

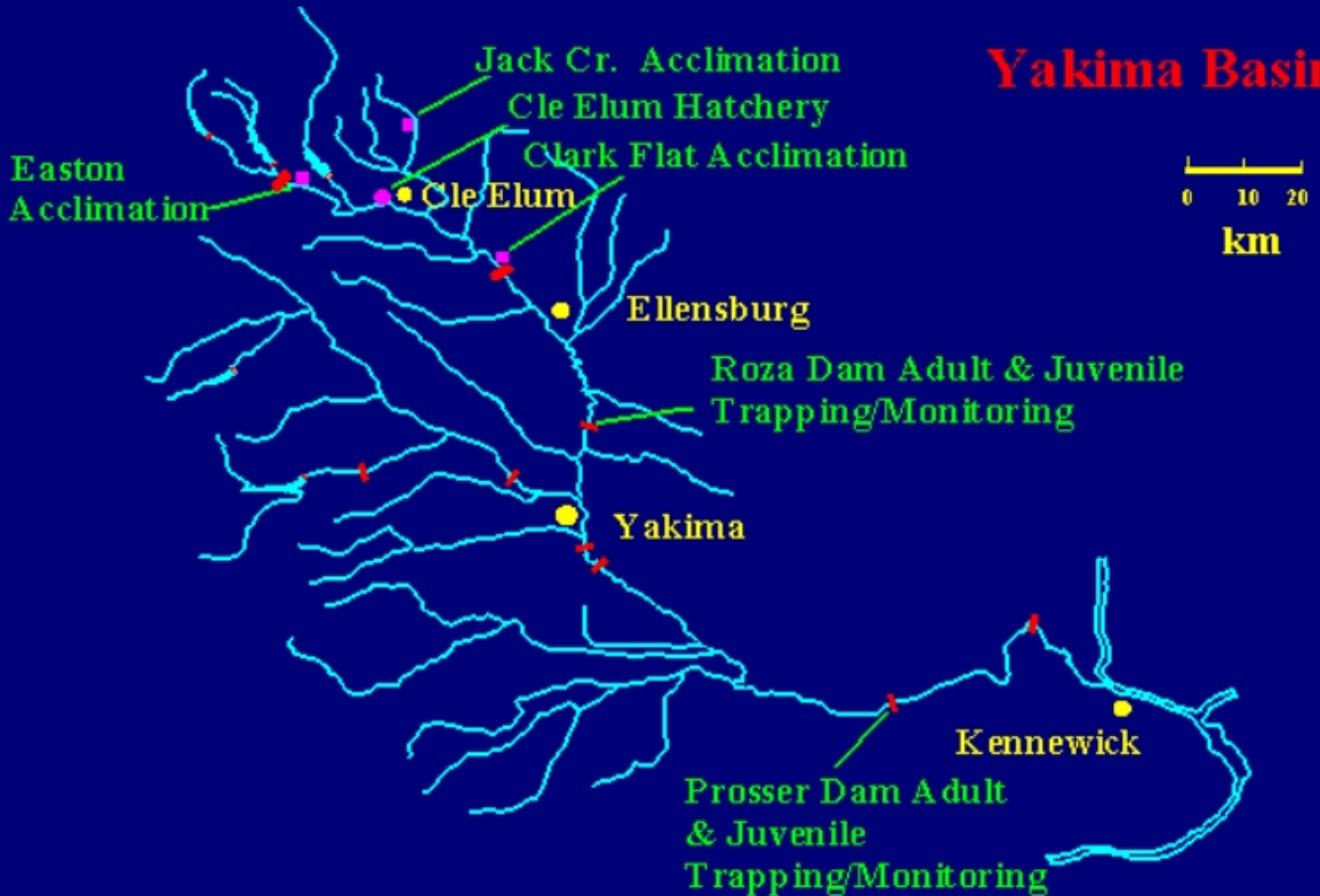
# Cle Elum Supplementation & Research Facility

## OCT/SNT Rearing and Smolt Survival Status

David Fast, Charles Strom, Mark Johnston,  
David Lind,  
Curtis Knudsen, Doug Nealey & Bill Bosch



# Yakima Basin







# MISSION OF FACILITY

- **Collect Broodstock**
- **Enumerate Spawning Escapement**
- **Monitor Characteristics of Escapement (age, length, weight, DNA,)**
- **Enumerate Hatchery Returns (by Treatment, Acclimation Site and Brood Year)**



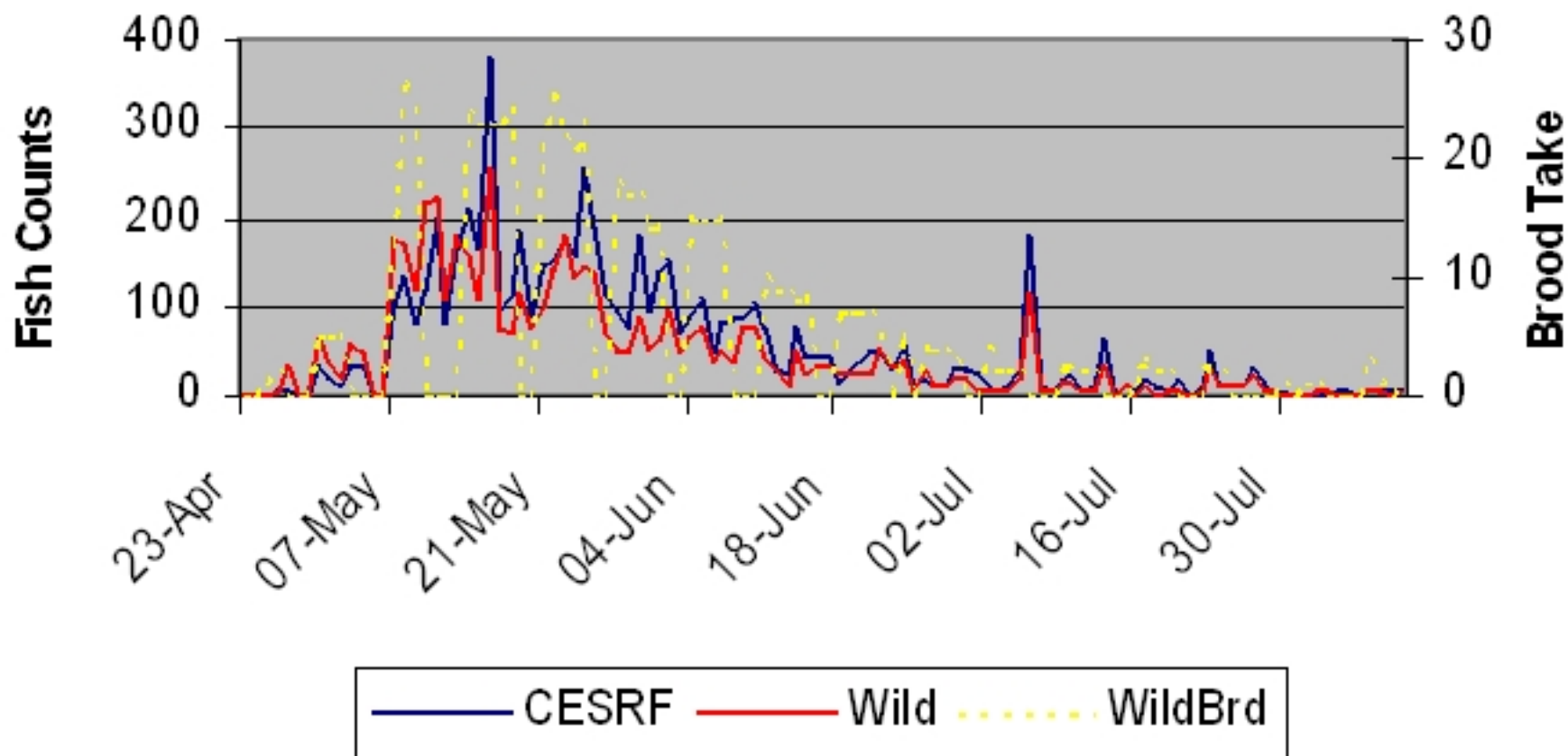


# **BROODSTOCK COLLECTION GENETIC GUIDELINES**

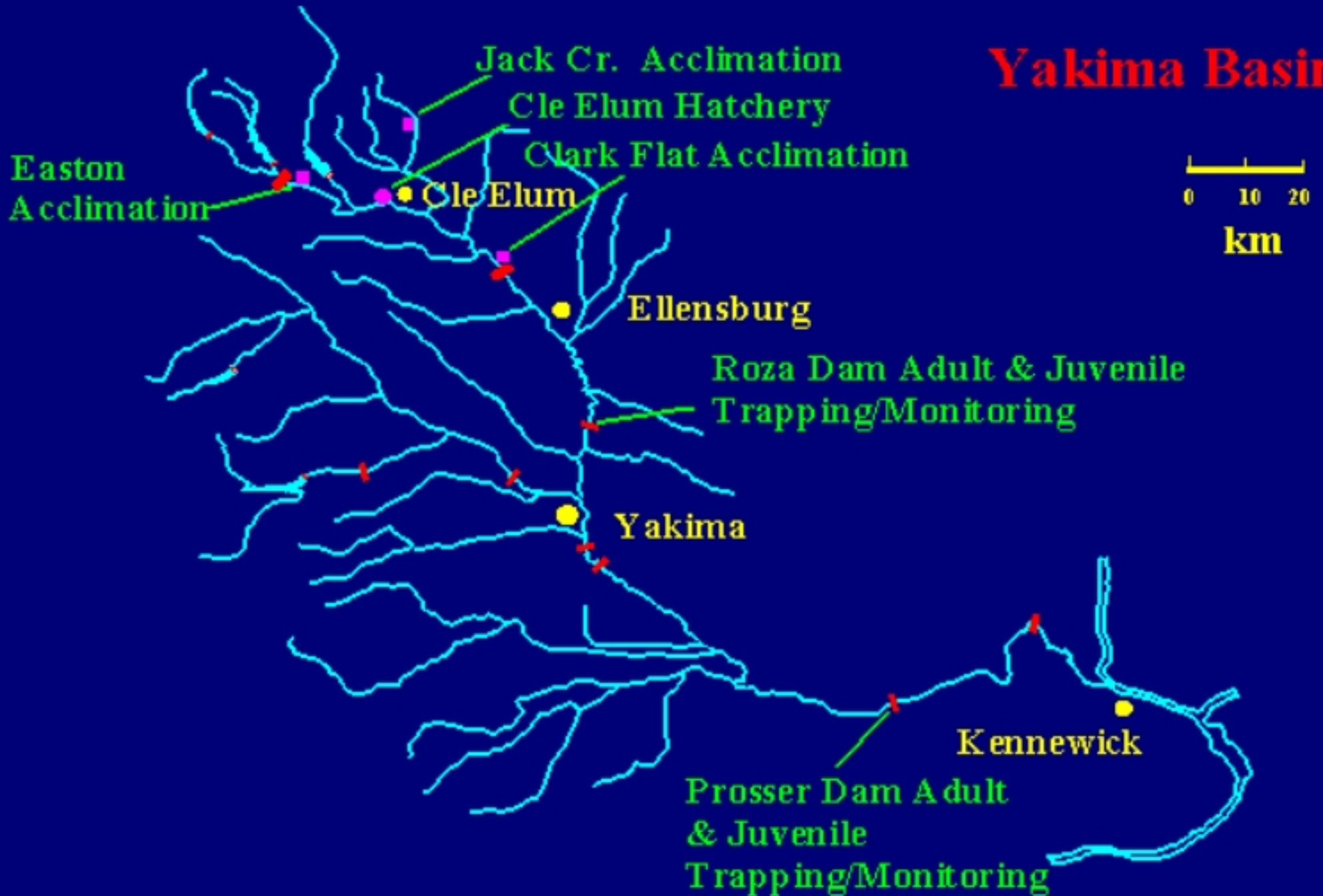
- **COLLECTION THROUGHOUT ADULT  
RUN TIMING**
- **RANDOM COLLECTION OF ADULTS**
- **TAKE NO MORE THAN 50% OF  
ADULTS INTO HATCHERY (HALF THE  
ADULTS SPAWN IN THE WILD)**



## Spring Chinook Run Timing at Roza, 2001



# Yakima Basin







P# No. FL

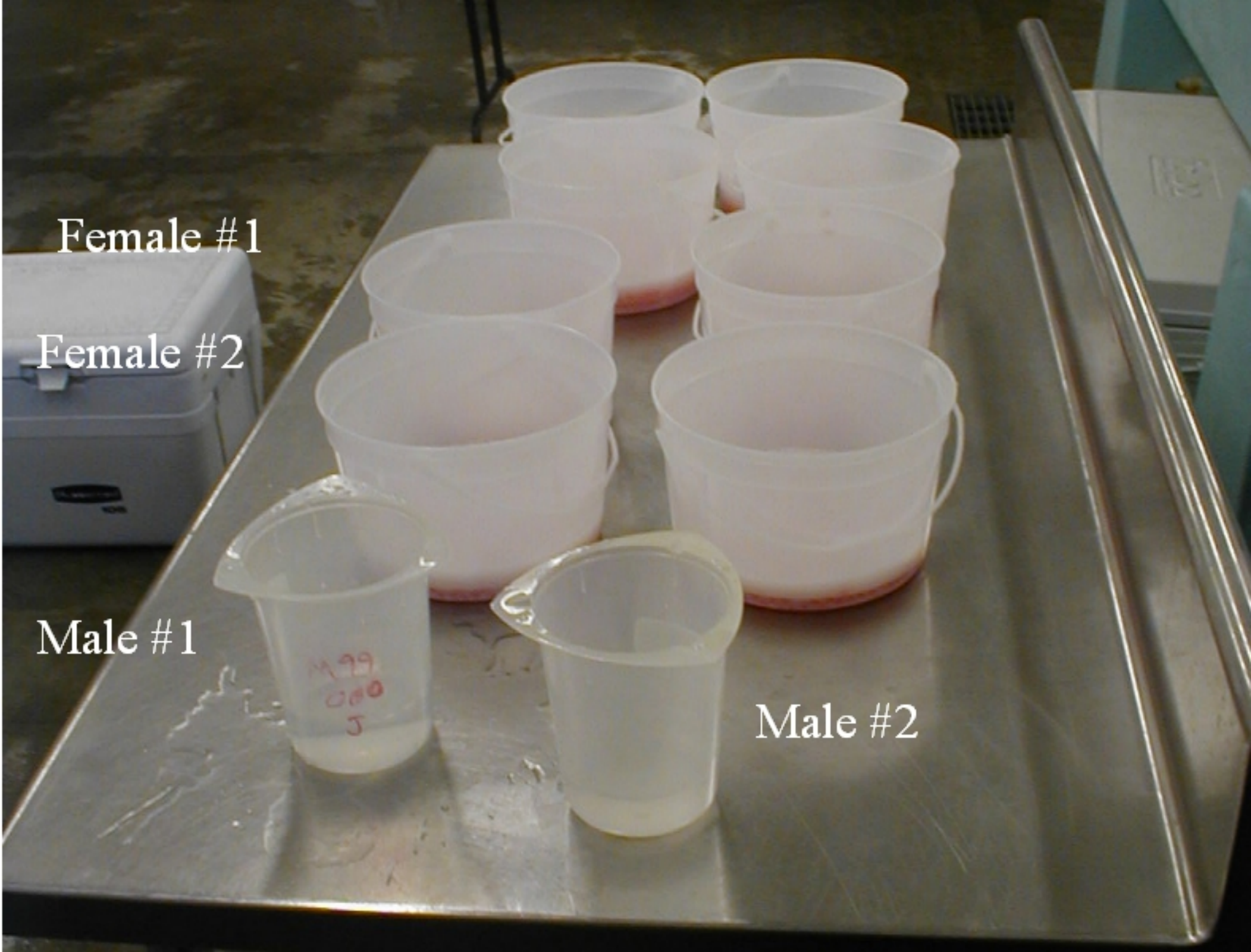


Female #1

Female #2

Male #1

Male #2



# **REARING CRITERIA for BY's 1997-2001**

- **OPTIMUM CONVENTIONAL TREATMENT-OCT**

**PRODUCTION VESSEL – 100'X10'X3.5'**

**LOW DENSITY – 0.75 LB/FT<sup>3</sup>**

**45,000 FISH PER VESSEL**

**TEMPERATURE – <55F**

- **SEMI-NATURAL TREATMENT -SNT – IDENTICAL TO OCT - PLUS**

**OVERHEAD COVER,**

**SUBSTRATE,**

**INSTREAM COVER,**

**UNDERWATER FEEDERS**



# **Research Monitoring Activities**

---

**Designed to test the performance  
of the  
two treatments of artificially  
reared fish  
(OCT vs. SNT),  
and to compare their performance  
with  
naturally reared fish.**











# Cle Elum PIT Tagging Operation



**134 KHz (ISO) Tags**



**Tagged ~ 5.6% Fish per Raceway  
(~ 2,225 per Raceway)**



**40,000 Fish PIT tagged**



**Selected 40,000 Total Marked to  
Rigorously Estimate Smolt-to-Adult  
Survival Rates.**







# CWT and Elastomer Marking Operation



**Raceway Specific Binary Codes**

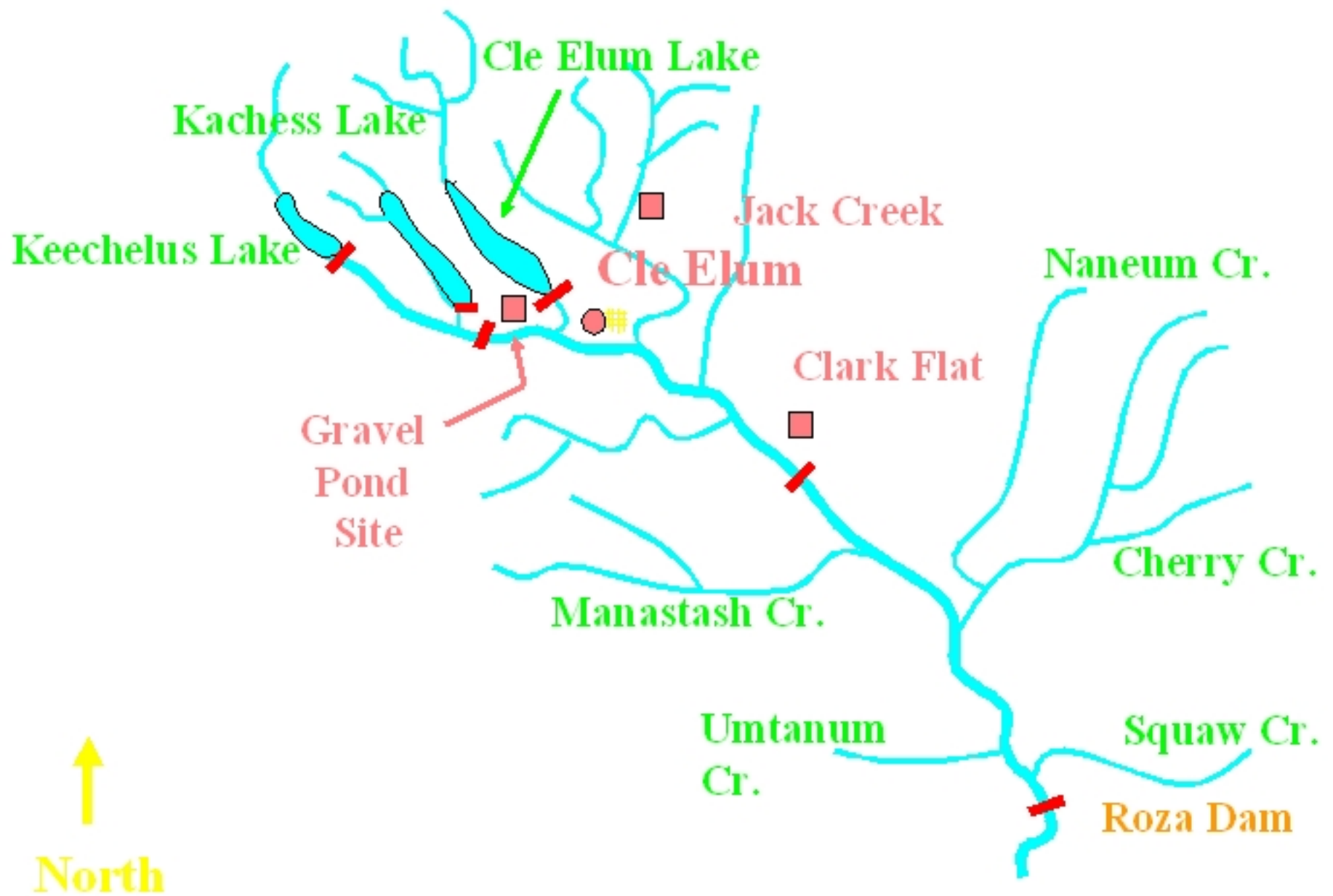


**100% Fish Marked**

- All Adipose fin clipped
- PIT tagged fish snout tag
- All 18 raceways body CWT & Elastomer



# Upper Yakima River Basin







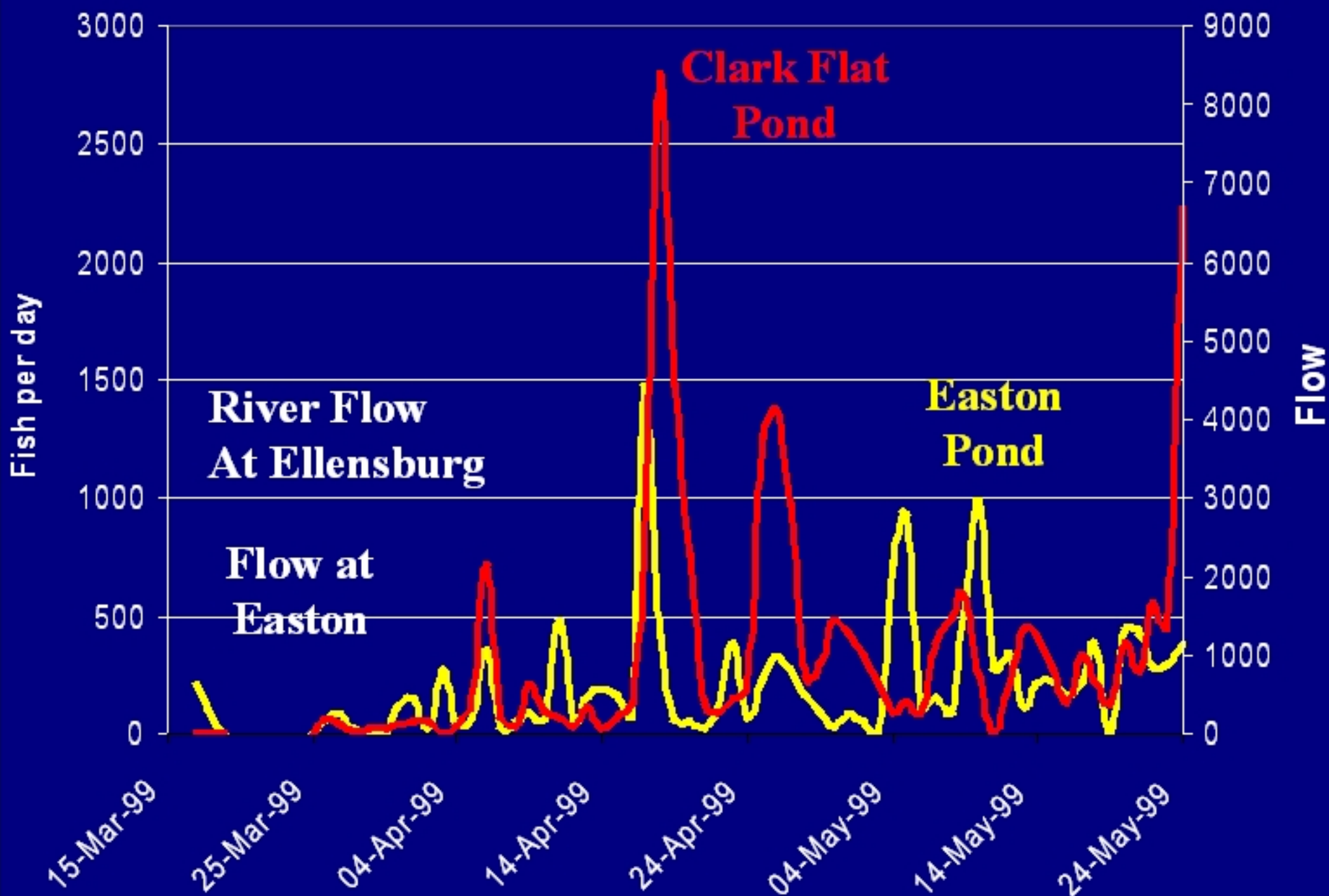


# PIT-Tag data transfer

- Fish volitionally leave acclimation raceways, starting March 15 (screens pulled, all ponds).
- PIT-Tag data retrieved from migration channel detection system.
- Data downloaded to PTAGIS system, distributed to YKFP data managers.
- Fish movement posted on website [YKFP.org](http://YKFP.org).



# Volitional Releases and River Flows 1999



# Hatchery Fish Performance will be Measured in Four Areas

---

---



**Post-release Survival (smolt release to adult)**



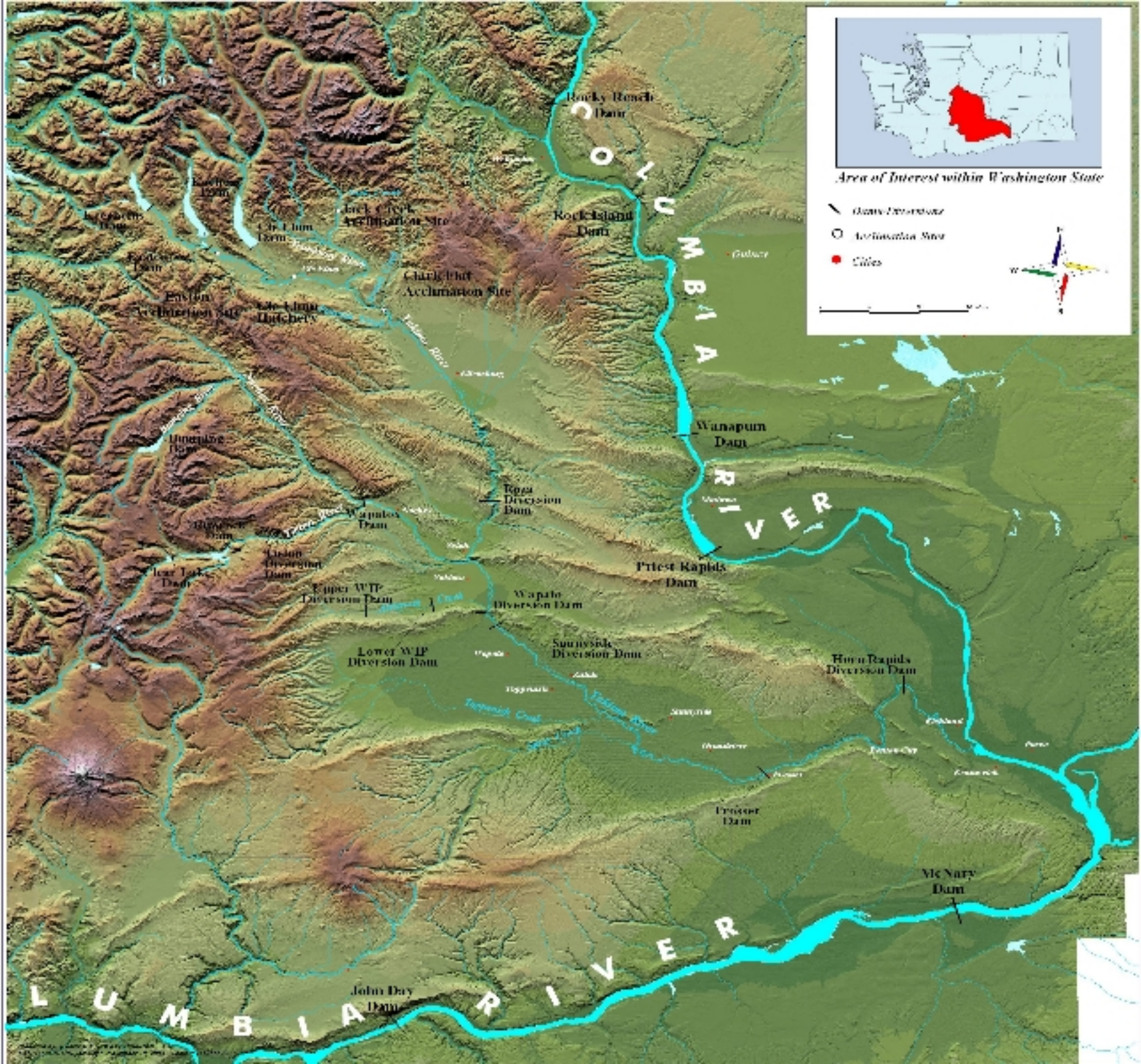
**Reproductive Success (smolts/spawner)**



**Long Term Fitness (genetic diversity and long term stock productivity)**



**Ecological Interactions (population abundance, distribution, growth rates, predation and competition)**



Area of Interest within Washington State

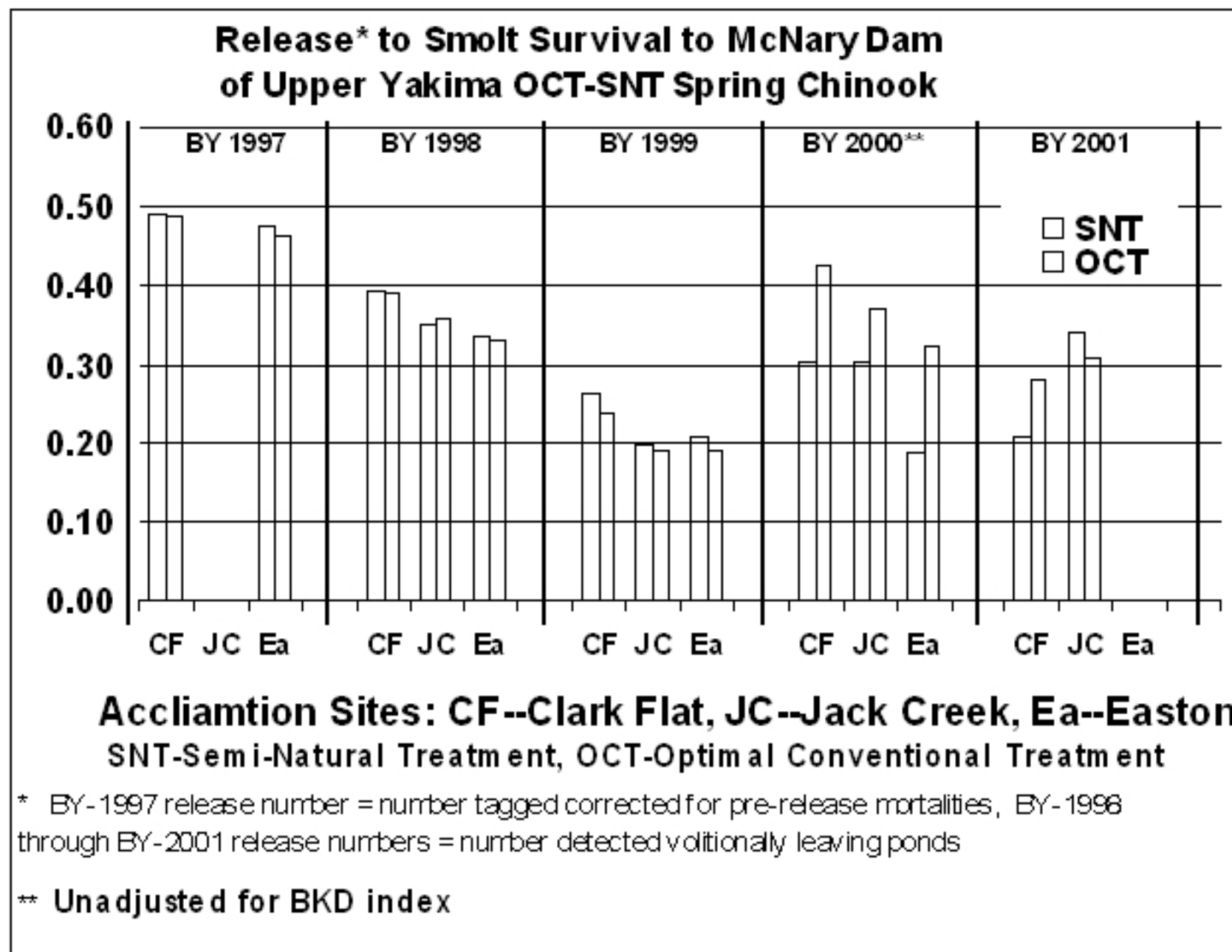
Legend:

- Dams/Diversion Structure
- Acclimation Site
- Cities

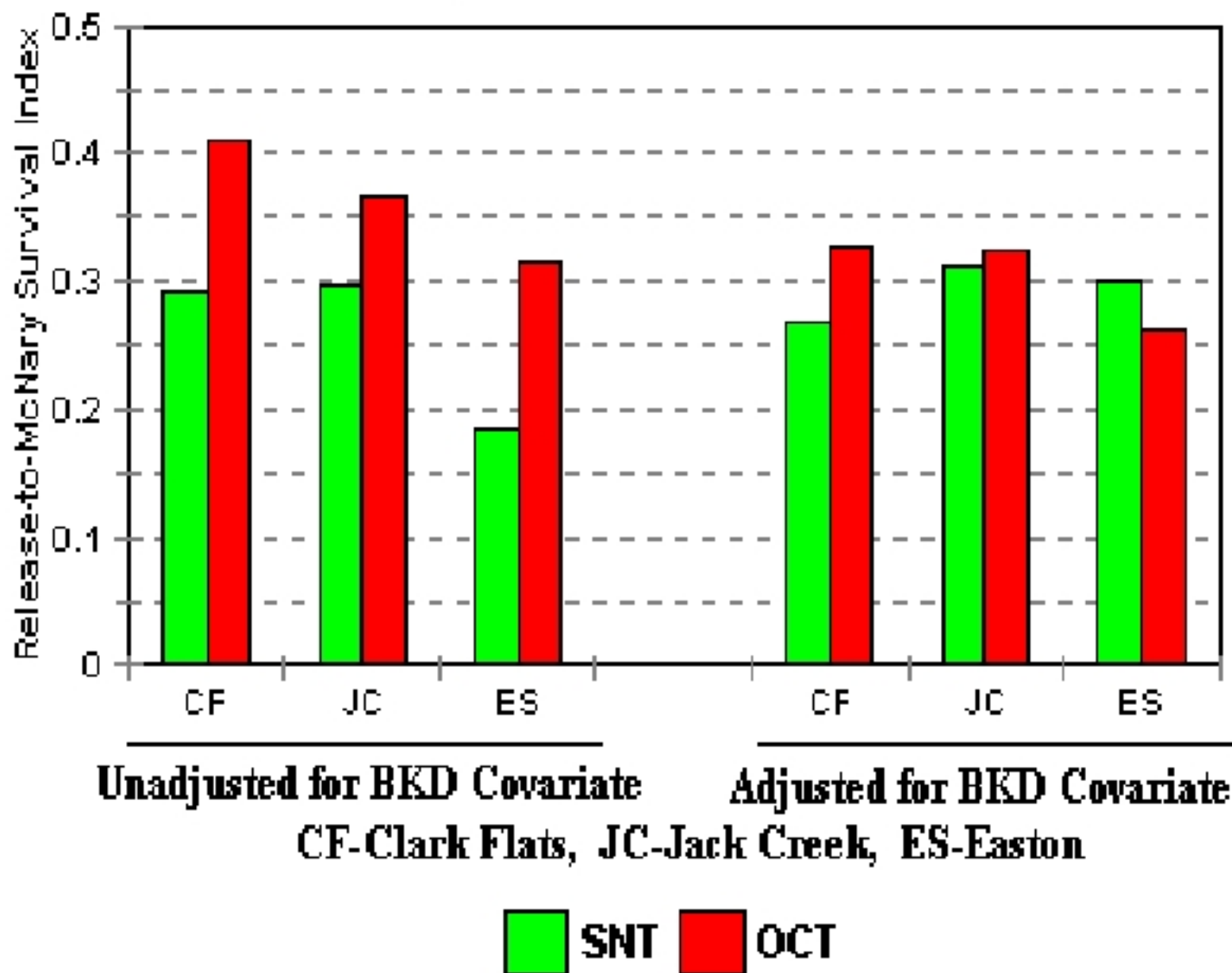
Scale: 0 10 20 Miles

North Arrow

**Outmigrant SNT and OCT Treatment Release-to-McNary-Dam  
Survival Indices within Sites for Brood-Years 1997 through 2001  
(1999 through 2003 Outmigrants)**



## 2000 Brood Survival Indices Unadjusted and Adjusted for BKD Covariate

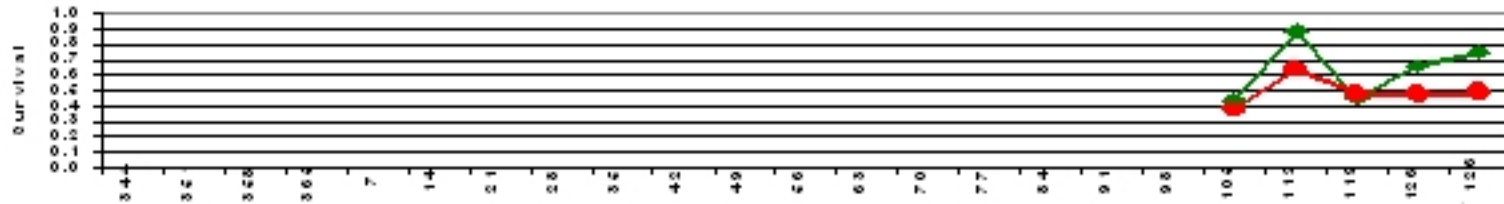




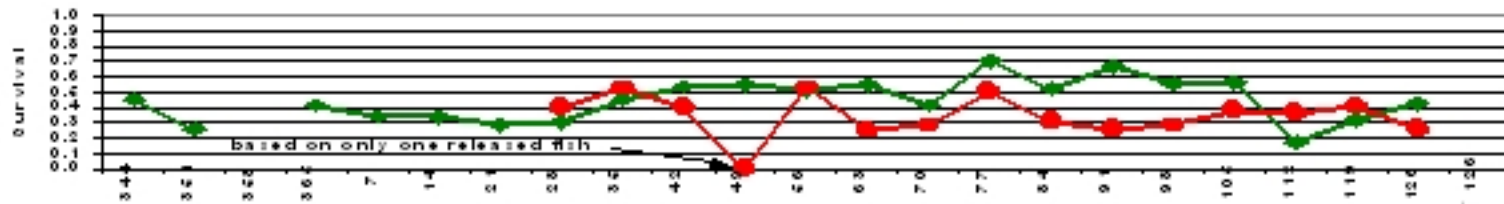


# Wild and Hatchery Smolt Survival Indices From Roza Dam to McNary

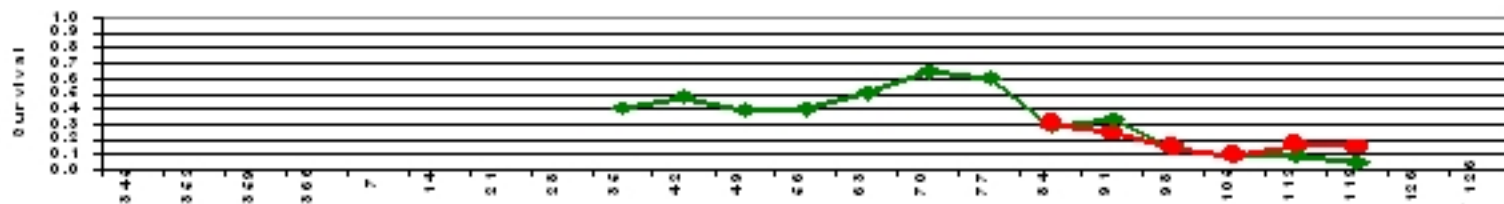
1999 Spring Chinook Roza-Release-to-McNary-Dam Smolt-Survival Index (1997 Brood)



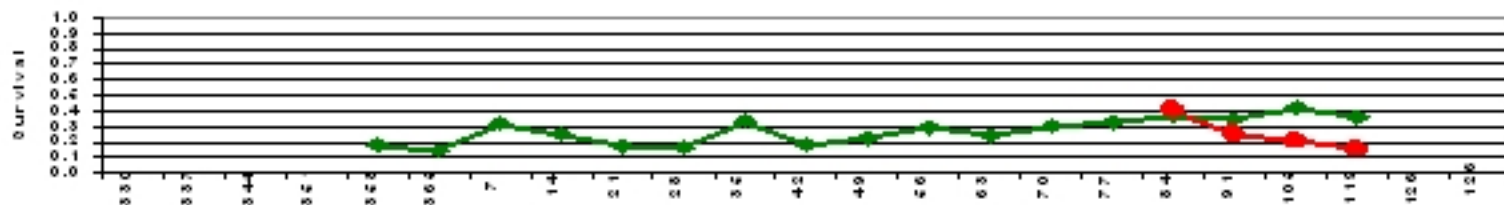
2000 Spring Chinook Roza-Release-to-McNary Dam Smolt-Survival Index (1998 Brood)



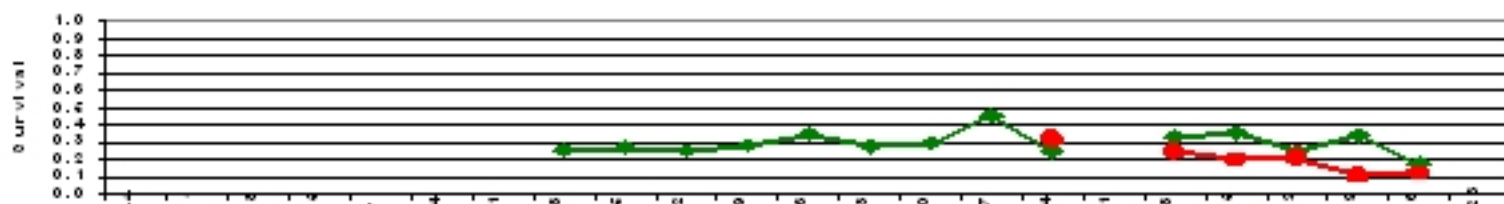
2001 Spring Chinook Roza-Release-to-McNary-Dam Smolt-Survival Index (1999 Brood)



2002 Spring Chinook Roza-Release-to-McNary-Dam Smolt-Survival Index (2000 Brood)



2003 Spring Chinook Roza-Release-to-McNary-Dam Smolt-Survival Index (2001 Brood)



Ending Julian Date of Roza Release  
 Wild Hatchery Pooled



# **Growth Modulation Research Brood Years 2002-2005**

- **Evaluate the Effect of Growth Modulation**
- **High vs Low Growth Rates of Juveniles**
- **Preliminary Research Indicates Lower Growth Rates Reduce Precocialism**  
(Larsen, 2004)
- **Evaluate on Large Production Facility**
- **Does Smaller Smolt Size Reduce Survival?**

# 2004 Migration Survival to McNary of Lo and Hi Feed Regimes

