Northwest **Power** and **Conservation** Council

July 6, 2022

MEMORANDUM

TO: **Council Members**

FROM: **Stacy Horton, Washington Policy Analyst/Biologist**

SUBJECT: **Tucannon River Spring Chinook Status Update and Next Steps to Recovery**

BACKGROUND:

Presenter: Joe Bumgarner, Washington Department of Fish and Wildlife (WDFW) Research Scientist Snake River Lab (Dayton) and Chris Donley, Washington Department of Fish and Wildlife Regional Fish Program Manager for Region 1 Spokane.

Summary: Chris Donley has been employed with the Washington Department of Fish and Wildlife for 27 years. During his tenure he has worked in both fisheries research and management working with a diverse array of native and non-native fish species.

Joe Bumgarner has been employed with the Washington Department of Fish and Wildlife for 29 years. He has spent his entire career at the Snake River Lab doing fisheries research and hatchery evaluations for spring and fall Chinook salmon, and summer steelhead in SE Washington under the Lower Snake River Compensation Plan program for Washington.

Joe and Chris will provide the Council with a status update and discuss recovery efforts for the Tucannon River Spring Chinook population.

Background: The Tucannon River Spring Chinook population has been listed as "threatened" under the endangered species act since 1992. Recovery

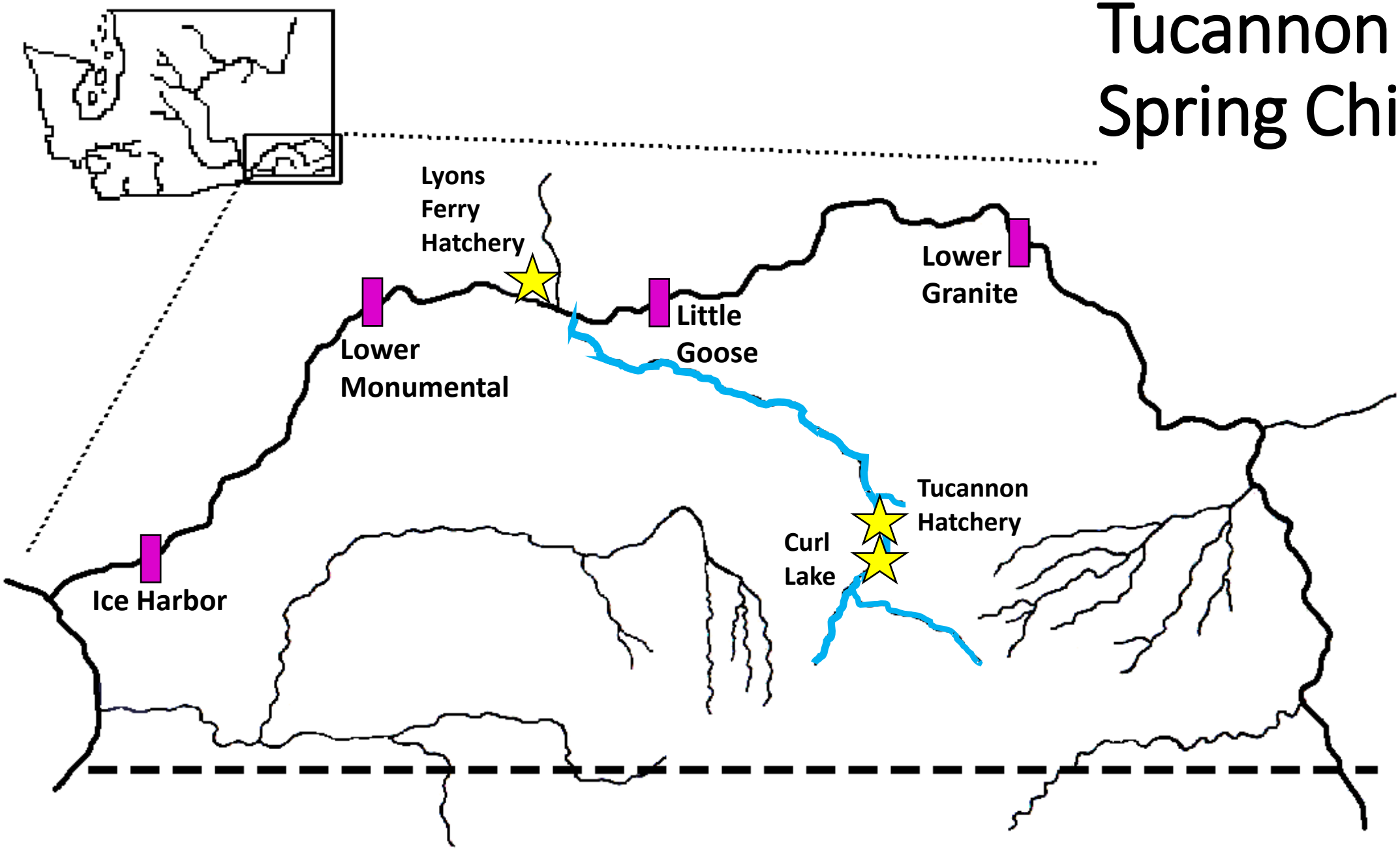
efforts implemented in the Tucannon basin after listing included hatchery reform/production changes, improved smolt release strategies, a short term captive broodstock program, habitat restoration and protective fishery closures. By the early 2000's the abundance trend for Tucannon spring Chinook was on an upward trajectory, and it appeared that recovery efforts were working, and that far greater numbers of adult fish were present in the basin. Unfortunately, as adult abundance increased other challenges arrived including floods, fires, high pre-spawn adult mortality, seemingly higher than normal juvenile outmigration mortality, rapidly increasing piscine and avian predation in the mainstem Snake and Columbia rivers on outmigrants, and most recently changes in marine survival as a result of reduced ocean productivity. These increasing stressors, in combination with pre-existing issues, have combined to create a rapid downturn in the population beginning around 2016 and continuing until today. Currently, an average of less than 200 adult fish of both hatchery and wild combined have returned to the basin annually since 2019, with an average redd count of 20 over the last three years. Despite the best efforts of WDFW, Comanagers, Recovery Boards and concerned public, the current recovery efforts are not working. Today's presentation will detail the history and current status of spring Chinook in the Tucannon basin and how the program will evolve moving forward to find recovery success.

Tucannon River Spring Chinook: History, Status, and Future Direction

Chris Donley, Joe Bumgarner and Michael Gallinat

Washington Department of FISH and WILDLIFE

Tucannon River Spring Chinook



History

- LSRCP Program began in 1985, Wild fish collected to establish broodstock.
- Program Goal = ***1,152*** hatchery adults (132,000 smolts released @15 fish/lb).
- 1985-1993: AVG H+W Total Return ~500
- Mid/Late 1990's – Bottom Dropped Out
  - 30 Year Floods in 1996 and 1997 (eliminated most natural production).
  - Chiller Accident in 1997 (lost 80% of hatchery production).
  - Trapped all fish returning to weir (1994, 1995, 1998, 1999).
    - ~30% of run remains below the weir on average each year.
- 1997-2002: Implemented a Captive Broodstock program (150,00 smolts)
  - Produced fish, but performed lower than expected
    - Poor egg quality / low fertilization success
    - SARs were ~1/2 of the standard supplementation group program survivals

History continued……

- 2008-2012: Size at Release study (9 fish/lb vs 15 fish/lb)
  - larger fish survived better, returned more adults overall
  - Also produced more jacks/minijacks
  - 12 fish/lb is the current goal
- 2006: Increased smolt production from 132,000 to 225,000
- 2012-2016: In-River Pre-Spawn mortality increased (HOR and NOR)
  - Good Returns, lots of fish left in river for natural spawning, relatively few redds.
- 2016-2022: 100% Adult holding at Lyons Ferry Hatchery / Outplants
  - Adult outplants occurred in 2016, 2017, 2018, and 2022??
  - No Outplants from 2019-2021.
- Overshoot Tucannon River (Continuous)
  - ~25% of run annually overshoot the mouth of the Tucannon River (go above Lower Granite Dam), though 80-90% appear to make it back downstream.

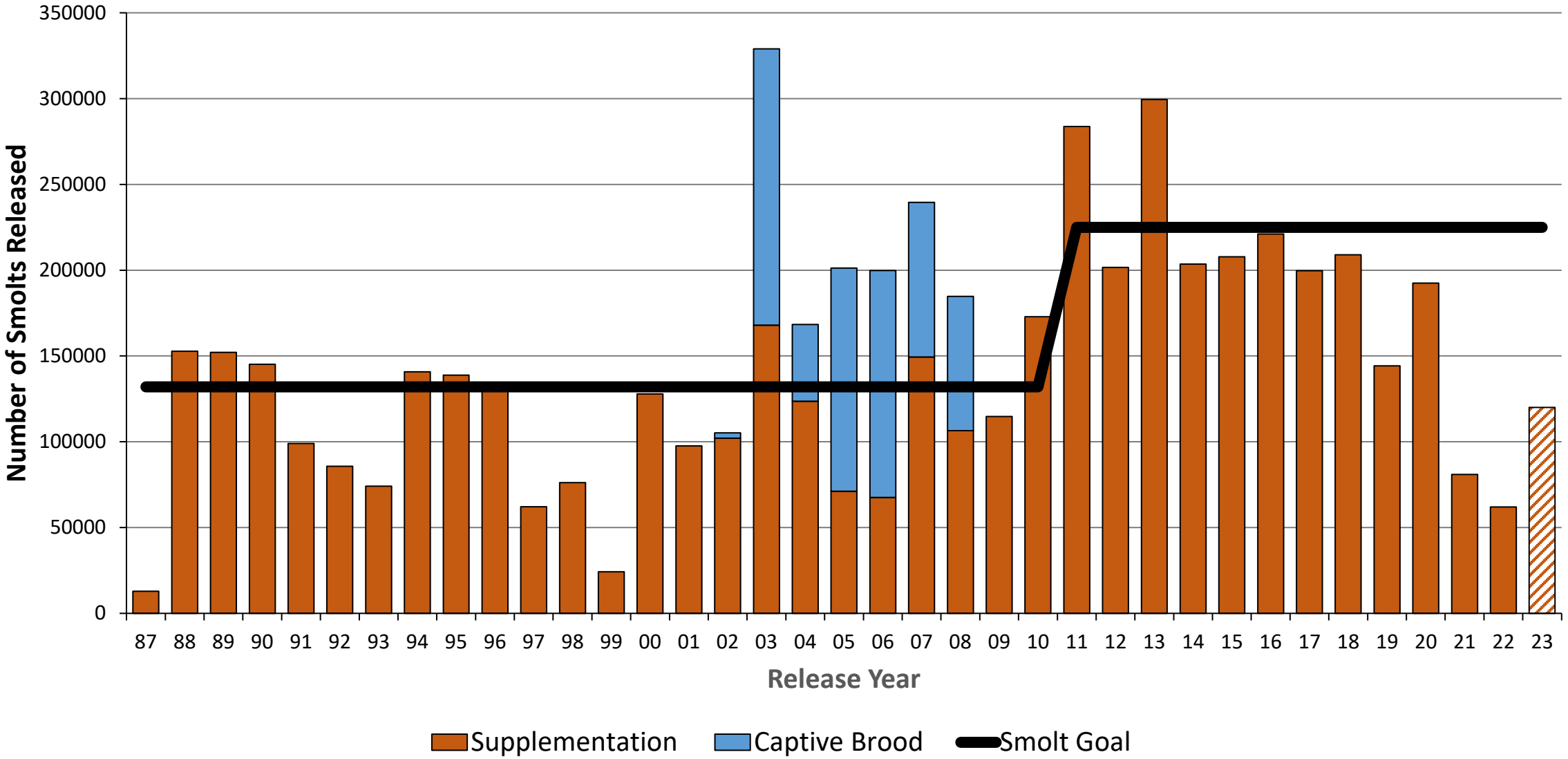
Other In-Basin Actions……

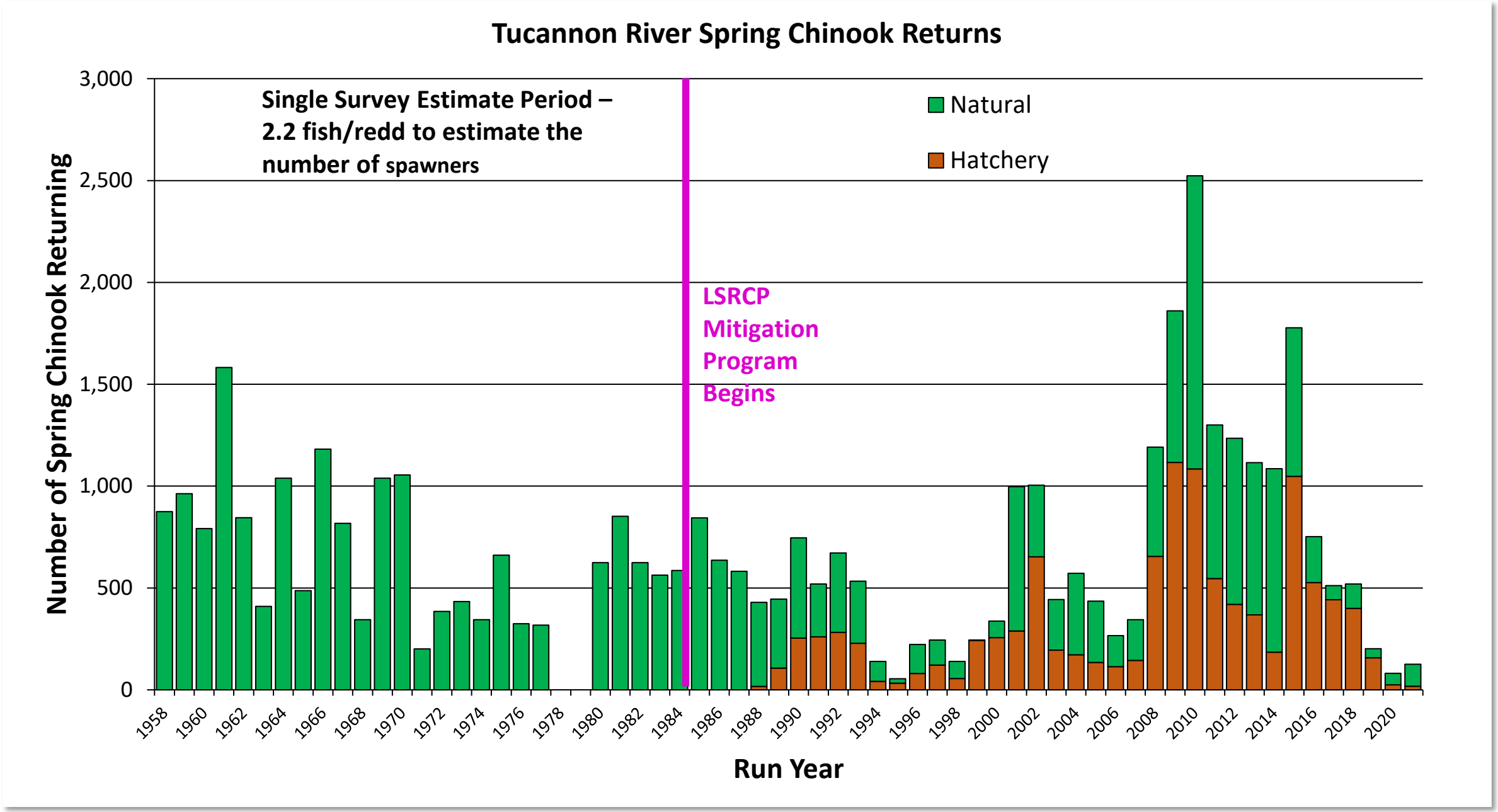
- Tucannon Model Watershed (1996)
- Limiting Factors Analysis (2002)
- Tucannon Sub-Basin Plan (2004)
- Snake River Salmon Recovery Plan (2005, updated in 2011)
- Tucannon Geomorphic Assessment (2011)
- Tucannon Programmatic (2011)

  - Reduce Sediment
  - Increase Riparian Corridor
  - Improved Irrigation Efficiencies
  - Increase Large Wood Debris
  - Increase Channel Complexity
  - Increase Floodplain Connectivity
  - Increase Pool Frequency
  - Reduce Stream Power

Time Series Graphs

Smolt Releases – Tucannon Spring Chinook




Tucannon River Spring Chinook Returns
Single Survey Estimate Period – 2.2 fish/redd to estimate the number of spawners
Natural
Hatchery
LSRCP Mitigation Program Begins
Number of Spring Chinook Returning
Run Year
3,000
2,500
2,000
1,500
1,000
500
0
1958
1960
1962
1964
1966
1968
1970
1972
1974
1976
1978
1980
1982
1984
1986
1988
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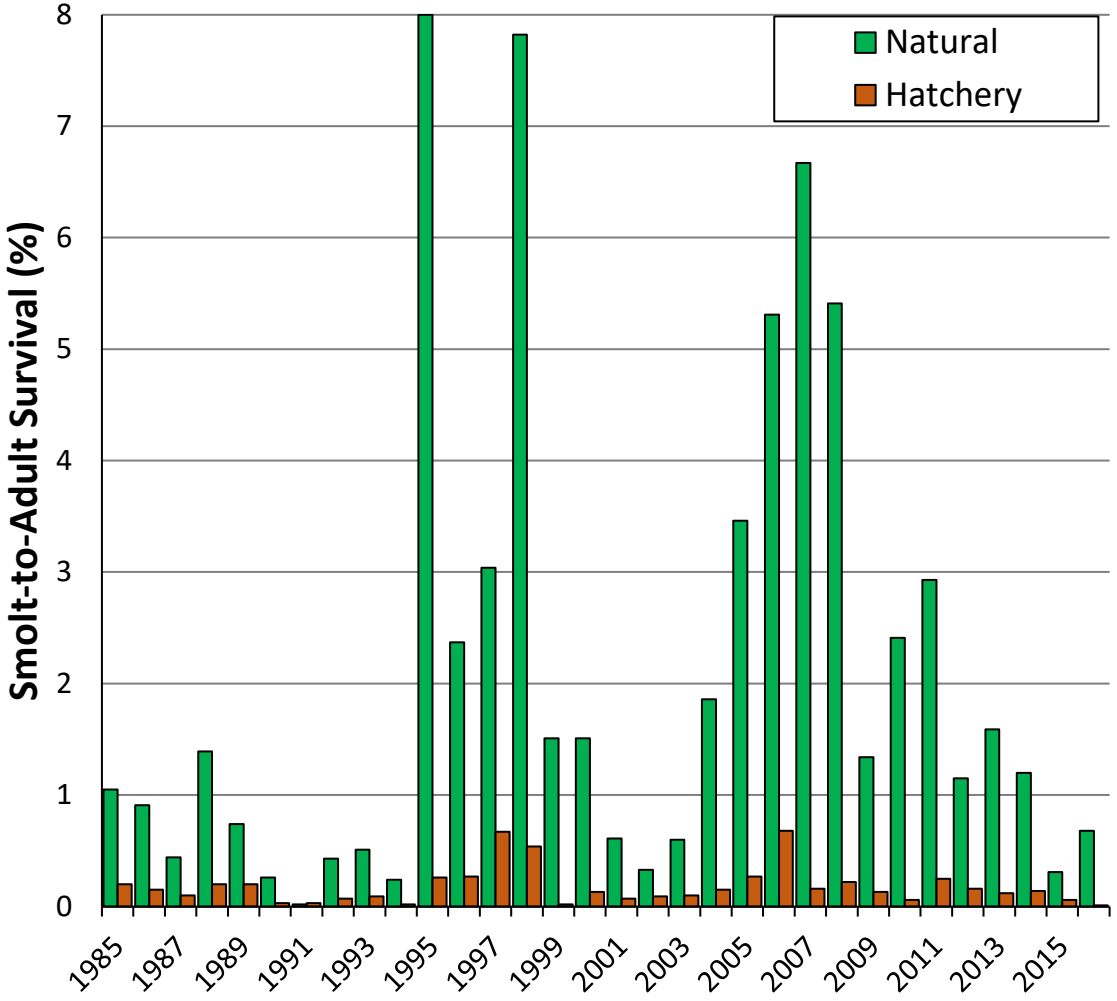
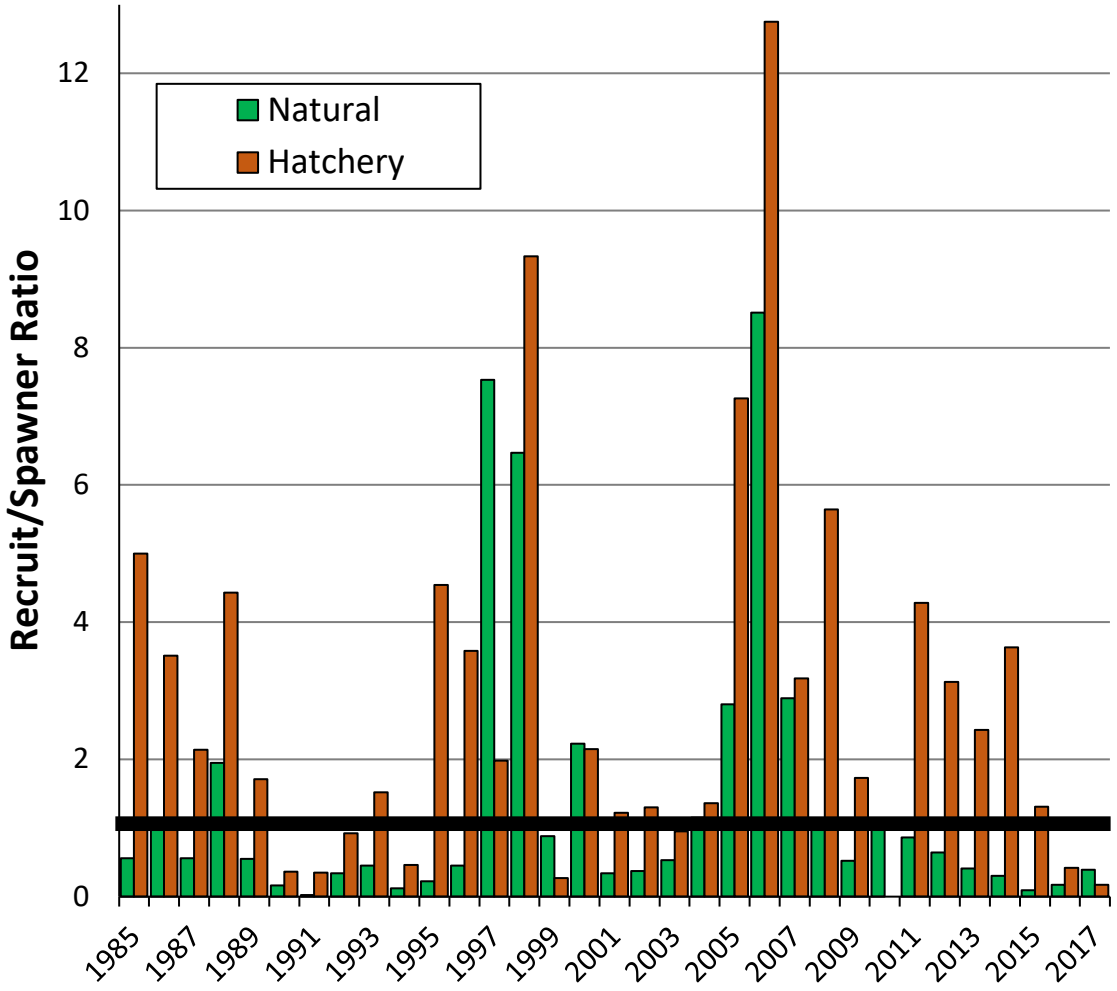
2016
2018
2020

Smolt-to-Adult Survival



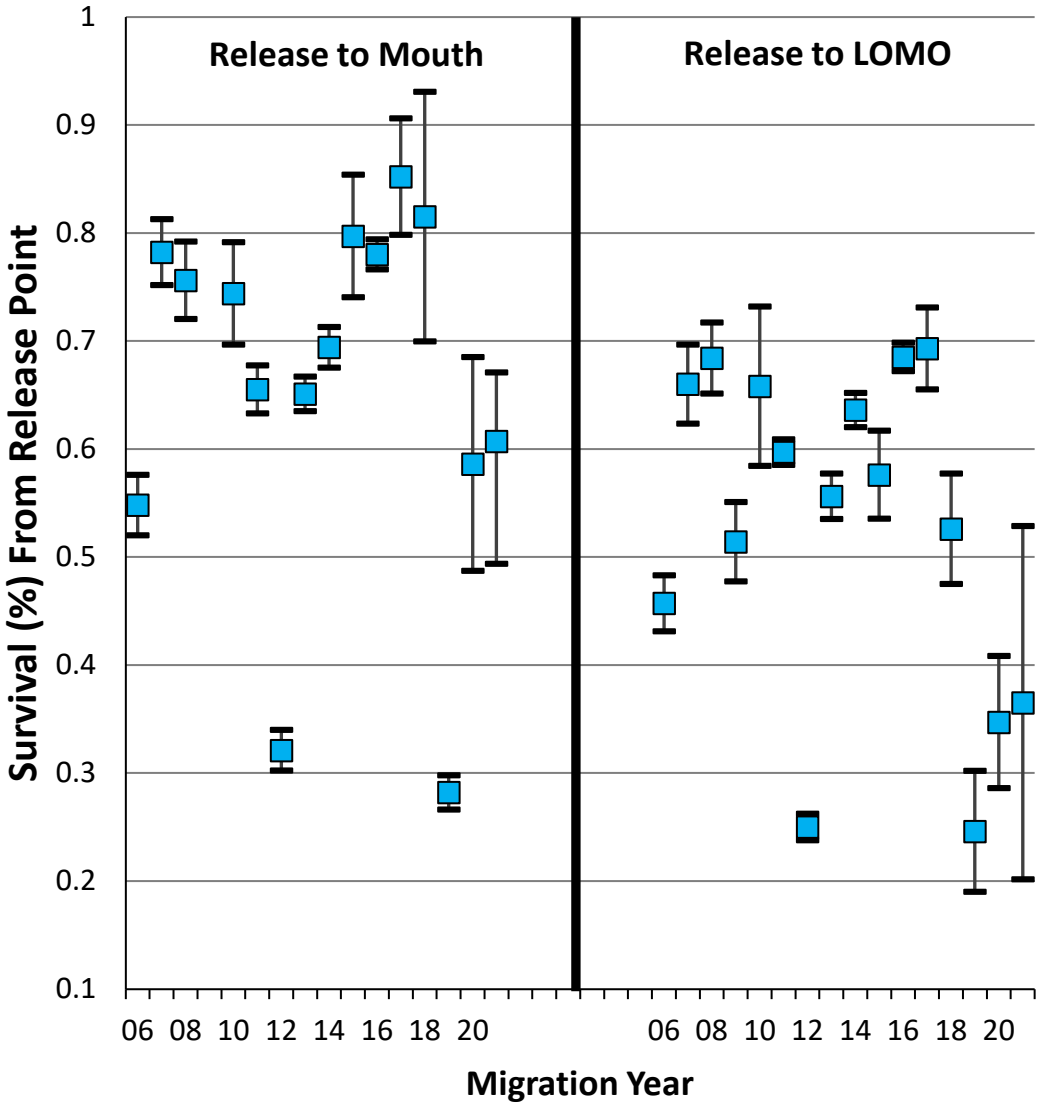
**** Average SAR of hatchery fish 1985-2016 BY = 0.18%, Lowest Hatchery Program SAR in entire Snake River Basin**

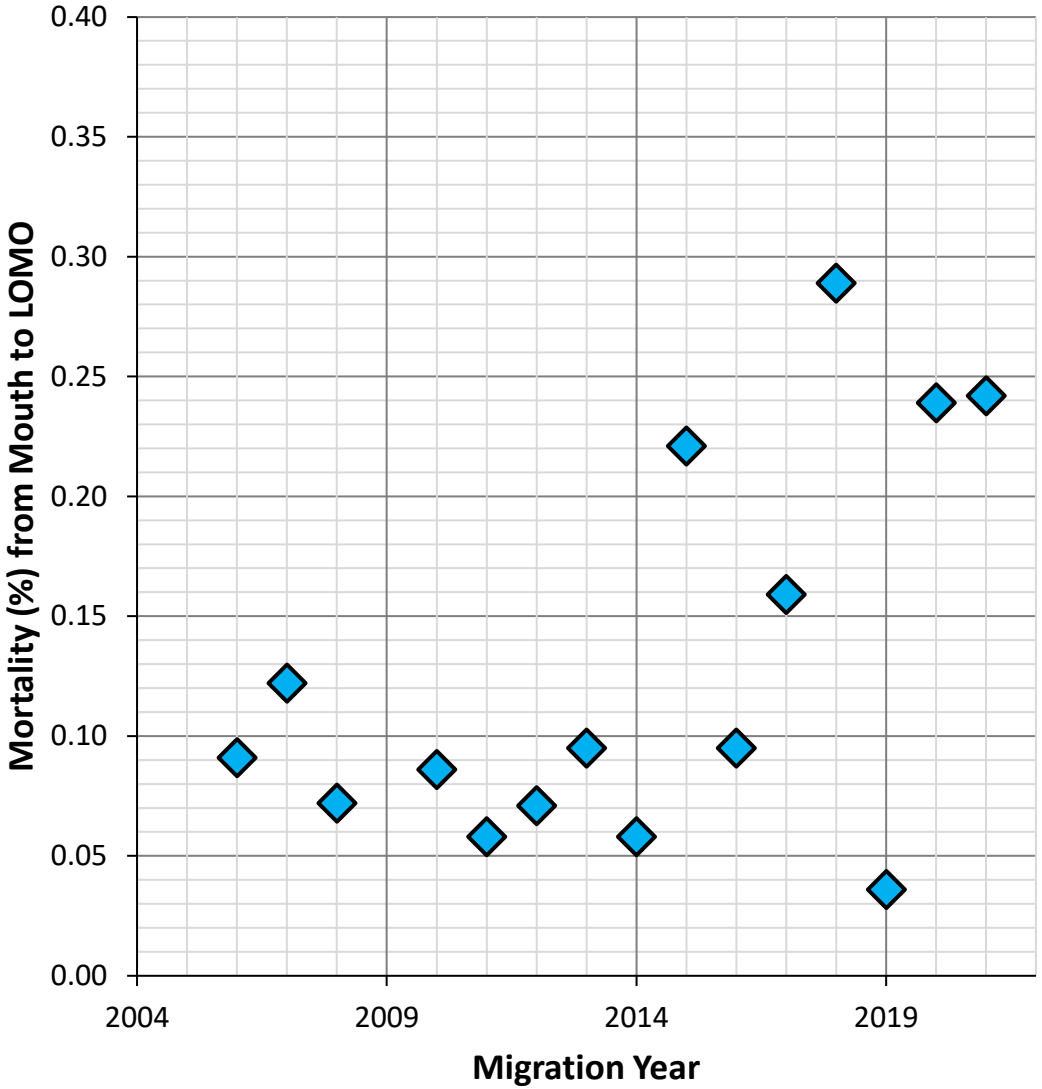
Recruits/Spawner



HOR Geomean = 2.9, 8 of 33 brood years below replacement

NOR Geomean = 0.6, 22 of 33 years below replacement





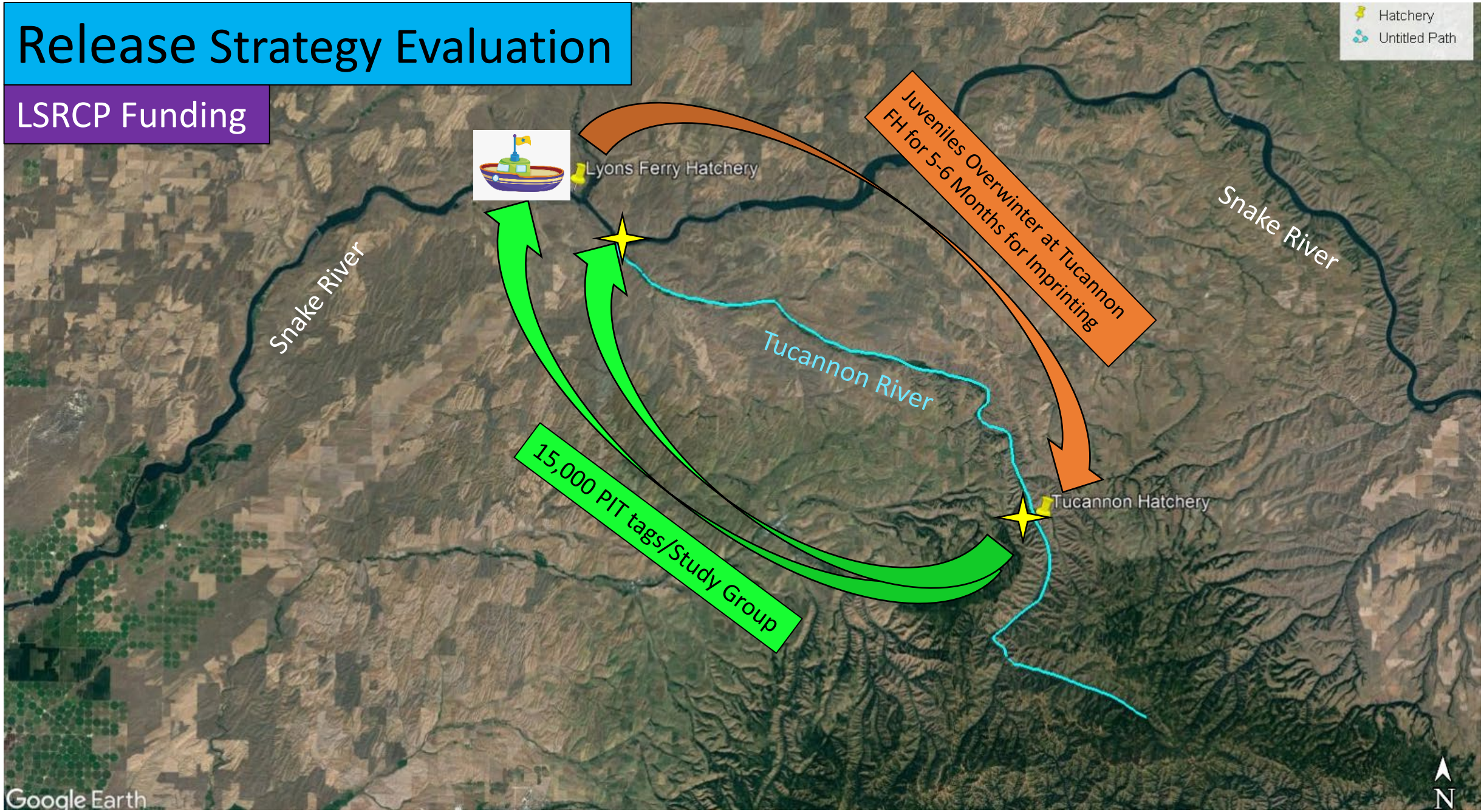
**** Lower Monumental Dam is only 62 miles away from the release point**

What are some options going forward…

- **Release Locations**
  - Local Vicinity (On-Going Evaluation)
    - TFH, Mouth of Tucannon, Barge
  - Out-of-Basin (Proposed Action)
    - Kalama River Release
      - Acclimate Smolts
      - Trap/Haul Adults Back
- **Captive Broodstock Program (Proposed Action)**
  - Similar to what was done previously

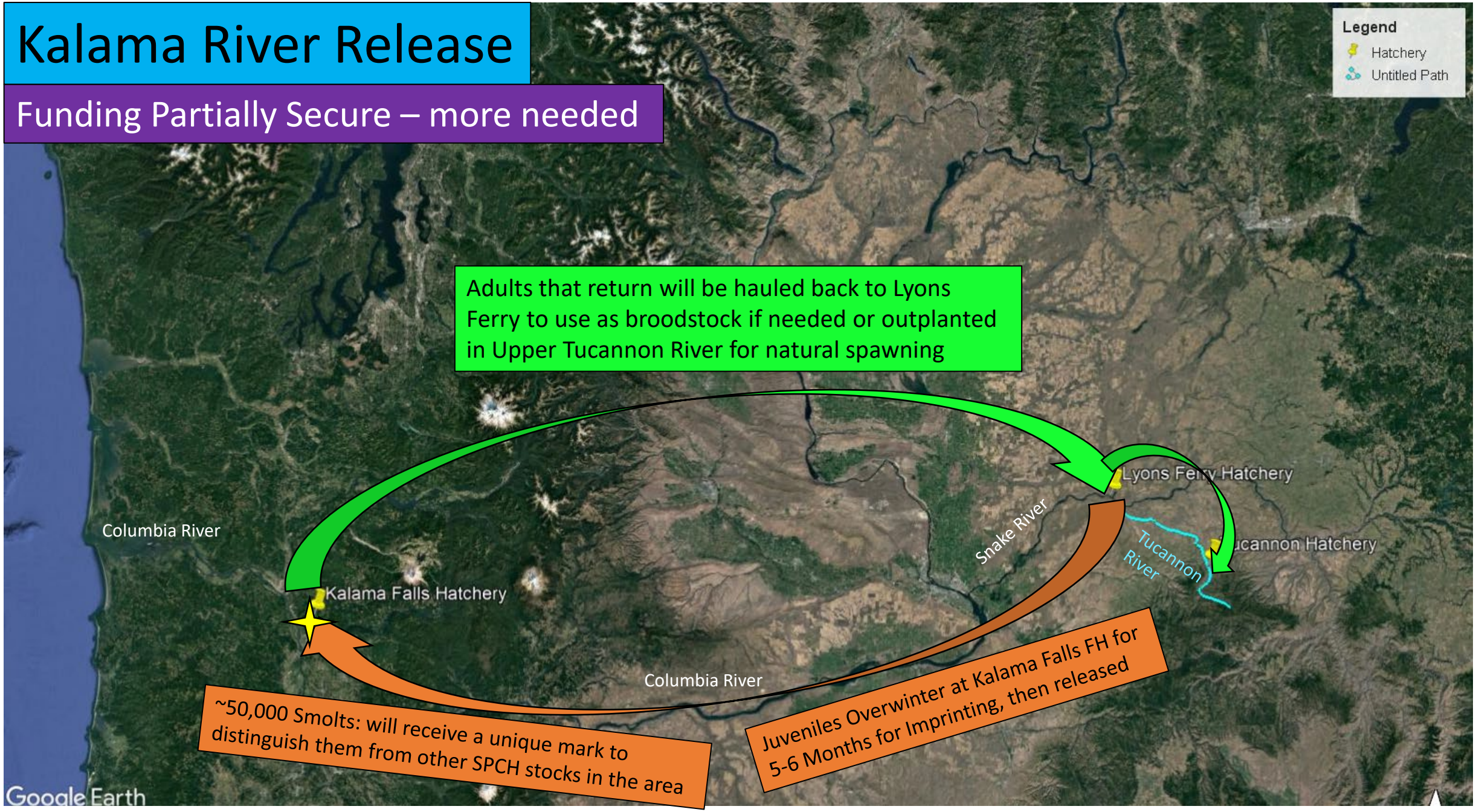
Release Strategy Evaluation

LSRCP Funding



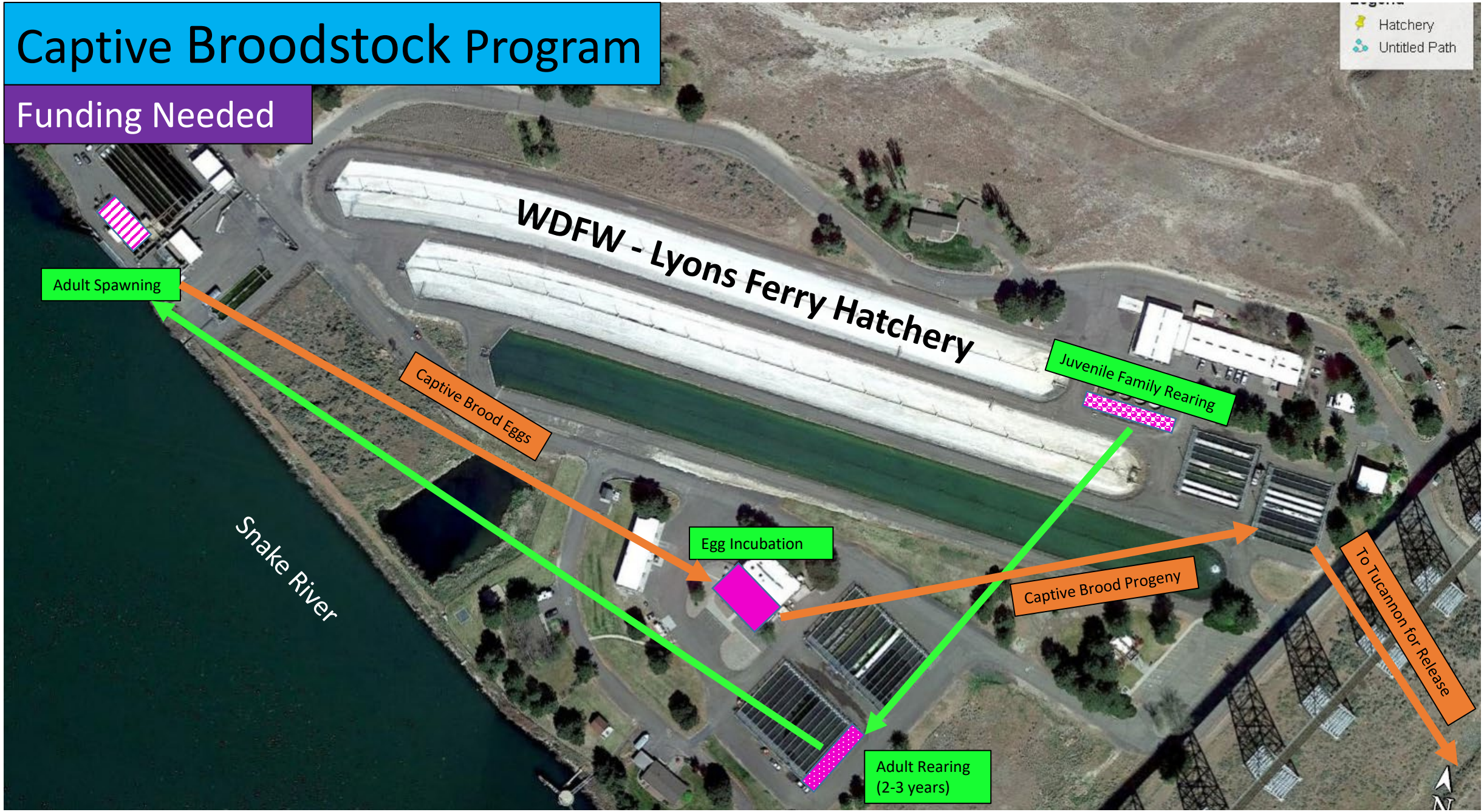
Kalama River Release

Funding Partially Secure – more needed



Captive Broodstock Program

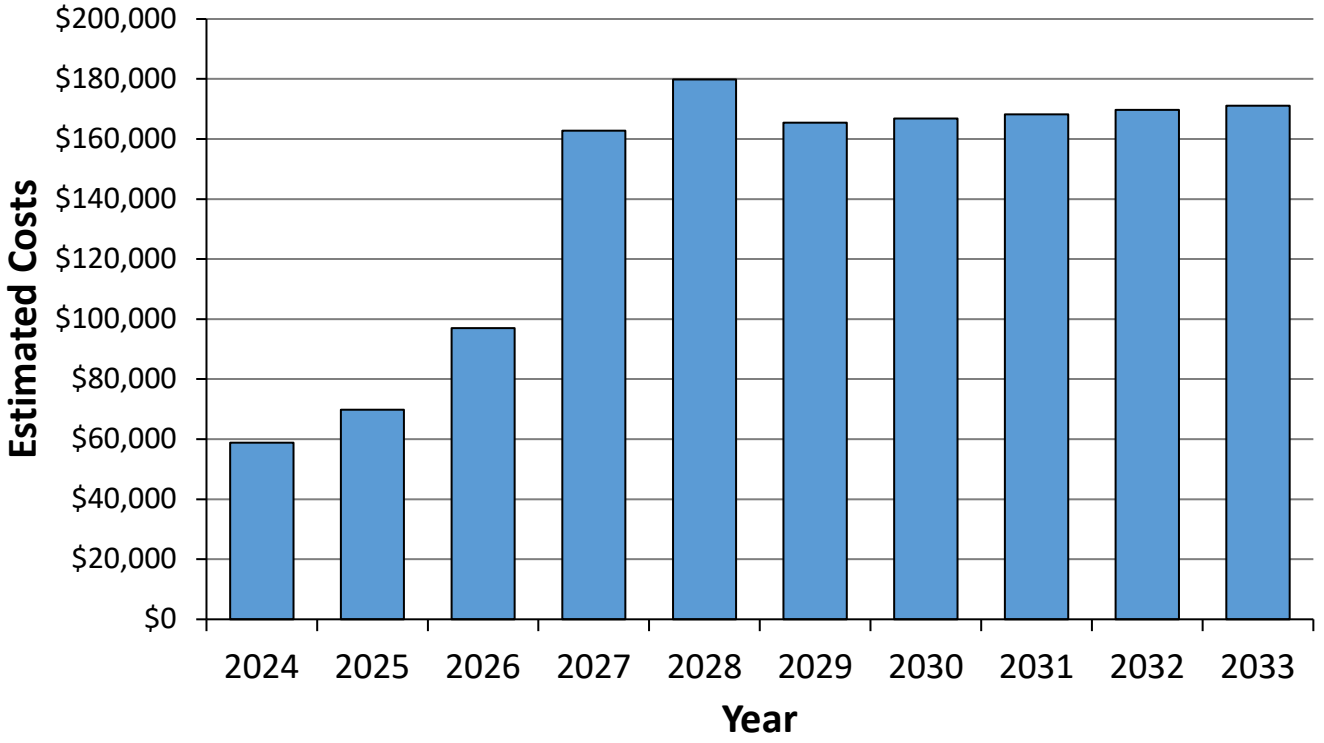
Funding Needed



Estimated Costs

- Kalama Release
  - First Year: ~$45,000 (Genetics Baseline, Staffing + Transport)
  - OutYear: ~$20,000/year (Staffing and Transport, genetic monitoring)

- Captive Brood
  - Start with BY2022



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Summary

- Spring Chinook in the Tucannon River continue to struggle even though the hatchery program has implemented lots of changes through adaptive management
- Extensive efforts in habitat restoration (>20 million) over the last 20 years, with more restoration coming in future years
- Even with everything that's been done, we're still proposing two extreme actions to maintain (but hopefully increase) spring Chinook productivity within the basin
- Need some financial support to implement these proposed actions, otherwise the population could be in further jeopardy and too late to save in the future.