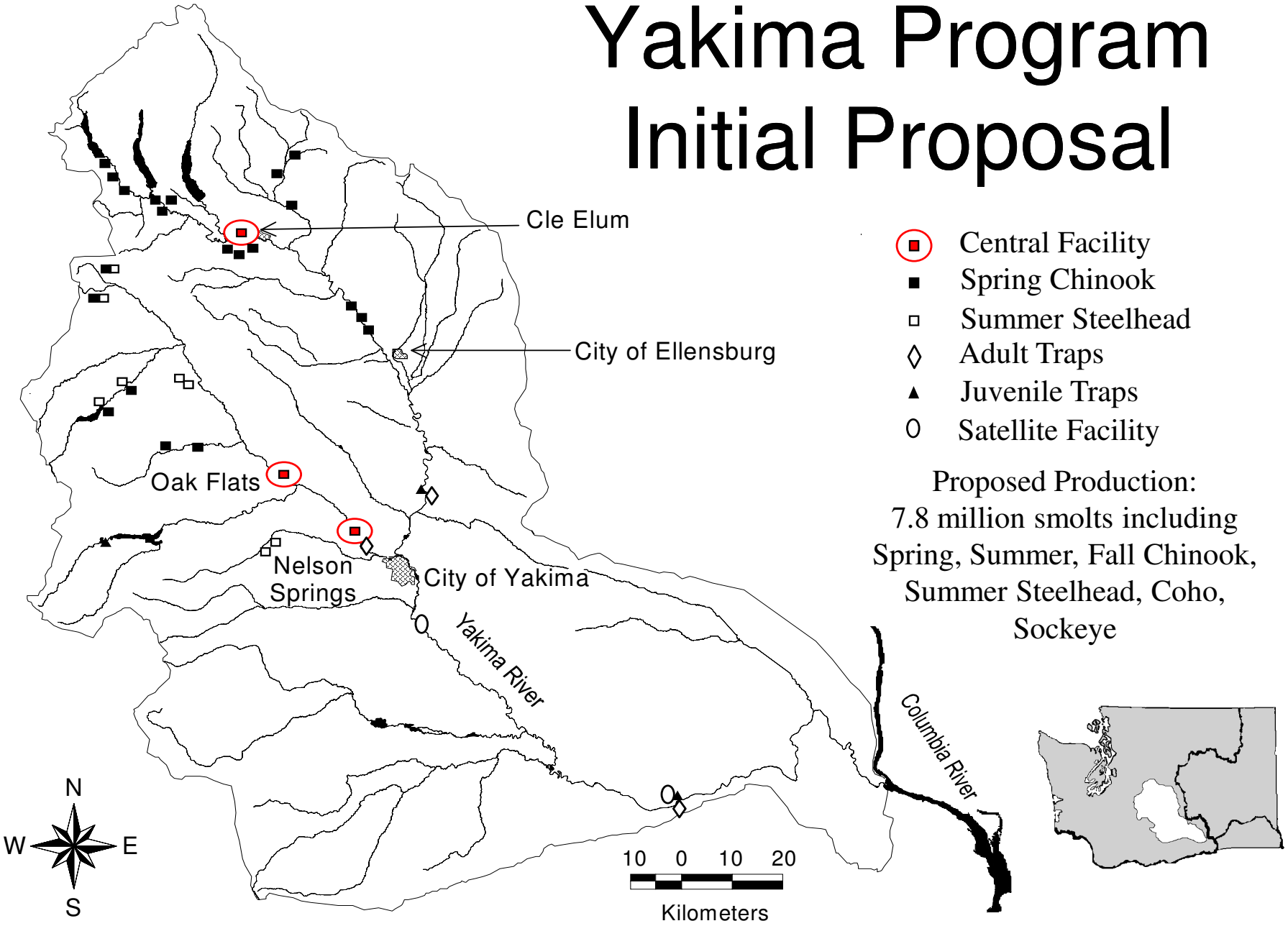
Risk Management Monitoring of Non-target Fish Taxa as Related to Salmon Supplementation

Gabriel M. Temple and Todd N. Pearsons

Yakima Program Initial Proposal

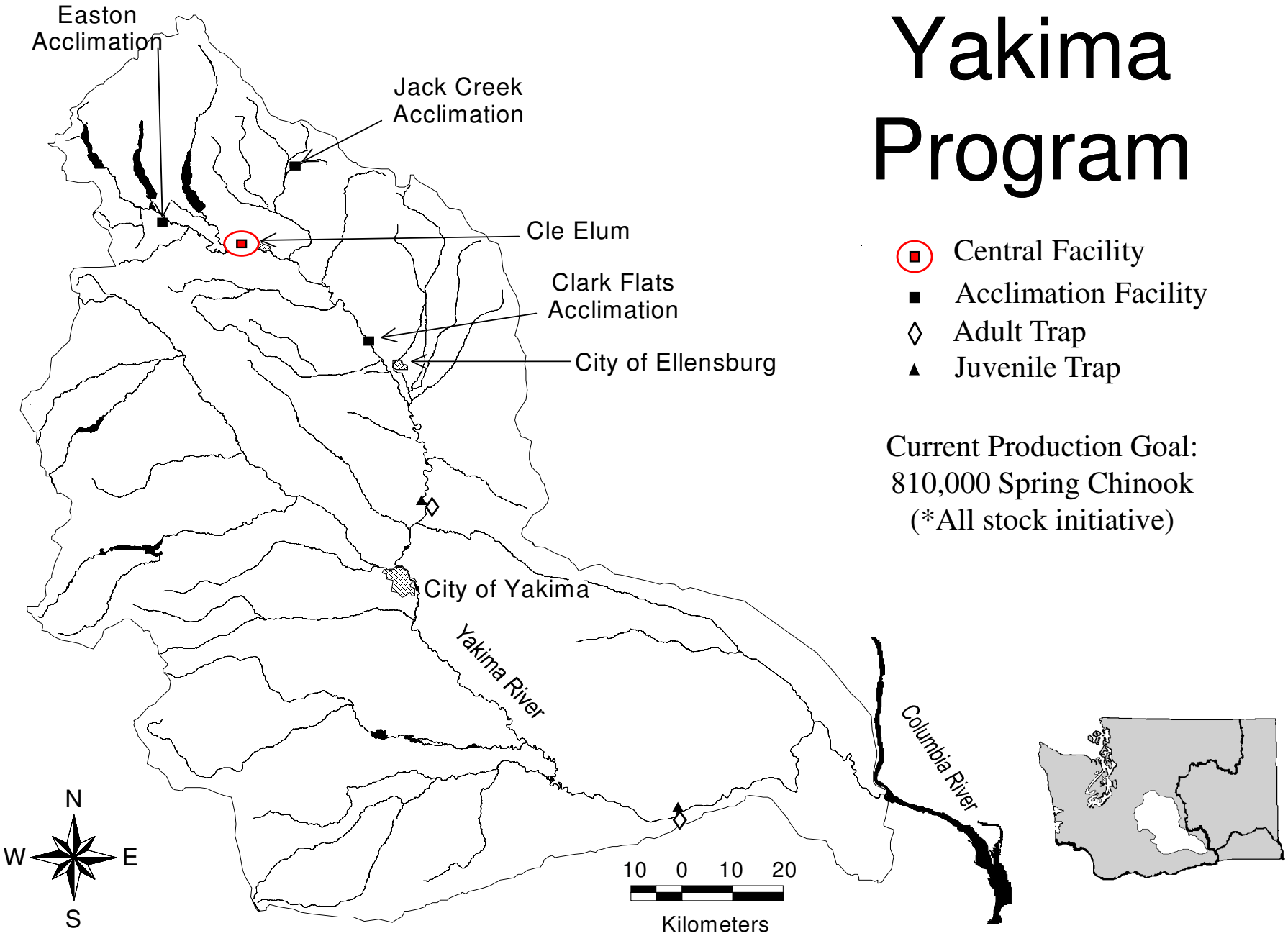


- Central Facility
- Spring Chinook
- Summer Steelhead
- Adult Traps
- Juvenile Traps
- Satellite Facility

Proposed Production:
7.8 million smolts including Spring, Summer, Fall Chinook, Summer Steelhead, Coho, Sockeye

DOE/EA-0392; 1990

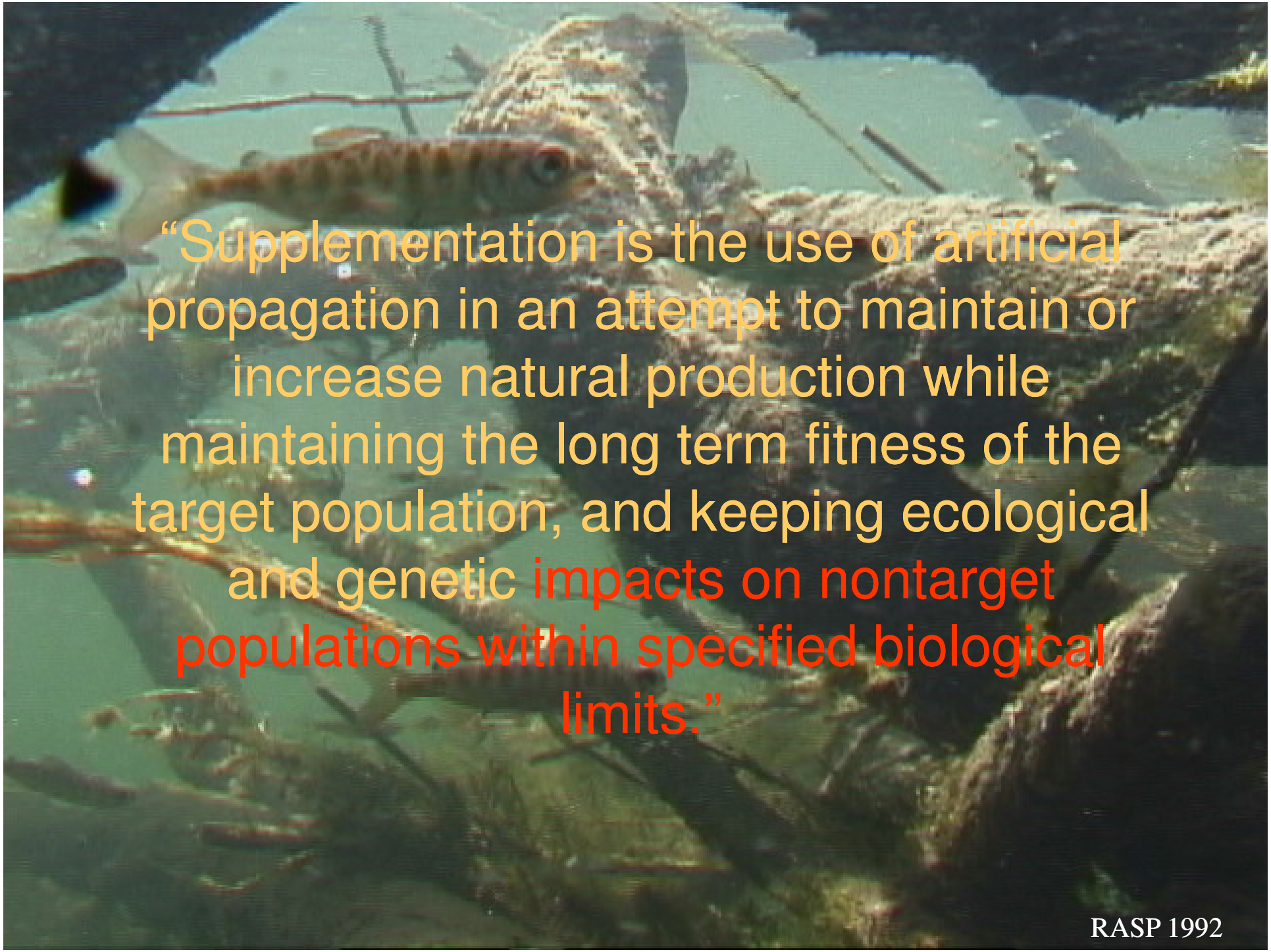
Yakima Program



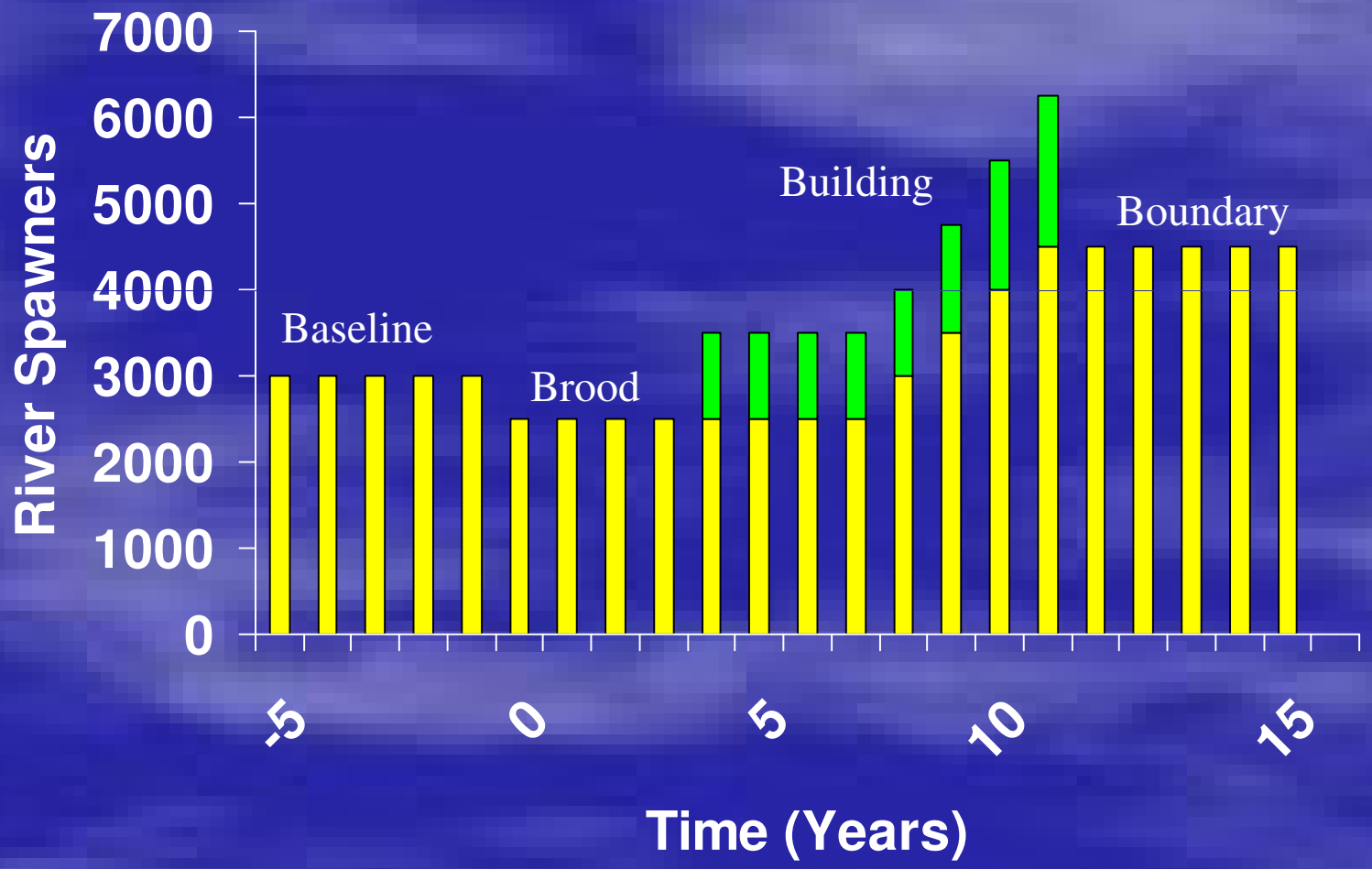
- Central Facility
- Acclimation Facility
- Adult Trap
- Juvenile Trap

Current Production Goal:
810,000 Spring Chinook
(*All stock initiative)

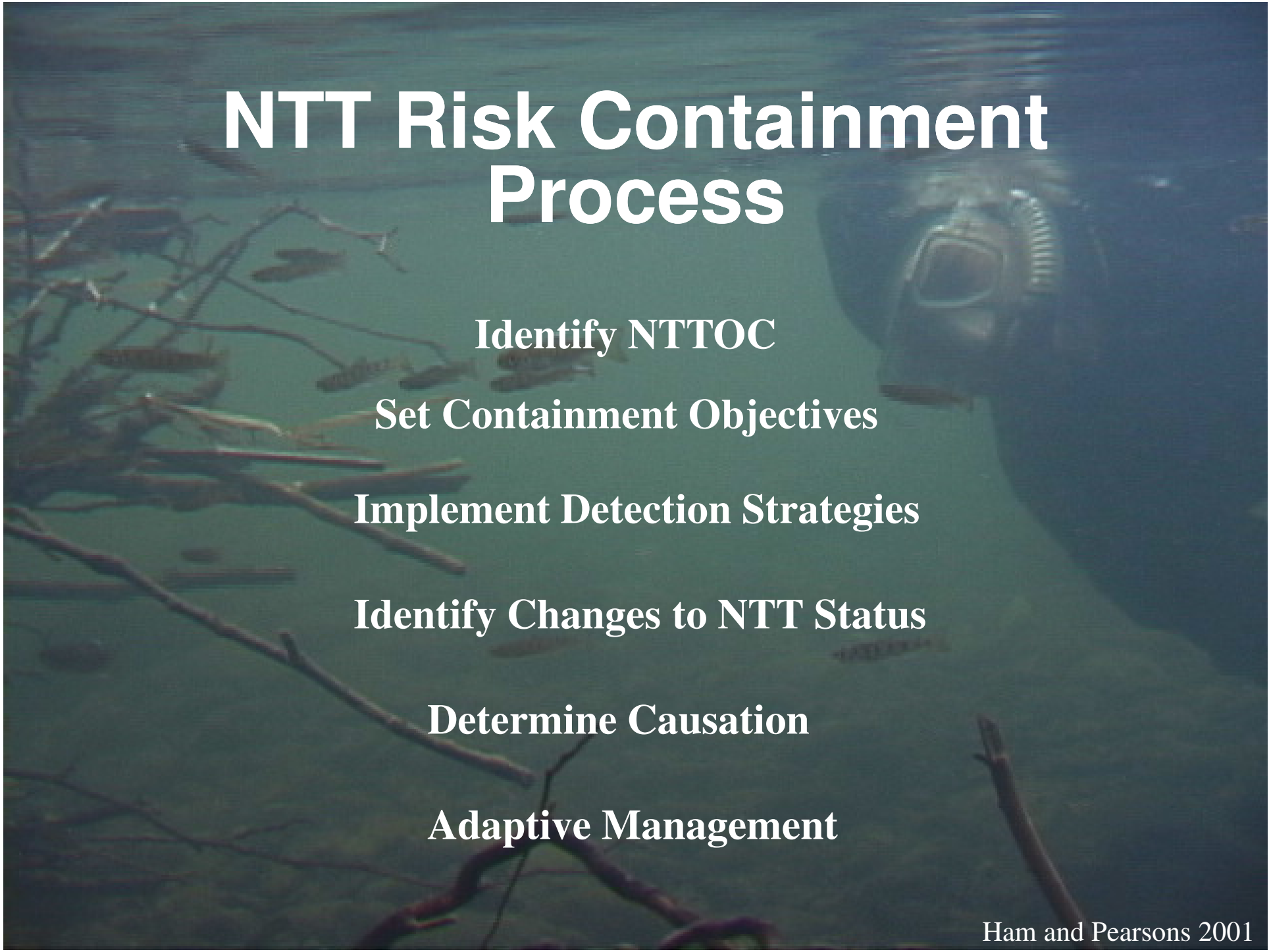
DOE/EIS-0169; 1996


"Supplementation is the use of artificial propagation in an attempt to maintain or increase natural production while maintaining the long term fitness of the target population, and keeping ecological and genetic impacts on nontarget populations within specified biological limits."
RASP 1992

Supplementation Chronology



Pearsons 2002; Fisheries



NTT Risk Containment Process

Identify NTTOC

Set Containment Objectives

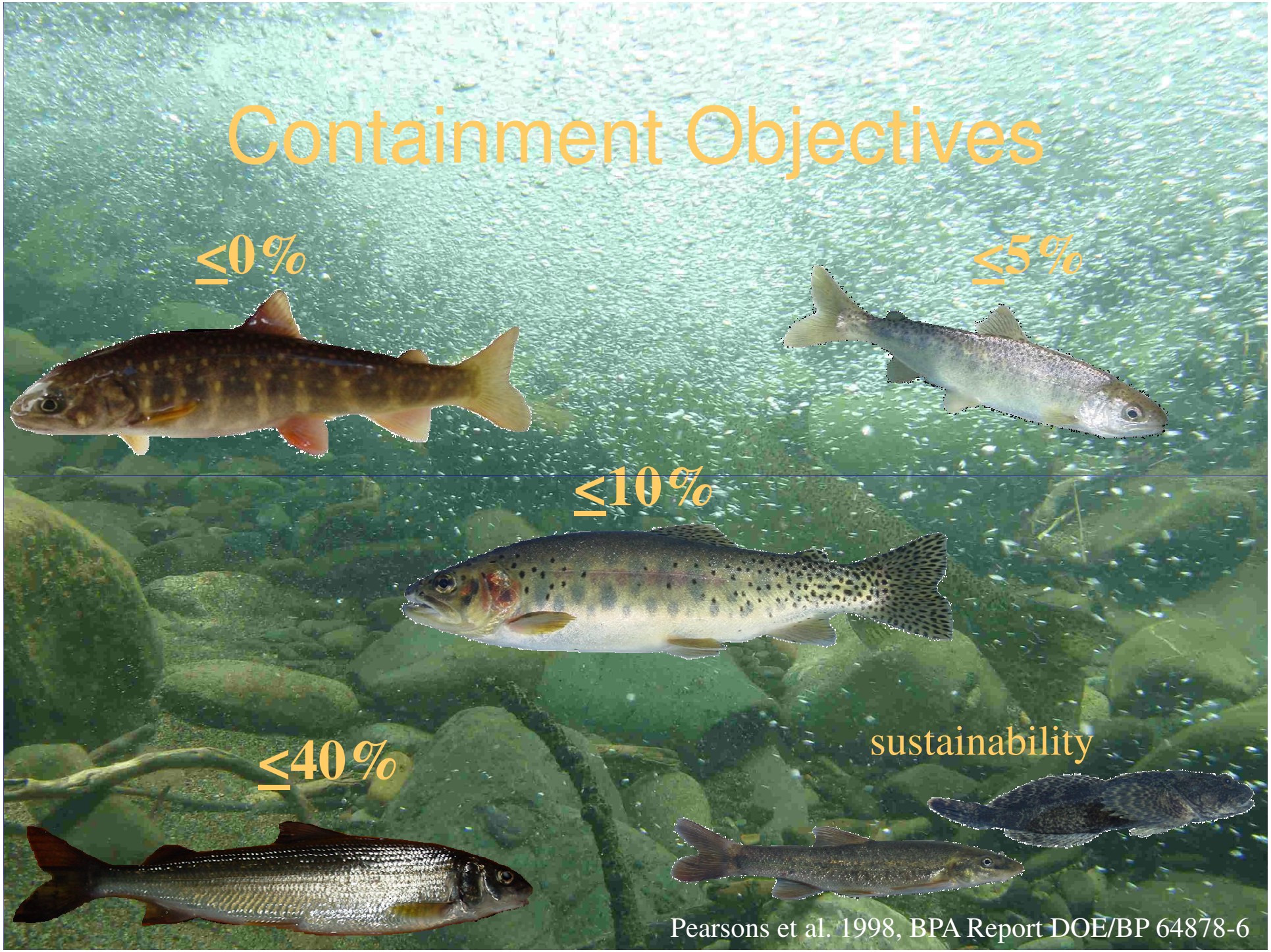
Implement Detection Strategies

Identify Changes to NTT Status

Determine Causation

Adaptive Management

Ham and Pearsons 2001

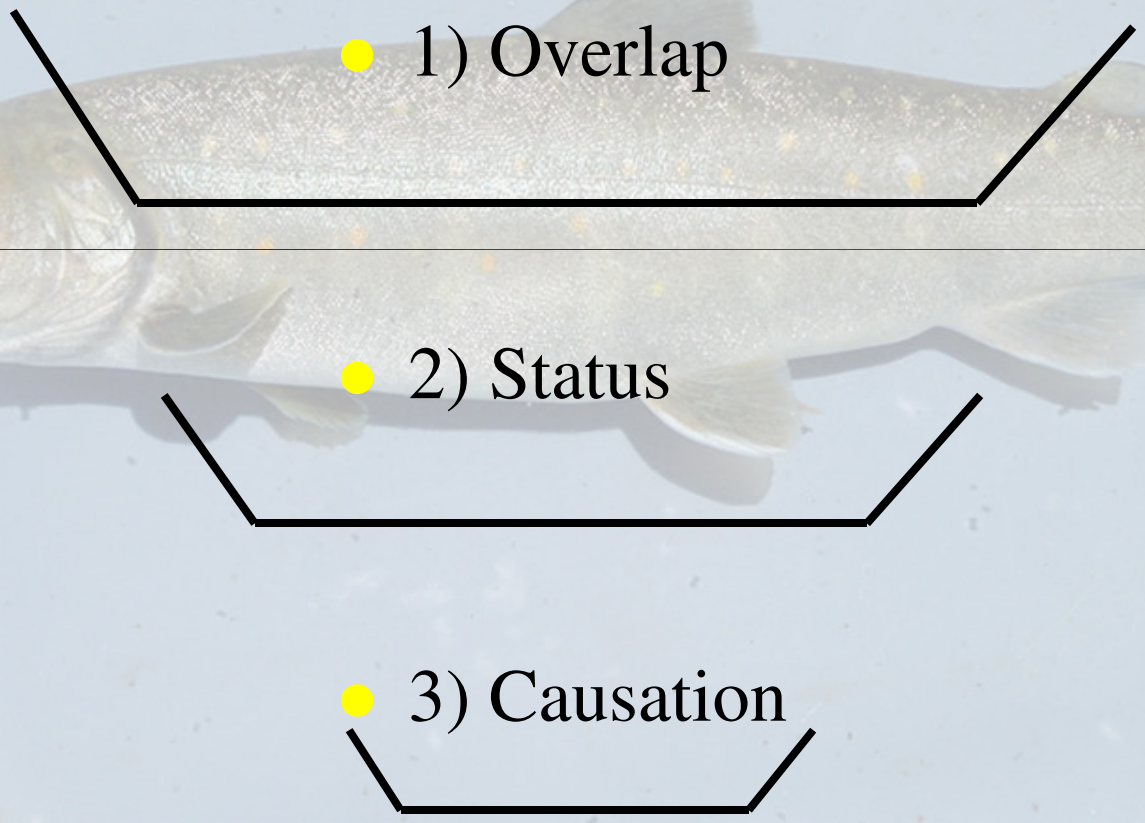

Containment Objectives
≤0%
≤5%
≤10%
≤40%
sustainability
Pearsons et al. 1998, BPA Report DOE/BP 64878-6

Methods…..

Special thanks: BPA, YN, and WDFW staff

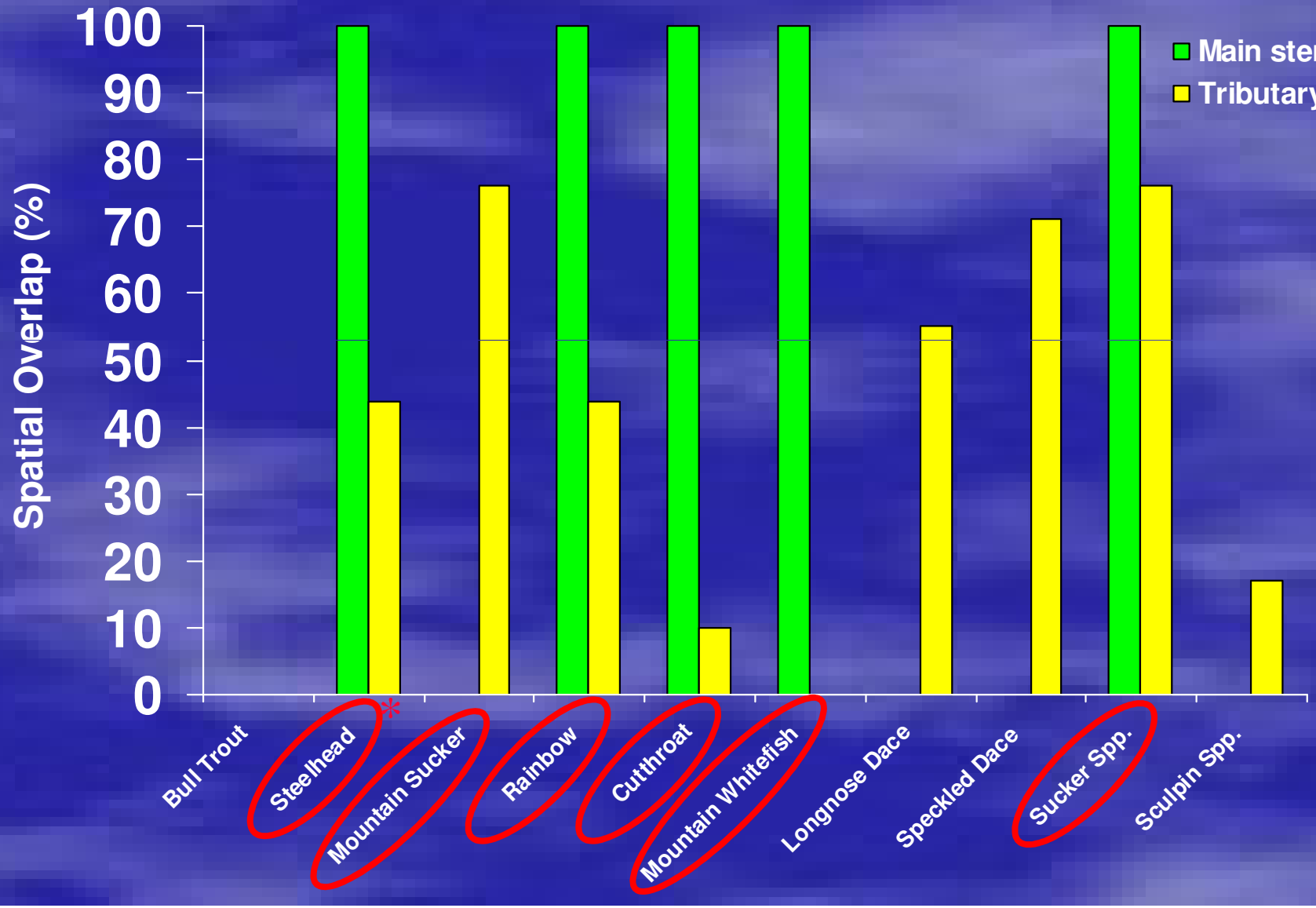
Temple and Pearsons 2007

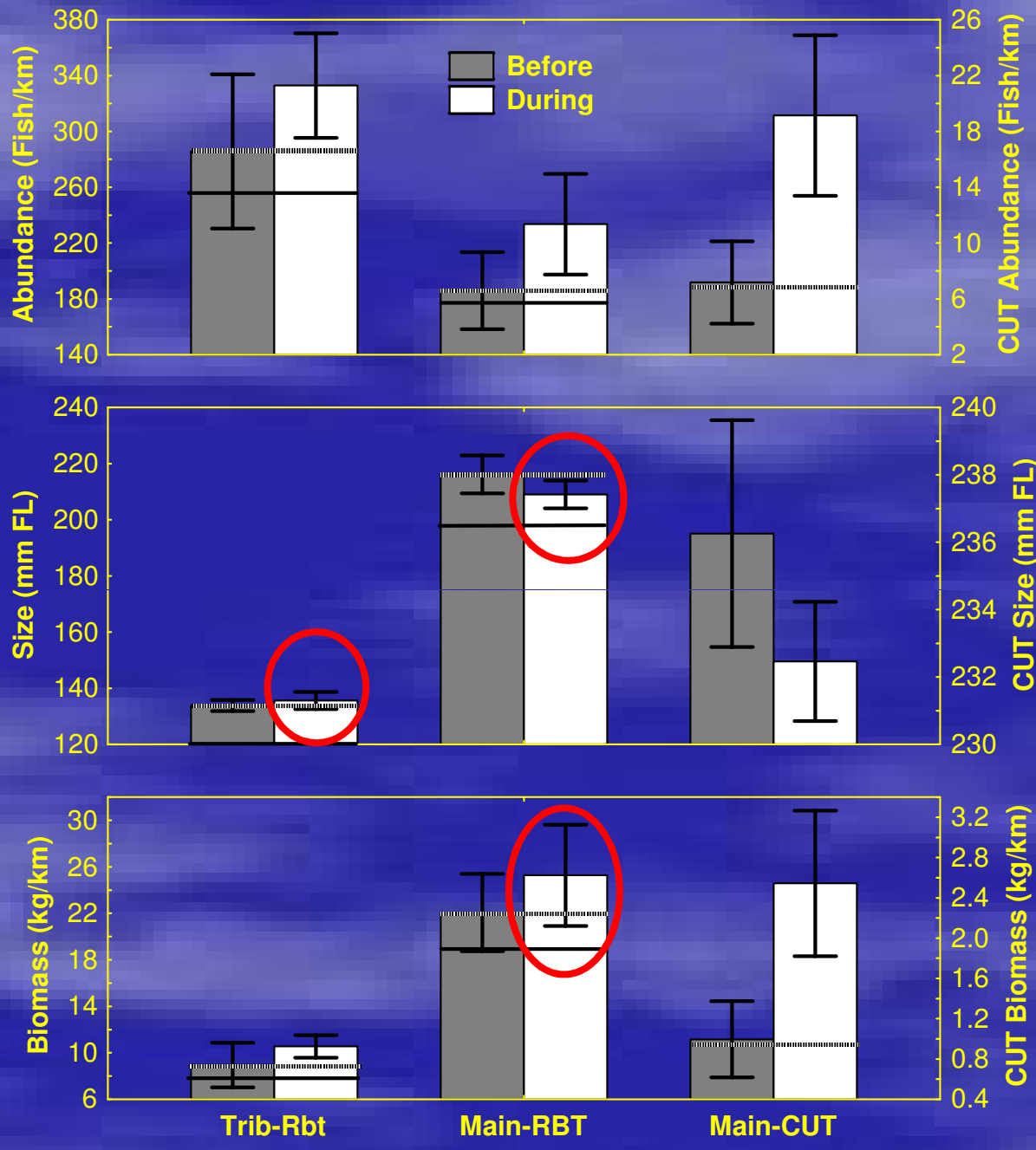
NTT Risk Containment Process: Sieve Approach



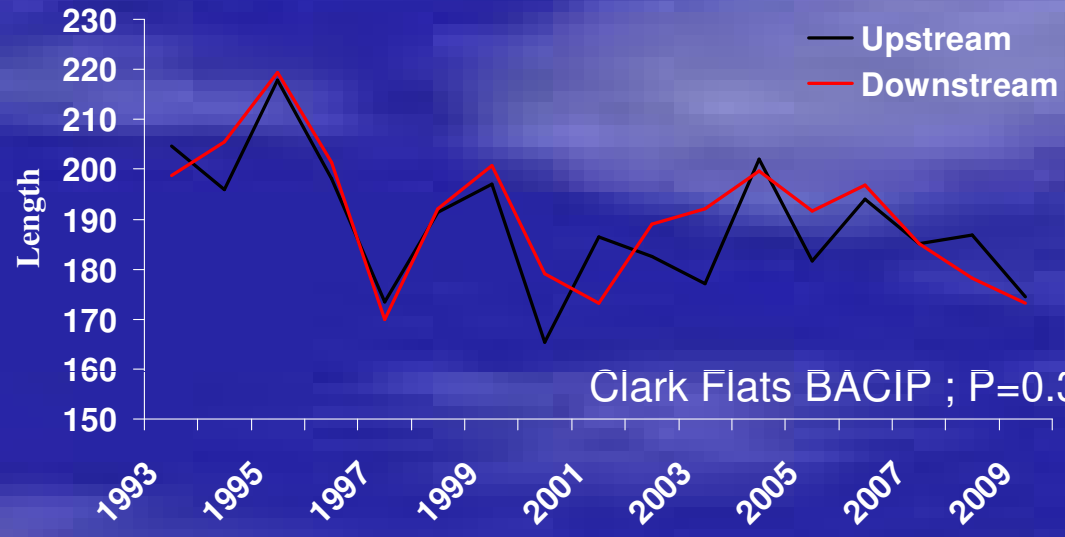
Pearsons and Temple 2007

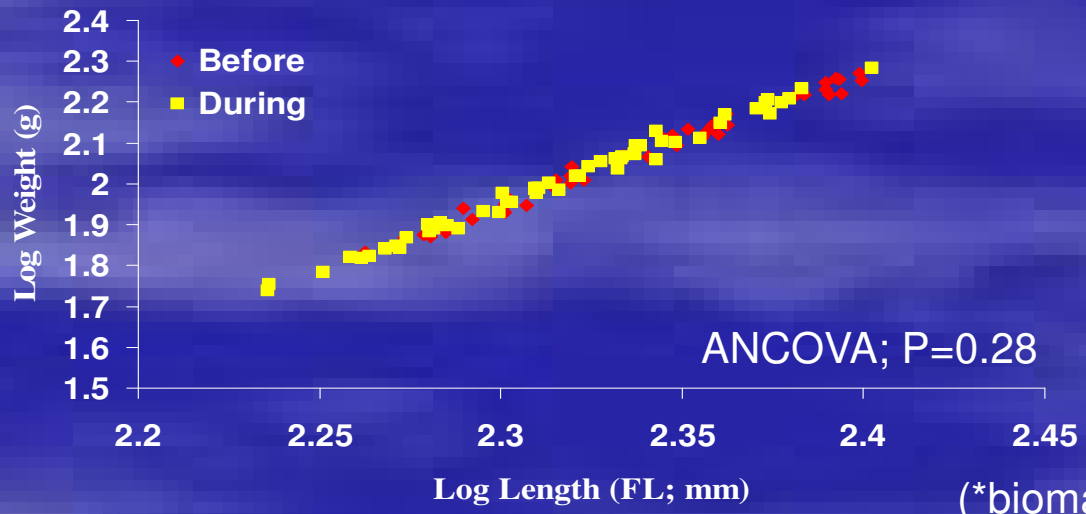
Distribution




Before
During
Abundance (Fish/km)
CUT Abundance (Fish/km)
Size (mm FL)
CUT Size (mm FL)
Biomass (kg/km)
CUT Biomass (kg/km)
Trib-Rbt
Main-RBT
Main-CUT

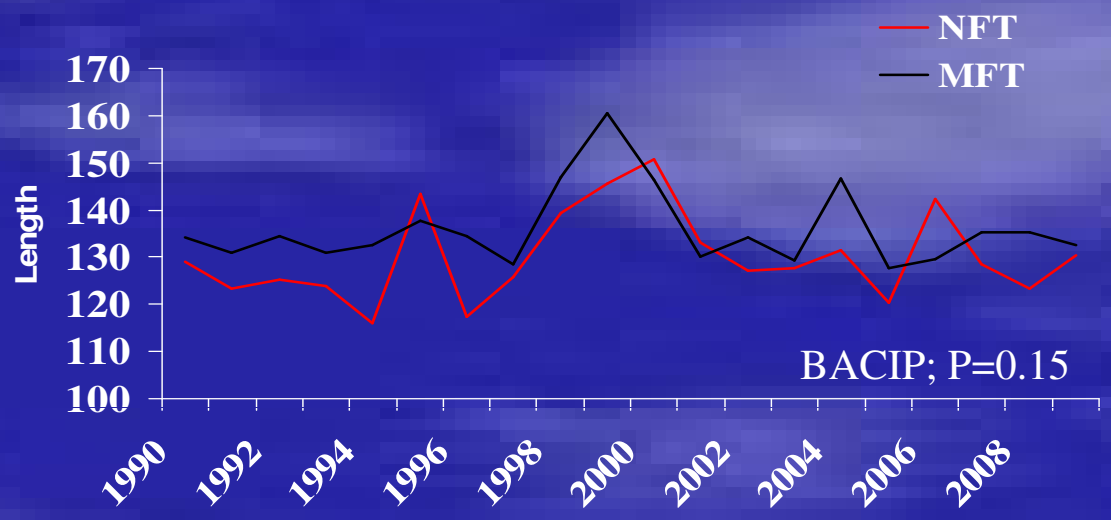
Mainstem *O. mykiss* Size

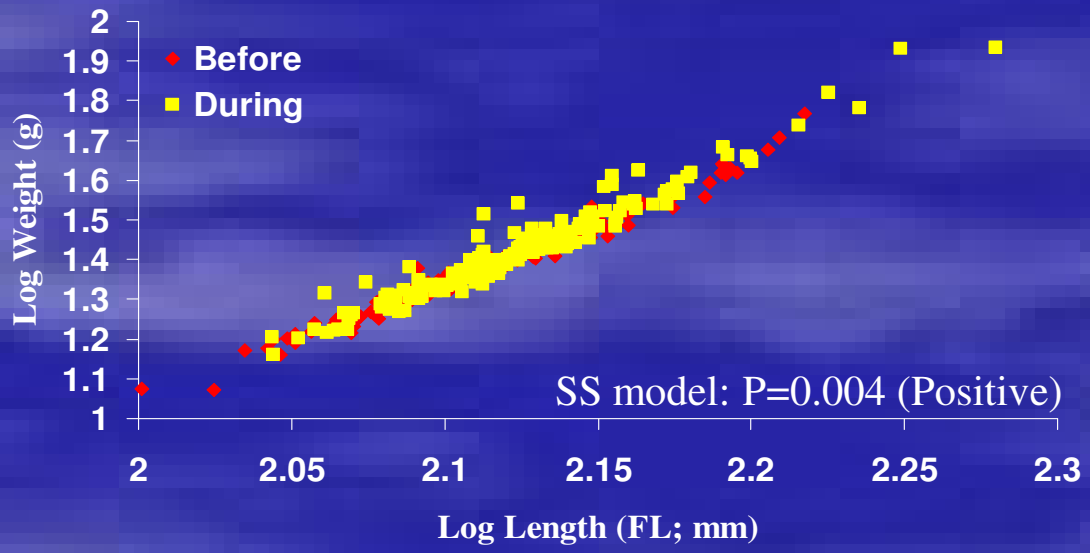




(*biomass BACIP; P=0.15)

Tributary *O. mykiss* Size

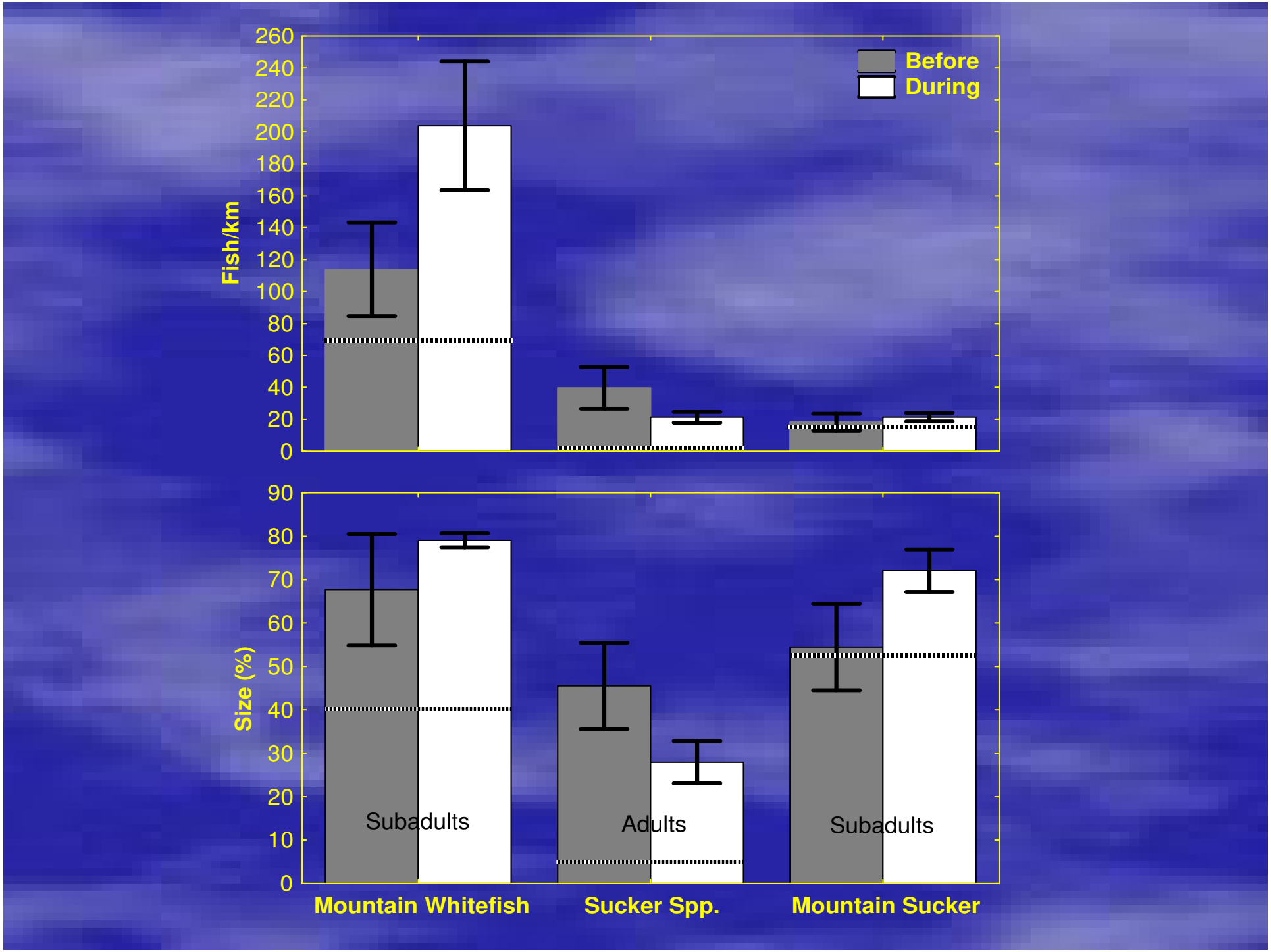




BACIP

- Decreased *O. mykiss* size not attributed to supplementation
- Abundance may be suppressed in the vicinity of a tributary hatchery release facility relative to reference streams (although we observed population level increases in abundance)
- Adaptive management (harvest regulation)

Pearsons and Temple 2010


Before
During
Fish/km
260
240
220
200
180
160
140
120
100
80
60
40
20
0
Size (%)
90
80
70
60
50
40
30
20
10
0
Subadults
Adults
Subadults
Mountain Whitefish
Sucker Spp.
Mountain Sucker

Summary

- Risk management monitoring of NTT is working as planned
- Currently monitoring the success of management action (harvest regulation)
- Developing refined methods to evaluate data gaps (remote sensing, PIT technology)

Lessons Learned

- Pre-implementation planning had bigger influence on ecological interactions than adaptive management monitoring (fine tuning)
- Sieve approach may not pick up changes of interest (e.g., Teanaway abundance)
- Value of reference sites/populations (NTT risk monitoring perspective)
- Adaptive monitoring as information becomes available (e.g., rare dispersed species-PAL, SND, LPD)
- Containment monitoring can support program from unfounded accusations (e.g., precocious males)