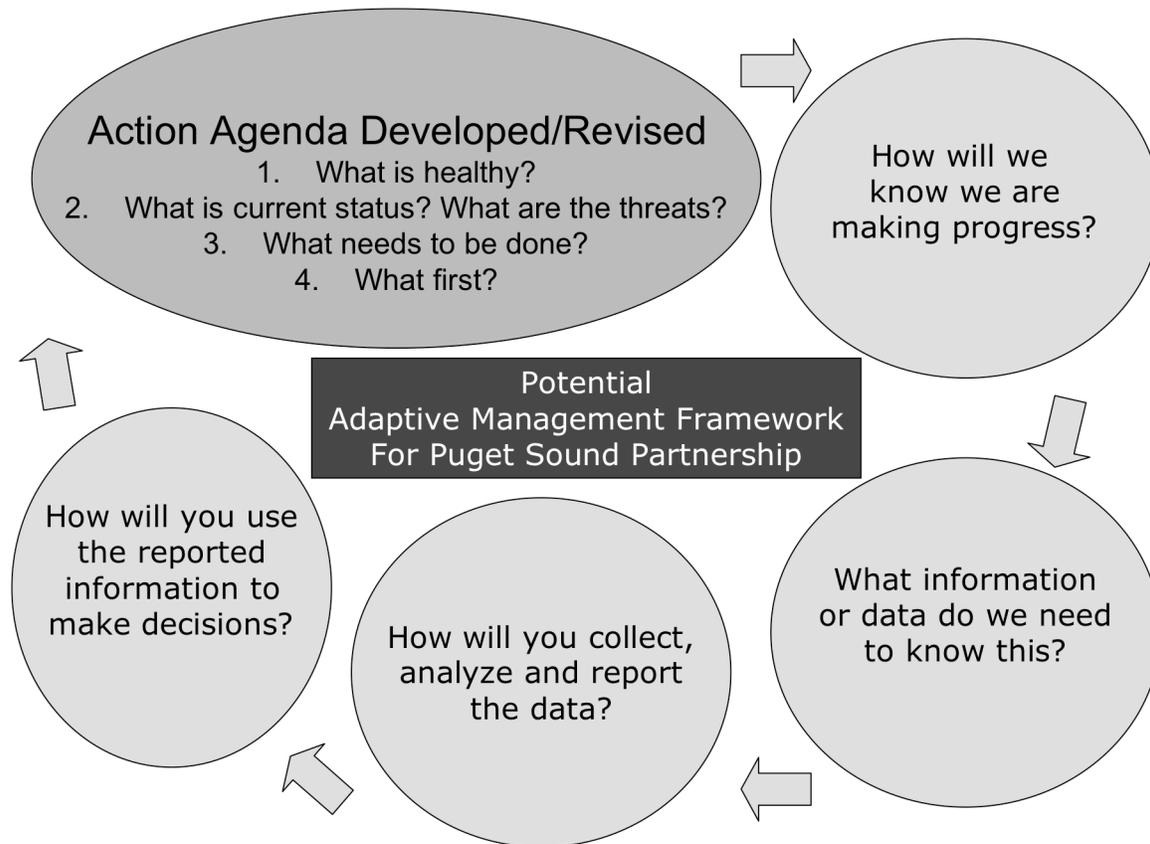
Thoughts from Science Panel Discussion

Science Panel discussion on February 26 included the following concepts to guide development of adaptive management and monitoring:

- Scientific information relevant to ecosystem-based management can come from integrating insights from monitoring, modeling, and research
- Each of the four types of monitoring (discussed below) must be included somewhere in the Partnership's Strategic Science Program
- Strategic Science Program outline and design should be informed by lessons learned in Puget Sound and in other large ecosystem management efforts
- Science program components, including monitoring and modeling, should build upon existing components and networks
- Monitoring should be driven by management questions and should include testable hypotheses about those inherent relationships between management actions and outcomes significant to the health of Puget Sound.
- Information management and access to results and data should be readily available and transparent

Adaptive Management Framework

The framework developed for adaptive management of Puget Sound Chinook Recovery (from Ecosystem Management Initiative, U of Michigan) can be adapted to:



Types of Questions That Can be Answered by Monitoring

Implementation and compliance

- Are remedial and protective actions occurring as intended?
- Are responsible entities meeting commitments and expectations?

Status and trends

- What is the current condition and trends over time of some diagnostic component of the Puget Sound ecosystem?
- What is the status of threats to a healthy condition?
- How are condition and threats changing?

Effectiveness

- How effective are protective and remedial actions and strategies in making positive changes to diagnostic indicators, over time and space?
- Are actions and strategies delivering desired outcomes?

Validation

- How do ecosystem components interact?
- How do ecosystem components respond to threats and management?
- What factors contribute to changes observed in ecosystem condition?
- What are the characteristics of a resilient, healthy ecosystem?

Possible Approach for Developing Scope of Partnership's Adaptive Management and Monitoring Program

What follows are some early ideas of how the Partnership might use the adaptive management framework previously adopted for Puget Sound Chinook Recovery. Potential steps are shown as bulleted items to address each question in the framework.

Staff will work with others to: (1) organize these items into a coordinated set of tasks; (2) continue coordination with the Integrated Ecosystem Assessment, the Puget Sound Monitoring Consortium, the Washington Monitoring Forum, and Action Agenda development; and (3) get guidance and decisions from the Science Panel, Ecosystem Coordination Board, and Leadership Council to ensure that we have scoped and described our adaptive management and monitoring approach as part of the September 2008 Action Agenda.

1. How will we know we are making progress?

- Identify "evaluation questions" that topic forums (and stakeholder caucuses and action area groups) want to ask about the implementation and expected outcomes of Action Agenda strategies and actions.
- Develop approach to setting priorities for evaluation
- Apply prioritization method to identify priority "evaluation questions"

2. What information or data to do we need to know if we are making progress?

- Review provisional indicators to identify those that could be used to answer priority evaluation questions. Determine which indicators apply to which type of monitoring used (e.g. outcome indicators for status and trends monitoring; input indicators to help establish cause and effect relationships).
- Define specific objectives for each ecosystem goal, and identify hypotheses that help frame the approach to monitoring, research and modeling.
- Define critical levels (e.g., potential milestones, benchmarks, triggers) for key indicators

- Identify additional information – e.g., about program implementation and effectiveness – needed to answer priority evaluation questions

3. How will we collect, analyze and report the data?

- Ecosystem monitoring and assessment
 - Review ongoing ecosystem monitoring and assessment programs to identify existing sources for key indicators and other information relevant to priority evaluation questions.
 - Design and develop monitoring and assessment efforts to provide ecosystem information relevant to priority evaluation questions but not currently available
- Accountability information
 - Review performance monitoring and program management information systems to identify existing sources of accountability information
 - Develop data collection and/or analysis to provide accountability information not available from existing systems and programs
- Information management
 - Review information management systems and networks to identify models or hosts for Partnership systems
 - Design and develop system from existing and/or new elements
 - Arrange the delivery of pertinent information and analyses from existing and new programs appropriate targets
- Reporting
 - Devise approaches by which “State of the Sound” and “Puget Sound Science Update” reports will be produced
 - Devise processes for reporting to Partnership leaders (LC, ECB, SP) and implementers

4. How will we use the reported information to make decisions?

- Triggers and responses
 - Obtain scientific and programmatic input about possible trigger points and strategy and program responses
 - Discuss and decide upon trigger points and actions to be taken if/when trigger point is reached
- Partnership processes
 - Discuss and decide upon processes for Partnership leaders and implementers to receive trigger information and ensure accountability for appropriate responses