

Monitoring and evaluation designs (continued)

iii) Hatcheries

Although hatcheries are used extensively as a management tool in the Columbia River Basin, considerable uncertainty remains as to the overall benefits and risks of hatchery programs.

CSMEP's Hatchery workgroup has focused on hatchery effectiveness questions that require broadscale sampling designs:

1. What is the distribution and magnitude of hatchery fish straying into natural populations?
2. What is the relative reproductive success of naturally spawning hatchery fish and natural origin fish?



iv) Habitat Actions

Habitat restoration actions are considered a cornerstone of recovery strategies for Columbia River Basin fish stocks. There is a need to determine the effectiveness of these actions for increasing salmonid survival rates and production.

CSMEP's Habitat workgroup developed a "question clarification process," which can be used to develop watershed-specific monitoring designs for evaluating the effectiveness of different habitat actions. They have applied this approach within the upper Salmon River in Idaho.



v) Harvest

Harvest monitoring is essential in limiting impacts to ESA-listed stocks in economically and culturally important fisheries.

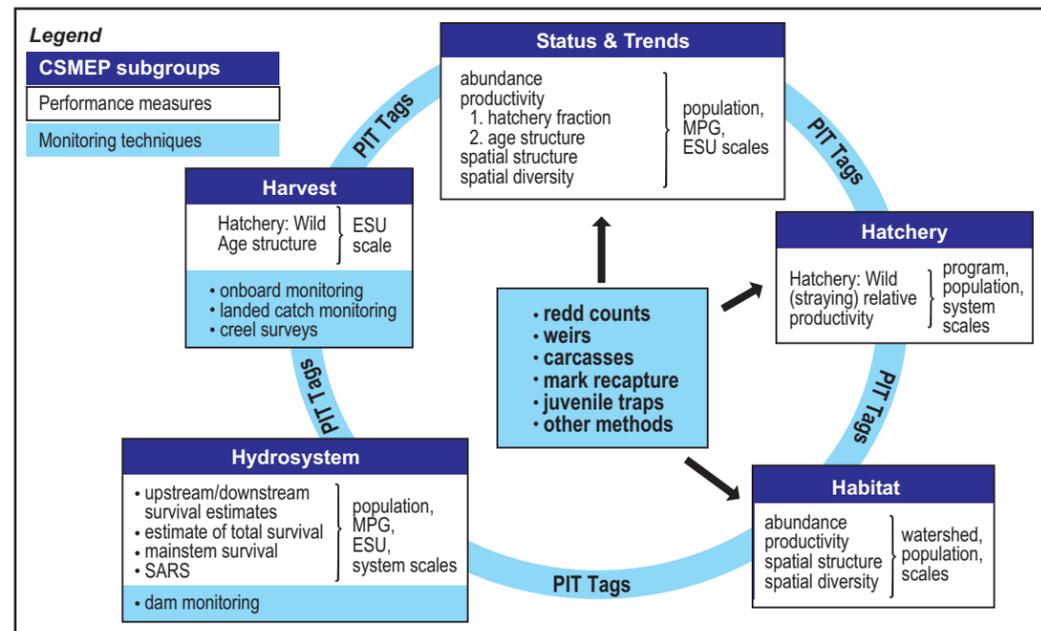
CSMEP's Harvest workgroup has focused on developing monitoring designs to answer two general harvest management questions:

1. What are the inseason estimates of run size and escapement for each stock management group (target and non-target) and how do they compare to preseason estimates?
2. What is the incremental target and nontarget harvest, and when does it reach allowable limits?



Monitoring integration

The five CSMEP workgroups (Status and Trends, Hydrosystem, Harvest, Habitat, Hatchery) are seeking to generate improved cost and analytical efficiencies through integrated designs. Integration of M&E across scales and topic areas is a challenge faced by all subbasins. The results from CSMEP's work on integrating status & trends and action effectiveness monitoring in the Snake River Basin will benefit planning efforts throughout the Columbia River.



CSMEP is working to integrate status & trends M&E with harvest, hydrosystem, habitat and hatchery action effectiveness M&E, across multiple spatial scales.

The future of CSMEP

CSMEP has a key role in linking technical analyses to the programmatic and policy level decisions required to improve implementation of M&E and associated data management for the Columbia River Basin. CSMEP represents a unique forum for the cross-fertilization of M&E ideas among federal, state and tribal fish agency staff. CSMEP has grown into a cohesive

team of analysts and biometricians with a clear understanding of the issues involved in developing more efficient, integrated approaches to M&E. CSMEP will continue working with other Columbia River Basin entities to resolve the multitude of technical design elements required to make an integrated M&E framework a reality.

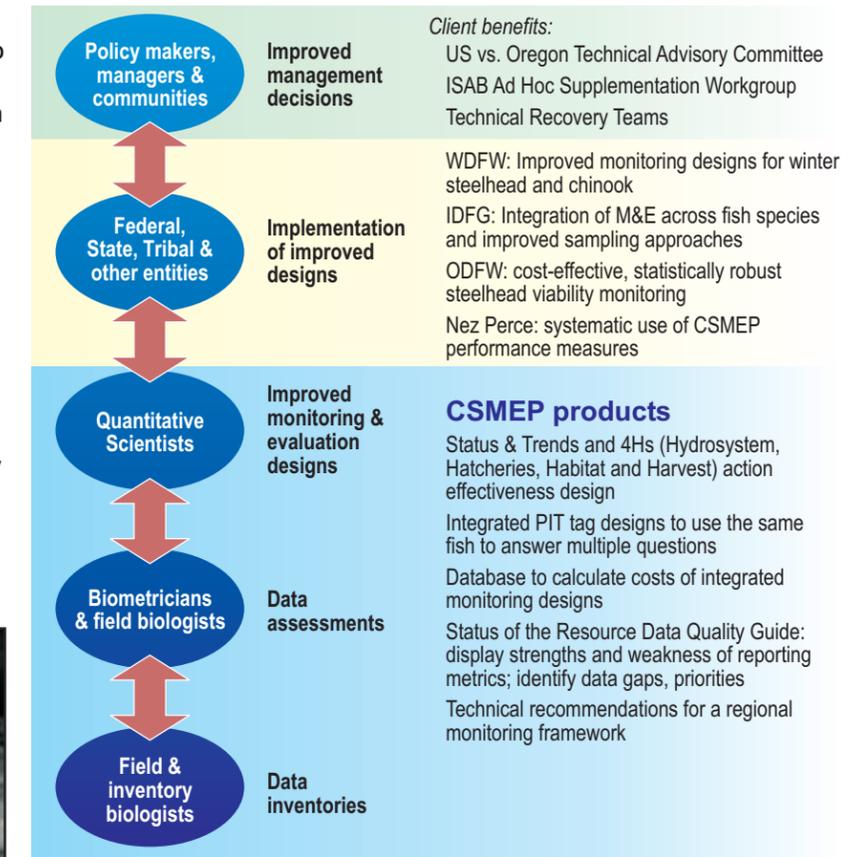


Collaborative Systemwide Monitoring and Evaluation Project

A collaborative partnership of biologists and quantitative scientists working to improve agency monitoring and evaluation of fish populations in the Columbia Basin

The Collaborative Systemwide Monitoring and Evaluation Project (CSMEP) is a bottom-up effort to build consensus across multiple agencies. It aims to improve the quality, consistency and focus of fish population and habitat data to answer key monitoring and evaluation (M&E) questions relevant to major decisions in the Columbia River Basin. CSMEP is considered essential to developing a regional monitoring and evaluation framework that will be widely accepted and implemented by state and tribal fish and wildlife managers.

CSMEP was initiated in 2003 and is administered by the Columbia Basin Fish and Wildlife Authority (CBFWA), with the collaborative participation of key federal, state and tribal fish and wildlife agencies in the Basin, as well as several independent experts. It is this broad participation which is the strongest feature of CSMEP.



Relationship of CSMEP to monitoring efforts in the Columbia Basin.

CSMEP goals

1. Document, integrate, and make available existing monitoring data on listed salmon, steelhead, bull trout and other fish species of concern.
2. Assess strengths and weaknesses of existing data for answering management questions.
3. Collaboratively improve monitoring and evaluation designs.
4. Work with agencies to implement designs that can provide better input to key decisions in the Columbia River Basin.

CSMEP participants

Agencies

Columbia Fish and Wildlife Authority (CBFWA)
 US Fish and Wildlife Service (USFWS)
 NOAA Fisheries
 Columbia River Intertribal Fish Commission (CRITFC)
 Bonneville Power Administration (BPA)
 Oregon Department of Fish and Wildlife (ODFW)

Washington Department of Fish and Wildlife (WDFW)

Idaho Department of Fish and Game (IDFG)

StreamNet

Nez Perce Tribe

Confederated Tribes of the Colville Reservation

Yakama Indian Nation

Confederated Tribes of the Umatilla Indian Reservation

Consultants

ESSA Technologies Ltd. (facilitators)

Eco Logical Research

Quantitative Consultants

Paulsen Environmental Research

Western EcoSystems Technology, Inc.

CSMEP strategy

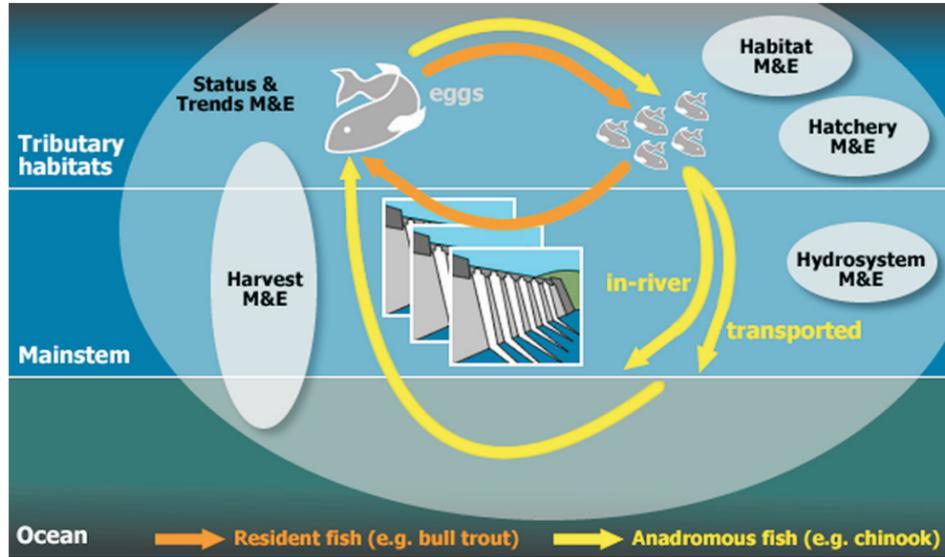
The Columbia River Basin is a vast area with a very complex set of jurisdictions and entities. While there are certainly overlapping interests, the relative priorities for M&E often differ among entities given the range of agency mandates and jurisdictional responsibilities. To meet the challenge of multiple M&E objectives, CSMEP applies these principles and processes:

1. Use decisions as the starting point for developing M&E designs, which permits rigorous assessment of the monitoring data inputs and level of precision required, and the risks of making different types of decision errors.
2. Interact with managers to ascertain priorities for different questions, scales, and species.
3. Involve federal, state, tribal and local entities in development of M&E designs for multiple scales, questions and species.
4. Explicitly address tradeoffs in design objectives and evaluation criteria.

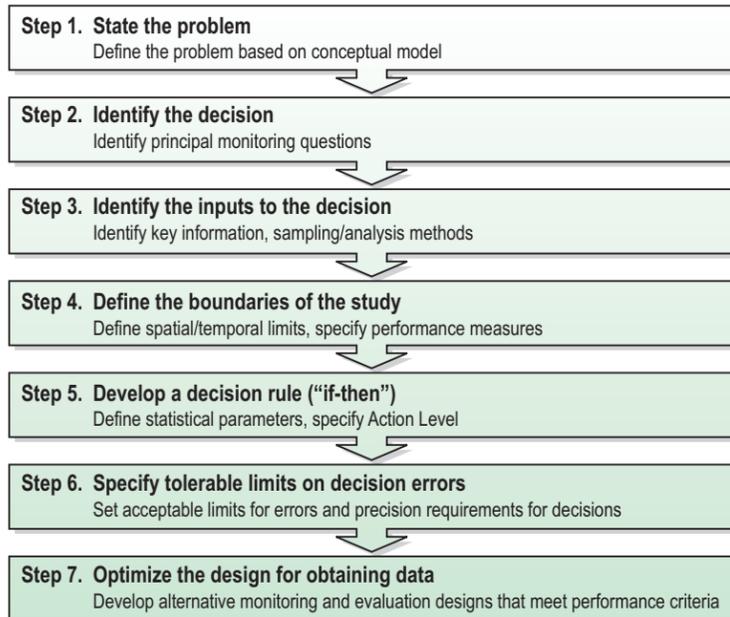
CSMEP efforts to improve Monitoring and Evaluation (M&E) designs in the Columbia River Basin

CSMEP is developing designs for monitoring the status and trends of fish populations, as well as the effectiveness of habitat, harvest, hatchery and hydrosystem recovery actions within the Columbia River Basin.

CSMEP has been using the Environmental Protection Agency's (EPA) Data Quality Objectives (DQO) process to rigorously define the connections between policy decisions in the Basin and the monitoring designs that will provide input for these decisions. CSMEP has also developed a 'question clarification' process to strengthen M&E designs in intensively monitored watersheds with habitat restoration actions.



CSMEP is developing improved M&E for Status & Trends, Hydrosystem, Hatchery, Harvest and Habitat questions, integrated across the life cycles of anadromous and resident fish.



EPA's Data Quality Objectives Process (DQO) is used to guide CSMEP's quantitative scientists in developing improved M&E designs.

CSMEP websites

CSMEP Public Website

www.cbfwa.org/csmep/

CSMEP Metadata Application

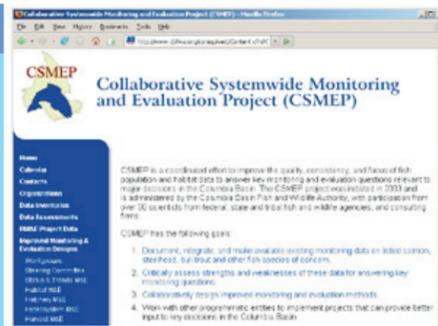
csmep.streamnet.org
(user name: csmep, password: csmep)

Status of the Resource Report

www.cbfwa.org/sotr

EPA's Data Quality Objectives Process

www.cbfwa.org/csmep/web/Content.cfm?SubContentID=3



CSMEP products

Data inventories

CSMEP inventories provide metadata summaries on fish population and habitat information available for 13 pilot subbasins within the Columbia River Basin.

These inventories are focused on fish performance measures for abundance, survival, distribution, genetics and life history. Information assembled for salmon, steelhead and resident fish can be accessed at the CSMEP Web Application maintained by StreamNet.

Data assessments

CSMEP analysts have assessed the strengths and weaknesses of each pilot subbasin's monitoring data for answering key management questions at relevant space/time scales. Strengths and weaknesses assessments are available for each inventoried subbasin on CSMEP's public website. This information is now contributing to CBFWA's Status of the Resource (SoTR) reporting for the Columbia River Basin.

Monitoring and evaluation designs

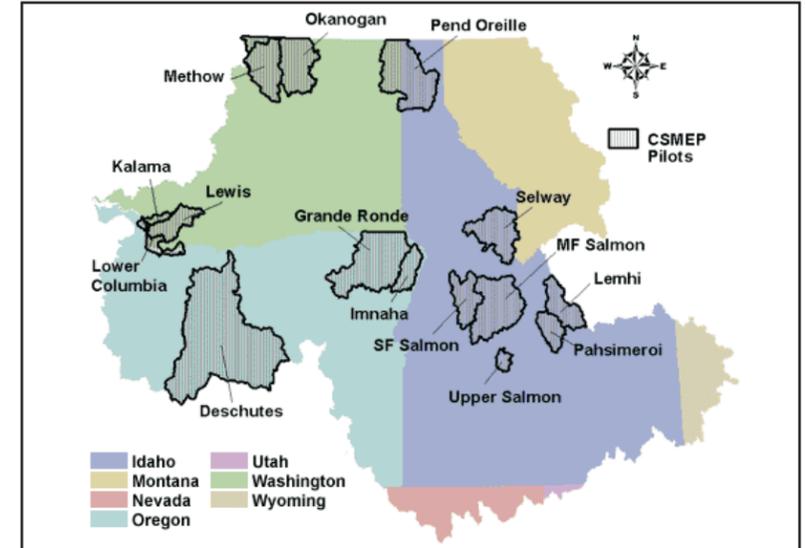
For each M&E category (status & trends; hydrosystem, hatchery, habitat and harvest action effectiveness) CSMEP workgroups have:

- evaluated current agency M&E designs
- developed low, medium and high design alternatives
- explored the strengths, weaknesses and trade-offs around each approach.

i) Status and Trends (S&T)

CSMEP's Status & Trends workgroup has focused on M&E designs for a key management question in the Columbia River Basin: Is a particular salmon or steelhead ESU considered viable under Technical Recovery Team viability criteria?

Trends in population abundance, productivity, spatial structure and diversity are the basis for this evaluation. CSMEP's Status & Trends workgroup has developed a simulation model to determine which alternative M&E designs could best provide this information for the least cost. They are currently using the Snake River spring/summer (SRSS) Chinook ESU as a test case.



CSMEP pilot subbasins in the Columbia Basin

ii) Hydrosystem

The Federal Columbia River Power System (FCRPS) is one of the most important anthropogenic factors influencing mainstem survival of listed salmon and steelhead ESUs.

CSMEP's Hydrosystem workgroup has focused on improving designs for four key hydro management questions:

1. Are smolt-to-adult return ratios sufficient to meet species recovery goals?
2. Does transportation improve survival relative to inriver passage?
3. How does annual inriver survival of spring summer Chinook and steelhead (Lower Granite to Bonneville) compare to 2000 FCRPS BiOp performance standards?
4. Does effectiveness of transportation change over the course of the season?

