



Independent Scientific Review Panel
for the Northwest Power & Conservation Council
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May 26, 2011

Presentation

An ISRP Retrospective Report: Review of the Lower Snake River Compensation Plan's Spring Chinook Program

ISRP Chair Eric Loudenslager will present findings and answer questions regarding the ISRP's Review of the Lower Snake River Compensation Plan's Spring Chinook Program. The report is scheduled for release on May 27, 2011 and will be posted on the ISRP's webpage as document ISRP 2011-14.

In 2010, the Northwest Power and Conservation Council (Council), in cooperation with the U.S. Fish and Wildlife Service, requested that the Independent Scientific Review Panel (ISRP) conduct a review of the Spring Chinook Hatchery Program of the Lower Snake River Compensation Plan (LSRCP). The LSRCP was authorized by Congress in 1976 to conduct fish hatchery operations to produce a return of 58,700 adult spring/summer Chinook salmon above Lower Granite Dam after providing 234,800 adults to fisheries in the ocean and Columbia River to replace fish lost by the construction and operation of four hydroelectric dams on the Lower Snake River. Spring Chinook for the LSRCP are reared at six hatcheries: Lookingglass, Lyons Ferry, Clearwater, Dworshak, McCall, and Sawtooth and acclimated and released at several other satellite facilities.

The ISRP's review is an evaluation of the managers' self-assessment of LSRCP spring Chinook program performance against the LSRCP goals. To conduct this review, the ISRP participated in a Spring Chinook Symposium organized by the U.S. Fish and Wildlife Service and held in Boise, Idaho from November 30 through December 2, 2010. The goal of the symposium was to evaluate the successes and failures of the LSRCP spring Chinook hatchery program since 1998 and to identify what changes in the LSRCP are warranted based on developments since 1998. The ISRP also used [program summaries](#) developed by agencies and tribes as part of the symposium, and annual reports that are publicly available through the [LSRCP](#).

ISRP Retrospective Report LSRCP spring Chinook Program

Dr. Eric J. Loudenslager

*Northwest Power and
Conservation Council*

*Whitefish, MT
June 7, 2011*



Lower Snake River Compensation Plan

1976 Congressional Authorization

Mitigate for Salmon Losses from
4 Lower Snake River Dams

15% loss per dam,
48% cumulative loss

spring/summer Chinook
fall Chinook
steelhead



Sampling Juvenile Salmon, Tucannon River

LSRCP spring/summer Chinook Program

Hatchery Production

Washington:
Lyons Ferry

Oregon:
Lookingglass

Idaho:
Sawtooth
McCall
Clearwater
Dworshak



Lyons Ferry Fish Hatchery

LSRCP spring/summer Chinook Program

1976 - Original Adult Mitigation Objectives

Project Area

- 58,700

Harvest Ocean/Lower R.

- 234,800

Commercial - 176,100

Sport - 58,700



Fishing – Yankee Fork

1990s – Conservation Objectives Added

LSRCP spring/summer Chinook Program

Planning Assumptions

SAR to Lower Granite Dam –	0.87%
Number of Smolts needed –	6,750,000
Egg to Smolt Survival –	70%
Number of eggs needed –	9,650,000



Chinook juveniles Tucannon River

Program Evaluation

In-hatchery performance

Post-release survival

Conservation Objectives

Genetic/Ecological Interactions

ISRP Questions:

Were there performance indicators?

Were they measured and reported?

Were they interpreted reasonably?



Asotin Creek

In-Hatchery Performance

Metrics:

Broodstock collection

Pre-spawning mortality

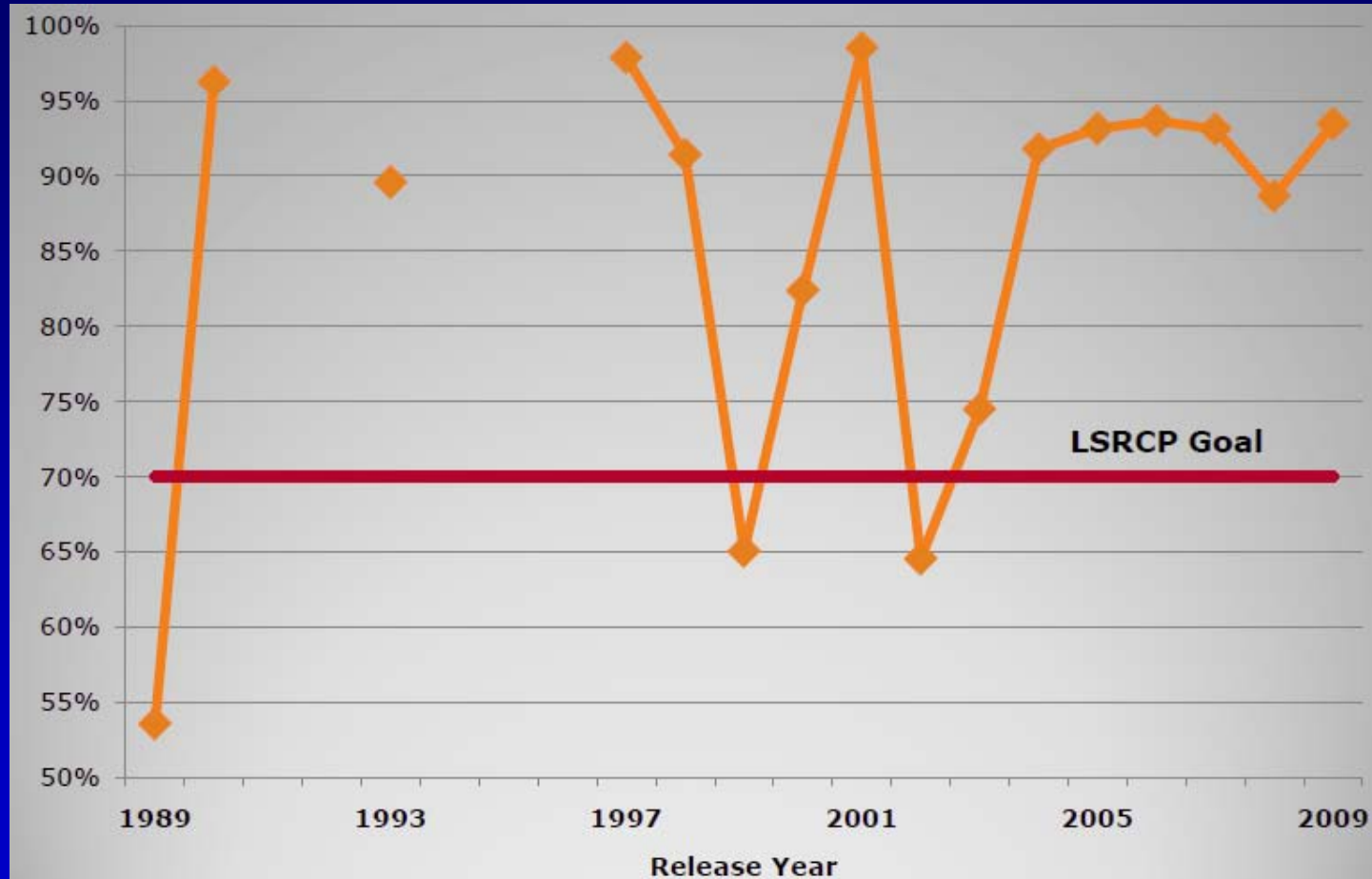
egg to smolt survival

Measured and Reported Appropriately: Yes

Generally achieved performance goals: Yes



In – Hatchery Performance



From M. Shuck, LSRCP Roll-up

Egg to Smolt Survival: Goal = 70%

In – Hatchery Performance



From M. Shuck, LSRCP Roll-up

Smolt Production: LSRCP Total

Post – Release Survival

Metrics:

Juvenile Survival to LGD

Smolt-to-Adult Survival (SAS)

Smolt-to-Adult Return (SAR)

Measured and Reported : Yes

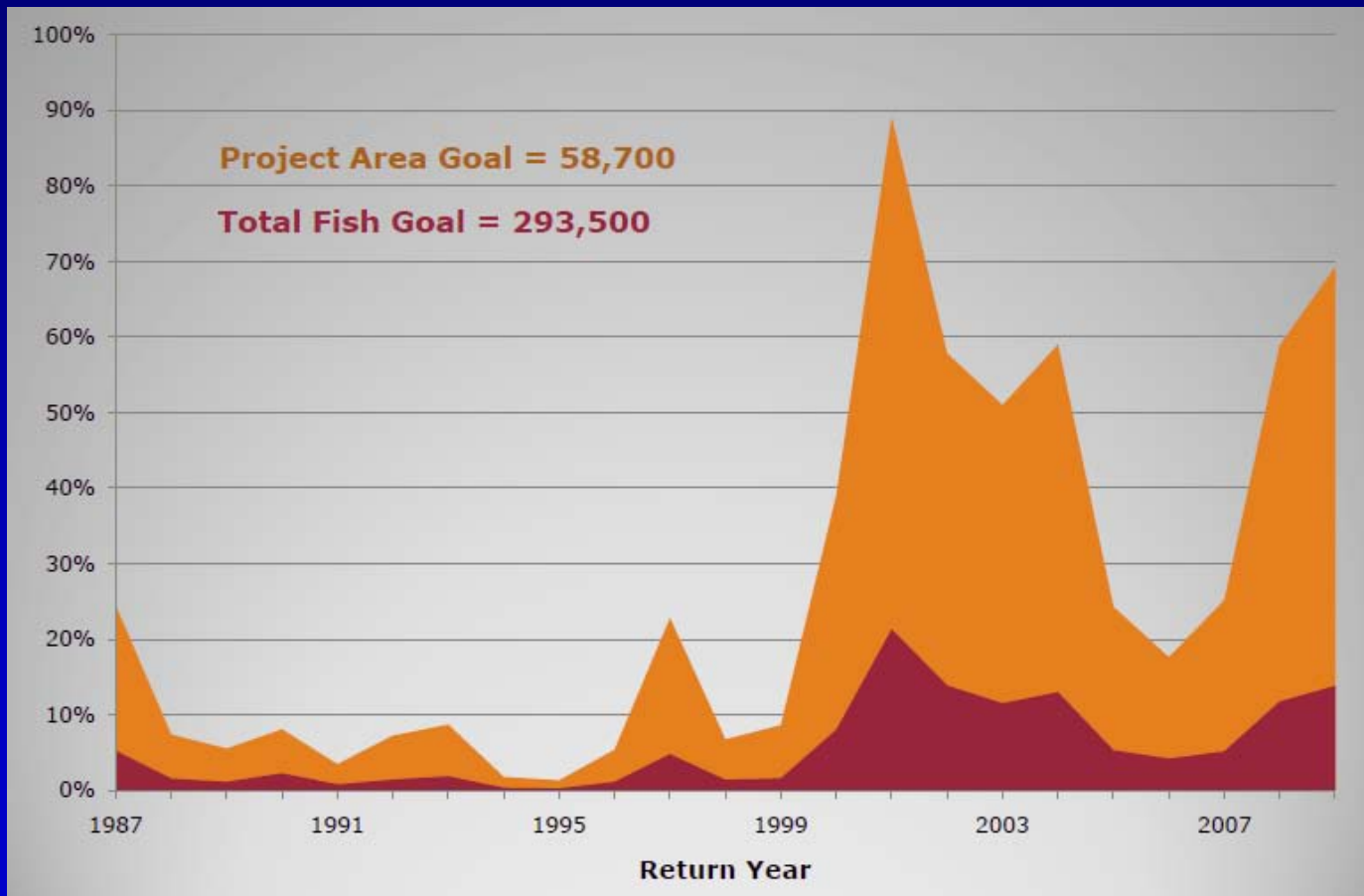
Achieved performance goals: No



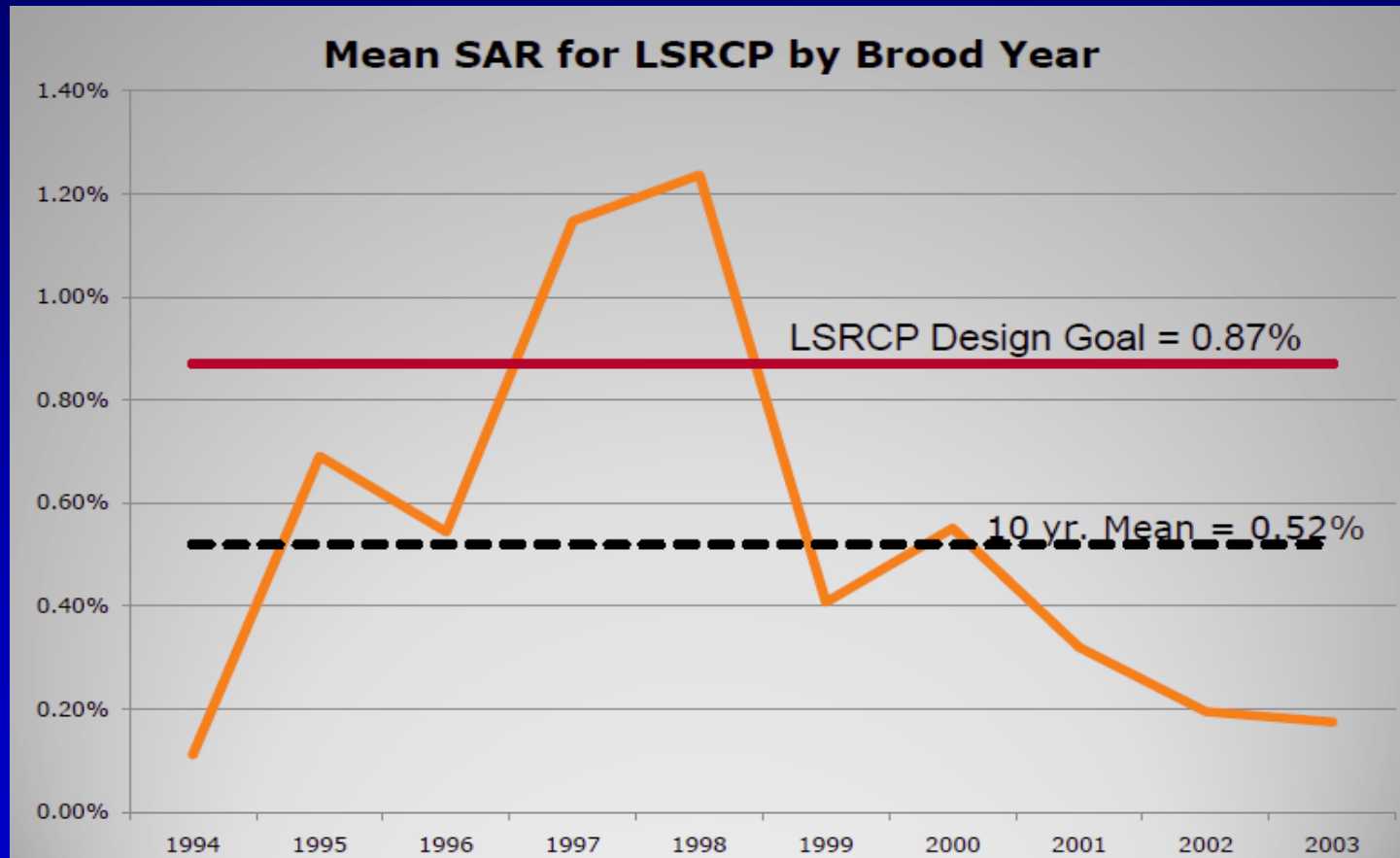
PIT tag array lower Tucannon

Post – Release Survival

LSRCP spring Chinook Adult Production



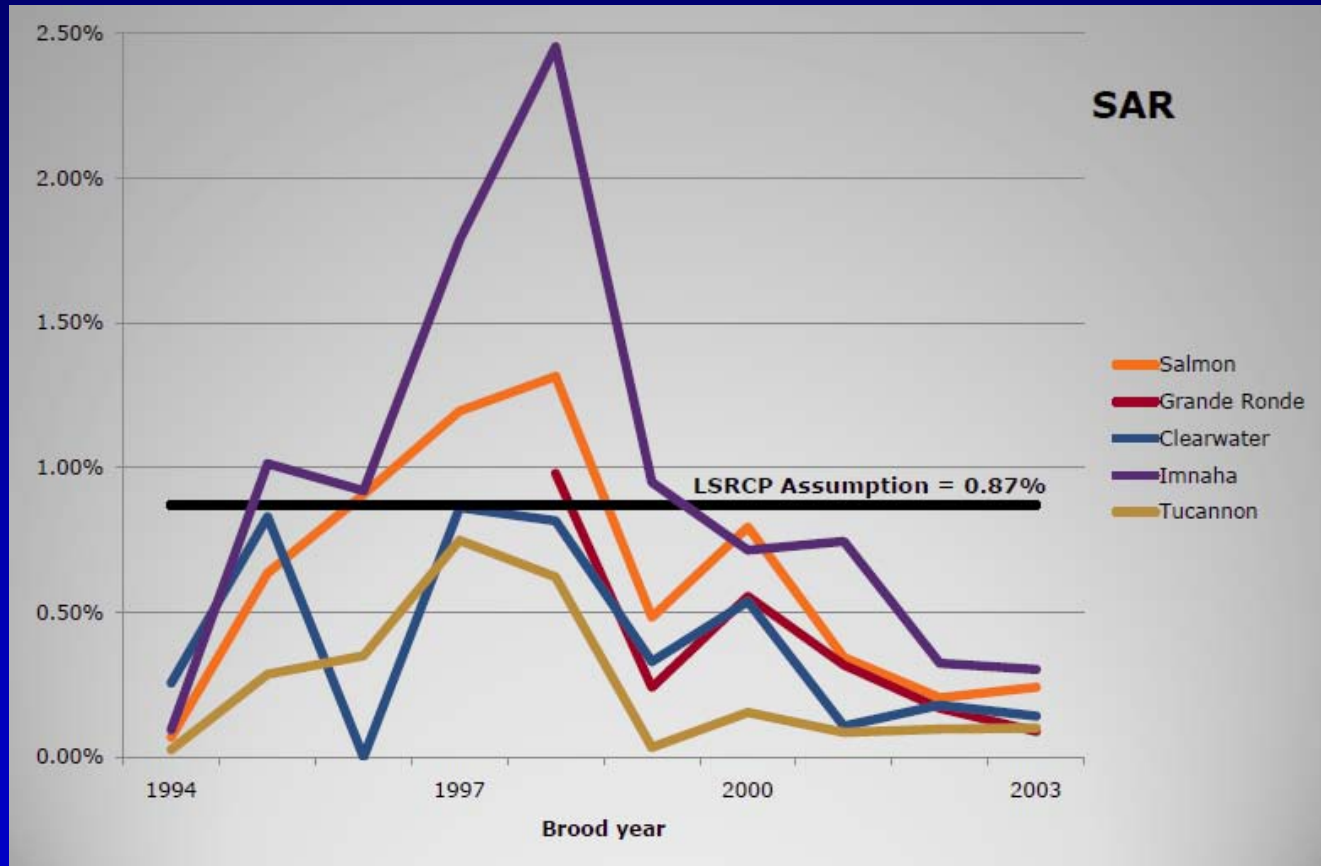
Post – Release Survival



From M. Shuck, LSRCP Roll-up

Brood Year

Post – Release Survival



From M. Shuck, LSRCP Roll-up

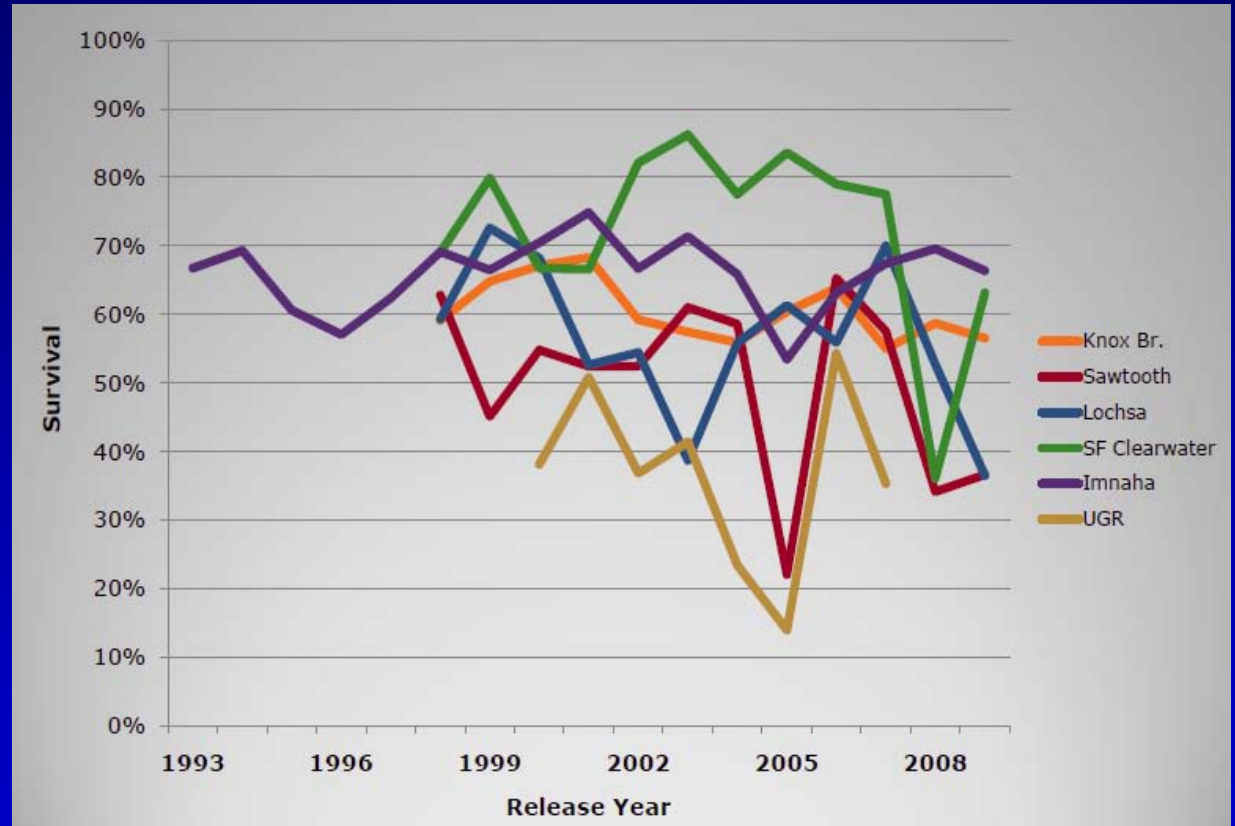
SARs for Individual Rivers

Post – Release Survival

No Goal

Variable

Improvement Potential ?

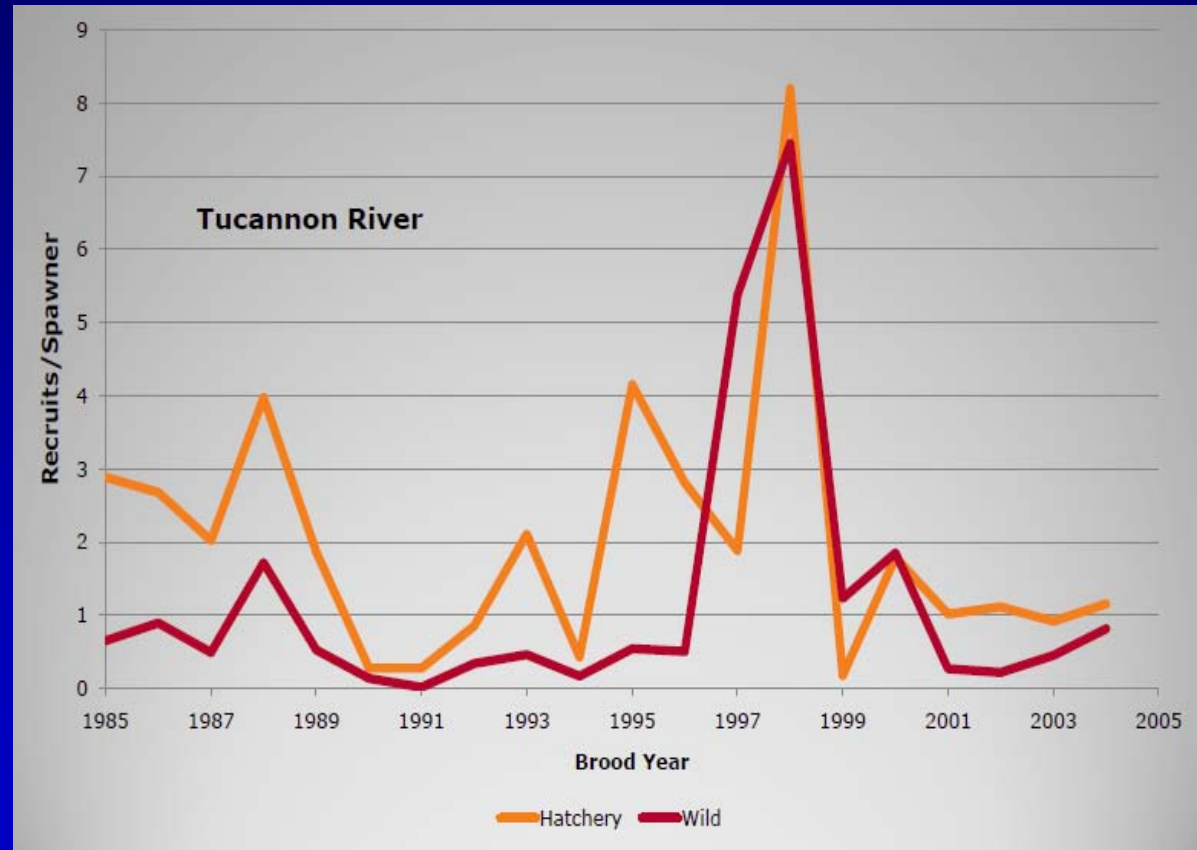


From M. Shuck, LSRCP Roll-up

Smolt survival to Lower Granite Dam

Post – Release Survival

Hatchery
Full Life Cycle
Advantage



From M. Shuck, LSRCP Roll-up

Hatchery R/S > Wild R/S

Conservation Objectives

Prevent Extinction

Improve NOR Abundance using Supplementation

Quantitative objectives missing

Formal analysis lacking

Exception – BACI Analysis in the Imnaha River and density-dependence analysis in the upper Grande Ronde River and Catherine Creek

Conservation Objectives

Prevent Extinction: Yes (Qualified)

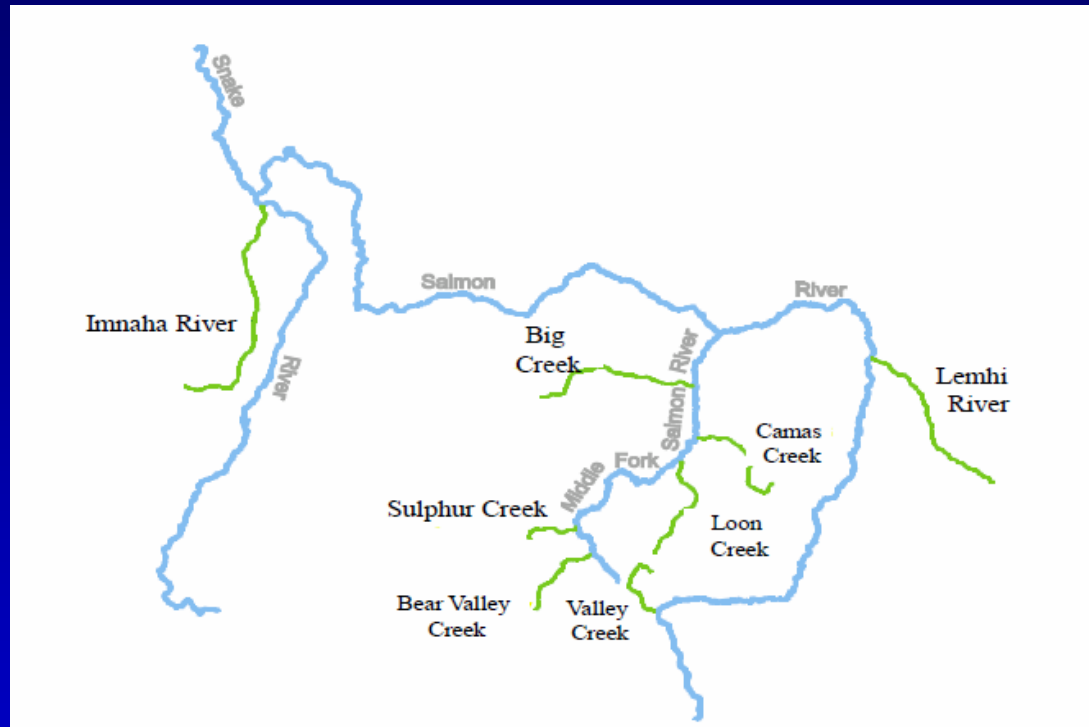
Improve NOR Abundance using Supplementation: No



Tucannon River Captive-reared Adult

Conservation Objectives – Supplementation Effectiveness

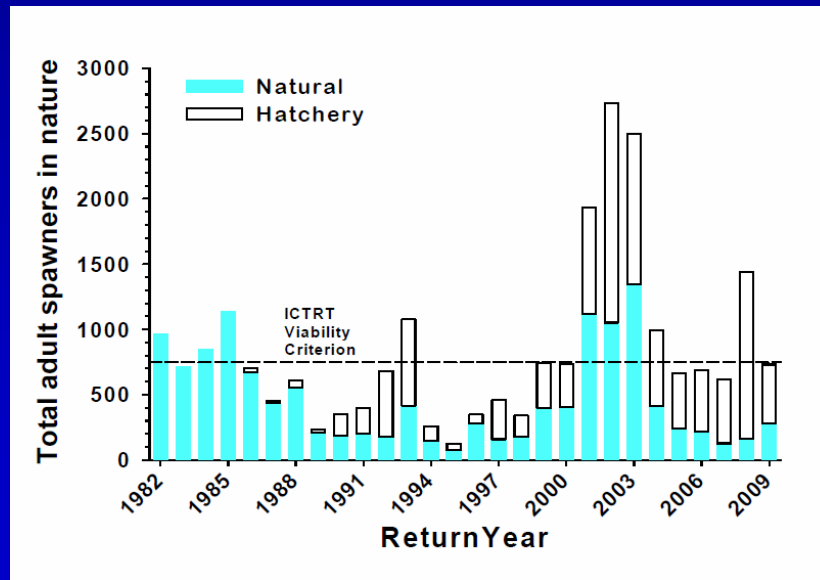
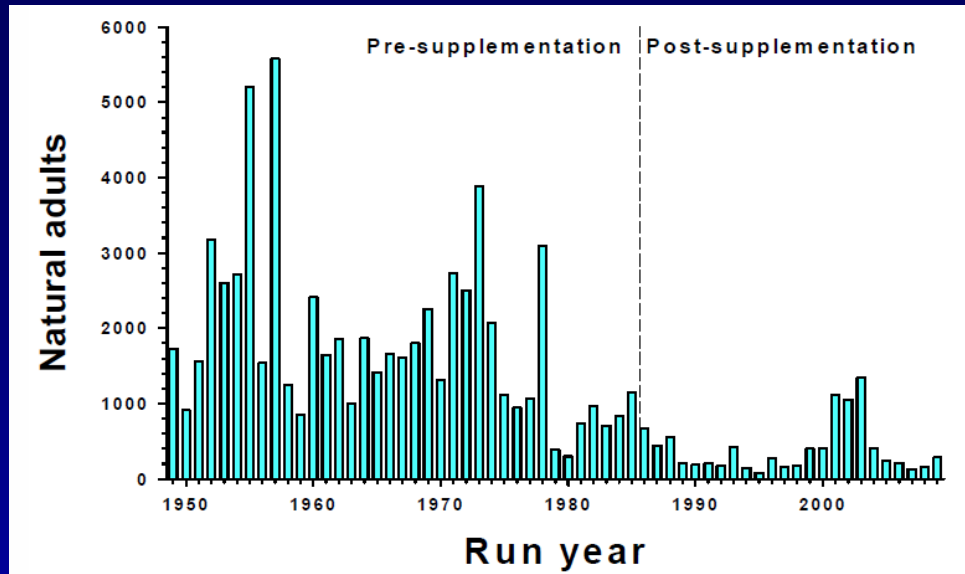
Before-After-Control-Impact (BACI) Analysis: Imnaha River



Total Spawner Abundance Increase?

Natural-origin Abundance Increase?

Productivity Remain the Same?



Abundance of natural- and hatchery-origin Chinook salmon in the Innaha River

Supplementation Effectiveness

Imnaha River

BACI Analysis –
(Before-After-
Control-Impact)



Steelhead and Chinook trap, Imnaha River, Oregon

Total Spawner Abundance Increased in all Comparisons

Natural-origin Abundance Increased in 3, Decreased in 5

Productivity Decreased in all 8 Comparisons

Conclusions and Recommendations

Conclusion 1. SAS, SAR, and overall mitigation goals and assumptions overly optimistic

Recommendation 1. An ecologically-based approach is needed to develop guidance on realistic harvest mitigation

Conclusion 2a. Hatchery programs could reduce the risk of extinction

Conclusion 2b. Supplementation not yielding an increase in NOR

Recommendation 2. Take action to establish natural populations that are viable