

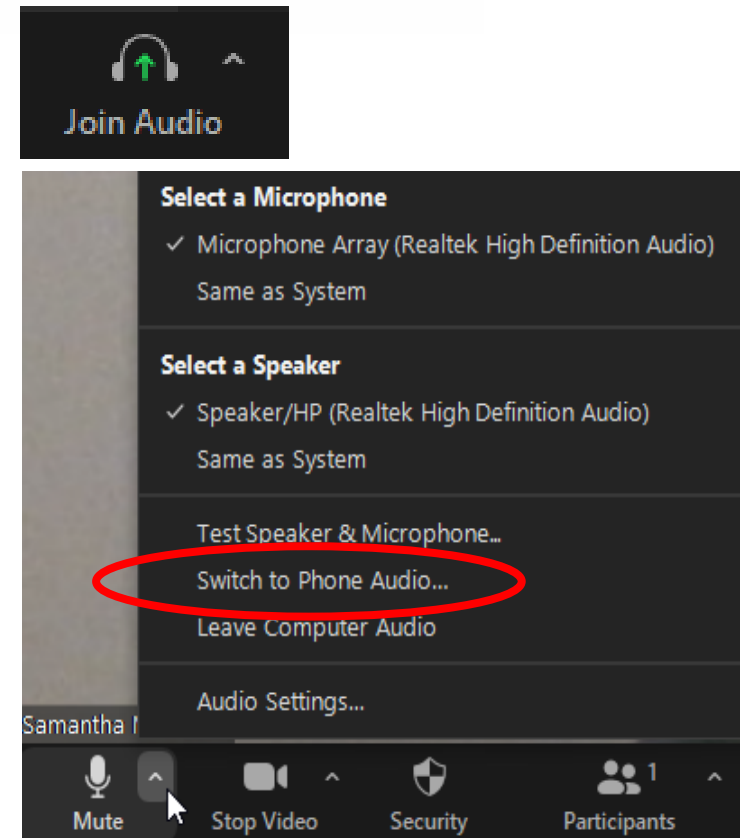


Columbia Basin Collaborative Hatchery & Harvest Work Group December Meeting

December 9, 2022

Zoom Features

- If you have not **connected your audio**, click on the “Join Audio” at the bottom left of your screen.
- To **switch to phone**, click the arrow next to the microphone icon and select “Switch to Phone Audio”.
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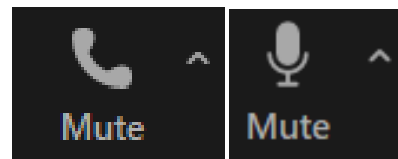


For technical support, please contact Grant Simmons, 831-331-7077

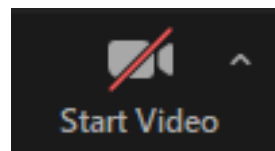


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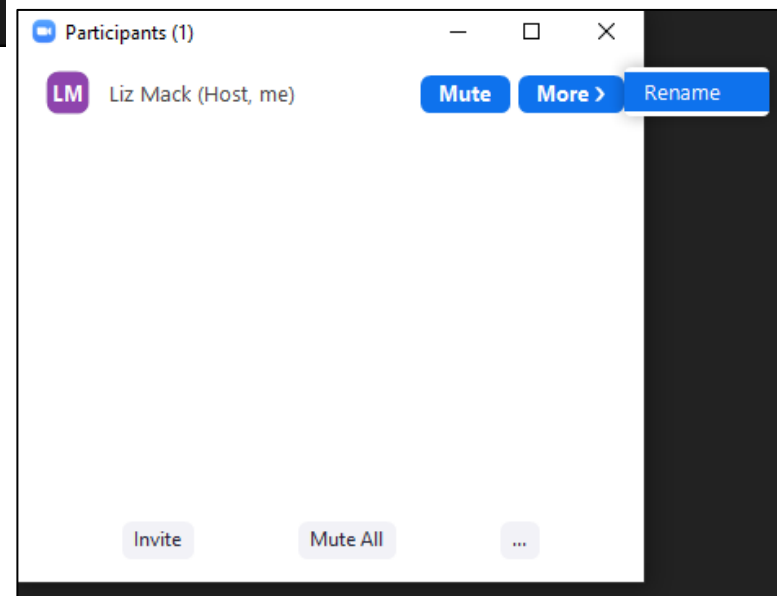
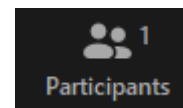
Keep yourself on mute when not speaking.



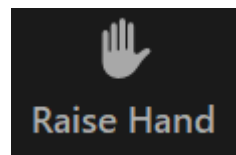
Use video, if possible, to promote face to face communication.



If needed rename yourself in the participant panel.



Find your raise hand function at the bottom of your screen



Welcome, Agenda Review, and Updates

Meeting Guidelines

- Honor the agenda
- Listen to understand and ask questions to clarify
- Balance speaking time
- Don't pile on
- Be hard on the problems, soft on the people
- Seek alignment and common ground wherever possible
- Be present



Agenda Review

Time (PT)	Topic
9:00 – 9:15 am	Welcome, Agenda Review, and Updates
9:15 – 9:30 am	Biological Matrices – Hatchery Management
9:30 – 10:45 am	Review Top Tier Gaps & Needs – Hatchery
10:45 – 10:55 am	BREAK
10:55 – 11:05 am	Biological Matrices – Harvest Management
10:55 – 11:55 am	Review Top Tier Gaps & Needs – Harvest
11:55 am – 12:00 pm	Confirm Next Steps and Action Items



Hatchery/Harvest Work Plan

Meeting	Key Topics/Outcomes
<i>Kick off</i>	<ul style="list-style-type: none">• <i>Come to shared understanding of the assignment from the I/RG and information available from the CBPTF</i>• <i>Assess existing forums, gaps, and funding needs and sources</i>• <i>Agree on next steps</i>
Meeting 2	<ul style="list-style-type: none">• Review relevant data and further discuss the impacts of fisheries and the hatchery/harvest interrelationship.• Identify levels of harvest that the medium and high level goals would support.• Identify most critical information and implementation gaps and needs and opportunities. Then, crosswalk these with recommendations from other efforts to develop early recommendations.• Look stock by stock for any additional needs considering work from other groups such as HSRG recommendations and recovery plans.
Meeting 3	<ul style="list-style-type: none">• Share proposed recommendations for actions/programs considering the discussion from meeting #2 and the following:<ul style="list-style-type: none">○ Equitable distribution of harvest○ Finer-scale impacts○ Mitigation and treaty obligations
Meeting 4	<ul style="list-style-type: none">• Finalize recommendations to go to the Science Integration Work Group and the IRG.

Biological Matrices – Hatchery Management

Hatchery

		Impact Level				
		Low	Medium	High	Very High	
Stock Status	Low	Will WSthd MC Sock UC Sock SN SpCH SN Sock	LC SpCH Tule FCH LC Coho LC Wsthd UC Sum CH Will Sp CH UC Sum Sthd	UC SpCH		Impact Level Low: less than 20% Medium: 20-30% High: 31-50% Very High: Greater than 50% Stock Status (based on CBP medium goal) Low: less than 25% Medium: 25-50% High: 51-75% Very High: greater than 75% Prioritization Status Red: Priority 1 Orange: Priority 2 Yellow: Priority 3 Blue: Back burner Green: Good shape
	Medium	LC Sum Sthd MC Sum Sthd LC Chum	MC SpCH SN Sum Sthd			
	High	SWW WSthd MC Coho SN FCH				
	Very High	LC Bright FCH MC FCH UC FCH				

Compiled Impacts by Stock

Sub- Region	Stock	Status	Abundance			MAFAC Phase II Impact Priority							
			Current	MAFAC Medium goal	Current as % of Medium Goal	Tributary Habitat	Estuary Habitat	Hydro (Mainstem)	Hydro (Latent)	Hydro (Blocked)	Predation	Harvest	Hatchery
Low-C	L Col R Spring Chinook	Threatened	2,240	21,550	10%	1	3	3	3	2	3	3	2
Low-C	L Col R Winter Steelhead	Threatened	5,989	27,900	21%	1	2	3	3	3	3	3	3
Low-C	L Col R Fall (tule) Chinook	Threatened	12,329	54,100	23%	1	2	3	3	3	3	1	2
Low-C	L Col R Coho	Threatened	31,524	129,550	24%	1	3	3	3	3	3	3	2
Low-C	L Col R Summer Steelhead	Threatened	10,594	29,800	36%	2	4	4	4	2	4	4	4
Low-C	Col R Chum	Threatened	11,762	33,000	36%	2	2	4	4	4	4	4	4
Low-C	SW WA Winter Steelhead	Threatened	3,252	5,850	56%	2	4	5	5	5	5	5	5
Low-C	L Col R Late Fall (bright) Chinook		10,800	16,700	65%								
Low-C	L Col R Fall (bright) Chinook	Threatened	11,000	11,000	100%	5	5	5	5	4	5	4	5
Mid-C	M Col Sockeye	Not Listed	1,036	45,000	2%	3	3	3	2	1	3	3	
Mid-C	M Col R Spring Chinook	Not Listed	11,600	40,425	29%	2	4	4	4	4	4	4	4
Mid-C	M Col R Summer Steelhead	Threatened	18,155	43,850	41%	2	4	4	4	4	2	4	4
Mid-C	M Col R Coho	Not Listed	6,324	11,600	55%		5	4	5	5	5	4	
Mid-C	M Col R Summer/Fall Chinook	Not Listed	11,500	13,000	88%	5	5	5	5	5	5	4	5
Up-C	U Col R Coho	Not Listed	392	15,000	3%								
Up-C	U Col R Summer Steelhead	Threatened	1480	31,000	5%	1	1	2	1	1	1	3	2
Up-C	U Col R Sockeye	Not Listed	40,850	580,000	7%	1	3	1	1	1	2	3	3
Up-C	U Col R Spring Chinook	Endangered	1430	19,840	7%	1	3	1	1	1	2	3	1
Up-C	U Col R Summer Chinook	Not Listed	16920	78,350	22%	1	2	1	1	1	3	1	2
Up-C	U Col R Fall Chinook	Not Listed	92,400	62,215	149%	5	5	4	5	5	5	4	5
Snake	Snake R Coho	Not Listed	100	26,600	0%								
Snake	Snake R Sockeye	Endangered	100	15,750	1%	3	3	1	1	1	2	3	
Snake	Snake R Spring/Summer Chinook	Threatened	6,988	98,750	7%	1	3	1	1	2	2	3	3
Snake	Snake R Summer Steelhead	Threatened	28,000	75,000	37%	2	4	4	2	2	2	4	4
Snake	Snake R Fall Chinook	Threatened	8,360	10,780	78%	5	5	4	4	4	5	4	
Willam	U Will R Spring Chinook	Threatened	4,278	47,850	9%	1	2	3	3	1	3	3	2
Willam	U Will R Winter Steelhead	Threatened	2,816	27,805	10%	1	2	3	3	3	1	3	3



Review Top Tier Gaps & Needs – Hatchery

Hatchery Gaps

Tier 1 Priorities

- Analysis: Scientifically valid studies to address impacts or benefits of hatcheries
- Infrastructure
 - Need to increase production of build new hatcheries (specifically for Upper Columbia)
 - Need estimated cost to repair/maintain/infrastructure improvements at existing facilities and fund it
- Performance
 - Overview of mitigation performance (meeting of failing to meet adult return goals), data showing release/return goals throughout basin
 - Focused goals on adult returns

Tier 2 Priorities

- Infrastructure:
 - Implement recommended hatchery reform actions at existing hatcheries (need to consider site specifics, what has been done and monitoring and reporting for adaptive management)
- Management
 - Random vs. Selective spawning of broodstock to improve age and survival of hatchery fish)some of this information is available and site-specific

Hatchery Gaps

Analysis/info needs:

- Economic cost/benefit analysis
- Understanding hatchery ecological impacts (competition, predation, and disease)
- Effects of selection on size and run timing
- Understanding of impact climate change on hatchery production

Hatchery impacting wild stocks:

- Analysis of impacts and mitigation measures
- Integrating new information (not depending on old studies)
- Impacts of hatchery fish on predation of wild stocks
- Assessment of demographic replacement, epigenetics, genetic drift
- Understanding “wild” for appropriate comparison of Relative Reproductive Success
- Impacts of strays on neighboring watersheds

Infrastructure: Implementing new technologies

Maintenance: Understand risk of catastrophic failure

Performance:

- Operations not meeting implementation plans/accountability
- Metrics evaluated appropriately to goals (generation 3+ benefits of hatcheries)

Management: Full adipose clipping of all mitigation (harvest directed) programs

Release size/timing:

- Hatchery release/program size relative to carrying capacity (freshwater & marine)
- Impact to smolt to adult returns and age structure

Hatchery Funding Needs

1. Repairs, maintenance, modernization
2. Water sources
3. Climate change planning
4. Rearing and release conditions of hatcheries
5. Tagging of hatchery fish
6. True assessment of PHOs and outcomes/impacts
7. Funding studies to evaluate hatchery outcomes/reforms

Other Hatchery Funding Needs

Monitoring and evaluation: Genetic ID

Emergency conservation: Captive brood, cryopreservation

Programs:

- The Upper Columbia Blocked Area Reintroduction Program
- NOAA Funding to complete HGMPs
- Long-term stability in Mitchell Act funding levels

Funding for studies:

- Understand effects in ocean phase
- Cost/benefit analysis



Break

10:40 – 10:50 am



Biological Matrices – Harvest Management

Harvest

		Impact Level				
		Low	Medium	High	Very High	
Stock Status	Low	LC SpCH LC Coho LC WSthd Will SpCH MC Sock UP SpCH UC Sock UC Sum Sthd SN SpCH SN Sock Will W Sthd		LC Tule FCH	UC Sum CH	<p>Impact Level Low: less than 20% Medium: 20-30% High: 31-50% Very High: Greater than 50%</p> <p>Stock Status (based on CBP medium goal) Low: less than 25% Medium: 25-50% High: 51-75% Very High: greater than 75%</p> <p>Prioritization Status Red: Priority 1 Orange: Priority 2 Yellow: Priority 3 Blue: Back burner Green: Good shape</p>
	Medium	LC Chum LC Sum Sthd MC Sum Sthd MC SpCH	SN Sum Sthd			
	High	SWW WSthd	MC Coho	SN FCH		
	Very High			LC Bright FCH	MC FCH UC FCH	

Review Top Tier Gaps & Needs – Harvest

Harvest Gaps

1. Information gap: Improve forecast models and run size updates
2. Better assessments of likely impacts of climate change on salmon at all life stages which will impact harvest opportunities
3. Improve adult fish sampling facility at Bonneville Dam to get a better stock-specific estimates for all species
4. Improvement to optimize LC Tule management
5. How the lack of adipose clipping of large portion of hatchery program at Priest Rapids production impacts the implementation of mark selective fisheries
6. Information gap: Real-time measures of effort, encounter, and harvest rates (not models and estimate)

Harvest Funding Needs

1. Development of electronic reporting of catch reporting for both commercial and recreational fisheries, including catch and release (rec) to allow better in-season management
2. Sufficient and stable funding for tagging and monitoring
3. A robust, basin wide study of the economic and cultural impacts of reduced harvest opportunity (tribal and non-tribal)
4. Additional tools and technology to assess catches and returns (improved software technology to collect sample data and PIT tag arrays)
5. Development of fishery management plans

Recommended Action Form

1. Work Group developing the action:
2. Summary of action:
 - a. Is this part of an existing program or new program?
3. Benefit: (link to matrices)
 - a. What benefit will the action provide?
 - b. What data support this?
4. Entities that would implement that action:
5. Timing:
 - a. How long will it take to implement that action?
 - b. How long until fish populations benefit from action?
6. Stock(s) benefited by the action and magnitude of benefit for each stock(s)
7. Estimated cost:
8. Uncertainties related to the action:
9. Regulatory processes or policies associated with the action:
10. Potential challenges:
11. Adaptive management (describe how this will be incorporated into to action):

TABLE 8. Aggregate stock-specific abundance values for natural-origin escapement under current and historical conditions, and low, medium, and high goal ranges.

Stock	Current	Historical	Low goal	Med goal	High goal	High as % of historical
L Col R Spring Chinook	2,240	101,700	9,800	21,550	33,300	33%
L Col R Fall (tule) Chinook	12,329	169,700	28,050	54,100	82,000	48%
L Col R Late Fall (bright) Chinook	10,800	33,000	11,100	16,700	22,200	67%
L Col R Fall (bright) Chinook	11,000	0	11,000	11,000	11,000	-
L Col R Coho	31,524	301,900	67,925	129,550	191,400	63%
Col R Chum	11,762	461,300	16,500	33,000	49,500	11%
SW WA Winter Steelhead	3,252	19,100	4,650	5,850	6,950	36%
L Col R Winter Steelhead	5,989	41,900	19,000	27,900	36,400	87%
L Col R Summer Steelhead	10,594	61,200	21,100	29,800	38,100	62%
M Col R Spring Chinook	11,600	246,500	17,750	40,425	114,500	46%
M Col R Summer/Fall Chinook	11,500	17,000	4,000	13,000	16,000	94%
M Col R Coho	6,324	75,000	5,300	11,600	19,900	27%
M Col Sockeye	1,036	230,000	7,500	45,000	107,500	47%
M Col R Summer Steelhead	18,155	132,800	21,500	43,850	69,150	52%
U Col R Spring Chinook	1,430	259,450	11,500	19,840	30,135	12%
U Col R Summer Chinook	16,920	733,500	9,000	78,350	131,300	18%
U Col R Fall Chinook	92,400	680,000	9,200	62,215	87,835	13%
U Col R Coho	392	44,500	7,500	15,000	26,000	58%
U Col R Sockeye	79,511	1,800,000	31,500	580,000	1,235,000	69%
U Col R Summer Steelhead	1,480	1,121,400	7,500	31,000	47,000	4%
Snake R Spring/Summer Chinook	6,988	1,000,000	33,500	98,750	159,500	16%
Snake R Fall Chinook	8,360	500,000	4,200	10,780	23,360	5%
Snake R Coho	100	200,000	8,900	26,600	44,100	22%
Snake R Sockeye	100	84,000	5,500	15,750	26,000	31%
Snake R Summer Steelhead	28,000	600,000	22,500	75,000	131,500	22%
U Will R Spring Chinook	4,278	312,170	28,900	47,850	66,800	21%
U Will R Winter Steelhead	2,816	220,000	16,290	27,805	39,320	18%
Totals	352,119	9,446,120	441,165	1,572,265	2,845,750	30%

FIGURE 13. Heat map of impacts of limiting factors by stock and region, including ranges reflecting uncertainties where appropriate. Units are percentage reductions in equilibrium abundance (generally equivalent to mortality rates).

	Stock	Tributary Habitat	Estuary Habitat	Hydro (mainstem)	Hydro (latent)	Hydro (blocked)	Predation	Fishery	Hatchery	
Lower Columbia	Spr Chinook	85	17	0	0 (0-0)	30	14	17	29 (4-54)	
	Fall (tule) Chinook	70	21	0	0 (0-0)	15	11	33	25 (3-47)	
	Fall (bright) Chinook	10	21	0	0 (0-0)	40	11	47	0 (0-0)	
	Chum	95	50	5	0 (0-0)	0	2	1	10 (1-18)	
	Coho	80	11	0	0 (0-0)	5	13	17	22 (3-42)	
	Sumr Steelhead	65	28	4	0 (0-0)	40	19	5	8 (1-15)	
	Win Steelhead SWW	60	28	0	0 (0-0)	0	19	5	17 (2-33)	
	Win Steelhead LCR	65	28	0	0 (0-0)	10	19	5	9 (1-16)	
	Willamette	Spr Chinook	85	20	0	0 (0-0)	50	19	13	25 (3-46)
		Win Steelhead	80	28	0	0 (0-0)	20	32	3	2 (0-4)
Middle Columbia	Spr Chinook	85	17	23	14 (3-25)	25	25	15	24 (3-45)	
	Fall Chinook	20	27	13	9 (2-17)	5	10	55	0 (0-0)	
	Coho	NA	11	30	19 (5-33)	0	17	22	NA	
	Sockeye	0	17	19	9 (2-17)	95	8	3	NA	
	Sumr Steelhead	80	28	11	14 (3-25)	20	33	10	17 (2-33)	
Upper Columbia	Spr Chinook	45	18	49	38 (9-67)	75	29	15	32 (5-59)	
	Summer Chinook	50	27	49	38 (9-67)	50	13	61	27 (4-51)	
	Fall Chinook	25	27	65	19 (5-33)	5	13	61	10 (1-18)	
	Sockeye	50	17	38	38 (9-67)	80	24	12	10 (1-18)	
	Sumr Steelhead	40	31	30	38 (9-67)	95	52	10	24 (3-45)	
Snake	Spr Chinook	50	16	39	38 (9-67)	30	29	14	15 (2-28)	
	Fall Chinook	25	27	62	38 (9-67)	80	13	45	NA	
	Sockeye	10	17	47	38 (9-67)	70	24	6	NA	
	Sumr Steelhead	45	27	30	38 (9-67)	40	43	25	24 (3-45)	
		<5%	5-20%	21-30%	31-50%	>50%				

Biological Matrices - Methods

TABLE 8. Aggregate stock-specific abundance values for natural-origin escapement under current and historical conditions, and low, medium, and high goal ranges.

Stock	Current	Historical	Low goal	Med goal	High goal	High as % of historical
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Totals	352,119	9,446,120	441,165	1,572,265	2,845,750	30%

FIGURE 13. Heat map of impacts of limiting factors by stock and region, including ranges reflecting uncertainty where appropriate. Units are percentage reductions in equilibrium abundance (generally equivalent to mortality rates)

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	Fall (tule) Chinook	70	21	0	0 (0-0)	15	11	33	25 (3-47)
	Fall (bright) Chinook	10	21	0	0 (0-0)	40	11	47	0 (0-0)
	Chum	95	50	5	0 (0-0)	0	2	7	10 (1-18)
	Coho	80	11	0	0 (0-0)	5	13	17	22 (3-42)
	Sumr Steelhead	65	28	4	0 (0-0)	40	19	5	8 (1-15)
	Win Steelhead SWW	60	28	0	0 (0-0)	0	19	5	17 (2-33)
	Win Steelhead LCR	65	28	0	0 (0-0)	10	19	5	9 (1-16)
	Willamette	Spr Chinook	85	20	0	0 (0-0)	50	19	3
Win Steelhead		80	28	0	0 (0-0)	20	32	3	2 (0-4)
Middle Columbia	Spr Chinook	85	17	23	14 (3-25)	25	25	5	24 (3-45)
	Fall Chinook	20	27	13	9 (2-17)	5	10	5	0 (0-0)
	Coho	NA	11	30	19 (5-33)	0	17	2	NA
	Sockeye	0	17	19	9 (2-17)	95	8	3	NA
	Sumr Steelhead	80	28	11	14 (3-25)	20	33	0	17 (2-33)
Upper Columbia	Spr Chinook	45	18	49	38 (9-67)	75	29	5	32 (5-59)
	Summer Chinook	50	27	49	38 (9-67)	50	13	6	27 (4-51)
	Fall Chinook	25	27	65	19 (5-33)	5	13	6	10 (1-18)
	Sockeye	50	17	38	38 (9-67)	80	24	12	10 (1-18)
Snake	Sumr Steelhead	40	31	30	38 (9-67)	95	52	1	24 (3-45)
	Spr Chinook	50	16	39	38 (9-67)	30	29	14	15 (2-28)
	Fall Chinook	25	27	62	38 (9-67)	80	13	45	NA
	Sockeye	10	17	47	38 (9-67)	70	24	6	NA
	Sumr Steelhead	45	27	30	38 (9-67)	40	43	25	24 (3-45)

Stock Status	Impact Level				Impact Level Low: less than 20% Medium: 20-30% High: 31-50% Very High: Greater than 50%
	Low	Medium	High	Very High	
Low	Will WSthd MC Sock UC Sock SN SpCH SN Sock	LC SpCH Tule FCH LC Coho LC Wsthd UC Sum CH Will Sp CH UC Sum Sthd	UC SpCH		Stock Status (based on CBP medium goal) Low: less than 25% Medium: 25-50% High: 51-75% Very High: greater than 75% Prioritization Status Red: Priority 1 Orange: Priority 2 Yellow: Priority 3 Blue: Back burner Green: Good shape
Medium	LC Sum Sthd MC Sum Sthd LC Chum	MC SpCH SN Sum Sthd			
High	SWW WSthd MC Coho SN FCH				
Very High	LC Bright FCH MC FCH UC FCH				

Fishery Impacts- Phase 2 Report, Appendix C, Page 49

Table 11. Stock specific fishery mortality rates (%) by major fishery areas.

Stock	Stock abbreviation	Ocean			Columbia River			Upriver Tribes	Total
		SE AK	Canada	WA/OR	Sport	Comm	Treaty		
Spring Chinook L Col	CHS LCR	4.1	2.5	2.2	7.8	0.5	0.0	0.0	17.1
Spring Chinook Willamette	CHS UWR	4.1	2.5	2.2	3.7	0.4	0.0	0.0	12.9
Spring Chinook Mid Col	CHS MCR	0.0	0.0	0.0	4.7	0.5	9.4	0.0	14.6
Spring Chinook U Col	CHS UCR	0.0	0.0	0.0	1.2	0.5	10.1	3.0	14.8
Spring Chinook Snake	CHS SR	0.0	0.0	0.0	2.5	0.5	11.4	0.0	14.4
Summer Chinook U Col	CHSu UCR	13.3	15.6	6.7	6.3	2.7	13.9	2.7	61.2
Fall Chinook U Col	CHF UCR	20.8	12.3	2.5	7.5	3.7	14.5	0.0	61.3
Fall Chinook Deschutes	CHF MCR	20.8	12.3	2.5	6.3	3.7	9.2	0.0	54.8
Fall Chinook Snake	CHF SR	2.2	7.5	9.8	5.4	3.7	16.0	0.0	44.6
Fall (tule) Chinook L Col	CHF LCR	3.2	5.5	11.8	7.6	4.5	0.0	0.0	32.6
Fall (brite) Chinook L Col	CHFI LCR	10.2	16.1	7.8	8.5	4.7	0.0	0.0	47.3
Chum L Col	CHU LCR	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.6
Coho L Col	COH LCR	0.0	1.7	10.2	1.0	4.1	0.0	0.0	17.0
Coho abv Bonn Dam	COH UpR	0.0	1.7	10.2	1.0	4.1	5.0	0.0	22.0
Sockeye Deschutes	SES MCR	0.0	0.0	0.0	0.0	0.4	2.9	0.0	3.3
Sockeye U Col	SES UCR	0.0	0.0	0.0	0.0	0.5	5.7	5.5	11.7
Sockeye Snake	SES SR	0.0	0.0	0.0	0.0	0.1	5.5	0.0	5.6
Summer Steelhead L Col	STS LCR	0.0	0.0	0.0	5.0	0.1	0.0	0.0	5.1
Summer Steelhead Mid Col	STS MCR	0.0	0.0	0.0	2.2	1.0	6.3	0.0	9.5
Summer Steelhead U Col	STS UCR	0.0	0.0	0.0	0.8	1.0	6.5	1.8	10.1
Summer Steelhead Snake	STS SR	0.0	0.0	0.0	16.0	1.0	8.0	0.0	25.0
Win Steelhead SW WA	STW SWW	0.0	0.0	0.0	5.0	0.2	0.0	0.0	5.2
Win Steelhead L Col	STW LCR	0.0	0.0	0.0	5.0	0.2	0.0	0.0	5.2
Win Steelhead U Willamette	STW UWR	0.0	0.0	0.0	2.0	0.7	0.0	0.0	2.7

Phase 2 Report, pg. 53

TABLE 10. Current (recent 10-year average) harvest of Columbia Basin salmon and steelhead in freshwater (Col basin) and ocean fisheries and potential harvest at high natural production goals and anticipated hatchery production levels. (See Table 9 for more detail on anticipated hatchery production levels).

Stock	Harvest (current)			Harvest (at high goal)		
	Col basin	Ocean	Total	Col basin	Ocean	Total
Chinook	429,800	426,150	855,950	1,280,400	707,600	1,988,000
Spring	88,800	7,400	96,200	619,800	34,300	654,100
Summer	31,100	41,500	72,600	153,000	207,000	360,000
Fall	309,900	377,250	687,150	507,600	466,300	973,900
Chum	80	0	80	41,000	0	41,000
Coho	134,800	95,100	229,900	336,900	121,700	458,600
Sockeye	42,082	0	42,082	1,217,600	0	1,217,600
Steelhead	222,300	0	222,300	521,200	0	521,200
Winter	19,700	0	19,700	59,000	0	59,000
Summer	202,600	0	202,600	462,200	0	462,200
Totals	829,062	521,250	1,350,312	3,397,100	829,300	4,226,400

TABLE A-8. Current (2008-2017 average) and potential harvest of Columbia River salmon and steelhead in combined ocean and freshwater fisheries projected at high natural production goal, anticipated hatchery production and potential fishing levels.

Stock	Harvest (current)			Harvest (at high goal)		
	Col basin	Ocean	Total	Col basin	Ocean	Total
L Col R Spring Chinook	6,200	1,200	7,400	34,000	8,000	42,000
L Col R Fall (tule) Chinook	21,000	33,000	54,000	170,000	73,000	243,000
L Col R Late Fall (bright) Chinook	2,800	7,500	10,300	9,600	17,300	26,900
Select Area Fall (bright) Chinook	10,100	NA	10,100	10,100	NA	10,100
L Col R Coho	108,000	63,000	171,000	262,000	57,000	319,000
Col R Chum	80	0	80	41,000	0	41,000
SWW/LCR WA Winter Steelhead	19,500	0	19,500	31,000	0	31,000
L Col R Summer Steelhead	24,200	0	24,200	35,000	0	35,000
M Col R Spring Chinook	13,600	0	13,600	120,700	0	120,700
M Col Fall (tule) Chinook	52,000	34,000	86,000	52,000	34,000	86,000
M Col R Summer/Fall Chinook	5,600	10,300	15,900	15,400	18,600	34,000
M Col Fall (bright) Chinook	60,000	84,450	144,450	65,400	92,100	157,500
M Col R Coho	16,000	19,000	35,000	26,600	26,200	52,800
M Col Sockeye	100	0	100	71,700	0	71,700
M Col R Summer Steelhead	26,800	0	26,800	110,100	0	110,100
U Col R Spring Chinook	5,970	0	5,970	119,400	0	119,400
U Col R Summer Chinook	31,100	41,500	72,600	153,000	207,000	360,000
U Col R Fall Chinook	136,200	191,700	327,900	153,200	211,100	364,300
U Col R Coho	6,100	7,400	13,500	20,000	16,800	36,800
U Col R Sockeye	41,900	0	41,900	1,122,200	0	1,122,200
U Col R Summer Steelhead	9,700	0	9,700	126,000	0	126,000
Snake R Spring/Summer Chinook	44,230	0	44,230	235,000	0	228,000
Snake R Fall Chinook	22,200	16,300	38,500	31,900	20,200	52,100
Snake R Coho	4,700	5,700	10,400	28,300	21,700	50,000
Snake R Sockeye	82	0	82	23,700	0	23,700
Snake R Summer Steelhead	133,900	0	133,900	183,100	0	180,800
U Will R Spring Chinook	18,800	6,200	25,000	110,700	26,300	137,000
U Will R Winter Steelhead	200	0	200	28,000	0	28,000
U Will Summer Steelhead	8,000	0	8,000	8,000	0	8,000
Totals	829,062	521,250	1,350,312	3,397,800	829,300	4,226,400
Chinook	429,800	426,150	855,950	1,280,400	707,600	1,988,000
Spring	88,800	7,400	96,200	619,800	34,300	654,100
Summer	31,100	41,500	72,600	153,000	207,000	360,000
Fall	309,900	377,250	687,150	507,600	466,300	973,900
Chum	80	0	80	41,000	0	41,000
Coho	134,800	95,100	229,900	336,900	121,700	458,600
Sockeye	42,082	0	42,082	1,217,600	0	1,217,600
Steelhead	222,300	0	222,300	521,200	0	521,200
Winter	19,700	0	19,700	59,000	0	59,000
Summer	202,600	0	202,600	462,200	0	462,200
Lower Columbia River	191,880	104,700	296,580	592,700	155,300	748,000
Mid Columbia River	174,100	147,750	321,850	461,900	170,900	632,800
Upper Columbia River	230,970	240,600	471,570	1,693,800	434,900	2,128,700
Snake River	205,112	22,000	227,112	502,000	41,900	543,900
Willamette	27,000	6,200	33,200	146,700	26,300	173,000

Phase 2 Report, pg. 183. Table A-8.

Current (2008-2017 average) and potential harvest of Columbia River salmon and steelhead in combined ocean and freshwater fisheries projected at high natural production goal, anticipated hatchery production and potential fishing levels.

Phase 2 Report, pg. 55 Table 11.

Columbia River mouth run sizes for salmon and steelhead at low and high natural production goals in conjunction with anticipated hatchery production and potential harvest relative to current numbers.

TABLE 11. Columbia River mouth run sizes for salmon and steelhead at low and high natural production goals in conjunction with anticipated hatchery production and potential harvest relative to current numbers.

	Species	Natural origin	Hatchery origin	Total	% Hatchery
Current Run Size	Chinook	384,740	718,400	1,103,140	65%
	Spring	58,940	217,100	276,040	79%
	Summer	30,000	45,000	75,000	60%
	Fall	295,800	456,300	752,100	61%
	Chum	14,700	300	15,000	2%
	Coho	34,000	375,100	409,100	92%
	Sockeye	297,490	34,070	331,560	10%
	Steelhead	107,600	375,700	483,300	78%
	Winter	17,300	33,000	50,300	66%
	Summer	90,300	342,700	433,000	79%
Total	838,530	1,503,570	2,342,100	64%	
Run Size at Low Goals	Chinook	536,700	727,700	1,264,400	58%
	Spring	198,400	217,300	415,700	52%
	Summer	30,000	43,000	73,000	59%
	Fall	308,300	467,400	775,500	60%
	Chum	21,000	0	21,000	0%
	Coho	116,300	375,100	491,400	76%
	Sockeye	320,100	53,600	373,700	14%
	Steelhead	187,900	371,400	559,300	66%
Winter	57,000	28,000	85,000	33%	
Summer	130,900	343,400	474,300	72%	
Total	1,182,000	1,527,800	2,709,800	56%	
Run Size at High Goals	Chinook	1,753,300	1,046,300	2,799,600	37%
	Spring	1,042,500	342,000	1,384,500	25%
	Summer	234,000	140,000	374,000	37%
	Fall	476,800	564,300	1,041,100	54%
	Chum	102,000	0	102,000	0%
	Coho	446,400	375,100	821,500	46%
	Sockeye	2,913,900	100,000	3,013,900	3%
	Steelhead	886,300	394,300	1,280,600	31%
Winter	163,000	28,000	191,000	15%	
Summer	723,300	366,300	1,089,600	34%	
Total	6,101,900	1,915,700	8,017,600	24%	

Next Steps and Action Items

Next Steps

- KW: Finalize compiled list of gaps and needs
- All: Receive and review meeting materials from the Shared Work Group folder



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Upcoming Meeting Topics

- Further developing recommendations



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Thank you



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