

Snake Basin In-Season Management of Salmon, Steelhead, and Coho for Tribal and State Fisheries, Utilizing PIT Tags



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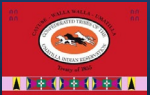
Chris Sullivan, Brian Leth, Chris Noyes, Katie McBaine, Joe DuPont, Beau Gunter



Jason Vogel, Becky Johnson, Mike Tuell, Jack Yearout, Bill Young, Bill Arnsberg, Mike Bisbee, Tui Moliga, Ryan Kinzer, Mike Ackerman –



Jeremy Trump, Michael Herr - Kyle Bratcher, Joseph Feldhaus



Preston Bronson-



Rebecca Croy, Lytle Denny, Kurt Tardy



Nate Wiese, Rod Engle -

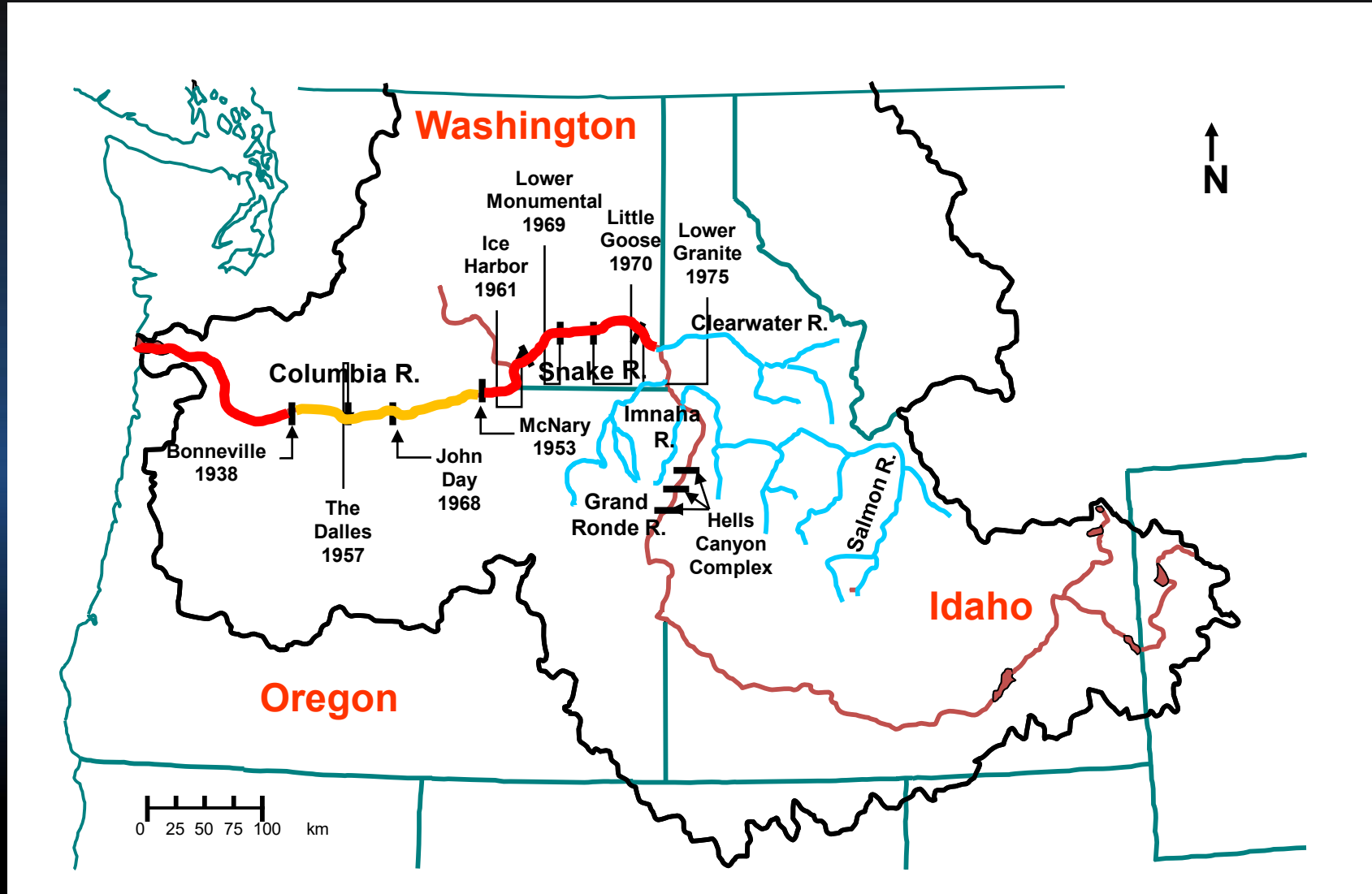


Stuart Rosenberger, Riley Brown,

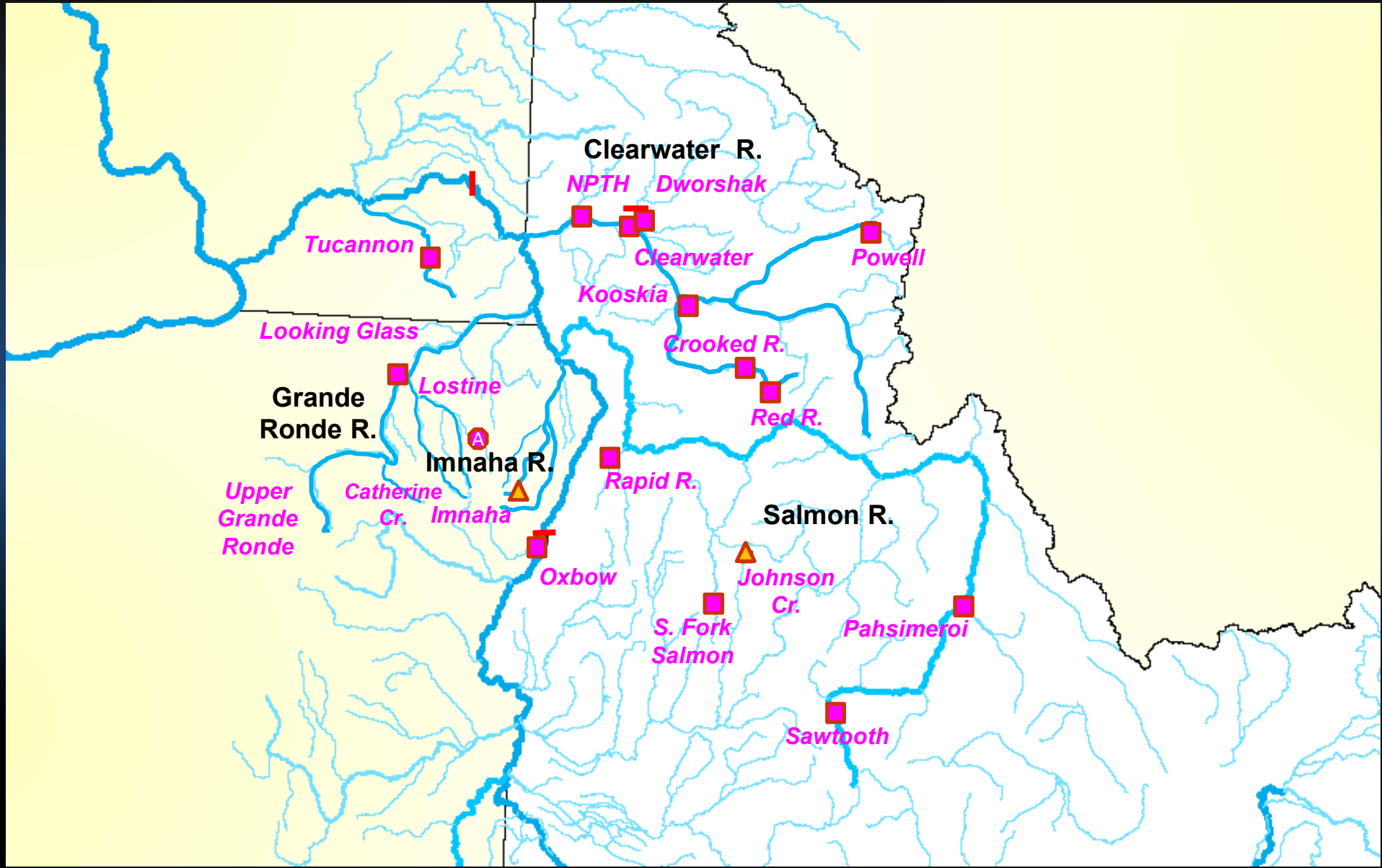


and on and on and on.....

Columbia River Basin



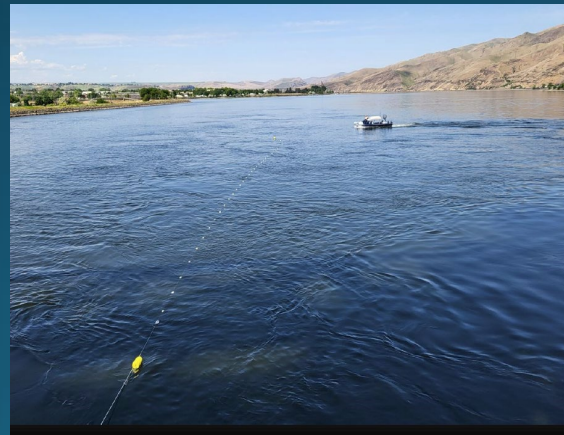
Hatchery Production Snake River Basin



Snake Basin Hatchery Production

Species	Number Released
• Steelhead	8,898,000
• Spring Chinook	10,594,000
• Summer Chinook	4,640,000
• Fall Chinook	5,700,000
• Coho	1,555,000
• Sockeye	1,000,000
Totals	32,382,000

Mechanics of Setting and Managing Anadromous Fishing Seasons



Fishery Management Outside Snake Basin



Photo credit: thecolumbian.com



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Fishery Management Outside Snake Basin

- Ocean fisheries - Pacific Salmon Treaty (1985)
 - Pacific Salmon Commission
 - Pacific Fishery Management Council
- Harvest of Snake R steelhead and spring/summer Chinook is very minimal
- Substantial harvest on fall Chinook and coho



Fishery Management Outside Snake Basin

- Ocean fisheries - Pacific Salmon Treaty (1985)
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 - Pacific Fishery Management Council
- Harvest of Snake R steelhead and spring/summer Chinook is very minimal
- Columbia River fisheries
 - US v OR Management Agreement
 - Spring, Summer, Fall Management periods



Forecasts start the process

- Forecasts are generated for:
 - Spring, summer and fall Chinook Salmon
 - Steelhead
 - Coho Salmon
 - Sockeye Salmon
- Forecasts generated at the Columbia River Mouth and Lower Granite Dam

Fishery Management Outside Snake Basin

- US v OR Management Agreement – Spring Management Period

Table 1. Upriver 2023 TAC forecasts of Chinook and Sockeye Salmon

<i>Columbia River Adult Salmon Returns: Actual and Forecasted*</i>			
	2022 Forecast	2022 Return	2023 Forecast
Spring Chinook	122,900	185,209	198,600
Upriver Total for Spring Management Period			
Upper Columbia (total)	21,700	29,605	41,400
Upper Columbia natural-origin	2,800	5,264	5,800
Snake River Spring/Summer (total)**	73,400	103,025	85,900
Snake River natural-origin**	13,200	23,331	13,200
Mid-Columbia (by subtraction)	27,800	52,579	71,300
Summer Chinook	56,300	78,494	84,800
Upper Columbia Total for Summer Management Period			
Sockeye	198,700	664,935	234,500
Total Annual Return			
Wenatchee	19,200	147,473	44,300
Okanogan	175,700	513,317	187,400
Yakima	3,500	157	100
Deschutes	100	35	100
Snake River	200	2,329	2,600

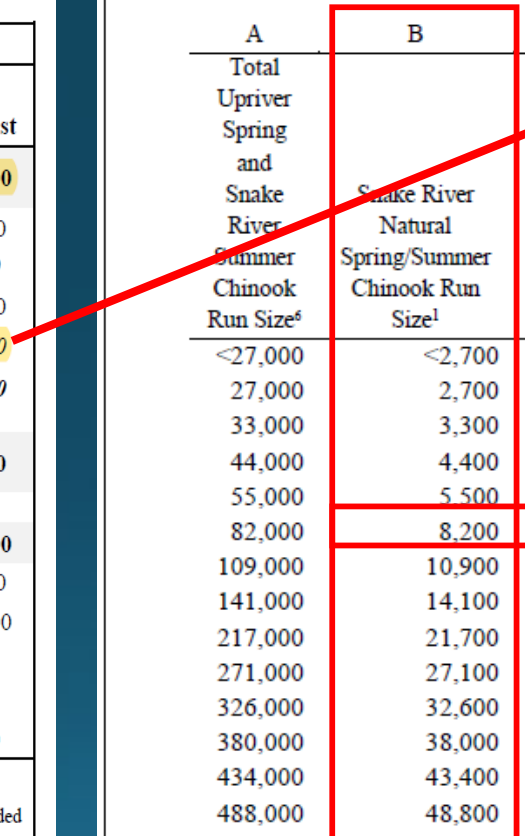
* Components may not sum due to rounding.

** 2021 return is based on standard TAC run reconstruction methodology. IDFG does not support the TAC methodology and has provided alternate estimates of 47,949 total adults, including 6,975 natural origin.

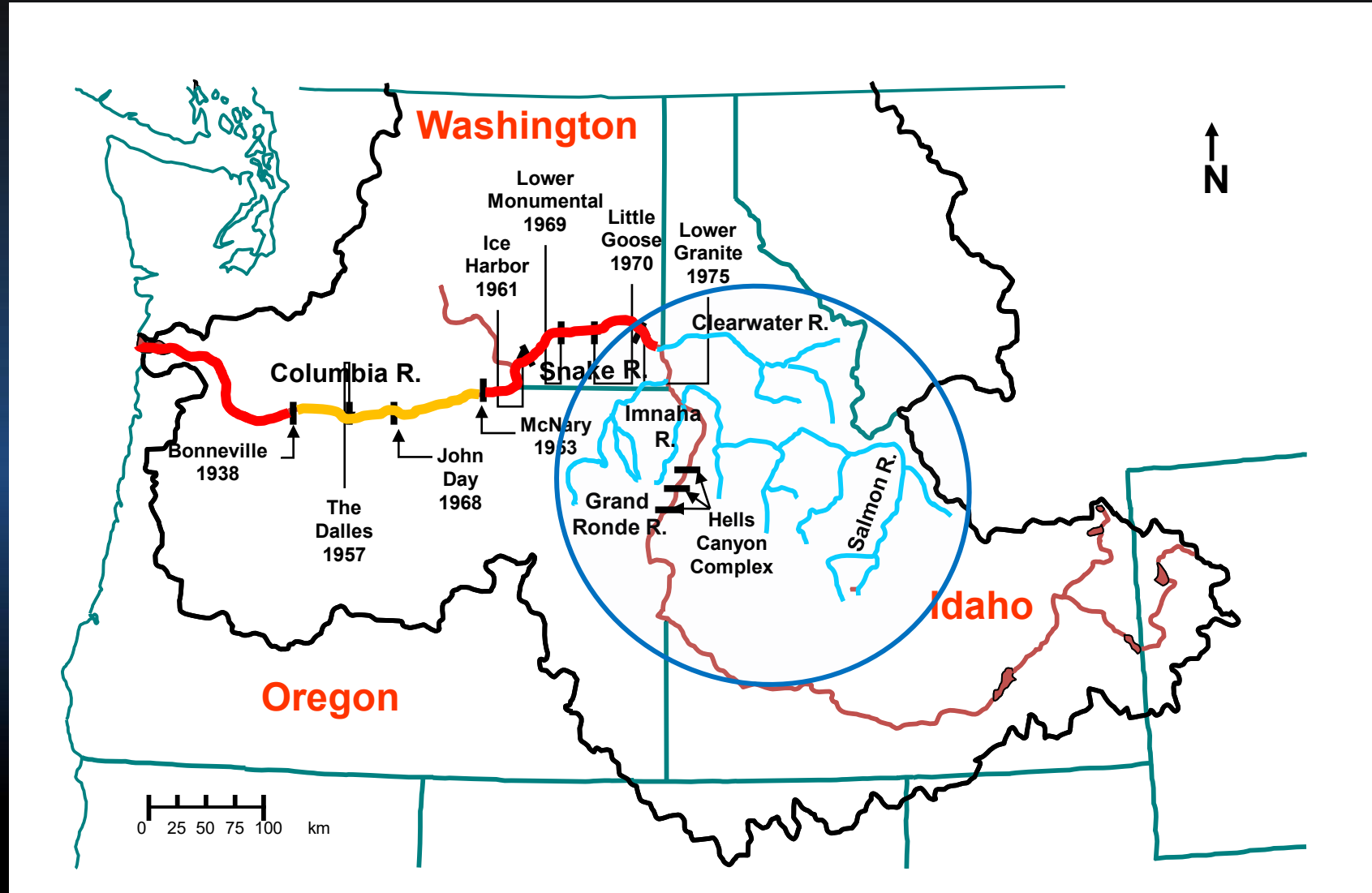
Harvest Rate Schedule for Chinook in Spring Management Period

A	B	C	D	E	F	G	H
Total Upriver Spring and Snake River Summer Chinook Run Size ⁶	Snake River Natural Spring/Summer Chinook Run Size ¹	Treaty Zone 6 Total Harvest Rate ^{2,5}	Treaty Catch Guideline	Non-Treaty Natural Harvest Rate ³	Non-Treaty Mortality Guideline	Total Natural Harvest Rate ⁴	Non-Treaty Natural Limited Harvest Rate ⁴
<27,000	<2,700	5.0%		<0.5%		<5.5%	0.5%
27,000	2,700	5.0%	1,350	0.5%	1,350	5.5%	0.5%
33,000	3,300	5.0%	1,650	1.0%	1,650	6.0%	0.5%
44,000	4,400	6.0%	2,640	1.0%	2,640	7.0%	0.5%
55,000	5,500	7.0%	3,850	1.5%	3,850	8.5%	1.0%
82,000	8,200	7.4%	6,068	1.6%	6,068	9.0%	1.5%
109,000	10,900	8.3%	9,047	1.7%	9,047	10.0%	
141,000	14,100	9.1%	12,831	1.9%	12,831	11.0%	
217,000	21,700	10.0%	21,700	2.0%	21,700	12.0%	
271,000	27,100	10.8%	29,268	2.2%	29,268	13.0%	
326,000	32,600	11.7%	38,142	2.3%	38,142	14.0%	
380,000	38,000	12.5%	47,500	2.5%	47,500	15.0%	
434,000	43,400	13.4%	58,156	2.6%	58,156	16.0%	
488,000	48,800	14.3%	69,784	2.7%	69,784	17.0%	

$13,200 \times 0.7 = 9,240$



Fishery Management within Snake Basin



Tribal and State Fishery Management and Evaluation Plans (FMEP's & TRMP's)

FISHERIES MANAGEMENT AND EVALUATION PLAN Submitted Under ESA Section 4(d)

IDFG Recreational Steelhead Fisheries Prepared by
Idaho Department of Fish and Game

Submitted December 2010
Updated with Recent Information 2018

LONG-TERM NEZ PERCE HARVEST PLAN FOR SNAKE RIVER SPRING/SUMMER CHINOOK SALMON IN THE IMNAHA AND GRANDE RONDE SUBBASINS OF NORTHEAST OREGON

Nez Perce Tribe

Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat (EFH) Consultation

Fall Chinook, Coho Salmon, and Resident Trout Fisheries in the Snake River Basin

NMFS Consultation Number: WCR-2019-00400

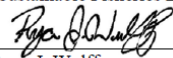
Action Agency: National Marine Fisheries Service (NMFS)

Affected Species and Determinations: ESA-Listed Species	Status	Is the Action Likely to Adversely Affect Species or Critical Habitat?	Is the Action Likely To Jeopardize the Species?	Is the Action Likely To Destroy or Adversely Modify Critical Habitat?
Chinook salmon (<i>Oncorhynchus tshawytscha</i>)				
Snake River spring/summer	Threatened	Yes	No	No
Snake River fall	Threatened	Yes	No	No
Sockeye salmon (<i>O. nerka</i>)				
Snake River	Endangered	Yes	No	No
Steelhead (<i>O. mykiss</i>)				
Snake River	Threatened	Yes	No	No

Fishery Management Plan That Describes EFH in the Project Area	Does the Action Have an Adverse Effect on EFH?	Are EFH Conservation Recommendations Provided?
Pacific Coast Salmon	No	No

Consultation Conducted By: National Marine Fisheries Service, West Coast Region, Sustainable Fisheries Division

Issued By:


Ryan J. Wulff
Assistant Regional Administrator

Date:

August 28, 2019

Forecasts start the process

Ad-Clipped Hatchery Origin Adult Chinook Salmon Returns	Age Specific Returns of Adult Sp/Su Chinook Salmon		
	2023 Forecast at Lower Granite Dam		
	2 Ocn	3 Ocn	Total
Dworshak			
NF Clearwater	5,304	43	5,347
Kooskia	2,214	20	2,234
Clearwater			
Clear Cr.	2,181	37	2,219
SF Clearwater	3,287	86	3,373
Selway	233	8	240
Powell (Su)	418	13	431
NF Clearwater	1,205	76	1,282
NPTH			
Onsite	188	159	347
Clearwater Total	15,030	442	15,472
Rapid River			
Rapid River	13,080	894	13,974
Little Salmon R	1,046	0	1,046
Hells Canyon	2,616	0	2,616
McCall	5,617	363	5,980
Pahsimeroi	975	70	1,045
Sawtooth	2,192	122	2,314
Yankee Fork	342	13	355
Salmon / ID Snake	25,867	1,463	27,330
Idaho Hatchery Total	40,897	1,905	42,802

Idaho

Subbasin	Forecast	Harvest Goals
Imnaha River Subbasin		
Imnaha River	954	85
subtotal	954	85
Grande Ronde River Subbasin		
Wallowa/Lostine	544	58
Lookingglass Creek	680	190
subtotal	1,224	248
Total	2,178	333

Northeast Oregon

Harvest Shares and ESA Impacts

Natural Population	2023 Preseason Forecast at Granite
Marsh Creek	556
Bear Valley Creek	804
Sulphur Creek	120
Camas Creek	78
Loon Creek	80
Big Creek	262
Chamberlain Creek	153
Middle Fork Salmon River below Indian Creek	8
MF SALMON MPG TOTAL	2,060
South Fork Salmon River Mainstem	581
East Fork South Fork Salmon River	581
Secesh River	581
SF SALMON MPG TOTAL	1,743
Salmon River Upper Mainstem above Redfish Lake	726
Salmon River Lower Mainstem below Redfish Lake	96
Valley Creek	183
Yankee Fork	27
East Fork Salmon River	338
Pahsimeroi River	217
Lemhi River	408
North Fork Salmon River	90
Panther Creek	72
UP SALMON MPG TOTAL	2,156
HELLS CANYON MPG TOTAL	4,348
GRAND TOTAL	10,307

Salmon River Predicted Return of Naturally Produced Listed Spring/Summer Chinook	Proposed Maximum Percent of Naturally Produced Run Mortality for Lower Salmon River Basin Fishery	Range of Potential Incidental Mortalities (number of fish)	Estimated Total Take (catch and release)
<2,505*	0%	0	0
2,513 to 5,024	0.25%	7-13	63-126
5,025 to 8,374	0.5%	25-42	251-419
8,375 to 12,562	0.75%	63-94	628-942
12,563 to 16,749	1.0%	126-168	1,256-1,675
16,750 to 22,612	1.50%	251-339	2,513-3,392
>22,613	2.0%	>452	>4,523

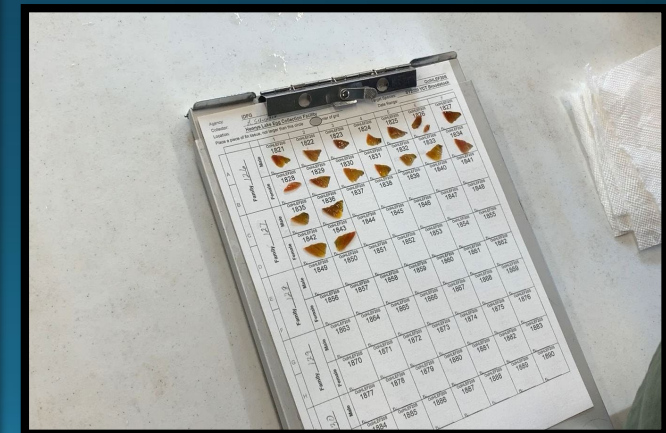
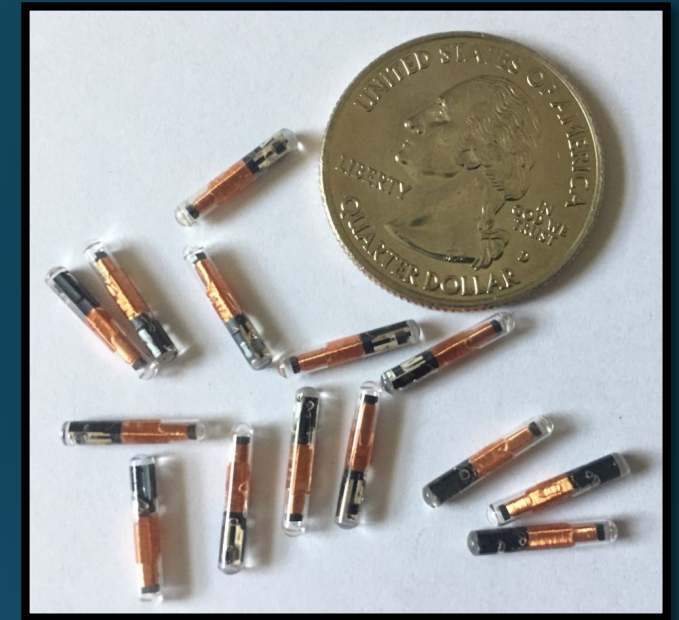
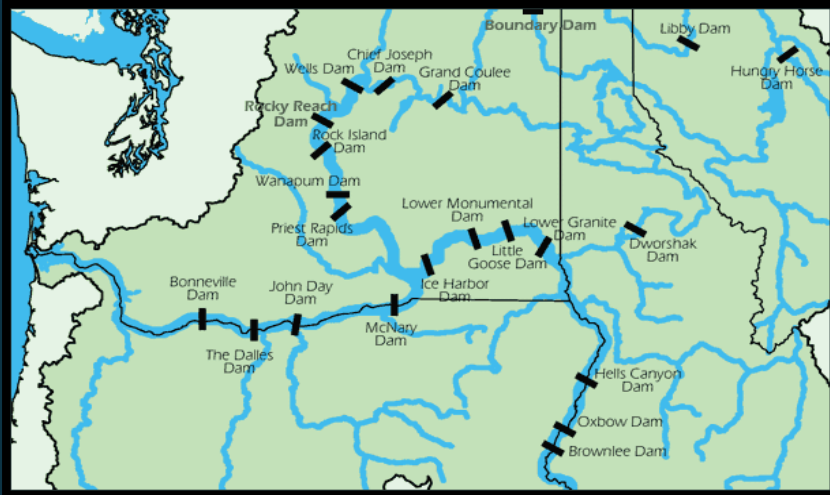
*At these low run sizes, Lower Salmon River Basin fisheries are restricted to the Little Salmon River.

$2,060 + 1,743 + 2,156 = 5,959$ Salmon River Naturals

Pre-season Planning

- **Forecast information**
- **Tribal and State Harvest share projections & fisheries**
- **Broodstock needs**
- **Escapement targets**
- **Plans for using fish in excess of broodstock needs**
- **Plans for back filling broodstock shortfalls**
- **Fisheries related logistics issues**

Real-Time In-season Abundance Estimation



Snake Basin Hatchery Production

Species	Number Released	PIT Tags
• Steelhead	8,898,000	184,000
• Spring Chinook	10,594,000	216,000
• Summer Chinook	4,640,000	124,000
• Fall Chinook	5,700,000	128,000
• Coho	1,555,000	20,000
• Sockeye	1,000,000	50,000
Totals	32,382,000	723,000

Tag Monitoring

- Since 2009, PIT detections have been monitored throughout the adult return at Bonneville, McNary, Ice Harbor, and Lower Granite dams



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- **PIT tag detections are expanded by the juvenile tagging rate for Run-At-Large (Monitor Mode) tags**

Tag Monitoring

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- PIT tag detections are expanded by the juvenile tagging rate for Run-At-Large (Monitor Mode)
- **Detections of tags in returning fish are used to generate in-season return estimates, by hatchery, release site, and age**

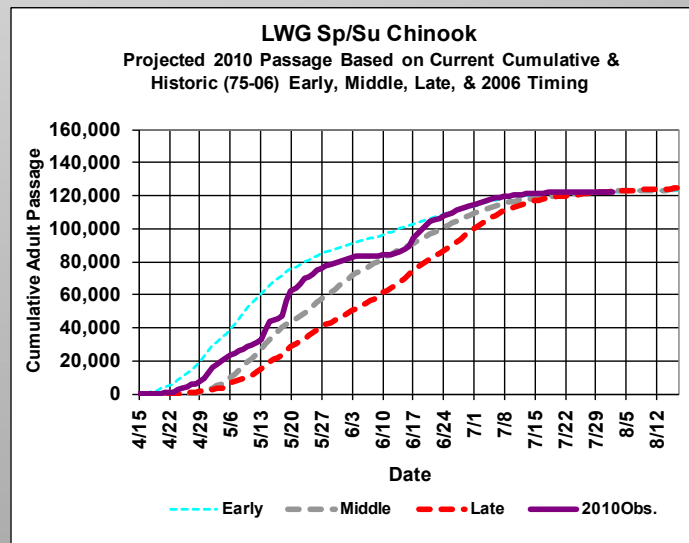
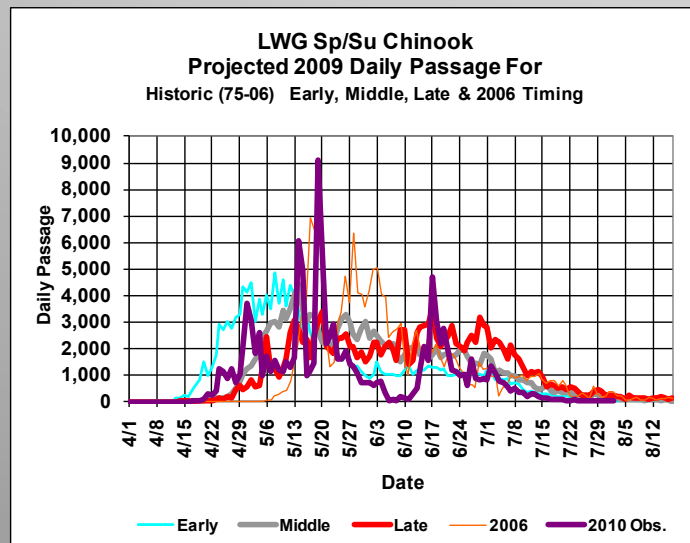
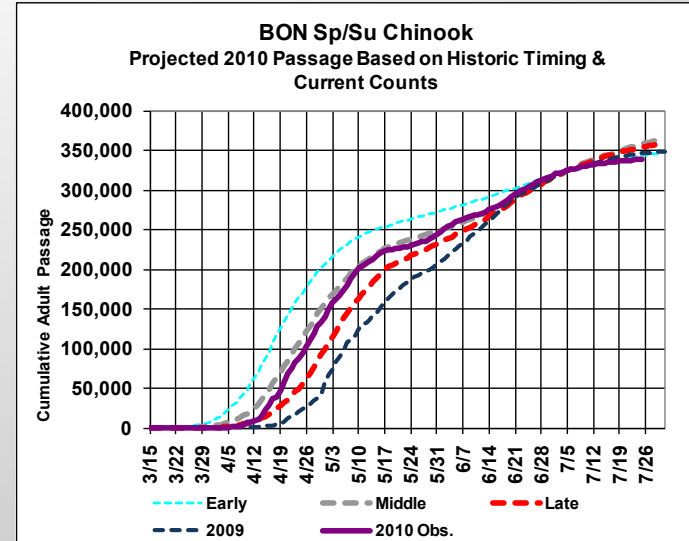
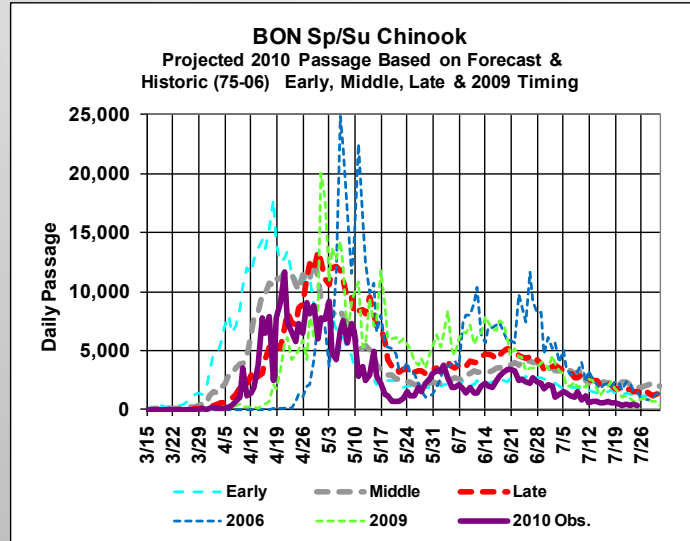
Tag Monitoring

- This monitoring also provides robust stock and age specific data for:
 - Inter-dam conversion rates

Hatchery	Release Site	Adults From Bonneville		Jacks From Bonneville	
		To:	To:	To:	To:
		McNary	Lower Granite	McNary	Lower Granite
Clearwater	SF Clearwater River	75.0%	74.5%	100.0%	83.3%
Clearwater	Powell Pond	74.1%	71.6%	87.5%	71.2%
Clearwater	Selway River	75.0%	68.1%	100.0%	100.0%
McCall	SF Salmon River	75.7%	72.5%	96.6%	94.8%
Pahsimeroi	Pahsimeroi Hatchery	82.0%	79.7%	100.0%	91.7%
Rapid River	Rapid River Hatchery	73.8%	67.9%	100.0%	90.0%
Sawtooth	Sawtooth Hatchery	88.9%	88.3%	100.0%	100.0%
AVERAGE		77.8%	74.7%	97.7%	90.1%

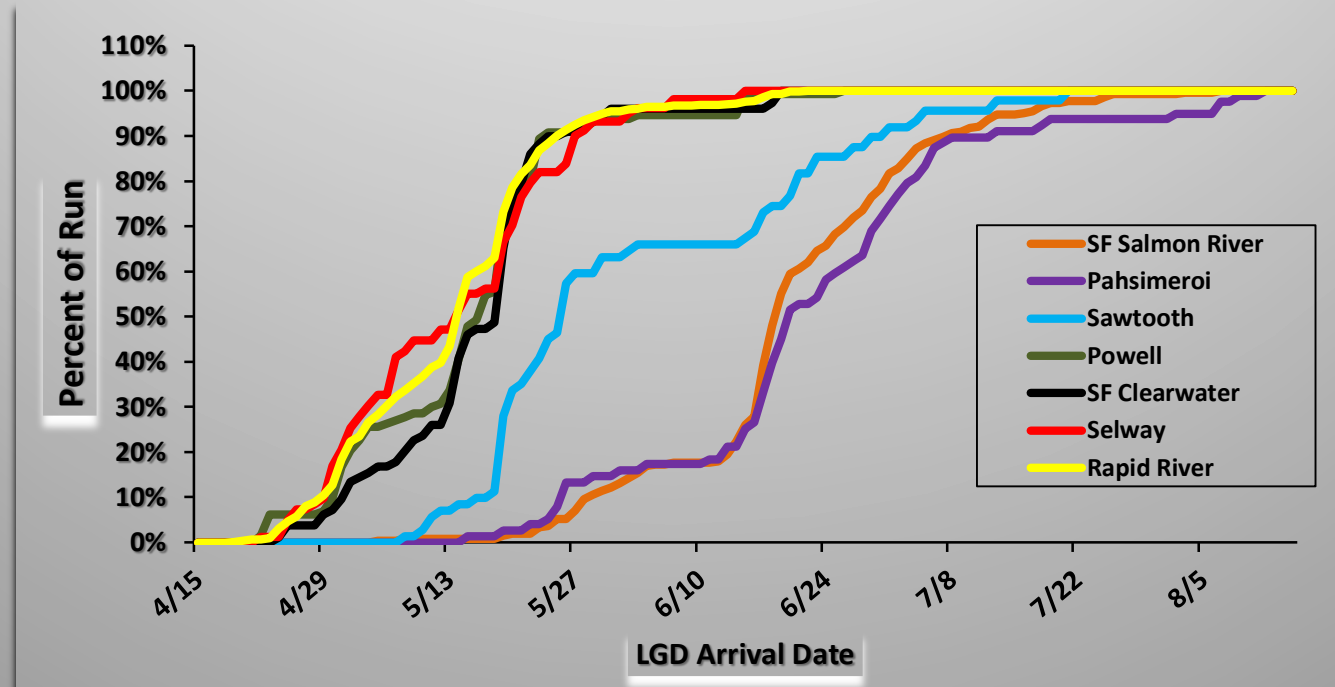
Tag Monitoring

- This monitoring also provides robust stock and age specific data for:
 - Run timing at each dam



Other Benefits

- This monitoring also provides more robust stock and age specific data for:
 - Run timing and vulnerability to / availability for downriver fisheries



What is the Major Shortcoming?



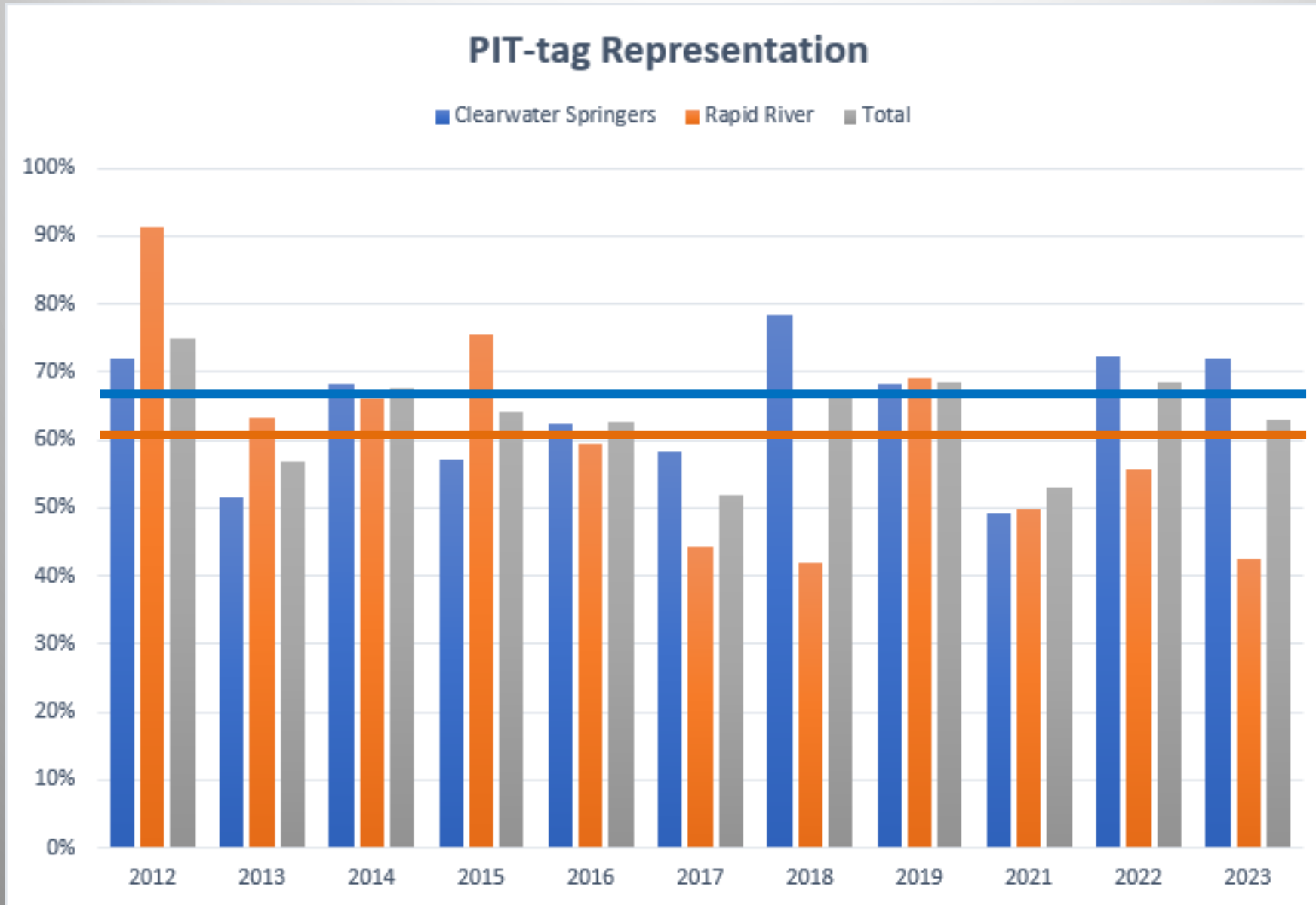
What is the Major PIT Tag Shortcoming?

- It is evident that expanding PIT tagged adults by juvenile tagging rates underestimates the return

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- It is evident that expanding PIT tagged adults by juvenile tagging rates underestimates the return
- **Issues such as tag shedding and differential survival between tagged and untagged fish result in lower representation of tagged fish in the returning population**

How are we Addressing this Issues



Clearwater 65%
Rapid River 60%

Certainty of Estimates

- PIT tag Representation
- Run timing by species and stock
- Conversion Rates (BONN to Rack)
- Harvest estimation (tribal and state)
- Others?

In-season Weekly Coordination Calls are Paramount to Success

Microsoft Teams

- **Includes all Snake Basin Fish Managers**
- **In-season versus preseason projections**
- **Broodstock acquisition progress**
- **Fisheries plans – opening and closures**
- **Harvest shares by fisheries**
- **Disposition and logistics of moving fish in excess of broodstock needs**
- **Enforcement issues**

Estimating Abundance In-season - Chinook

Idaho Bound Adults associated with PIT groups As of 4/25/2023								
Release Group	Bonneville Pre-Season Forecast	Current Bonneville Estimate	Current Lower Granite Estimate	Broodstock Need	Estimated Harvestable Share based on BONN	Early Run Timing BONN	Average Run Timing BONN	Late Run Timing BONN
Dworshak-NF Clearwater	7,289	58		1,434	-691	66	77	120
CFH-NF Clearwater	1,754	86		538	-231	97	110	160
Kooskia-Clear Cr	3,044	2		529	-264	2	2	4
CFH-Clear Cr.	3,125	95		544	-228	103	118	182
CFH-Red River	4,737	101		967	-437	109	130	176
CFH-Selway Ad-Clip	345	45		304	-131	49	60	86
CFH-Selway No-Clip	352	23		0	NA	25	31	44
NPTH-Ad-Clip (surrogate)	479	8		314	-98	9	11	17
Clearwater Spring Chinook Total	21,125	419		4,630	-2,080	461	539	788
CFH-Powell Summer Ad-clip	585	0		238	-119	0	0	0
CFH-Powell Summer No-clip	591	0		238	-119	0	0	0
Clearwater Summer Chinook Total	1,176	0		476	-238	0	0	0
Hells Canyon (surrogate)	3,540	39		281	-123	42	49	64
Total Snake River	3,540	39		281	-123	42	49	64
Rapid River	18,909	349		2,118	-899	376	440	570
Little Salmon (surrogate)	1,416	17		0	8	18	21	27
Rapid R. and Little Salmon Combined	20,325	366		2,118	-891	394	461	597
Sawtooth-Segregated	3,258	0		1,034	-517	0	0	0
Yankee Fork-Ad Clip	500	0		0	0	0	0	0
Pahsimeroi-Segregated	1,393	0		664	-332	0	0	0
McCall-Segregated	8,375	0		943	-472	0	0	0
McCall-Integrated	1,338	0		0	NA	0	0	0
TOTAL	61,031	824		10,146	-4,652	897	1,049	1,448

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Clearwater Spring Chinook Total	21,125	419		4,630	-2,080	461	539	788
CFH-Powell Summer Ad-clip	585	0		238	-119	0	0	0
CFH-Powell Summer No-clip	591	0		238	-119	0	0	0
Clearwater Summer Chinook Total	1,176	0		476	-238	0	0	0
Hells Canyon (surrogate)	3,540	39		281	-123	42	49	64
Total Snake River	3,540	39		281	-123	42	49	64
Rapid River	18,909	349		2,118	-899	376	440	570
Little Salmon (surrogate)	1,416	17		0	8	18	21	27
Rapid R. and Little Salmon Combined	20,325	366		2,118	-891	394	461	597
Sawtooth-Segregated	3,258	0		1,034	-517	0	0	0
Yankee Fork-Ad Clip	500	0		0	0	0	0	0
Pahsimeroi-Segregated	1,393	0		664	-332	0	0	0
McCall-Segregated	8,375	0		943	-472	0	0	0
McCall-Integrated	1,338	0		0	NA	0	0	0
TOTAL	61,031	824		10,146	-4,652	897	1,049	1,448

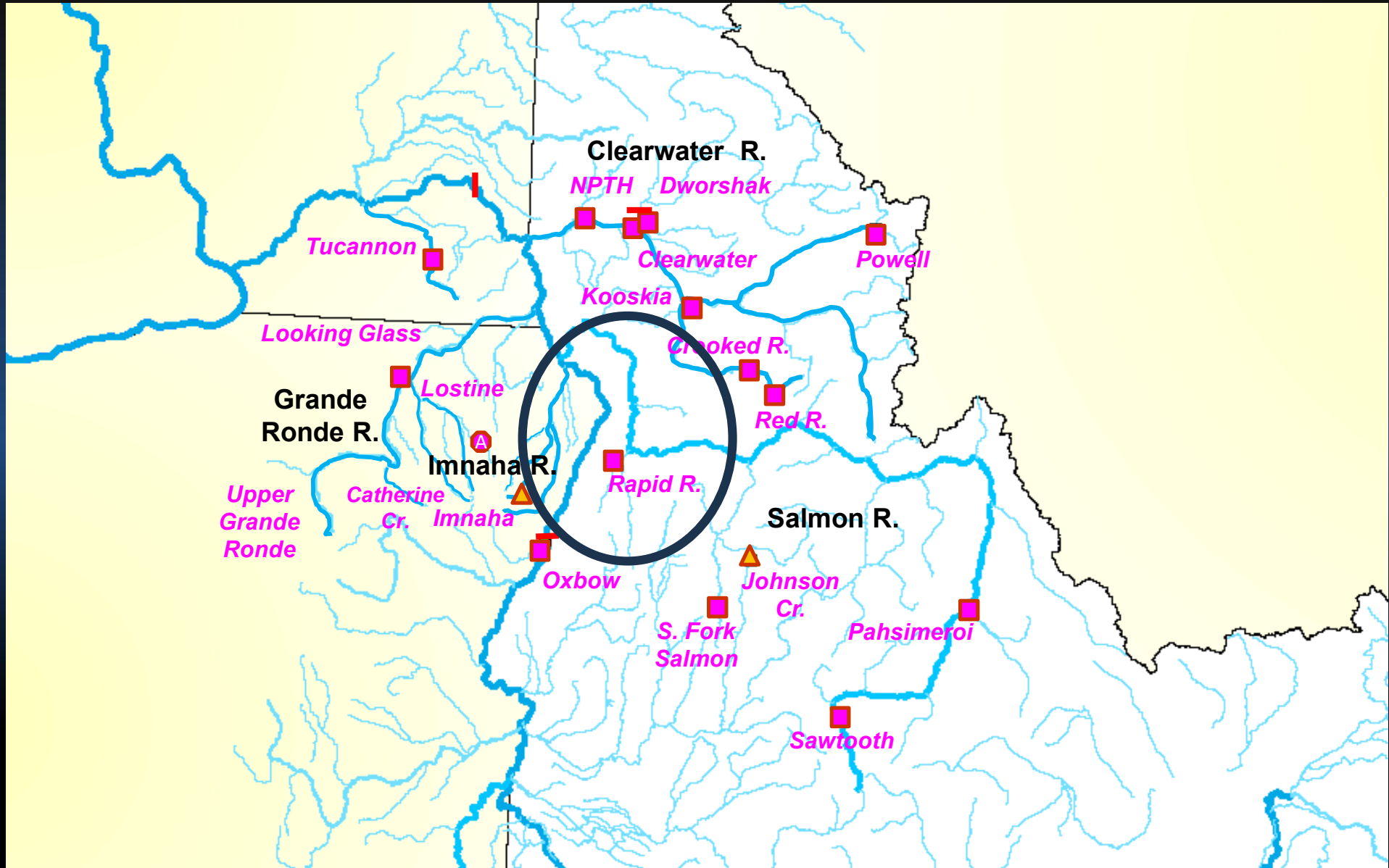
Estimating Abundance In-season - Chinook

Idaho Bound Adults associated with PIT groups					As of 4/25/2023			
Release Group	Bonneville Pre-Season Forecast	Current Bonneville Estimate	Current Lower Granite Estimate	Broodstock Need	Estimated Harvestable Share based on BONN	Early Run Timing BONN	Average Run Timing BONN	Late Run Timing BONN
Dworshak-NF Clearwater	7,289	58		1,434	-691	66	77	120
CFH-NF Clearwater	1,754	86		538	-231	97	110	160
Kooskia-Clear Cr	3,044	2		529	-264	2	2	4
CFH-Clear Cr.	3,125	95		544	-228	103	118	182
CFH-Red River	4,737	101		967	-437	109	130	176
CFH-Selway Ad-Clip	345	45		304	-131	49	60	86
CFH-Selway No-Clip	352	23		0	NA	25	31	44
NPTH-Ad-Clip (surrogate)	479	8		314	-98	9	11	17
Clearwater Spring Chinook Total	21,125	419		4,630	-2,080	461	539	788
CFH-Powell Summer Ad-clip	585	0		238	-119	0	0	0
CFH-Powell Summer No-clip	591	0		238	-119	0	0	0
Clearwater Summer Chinook Total	1,176	0		476	-238	0	0	0
Hells Canyon (surrogate)	3,540	39		281	-123	42	49	64
Total Snake River	3,540	39		281	-123	42	49	64
Rapid River	18,909	349		2,118	-899	376	440	570
Little Salmon (surrogate)	1,416	17		0	8	18	21	27
Rapid R. and Little Salmon Combined	20,325	366		2,118	-891	394	461	597
Sawtooth-Segregated	3,258	0		1,034	-517	0	0	0
Yankee Fork-Ad Clip	500	0		0	0	0	0	0
Pahsimeroi-Segregated	1,393	0		664	-332	0	0	0
McCall-Segregated	8,375	0		943	-472	0	0	0
McCall-Integrated	1,338	0		0	NA	0	0	0
TOTAL	61,031	824		10,146	-4,652	897	1,049	1,448

Estimating Abundance In-season - Chinook

Idaho Bound Adults associated with PIT groups <i>As of 4/25/2023</i>								
Release Group	Bonneville Pre-Season Forecast	Current Bonneville Estimate	Current Lower Granite Estimate	Broodstock Need	Estimated Harvestable Share based on BONN	Early Run Timing BONN	Average Run Timing BONN	Late Run Timing BONN
Dworshak-NF Clearwater	7,289	58		1,434	-691	66	77	120
CFH-NF Clearwater	1,754	86		538	-231	97	110	160
Kooskia-Clear Cr	3,044	2		529	-264	2	2	4
CFH-Clear Cr.	3,125	95		544	-228	103	118	182
CFH-Red River	4,737	101		967	-437	109	130	176
CFH-Selway Ad-Clip	345	45		304	-131	49	60	86
CFH-Selway No-Clip	352	23		0	NA	25	31	44
NPTH-Ad-Clip (surrogate)	479	8		314	-98	9	11	17
Clearwater Spring Chinook Total	21,125	419		4,630	-2,080	461	539	788
CFH-Powell Summer Ad-clip	585	0		238	-119	0	0	0
CFH-Powell Summer No-clip	591	0		238	-119	0	0	0
Clearwater Summer Chinook Total	1,176	0		476	-238	0	0	0
Hells Canyon (surrogate)	3,540	39		281	-123	42	49	64
Total Snake River	3,310	39		281	-123	42	49	64
Rapid River	18,909	349		2,118	-899	376	440	570
Little Salmon (surrogate)	1,416	17		0	8	18	21	27
Rapid R. and Little Salmon Combined	20,325	366		2,118	-891	394	461	597
Sawtooth-Segregated	3,238	0		1,034	-317	0	0	0
Yankee Fork-Ad Clip	500	0		0	0	0	0	0
Pahsimeroi-Segregated	1,393	0		664	-332	0	0	0
McCall-Segregated	8,375	0		943	-472	0	0	0
McCall-Integrated	1,338	0		0	NA	0	0	0
TOTAL	61,031	824		10,146	-4,652	897	1,049	1,448

Hatchery Production Snake River Basin



Rapid River - Chinook

Idaho Bound Adults associated with PIT groups					<i>As of 4/25/2023</i>			
Release Group	Bonneville Pre-Season Forecast	Current Bonneville Estimate	Current Lower Granite Estimate	Broodstock Need	Estimated Harvestable Share based on BONN	Early Run Timing BONN	Average Run Timing BONN	Late Run Timing BONN
Rapid R. and Little Salmon Combined	20,325	366		2,118	-891	394	461	597

Idaho Bound Adults associated with PIT groups					<i>As of 5/1/2023</i>			
Release Group	Bonneville Pre-Season Forecast	Current Bonneville Estimate	Current Lower Granite Estimate	Broodstock Need	Estimated Harvestable Share based on BONN	Early Run Timing BONN	Average Run Timing BONN	Late Run Timing BONN
Rapid R. and Little Salmon Combined	20,325	1,338	145	2,118	-446	1,441	1,685	2,183

Idaho Bound Adults associated with PIT groups					<i>As of 5/17/2023</i>			
Release Group	Bonneville Pre-Season Forecast	Current Bonneville Estimate	Current Lower Granite Estimate	Broodstock Need	Estimated Harvestable Share based on BONN	Early Run Timing BONN	Average Run Timing BONN	Late Run Timing BONN
Rapid R. and Little Salmon Combined	20,325	6,337	1,257	2,118	1,789	6,481	6,628	7,825

Rapid River - Chinook

Idaho Bound Adults associated with PIT groups

As of 5/23/2023

Release Group	Bonneville Pre-Season Forecast	Current Bonneville Estimate	Current Lower Granite Estimate	Broodstock Need	Estimated Harvestable Share based on BONN	Early Run Timing BONN	Average Run Timing BONN	Late Run Timing BONN
Rapid R. and Little Salmon Combined	20,325	6,712	1,632	2,118	1,545	6,822	6,859	7,154

Idaho Bound Adults associated with PIT groups

As of 5/31/2023

Release Group	Bonneville Pre-Season Forecast	Current Bonneville Estimate	Current Lower Granite Estimate	Broodstock Need	Estimated Harvestable Share based on BONN	Early Run Timing BONN	Average Run Timing BONN	Late Run Timing BONN
Rapid R. and Little Salmon Combined	20,325	7,009	3,803	2,118	1,543	7,055	7,103	7,150

Idaho Bound Adults associated with PIT groups

As of 6/8/2023

Release Group	Bonneville Pre-Season Forecast	Current Bonneville Estimate	Current Lower Granite Estimate	Broodstock Need	Estimated Harvestable Share based on BONN	Early Run Timing BONN	Average Run Timing BONN	Late Run Timing BONN
Rapid R. and Little Salmon Combined	20,325	7,009	4,773	2,118	1,502	7,009	7,025	7,038

Rapid River - Chinook

Idaho Bound Adults associated with PIT groups					<i>As of 6/8/2023</i>			
Release Group	Bonneville Pre-Season Forecast	Current Bonneville Estimate	Current Lower Granite Estimate	Broodstock Need	Estimated Harvestable Share based on BONN	Early Run Timing BONN	Average Run Timing BONN	Late Run Timing BONN
Rapid R. and Little Salmon Combined	20,325	7,009	4,773	2,118	1,502	7,009	7,025	7,038

- PIT Representation Correction completed on 6/14/23
 - was calculated at 42% using PBT taken at Lower Granite
 - Increased up to 65% - adding 345 fish harvest share each – total increase of 790 fish allowed to be harvested

Idaho Bound Adults associated with PIT groups					<i>As of 6/14/2023</i>			
Release Group	Bonneville Pre-Season Forecast	Current Bonneville Estimate	Current Lower Granite Estimate	Broodstock Need	Estimated Harvestable Share based on BONN	Early Run Timing BONN	Average Run Timing BONN	Late Run Timing BONN
Rapid R. and Little Salmon Combined	20,325	7,085	4,847	2,118	1,847	7,085	7,090	7,090

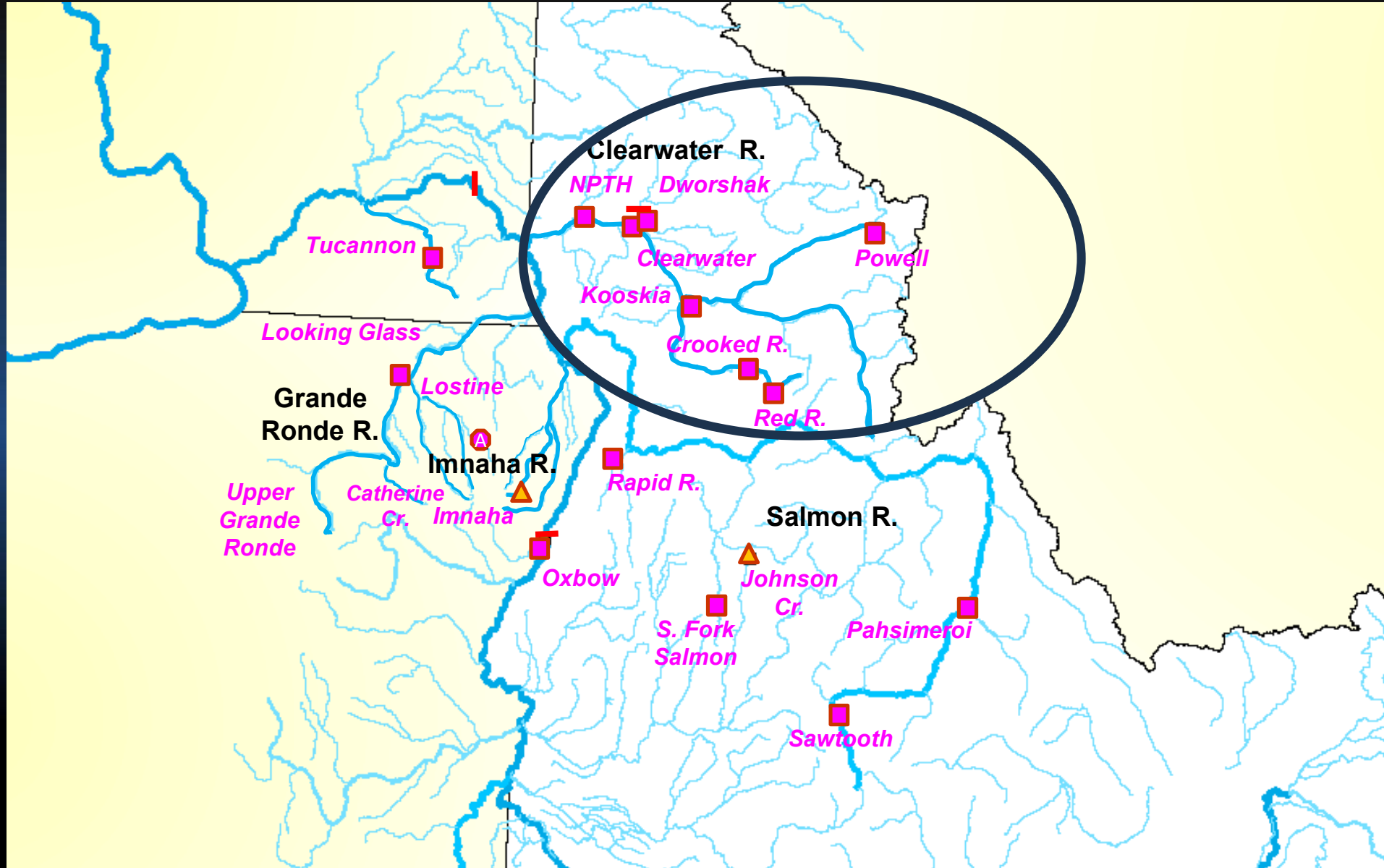
Rapid River Management Lessons Learned

- Conversion of fish from Lower Granite to Rapid River very high
- Tribal and State Fisheries very effective at achieving their harvest share
- PIT representation averages 60% -
 - Adjust for PIT representation if it drops below 65%
- Broodstock obtained in all years

Estimating Abundance In-season - Chinook

Idaho Bound Adults associated with PIT groups					As of 4/25/2023			
Release Group	Bonneville Pre-Season Forecast	Current Bonneville Estimate	Current Lower Granite Estimate	Broodstock Need	Estimated Harvestable Share based on BONN	Early Run Timing BONN	Average Run Timing BONN	Late Run Timing BONN
Dworshak-NF Clearwater	7,289	58		1,434	-691	66	77	120
CFH-NF Clearwater	1,754	86		538	-231	97	110	160
Kooskia-Clear Cr	3,044	2		529	-264	2	2	4
CFH-Clear Cr.	3,125	95		544	-228	103	118	182
CFH-Red River	4,737	101		967	-437	109	130	176
CFH-Selway Ad-Clip	345	45		304	-131	49	60	86
CFH-Selway No-Clip	352	23		0	NA	25	31	44
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Clearwater Spring Chinook Total	21,125	419		4,630	-2,080	461	539	788
CFH-Powell Summer Ad-clip	585	0		238	-119	0	0	0
CFH-Powell Summer No-clip	591	0		238	-119	0	0	0
Clearwater Summer Chinook Total	1,176	0		476	-238	0	0	0
Hens Canyon (surrogate)	3,340	33		281	-123	42	49	64
Total Snake River	3,540	39		281	-123	42	49	64
Rapid River	18,909	349		2,118	-899	376	440	570
Little Salmon (surrogate)	1,416	17		0	8	18	21	27
Rapid R. and Little Salmon Combined	20,325	366		2,118	-891	394	461	597
Sawtooth-Segregated	3,258	0		1,034	-517	0	0	0
Yankee Fork-Ad Clip	500	0		0	0	0	0	0
Pahsimeroi-Segregated	1,393	0		664	-332	0	0	0
McCall-Segregated	8,375	0		943	-472	0	0	0
McCall-Integrated	1,338	0		0	NA	0	0	0
TOTAL	61,031	824		10,146	-4,652	897	1,049	1,448

Hatchery Production Snake River Basin



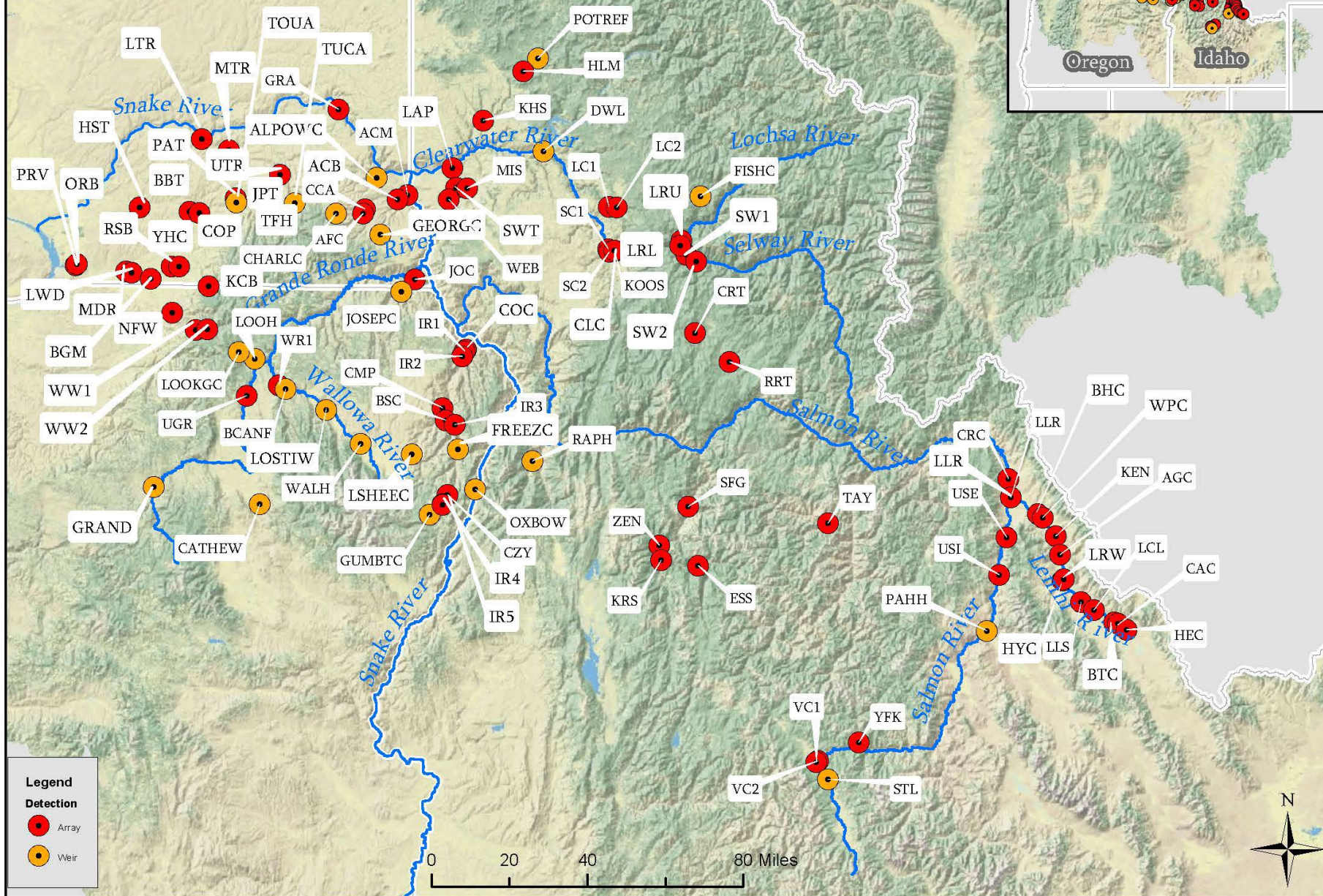
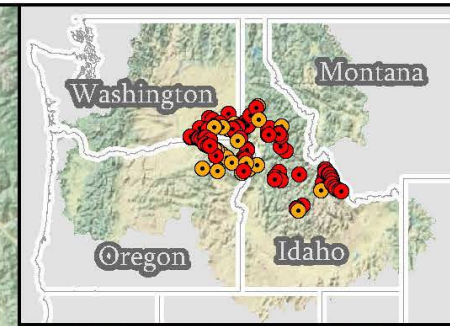
Clearwater Basin - Chinook

Management Weeks				Harvest			Harvest Share		
				NPT	IDFG	Total	NPT	IDFG	Total
1	5/1/2023	-	5/7/2023	0	0	0			
2	5/8/2023	-	5/14/2023	0	13	13			
3	5/15/2023	-	5/21/2023	0	84	84			
4	5/22/2023	-	5/28/2023	53	270	323			
5	5/29/2023	-	6/4/2023	467	522	989			
6	6/5/2023	-	6/11/2023	810	619	1,429			
7	6/12/2023	-	6/18/2023	776	275	1,051			
8	6/19/2023	-	6/25/2023	389	197	586			
9	6/26/2023	-	7/2/2023	260	139	399			
10	7/3/2023	-	7/9/2023	125	43	168			
11	7/10/2023	-	7/16/2023	3	33	36			
12	7/17/2023	-	7/23/2023	67	26	93			
13	7/24/2023	-	7/30/2023	66	60	126			
14	7/31/2023	-	8/6/2023	6	17	23			
15	8/7/2023	-	8/13/2023	2	18	20			
TOTAL				3,024	2,316	5,340	3,418	3,418	6,836

Utilizing Adult PIT tag Detections upstream of Lower Granite

- Utilizing PIT Tag recaptues at remote PIT tag arrays and adult trapping
- <https://nptfisheries.shinyapps.io/PITtrackR>

PIT Tag Detection Locations





PITtrackR

PITtrackR



Data Selection

Spawn Year:
2023

Species:
 Chinook
 Coho
 Steelhead
 Sockeye

Load/Refresh Data

Lower Granite Observations

Snake Basin Summary

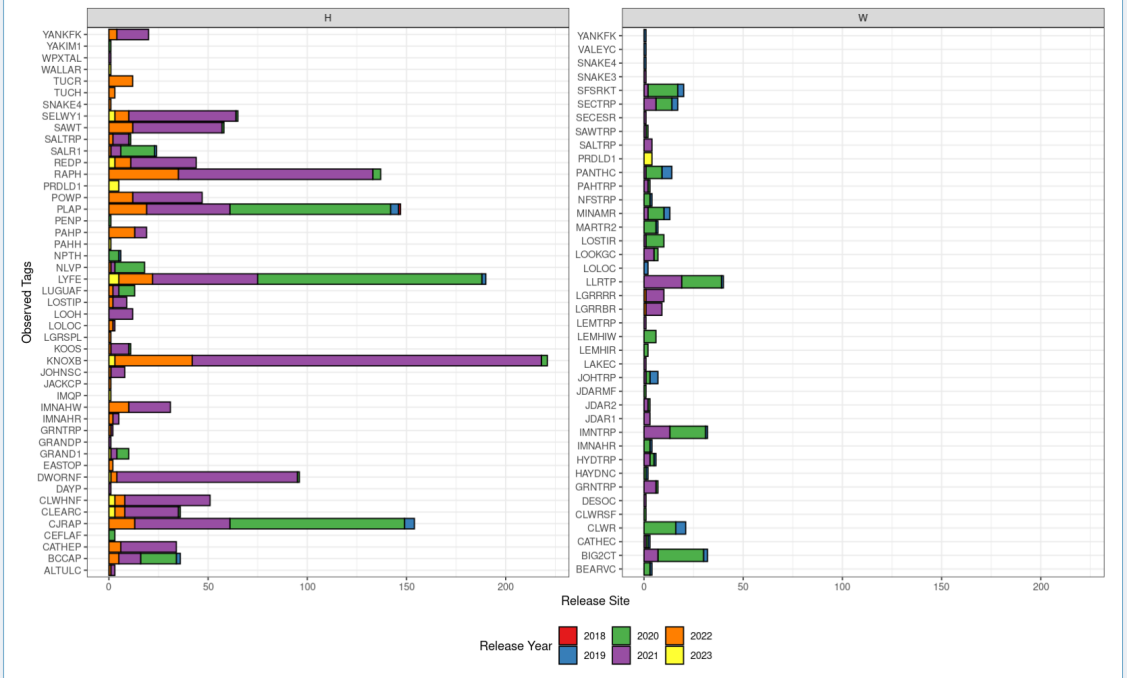
Watershed Summaries

Raw Data

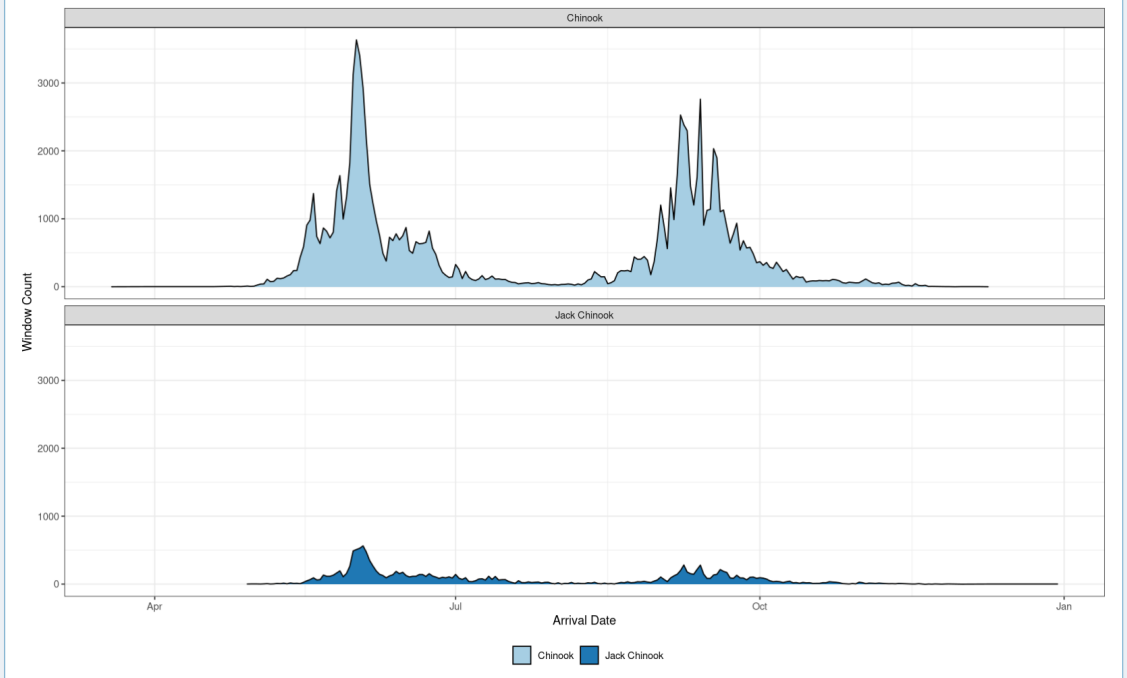
115,787
Adult Chinook Window Count

15,214
Jack Chinook Window Count

Previously Tagged Adults Observed at Lower Granite



Lower Granite Window Count



Previously Tagged Adults Observed at Lower Granite

Show 10 entries

Search:

	Species	Origin	Release Site	Release Year	Unique Tags	Last Obs
1	Chinook	W	LGRLDR	2023	1960	2023-12-09

Data Selection

Spawn Year:

2023

Species:

- Chinook
- Coho
- Steelhead
- Sockeye

Load/Refresh Data

Lower Granite Observations

Snake Basin Summary

Watershed Summaries

Raw Data

5,163

Released Granite Tags

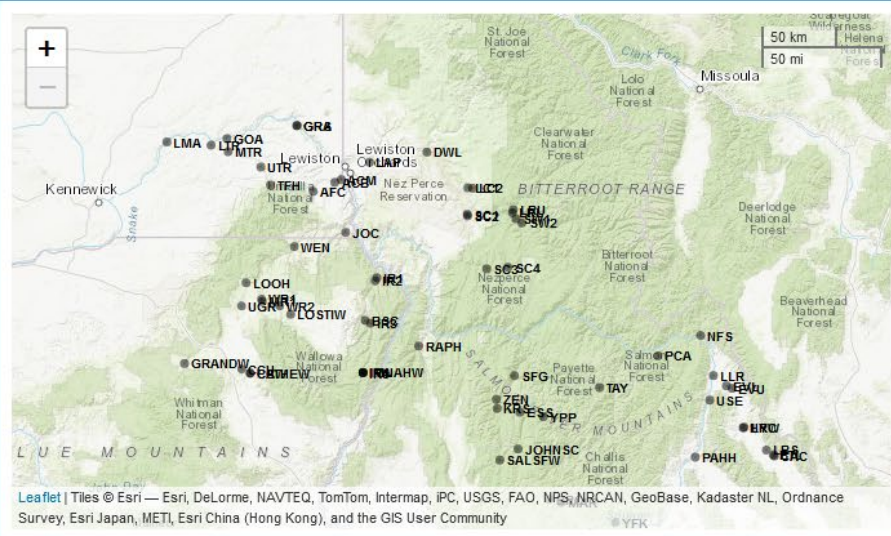
3,059

Observed Granite Tags

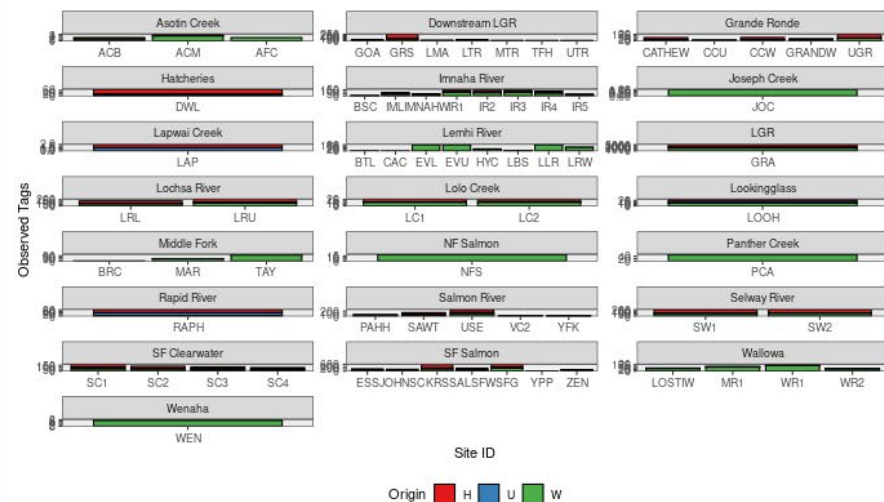
59%

Percent Observed

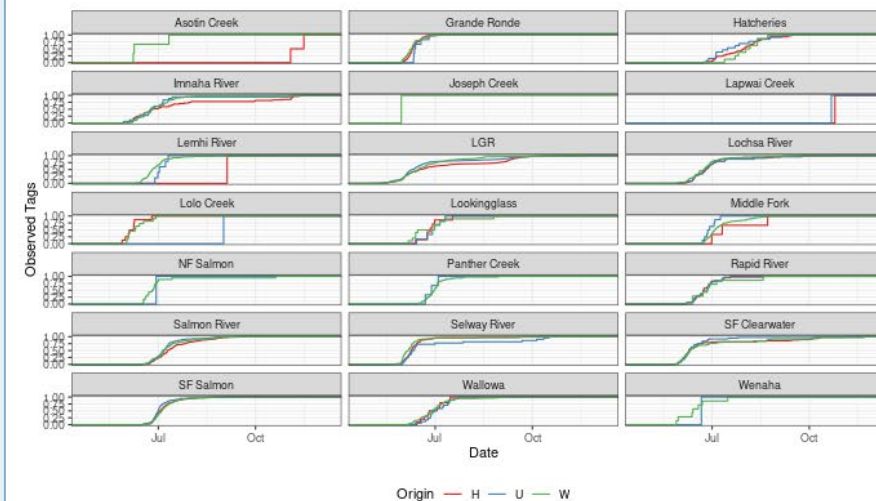
Tags observed at each detection site.



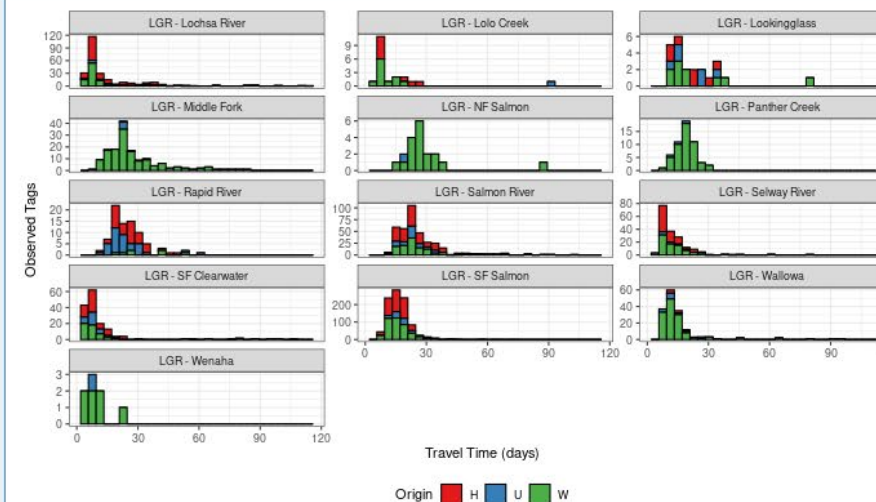
Origin of tags detected at site.



Cumulative arrival of tags to each sub-basin.



Travel time from Lower Granite to sub-basins.

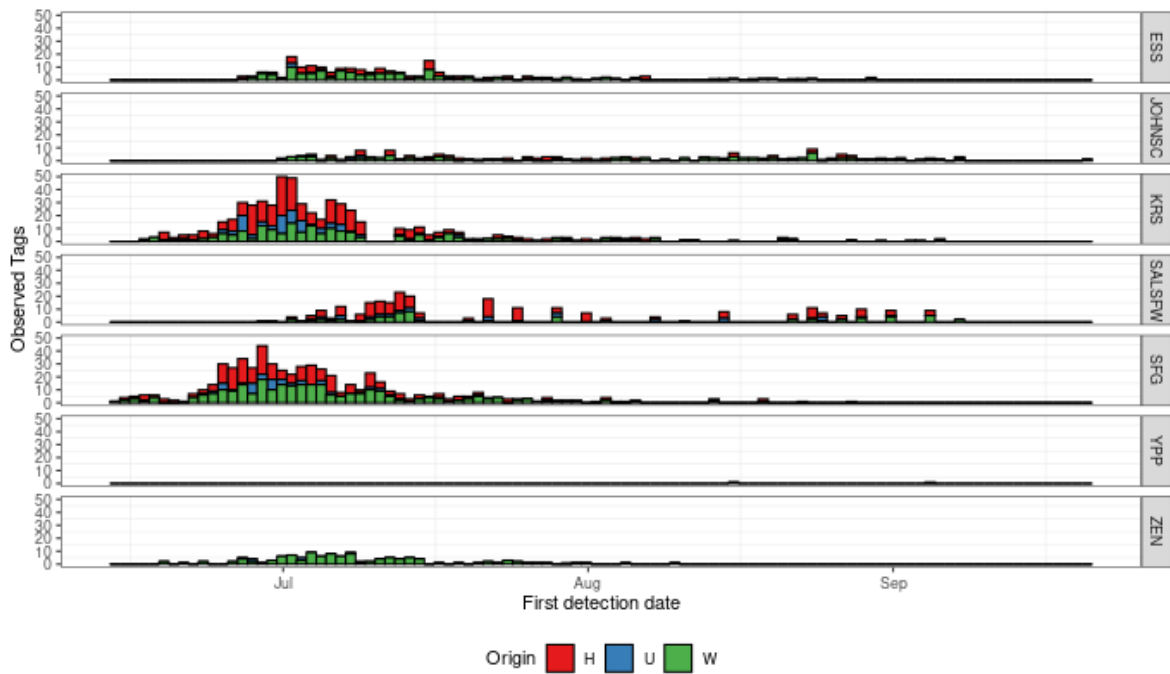


Watershed Summary Selections

Selected Main Gate Array:

SF Salmon

First arrival date at each site.

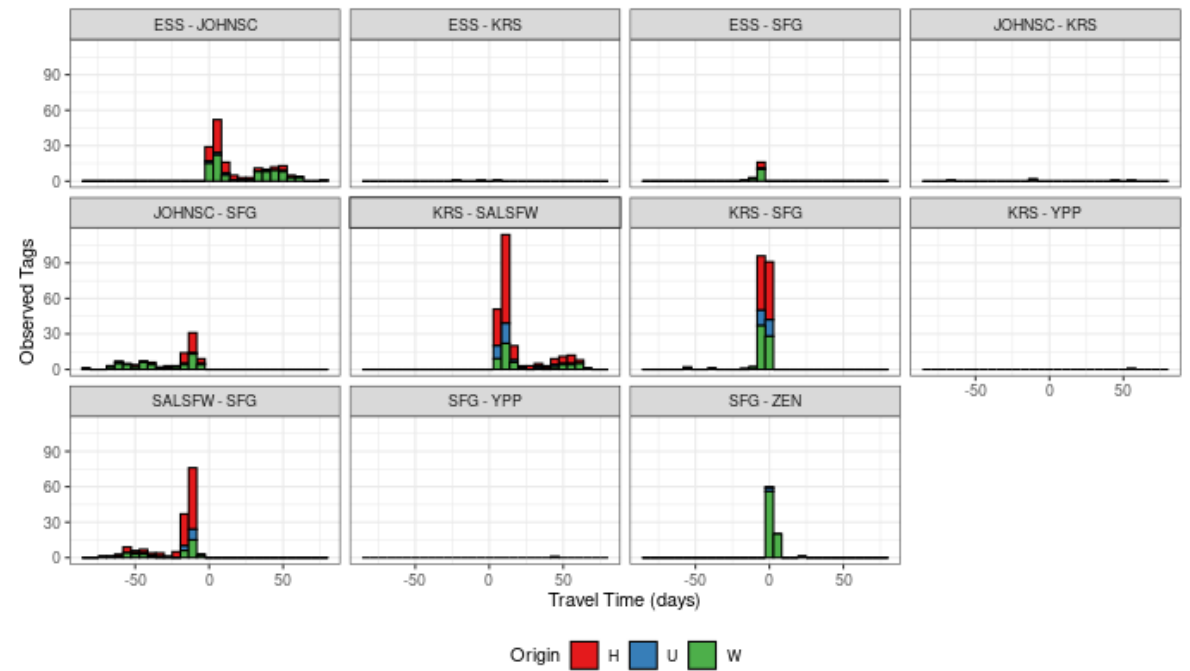


948

Unique tags observed in the watershed.



Travel time of through watershed reaches.



South Fork Salmon Management

- Utilize inseason analysis to:
 - Estimate natural and hatchery fish timing
 - Estimate natural fish run strength to inform fishery decisions
 - inform anglers about timing of fish into fishing areas
- <https://nptfisheries.shinyapps.io/PITtrackR>

Summary & Conclusions

- PIT tags are vital tool utilized for in season hatchery and harvest management
 - Able to track Realtime stock abundances, run timing, and conversion rates
 - Manage for uncertainty around estimates
 - Adjust harvest management in-season, utilizing PIT tags and PIT representation corrections when necessary and prudent
 - Strong communication and collaboration is strengthened by weekly coordination calls

Partnerships and Communication are Key



3D9.1BF2328B20

3D9.QBF1641BB4

3D9.1UF1955DD2

3D9.1BE1970B60

3D9.1BFS971444

3D9.1BF1TE288A

3D9.1BF1AI1964

3D9.1BF232OD0D

3D9.1BF2330NF0

3D9.1BF236AFS8

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3D9.1BF23A0EB4