The Columbia Basin Collaborative

Revised Recommendations 1-24-24

Introduction

The Columbia Basin Collaborative (CBC) charter aims to achieve the quantitative and qualitative goals for salmon and steelhead documented in the Columbia Basin Partnership Task Force (CBPTF) Phase 1 and 2 Reports, as adopted by the Marine Fisheries Advisory Committee (MAFAC). The CBPTF "explored the various limiting factors that impact salmon and steelhead across their life cycles. The results of the analyses show that no single strategy (e.g., reducing predation, increasing habitat, reducing harvest) will achieve the Goals on its own. Instead, improvements in multiple factors will be needed to increase abundance to desired levels for most stocks. Together, these improvements create synergies that compound benefits greater than those achievable through single actions."

The CBPTF also identified that, "reliable and predictable funding is essential. Funding must be targeted to achieve the Partnership's Quantitative and Qualitative Goals. New funding sources should be identified. Funding must come from multiple sources, consider the burden across communities, and account for past, present, and potential impacts."

The CBC agrees with these MAFAC-adopted objectives and hence the recommendations below are aimed to help achieve those CBPTF Goals. No one recommendation can meet these goals alone.

The parties of the CBC have come to consensus that this recommendation is valid for implementer consideration. As stated in the Charter "sovereigns with management decision-making authority will review recommendations and make independent decisions to implement or support actions. The CBC itself is not a management decision-making body, but will strive to support its recommendations through to implementation."

The following supplemental information addresses pinniped predation on adult returning salmon and steelhead to clarify the "Enhance and Modify the Marine Mammal Protection Act Section 120 Pinniped Removal Program" Columbia Basin Collaborative Recommendation

Recommendation: Enhance and Modify the Marine Mammal Protection Act Section 120 Pinniped Removal Program – Revised November 2023

Problem Statement

Steller sea lions (SSL) and California sea lions (CSL) residing at Bonneville Dam and Willamette Falls can consume between 2 and 6 adult salmon per day depending on salmon aggregation densities at the ladders, which means approximately 2,000 adult migrating chinook salmon consumed for every 10 sea lions present at each project (assuming 4 salmon per sea lion per day for a 50-day period). This translates to 2% mortality on spring run chinook salmon (assuming a run size of 100,000) for every 10 sea lions present. Mortality estimates vary depending on run size, sea lion abundances, and sea lion residency times. Direct observations at Bonneville Dam have been documented since 2002, accounting for animals in the immediate vicinity of Bonneville Dam. Salmonid mortalities have ranged from 2-6% at Bonneville in that period within the area observable at Bonneville dam, but the total impact is greater because predation is not limited to the observed area. Sea lion predation studies documented losses of Spring chinook salmon between 22% and 50% of the run in the Astoria to Bonneville reach.

The Oregon Department of Fish and Wildlife (ODFW), Washington Department of Fish and Wildlife (WDFW), Idaho Department of Fish and Game (IDFG), and the Columbia River Inter-Tribal Fish Commission (CRITFC) jointly manage and implement lethal removal of SSLs and CSLs under the Marine Mammal Protection Act Section 120 Pinniped Removal Program. Section 120(f) of the program authorizes removal of sea lions from the Columbia River between river mile 112 and river mile 292, and within the tributaries of the Columbia River beginning at the mouth. Sea lion removals under the program have resulted in approximately 30-60% annual reductions of the animals present in the authorized removal areas. The 120(f) permit is authorized through August 2025 and funded through June 2025. The current program has effectively alleviated a significant porstion of pinniped predation mortality on salmon and steelhead within the geographical extent of the authorized removal area. Stable long-term funding is essential to maintain this reduction in predation. Additional improvements and innovations should be pursued to increase the effectiveness of the program, including a refinement of the 120(f) language to authorize lethal removal of tributary-preying sea lions dispersing into the Columbia River mainstem in the immediate vicinity of its confluence with tributaries downstream of river mile 112.

Summary of actions:

Recommended enhancements and modifications to the existing Marine Mammal Protection Act Section 120 Pinniped Removal Program would include:

a) Extend authorization and fully fund the *status-quo* 120(f) permit scope with inflationary costs through 2035 to provide stability to the program's effectiveness.
b) Additionally provide one-time funding for new sea lion removal equipment and to replace outdated equipment.
c) Provide additional funding to increase the capacity to remove sea lions and process animals, including a program to maintain an on-call veterinarian roster for euthanasia processing, and a program to train more state and/or tribal biologists and technicians for seasonal work.
d) Additionally extend and fully fund pinniped abundance estimation and kill rate monitoring programs, e.g., USACE Bonneville monitoring.
e) Additionally pursue research and innovation in dart usage. Alaska wildlife managers have employed techniques in the usage of darts for research that have successfully minimized animal drowning and dart loss incidents.
f) Additionally introduce a modification to the 120(f) geographical definition of tributaries to include a flexible tributary-specific buffer area along the Columbia River mainstem upstream, downstream, and across-channel from tributary confluences with the Columbia mainstem where pinnipeds habituated to salmon predation are known to temporarily disperse from target prey-rich tributaries to nearby mainstem haulouts. This buffer concept is similarly captured by the existing river-mile 112 limit in the 120(f) authorization being predicated by dispersal from Bonneville dam to haulouts up to 30 miles from Bonneville Dam (e.g., Phoca Rock). Lethal removals from tributary buffer areas would not add to the total removals under 120(f) authorization. The tributary-specific buffer areas are specified by:
    1. Implementing an initial 4 tributary-specific buffer areas based on documented pinniped haulouts near tributary confluences (GPS coordinates at middle of tributary mouth) for: #1 Willamette (456528,-76552), #2 Lewis (45.85193,-122.77962), #3 Kalama (46.03360,-122.87033), and #4 Cowlitz (46.094,-122.92155), with these 4 buffers based on;
    2. Empirically observed haulouts at Rainier Marina, barges, dock and peninsula haulouts at the Cowlitz confluence, Coffin Rock haulouts at the Kalama confluence, Warrior Rock and St. Helens marina haulouts at the Lewis confluence, and private resident dock haulout at the Willamette confluence, and;
    3. Tributary confluence buffer distances will initially be premised on a maximum of 3 miles upstream and downstream of tributary confluence on both sides of the Columbia mainstem, but extended to a further distance on a tributary case-by-case basis.

Benefit Provided by Action:

A removal of 10 sea lions per year can translate to between 1,200 and 5,100 additional adult salmon passing Bonneville Dam and Willamette Falls (based on a 60 to 90 consumption window and a range of 2 to 6 salmon per day).

Stocks Benefited by the Action:

Spring chinook and winter steelhead migrating past Willamette Falls and Bonneville Dam will benefit from the removal of CSLs and SSLs.

Data Supporting Benefits:

COE observed CSL abundance and salmon kills at Bonneville dam. See Van der Leeuw B.K. and K.S. Tidwell. 2022. Evaluation of Pinniped Predation on Adult Salmonids and Other Fish In The Bonneville Dam Tailrace, 2021. U.S. Army Corps of Engineers, Portland District, Fisheries Field Unit. Cascade Locks,OR. 42 pp.

Implementing Entities:

ODFW, WDFW, IDFG, Tribes.

Time Needed to Implement:

The *status-quo* 120(f) component is already implemented. Additional research and innovation actions can be implemented before the expiry of the 2025 120(f) permit and continue upon extension.

Time Needed to Benefit Fish Populations:

The 120(f) *status-quo* is on-going, and immediately benefits each run of adult chinook and steelhead upon removal of CSLs and SSLs. Additional trapping and darting capacity and innovation will benefit salmon and steelhead runs immediately upon implementation.

Estimated Cost:

$3.2M total operational budget per year, plus $800K one-time equipment cost for mainstem removals, plus $500K one-time budget for tributary removals traps and barges. The *status-quo* removal budget for the 120(f) program is approximately $2M per year for ODFW, WDFW, IDFG, and CRITFC operational costs. Tributary removals will add an additional $500K per year. It is recommended that this budget be extended through 2035. Additional annual budgets are: 1. Research and development to increase capacity to remove and process animals - $250K, 2. Effectiveness monitoring of pinniped abundance and kill rates (USACE) - $100K and adaptive management research and analysis - $250K, and 3. Research and development for the use of darts - $100K.

Uncertainties:

Biological uncertainties exist regarding sea lion abundance trends and upstream migration rates, as well as the resulting predation mortality rates. Uncertainties also exist in capture and removal effectiveness rates.

Regulatory processes or policies:

Marine Mammal Protection Act section 120(f).

Potential challenges:

Trapping and euthanizing animals has many logistical problems and sea lions periodically change their haul out behavior which necessitates changes in trapping methods. Darting and retrieving animals may provide new challenges for managers to consider. Legal authorization only allows remove with trap or dart capture followed by chemical euthanasia.

Adaptive Management

Continued monitoring and/or abundance estimation of predator and prey abundances, and of prey kills will provide evidence of the effectiveness of the program.

Original Recommendation below:

Recommendation: Enhance and Modify the Marine Mammal Protection Act Section 120 Pinniped Removal Program

Problem Statement:

The following recommendation addresses pinniped predation on adult returning salmon and steelhead.

Steller sea lions (SSL) and California sea lions (CSL) residing at Bonneville Dam and Willamette Falls can consume between 2 and 6 adult salmon per day depending on salmon aggregation densities at the ladders, which means approximately 2,000 adult migrating chinook salmon consumed for every 10 sea lions present at each project (assuming 4 salmon per sea lion per day for a 50-day period). This translates to 2% mortality on spring run chinook salmon (assuming a run size of 100,000) for every 10 sea lions present. Mortality estimates vary depending on run size, sea lion abundances, and sea lion residency times. Direct observations at Bonneville Dam have been documented since 2002, accounting for animals in the immediate vicinity of Bonneville Dam. Salmonid mortalities have ranged across the stocks from 2-6% at Bonneville in that period within the area observable at Bonneville dam, but the total impact is greater because predation is not limited to the observed area. Sea lion predation studies documented losses of Spring chinook salmon between 22% and 50% of the run in the Astoria to Bonneville reach.

The Oregon Department of Fish and Wildlife (ODFW), Washington Department of Fish and Wildlife (WDFW), Idaho Department of Fish and Game (IDFG), and the Columbia River Inter-Tribal Fish Commission (CRITFC) jointly manage and implement lethal removal of SSLs and CSLs under the Marine Mammal Protection Act Section 120 Pinniped Removal Program. Section 120(f) of the program authorizes removal of sea lions from river mile 112 to river mile 292 of the Columbia River, and its tributaries to the mouth. Sea lion removals under the program have resulted in approximately 30-60%

reductions of the animals present. The 120(f) permit is authorized through August 2025 and funded through June 2024. The current program has reduced pinniped predation mortality on salmon and steelhead. Stable long-term funding is essential to maintain the reduction in predation. Additional improvements and innovations may increase the effectiveness of the program.

Summary of Action:

Recommended enhancements and modifications to the existing Marine Mammal Protection Act Section 120 Pinniped Removal Program would include:

a. Maximize the use of existing authority.
b. Extend authorization and fully fund the *status-quo* 120(f) permit scope with inflationary costs through 2035 to provide stability to the program's effectiveness.
c. Additionally provide one-time funding for new sea lion removal equipment and to replace outdated equipment.
d. Provide additional funding to increase the capacity to remove sea lions and process animals, including a program to maintain an on-call veterinarian roster for euthanasia processing, and a program to train more state and/or tribal biologists and technicians for seasonal work.
e. Additionally extend and fully fund pinniped abundance estimation and kill rate monitoring programs, e.g., USACE Bonneville monitoring.
f. Additionally pursue research and development into lethal tributary removals and the use of lethal darts.
g. Develop a comprehensive monitoring program to gauge effectiveness.

Existing or New Program:

Existing program.

Benefit Provided by Action:

A removal of 10 sea lions per year can translate to between 1,200 and 5,100 additional adult salmon passing Bonneville Dam and Willamette Falls (based on a 60 to 90 consumption window and a range of 2 to 6 salmon per day).

Stocks Benefited by the Action:

Spring chinook and winter steelhead migrating past Willamette Falls and Bonneville Dam will benefit from the removal of CSLs and SSLs.

Data Supporting Benefits:

COE observed CSL abundance and salmon kills at Bonneville dam. See Van der Leeuw B.K. and K.S. Tidwell. 2022. Evaluation of Pinniped Predation on Adult Salmonids and Other Fish In The Bonneville Dam Tailrace, 2021. U.S. Army Corps of Engineers, Portland District, Fisheries Field Unit. Cascade Locks, OR. 42 pp.

Implementing Entities:

ODFW, WDFW, IDFG, Tribes.

Time Needed to Implement:

The *status-quo* 120(f) component is already implemented. Additional research and innovation actions can be implemented before the expiry of the 2025 120(f) permit and continue upon extension.

Time Needed to Benefit Fish Populations:

The 120(f) status-quo is on-going, and immediately benefits each run of adult chinook and steelhead upon removal of CSLs and SSLs. Additional trapping and darting capacity and innovation will benefit salmon and steelhead runs immediately upon implementation.

Estimated Cost:

$3.25M total operational budget per year, plus a $800K one-time equipment cost. The status-quo removal budget for the 120(f) program is approximately $2M per year for ODFW, WDFW, IDFG, and CRITFC operational costs. It is recommended that this budget be extended through 2035. Additional annual budgets are:

1. Research and development to increase capacity to remove and process animals - $250K
2. Effectiveness monitoring of pinniped abundance and kill rates (USACE) - $500K
3. Adaptive management research and analysis - $250K
4. Research and development in the use of darts and lethal removal from tributaries - $250K

Uncertainties:

Biological uncertainties exist regarding sea lion abundance trends and upstream migration rates, as well as the resulting predation mortality rates. Uncertainties also exist in capture and removal effectiveness rates.

Associated Regulatory Processes or Policies:

Marine Mammal Protection Act section 120(f).

Potential Challenges:

Trapping and euthanizing animals has many logistical problems and sea lions periodically change their haul out behavior which necessitates changes in trapping methods. Darting and retrieving animals may provide new challenges for managers to consider. Legal authorization only allows remove with trap or dart capture followed by chemical euthanasia.

Adaptive Management:

Continued monitoring and/or abundance estimation of predator and prey abundances, and of prey kills will provide evidence of the effectiveness of the program.

Stock Benefits Report Card:

Predation: Recommendation to enhance and modify the Marine Mammal Protection Act Section 120 Pinniped Removal Program

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

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Stocks most benefited
Stocks receiving secondary benefit