

Applying Supplementation and Captive Rearing/Brood Lessons



WHERE DO WE GO FROM HERE?

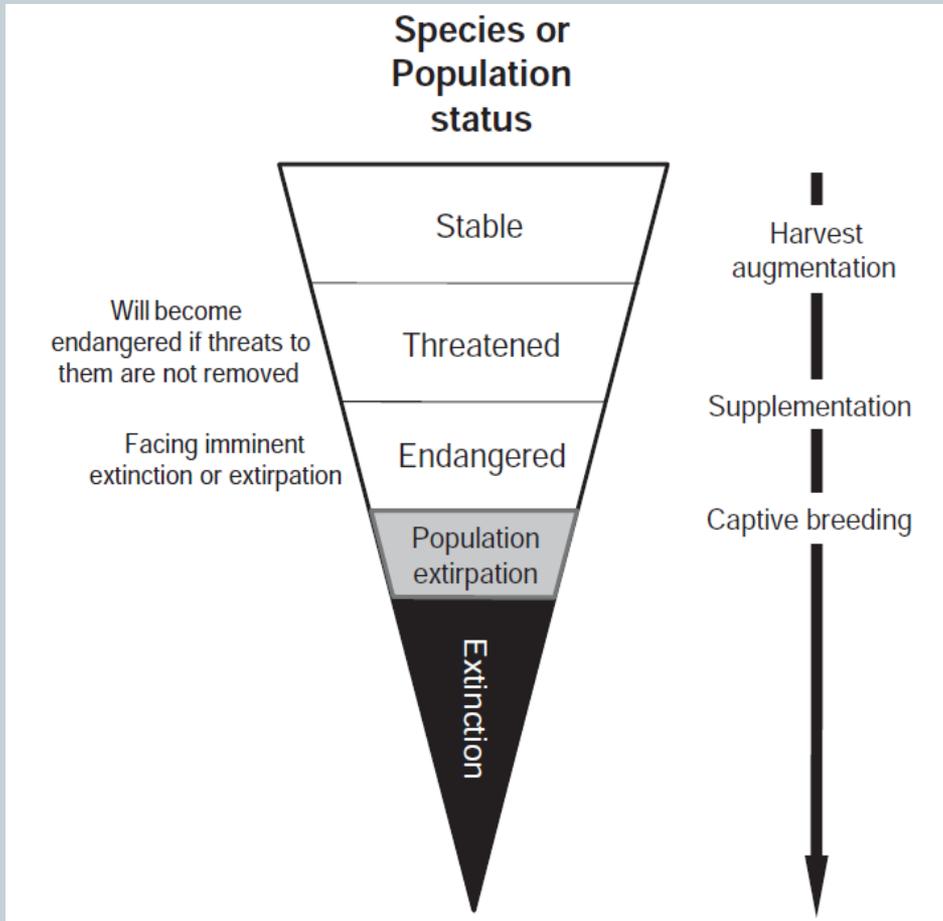
OUTLINE



- **Types of Supplementation Programs**
- **Implementation, Scale, and Monitoring**
- **Open up discussion for further dialogue**



Types of Hatchery Programs



In Idaho we have:

- Mitigation
- Integrated brood/ISS type supplementation*
- Chinook Captive Rearing (CR)*
- Sockeye Captive Broodstock (CB)

Supplementation Programs



- Each can provide a demographic boost
 - ISS - during the supplementation period
 - Harvest and/or conservation
- Can prevent extinction/cohort collapse



Supplementation Programs



- Bypass high mortality at key points in life cycle



Natural Environment

Egg to Smolt Survival 1-10%

SAR 1-2%



Hatchery Environment

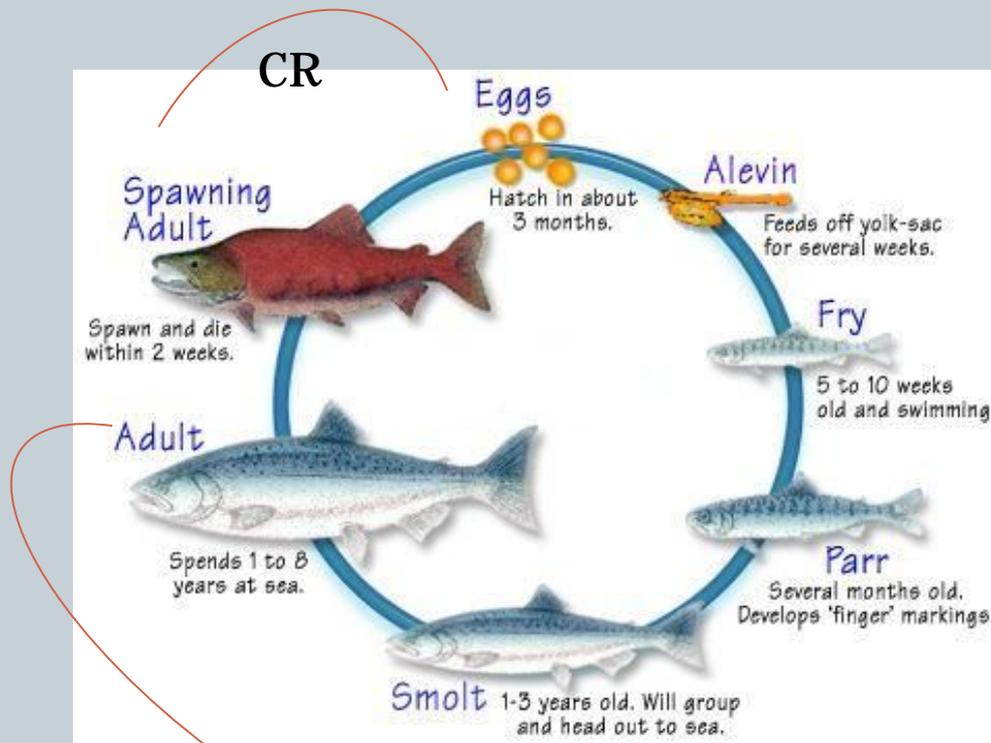
Egg to Smolt Survival 90%

Smolt to Adult Survival – 50-80%

Supplementation Programs



- Allows natural selection at *some* life stage



CR

ISS

Natural origin fish born in gravel – experience natural selection entire life cycle

Choice of Supplementation Type



Considerations:

- Goals/Objectives of Supplementation
- Importance of population(s)
- Risk if no intervention is taken
- Monetary costs
- Infrastructure



Many variations in operations



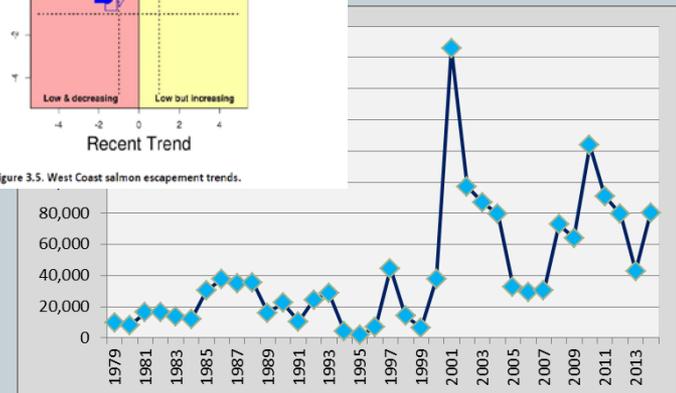
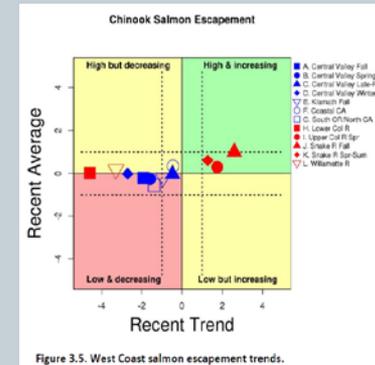
- Many variations available:
 - ✦ Broodstock Collection
 - ✦ Spawning protocols
 - ✦ Rearing protocols
 - ✦ Release strategies
 - ✦ Management of returning adults



Implementation



- Where should you implement?
 - ✦ Good spawning habitat requisite for CR
- When should you implement?
 - ✦ Knowledge of decline or need
 - ✦ Before crisis time



Scale



- **Size of collections/broodstock**
 - ✦ What infrastructure is available?
 - Space for juveniles, adults?
 - ✦ What fish should source the broodstock?
 - Eyed Eggs, Parr, Adults
 - ✦ What are current adult escapements?
 - ✦ What are adult targets (replacement broodstock, harvest, escapement, carrying capacity)?
- **Adaptively manage size of program**

Releases



✦ Release Targets

- What life stage is optimal?
 - CR – Adults
 - ISS - Smolts
- How should you mark releases?
- Where should you release fish to optimize returns and reduce straying?



Monitoring



- **In hatchery**
 - Survival
 - Marking
 - **Life cycle**
 - Redds
 - Juveniles (emigrants and smolts)
 - Adult progeny
 - **Reproductive contribution**
 - PBT for naturally spawning component
 - **Weir**
 - Control escapement onto spawning ground
 - Adult collection (PBT)
 - **Reference stream (s)**
- ISS – Across 3 Phases

SUMMARY



- **Many ways to approach supplementation**
 - ✦ CR and ISS – add to current body of knowledge
- **Dedicated 20+ year programs with adaptive management**
 - ✦ Learned about response of populations to supplementation
 - ✦ Recommendations for future implementation