Introduction: Grande Ronde Basin Spring Chinook Salmon LSRCP Program Review – The Early Years

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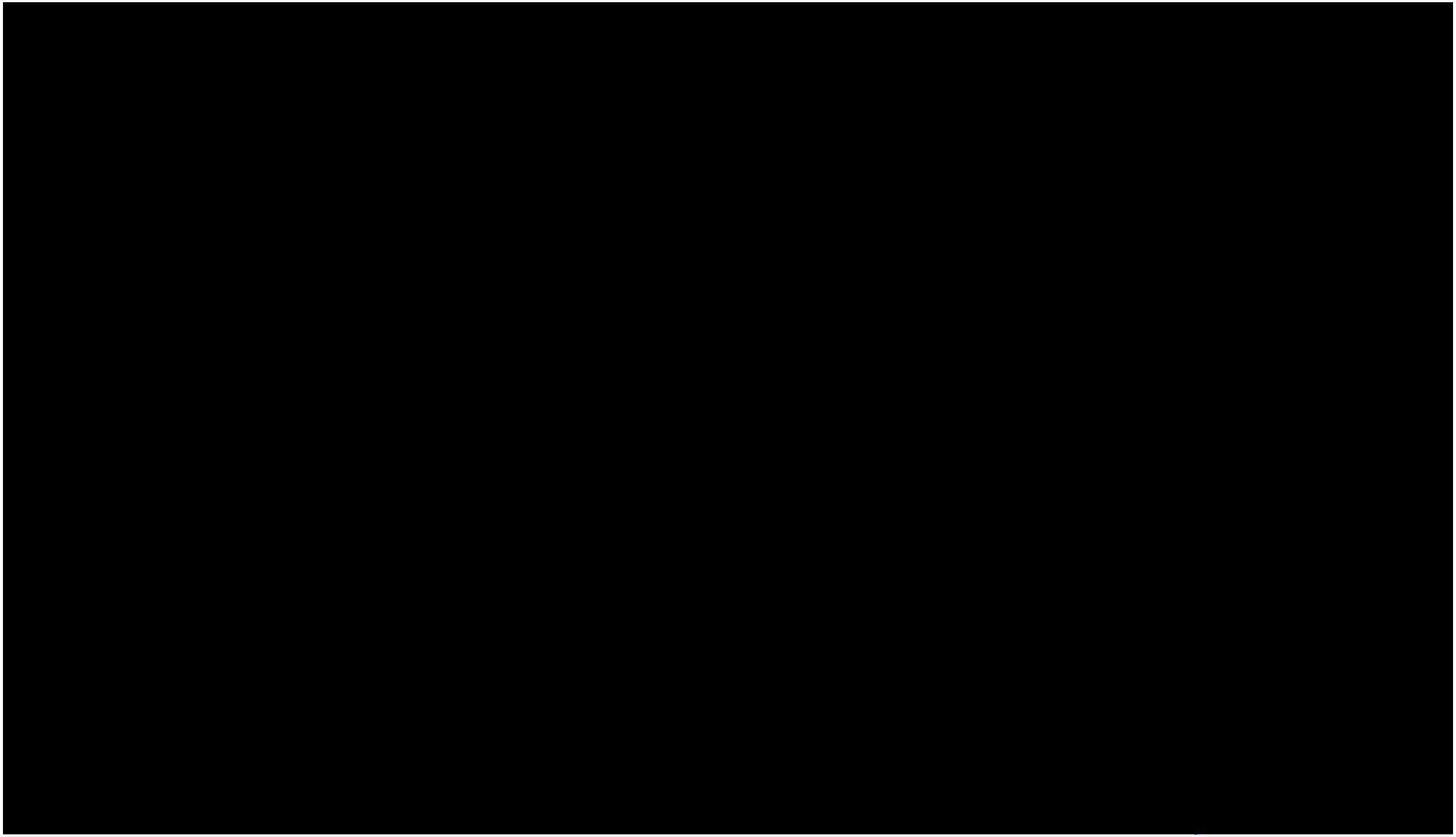
Presentation Outline

- Program development history and background
- Early program performance (early 1980's – late 1990's)
- Biological risk and policy/legal influences
- Adaptive management decisions and hatchery reform actions
- Current program description

Grande Ronde and Imnaha River Basins Chinook Hatchery Facilities



Mitigation Goals

Spring Chinook Salmon
Grande Ronde Basin
Annual Goals

900,000 Smolts

45,000 Lbs.

5,820 Adults

0.65% Smolt-to-Adult Return Rate

29,100 Total Adults

3.25% Smolt-to-Adult Survival Rate

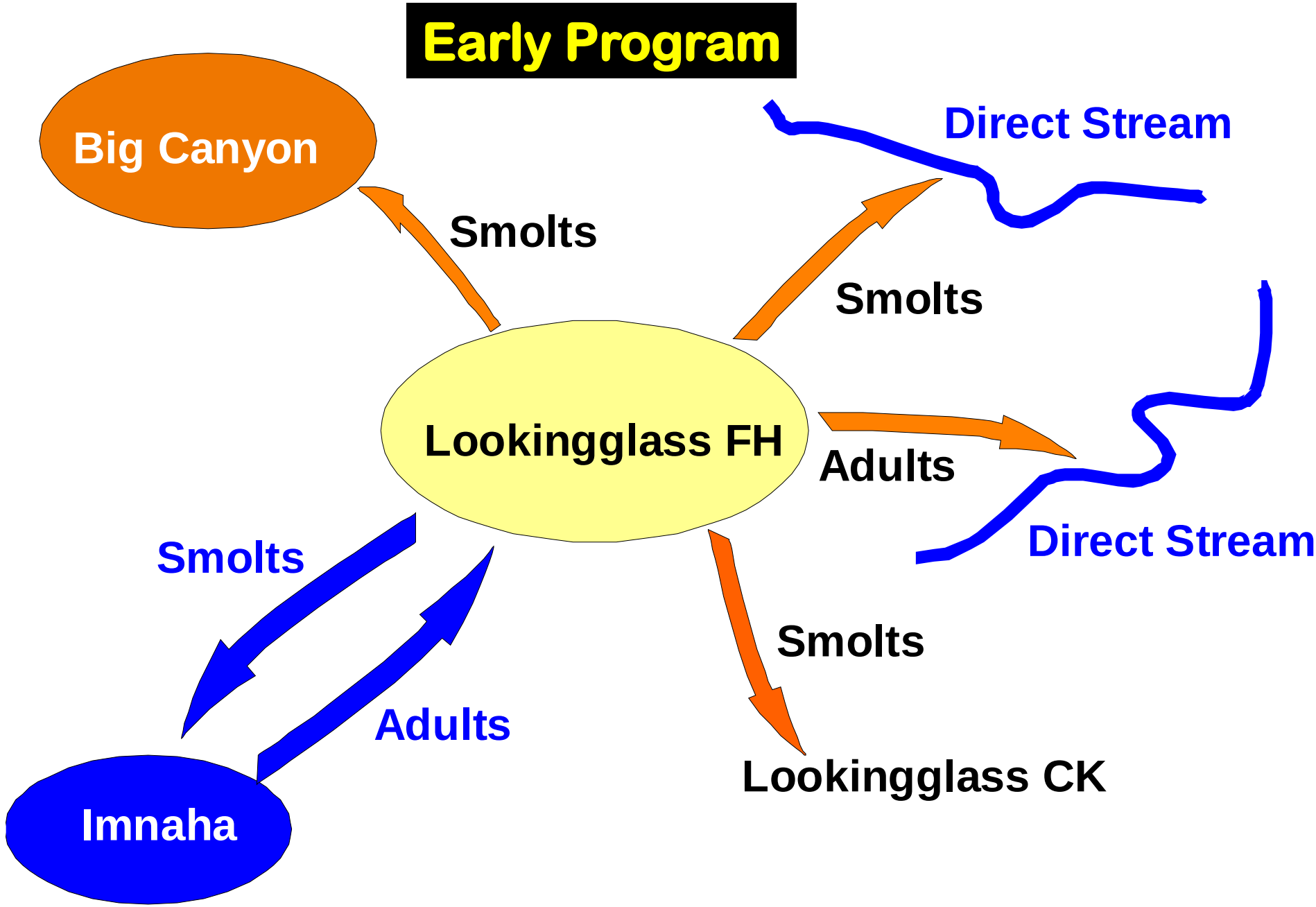
Original Management Objectives

- Establish adequate broodstock to meet annual production needs.
- Restore and maintain natural spawning populations of spring chinook salmon in the Grande Ronde Basin.
- Reestablish historic tribal and recreational fisheries.
- Establish an annual return of 5,820 hatchery fish.
- Maintain endemic wild populations of spring chinook salmon in the Minam and Wenaha rivers.
- Minimize impacts of hatchery program on resident stocks of game fish.

Initial Evaluation Objectives

- Document and assess fish culture and hatchery operation practices.
- Determine optimum rearing and release strategies that will produce maximum survival to adult.
- Determine total catch and escapement and assess if adult production meets mitigation goals.
- Determine the success of maintaining genetic integrity of endemic wild spring chinook salmon in the Minam and Wenaha rivers.

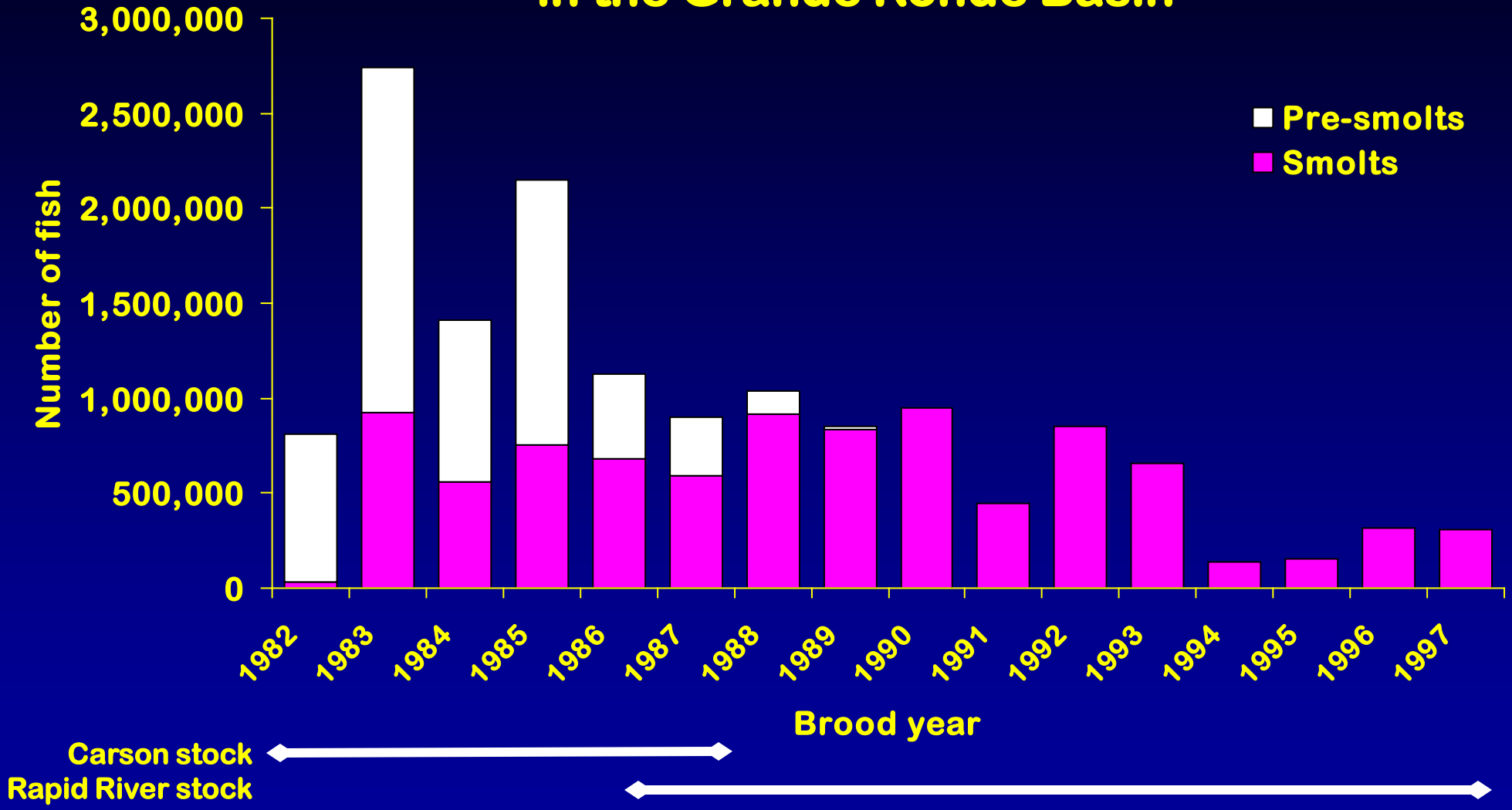
Lookingglass Fish Hatchery


Early Program
Big Canyon
Smolts
Direct Stream
Smolts
Lookingglass FH
Adults
Direct Stream
Smolts
Adults
Smolts
Lookingglass CK
Imnaha

Broodstock History

Brood year	Stock Source
1978	Rapid River
1980-84	Carson / Willamette Hatchery
1985-87	Carson / Lookingglass Hatchery Rapid River / Idaho
1988	Rapid River / Idaho
1989	Carson / Lookingglass Hatchery Rapid River / Idaho
1990-97	Rapid River / Lookingglass Hatchery

Releases of Spring Chinook Salmon in the Grande Ronde Basin

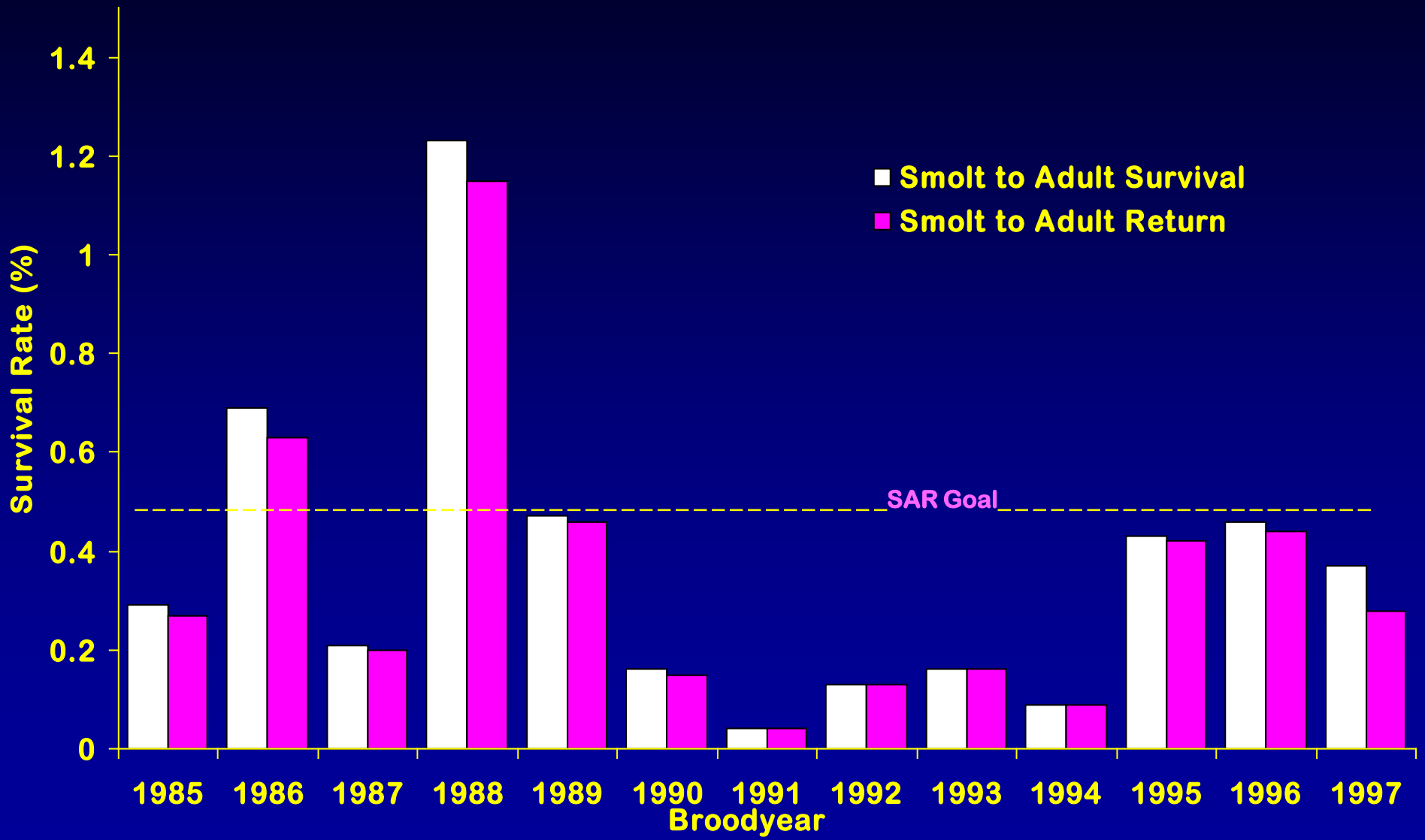


Spring Chinook Salmon Supplementation Efforts

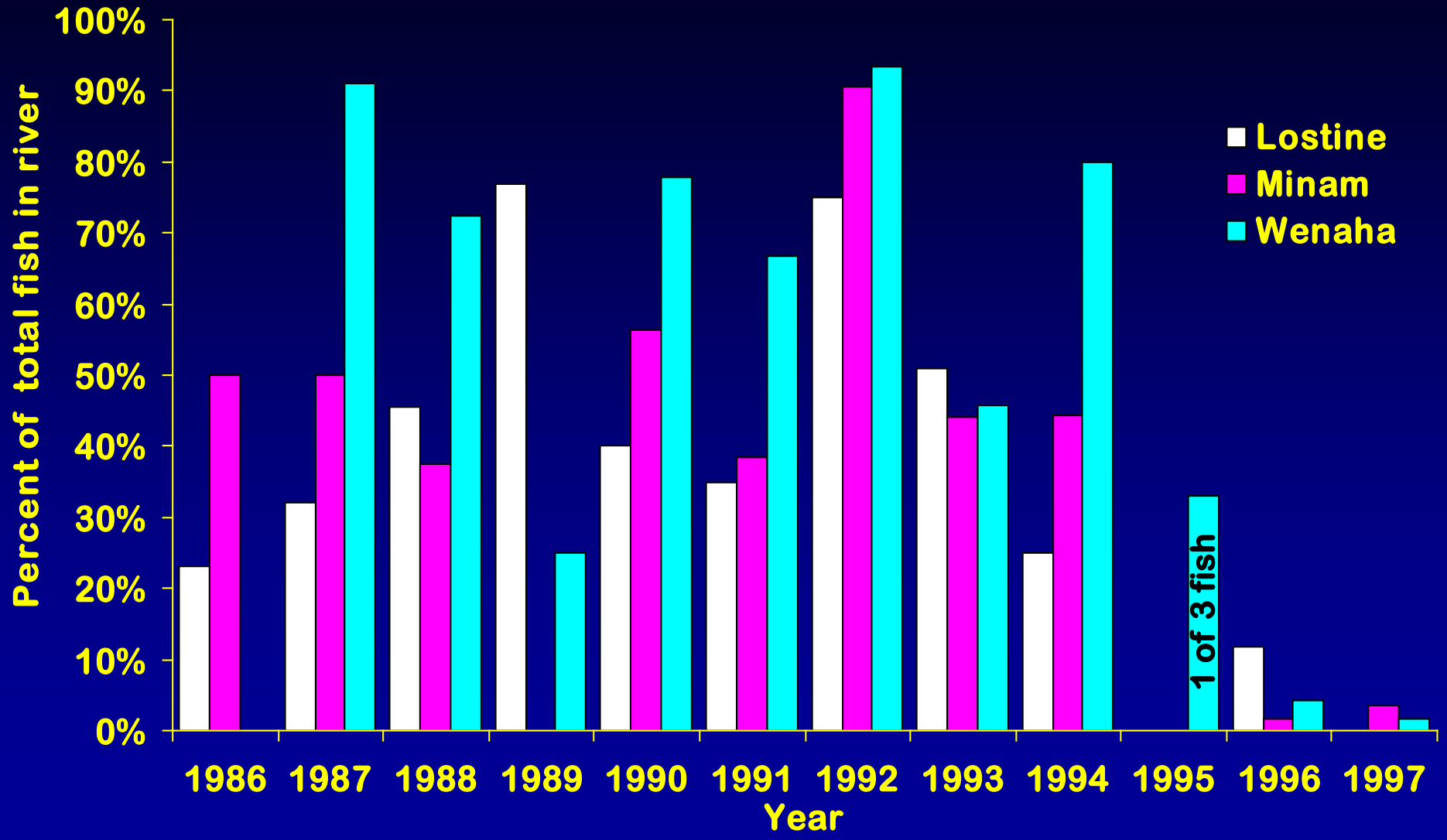
- Carson or Rapid River stock smolts (1980-1988 BY) into Catherine Creek and Upper Grande Ronde River
- Carson stock pre-smolts (1983 and 1985 BY) into Catherine Creek and the Upper Grande Ronde River
- Carson stock adults (1987-1989) into Catherine Creek, upper Grande Ronde and Wallowa rivers

Returns to Compensation Area
Goal = 5820

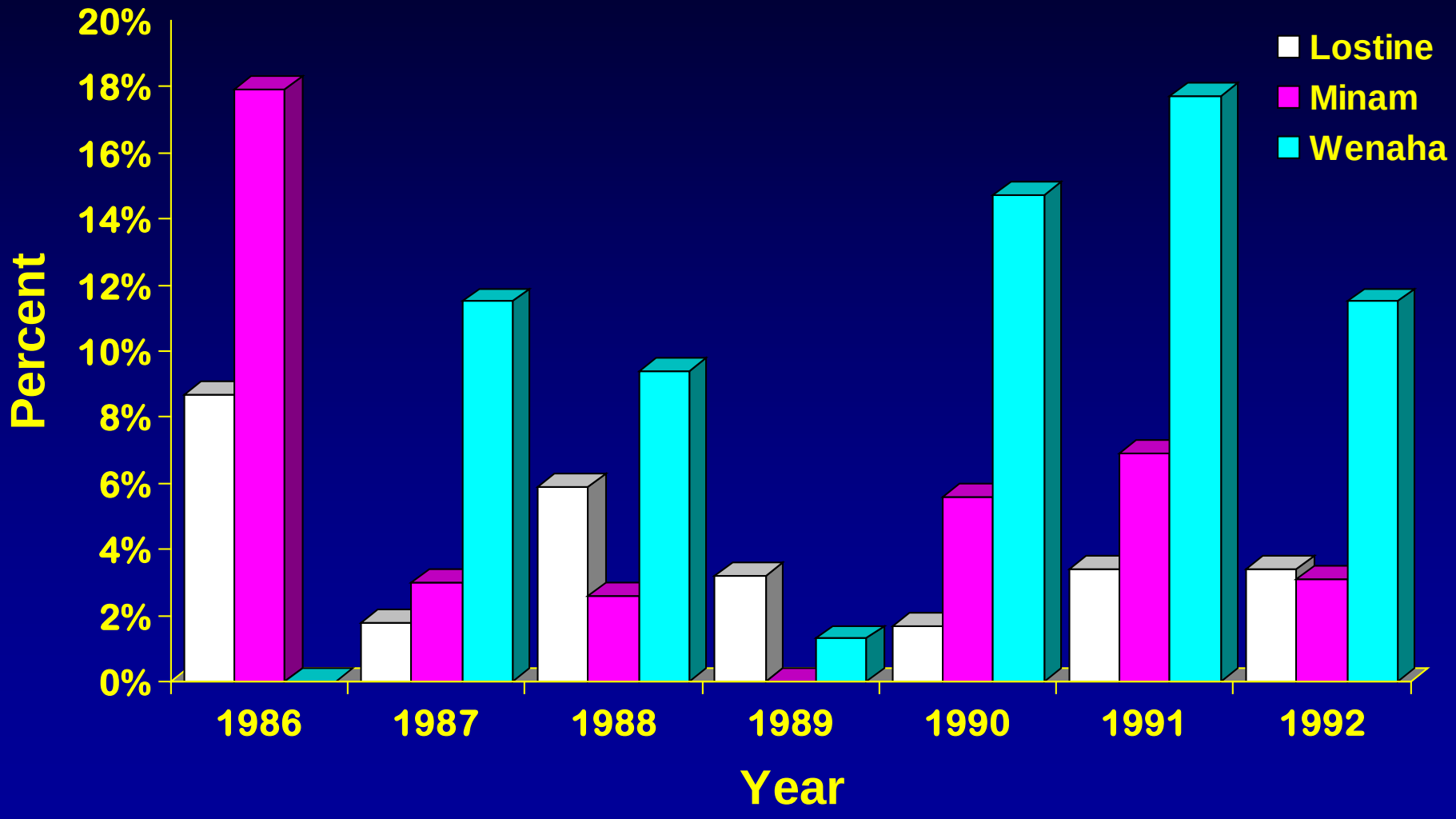
Smolt-to-Adult Survival and Return Rates



Percentage of Naturally Spawning Fish of Lookingglass Hatchery Origin



Rate of Straying of Hatchery Fish in the Grande Ronde Basin



Summary

- Using Carson and Rapid River stocks allowed us to achieve smolt production goals quickly and develop an adequate broodstock.
- Smolt-to-adult survival rates were consistently poor.
- Sufficient numbers of adults were not available to re-establish recreational fisheries. Tribal fishing opportunity was provided only in in a few years in restricted locations.
- Hatchery origin fish were straying into the Lostine, Minam, and Wenaha rivers and represented a high percentage of fish spawning in nature.
- Natural population status was severely depressed and supplementation efforts had failed as shown by poor recruits per spawner and low abundance of natural spawners in supplemented populations.

Policy Influences

- **Oregon's Wild-Fish Management Policy (1990)**
  Guidelines that specified limits on the proportion of natural spawners that were hatchery origin

- **Listing as threatened under ESA (1992)**

The hatchery program was generating outcomes that were inconsistent with the Wild–Fish Policy guidelines, ESA recovery and sound conservation principles

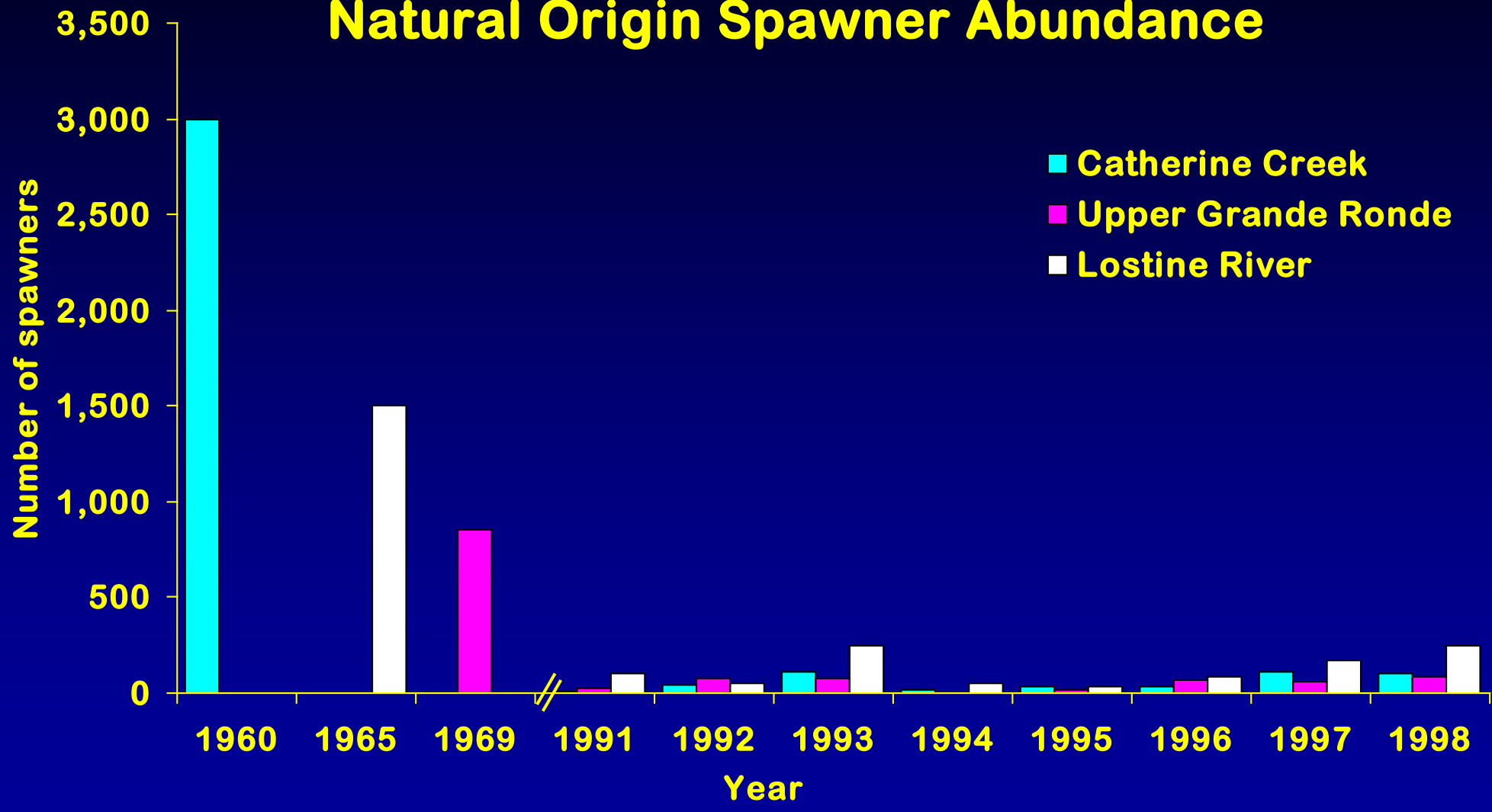
To Inform Wise Hatchery Reform
Critical Biological Questions

What is the demographic status and the near term risk of extinction of chinook salmon populations in the basin?

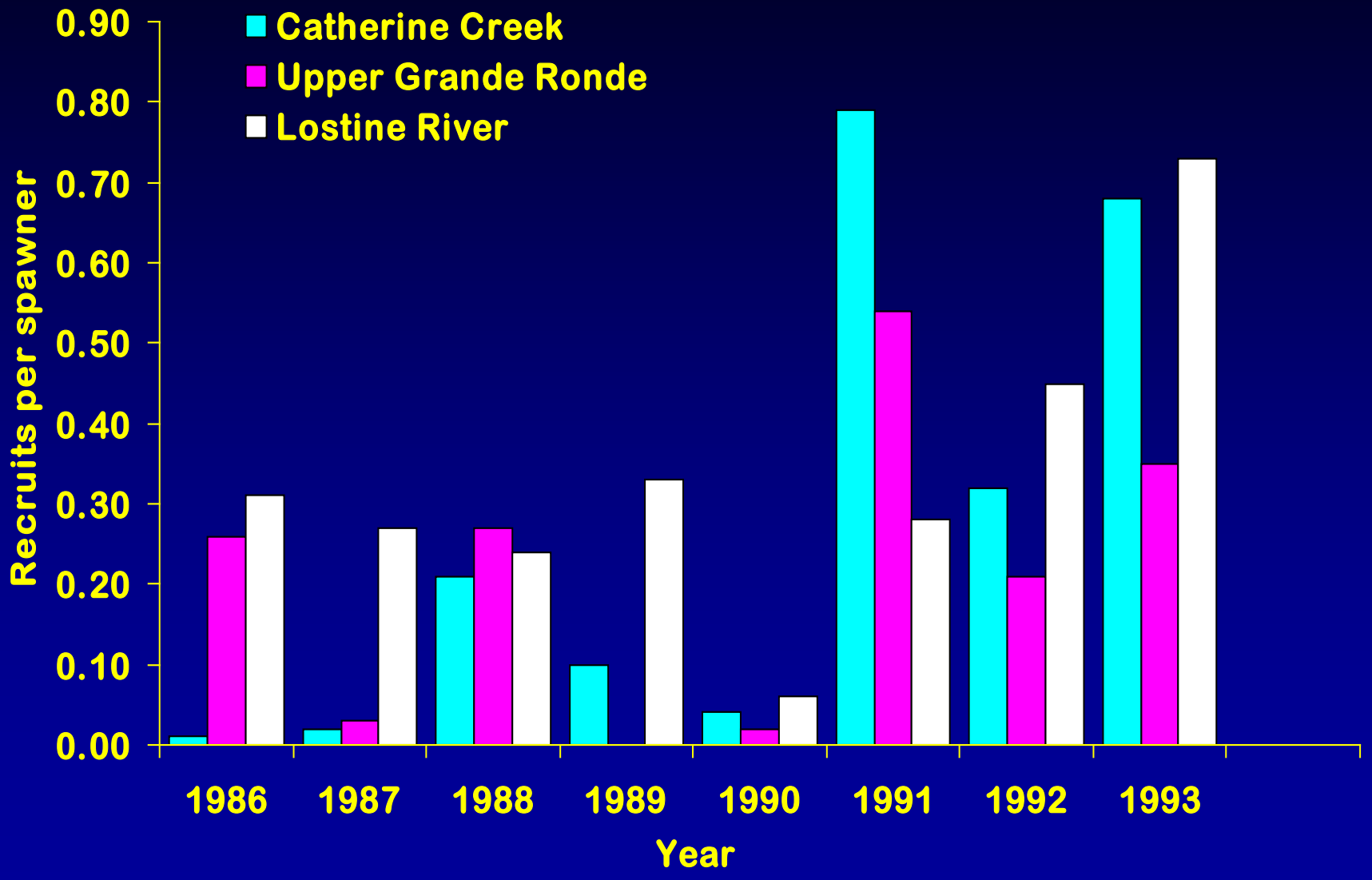
What genetic effects have resulted from prior releases and straying of non-endemic hatchery stocks?

Does there remain any genetic differentiation between natural and hatchery populations and between natural populations?

Demographic Status
Natural Origin Spawner Abundance



Natural Origin Recruits per Spawner



Conclusions

- Prior supplementation failed as indicated by low natural origin abundance.
- Extinction risk was high based on population growth rate trends, low abundance of natural origin spawners, and low productivity.
- There was significant genetic differentiation between hatchery and natural populations and between the Minam, Wenaha, Upper Grande Ronde, Lostine, and Catherine Creek natural populations.
- Hatchery programs using endemic broodstock should be initiated immediately in Catherine Creek, the Upper Grande Ronde, and Lostine river populations.
- Given the uncertainties associated with use of artificial propagation to enhance natural production, we should use a diversified approach (lower to higher risk) and maintain the Minam and Wenaha river basins as wild-fish management areas.

Adaptive Management
Hatchery Reform Actions

- Eliminated releases of Rapid River stock Chinook salmon in the Grande Ronde basin in 1999. Uniquely marked and trap/removal at Lower Granite Dam.

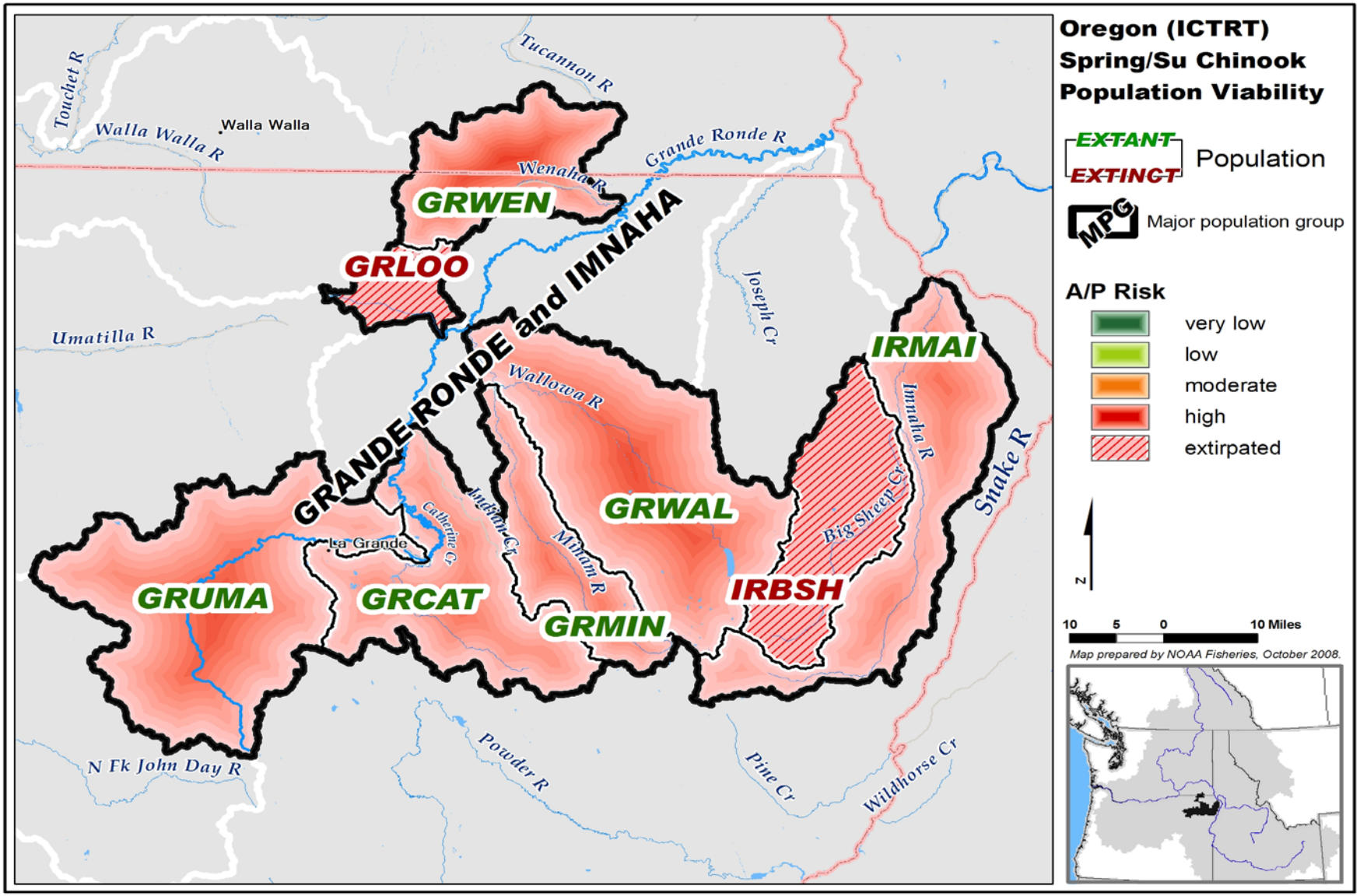
- Initiated captive broodstock with collection of parr from Catherine Creek, the Upper Grande Ronde, and Lostine rivers in 1995.

- We began conventional supplementation programs (natural adult broodstock) in Catherine Creek, the Upper Grande Ronde, and Lostine rivers in 1997 using sliding scale management strategies.

- Constructed acclimation and adult capture facilities on Catherine Creek, Upper Grande Ronde and Lostine rivers and made significant modifications to Lookingglass Hatchery.

- Developed comprehensive hatchery management and monitoring plan to guide programs into the future - NEOH

Grande Ronde - Imnaha MPG Populations

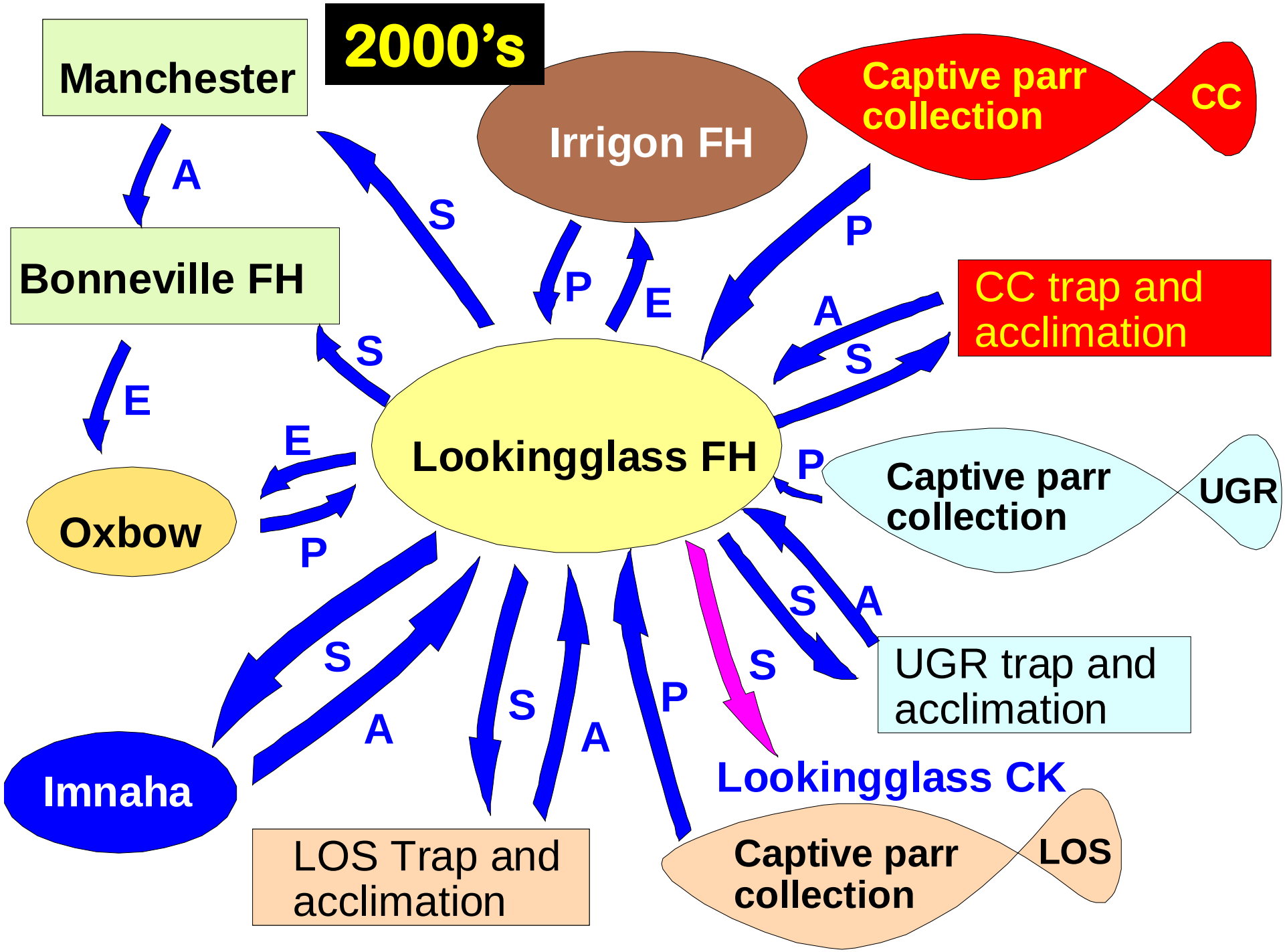


Mitigation Goals

Spring Chinook Salmon
Grande Ronde Basin
Specific Population Program Goals

Upper Grande Ronde River	250,000 Smolts
Lookingglass Creek	1617 Adults
Lostine River	
Catherine Creek	150,000 Smolts
	970 Adults

0.65% Smolt-to-Adult Return


2000's
Manchester
A
Bonneville FH
E
Oxbow
S
P
E
Irrigon FH
P
E
S
Lookingglass FH
S
A
P
CC trap and acclimation
Captive parr collection
CC
P
Captive parr collection
UGR
S
A
UGR trap and acclimation
S
P
Lookingglass CK
Captive parr collection
LOS
S
A
LOS Trap and acclimation
S
A
Imnaha

Grande Ronde River Basin Chinook Salmon Hatchery Program Organization