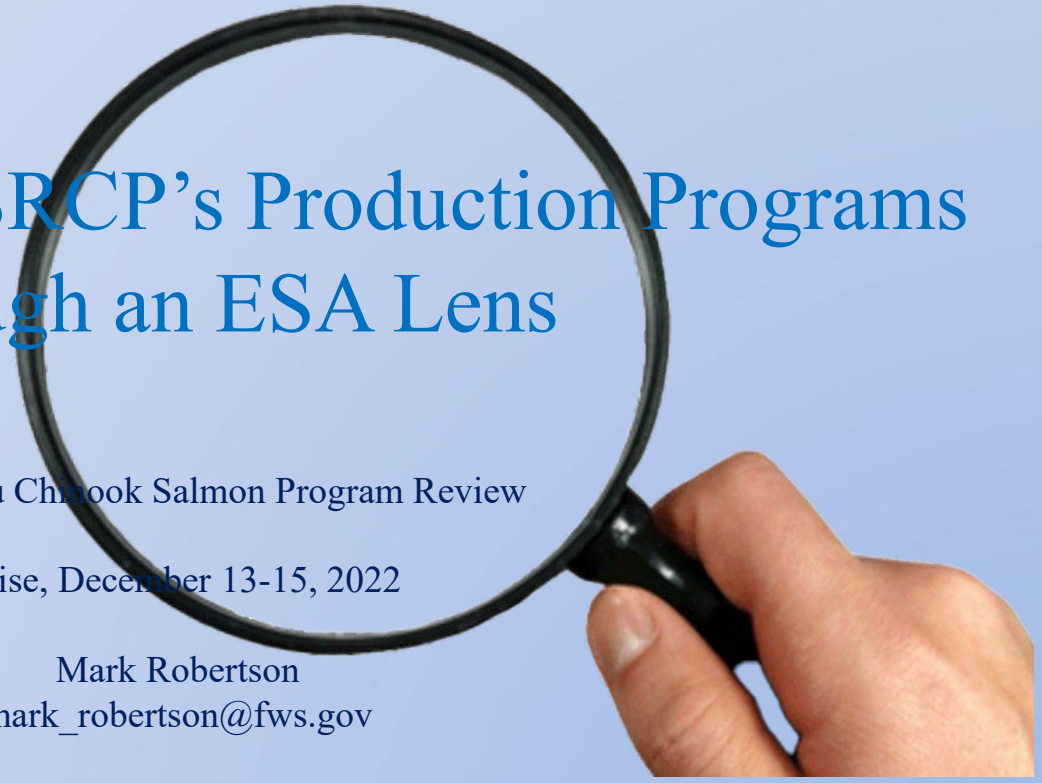
ENDANGERED SPECIES ACT CONSIDERATIONS

Looking at the LSRCP's Production Programs Through an ESA Lens



ISRP Sp/Su Chinook Salmon Program Review

Boise, December 13-15, 2022

Mark Robertson
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All Programs Currently Operating Under BiOps

- LSRCP Spring Chinook BiOps
  - FWS (4 Geographically Based BiOps)
  - NMFS (5 Geographically Based BiOps)
    - Section 10 Permits and Section 4(d) Authorizations
- https://www.fws.gov/media/lsrcp-related-esa-compliance
  - Reporting Requirements @ https://www.fws.gov/office/lower-snake-river-compensation-plan/library

All Programs Currently Operating Under FWS BiOps

- FWS BiOps (Sp/Su Chinook and Steelhead Combined Programs)
  - NEOR/SEWA (08/2016)
  - Hells Canyon/Salmon River (12/2018)
  - Clearwater (12/2017)
  - Touchet/Walla Walla (09/2018)

All Programs Currently Operating Under FWS BiOps

- FWS BiOps (Sp/Su Chinook and Steelhead Combined Programs)
  - Examples of LSRCP Requirements
    - Address Bull Trout deaths associated with trapping/passing fish at Imnaha River weir
    - Initiation of studies at Imnaha and Tucannon River weirs to address bull trout passage/delay concerns

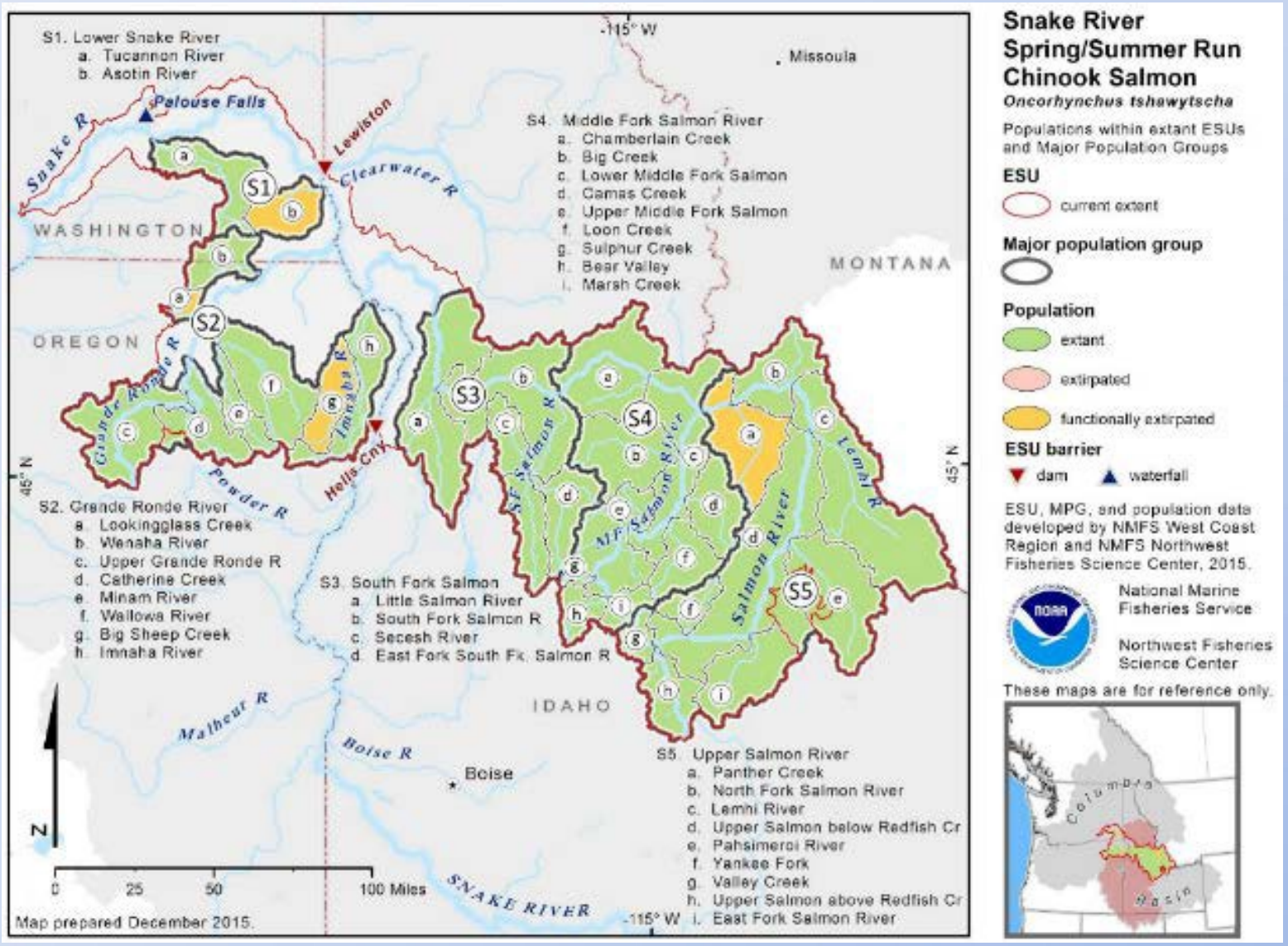
All Programs Currently Operating Under NOAA BiOps

- NOAA BiOps (Sp/Su Chinook Programs)
  - NEOR/SEWA (06/2016)
  - SF Salmon River (11/2017, reinitiated 02/2019)
  - Clearwater (12/2017)
  - Mid-Columbia/Touchet (reinitiated 04/2019)
  - Upper Salmon River (12/2017)

All Programs Currently Operating Under NOAA BiOps

- Listed Populations/Stocks
  - NEOR/SEWA
  - SF Salmon River
  - Upper Salmon River

- Unlisted Populations/Stocks
  - Clearwater
  - Walla Walla/Touchet



Snake River Spring/Summer Run Chinook Salmon

Oncorhynchus tshawytscha

Populations within extant ESUs and Major Population Groups

ESU

current extent

Major population group

Population

extant

extirpated

functionally extirpated

ESU barrier

dam waterfall

ESU, MPG, and population data developed by NMFS West Coast Region and NMFS Northwest Fisheries Science Center, 2015.

National Marine Fisheries Service

Northwest Fisheries Science Center

These maps are for reference only.

U.S. Fish and Wildlife Service

Lower Snake River Compensation Plan Office

"Fish for the Future"


Lower Snake River MPG
Tucannon River
Asotin Creek **
South Fork Salmon River MPG
South Fork Salmon River
Secesh River
East Fork South Fork Salmon River
Little Salmon River
Grande Ronde/Imnaha Rivers MPG
Catherine Creek
Lostine/Wallowa Rivers
Minam River
Imnaha River
Wenaha River
Upper Grande Ronde River
Lookingglass Creek**
Big Sheep Creek**
Middle Fork Salmon River MPG
Big Creek
Bear Valley Creek
Marsh Creek
Sulpher Creek
Camas Creek
Loon Creek
Chamberlin Creek
Lover Middle Fork Salmon River
Upper Middle Fork Salmon River
Upper Salmon River MPG
Lemhi River
Valley Creek
Yankee Fork Salmon River
Upper Salmon River
North Fork Salmon River
Lower Salmon River
East Fork Salmon River
Pahsimeroi River
Panther *

All Programs Currently Operating Under NOAA BiOps

- Listed Populations/Stocks
  - Overall viability rating considered "HIGH RISK"
  - Production Programs generally feature
    - Integration with wild populations/conservation component (e.g., supplementation)
    - Weir management and sliding scales to limit impacts to wild populations

All Programs Currently Operating Under NOAA BiOps

- NOAA BiOps Evaluated:
  - Removal of fish from natural population
  - pHOS/weirs (e.g., straying)
  - Competition (rearing areas and migration corridors)
  - Research, monitoring, and evaluation
  - Facility Operations
  - Fisheries (separate effort)

Natural population viability parameter	Productivity	Diversity	Abundance	Spatial Structure
Hatchery broodstock originate from the local population and are included in the ESU or DPS	***Positive to negative effect*** Hatcheries are unlikely to benefit productivity except in cases where the natural population's small size is, in itself, a predominant factor limiting population growth (i.e., productivity) (NMFS 2004).	***Positive to negative effect*** Hatcheries can temporarily support natural populations that might otherwise be extirpated or suffer severe bottlenecks and have the potential to increase the effective size of small natural populations. Broodstock collection that homogenizes population structure is a threat to population diversity.	***Positive to negative effect*** Hatchery-origin fish can positively affect the status of an ESU/DPS by contributing to the abundance and productivity of the natural populations in the ESU/DPS (70 FR 37204, June 28, 2005, at 37215).	***Positive to negative effect*** Hatcheries can accelerate re-colonization and increase population spatial structure, but only in conjunction with remediation of the factor(s) that limited spatial structure in the first place. "Any benefits to spatial structure over the long term depend on the degree to which the hatchery stock(s) add to (rather than replace) natural populations" (70 FR 37204, June 28, 2005 at 37213).

All Programs Currently Operating Under NOAA BiOps

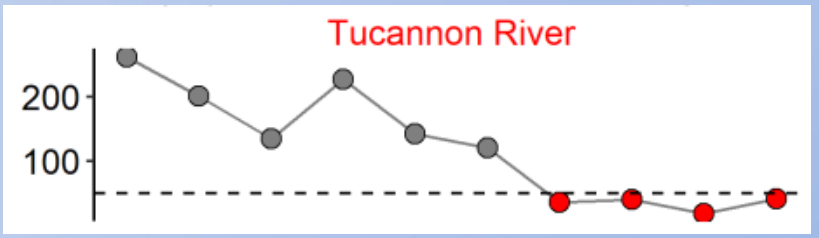
- Examples of ESA/BiOp/Sec. 10 Permit Requirements
  - Precosity evaluations to minimize competition with wild fish in rearing habitat
  - Limit Lookingglass program spawners to ≤5% in Minam/Wenaha
  - Install efficient weir in Imnaha to better manage pHOS

Examples of ESA Challenges in Listed Production Programs

- Tucannon Program Considerations
  - Small production program (225K)
  - Limited adult returns
  - High pre-spawn mortality
  - Poor downstream survival (essentially all within the hydro-system)

Examples of ESA Challenges in Listed Production Programs

- Tucannon Program Considerations
  - Only extant population in MPG
    - Asotin functionally extirpated but viability necessary for recovery
  - High risk of extinction
    - Via Quasi-extinction Threshold



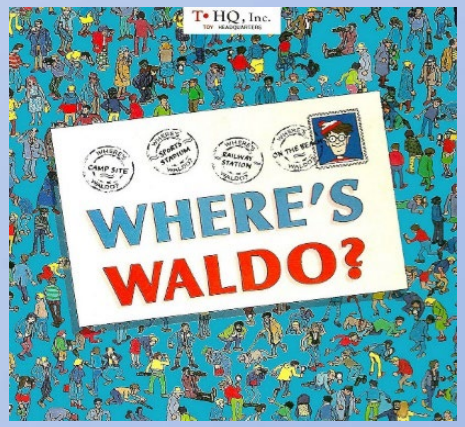
Examples of ESA Challenges in Listed Production Programs

- Tucannon Program Options/Constraints
  - Different release strategies (trib., mouth, transport)
  - Captive brood program
  - Downstream component to improve adult returns (Kalama)

  - Asotin Cr. component – spread the wealth?

Examples of ESA Challenges in Listed Production Programs

- NEOR Program Considerations
  - Small production programs (≤250K, Imnaha exception at 490K)
  - 2 of 6 extant populations not associated with hatchery program
    - Straying into the Wenaha or Minam a major concern



Examples of ESA Challenges in Listed Production Programs

- NEOR Program Considerations
  - 4 of 6 extant populations supplement wild populations
  - Imnaha population only one in MPG with a sp/su life history
  - 4 of 8 populations necessary for MPG recovery
    - At least 1 highly viable

Examples of ESA Challenges in Listed Production Programs

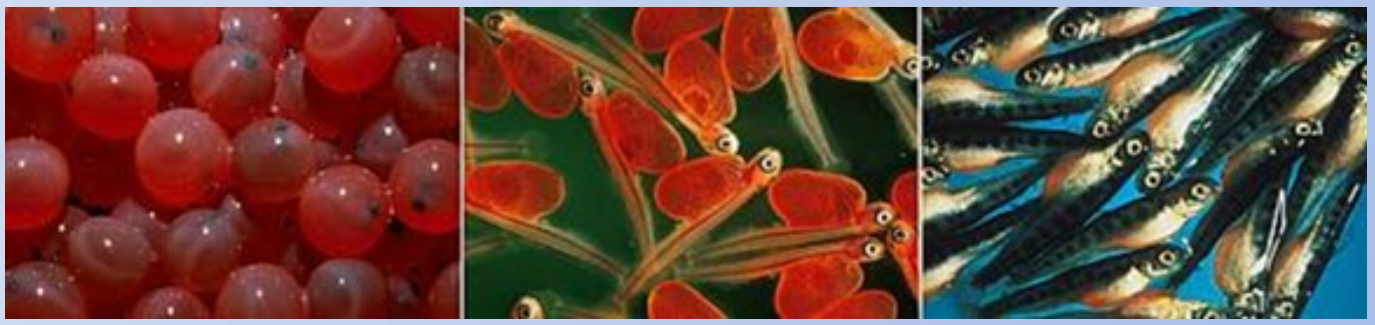
- NEOR Program Options/Constraints
  - Marginally increase program sizes
    - May require Wenaha/Minam weirs to manage straying
    - May require additional hatchery space
  - Adult Return/Brood Collection Timing
    - Catherine Creek and Upper Grande Ronde adults considered early migrating
    - Higher exposure to sea lion mortality

Examples of ESA Challenges in Listed Production Programs

- Upper Salmon Program Considerations
  - Most biological obstacles to hurdle
    - Longest migration and most elevation gain in addition to passage through 8 dams in hydro-system
    - Water temperatures/climate change
  - Low SARs
  - Brood Availability

Examples of ESA Challenges in Listed Production Programs

- Upper Salmon Program Considerations
  - Variable sized production programs
  - 5 of 9 populations necessary for MPG recovery
    - At least 1 highly viable (Upper Salmon)



Examples of ESA Challenges in Listed Production Programs

- Upper Salmon Program Options/Constraints
  - Expand/Enhance programs (e.g., Sawtooth)?
    - Limited options for marginal program size increase due to infrastructure capacity
    - Search for improvements in SARs

Examples of ESA Challenges in Listed Production Programs

- Upper Salmon Program Options/Constraints
  - Enhance programs (e.g., Yankee Fork)?
    - May require new weirs/acclimation facilities to minimize impacts to wild fish and to maximize success of production program
    - Yankee Fork fidelity concerns (Sawtooth Fish Hatchery)

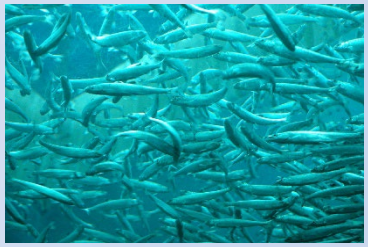
Examples of ESA Challenges in Listed Production Programs

- Upper Salmon Program Options/Constraints
  - New programs (e.g., EF Salmon)?
    - Would likely be small
    - Would likely require tight sliding scales and have a conservation component
    - May require new weirs to minimize impacts to wild fish and to maximize success of production program

LSRCP Mitigation Goals and ESA Implications

LSRCP 2032 LSRCP 2032 LSRCP 2032 LSRCP 2032 LSRCP 2032

More???



Better???

???IDEAS???

LSRCP 2032 LSRCP 2032 LSRCP 2032 LSRCP 2032 LSRCP 2032

Both???

Questions???

Input???