

2010 LSRCRP Spring/Summer Chinook Symposium

Symposium Summary

Mark Schuck



- What am I going to tell you?
 - Metrics – as agreed upon by Cooperators
 - Generalizations (everything is combined)
 - Observations/take homes
 - Program strengths and Data gaps
- How did I summarize the data?
 - Cooperators provided Metric Summaries
 - Tried to roll-up into general overview take-homes.
 - I did not comprehensively re-analyze data.

Roll Up Presentation

- Remember

- The data represent the hard work of a large hatchery network and their staff (production) to meet challenging goals and objectives.
- The data are a result of close collaboration among cooperators (hatchery + M&E), and represent estimates of performance within the limitations of time, money and management direction at the time.
- Production and evaluations have been as adaptive as possible while attempting to retain the continuity of purpose that is necessary for anadromous fish mitigation. Currently 100% marked production for accounting and assessment.

Roll Up Presentation

- Smolt production (assumed 0.87% SAR)
 - 6,750,000
- Adult Numbers (escapement)
 - 58,700 to Snake Basin
- Harvest (somewhere downriver)
 - 58,700 sport harvest
 - 176,100 commercial harvest

LSRCP Goals/Assumptions

- Objectives changed as a result of ESA or production or management goals changed by the Cooperators. Progress toward goals or objectives presented here reflect those changes over time.
- Post release survival (to LGD and SAR/SAS)
- Population level changes (age structure, return timing, productivity)
- Fisheries
- Focus period (BY1996-2004)

LSRCP Summary Goals

In-Hatchery Performance

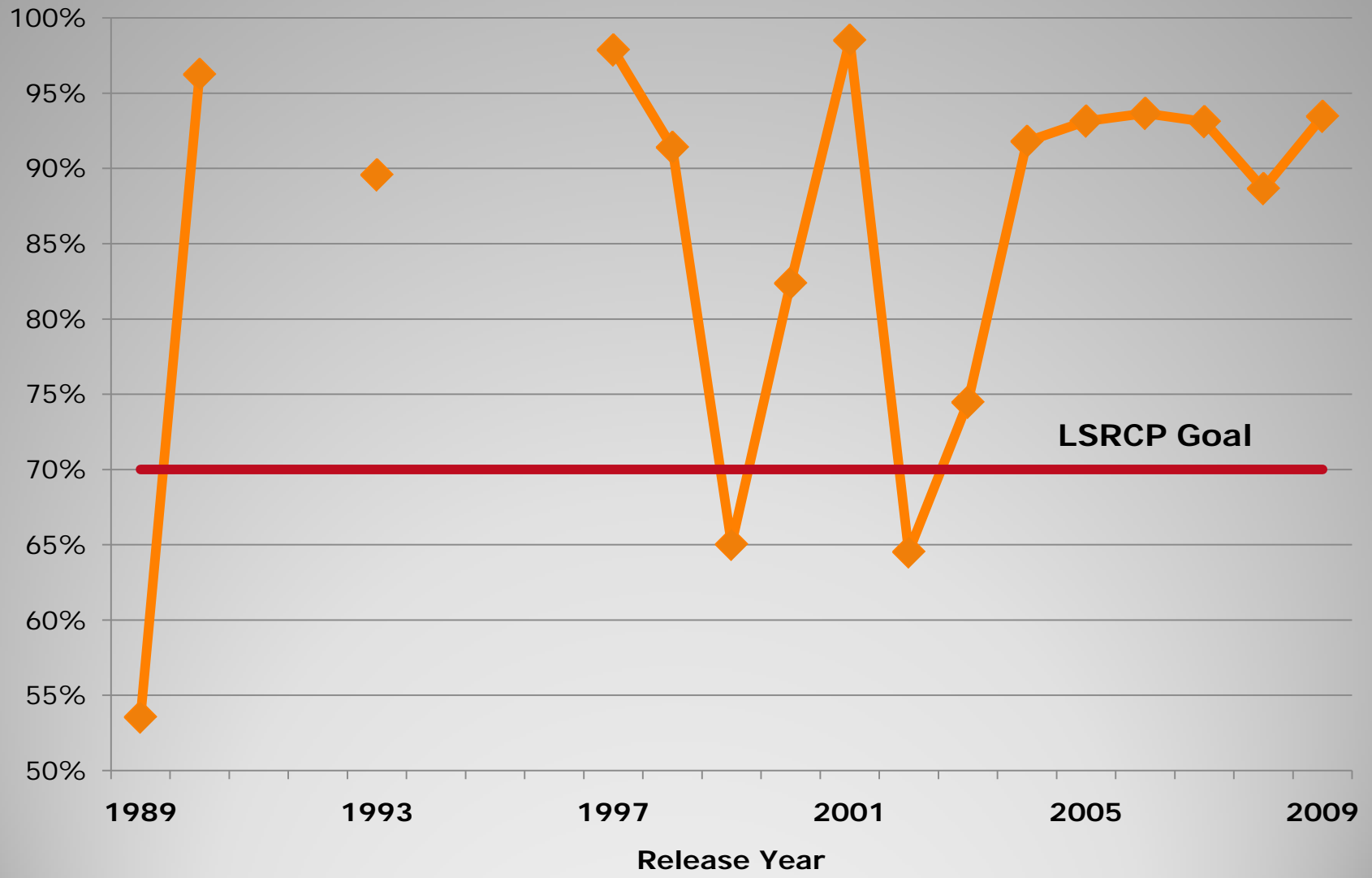


McCall Fish Hatchery,
McCall Idaho
FWS Image



- In general mitigation programs are typically meeting brood stock objectives. Other programs face challenges.
- Mature supplementation programs are also mostly successful in brood collection.
- New supplementation programs have experienced challenges with brood stock:
 - Low abundance of NOR
 - Low abundance of early hatchery releases
- Supplementation programs can face challenges collecting representative brood stock and achieving desired PNI.

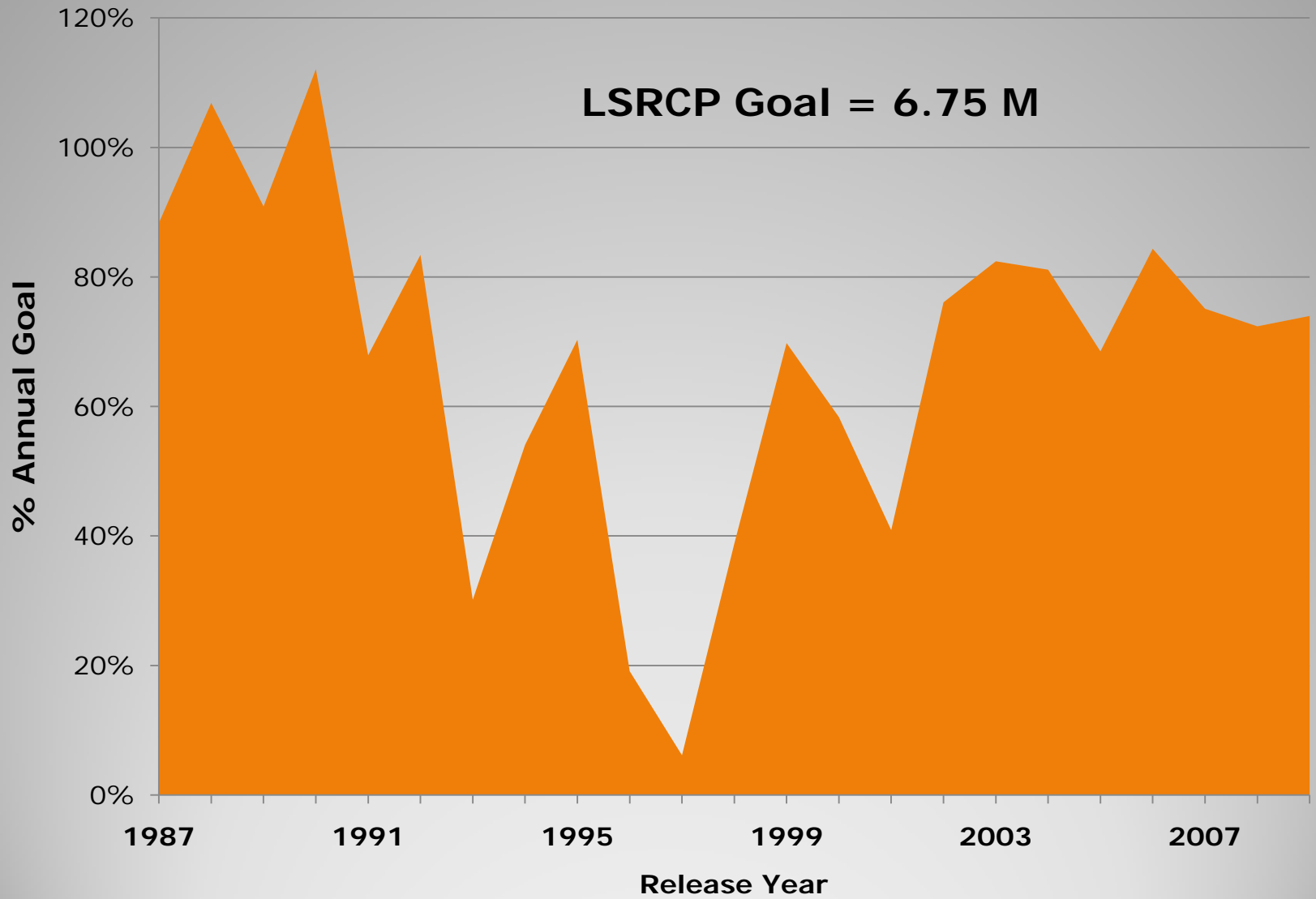
Brood stock Acquisition



Egg to smolt survival: Goal = 70%

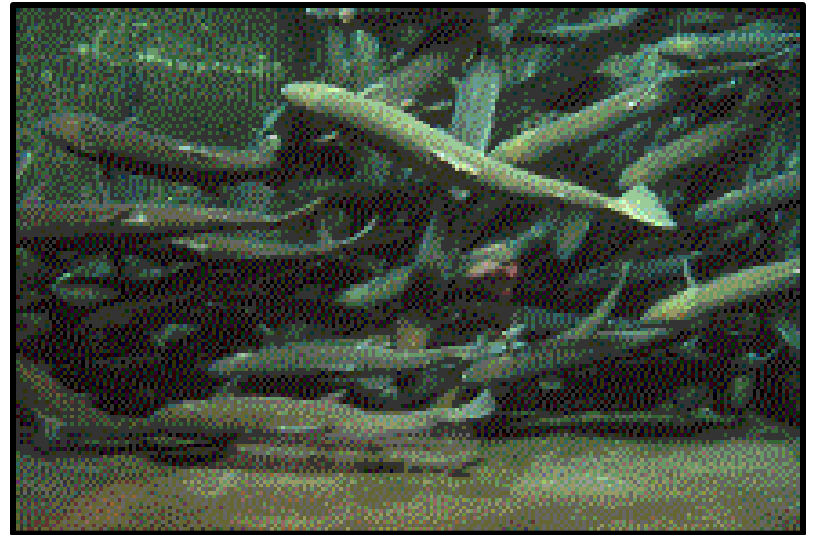
- BKD control has been effective
 - Prophylactic treatments of adult females are used commonly. Juvenile treatments are used, but more/less aggressively by agency protocol.
 - Culling of eggs from high ELISA value females is used by some hatcheries –not universally.
 - Prevalence has dropped.
 - ODFW not seen increase in natural populations.
- Standard Disease monitoring is closely followed throughout the Program
- Presently disease is not limiting production.

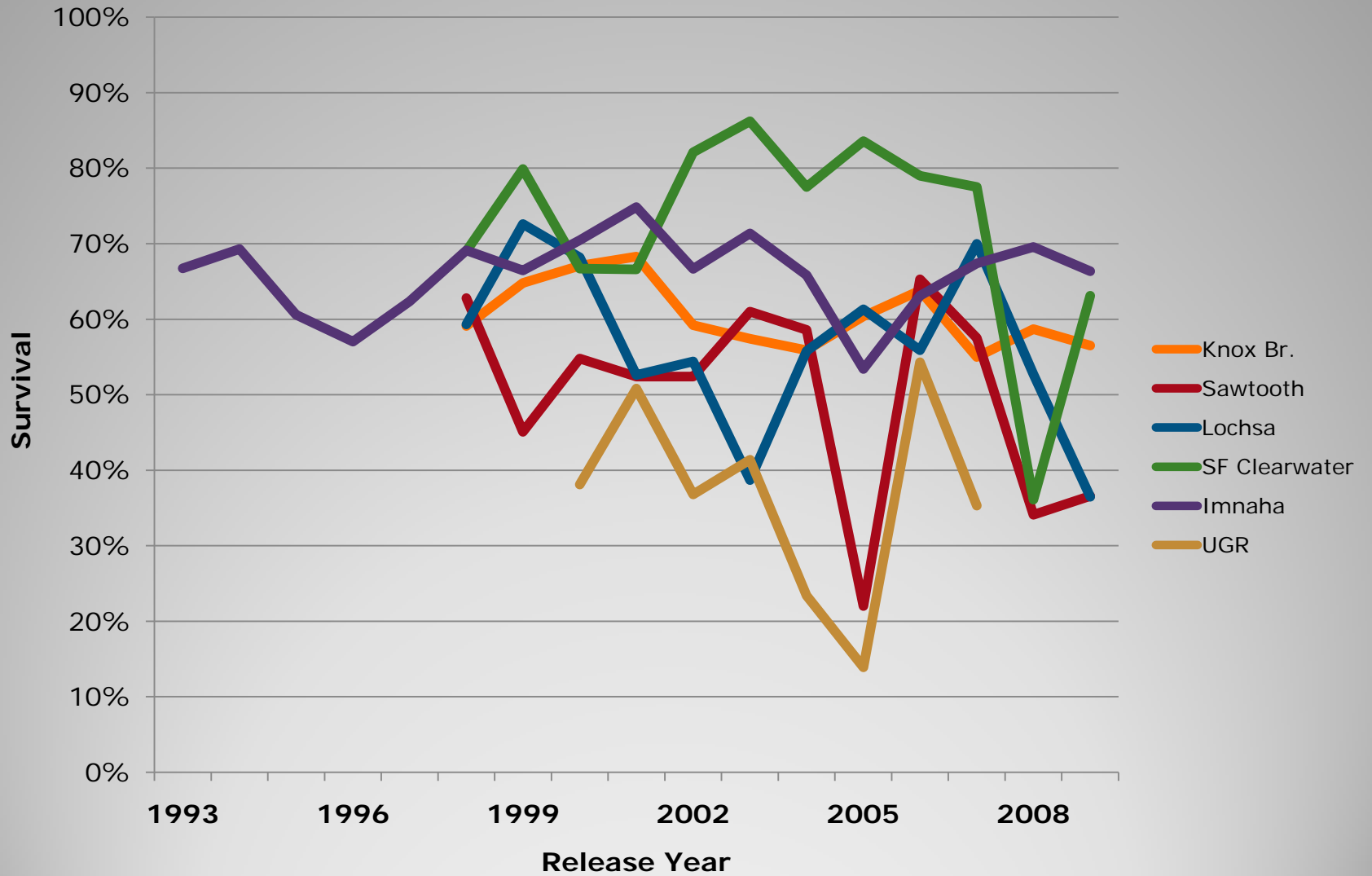
Disease Considerations



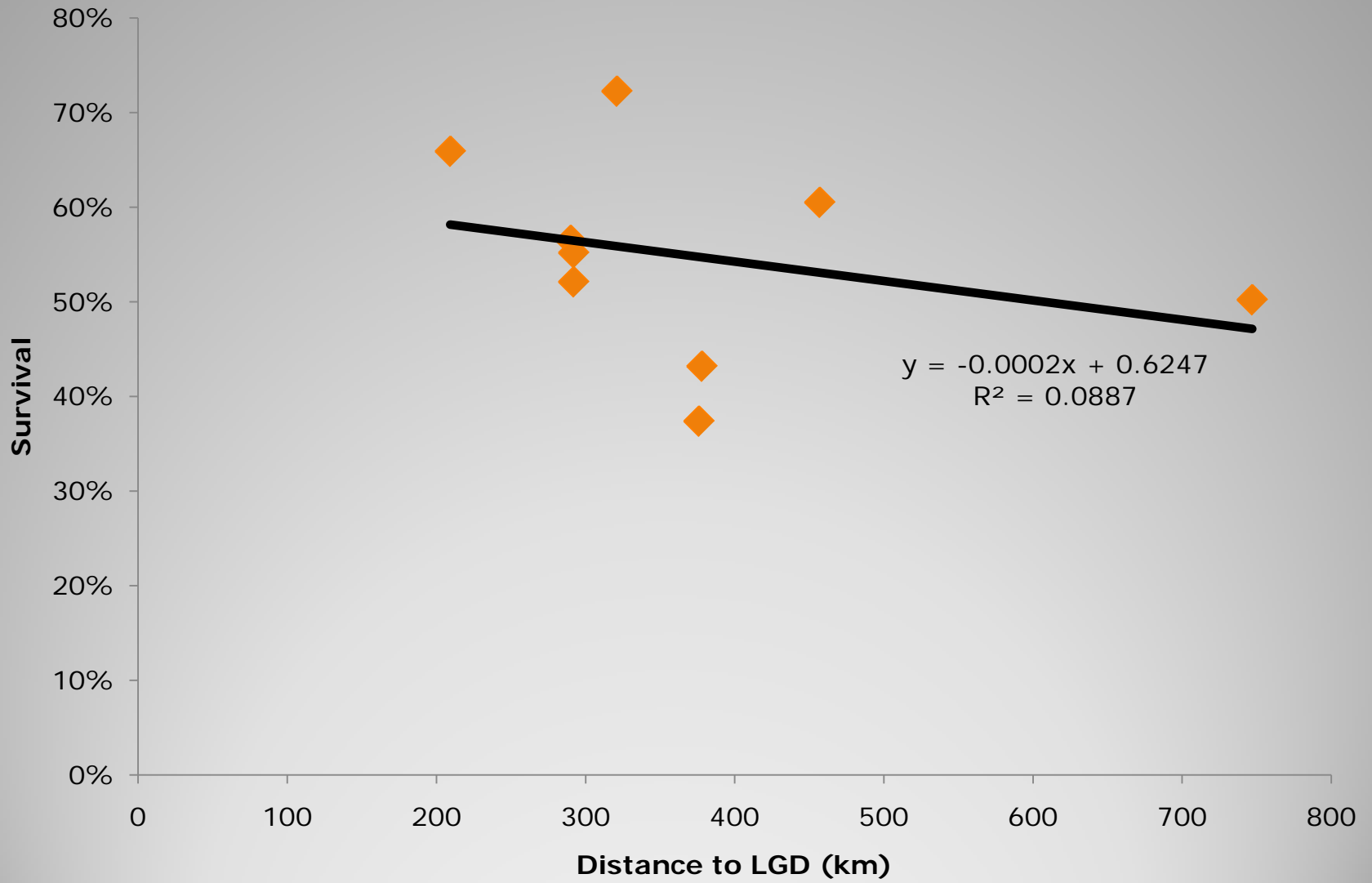
Smolt production : LSRCP total

Post Release Performance

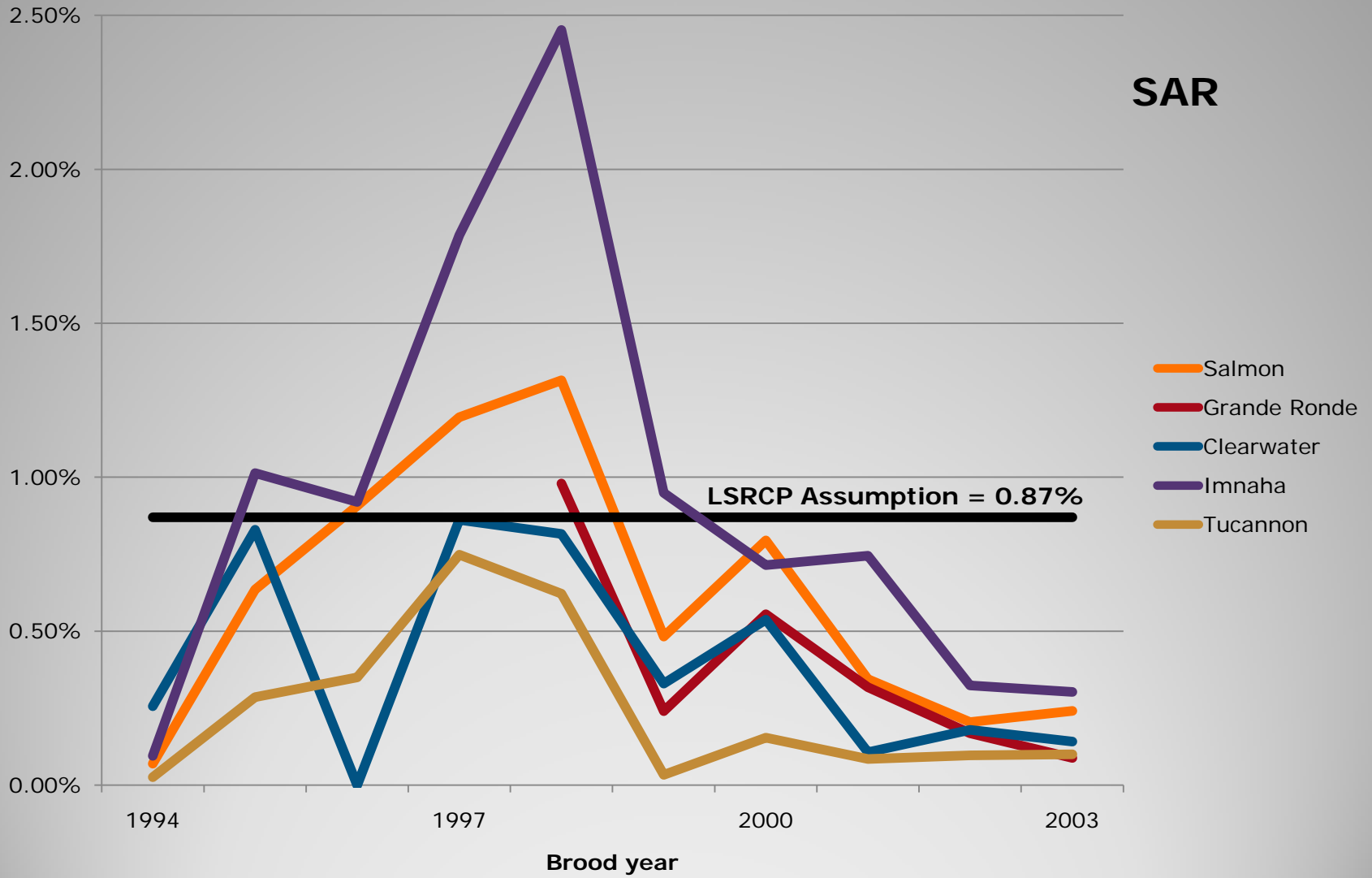




Smolt Survival: Release to LGD

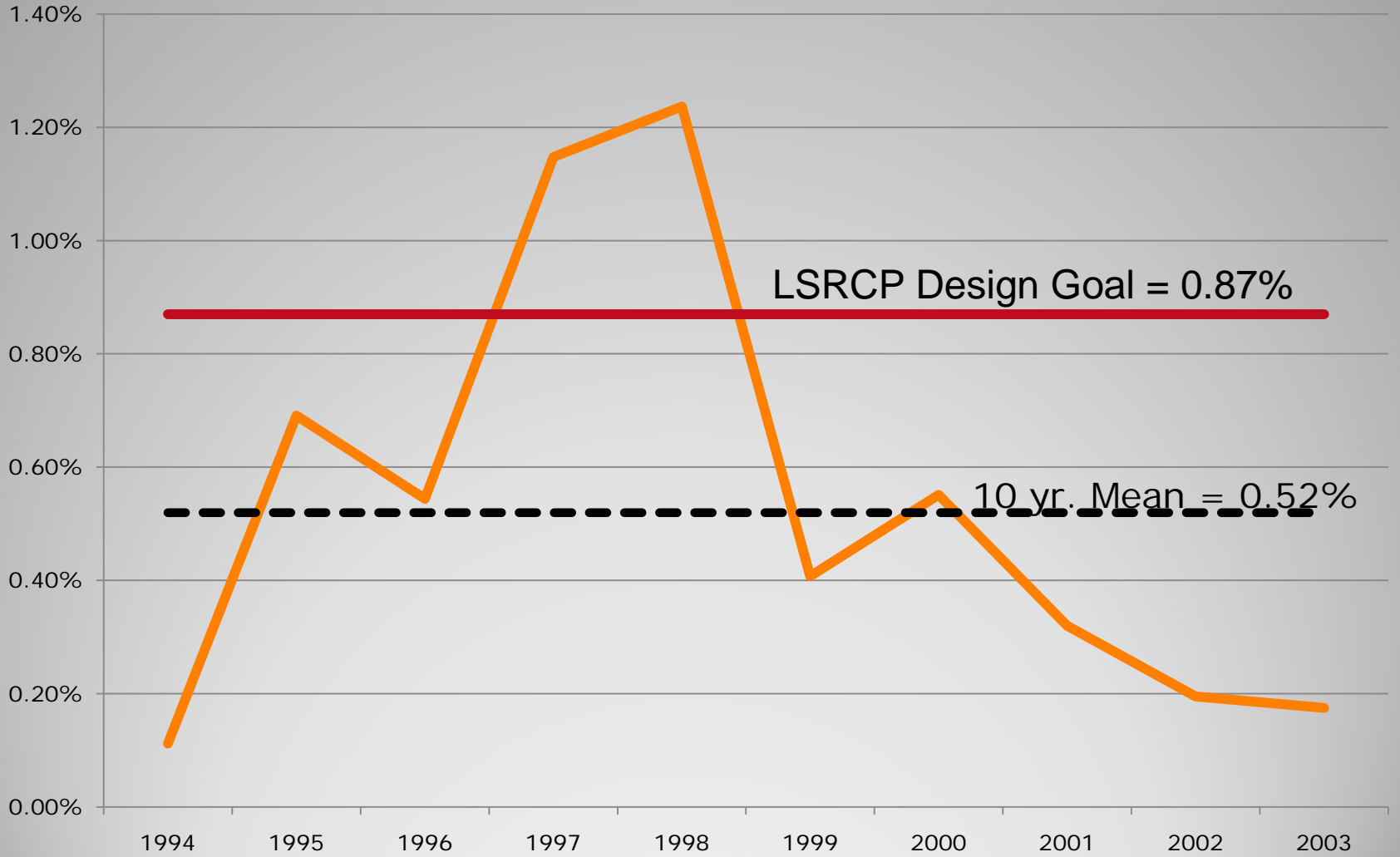


Mean Survival to LGD



SARs for Primary Rivers

Mean SAR for LSRCP by Brood Year

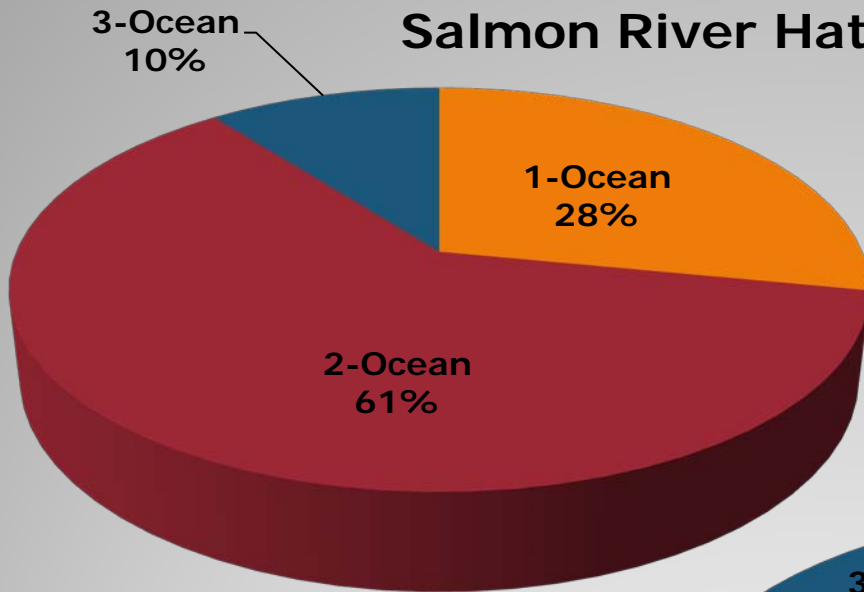


Brood Year

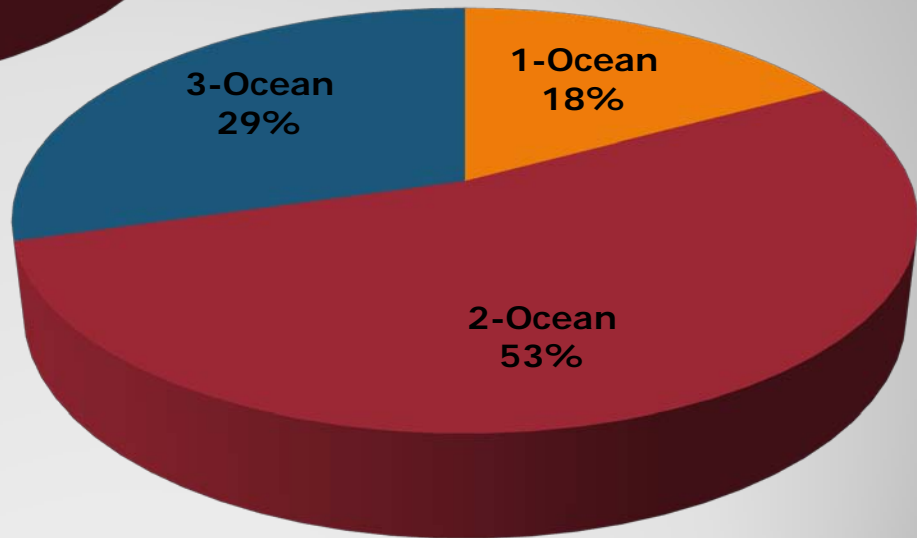
- Hatchery and natural population run timing does not appear to have significantly changed over time.
- Although there tends to be slight deviations between H & N at LGD, with slightly prolonged natural arrival.
- Spring and summer populations retain their different timing.

Return Timing

Salmon River Hatchery

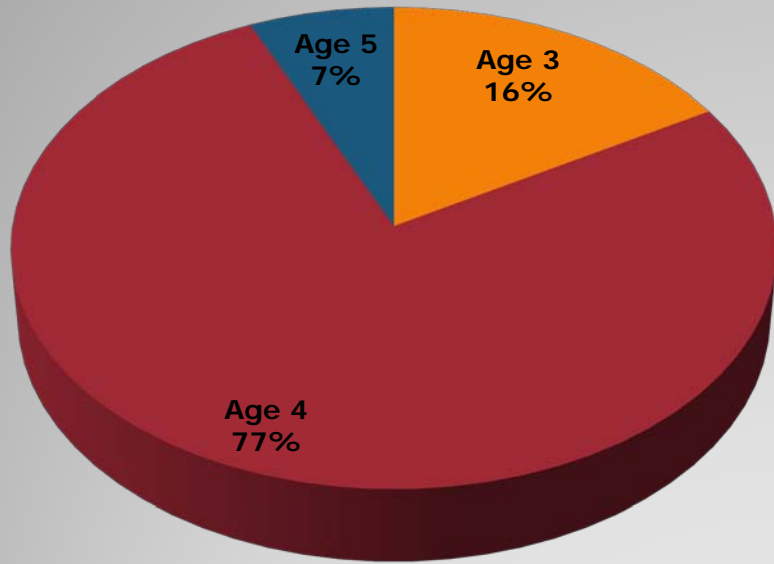


Salmon River Natural

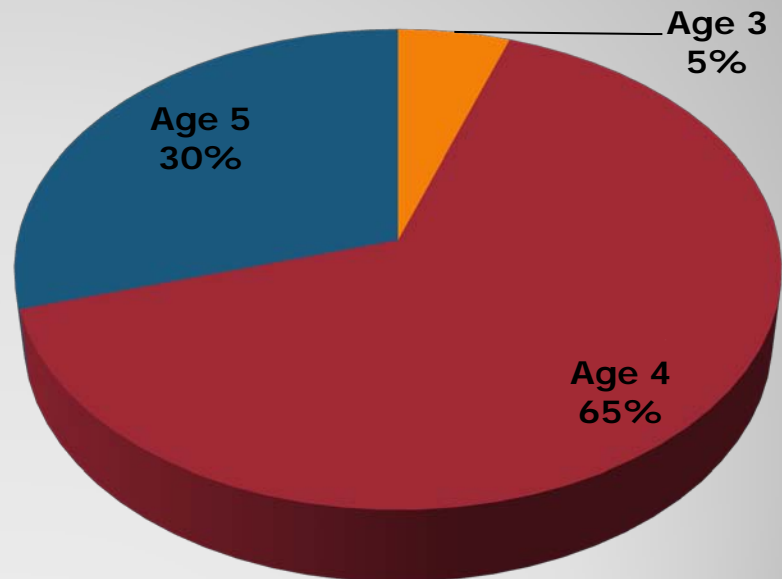


Age at return

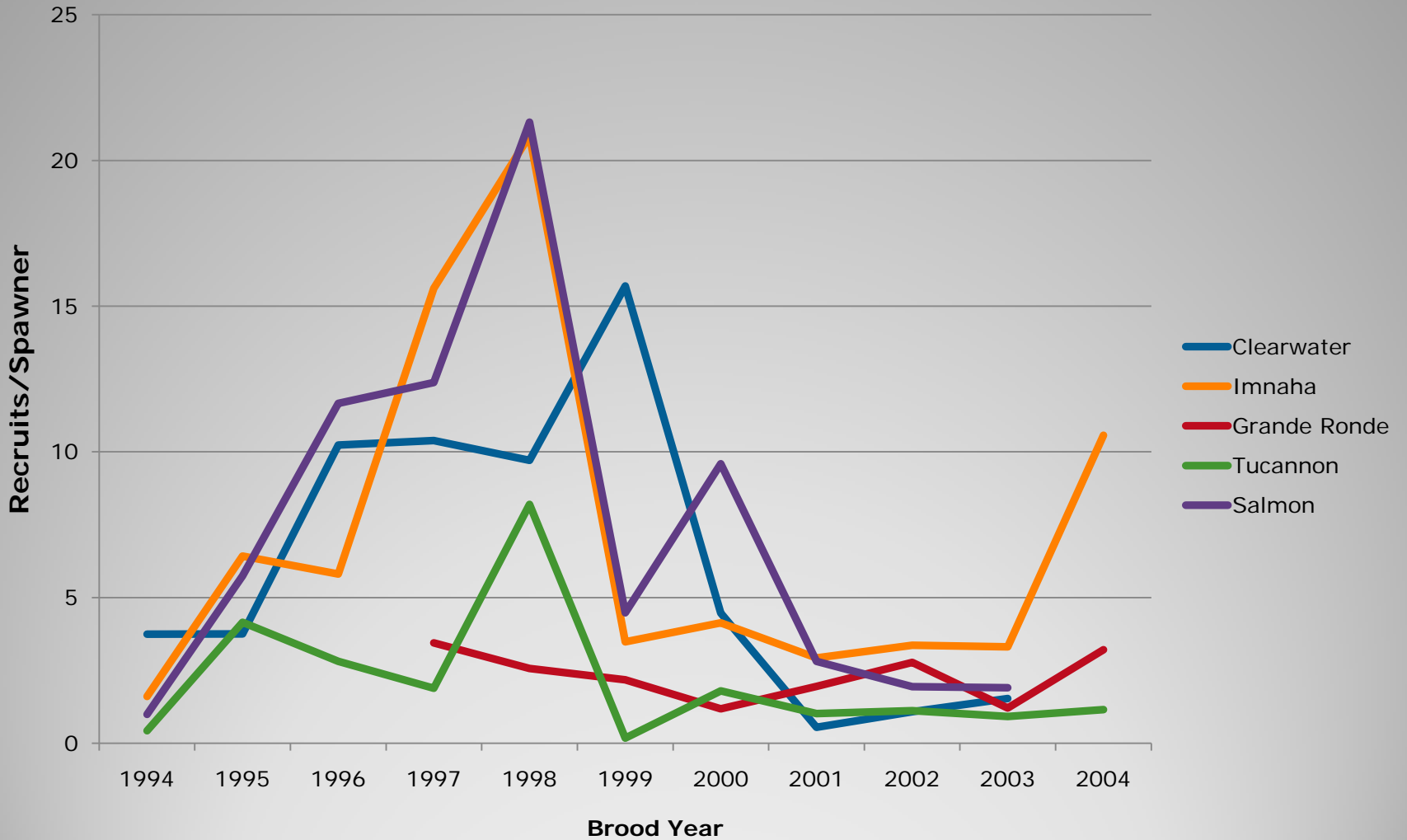
Grande Ronde Hatchery



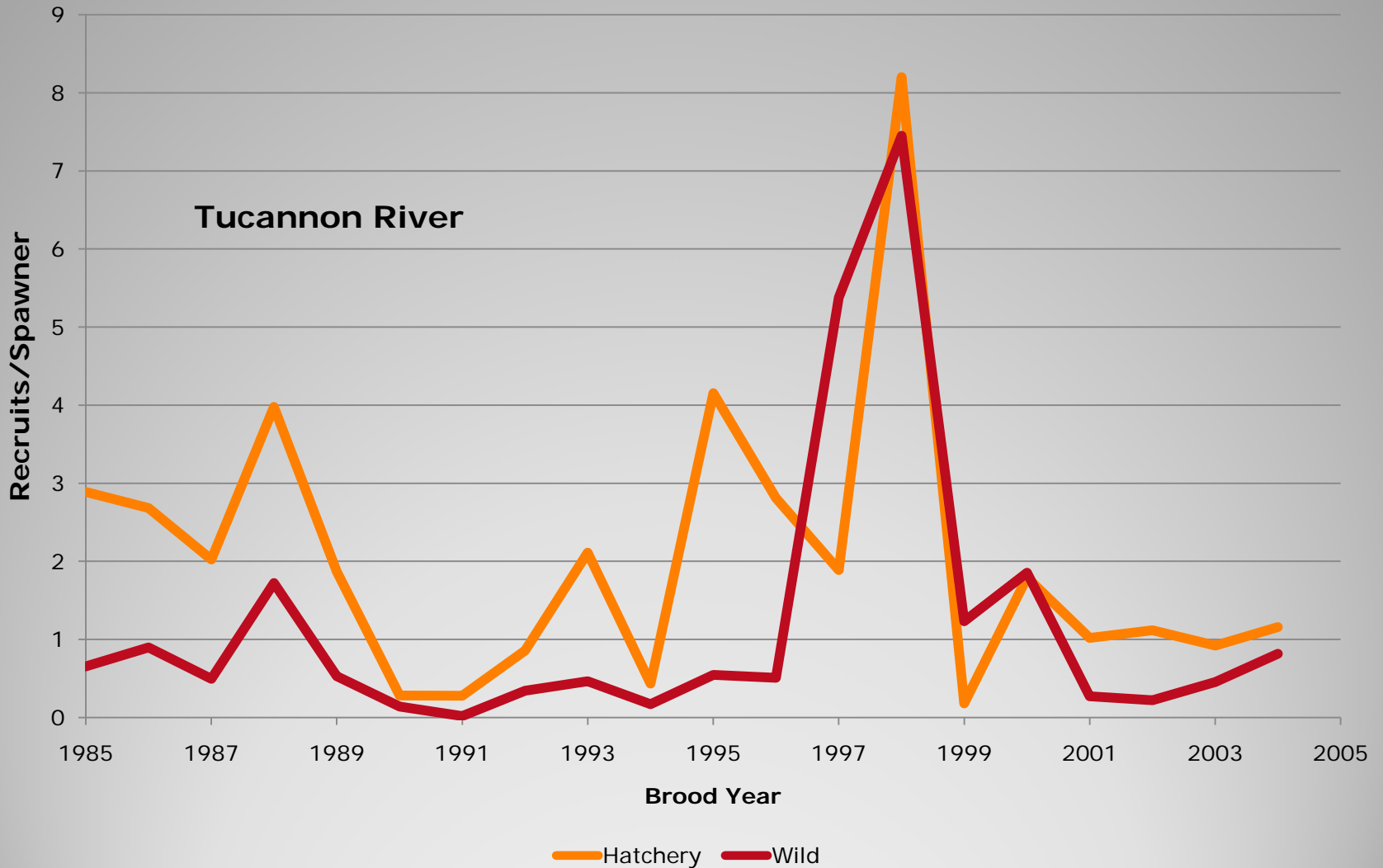
Grande Ronde Natural



Age at Return



**Hatchery Fish Progeny/Parent Performance
(w/o jacks)**



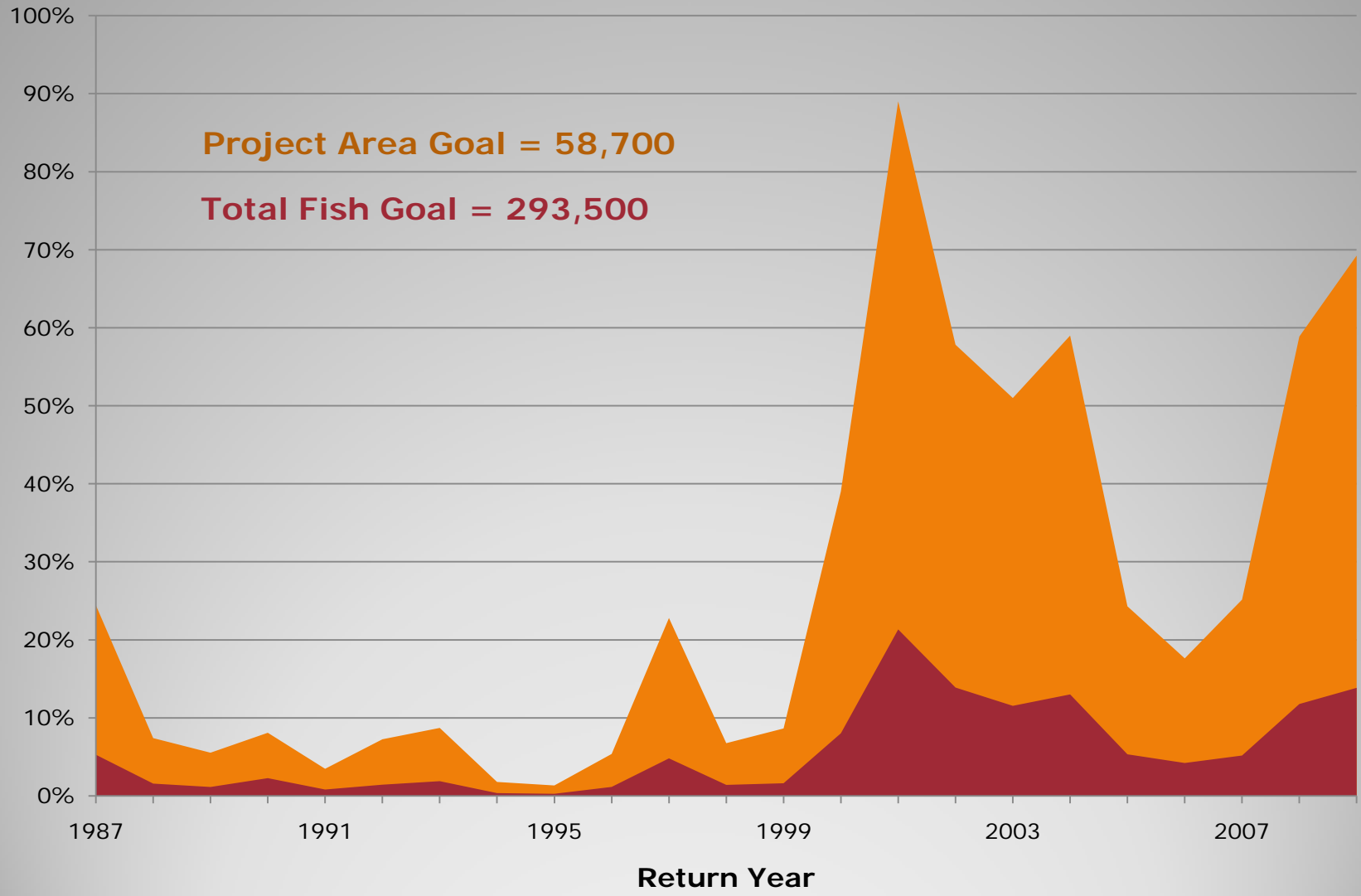
**Hatchery and Natural Fish R/S Performance
(w/o jacks)**

- All the programs increased spawners in their respective rivers.
- There is uncertainty about whether supplementation programs will provide an abundance boost in natural populations.
- The Imnaha has seen reduced R/S performance since supplementation began.

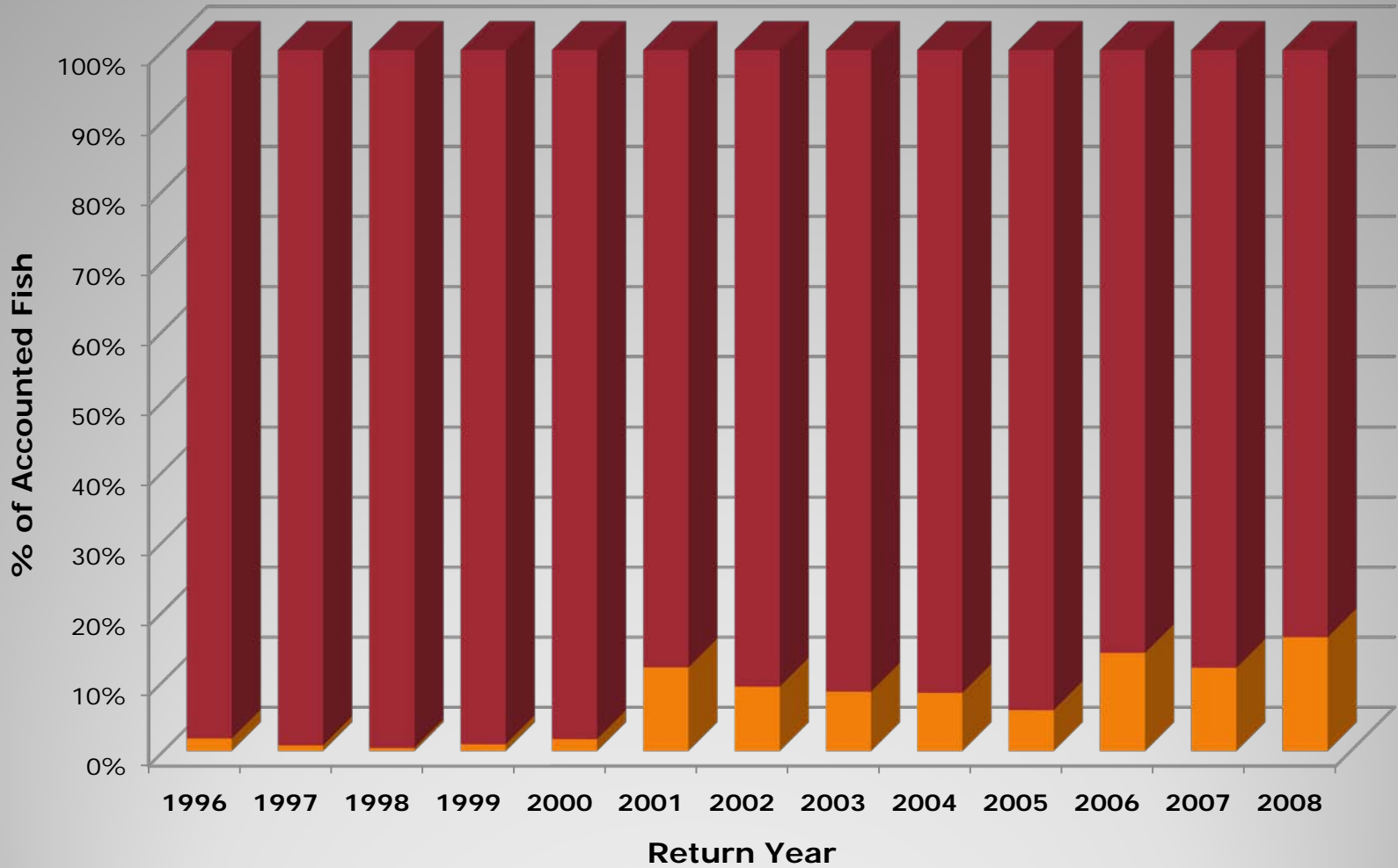
R/S Performance

- Problems with weirs (flow, poor design, improper water source for attraction, poor ladder design) in some cases rectified by acclimation or facility changes.
- Hatchery Fish concentrate near release area for their focal spawning area. This can affect their success if significant habitat quality variation occurs in the river. However there could also be density dependent effects.
- In most cases there is complete spatial overlap of hatchery and natural spawners.

Spatial Distribution of Spawners



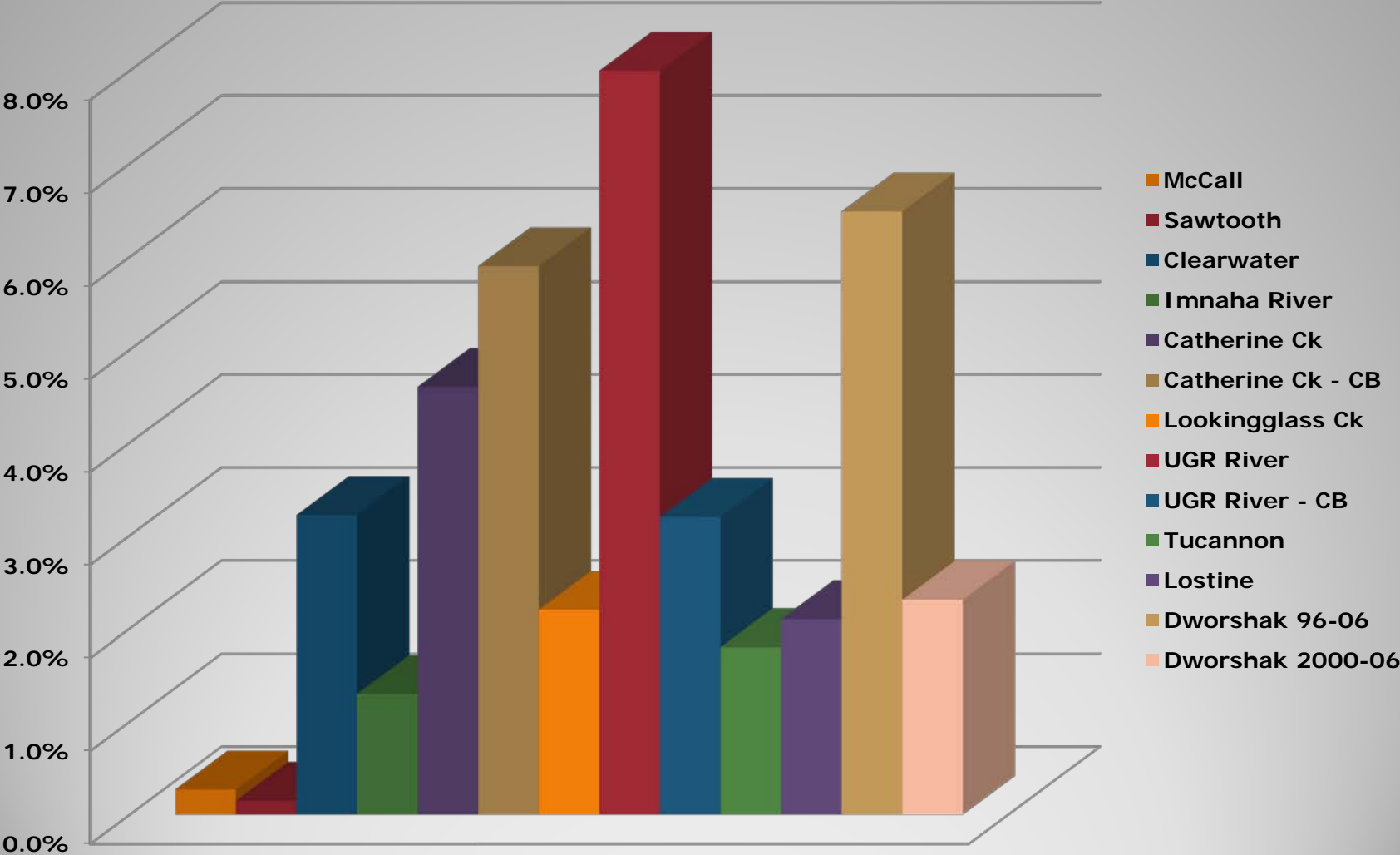
% of LSRCP Adult Goal Achieved



■ Harvest Below LGD
 ■ Escapement to LGD

Catch / Escapement

Stray Rates



- During the 1975-1995 period there was nearly complete lack of fisheries.
- Since late 1990's fisheries reestablished:
 - *8.7% of historical harvest*
 - *31% of historical mileage open*
 - *15.9% of historical days*
- Still a long way to go, but recent fisheries have shown the potential economic and cultural value fisheries possess.

Fisheries (w/in Snake Basin)

- Natural Origin abundance – can be increased in short term
- Run/spawn timing and spatial distribution doesn't seem affected.
- Can preserve genetic and life history resources
- However risks have been identified and answers must be pursued.
- Data are difficult to generate and require a long time frame. Current results not conclusive (+/-) within work already completed.

Effects of supplementation

- New or integrated brood stocks – programs have used to maintain the genetics and life history patterns of source populations
- Captive brood stock = used short term and possibly prevented population extinction in some cases.
- Acclimation = 3 new facilities
- Reduced production – implemented to improve survival, address concerns on hatchery densities.
- Active adult management (exclusion or mgmt for pHOS or pNOB) is used as a result of co-manager discussions and joint decisions.
- Disease – Management and control is carefully implemented and has been successful in controlling BKD.

Adaptive Management of program

- Fisheries – Tribal and Sport have been closely coordinated and implemented within management agreements both locally and regionally.
- Improved documentation to be responsive to data requests, collaborative data management and dissemination, and evaluations to address critical questions.
 - *AOP process*
 - *Regional harvest and Manager discussions*
 - Weekly conference calls
- Annual LSRCF meetings or Symposia.

Adaptive Management of program

- HSRG/HRT suggestions – They were complex and diverse but some commonalities were:
 - *Move away from non-local stocks to endemics and integrated brood.*
 - *Decrease pHOS and increase pNOB – move toward more natural*
 - *Reduce production and acclimate*
- These suggestions may or may not be valid but are under, or have been considered and decisions to implement may take significant time and funding.

Adaptive Management of program

- Natural fish SARs consistently surpass Hatchery fish SARs – Why?
- Supplementation is still “Experimental” and we need to understand why it isn’t generally improving natural fish status.
- Why are river capacities seemingly lower than expected (density dependence) and can factors be addressed to help recovery?
- Accurate fish accounting – There is considerable uncertainty in estimating hatchery and natural adult abundance. Methods need to be developed to address.

Data Gaps

- Less intensely now within the hatcheries
 - Complete suite of population metrics
 - Focus early (or with new programs) on hatchery performance
- Increased studies to improve survival
 - Size and time of release
 - Acclimation vs. Direct
 - Endemic brood stocks
- Analysis of potential effects on Wild
 - R/S
 - Spatial distribution
 - Smolts/spawner
 - Genetics

Monitoring and Evaluation

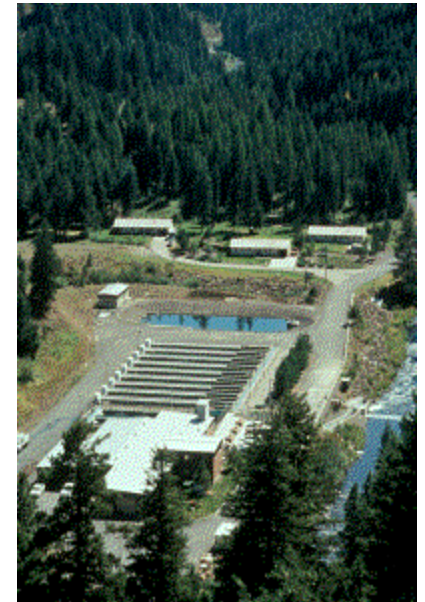
- Contribution to fisheries
 - Affects on natural populations (ESA)
- Actively engaged within Columbia Basin efforts to understand the pros/cons of hatcheries collaborative scientific processes. (ASMS, AHSWG, ISS, CSS, ISEMP, PNAMP, CRHEET..... And the LSRCP)

Monitoring and Evaluation

Wrap Up



Clearwater Fish Hatchery, Ahsahka ID
FWS Image



- Neither mitigation nor supplementation programs have achieved the juvenile production goal (collectively)
 - Brood stock collection challenges
 - Conflicting management objectives
- Hatcheries have generally met size and fish quality goals for releases.
- The program has not yet met its original adult abundance targets – however abundance within the Snake has risen.
 - Some of original assumptions may be unreachable in our current world.

Take Home's

- Substantial modifications have been made to individual programs to meet changing expectations (Adaptive for success and Redirected management intent).
 - New brood stocks
 - Captive broodstock conservation programs
 - Acclimation
- Hatcheries Affect Fish
 - Some is good – persistence, fisheries
 - Some is not so good – age at return, etc.
 - Some remains unknown – will supplementation work?

Take Home's

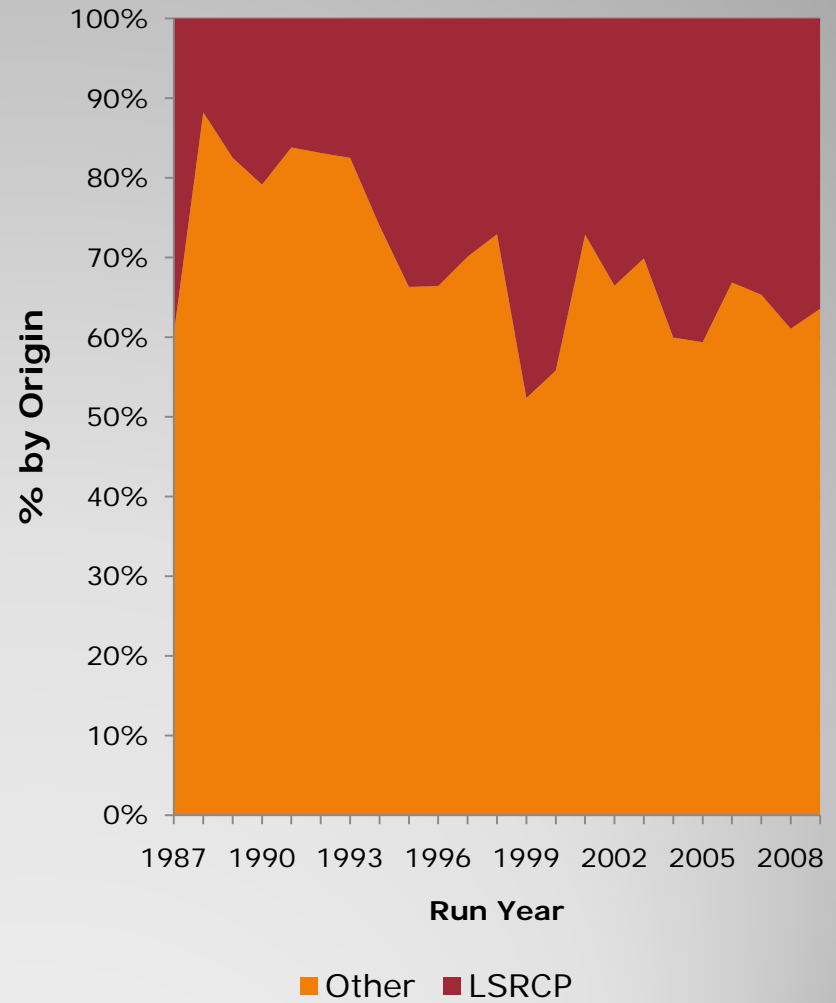
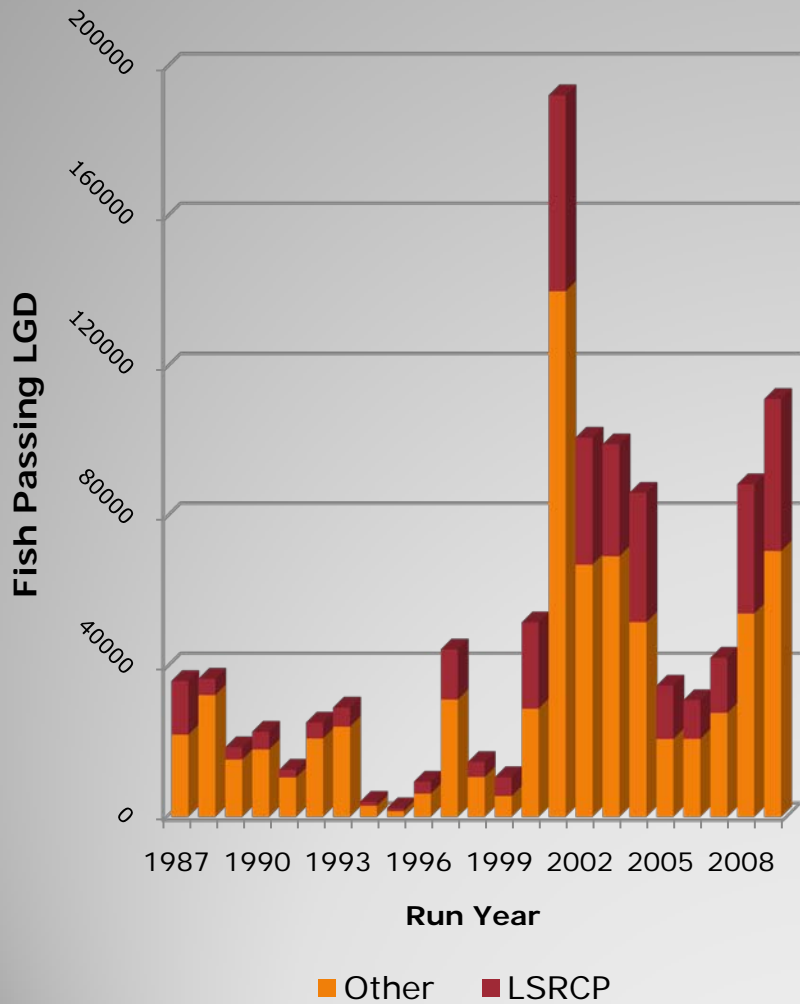
- Evaluations have actively pursued understanding the potential effects of the programs on natural populations
- Post release survival is highly variable and likely dependent on migration (river) and ocean conditions.
- Hatchery fish return younger than Wild fish (especially jacks)– but there hasn't been a consistent increase (trend) in younger fish for natural or hatchery populations.

Take Home's

- Disease has generally not been a significant factor in limiting program success
- Fisheries cannot always effectively access harvestable hatchery fish while protecting the ESA listed Snake River natural fish.
- Evaluations continue to look hard at what works, what doesn't, and helping ensure the programs are responsive to developing fish science.
- Adaptive change is a management paradigm within the LSRCF program.

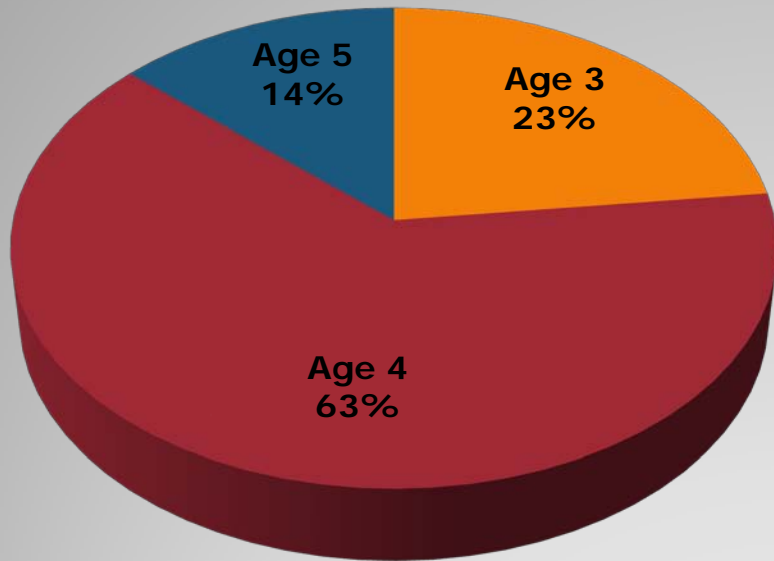
Take Home's

Questions?

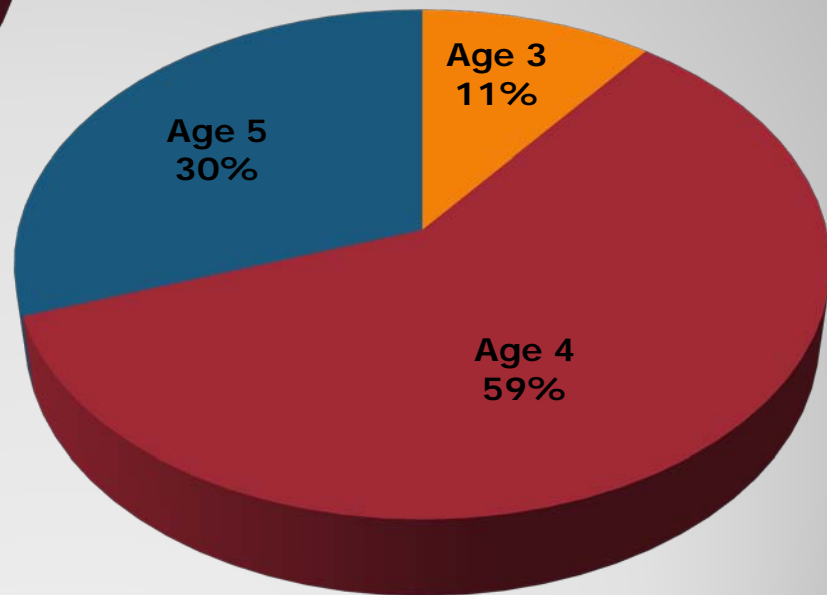


Spring/Summer Chinook @ LGD

Imnaha Hatchery



Imnaha Natural



Age at return (M+F)