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July 5, 2023

#### MEMORANDUM

- TO: Council Members
- FROM: Erik Merrill, Independent Science Manager; Maureen Hess, Fish and Wildlife Program Analyst; and Mark Fritsch, Project Review and Implementation Manager
- SUBJECT: ISRP Review of the Lower Snake River Compensation Plan Spring/Summer Chinook Program

#### BACKGROUND:

- Presenters: Stan Gregory, ISRP Chair, and Richard Carmichael, ISRP Vice Chair
- Summary: This presentation will share the Independent Scientific Review Panel's (ISRP) key findings and recommendations from its review of the Lower Snake River Compensation Plan (LSRCP) Spring/Summer Chinook Program (<u>ISRP 2023-1</u>).

Prior to the presentation from the ISRP, Council staff will present a brief overview and history of the LSRCP, including operations and maintenance funding and the review process.

The LSRCP goal for spring/summer Chinook is to return 58,700 adults to and through the LSRCP project area. LSRCP produced adult returns have declined in recent years and have ranged from more than 50,000 spring/summer Chinook salmon in the early years of the program to less than 10,000 in 2017. Low returns have continued in recent years. The ISRP's presentation will describe the challenges, areas of high and low performance, and recommendations to improve performance, recognizing that many of the challenges limiting program success cannot be addressed by LSRCP Program actions alone.

- Relevance: The 2014 Fish and Wildlife Program calls for ISRP reviews of projects funded through Bonneville's reimbursable program, including the programs of the LSRCP, as recommended in the 1998 U.S. Congress' Senate-House conference report on the Fiscal Year 1999 Energy and Water Development Appropriations bill.
- Workplan: Fish and Wildlife Division work plan 2023; Program planning and coordination, Program implementation.

#### Background:

The Council, in cooperation with the U.S. Fish and Wildlife Service (USFWS) and its partners, asked the ISRP to conduct a follow-up review of the Spring/Summer Chinook Salmon Hatchery Programs of the LSRCP. The LSRCP is a federal program designed to mitigate the impacts of construction and operation of the four lower Snake River federal dams (Ice Harbor, Lower Monumental, Little Goose, and Lower Granite) on Chinook salmon and steelhead populations in the Snake River basin. LSRCP hatcheries were constructed between 1982 and 1992, approximately 15 to 30 years after the dams were constructed. The LSRCP goal for spring/summer Chinook is to return 58,700 adults to and through the LSRCP project area to compensate for the estimated annual loss of 48% of the return relative to the base period of the late 1940s and early 1950s. It was assumed that 52% (64,000) naturally produced adults from the base period would continue to return annually. The mitigation goal does not include harvest contribution of adults below the project area, but the total adult production goals were calculated using harvest rates that were occurring in areas below the project areas during the 1970s and assuming that level of harvest would continue. Thus, the total adult production goal accounting for harvest below the project area was assumed to be 293,500 Spring/Summer Chinook. To pursue this goal, the LSRCP is currently implementing eleven separate hatchery production programs in Washington, Oregon, and Idaho spread throughout all the major subbasins in the lower Snake River, including the Tucannon, Clearwater, Grande Ronde, Imnaha, and Salmon subbasins. Another program is operated in the Touchet River, Washington. The USFWS owns most of the facilities that culture spring/summer Chinook salmon for the LSRCP program and administers the program through a direct funding agreement with Bonneville Power Administration (BPA). State, federal, and tribal fish and wildlife agencies in the region operate the LSRCP facilities.

The LSRCP faces major challenges in their efforts to mitigate the impacts of construction and operation of the four lower Snake River dams on salmon and steelhead populations in the Snake River basin. Salmon and steelhead must migrate a long distance to the upper portion of the Columbia River Basin and must pass through six or more hydropower dams and reservoirs to reach their spawning grounds. In addition, climate change and habitat degradation over the last 50 years have reduced freshwater and ocean productivity and caused major declines in salmon and steelhead populations throughout the Pacific Northwest. LSRCP produced adult returns have

declined (similar to their natural-origin counterparts) in recent years and have ranged from more than 50,000 spring/summer Chinook salmon in the early years of the Program to less than 10,000 in 2017.

The LSRCP tracks adult return, in-hatchery and smolt-to-adult return rate performance, ecological interactions, and harvest contributions. Overall in the past decade, the hatchery programs in the LSRCP achieved approximately 60 to 80 percent of their goals for adult returns on average, although some achieved only 20 to 30 percent and one program achieved their goal. With low adult returns, the hatchery programs often have difficulty meeting their broodstock goals for the next generation of hatchery fish. One of the many strengths of the LSRCP Program is the high level of in-hatchery performance. Specifically, egg-to-smolt survival is excellent, exceeding 80 percent in all hatcheries in most years; prespawning mortality of broodstock is very low; and in general, the majority of hatchery programs met approximately 85 to 95 percent of their smolt production goals. While in-hatchery performance is a positive achievement of the program, it illustrates that alternatives for the LSRCP to address overall survival challenges through hatchery management changes are somewhat limited. After release from hatcheries, the smolt-to-adult return rates (SAR) are highly variable, ranging from 0.18 to 0.86 percent, which represents 20 to 132 percent of the SAR goals.

Multiple factors have limited the achievement of the LSRCP goals and management objectives during the past decade including:

- 1. The SARs are very low because of high mortality rates at multiple life stages across the life cycle. Returns are highly influenced by poor and changing conditions experienced by smolts migrating to sea, as sub-adults feeding at sea, and as adults migrating upriver.
- 2. The low abundance of natural- and hatchery-origin adult returns in multiple years has influenced the achievement of broodstock and smolt production objectives. The number of natural-origin returns to the Snake River has never been close to the 64,000 adults that were assumed would continue to return annually after dam construction. Natural escapement targets above weirs have rarely been met in recent years.
- 3. The early age-at-maturity and very high proportions of Chinook jacks have significant influence on the ability to meet broodstock objectives and also limit the availability of age-four and older adults for fisheries.
- 4. There is limited hatchery rearing capacity to reduce rearing densities or increase smolt production in those cases where it might be appropriate.
- 5. The marking capacity limitations and logistics dictate the minimum fish size-atmarking, which limits the ability of hatcheries to pursue alternative growth profiles and release smolts at smaller sizes.
- 6. There has been limited response in increasing natural-origin abundance in populations that are supplemented with hatchery adults. Density dependence in juvenile production areas that are supplemented has limited the effectiveness of supplementation.
- 7. The overshoot of Tucannon River adults to areas above Lower Granite Dam reduces returns to the Tucannon River.

- 8. Straying of fish produced at Lookingglass Hatchery into the Wenaha and Minam rivers, which are managed as wild fish sanctuaries, results in hatchery proportions that greatly exceed the 5% criteria.
- 9. The limited distribution of adults in traditional tribal fishing areas has affected the ability of tribes to fish in traditional areas with traditional methods.
- 10. The high-risk status and low abundance of ESA-listed populations limits the ability to harvest hatchery fish in mixed stock fisheries.
- 11. Climate change will influence the smolt-to-adult survival and hatchery operations and performance (e.g., high mortality at the South Fork Salmon River adult holding facility).
- 12. Flat or reduced funding availability limits many aspects of hatchery operations, hatchery maintenance, monitoring and evaluation, and adaptive management actions.

The LSRCP Program has demonstrated adaptability and capacity to address factors such as these and to implement adaptive changes throughout the history of the program. The LSRCP's most prevalent management change is to increase smolt production. This production effort is coupled with extensive monitoring, evaluation, and research to provide information for adaptive management decision processes and ultimately to improve program performance. The LSRCP is forward thinking in initiating an extensive assessment of climate change impacts and associated needs for facilities modifications for all the LSRCP facilities.

The ISRP identifies 12 major key findings and programmatic issues that affect program performance and makes recommendations for future actions for the LSRCP Program and its state and tribal cooperators that include:

- 1. Consider adaptive changes to meet adult return goals and smolt survival objectives.
- 2. Enhance the monitoring and evaluation of benefits and risks of supplementation and increase emphasis on ESA considerations.
- 3. Reduce straying of Grande Ronde hatchery fish into the Minam and Wenaha rivers.
- 4. Consider density dependence in supplementation and for future production increases.
- 5. Modify programs to address early age-at-maturity and decreased representation of age-five adults across the LSRCP program.
- 6. Conduct a program-wide assessment to identify factors influencing in-river smolt survival, SARs, and early age-at-maturity.
- 7. Implement actions to better achieve tribal harvest share (50%) and incorporate Indigenous Knowledges.
- Complete the proposed climate change assessments for existing and new facilities on an expedited schedule and consider impacts on post-release survival.
- 9. Expand structured decision making and adaptive management.
- 10. Improve centralized access to methods, indicators, and metadata for performance assessments.

- 11. Use consistent methods for all metrics and for inclusion of jacks in SARs, adult returns, recruits-per-spawner, and LSRCP mitigation goals assessments.
- 12. Incorporate additional metrics into the comprehensive LSRCP objectives and performance metric assessment table.

The ISRP appreciates the USFWS and the LSRCP partners' constructive approach to review, evaluation, and adaptation, and the ISRP hopes its recommendations can help the program address its many daunting challenges and move the program closer to meeting its goals. That stated, the ISRP understands that many of the challenges that limit success cannot be addressed by LSRCP Program actions alone, and thus the lack of consistent achievement of objectives is mostly despite, not because of, the extensive efforts of the program.

## ISRP review of the Lower Snake River Compensation Plan (Spring/Summer Chinook)

July 2023



#### Lower Snake River Compensation Plan

- Congress authorized the Lower Snake River Compensation Plan (LSRCP) in the Water Resources Development Act of 1976 (that is, *before* the Northwest Power Act of 1980)
- Adopted by Congress to mitigate and compensate for fish and wildlife resource losses caused by the construction and operation of the four federal dams in the lower Snake River:

Ice Harbor (1961)Little Goose (1970)Lower Monumental (1969)Lower Granite (1975)



#### LSRCP Operations, Construction and Administration

- The LSRCP is to replace some of those losses through production of salmon and steelhead.
- Congress appropriated funds to the Corps of Engineers to construct LSRCP hatchery facilities.
- Ownership and management of the facilities eventually turned over to the US Fish and Wildlife Service (FWS).
- LSRCP hatcheries and acclimation facilities are operated by the cooperators through agreements with the FWS:
  - Confederated Tribes of the Umatilla Indian Reservation (CTUIR)
  - Idaho Department of Fish and Game (IDFG)
  - Nez Perce Tribe (NPT)
  - Oregon Department of Fish and Wildlife (ODFW)
  - Shoshone-Bannock Tribes (SBT)
  - Washington Department of Fish and Wildlife (WDFW)

#### LSRCP Operations and Maintenance Funding

- Until 2000, Congress appropriated funds to the FWS for LSRCP facility operations and maintenance. Bonneville annually reimbursed the Treasury for these expenses. Thus, the LSRCP funding is in the "reimbursable" category of Bonneville's fish and wildlife funding responsibilities.
- In 2001, Bonneville and FWS signed a "direct fund" agreement for the "Direct Funding of Power-related Operations and Maintenance Costs of the Lower Snake River Compensation Plan Program." Five-year agreements that have been repeatedly renewed.
- Thus since 2001, Bonneville has *directly* funded the LSRCP O&M expenses, although still considered a "reimbursable" funding activity.



#### **ISRP and Council Review**

- The 1996 amendment to the Northwest Power Act that added the ISRP and Council project review applied to "projects proposed to be funded through that portion of [Bonneville's] annual fish and wildlife budget that implements the Council's fish and wildlife program."
- The LSRCP obligation and funding at Bonneville <u>pre-dated</u> the Power Act, thus the LSRCP activities and funding are <u>not</u> considered part of the Power Act/Fish and Wildlife Program. And the LSRCP activities were <u>not</u> considered part of the ISRP/Council project review process created by the Power Act amendment.



#### **ISRP and Council Review**

- A 1998 Conference Report to the Fiscal Year 1999 Energy and Water Development Appropriations Act "recommended" that the Council and its ISRP review annually "the Columbia Basin fish and wildlife projects, programs, or measures proposed in a federal agency budget to be reimbursed by the Bonneville Power Administration," using the same standards and criteria of the 1996 amendment. The reimbursable programs include the LSRCP.
- In cooperation with the FWS, the ISRP and Council have reviewed the LSRCP a number of times since, either the program as an entirety or certain elements or facilities – in 1999, 2001, 2002, 2011, 2013, 2014 and now 2022-23.



Review of the Lower Snake River Compensation Plan Spring/Summer Chinook Program 2022-2023

Presentation to the Northwest Power and Conservation Council July 12, 2023





ISRP 2023-1, May 10, 2023

#### **ISRP** Members

- Richard Carmichael, M.S., (ISRP Vice-Chair) Retired, Oregon Department of Fish and Wildlife
- Patrick Connolly, Ph.D., Emeritus, United States Geological Survey
- Kurt Fausch, Ph.D., Emeritus, Colorado State University
- Kurt Fresh, M.S., Retired, Northwest Fisheries Science Center, NOAA Fisheries
- Stan Gregory, Ph.D., (ISRP Chair) Emeritus, Oregon State University
- Dana Infante, Ph.D., Michigan State University
- Josh Korman, Ph.D., Ecometric Research and Adjunct Professor, University of British Columbia
- Thomas P. Quinn, Ph.D., Emeritus, University of Washington
- Kenneth Rose, Ph.D., University of Maryland
- Thomas Turner, Ph.D., University of New Mexico
- Ellen Wohl, Ph.D., Colorado State University
- Peer Review Group member
- Steve Schroder, Ph.D., Retired, Washington Department of Fish and Wildlife

Staff

• Erik Merrill, J.D., Independent Science Manager, Northwest Power and Conservation Council



### Lower Snake River Compensation Plan

 Designed to mitigate the impacts of construction and operation of the four lower Snake River federal dams on Chinook salmon and steelhead populations in the Snake River basin.





## Spring/Summer Chinook Programs

- Touchet River Subbasin WDFW and CTUIR
- Tucannon River Subbasin WDFW, NPT, and CTUIR
- Clearwater River Subbasin IDFG and NPT
- Grande Ronde River Subbasin ODFW, CTUIR, and NPT
- Imnaha River Subbasin ODFW and NPT
- Salmon River Subbasin IDFG, NPT, SBT





#### Lower Snake River Compensation Program

• The LSRCP goal for spring/summer Chinook is to return 58,700 adults to and through the LSRCP project area.





### "...in place, in kind..."



- 58,700 spring/summer Chinook (Project Area)
  - In-kind
- Programs placed in specific locations
  - In-place





## **Management Objectives**

- Meet annual broodstock and smolt production objectives
- Maximize smolt-to-adult survival
- Meet the LSRCP adult return goal
- Restore and enhance tribal and recreational fisheries
- Enhance natural production with supplementation
- Produce hatchery fish with similar life history as natural fish
- Minimize ecological effects on native fishes



## Major Challenges for the LSRCP

- Salmon and steelhead migrate long distances.
- Pass through more than six major hydropower dams and reservoirs.
- Climate change and habitat degradation have reduced freshwater and ocean productivity.





## Major Challenges for the LSRCP

- LSRCP Spring/summer Chinook returns to the project area declined from more than 50,000 at the start of the Program to less than 10,000.
- ESA listing and status of natural populations.
- Many factors cannot be addressed by LSRCP Program.









## Changes since 2011 Review

- Attained ESA Compliance for all hatcheries and M&E programs.
- Integrated hatchery and natural spring Chinook broodstock and supplementation are the dominant hatchery program type.
- Operating under a new U.S. v. Oregon Management Agreement.
- Some programs increased hatchery production and new programs have been initiated.
- Spring/summer Chinook salmon returns have declined since the 2011 ISRP review.
- Flat funding and new obligations have constrained the programs.





Project Area and Total Adult Spring/Summer Chinook Return Years 1987-2021

CONTROL OF CONTROL CON

## **High Performance**

• Egg-to-smolt survival exceeds 80% in all hatcheries in most years (2007-2020 BY).





## **High Performance**

• Prespawning mortality of broodstock is very low (2007-2020 BY).





## **Mixed Performance**

• Some hatchery programs meet a high proportion of smolt production goals (2007-2020 BY).





#### **Low Performance**

• Hatcheries often have difficulty obtaining their broodstock targets (2007-2020 BY).





#### **Low Performance**

• Smolt-to-adult survival rates are highly variable - range from 20%-132% of targets (2007-2016 BY).





### **Low Performance**

• Most LSRCP programs attain approximately 60% - 80% of their adult return goals on average (2010-2020 RY).





#### **Mixed Performance**

• Some subbasins had Tribal harvest in most years, others often did not (2010-2020 RY).





#### **Mixed Performance**

• Some subbasins had sport harvest in most years, others often did not (2010-2020 RY).







- Very low SARs result from high mortality rates at multiple life stages across the life cycle.
- Broodstock and smolt production objectives often are not achieved because of low adult returns.
- Natural-origin returns to the Snake River have never been close to the 64,000 adults that were assumed would continue to return annually after dam construction.



- Hatchery/natural ratios for escapement and broodstock have rarely been met due to low abundance of natural-origin returns.
- Early age-at-maturity limits reproductive capacity and harvest opportunities.
- Limited increases of natural-origin abundance in populations supplemented with hatchery adults.
- Density dependence has limited the effectiveness of supplementation.



 Limited distribution of Chinook adults to traditional Tribal fishing areas affects the ability of Tribes to fish in traditional areas with traditional methods.





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- High risk and low abundance of ESA-listed populations limit the ability to harvest hatchery fish in mixed-stock fisheries.
- Climate change influences smolt-to-adult survival and hatchery operations and performance.
- Flat funding limits hatchery operations, maintenance, monitoring and evaluation, and adaptive management.





#### **Programmatic Issues**



- Increasing smolt production has been the LSCRP's most prevalent management action to address adult declines.
- The LSRCP is initiating a modeling assessment of climate change impacts and associated needs for facilities modifications for all the LSRCP facilities, but it may take more than a decade to complete.
- Tucannon Program, in particular, has not achieved its goals, with less than 200 adult Chinook salmon returning to the river in recent years.



Apply to LSRCP USFWS coordinators and agency and tribal cooperators.

- Conduct rigorous benefit-risk assessments for any proposed actions that will significantly increase the number of smolts released.
- Elevate the importance of actions and reporting of ESA goals and management objectives.





- Examine the effects of hatchery/natural ratios on in-hatchery and post-release performance.
- Examine supplementation success across programs.
- Continue to develop and evaluate alternative rearing and release strategies to shift hatchery adult age structure to match natural-origin populations.



Photo: Samantha Sais



 Update broodstock and natural escapement management plans for all supplementation programs (include new information on density dependence).





 Conduct Program-wide analysis to identify production and environmental factors that influence smolt survival through the mainstem, SARs, and age-at-maturity.



- Develop actions to achieve Tribal harvest share (50%).
- Increase the use of Indigenous Knowledge in the LSRCP's assessment of program performance and decision making.





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- Prioritize Climate Change Vulnerability
   Assessments to first complete assessments for
   facilities facing the most severe near-term
   risk. Explore options for faster completion.
- Apply structured decision processes more extensively to improve adaptive management decisions.
- Adapt life-cycle models to explore factors responsible for low performance and to develop alternative future actions to meet goals.





• Develop a standard metric centralized data system and use the performance metrics table to regularly assess program performance and alternative management options.

	Table 1. ISRP assessment of the r	eporting of objectives an	d performance metrics i	n individual hatchery p	rogram reports.								
	prepared for the 2022 LSRCP Sp	oring Chinook Program Re	eview, brood years 2007-	2016. This table provid	des summary information	on only since	the last ISRP revie	w (2010).					
	Note that Joseph Feldhaus provided revised estimates for the Imnaha, Lookinglass, Catherine Creek, and Lostine Hatchery Programs, which are included in this table												
Brood Years	Metric (reporting guidance in	Sawtooth	McCall	Clearwater Spring	Clearwater Summer	Dworshak	Tucannon	Touchet	Imnaha	Lookingglass	Grande	Catherine	Lostine
Reporting	cell comments)										Ronde	Creek	
BY2007-2020	Broodstock Collection Goals (2007-2020)	1,105	817	2,078	440	1,372	170	176	296	160	172	102	166
	Years Achieved	10 of 14	14 of 14	12 of 14	9 of 12	12	3	NA	9	8	3	7	6
	Program Type	BY98-09 Segregated,	BY98-09 Segregated,	Segregated	Segregated	Segregated	Integrated	Segregated	Integrated	Integrated	Integrated	Integrated	Integrated
		BY10-Current	BY10-Current				-		-	-	-	-	-
		Integrated	Integrated										
	Pre-spawning Mortality	2% (0 - 3%)	18% (0 - 71%)	5% (1 - 17%)	8% (0 - 28%)	3.6	7% +/- 6.03	NA	9% (1-28)	6% (1-15)	11% (1-34)	5% (1-24)	11% (2-18)
	Egg to Smolt	83% (69 - 99%)	81% (63 - 97%)	85% (65 - 97%)	82% (63 - 97%)	76.9%	81% (64.2-95.7)	NA	81% (53-96)	89% (71-99)	88% (72-98)	80% (38-95%)	78% (23-88)
	Smolt Release Goal	1.700.000 - 2.000.000	1.000.000	2.135.000 -	200,000 - 640,000	1650000	225.000	250,000	490,000	250,000	250,000	150,000	250,000
	Years Achieved	10 of 14	14 of 14	12 of 14	10 of 12	11	2	3/3	5	6	6	9	9
	B. Post-Release Performance												
	Density Index	0.30	≤0.25	≤0.30	≤0.30	0.3	0.16	0.16	0.17 (0.15-0.19)	0.19 (0.17-0.20)	0.15 (0.14-0.16)	0.20 (0.19-0.21)	0.15 (0.14-0.16)
	Size at Release	20 fpp (14 - 28)	19 fpp (17 - 21)	17 fpp (15 - 20)	16 fpp (14 - 20)	20	12 fpp (2011 BY on)	11-13 fpp	20–25 fpp				
	Survival to LGD/LoMO/MCN					76%	0.52%	0.51% (0.45-0.57)	0.66% (0.58-0.72)	0.69% (0.57-0.77)	0.43% (0.35-0.54)	0.34% (0.22-0.50)	0.59% (0.45-0.67)
	Target (smolts)	54% (37% - 68%)	67% (51% - 78%)	70% (54% - 93%)	63% (53% - 77%)								
	1976 Program Sizing SAR	0.87%	0.80%	0.87%	N/A	0.87%	0.87%	NA	0.87%	0.87%	0.87%	0.87%	0.87%
	2022 Program Sizing SAR	0.97%	0.80%	0.38%	N/A	0.55%	0	.24%	0.65%	0.65%	0.65%	0.65%	0.65%
	1976 SAS Target	4.35%	4.00%	4.35%	N/A	4.30%	3.48%	NA	3.48%	3.48%	3.48%	3.48%	3.48%
	2022 SAS Target	4.85%	4.00%	1.92%	N/A	2.20%	0	.96%	2.60%	2.60%	2.60%	2.60%	2.60%
BY07-16	Observed SAR Average	0.30% (0.08% - 0.65%)	0.50% (0.06% - 1.03%)	0.33% (0.16% - 0.59%	0.26% (0.05% - 0.47%)	0.48%	0.18% (0.02-0.37)	NA	0.62% (0.12-1.26)	0.57% (0.14-1.21)	0.44% (0.07-1.29)	0.38% (0.13-0.97)	0.86% (0.17-2.13)
	Observed SAS Average	0.41% (0.12% - 1.02%)	0.80% (0.08% - 2.07%)	0.45% (0.18% - 0.78%	0.43% (0.06% - 0.92%)	0.53%	0.19% (0.02-0.37)	NA	0.83% (0.13-1.83)	0.68% (0.15-1.41)	0.49% (0.08-1.31)	0.45% (0.16-1.17)	1.03% (0.19-2.34)
Return years 2010- 2020	Return to Project Area Goal	19,445	8,000	9,882	2,033	9,135		1,152	3,210	1,617	1,617	970	1,617
	Return to Project Area Average	4,013 (831 - 7,521)	6,053 (1,032 - 14,263)	8,703 (3,6	76 - 15,958)	6,236	366 (50-711)	NA	2,516	1,201	972	578	1,895
	Years Project Area Goals Achieved	0	4		2	4	0	NA	5	3	0	2	6
	Years of Tribal Harvest	11	11			14	0	NA	11	11	7	7	10
	Years of Sport Harvest	9	8	1	11	13	NA	NA	7	7	0	1	4
										-	1.		
	Natural Origin or Interaction	Yes	Yes	Yes		NA	LSRCP	2000-039-00 ??	1992-026-04		1992-026-04	1992-026-04	1992-026-04
	Monitoring projects												
	BACI Assessment	No	No	No	No	NA	Yes	No	Yes	No	No	No	No
	Other Supplementation	Yes	Yes	No	No	NA	Yes	No					
	Effectiveness Evaluation												
	KKS Assessment	Yes	Yes	NO	NO	NA	NO	NO	NO	Yes	NO	Yes	Yes
1	PBI Baseline (Year Initiated)	2008	2008	2008	2008	2008	2014	2018-2019, 2022	2008	2008	2008	2008	2008



## Accomplishments

- LSRCP supports extensive monitoring and evaluation to inform adaptive management decisions.
- Numerous studies conducted to improve smolt performance and to increase age-at-return and reduce proportion of jacks.
- The LSRCP Program has demonstrated adaptability and capacity to change throughout the history of the program.



## Accomplishments

- Program attained ESA Compliance for all hatcheries and M&E programs.
- Integrated hatchery broodstocks developed for Salmon River Programs.
- Hatchery production of spring/summer Chinook salmon increased for some programs and new programs have been initiated.



## Acknowledgements

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- Nez Perce Tribe (NPT): Bill Young, Shane Vatland, Jack Yearout, Joe Oatman, Becky Johnson, Jason Vogel, and Jay Hesse
- Oregon Department of Fish and Wildlife (ODFW): Joseph Feldhaus, Ethan Brandt, Ian Tattam, and Andrew Gibbs
- **Confederated Tribes of the Umatilla Indian Reservation (CTUIR):** Les Naylor, Carrie Crump, Gene Shippentower, and Gary James
- Shoshone-Bannock Tribes: Lytle Denny and Sammy Matsaw
- Idaho Department of Fish and Game (IDFG): Brian Leth, Chris Noyes, Chris Sullivan, and John Cassinelli
- USFWS, Idaho Fish and Wildlife Conservation Office: Doug Nemeth, John Erhardt, Frank Mullins, and Jarret Page
- USFWS, Abernathy Fish Technology Center: Doug Peterson
- Pacific States Marine Fisheries Commission (PSMFC): Nancy Leonard, Stan Allen, and Tara Garrison
- Northwest Power and Conservation Council: Maureen Hess, Mark Fritsch, Patty O'Toole; Trina Gerlack, Kendra Coles, and Eric Schrepel



# Questions





#### Staff will draft a letter requesting that

- Bonneville and the U.S. Fish and Wildlife Service and cooperators consider the 12 ISRP key findings and programmatic recommendations (ISRP document 2023-1) associated with the spring/summer Chinook programs.
- Upon completion of the steelhead and fall Chinook program reviews, Bonneville and the USFWS report to the Council on how ISRP key findings and programmatic recommendations have been or are being addressed for all programs.





