

COLUMBIA BASIN RESTORATION INITIATIVE

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MID-COLUMBIA STEELHEAD RECOVERY ACTIONS

NEAR-TERM PRIORITIES FOR 2024-25

A summary of the Six Sovereigns' near-term 2024-2025 priority centerpiece projects within the USG commitments to help recover Endangered Species Act-listed middle Columbia River summer steelhead.

This list of priority projects represents a small but essential subset of the actions necessary to recover the entirety of the listed salmon and steelhead populations in the Columbia River.

The following projects (and associated funds) are all in addition to existing programs and are implementable within the next two years. These projects directly address fish habitat complexity, fish passage, instream flows, cold water refuge habitat, and predation. They are well-vetted projects that have broad support, they just need resources to be implemented.

Project Summary Table

(Unless otherwise indicated projects and costs are for two years)

Project	Estimated Cost
Lower Deschutes Tributary Habitat Enhancement Project ¹	\$2.5M
Warm Springs Reservation Watershed Enhancement Project ²	\$5M
Upper Deschutes Basin Aquatic Habitat Enhancement Project ³	\$6.65M
John Day Flow Enhancement and Beaver-Modified Landscapes Restoration ⁴	\$1.25M
John Day Basin Land Acquisition and Easement Project ⁵	\$3M
McKay Creek Fish Passage Restoration and Monitoring Project ⁶	\$15.15M
UmaBirch Habitat Restoration and Conservation Easement Project ⁷	\$6M
Walla Walla River USACE Nursery Reach Ecosystem Restoration General Investigation Study	\$1.5M
Mill Creek Gose Street Fishway Passage Project ⁸	\$3M
Yakima Delta Temperature and Flow – Including Bateman Island Causeway Removal	\$7M
Toppenish Creek Fan - Including Pom Pom Toppenish Floodplain Restoration ⁹	\$6M
Yakima Basin BOR Irrigation Infrastructure Improvements	\$7.7M
Fund, Execute, and Expand Pinniped Predation Actions in the Columbia Basin	\$8M
Expand current avian predation suppression actions in the Columbia Basin	\$10M
Basin-wide CRS related Piscine Predation Reduction Actions	\$12M

¹ Total cost for project implementation and O&M after 2 years, TBD.

² Total cost for project implementation over five years is \$10 Million.

³ Implementation costs for the first two years, with an additional \$12.25 Million the next five years.

⁴Total cost of John Day flow enhancement and beaver-modified landscapes restoration will be a minimum of \$3 Million over the next 5 years.

⁵Total cost for implementation over five years is \$15 Million.

⁶Total cost of McKay Creek fish passage restoration and reintroduction will be closer to \$25 Million over ten years to ensure success, but the initial lift can be completed in two-years with \$15.15 Million.

⁷ Total cost for completion over five years is \$16 Million.

⁸ Total cost for completion is \$10 Million.

⁹ Total cost for completion is \$12 Million.



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DESCHUTES & CROOKED RIVER STEELHEAD POPULATIONS

Lower Deschutes Tributary Habitat Enhancement Project

\$2.5 Million

This project will 1) restore instream flows in Trout Creek and 2) address the Jones Canyon Ford Crossing in the Lower Deschutes. The Trout Creek sub-basin is approximately 692 square miles and includes three major spawning areas for the Deschutes Eastside summer steelhead population (NMFS 2009, ODFW 2010). Habitat restoration efforts over the last twenty years in Trout Creek have improved riparian and in-channel habitat conditions, however low instream flows during the summer season remain a primary limiting factor for steelhead rearing, migration, and survival. Trout Creek flow restoration will establish a water transactions program to coordinate with landowners on instream leasing agreements to improve early and late summer season flows for steelhead rearing, migration, and survival. Flow improvements would improve ecological benefits from past habitat restoration efforts and also support future habitat restoration actions in the watershed. In 2012, the Bureau of Land Management paved the access road and gravel ford crossing at Jones Canyon, a tributary to the Lower Deschutes Wild and Scenic River and a designated spawning area for summer steelhead per the Middle Columbia Steelhead Recovery Plan (NMFS 2009, ODFW 2010). The paved ford is a fish passage barrier, and the crossing allows vehicles to drive through the mouth of Jones Canyon, creating additional mortality impacts to steelhead. Project activities will include developing technical designs for ford removal, re-channelization, and instream habitat restoration and project implementation to provide unimpeded summer steelhead passage and instream fish habitat improvements.



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Warm Springs Reservation Watershed Enhancement Project

\$5 Million

*first two years with a \$10 Million total
cost over the next five years*

This project will protect and stabilize watersheds on the Warm Springs Reservation, including the Warm Springs River, Shitike Creek and their tributaries, through integrated restoration actions including: removal of problem roads to address sediment and water quality issues and/or disturbance to floodplain-riparian function, improving fish passage through culvert and barrier removal or remediation, improving aquatic habitat through instream and/or floodplain wood placement, and maintaining and enhancing wet meadow habitats. These activities align with highest priority actions and summer steelhead restoration areas identified in the Middle Columbia Steelhead Recovery Plan (NMFS 2009), Oregon's Conservation and Recovery Plan for Middle Columbia River Steelhead (ODFW 2010, 2012, 2019), and the National Marine Fisheries Service' 2022 5-Year Review Summary and Evaluation of Middle Columbia River Steelhead (NMFS 2022).

Upper Deschutes Basin Aquatic Habitat Enhancement Project

\$6.65 Million

*for first two years and an additional
\$12.25 Million over the five years*

This project will improve instream flows, aquatic habitat, and fish passage in Whychus Creek, Lower Crooked River, McKay Creek, and Ochoco Creek. The project includes the following elements to address limiting factors to steelhead survival in the Upper Deschutes and Crooked River population areas: creating an incentivized leasing program to improve instream flows for steelhead rearing, migration, and survival in Whychus Creek; conducting barrier and screening inventories in the Upper Deschutes-Crooked River to support project prioritization, and implementation with partners; implementing riparian vegetation, nutrient reduction, and on-farm efficiency strategies to protect and restore riparian community, and water quantity and quality habitat conditions for steelhead in the Lower Crooked River below Bowman Dam; implementing Ochoco Preserve Phase 3 and Whychus Canyon Reach Phase 1; coordinating and supporting basin partners to design and implement strategic restoration actions that complement the McKay Creek Water Rights Switch and improve instream habitat connectivity and quality for steelhead and native fish; and implementing habitat restoration actions (riparian planting, in-channel and floodplain restoration, fish screening, culvert replacements), and exploring developing a fish passage design for Ochoco Dam.



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JOHN DAY RIVER STEELHEAD MAJOR POPULATION GROUP

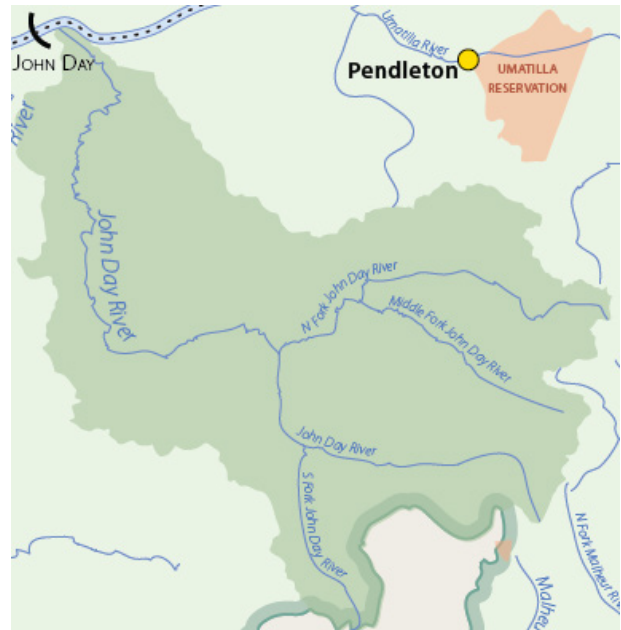
John Day Flow Enhancement and Beaver-Modified Landscapes Restoration Project

\$1.25 Million

for first two years with a \$3 Million total cost over the next five years

This project will 1) restore instream flows in the John Day River and its tributaries by establishing the John Day Flow Restoration Program and 2) advance beaver-modified landscape restoration in the Cottonwood/Fox Creek Beaver Emphasis Area to address the primary limiting factors of low instream flows, high instream water temperatures, and reduced habitat connectivity for summer steelhead (NMFS 2009, 2022; ODFW 2010, 2012, 2019; CTWSRO 2014; JDBP 2021). For the John Day Flow Restoration Program, project activities include funding a full-time project manager to coordinate landowner outreach, and develop and maintain water transaction and leasing agreements. This program addresses a key technical capacity limitation in the basin that ODFW and the John Day Basin Partnership have identified as a priority for restoring early and late season summer flows for summer steelhead rearing, migration, and survival. The middle mainstem and upper mainstem John Day and its tributaries are proposed focal areas for flow restoration program.

The Cottonwood/Fox Creek watershed (North Fork John Day River) is a high priority watershed for summer steelhead recovery (NMFS 2009, ODFW 2010, 2012, 2019) and a designated Beaver Emphasis Area for Oregon's 3-Year Beaver-Modified Landscapes Action Plan (ODFW 2023). Landscape-scale activities in the beaver emphasis area will include coordination with partners to conduct landowner outreach, beaver activity surveys, in-channel and



floodplain restoration through the use of low-tech process-based restoration methods (beaver dam analogs, post-assisted log structures, small wood structures), riparian vegetation community protection and restoration (riparian fencing, vegetation management, and grazing management practices), and protection and restoration of wet meadows. Restoring floodplain-riparian and beaver-modified habitats will address legacy habitat limiting factors to improve water quality, quantity, and rearing, migration, and spawning habitat connectivity and complexity for steelhead in the Cottonwood/Fox Creek Watershed.



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John Day Basin Land Acquisition and Easement Project

\$3 Million

for the first two years with a \$15 Million total cost over the next five years

This project will protect and conserve high priority habitat areas, through land acquisition and conservation easements, e.g., Phipps Meadow, within the John Day River and its tributaries that support ESA-listed summer steelhead and spring Chinook,

a Tribal culturally significant and Oregon state sensitive species. Protecting and conserving fish habitat is a highest priority action in the John Day Watershed Restoration Strategy (CTWSRO 2014), Middle Columbia Steelhead Recovery Plan (NMFS 2009), and John Day Basin Partnership Aquatic Habitat Strategic Action Plan (JDBP 2015, 2019). Project activities will involve developing, coordinating, and managing land acquisitions and conservation easements, developing associated management plans, and conducting annual stewardship management activities including restoration and monitoring.

UMATILLA RIVER STEELHEAD POPULATION

McKay Creek Fish Passage Restoration and Monitoring Project

\$15.15 Million

with an additional \$9 Million over the remainder of the decade to complete the effort

McKay Creek is a relatively large tributary by area (191 square miles) of the Umatilla River and includes approximately 25% of the suitable Mid-C steelhead spawning and rearing habitat in the sub-basin. McKay Dam completely blocks fish passage at river mile six. The dam is 165 feet high with 65,500 acre-feet of managed storage capacity and was constructed during 1923-1927 to furnish water to the Stanfield and Westland Irrigation Districts. The Middle Columbia Steelhead Recovery Plan (NMFS 2009), Oregon's Middle Columbia Steelhead Conservation and Recovery Plan (ODFW 2010, 2019), and the National Marine Fisheries Service' 2022 5-Year Review Summary and Evaluation of Middle Columbia River Steelhead (NMFS 2022),



identifies impaired fish passage to upstream habitat at McKay Dam as a key habitat concern and limiting factor for the Umatilla River steelhead population. McKay Dam is also listed as a high priority (Tier 1) on Oregon's Statewide Fish Passage Barrier Priority List (ODFW 2019). Currently the Umatilla River steelhead population does not meet criteria for recovery. Restoring passage at McKay Dam will reconnect the population with an additional 80-plus miles of spawning and rearing habitat that would result in increased spatial distribution and likely contribute to the overall abundance of Umatilla River steelhead, both of which are criteria that need to be met for the population to achieve



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low extinction risk (viable) status and contribute to Middle Columbia steelhead ESA- delisting goals. Additionally, eight PIT tag arrays will be installed to evaluate reach specific survival and use of restoration areas with the Umatilla River Basin.

UmaBirch Habitat Restoration and Conservation Easement Project

\$6 Million

for first two years with an additional \$10 Million to complete the project

This project will restore full floodplain connection to the confluence of the Umatilla River and Birch Creek Watershed. Birch Creek is one of the main producers of ESA-Listed Mid-C steelhead and is a high priority watershed for steelhead recovery in the Umatilla Basin (NMFS 2009, ODFW 2010, CTUIR 2017). Additional goals include restoring instream habitat for ESA-listed and non-listed fish, which benefit channel morphology and instream processes, and protect existing infrastructure at the Birch Creek confluence which includes Birch Creek

from RM 0.0 to RM 0.7 and RM 1.8 to RM 2.7, the Umatilla River from RM 47.8 to RM 49.9, the entire Birch Creek alluvial fan, and the associated floodplain areas on both sides of Birch Creek and the Umatilla River. The Conservation Easement is about 4 miles, 985 acres, and 9.5 cfs of water. Project milestones would include: complex floodplain connectivity project of 3.8 river miles and 313.9 acres of riparian wetland habitat; transferring Water Rights and development of groundwater wells to support farm and building envelopes; decommissioning a 42.6 acre feed lot; transforming manure effluent ponds into new wetlands decommissioning a USACE - certified levee; and Installation of large wood instream for river complexity and fish habitat. Project activities are consistent with priorities and recommendations in the Umatilla River Vision (CTUIR 2008), Birch Creek Assessment and Action Plan (CTUIR 2017), the Middle Columbia Steelhead Recovery Plan (NMFS 2009), Oregon's Middle Columbia Steelhead Conservation and Recovery Plan (ODFW 2010, 2012, 2019), and the National Marine Fisheries Service' 2022 5-Year Review Summary and Evaluation of Middle Columbia River Steelhead (NMFS 2022).

WALLA WALLA RIVER STEELHEAD POPULATION

Walla Walla River USACE Nursery Reach Ecosystem Restoration General Investigation Study Initial Funding Authority Cost Share

\$1.5 Million

Future implementation funds TBD

The project will complete passage design and implementation of the proposed Nursery Bridge sill



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notching and channel design to orient low flow to the east bank for reliable activation of the Eastside Fishway. The design will consolidate the WWR Irrigation District Eastside irrigation diversion with the Little WWR Diversion removing in-stream infrastructure, eliminating a seasonal fish passage barrier and in-water channel manipulations, and may allow the US Army Corps of Engineers to obtain authority and funding to complete an ecosystem restoration feasibility study under Section 216 of the Flood Control Act of 1970. Future work may use the feasibility study conclusions to develop designs that address impaired floodplain-riverine processes within the project reach, and ultimately increase the right-of-way of the floodway where feasible Congressional Authority for GI Study and Funding.

Mill Creek Gose Street Fishway Passage Project

\$3 Million

*for first two years and an additional \$7
Million to complete the project*

The Corps constructed a flood control project in seven miles of lower Mill Creek near Walla Walla in 1939-1943. The work included stream channelization with revetted levees, 250 cross-channel small dams to set channel grade, and a concrete channel and revetment wall through downtown Walla Walla. The crossing of Mill Creek by Gose Street marks the end of the Mill Creek Flood Control Zone District (MCFCZD) channel and the transition from a highly engineered grade-controlled and leveed channel to a natural channel. The MCFCZD is an US Army Corps of Engineers (USACE)-authorized flood channel and is flow-regulated by the USACE owned and operated Mill Creek Project. In 2008, the Walla Walla County Conservation District, in partnership with the CTUIR, constructed two concrete fishways and two concrete channel spanning weirs at the site to improve fish passage at the transition between the natural channel and the MCFCZD channel. This ladder operated well

until the winter of 2020. In February 2020, flows up to an estimated 4,700 cubic feet per second (cfs) were released by the USACE through a diversions dam in response to a large flood event in the Mill Creek watershed. Operational procedures for the USACE Mill Creek Project dictate that regulated flows downstream of the diversion dam should not exceed 3,500 cfs, as it exceeds the designed capacity of the MCFCZD channel. As a result of the greater-than-allowable regulated flow in Mill Creek over an extended period of time, the natural channel downstream of the MCFCZD channel incised by 4-5 feet, creating a jump barrier for migrating fish downstream of the 2008 fishway. A temporary fix was completed by the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) and the Washington Department of Fish and Wildlife (fishery co-managers). Partners are currently working on a feasibility study and development of design led by non-profit Tri-State Steelheaders. Remaining needs include: complete designs to ensure volitional fish passage and reduced risk of channel incision at the Gose Street channel transition, obtain regulatory clearance and funding to rectify fish passage, and construction of fish passage enhancement.



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YAKIMA RIVER STEELHEAD MAJOR POPULATION GROUP

Yakima Delta

Temperature and Flow

Including Bateman Island Causeway Removal

\$7 Million

The Yakama Nation (YN), Mid-Columbia Fisheries Enhancement Group (MCF), and Washington Fish and Wildlife (WDFW) have been working to remove the Bateman Island Causeway since before 2015. Bateman Island Causeway removal is modeled to reduce the duration of the June- October thermal barrier in the Yakima River delta by 12%, with the cooler temperatures during smolt outmigration expected to reduce piscivorous fish metabolism resulting in a 38% reduction in predation. The first alternatives analysis looking at different potential solutions to the poor water quality conditions in the delta was completed in 2016 using leveraged Yakima Basin Integrated Plan (YBIP) funding. Currently the project is stuck in the public review stage, pending results from sediment sampling that will be performed imminently to characterize contaminants in the delta and downstream Columbia River sediments. It is expected that public review will be completed with the final feasibility report issued sometime this spring. After the issuance of the final feasibility report, there will be a significant and indeterminate lag between the completed first phase of the 1135 project and the final design and implementation phase as the USACE must work through its internal process to determine which 1135 projects to approve and fund.

It is currently expected that YN will replace WDFW as the project sponsor for this second phase. The second phase may not initiate until early 2025 with USACE indicating that an optimistic schedule suggests construction not occurring until the winter of 2026-2027. Total project costs are estimated to be \$12.8 million, which includes a 30% contingency.



If the YN becomes the project sponsor, the YN will be responsible for a 25% cost share up to the federal limit of \$10 million for the CAP program, minus a \$665k cost share waiver for tribes. The current estimate for YN's share of costs is around \$2.8 million and our 2022 NOAA grant has \$2.73 million budgeted for the project. NOAA and USACE have both agreed that the NOAA grant funding dollars when applied to the 1135 project is considered as non-federal cost share dollars.

Though funding is not currently needed according to current cost estimates, it is important to note that previous USACE cost estimates did increase substantially between their 2022 estimate and their 2023 estimate in the draft feasibility report. The NOAA grant budget assumed 9% yearly inflation and was able to accommodate this escalation; however further cost escalations will require that the YN identify additional funding for the project. Such further cost escalations are deemed likely. To expediate the currently protracted USACE 1135 CAP process, \$7 million dollars is requested to ensure the project continues to move forward expeditiously despite the occurrence of any substantial cost escalations that may occur in the future. High level



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federal support is also requested to ensure timely USACE review and approval of the upcoming final feasibility report to quickly move the project into the final design and implementation phase.

Toppenish Creek Fan

Including Pom Pom

Toppenish Floodplain Restoration

\$6 Million

for the first two years and an additional \$6 Million for project completion

YN Fisheries has been working on this vital cultural and natural area for the last 20 years and we are close to restoring the major reaches that need it. Restoring habitat and full passage in the Fan is critical to recovering ESA threatened steelhead and bringing back robust Pacific lamprey populations. There are 3 sub-projects in play: Pom Pom Rd will be ready for construction in 2024 and 2025 and requires \$4 million. 3-way levee phase 2 will be ready for construction in 2025 (conservatively, could possibly be 2024), and requires \$3 million. Olney Diversion floodplain will be ready for construction in 2027 and requires \$3 million. The total package would restore 5 miles of critical steelhead habitat plus lamprey habitat on Toppenish Creek within the Reservation, be completed in 2027, and would cost \$10 million. This could be scaled as well, for example Pom Pom and 3-way levee would be done in 2025 and require \$7 million. The project already has initial funding from NRCS, USBR, BPA, BIA, WA Dept of Ecology, and US Fish and Wildlife Service. Yakama Nation needs \$5 million by February of 2024, \$4 million by October of 2024, and another \$3 million in 2025 to complete these projects on schedule.

BOR Irrigation Infrastructure Improvements

Including Prosser Dam, Chandler

Diversion, and Chandler Power Plant

\$7.7 Million

Prosser Dam

The Yakama Nation initiated work on a feasibility study of potential improvements to boost smolt survival through Prosser Dam and the Chandler Diversion after work by the USGS indicated that significant mortality was occurring at the site. The YN feasibility study was initiated in winter of 2022 using internal funding sources. Since that time, additional work performed by the YN and USGS have identified canal entrainment as being the primary risk factor for smolt mortality at the site. Preliminary findings indicate that 88% of yearling Chinook remaining in the Yakima River survived from above the Prosser Diversion to the Chandler Power Plant 11 miles downstream, while the survival probability of entrained and bypassed yearlings was only 57% over the same distance. For sub yearlings the percentages were 69% and 54%, and Steelhead survivals were 93% and 82%. While entrained and bypassed fish suffered the most mortality, mortality of smolts remaining in-river, especially the later-migrating sub yearling Chinook, was also significant. Sensor fish passed through the diversion head gates and fish bypass system produced results that suggest that violent hydraulics may be responsible for much of the mortality of entrained smolts. The feasibility analysis of the site is ongoing, with funding currently provided by both USBOR and YN at this time. An aquatic ecosystem restoration projects (AERP) waterSMART grant was submitted this summer to progress portions of the project (depending on which alternative is ultimately selected) to 60% design for \$2.7 million over 3 years.

The YN will be submitting a NOAA fish passage grant that will include similar tasks as the AERP grant for Prosser this fall with a similar amount of funding allocated to Prosser. However, the NOAA



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grant is a bundled list of projects covering all four lower river low-head dams (including Prosser) and two upper basin projects (Olney and Middle Creek), with a total expected budget of around \$18.5 million. Total construction costs for improving Posser Dam and associated facilities may ultimately reach \$170 million on the high end depending on the alternatives selected. Though the total cost of the project may be substantial, the project does have modular components that may have total costs of around \$10 million. Such projects may include constructing a roughened channel at the dam, and altering the downstream stream channel hydraulics to deter predation. Work on the development of potential alternatives for Prosser is progressing rapidly and more information will likely be available this winter.

Chandler Power Plant

While the Chandler Power Plant is already subordinated to some extent, and is turned off when the river is put on storage control, further subordination during the smolt outmigration would increase smolt survival. Currently up to 1,300 cfs goes towards the power generation at the plant, dewatering

a 13-mile reach of the river. If flows in that bypass reach during smolt outmigration are steady at 1000 cfs and are further increased to 2000 cfs, preliminary research suggests that this action could result in a 7 percentage points (Steelhead) to 70 percentage points (subyearling Chinook) increase in smolt survival. While it may be preemptive to advocate for this action prior to finishing an alternatives analysis of possible improvements at Prosser, USBOR's resistance to engaging with the YN and our consultants about the power plant makes it difficult to properly evaluate changes to the facility.

\$7.7 million is requested to augment the funding that the YN has already and is likely to secure for the Prosser Dam and Chandler Diversion improvement project to help implement actions that boost smolt survival as quickly as possible. Given the complexity of the water, energy nexus at this facility, and federal ownership of the dam and powerplant, high level federal support for this project would be beneficial in ensuring the project moves forward at a speed that is commensurate to its impacts on Yakima River anadromous fish populations.

PREDATION ACTIONS

The Federal Columbia River System (CRS) has created and maintains a highly anthropogenically altered mainstem riverine environment that greatly exacerbates predation related mortality, be it pinniped, avian, or piscine sourced, and as such the USG recognizes that it has a disproportionate mitigative responsibility in this arena as it attempts to compensate for past and ongoing decades of impacts from the CRS. As such it commits to fund and implement, while maintaining its mitigative burden from the CRS, a three-tiered predation impact reduction effort basin-wide to complement the above restoration/conservation actions in the mid-Columbia.



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Fully fund and execute the existing Marine Mammal Protection Act Section 120 Pinniped Removal Program; expand current suppression actions in the Columbia Basin

\$8 Million

To optimize the benefits that in-river removals of pinnipeds provide to listed populations of interior basin salmon and steelhead, including mid-Columbia populations of summer steelhead, the ability to trap and remove California and Steller sea lions in the lower Columbia River and Willamette River within the scope of existing management authority must be maximized. To do this we need to: extend the existing authorization and fully fund the 120(f) permit with inflationary costs through 2025 (and ultimately through 2036 to provide stability and long-term program effectiveness); purchase additional removal equipment in addition to replacing outdated equipment; increase program capacity (both population monitoring and control aspects – including observers as well as on call veterinarians and technicians); initiate non-lethal deterrence actions and assessment of ways to reduce non-natural haul-out areas; and implement a robust adaptive management program that explores novel removal methods and locations and gauges the effectiveness of actions taken.

Expand current avian predation suppression actions in the Columbia Basin

\$10 Million

Avian predation on out-migrating salmon smolts has been identified as a limiting factor for some ESA listing salmon and steelhead populations. These predation and monitoring actions detailed below are targeted at reducing these impacts support the goals of existing and new federal avian predation environmental impact statements. If fully funded and developed, would support full implementation of current avian predation actions as well as additional Columbia Basin avian predation areas of concern including the potential removal of California/Ring-billed gulls, Double Crested Cormorants, Caspian Terns, and American White Pelicans birds breeding colonies and/or using falconry or other hazing techniques to deter birds at tailraces of hydroelectric projects. It would also support the development of systematic, Columbia basin-wide strategies for managing avian predation impacts that minimize unacceptable predation impacts to juvenile and adult salmonids while supporting regional goals for sustainable native bird populations and distribution. Finally, there is a need to develop a comprehensive monitoring program to gauge effectiveness of the actions taken and use adaptive management to address any unintended counter-productive outcomes.

It is important to remember that the impoundments created by the federal hydrosystem have created multiple locations where colony nesting birds can now flourish. The predation rates on ESA listed and treaty fish have been well documented for several decades. Of equal importance, these colonies continue to desecrate important cultural areas vitally important to Columbia River tribes. These issues can be addressed with actions to move these colonies. We look to the USG to address these issues via funding sufficient to allow actions that remove and limit colony nesting birds within the Mid-Columbia River.



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Basin-Wide CRS related Non-Native and Native Piscine Predation Reduction Actions

\$12 Million

The interior Columbia Basin remains a highly altered system, current piscine reduction actions must be maintained and expanded on given the current and foreseeable configuration of the CRS. Toward that end the existing piscine predation suppression action, the Northern Pikeminnow Sport Reward and Management Program must continue to be fully funded and consideration should be given to adding other piscine predators to this program. Additionally, a basin-wide modular, scalable comprehensive Piscine Predator Monitoring and Evaluation Program (PPMEP) study to generate unbiased estimates of predator abundance and the consumption rates of juvenile salmonids must be designed.

These metrics can then be used to inform adaptive management of piscine predation in the lower and mid-Columbia River Basin (PPMEP Study Design). The design of this study will be coordinated closely with managers to ensure that the data being collected will be directly applicable to management decisions and actions for both new and existing programs. Additionally, a comprehensive monitoring program to gauge effectiveness of the actions taken by managers and the use of adaptive management to address any unintended counterproductive outcomes must be part and parcel with implementation of the study. Finally, committed cooperation from federal agencies such as the USFWS is needed to effectively implement piscine predation actions and address predation issues in the Columbia River system.



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