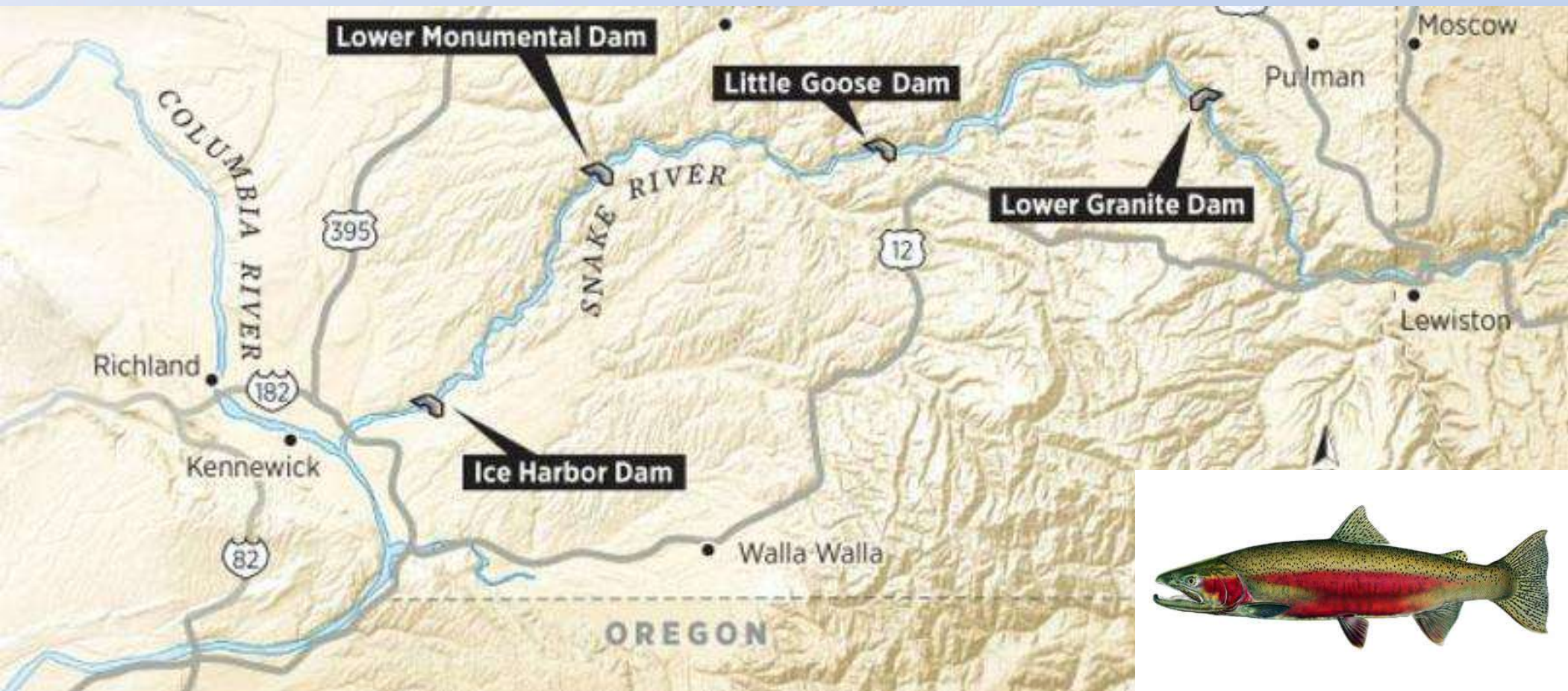


Lower Snake River Compensation Plan Steelhead Management and ISRP Review



Rod Engle* and Nathan Wiese USFWS-LSRCP



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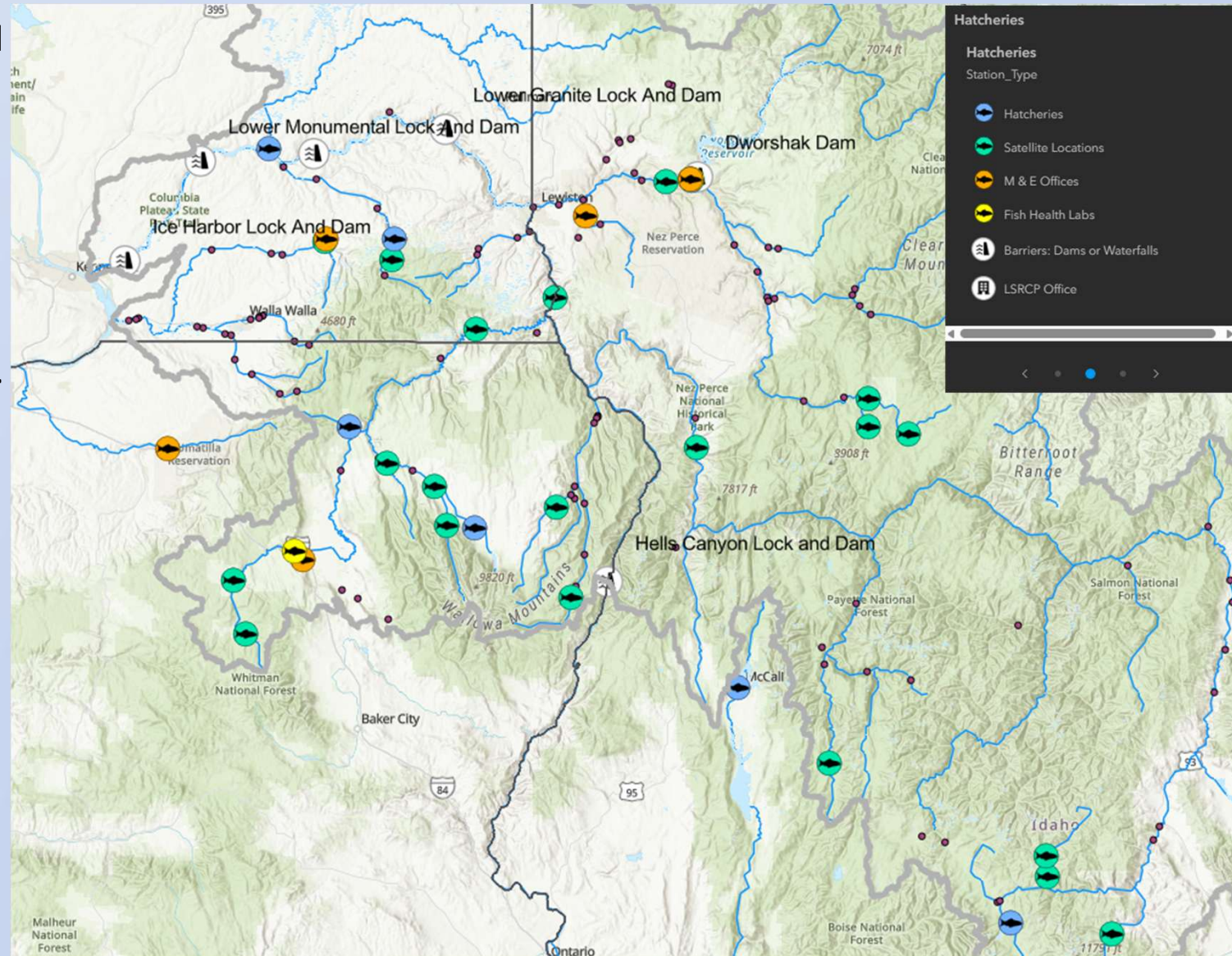


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What is the Lower Snake River Compensation Plan?

- Congressionally authorized (1976) to compensate for the construction and operation of the four lower Snake River dams.
- Artificial production of spring/summer Chinook, fall Chinook and steelhead.
- Adult return goals
 - In-place, in-kind to the LSRCP project area
- Funded by Bonneville Power Administration, administered by U.S. Fish and Wildlife Service
 - FY25= \$33.7 M
- Implemented in the late 1970's early 1980's.



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Who is the Lower Snake River Compensation Plan?

- Co-Managers
 - Idaho, Oregon, Washington
 - Nez Perce Tribe, Confederated Tribes of the Umatilla Indian Reservation and Shoshone Bannock Tribes
- Federal and Non-Federal
 - Bonneville Power Administration
 - NOAA-Fisheries
 - Idaho Power
 - Corps of Engineers
 - Pacific States Marine Fisheries Commission
 - USFWS
- 11 Fish Hatcheries
 - 21 Spawning or Acclimation Locations
- 3 Fish Health Labs
- 7 Monitoring and Evaluation Groups



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LSRCP Program Goals and Harvest Objectives

Species	Project Area Goals (Adults)	Coastwide Harvest Objectives (Adults)	Total Adults (Goals + Objectives)
Fall Chinook	18,300	73,200	91,500
Spring/Summer Chinook	58,700	234,800	293,500
Steelhead	55,100	110,200	165,300
Rainbow Trout	86,000 pounds stocked		



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Table 2. Distribution of salmon and steelhead requiring hatchery compensation by the Columbia Basin Fisheries Technical Committee's Lower Snake Hatchery Subcommittee in 1974 (WDFW 1974). Values were derived by multiplying 48% loss rate to estimated run escapements developed within the U.S. Army COE Special Report (COE 1975) except for fall Chinook salmon. Rounding errors with the LSRCP goals were acknowledged by the subcommittee.

Area	Fall Chinook salmon	Spring-Summer Chinook salmon	Steelhead
Snake River			
Below Lewiston	5,000		
Lewiston to China Gardens	3,580		2,208
China Gardens to Pleasant Valley	1,689		
Pleasant Valley to Hells Canyon	4,459		
Hells Canyon Dam Fish Facilities	3,648	1,200	2,736
Tucannon River		1,152	1,632
Clearwater River	68	288	20,736
Asotin Creek			816
Grande Ronde River		5,856	7,632
Salmon River		46,656	16,896
Imnaha River	68	3,216	1,920
Small Tributaries		288	528
Totals	18,512	58,656	55,104



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Table 3. Allocation of compensation (adults) by State as suggested by Columbia Basin Fisheries Technical Committee (reproduced from WDFW 1974). This allocation was not to be used as a specific indicator of release sites.

Area or Basin	Washington			Oregon		Idaho	
	Spring Chinook salmon	Fall Chinook salmon	Steelhead	Spring Chinook salmon	Steelhead	Spring-Summer Chinook	Steelhead
Snake River							
Below Lewiston		5,000					
Lewiston – Hells Canyon		9,728	2,208				
Hells Canyon Dam		3,648			1,368	1,200	1,368
Tucannon River	1,152		1,632				
Clearwater River		68				288	20,736
Asotin Creek			816				
Grande Ronde River				5,856	7,632		
Salmon River						46,656	16,896
Imnaha River		68		3,216	1,920		
Small Tributaries					264	288	264
Totals	1,152	18,512	4,656	9,072	11,184	48,432	39,264



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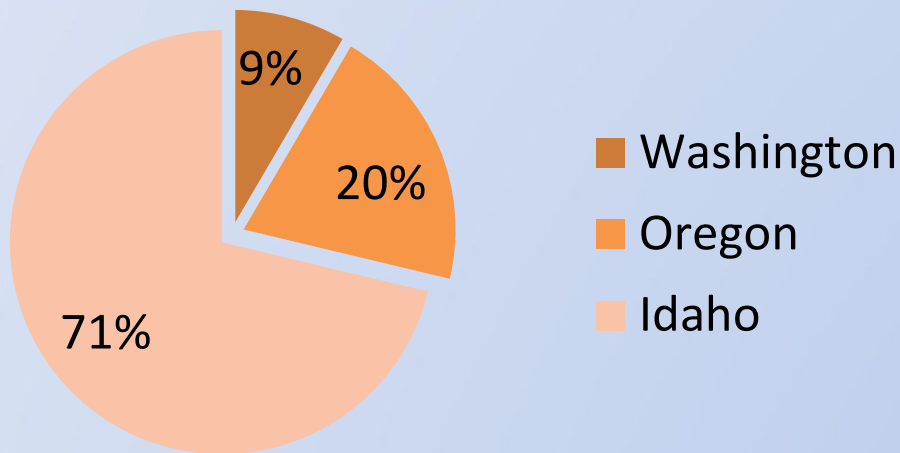


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“...in place, in kind...”

Steelhead
55,100



- Hatchery programs originally sized and implemented with a 0.5 SAR (Project Area)
 - In-kind.
- Programs placed is specific locations
 - In-place
- Inception of program, meet SAR of 0.5.... meet 55,100.



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LSRCP Program Reviews

- 1990 – LSRCP Internal Review
 - 1998 – LSRCP Internal Review
 - 2002 – First Independent Scientific Review Panel (ISRP*) Review
 - 2009-2011 – USFWS Hatchery Reviews
 - 2011 – ISRP – Spring/Summer Chinook Program
 - 2013 – ISRP – Steelhead Programs
 - 2014 – ISRP – Fall Chinook Program
 - 2023 - ISRP Spring/Summer Chinook Review
 - 2025 - ISRP Steelhead Program Review
 - 2027 - ISRP Fall Chinook and Rainbow Trout Program Review
- The ISRP is formed under the Council's program and reviews individual fish and wildlife projects funded by Bonneville Power Administration and makes recommendations on matters related to those projects. <https://www.nwcouncil.org/independent-scientific-review-panel-background/>



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Benefits of Periodic Independent Scientific Review

- Accountability
 - Scientific methods and approach
 - Program performance and administration
 - Funding allocation, use and requests
- Implementation of adaptive management, alternative to stagnation and groupthink, constructive feedback
- Consistency
- ESA Consultation
- Environmental change
- Partnerships and collaboration

Considerations – commitment, input, travel, location.



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Process for Review

- USFWS and Northwest Power and Conservation Council (NWPCC) request a review.
 - ISRP review process from 1996 NW Power Act recommended to *“...projects, programs or measures proposed in a federal agency budget to be reimbursed by the Bonneville Power Administration.”*
- LSRCP and NWPCC Questions for 2025 Steelhead Review
 - *How is each hatchery program performing and contributing toward the LSRCP adult return goal for steelhead, including at specific release sites, in co-manager defined aggregations, and in LSRCP program in-place, in-kind goals?*
 - *What are the demographic, ecological, and genetic effects on wild fish?*
 - *How are the programs being modified to achieve adult return goals and contribute to program-specific management objectives (i.e., fishery and/or supplementation)?*



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LSRCP Changes to Meet Goals

- 0.5 SAR is not the standard for every LSRCP program.
 - Performance has differed over 40+ years (stock, release sites, program type).
 - Production has been variable over time toward the LSRCP goals
- 55,100 to LSRCP project area remains the primary goal... and coastwide harvest objective of 110,200 is secondary.
 - Non-project area harvest is secondary goal for several reasons....
- In place mitigation has evolved since program inception



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Steelhead Goal Example

		LSRCP Total Production					
		5,000,000	6,000,000	7,000,000	8,000,000	9,000,000	10,000,000
Project Area SAR	1.10%	55,000	66,000	77,000	88,000	99,000	110,000
	1.00%	50,000	60,000	70,000	80,000	90,000	100,000
	0.90%	45,000	54,000	63,000	72,000	81,000	90,000
	0.80%	40,000	48,000	56,000	64,000	72,000	80,000
	0.70%	35,000	42,000	49,000	56,000	63,000	70,000
	0.60%	30,000	36,000	42,000	48,000	54,000	60,000
	0.50%	25,000	30,000	35,000	40,000	45,000	50,000
	0.40%	20,000	24,000	28,000	32,000	36,000	40,000
	0.30%	15,000	18,000	21,000	24,000	27,000	30,000
	0.20%	10,000	12,000	14,000	16,000	18,000	20,000
	0.10%	5,000	6,000	7,000	8,000	9,000	10,000
		Where LSRCP Goal is met (55,100)					

Increased Performance

- Low densities
- Release loc.
- Good homing
- Releases that are ready-to-migrate
- Better in-river survival, hydrosystem survival.
- Endemic or localized stock

Increasing Costs (\$) 

Increased Brood Need (and Reduced Fisheries)

Current program is 5.553 M with measured, mean survival of 0.996% = 55,100



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Table 4. LSRCP Program in-place, in-kind distribution of project area steelhead goal of 55,100 adults.

LSRCP Basin/Location	Facility	Location/Stock	Current Production	Adult Goal
Salmon River	Hagerman NFH	Sawtooth Weir - A	1,410,000	13,100
	Hagerman NFH	PRAS Evaluation Sawtooth Weir - A	90,000	
	Hagerman NFH	East Fork Salmon - A	60,000	500
		<i>Sub Total</i>	<i>1,560,000</i>	13,600
Salmon River	Magic Valley FH	Sawtooth Weir - A	279,000	4,200
	Magic Valley FH	Little Salmon River - A	403,000	
	Magic Valley FH	Pahsimeroi Weir USR - B	434,000	7,400
	Magic Valley FH	Yankee Fork - USR - B	434,000	
		<i>Sub Total</i>	<i>1,550,000</i>	11,600
Clearwater River	Clearwater FH	Meadow Creek -SF CLW B	501,000	14,000
	Clearwater FH	Red House Hole - SF CLW B	219,000	
	Clearwater FH	Newsome Creek - SF CLW B	123,000	
		<i>Sub Total</i>	<i>843,000</i>	14,000
Northeast Oregon	Wallowa FH/Irrigon FH	Wallowa FH Early Acclimation - Wallowa A	400,000	9,184
	Wallowa FH/Irrigon FH	Wallowa FH Late Acclimation - Wallowa A	160,000	
	Wallowa FH/Irrigon FH	Big Canyon - Wallowa A	240,000	
	Irrigon FH/Wallowa FH	Little Sheep - Imnaha A	215,000	
		<i>Sub Total</i>	<i>1,015,000</i>	11,184
Southeast Washington	Lyons Ferry FH	Touchet/Dayton Pond - Touchet Endemic A	50,000	398
	Lyons Ferry FH	Tucannon/Curl Lake - Tucannon A	100,000	1194
	Lyons Ferry FH	Tucannon/Tucannon FH - Tucannon A	50,000	
	Lyons Ferry FH	Grande Ronde/Cottonwood AF - Wallowa A	225,000	3064
	Lyons Ferry FH	Touchet/Dayton Pond - Wallowa A	100,000	
	Lyons Ferry FH	Snake River/Lyons Ferry FH - Wallowa A	60,000	
		<i>Sub Total</i>	<i>585,000</i>	4,656
	Grand Total		5,553,000	55,040



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LSRCP Program Performance			Current		
LSRCP Basin/Location	Facility	Location/Stock	Production	Adult Goal	BY07-20 SAR
Salmon River	Hagerman NFH	Sawtooth Weir - A	1,410,000	13,100	0.95%
	Hagerman NFH	PRAS Evaluation Sawtooth Weir - A	90,000		
	Hagerman NFH	East Fork Salmon - A	60,000	500	0.54%
			<i>Sub Total</i>	<i>1,560,000</i>	<i>13,600</i>
Salmon River	Magic Valley FH	Sawtooth Weir - A	279,000	4,200	1.18%
	Magic Valley FH	Little Salmon River - A	403,000		
	Magic Valley FH	Pahsimeroi Weir USB - B	434,000	7,400	0.33%
	Magic Valley FH	Yankee Fork - USB - B	434,000		
			<i>Sub Total</i>	<i>1,550,000</i>	<i>11,600</i>
Clearwater River	Clearwater FH	Meadow Creek -SF CLW B	501,000	14,000	0.94%
	Clearwater FH	Red House Hole - SF CLW B	219,000		
	Clearwater FH	Newsome Creek - SF CLW B	123,000		
			<i>Sub Total</i>	<i>843,000</i>	<i>14,000</i>
Northeast Oregon	Wallowa FH/Irrigon FH	Wallowa FH Early Acclimation - Wallowa A	400,000	9,184	0.94%
	Wallowa FH/Irrigon FH	Wallowa FH Late Acclimation - Wallowa A	160,000		
	Wallowa FH/Irrigon FH	Big Canyon - Wallowa A	240,000	2,000	1.05%
	Irrigon FH/Wallowa FH	Little Sheep - Imnaha A	215,000		
			<i>Sub Total</i>	<i>1,015,000</i>	<i>11,184</i>
Southeast Washington	Lyons Ferry FH	Touchet/Dayton Pond - Touchet Endemic A	50,000	398	0.39%
	Lyons Ferry FH	Tucannon/Curl Lake - Tucannon A	100,000		
	Lyons Ferry FH	Tucannon/Tucannon FH - Tucannon A	50,000	1194	0.66%
	Lyons Ferry FH	Grande Ronde/Cottonwood AF - Wallowa A	225,000		
	Lyons Ferry FH	Touchet/Dayton Pond - Wallowa A	100,000	3064	1.58%
	Lyons Ferry FH	Snake River/Lyons Ferry FH - Wallowa A	60,000		
			<i>Sub Total</i>	<i>585,000</i>	<i>4,656</i>
		Grand Total	5,553,000	55,040	50,456



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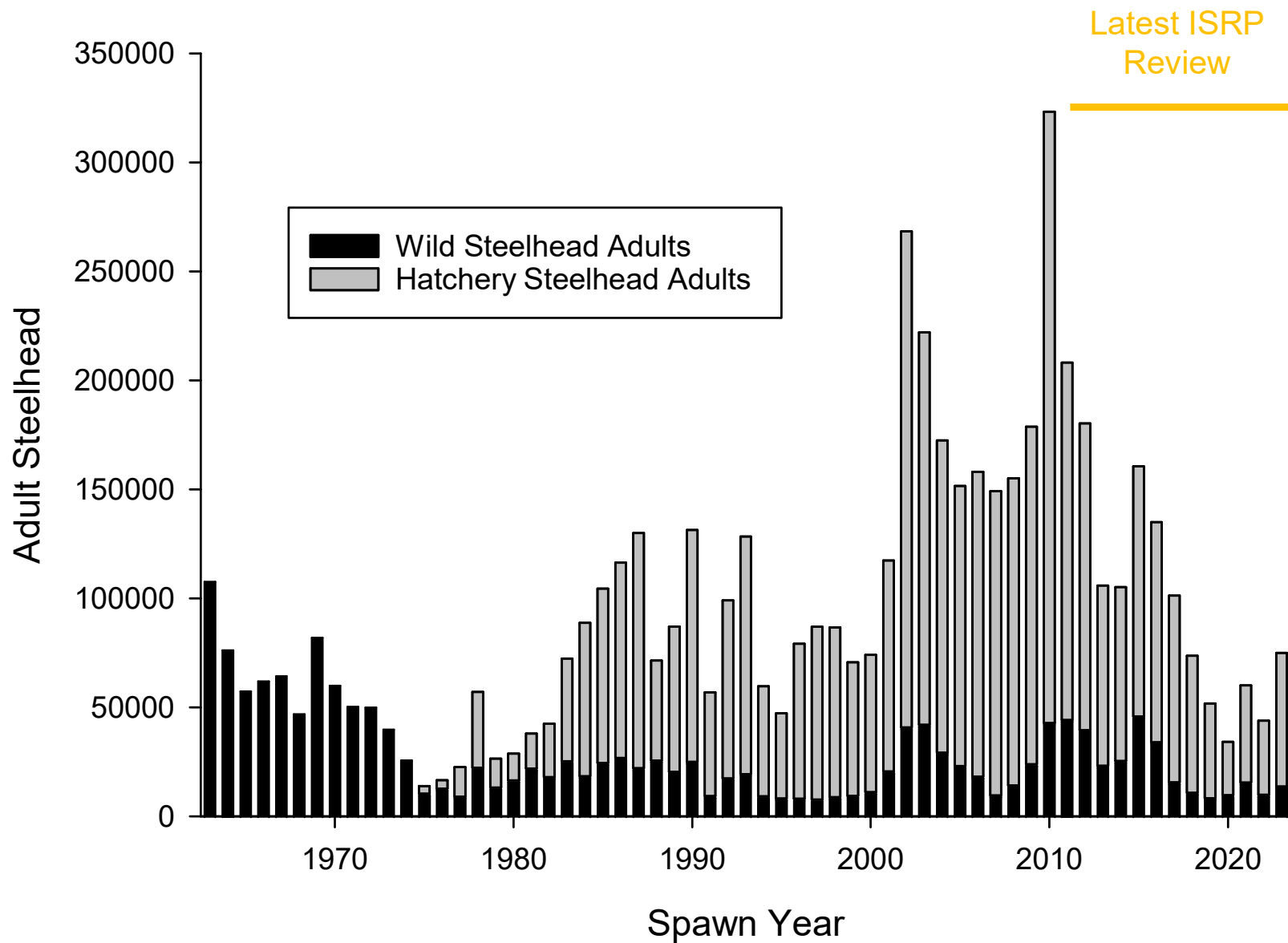
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Origin of Snake River Steelhead by Spawn Year 1963-2023



Data Summary by Brian Leth - IDFG



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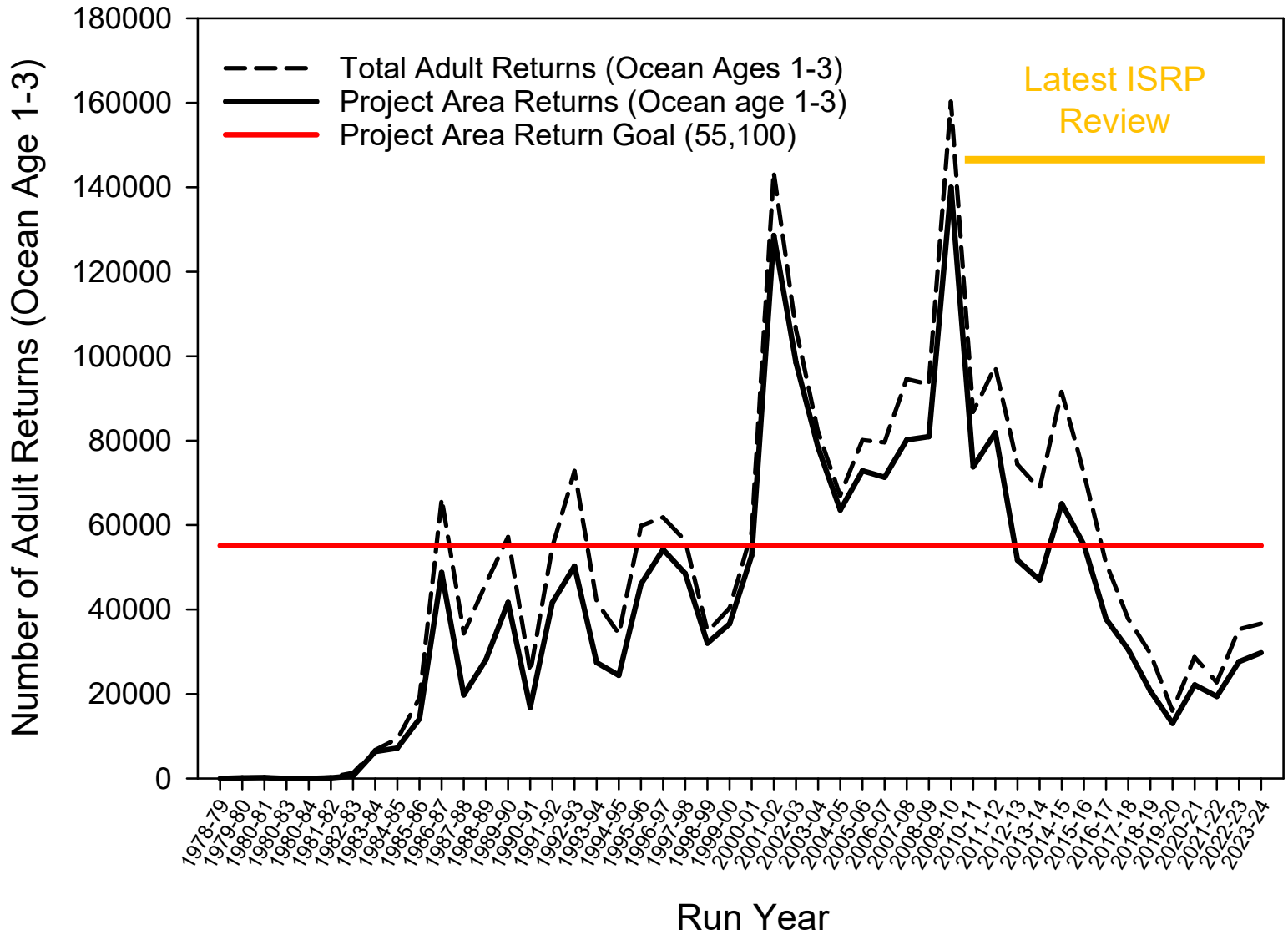
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Lower Snake River Compensation Plan Returns of Steelhead from 1978/79-2023/24 Run Years



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Recent Issues

- Decline of steelhead abundance coastwide
- Decline of A/B steelhead performance for USFWS -LSRCP Mitigation Program.
- Unsustainability of B-steelhead hatchery programs in Upper Salmon River as implemented.
 - *“Status quo won’t produce more adults, steelhead won’t fix themselves.”*



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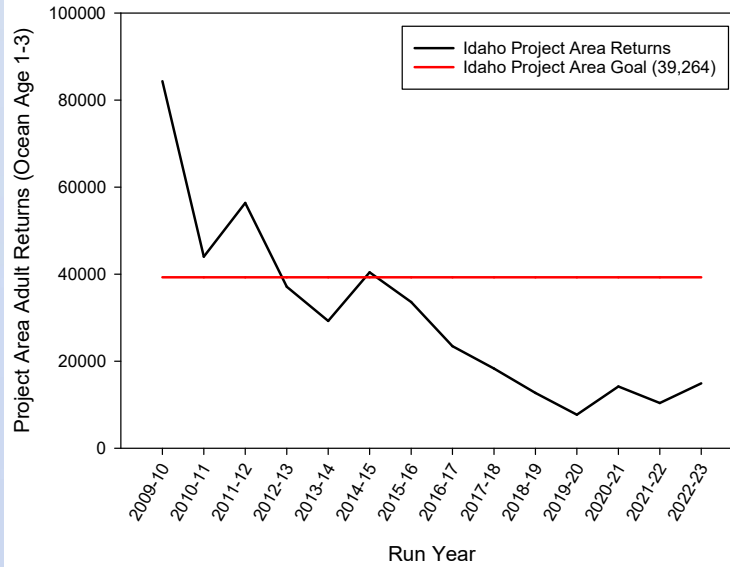
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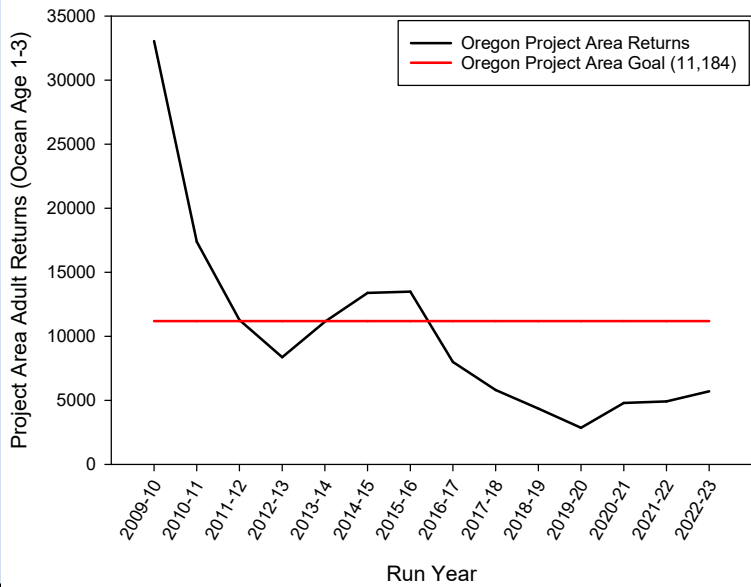
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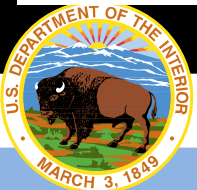
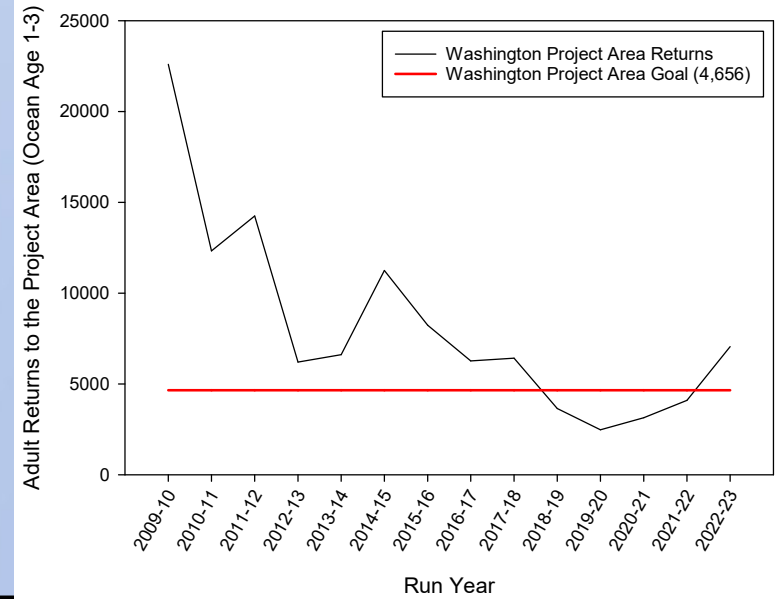
Idaho Project Area Returns of Steelhead from 2009-10 to 2022-23 Run Years



Oregon Project Area Returns of Steelhead from 2009-10 to 2022-23 Run Years



Washington Project Area Returns of Steelhead for 2009-10 to 2022-23 Run Years

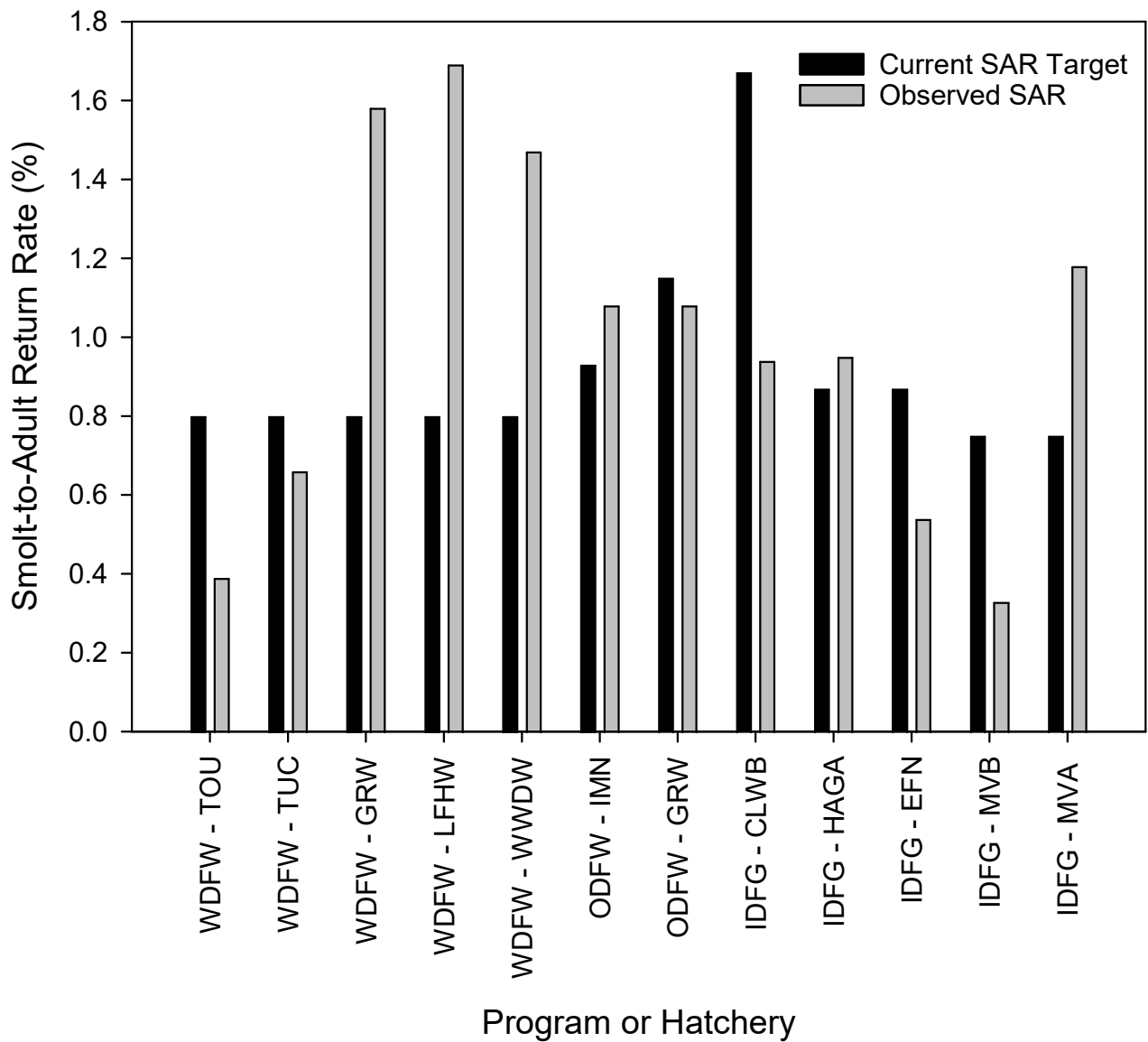


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*SAR data reflects estimation of adult return to, or upstream, of the LSRCP project area and comprises multiple methods of estimation depending on reporting agency.



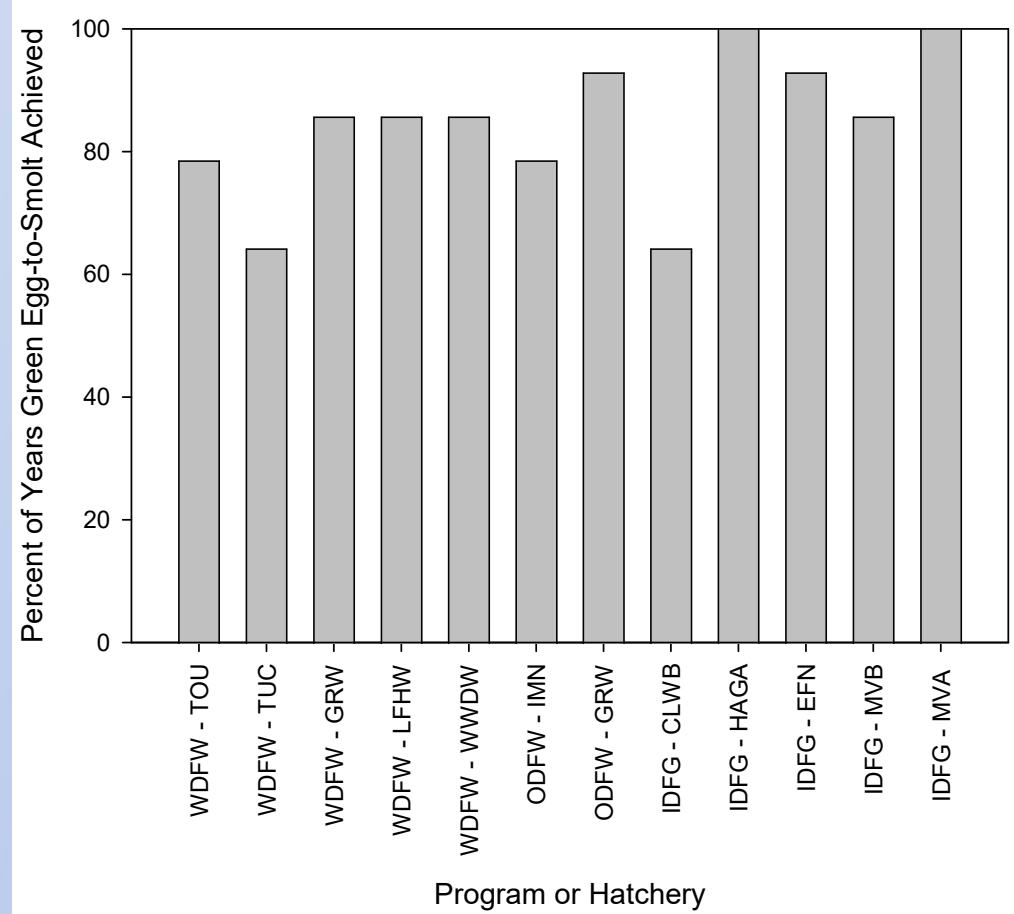
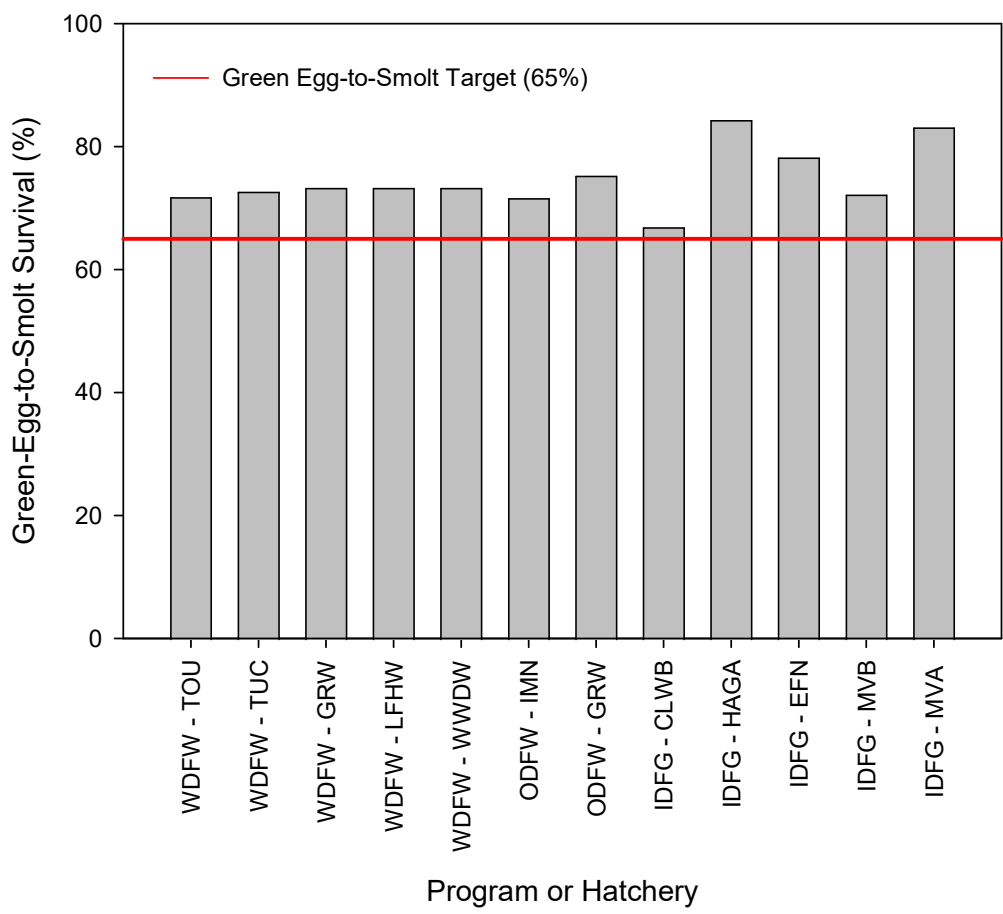
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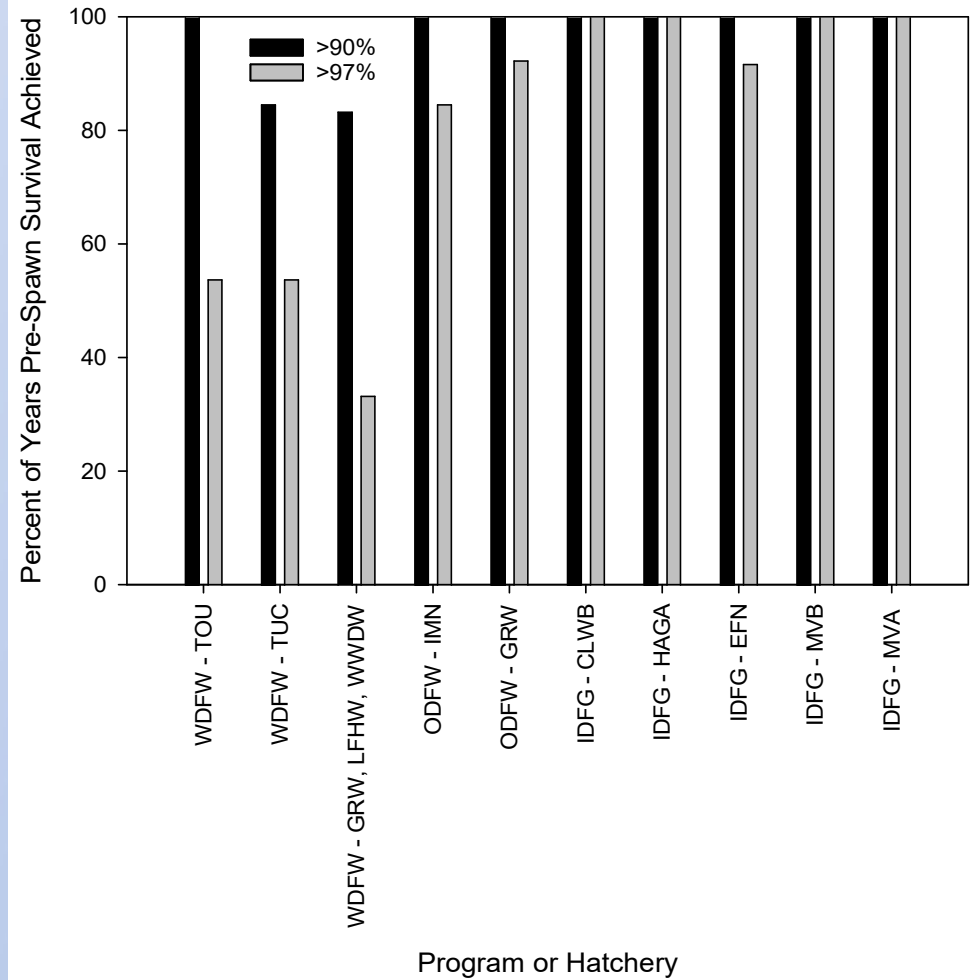
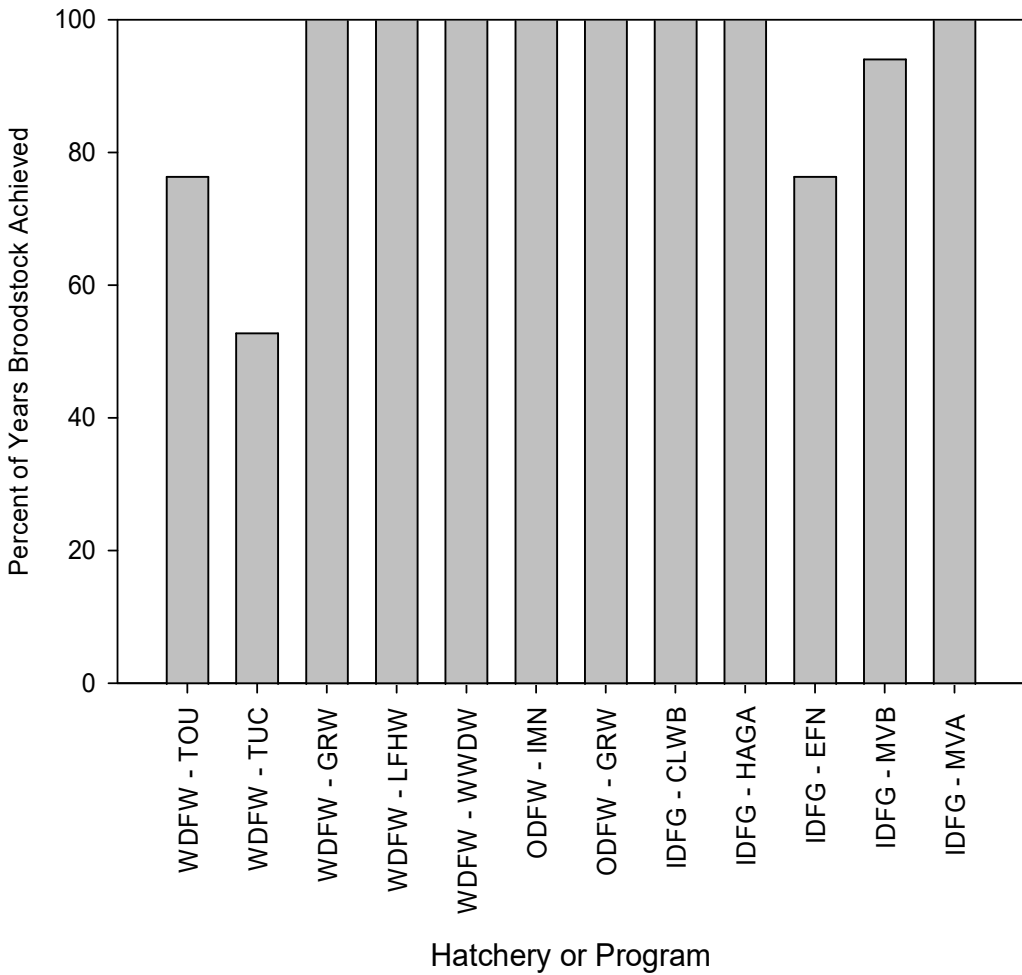




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ISRP Recommendations to LSRCP

Apply to LSRCP USFWS coordinators and agency and tribal cooperators.

- Continue to maintain and monitor sport fisheries to document key performance indicators.
- Elevate the importance of actions and reporting of ESA goals and management objectives.
- Maintain and continue to document stray rates and pHOS of LSRCP steelhead in Mid-C listed populations.
- WDFW and co-managers - Use a structured decision process to evaluate the multiple proposed alternatives for modifying the Touchet, Tucannon, and Wallowa stock programs to address overshoot, straying, and other performance issues.
- Develop sound and robust supplementation evaluation studies for the four supplementation programs.



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ISRP Recommendations to LSRCP

- Continue to pursue essential funding for infrastructure and water supply improvements. Complete hatchery climate vulnerability assessments.
- Develop a systematic decision process that documents decisions and rationale for prioritizing infrastructure and maintenance projects.
- Develop actions to better achieve Tribal harvest share (50%) and provide fisheries in traditional areas. Document success in restoring tribal fisheries.
- In future reviews provide consistent data among programs for key performance metrics. Develop systematic data quality assurance and analytical processes to maintain up-to-date estimates.
- Develop a shared standard metric data system and use the performance metrics table to regularly assess program performance and alternative management options.



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Overall Summary

- Periodic independent scientific review benefits the LSRCP program in a number of ways.
- Recent LSRCP Steelhead program performance has declined similarly to the declining steelhead populations coastwide.
- LSRCP stocks and programs perform differently based on location and other factors.
- ISRP 2023 Review of LSRCP Spring/Summer Chinook salmon program available at <https://www.nwcouncil.org/reports/isrp2023-01/>
- ISRP 2025 Review of LSRCP Steelhead Program available at <https://www.nwcouncil.org/reports/isrp-review-of-the-lower-snake-river-compensation-steelhead-program-2024-2025/>
- ISAB SAR and SAS Metrics Report – LSRCP program example - <https://www.nwcouncil.org/reports/isab-sar-and-sas-metrics-report/>



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Questions?



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Additional Slides



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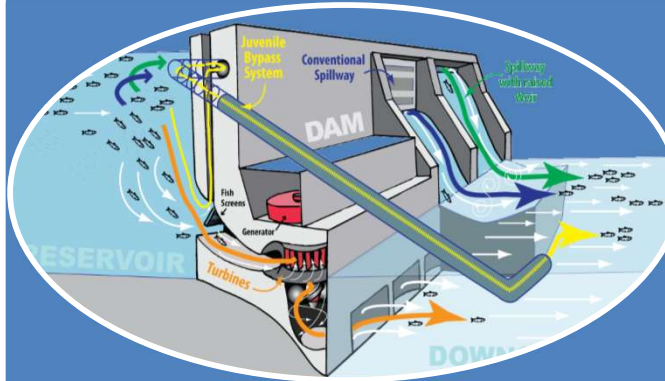
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History



Escapement

- Adult Estimates Pre-Dams
- Steelhead = 114,800



Hydrosystem Loss

- Construction/Operations
- 48% loss
- Project Area goals



Harvest/Habitat Loss

- Habitat
- Harvest (sport and commercial)
- 2:1 Steelhead

Steelhead Total Adults = 55,100 + 110,200 = 165,300



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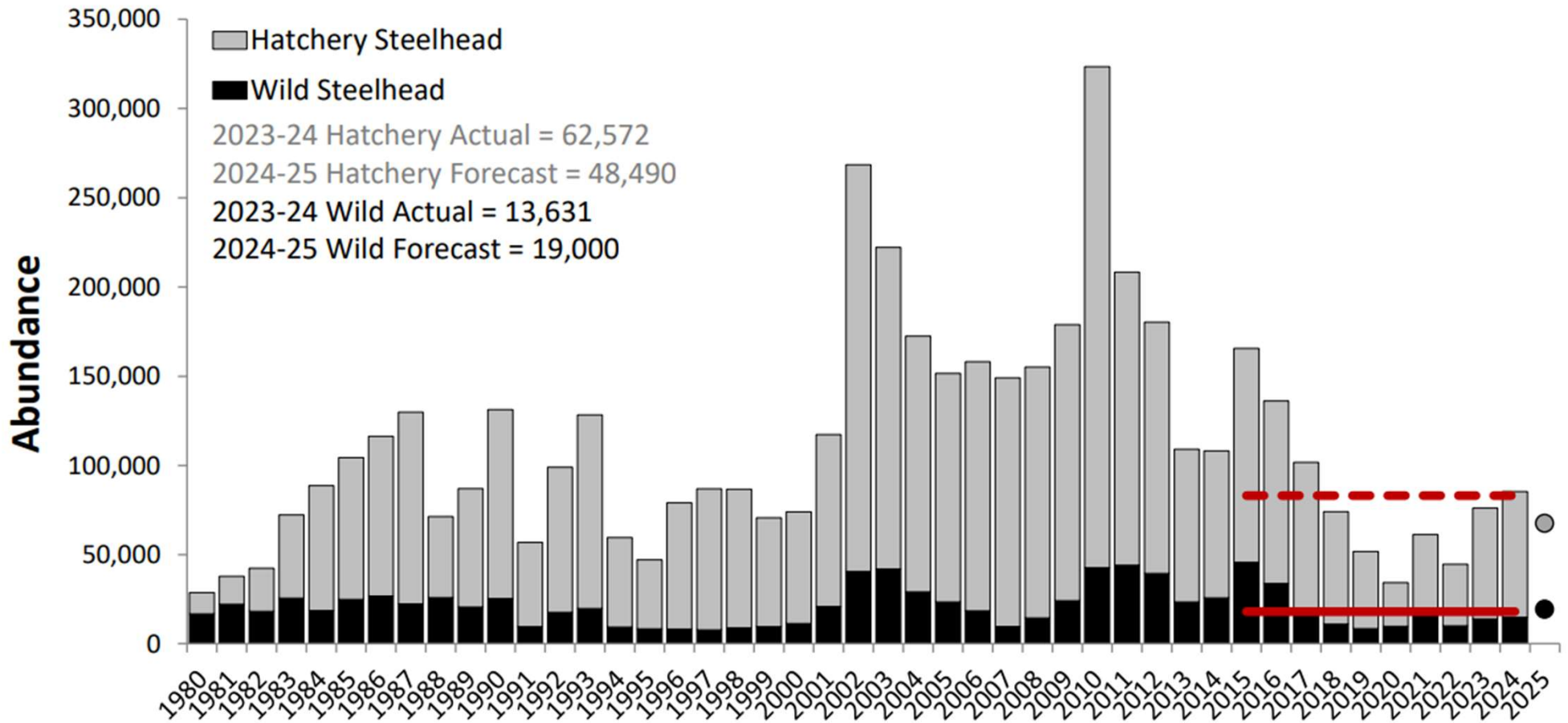
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Snake River steelhead at Lower Granite Dam



LSRCP Performance Table Data

- Provided for review period (BY07-20)
 - Additional to ISRP a LSRCP historical table (BY95-2020)
 - Report card, compare and contrast programs.
 - Changes to programs to reflect stock/management changes
 - East Fork Program Transfer to Shoshone-Bannock Tribes
 - Magic Valley A/B Steelhead Performance
 - SE Washington Programmatic Changes
 - Variable temperatures and density index
 - Goal achievement highly variable.



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