

MAFAC CBP Task Force
SCEE Section for CBP Phase 2 Report
May 6, 2020

Section 7. Social, Cultural, Economic, and Ecological Considerations

7.1 Overview

Salmon and steelhead traverse a wide landscape during their migration to and from the ocean, weaving a common thread through a patchwork of human communities along their paths. Each of the communities they touch is unique and connected to each other by the river system. A river system that supports salmon, grows food, lights up homes and businesses, provides transportation, and sustains the souls of those drawn to the river and salmon for spiritual, cultural, and social reasons.

From the onset, the CBP Task Force sought to integrate the “people side” of the Columbia Basin into discussions about the future of salmon. Members came together from across the basin to share their stories and experiences. In Phase 1, the Task Force adopted a qualitative goal to “Make decisions within a broader context that reflects and considers effects to the full range of social, cultural, economic, and ecosystem values and diversity in the Columbia Basin.” The Task Force engaged several approaches to help articulate those considerations. For example, individual members described their communities and constituencies in presentations. Also, discussions were structured to allow for inquisitive explorations and greater understanding of the reasons behind people’s positions.

In Phase 2, The Task Force delved further into these social, cultural, economic, and ecological considerations. Through small group exercises and a half-day workshop led by SERA Architects (see appendix), Task Force members shared their experiences from where they live and work in the Basin. Task Force members heard inspiring stories about farmers in eastern Washington collaborating with Yakama tribal members and NGO’s to preserve water for migrating fish at critical times of the year. They heard about the difficulties in salmon-dependent communities and industries due to declines in abundance. And they listened to stories about the tragic repercussions of the loss of salmon to tribal culture, health and economies. Together, the stories highlight the complex mix of challenges and opportunities that we face moving forward.

These workshop conversations were not easy. Task Force members learned new insights and had to dispense with false impressions. The respectful exchange of viewpoints helped to create a sense of openness to change. Throughout difficult conversations, the collective interest in sustainable salmon and a healthy ecosystem into the future served as a bond to keep everyone at the table.

This section shares the stories of different CBP members. The stories, like the individuals, are all authentic. Heartfelt, the stories portray the complexity of the basin’s human landscape and the needs and values of its people. All of the stories, like the people, matter. They are provided here so we can learn about and from each other, and gain perspective on our collective needs. The stories capture the energy and commitment of individual CBP members to the salmon, rivers, and landscape, and their desire to work together to create a healthy ecosystem that supports different cultures and economies.

Like different pieces of a patchwork quilt, the stories bring us together and unify the basin towards a common vision. Our hope is that these stories will motivate others to learn from different viewpoints and work openly and passionately to achieve common goals.

The collection of perspectives from across the basin serves as a way to change the nature of the conversation about salmon and steelhead survival. In most contexts, the focus is on biological or engineered solutions to human-created problems. The question of how the problem came to exist in the first place, including the social, cultural, and economic values that contributed to and perpetuate the decline of salmon, is rarely discussed. By engaging in these broader conversations, we break down those barriers and allow people to think about a problem more holistically, thus providing a space for broader solutions. One obvious example emerges from the tribal perspective:

If people understood the relationship between native people and salmon, would they have done anything differently when constructing the Columbia River hydropower system? Or when conducting logging operations in riparian forests? Moving forward, is there an opportunity to do something different, now that we have expanded our value perspective?

The proposition of changing course is not as threatening when it is prefaced with an understanding that our current situation was created by a certain set of social, cultural, economic, and environmental values, and that those values may be combined in different ways to create better results for all. We stop thinking about a problem in terms of “winners” and “losers” and begin to explore different ways of sharing the benefits we all enjoy.

Ultimately, these perspectives do not represent an “end” in and of itself, but rather, the means to incorporate a more creative way to think about challenges ahead, with the hopes of moving toward an agreeable solution. Meeting the needs of our diverse landscape – while leaving future generations with resilient fish and wildlife populations, and a healthy ecosystem – will take ingenuity, innovation, and teamwork. This diversity, however, is also our strength. By listening to each other and recognizing our different interests, we can pinpoint common problems, identify sustainable solutions, and join forces to address them effectively.

Synthesis of Opportunities and Challenges

Over the course of Task Force meetings, members learned about each other’s place in the basin and came to better understand each other’s interests. These conversations helped members to discover interests they shared in common and served to articulate powerful learnings about both challenges and opportunities they faced. It is the hope of the Task Force members that more explicitly articulating these opportunities and challenges will support future discussions about how best to achieve the goals and to maximize outcomes while limiting the amount of harm. The synthesis below reflects perspectives from the individual stories that follow.

[Note from Katherine: there are only 2 examples below to demonstrate one way to capture the content for discussion purposes]

Ranching Interests, Challenges, and Opportunities

Ranching interests include good stewardship of the land that improves ecosystem processes and functions and support for working lands. Agriculture, restoration, and recreation can all coexist on the same landscape when approached holistically. Challenges moving forward include the need to build

trust through listening to landowners, and respecting their knowledge as the people who know the history of the place and live there. Restoration work needs to be accomplished in ways that allow farms and ranches to remain viable operations. Opportunities to overcome these challenges include efforts to reach out to ranching communities and share restoration success stories. Agencies, non-profits, and others can work one-on-one with ranchers to support projects to restore private lands, share resources and exchange knowledge to accomplish improvements on the landscape.

Irrigation Interests, Challenges, and Opportunities

The interests of irrigators and water storage providers include providing reliable water for agricultural producers while supporting additional uses of water such as fish and wildlife, power, and recreation. They believe that water supplies can be optimized to achieve multiple benefits, and create a system that is resilient and responsive to the effects of climate change. Challenges moving forward include competition for limited water supplies and potential impacts to irrigation from dam breaching. These potential impacts need to be further explored to see if there are ways to address them. Opportunities to overcome these challenges include further collaboration to generate innovative, long-term solutions that achieve the interests of many stakeholders. There are a number of examples of successful collaborative approaches that have found sustainable solutions to improve water management, such as in Yakima River basin, where the parties worked together to find innovative ways to conserve water for instream flows during critical periods.

7.2 Sportfishing Industry Perspective, by Liz Hamilton, Northwest Sportfishing Industry Association

The Northwest Sportfishing Industry Association (NSIA) is dedicated to the preservation, restoration, and enhancement of sport fisheries and the businesses dependent on them. Our organization itself consists of about 300, mostly small, businesses serving nearly 2.2 million customers in Oregon, Washington, and Idaho. In Oregon and Washington alone, nearly 400,000 customers have purchased a special permit to fish for salmon in the Columbia River annually. Not only do these millions of license holders fund conservation agencies, in addition the sportfishing industry pays an excise tax on manufactured goods and boat fuel. This federal excise tax, called the Sportfish Restoration Fund, was initially introduced by the industry and brings tens of millions back to the Pacific Northwest for the betterment of fish and fisheries.

As the largest salmon producing river in the lower 48 states, the Columbia is vital to the industry across an entire supply chain. Chinook, steelhead, sockeye, and coho returns fuel sport fisheries in the basin across an entire calendar year. And the first salmon of the year to enter the Columbia River, spring chinook, sets the table for the success of our industry for the entire year. Fishermen buy their license, the latest tackle, a new battery for their boat, maintenance for their boat, motor and trailer, and make a dozen other purchases that support local industries. The food chain of manufacturing, wholesale, and retail that feeds these industries can take several months or even years. For example, if a local lure manufacturer is looking to be as cost effective as possible, they may need to buy several years-worth of hooks, creating a distribution cycle that must start months or years in advance. If salmon fishing is curtailed, an overstocked inventory becomes difficult to move, impacting everyone from manufacturers to retailers and fishing guides.

The economic impacts of sportfishing are most directly felt in rural communities, acting as one of the few reliable transfers of wealth from urban to rural areas. The industry that produces around \$3 billion of economic development in the Pacific Northwest is mostly operated by small, often family-run, businesses. The largest local businesses employ between 100-150 workers. The unique waters of the Columbia Basin lead to innovation from skilled craftsman in the region, including aluminum boat builders and creators of geographic-specific fishing gear and the latest salmon lures.

Recent declines in salmon abundance have been extraordinarily difficult for sportfishing industries. Additionally, the ripple effect that filters through secondary businesses such as restaurants, hotels, and local tourism is often located in rural communities. The challenges the sportfishing industry face are not easily remedied. It is difficult for these industries to adapt to other fish species – as they don't excite anglers like salmon do. The trend has been for struggling salmon-related businesses to fold, or sell to larger corporations. To illustrate this point, consider the fate of Luhr-Jensen & Sons. It was once the largest salmon lure manufacturing company in the world, starting in a garage along the Columbia River in the 1930s and then growing to become the second-largest employer in Hood River County. Recent declines in salmon abundance impacted the business so consistently that when the founder/owner retired, he sold the company. Today it is owned by a large international company based in Finland – which has moved the production and jobs offshore.

Consider the local fishing guide, an important part of Oregon's tourism infrastructure, who needs to juggle two jobs to support his young family. This young man has over \$200,000 tied up in his boat, motor, trailer, truck and gear, and a loan payment to finance his equipment. Add onto that moorage,

business licenses, hotels, food, ice, and other necessary trip expenditures. His family's fate tied up in fisheries that are collapsing. When his trips are canceled, or failed to be booked in the first place, local communities lose income for hotels, restaurants, rain gear, and other purchases to local shops during his customers' stay. When a fishery closes suddenly, entire trips to the Pacific Northwest are canceled, creating second thoughts for these visitors to book a trip to fish our waters for salmon and steelhead.

Importantly, fishing is more than an industry. Fishing connects people in terms of family and friends while putting sustainable food on their tables. And fishing is about hope – hope that “I” will be the lucky one to catch the next salmon and be able to take it home for dinner. One of our constituents recently said, “Well it looks like this year will be as bad as last year, but last year we had some hope.” We’re looking at some bad fishing seasons, compounded with the lack of hope. And yet fishing is about hope.

There is also a personal connection to fish that cannot be understated for those who live and work on the river. It is more than an economic connection. It is also spiritual. I believe we have a moral obligation to avoid their extinction.

Opportunities and Challenges

The status quo is not acceptable. We are in crisis mode. The path forward should consider what alternatives are available or might be available in the future for those river-based industries that can adapt. Salmon do not have any alternatives but to live in the river. We can find ways to transport our goods, irrigate crops, and we can find ways to generate and conserve power, but fish can't do without water.

Constructive dialogue should continue to move away from the false choices that have dominated the discussions about Columbia River salmon recovery, such as either fish or reliable power and fish or efficient transportation. These will be important conversations as we look to dam removals and re-introductions to recover, protect, and restore salmon. What does it look like to restore fish above blocked areas and what kind of productivity can we get out of that? These conversations should include questions about alternatives. How can the irrigation sector modernize and conserve water so there's enough for fish also? What kind of system of transportation do we need for our farmers? Where do transportation investments help the entire region, not just agriculture? There are many examples of innovation in the energy sector, and ideas about how we can embrace conservation and renewables.

These types of questions and considerations will shape not just the future of salmon but the future economic development of the Columbia Basin. The businesses in the sportfishing industry have been put on hold for too long. We cannot start soon enough to create solutions to these important considerations and solving these challenges.

7.3 Southern Resident Killer Whales and Ecological Perspective, by Ben Enticknap, Oceana

Columbia Basin salmon and steelhead provide a rich, seasonal food source for aquatic and terrestrial wildlife. As such, they play an integral role in establishing a functional food web, linking together the land, river, and sea. Wildlife, including bald eagles, osprey, American black bear, river otter and orcas, have a very strong, possibly co-evolutionary relationship with salmon. The importance of salmon to over 130 species of fish and wildlife across the region cannot be overlooked or understated.¹ The loss of salmon and steelhead impacts many wildlife species and weakens the overall health and functioning of the region's terrestrial and aquatic ecosystems.

For Southern Resident killer whales (SRKWs), the close connection between salmon and dependent wildlife could not be clearer. Perhaps the single greatest change in food availability for SRKWs has been the decline of Chinook salmon in the Columbia River basin.² Rebuilding Chinook populations in the Columbia-Snake system is a critical need for the recovery of these whales. This distinct SRKW population has relied on Columbia Basin Chinook for thousands of years but the whales are now dangerously nearing extinction just as many Chinook populations are threatened with extinction.

In November 2005, NOAA's National Marine Fisheries Service issued a final rule listing SRKWs as endangered.³ Primary threats to the whales' recovery include reductions in the quantity or quality of prey (principally Chinook salmon), contaminants, and sound and disturbance from vessel traffic. As of January 2020, there are only 72 SRKWs in the population (Figure 1). The SRKW recovery goal of an annual average 2.3 percent growth rate over 28 years is not being met. In fact, population-level analyses find that the SRKWs will likely go extinct under current conditions and threats.⁴ To meet SRKW recovery goals and prey requirements, Chinook abundance must increase, including recovering Chinook from the Columbia Basin where there is significant restoration potential.

SRKW births and deaths have been closely linked with coast-wide Chinook abundance. Diet studies show that 99 percent of their diet is salmonids, with roughly 80 percent being the largest and fattiest of fish, the Chinook.⁵ It's been shown that with lower Chinook abundance, SRKW fecundity decreases and

¹ Cederholm, CJ, DH Johnson, RE Bilby, LG Dominguez, AM Garrett, WH Graeber, EL Greda, MD Kunze, BG Marcot, JF Palmisano, RW Plotnikoff, WG Pearcy, CA Simenstad, and PC Trotter. 2000. Pacific Salmon and Wildlife - Ecological Contexts, Relationships, and Implications for Management. Special Edition Technical Report, Prepared for DH Johnson and TA O'Neil, Wildlife-Habitat Relationships in Oregon and Washington. Washington Department of Fish and Wildlife, Olympia, Washington.

² National Marine Fisheries Service. 2008. Recovery Plan for Southern Resident Killer Whales (*Orcinus orca*). National Marine Fisheries Service, Northwest Region, Seattle, Washington. At: II-82.

³ 70 Fed. Reg. 69,903 (November 18, 2005).

⁴ Velez-Espino, L. A., J. K. B. Ford, H. A. Araujo, G. Ellis, C. K. Parken, and R. Sharma. 2014. Relative importance of Chinook salmon abundance on resident killer whale population growth and viability. *Aquatic Conservation: Marine and Freshwater Ecosystems*. 25(6): 756-780. Lacy, RC, R Williams, E Ashe, KC Balcomb, JN Brent, CW Clark and PC Paquet. 2017. Evaluating anthropogenic threats to endangered killer whales to inform effective recovery plans. *Scientific Reports*, 7, 14119.

⁵ Ford, MJ, J Hempelmann, MB Hanson, KL Ayres, RW Baird, CK Emmons, LK Parlk. 2016. Estimation of a Killer Whale (*Orcinus orca*) Population's Diet Using Sequencing Analysis of DNA from Feces. *PLoS ONE*, 11(1), 1-14.

<http://doi.org/10.5061/dryad.ds6gc>.

mortality increases.⁶ Other studies, however, suggest this relationship may be weakening, highlighting the challenges in quantifying the ecological relationships of the SRKW population.⁷ Never-the-less, recent low Chinook salmon returns have been perilous for the whales. There were no successful SRKW births from 2016 to 2018 and half of the ten SRKWs born in the 2014-15 “baby boom” later died. Some of the whales were visibly emaciated. In 2018, a 3-year-old SRKW, “Scarlet” or J50, died after she became so obviously thin that she lost the fat at the base of her head – what scientists call “peanut head.”

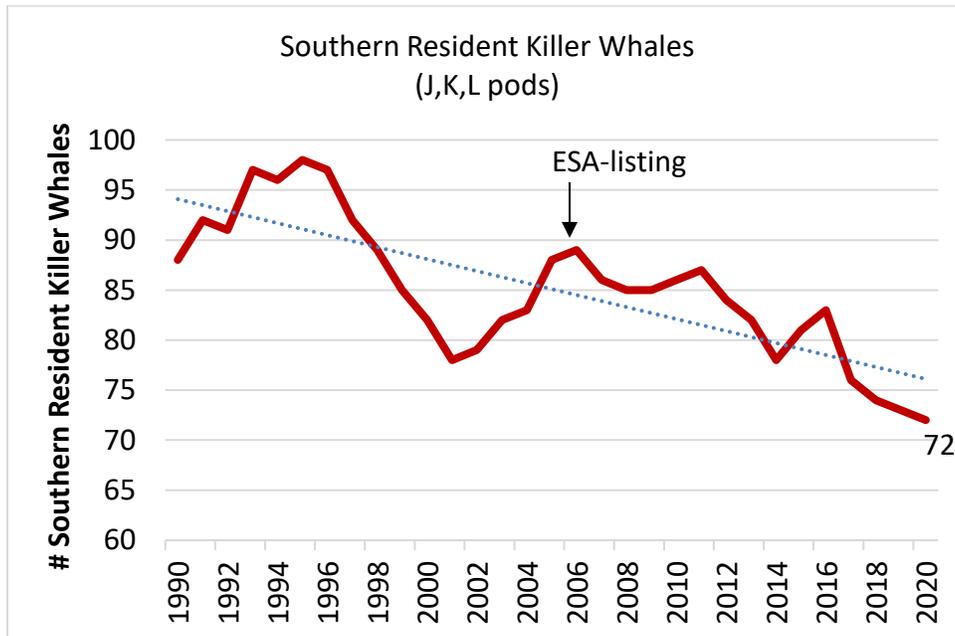


Figure 1. Number of Southern Resident killer whales, 1990 to January 2020. Center for Whale Research. The dotted line shows the downward trajectory for the future at the current rate of population decline.

Chinook from the Columbia Basin, including Lower Columbia spring, Snake River spring, Middle Columbia, and Upper Columbia summer/fall Chinook, are considered among the “priority” Chinook stocks for increasing abundance to help SRKW recovery.⁸ The science confirms that the whales feed on Columbia River basin Chinook, often in the late winter and early spring months when they are foraging near the mouth the Columbia River. Analysis of fish scales and SRKW fecal samples collected on the

⁶ Ward, EJ, EE Holmes, and KC Balcomb. 2009. Quantifying the Effects of Prey Abundance on Killer Whale Reproduction. Source Journal of Applied Ecology Journal of Applied Ecology, 46(46), 632–640.

<http://doi.org/10.1111/J.1365-2664.2009.01647>. Ford, JKB, GM Ellis, PF Olesiuk, and KC Balcomb. 2010. Linking killer whale survival and prey abundance: food limitation in the oceans’ apex predator? Biol. Lett. (2010) 6, 139-142 <http://doi.org/10.1098/rsbl.2009.0468>.

⁷ PFMC 2020. Pacific Fishery Management Council Salmon Fishery Management Plan Impacts to Southern Resident Killer Whales. Final Draft Risk Assessment (February 2020). Available: <https://www.pcouncil.org/documents/2020/02/e-3-a-srkw-workgroup-report-1-electronic-only.pdf/>.

⁸ NOAA Fisheries West Coast Region and Washington Department of Fish and Wildlife (NOAA and WDFW). 2018. Southern Resident Killer Whale Priority Chinook Stocks Report. Available: <https://www.fisheries.noaa.gov/webdam/download/103504571>.

outer coast indicate that Chinook are the primary species consumed on the outer coast and that over half the Chinook consumed by the whales are from the Columbia River basin.⁹

In the face of persistent threats to salmon and SRKW recovery, many people are calling for bold and urgent recovery actions, including making big changes in the Columbia River basin. Many see the Columbia River basin as critical to the region's SRKW recovery efforts. The focus on salmon recovery in the Columbia Basin is based on two converging sets of facts: First, as described above, the science on SRKW shows the link to salmon as part of their prey requirements, foraging ecology, and major threats to their continued survival. Second, the tremendous salmon restoration potential in the Basin.

Opportunities and Challenges

By implementing bold actions like restoring the lower Snake River and increasing spill, establishing passage above currently blocked areas, and providing salmon access to high-quality habitat in the upper reaches of the Columbia Basin, we can expect to see substantially more Chinook returning to the Basin on average than under current conditions (Figure 2). We expect many of these results could be seen quickly with tremendous benefits for SRKWs and people.

The extinction of SRKWs is an unfathomable proposition for people throughout the region, including scientists, conservationists, non-governmental organizations, whale watchers, and many others. But without the urgent implementation of bold actions to recover Columbia Basin salmon, quickly stopping the decline of endangered SRKWs, and beginning to achieve recovery goals, it is an all too likely scenario. The sense of urgency is only heightened by climate change which will result in further loss of salmon habitat, alteration of river flows and temperatures, in addition to increasingly frequent marine heatwaves and ocean acidification.¹⁰

⁹ National Marine Fisheries Service (NMFS). 2019. Proposed Revision of the Critical Habitat Designation for Southern Resident Killer Whales Draft Biological Report. Available: <https://www.fisheries.noaa.gov/action/critical-habitat-southern-resident-killer-whale>.

¹⁰ Northwest Fisheries Science Center. 2014. Impacts of Climate Change on Columbia River Salmon. Fish Ecology Division Northwest Fisheries Science Center National Marine Fisheries Service, NOAA. IPCC, 2019: Special Report on the Ocean and Cryosphere in a Changing Climate [H.-O. Pörtner, D.C. Roberts, V. Masson-Delmotte, P. Zhai, M. Tignor, E. Poloczanska, K. Mintenbeck, A. Alegría, M. Nicolai, A. Okem, J. Petzold, B. Rama, N.M. Weyer (eds.)].

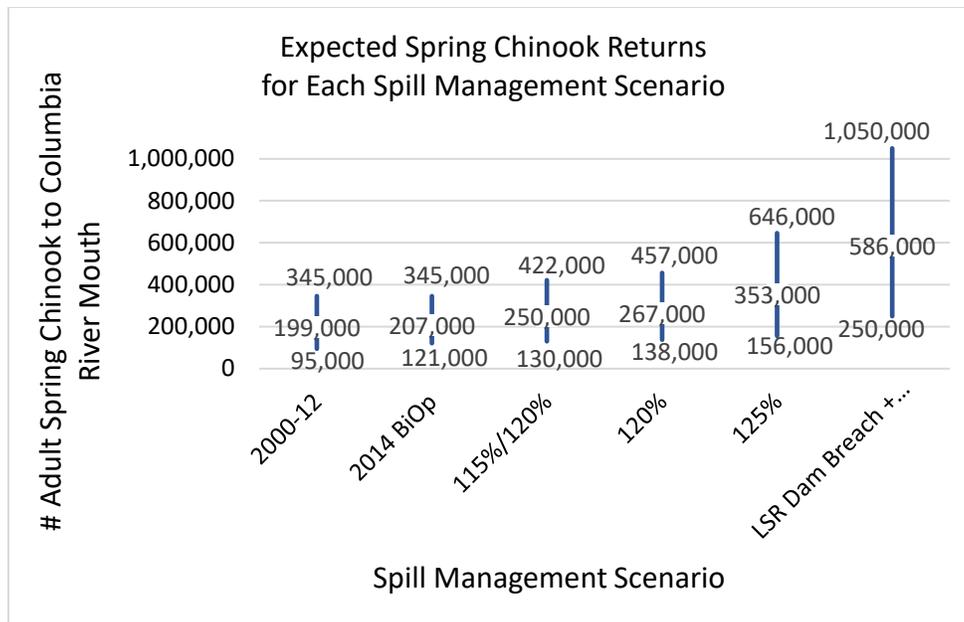


Figure 2. Spring Chinook returns and expected spring Chinook returns to the mouth of the Columbia River under the 2014 federal Columbia River hydropower system spill management framework (BiOp) and revised spill and Lower Snake River (LSR) dam breach management scenarios (Adapted from, M. DeHart 2018).

SRKWs and salmon are important to our region’s cultural identity, fishing economy, and tourism industry. SRKWs are deeply respected by many people, including Coast Salish Tribes and First Nations. Killer whales, for example, are considered culturally and spiritually significant for the Lummi people of Washington's northernmost coast and southern British Columbia. The Lummi name for killer whales, *qw’e lh’ol’ me chen*, means “our relations who live under the water.”¹¹ SRKWs are also an important economic driver in Washington. One study of the economic contribution of whale watching in the state projects annual losses of \$34 million in economic activity, \$2.2 million in state and local tax revenue, and 330 jobs if the SRKW population were to go extinct.¹²

While the big, bold changes for salmon and SRKW recovery being called for will not be easy, they will be effective. It is well understood that actions like lower Snake River dam removal will require that we also address other related important issues, like clean power generation, energy efficiency, irrigation, and transportation for shipping. These are complex issues that the region must address. With this great challenge, however, there is an opportunity for collaborative approaches that could help move these ideas forward in ways that address the urgent needs for SRKW and the needs of people throughout the Columbia Basin. Ultimately, for salmon, dependent wildlife and people, we need to see real, meaningful change. It’s encouraging that people throughout the Basin are willing to come together to find a path forward that benefits killer whales, salmon, people, and the overall health of the region’s ecosystem.

¹¹ Julius, J. 2018. Tokitae’s return is part of their larger vision to protect and restore the Salish Sea. The Bellingham Herald, op-ed, Jay Julius, Lummi Nation. Available: <https://www.bellinghamherald.com/opinion/op-ed/article210826344.html>.

¹² Van Deren, M, J Mojica, J Martin, C Armistead, and C Koefod. 2019. The Whales in Our Waters: The Economic Benefits of Whale Watching in San Juan County. Earth Economics. Tacoma, WA.

7.4 Ranching Perspectives, by Liza Jane McAlister, 6 Ranch and Mike Edmondson, Idaho Governor's Office of Species Conservation

Ranching and river restoration in Eastern Oregon, "It's not just all about the fish," Perspective by Liza Jane McAlister, 6 Ranch

James W. McAlister first saw Wallowa County as a boy on a hunting trip in 1876 and he was forever enamored, vowing to come back and raise his family there, which he did. Along with his hardy wife Belle, he settled on a piece of land with rich soil, diverse wildlife, and a winding river. Six generations later, we are still striving to be the best stewards of the land, river, and animals that sustain us. We raise Corriente cattle, quarter horses, cow dogs, bees, chickens, gardens, and do our best to preserve traditions, restore ecosystems, and produce healthy food.

My experience with restoration began about 28 years ago when I was fishing with my 8 year- old son on the stretch of the Wallowa River that runs through our family ranch. A half-century before us, the river had been moved, straightened and channelized to accommodate agriculture, and protect the railroad and highway. The winding, historic riverbed was still evident in the riparian pasture and we both wondered how we could "put it back" the way it used to be. My son was thinking about creating better fishing, I was looking to restore balance. We initiated a project with ODFW to divert the river, but it rapidly became very expensive, bogged down in bureaucracy, and out of our reach. However, a neighbor downstream with similar values and greater tenacity picked up where we left off and completed a successful restoration project in his stretch of the Wallowa River. Often it takes a trailblazer to cut the path so we can all see how to get where we want to go, and 18 years after we started the process, we moved the river back into its old bed.

The resiliency of Nature is miraculous. Within two weeks of moving the river into its new channel, we had macroinvertebrates making homes under rocks, and in less than a month Chinook salmon were found spawning for the first time in over 30 years. The abundance of bugs, birds and streamside vegetation was inspiring, and the water table for the valley improved to help sub-irrigate our pastures. One good thing leads to another, so we purchased the land adjacent to ours that included another mile of river and set out to restore its meanders and floodplains, too.

Just as everything is connected, nothing happens in isolation. The restoration work on our ranch could not have happened for us without partnering with government and non-profit agencies. In the ranching community, it is a widely held belief that collaborating with the government is akin to the death penalty. This belief is based in the reality of power imbalance and an unintended message of discredited knowledge and lack of trust. I think of my great-grandparents who homesteaded our ranch in 1884. It is hard to imagine their urban neighbors or government agencies restricting their decisions on their land because they believed they were more knowledgeable about managing natural resources than my family that worked on the land; but that is the reality today. Many people in my community believe that if the government is allowed to get one step inside the gate, they will eventually take our land and livelihood. There is a historical record to provide a basis for those fears.

Trust can be built when respect for knowledge is present in relationships and will be what is necessary to continue to restore the health of watersheds for fish and wildlife, specifically on private working lands. An example of a shift in trust and respect is the second phase of the Wallowa River restoration project on our ranch. It's one of the first projects in our region where cattle will actually be considered as a restoration tool, helping to graze invasive Reed Canary grass in the riparian areas. In addition, our

government partners understood that the restoration work we accomplished could not be at the expense of our ability to remain an economically viable operation. Agriculture, restoration, and recreation can all fit onto the same landscape when approached holistically.

A good story can go a long ways. I hope that we can keep finding those stories about all the good work and successes that we are having on the land that will help us reach our goals to support the return of salmon and steelhead to our rivers.

Working with ranchers, Perspective by Mike Edmondson, Idaho Governor's Office of Species Conservation

In the interior Columbia Basin, agricultural and ranching lands are often adjacent to the spawning areas of spring/summer Chinook salmon. This is no coincidence, as the broad floodplains created by western rivers and their rich soils were idyllic to settlers looking to sustain themselves. These same broad river valleys are the habitat in which Chinook salmon complete their life cycle, bringing loads of marine-derived nutrients inland, spawning, and dying thus contributing to these same floodplain ecosystems. The Chinook salmon's progeny rear in these same areas in preparation to go to the ocean and mature to adults and complete the cycle.

As we settled the west, populated these valleys, and our population increased, often we altered the riverine habitat and adjacent floodplain to suit our growing needs. This often meant channelizing rivers, de-snagging rivers, moving rivers, and diverting water for growing crops. The changes, while practical and necessary for human needs, often were detrimental to the habitats that supported these salmon and that these salmon sustained. No one action, no one government program, no one segment of our culture intended to diminish salmon populations, rather a myriad of actions and government programs worked to change the landscape to benefit human needs. The unintended consequences of our growth have been highly detrimental to salmon populations. Floodplains that were once tangled riparian forests that flooded seasonally have become pastoral landscapes disconnected from the water tables. They now contain single-thread rivers in place of multi-channel river systems. These single-thread systems, lacking beaver, de-snagged, disconnected from their floodplain, often diked or leveed, have become efficient drainage networks and conveyances of irrigation water rather than the vibrant aquatic/riparian habitats that once supported a keystone species, the salmon, a cultural icon and for some, a sacred creature.

Fast forward to today, we see that in the interior Columbia Basin we have upwards of 18 ESA-listed stocks of salmon and steelhead. In Idaho, we have four ESA-listed stocks: spring/summer Chinook, fall Chinook, steelhead, and sockeye. In the Upper Salmon Basin, the settlement patterns and conversion of floodplains to agriculture have played out in the same manner they have basinwide. The Idaho Legislature created the Governor's Office of Species Conservation (OSC) in 2000 and charged the agency with all matters pertaining to ESA issues and federal-state coordination. Working in concert with the Idaho Department of Fish and Game (IDFG) and many other state and non-governmental organizations we are working to implement the ESA recovery plans for listed stocks of anadromous fish in Idaho. A key approach is to improve or rehabilitate the freshwater habitat to increase the carrying capacity of the riparian/riverine ecosystem which will, in turn, increase the productivity, abundance, survival, and overall health of our ESA-listed stocks. The challenge is to do it in such a way that it is a win-win situation for all parties involved. The guiding principle in Idaho is to recover species while maintaining Idaho's vibrant economy.

On the scale of a river reach that should support anadromous reproduction and rearing, we work with private landowners to improve the capacity of the landscape for salmon while keeping agricultural operations whole or providing a net benefit through increased efficiency of irrigation or a net increase in production. Ranchers and other landowners want to see anadromous fish recovered for a variety of reasons, including reducing the burden of the ESA, intrinsic value salmon, and often the nostalgia of remembering catching salmon on their ranches or hearing the stories of their fathers or grandfathers catching salmon. Whatever the reason, they are all valuable, meaningful, and motivational.

As a fish biologist working with ranchers and other landowners, I believe the best thing we can do is listen. Landowners observe changes through time and seasons and know their land best. They can be exceedingly good stewards of their land and come to us to improve their land for anadromous fish. To do so, we need to understand landowner's daily lives, their operations, seasonal patterns, and challenges. We need to respect their experience, observations, and knowledge. Relationships have to be built. Often, this occurs over morning coffee, supper with the ranch crew, and even branding calves in the spring. Relationships become partnerships in conservation and often turn in to lifelong friendships. Changes to the river system negatively impacting anadromous fish often came from improvements to make living and ranching next to the river more viable. Flooding was often problematic once infrastructure was built so rivers were confined in single channels or even moved over to one side of a valley so an operation didn't need a bridge or have to drive a long distance around to access a pasture on the other side of the river. Levees were built after flood events, rip-rap was placed to "repair" banks and was often a pragmatic approach to a single landowner with limited personal funds.

In this era of river restoration, the public and user groups, such as electrical ratepayers, are providing funding to rebuild rivers either for regulatory compliance or for mitigation responsibilities. Since the habitats that need improvement are on private lands, it is only through a voluntary model that these actions can occur and due to their nature only through shared cost models. While there are incentives for landowners, often they aren't the right fit for a family or individual and most participate because they want to see the outcome of increased fish abundance. Other times, conservation easements or water transactions are the vehicle that facilitates the ability to restore riparian/riverine systems on private lands. In the end, it is the willingness of a landowner, the relationships that have been cultivated, and the availability of funding that need to come together to move the needle toward ESA recovery and eventually to anadromous fish abundance.

Opportunities and Challenges

[Example forthcoming in May.]

7.5 Hydroelectric Power Perspective, by Tom Dresser, Mike Edmondson, Joe Lukas, Kurt Miller, and Glen Spain

The Columbia Basin contains more than 400 dams,¹³ over half of them dedicated (fully or partly) to generating power. Together these dams serve as the region's primary source of electricity. Fully 40 percent of the electricity used in the Northwest is generated by 33 federal dams that comprise the Columbia Basin Power System (CBS). The percentage of hydroelectricity rises with contributions from non-federal dams in the Columbia Basin, and again with the addition of electricity from dams in the Canadian portion of the Columbia Basin. It is the largest hydroelectric system in the United States, accounting for 40 percent of all hydroelectric production in the nation. Nearly 60 percent of the energy produced in Washington, Oregon, Idaho, and Montana is generated by hydropower dams on the Columbia and Snake Rivers. Most of the hydroelectricity in the region is marketed by the Bonneville Power Administration to not-for-profit, community-owned utilities across the Northwest. Fish passage at these and other dams has been a major concern for nearly as long as dams have existed in the basin.

Ultimately, the key interest of the hydroelectric sector is to cleanly, efficiently, and reliably generate and deliver affordable energy to customers throughout the Pacific Northwest in the most cost-effective manner to support carbon-reduction goals and enhance economic development throughout the region. Additionally, the hydroelectric sector wants to produce electricity in a manner that reduces the impact on fish with regulatory and budget certainty.

In return for certain social benefits that dams provide, yesterday's policy decision-makers (those who made the original decisions to build any particular dam) chose to accept various negative impacts on society that can also be caused by dams, such as partial or complete blockage of salmon migration routes, reduced water quality and quantity, loss of natural river functions such as sediment recruitment and seasonal flushing flows that support healthy riverine ecosystems, channeling of rivers that reduce the natural meander of rivers over time, and reduced river ecosystem functions generally. In today's world, our views as a society of these tradeoffs are changing.

Mid-Columbia Public Utility Districts

In central-eastern Washington State, the Mid-Columbia Public Utility Districts (Chelan, Douglas, and Grant; Mid-C PUD's) provide a combined peak generating capacity of 4,928 megawatts. This electricity supports regional needs but more importantly drives the local economies of Chelan, Douglas, and Grant counties for irrigated farming, food processing, manufacturing, local governments, retail trade, health services, data centers, and other industries.

The above-mentioned sectors accounted for over 98,000 individual payrolls within these three Washington State counties with a total wage income of \$3,540,479,000 (Merseck 2020).¹⁴ The importance of this low-cost power generated by the Mid-C PUD's is further highlighted by the fact that Grant County farms annually produced crops and livestock valued at \$1.19 billion, while crops processed within the county create a \$364 million industry (Merseck 2020).

¹³ NW Power Conservation Council. However, no universally agreed up census of dams in the Columbia Basin seems to exist.

¹⁴ Merseck 2020. <http://esd.wa.gov/labormarketinfo/county-profiles>

Opportunities and Challenges

Salmon, water, and the hydroelectric system play an integral role in the Pacific Northwest culture so “turning the dial” on a single interest/sector will not achieve the quantitative goals developed during Phase 1 meetings of the Columbia River Partnership Task Force. Instead, a comprehensive approach including all interests/sectors must be developed from the federal, state, to the local levels. This comprehensive approach needs to be well defined with costs and benefits clearly documented and articulated so the citizens of the Pacific Northwest can fully understand the shared cost(s) across society.

Scenarios for salmon recovery calling for normative river conditions, dam breaching, or year-round spill at one or more hydroelectric facilities on the Snake or Columbia Rivers could severely and negatively impact the reliability and affordability of electricity from the Pacific Northwest power system. This impact would likely be severely felt by customers, especially low-income customers in central-eastern Washington and other rural counties in the Pacific Northwest who rely on access to affordable energy. For example, in rural counties, like Grant County, Washington the inflation-adjusted per capita personal income is \$38,308, which is less than the average in the rest of Washington State (\$57,896) and the nation (\$51,640; Merseck 2020). Income in other rural counties is much lower. With a per capita income of only \$11,597, Glacier County, Montana depends on low-cost power from the CRS to serve customers in one of the most severe climates in the United States.

Major changes in power production (such as dam breaching) could also have a chilling effect on the region’s ability to draw new businesses or support existing agricultural jobs in eastern-central Washington, where agriculture is the top job providing sector. Agricultural jobs accounted for 23.5 to 5.3 percent of the total employment for Chelan, Douglas, and Grant counties, followed by local government (14.5%-17.1%; Douglas and Grant counties) and health services (Chelan County 14.1%; Merseck 2020). Any redesign of the Northwest’s hydropower system would have to minimize negative impacts to agricultural industries and other important economic sectors.

While there will always be great debate over the costs and benefits of specific dam removal proposals, the potential problems with dam removal are further illustrated in the draft environmental impact statement for the removal of the lower Snake River Dams, which reported that breaching would cost \$1 billion a year¹⁵ and raise residential utility bills by 25 percent or more (if the dam generation is replaced with a carbon-free portfolio, such as wind, solar, and batteries) and cost \$457 million in social welfare due to the loss of irrigation and jobs for farm laborers.

It is likely, however, that future technological innovations will provide opportunities to optimize hydropower generation while minimizing environmental impacts. This is well documented at the Mid-C PUD hydroelectric projects where they have designed and constructed top-spill bypasses (Priest and Wanapum), juvenile fish bypass systems (Rocky Reach), and “fish friendly” advanced turbine systems (Wanapum), and incorporated biological criteria into turbine upgrades (Priest Rapids and Rocky Reach). They also now operate a hydro-combine (Wells), implement specific operational criteria, such as “fish mode” during the juvenile salmonid and steelhead migration (Wanapum and Priest Rapids), flow protection programs (Hanford Reach Fall Chinook Protection Program), and a flow management tool (Okanagan River).

¹⁵ This value is very consistent with a recent [analysis](#) performed by EnergyGPS.

To move the region towards achieving the developed quantitative objectives (during phase 1), hydroelectric operators will need to take an objective look at their facilities' operations and configurations to determine if proven technologies/innovations implemented at other dams are reasonable and feasible.

Finally, we must keep in mind that dams are human-engineered constructions that are designed and built to last certain lifespans and to provide a combination of benefits to society, including hydropower production, river transportation corridors, flood control, and irrigation. Over time, and often related to changes in technology, we have seen the mix and value of benefits that dams provide change. Additionally, according to the U.S. Army Corps of Engineers, the average age of the 90,580 dams in the U.S. is about 56 years, with many of them approaching or exceeding their designed lifespans.¹⁶ This is true in the Columbia Basin. Thus, during the 100-year salmon restoration time frame that we contemplate in this report, there may be many opportunities to rethink, redesign, and reconstruct the Pacific Northwest's hydropower system in ways that both enhance salmon restoration and also better protect vitally important river ecosystems.

¹⁶ See for instance the American Society of Civil Engineers (ASCE) *2017 Infrastructure Report* on the nation's dams at: <https://www.infrastructurereportcard.org/cat-item/dams>. According to an inventory maintained by American Rivers, 1,384 dams have been removed in the U.S. from 1912 through 2016 (www.americanrivers.org/DamRepdf_movalDatabase). Dam removal is thus not a radical or new idea, and there are often sound reasons to remove particular dams, but we must also remember that each dam presents unique situations, benefits and opportunities that must be carefully thought through on a case-by-case basis. See also Maclin E. Sicchio M (1999), *Dam Removal Success Stories: Restoring rivers through selective removal of dams that don't make sense*. American Rivers, Friends of the Earth, & Trout Unlimited, December 1999. www.michigan.gov/dnr/damsuccess_513764_7.pdf

7.6 Port Perspective, by David Doeringsfeld and the Port of Lewiston

Along the Columbia and Snake Rivers, there are 27 inland and coastal ports that serve as important job creation centers for rural communities. To foster job creation, ports primarily focus efforts in three areas: intermodal transportation, economic development and international trade. A port's role in intermodal transportation includes river, rail, roads, and runways. A port must be competitive in each of these areas in today's global economy.

Ports provide dependable, cost-effective transportation for agriculture exports. North central Idaho and eastern Washington have primarily natural resource-based economies in timber and agriculture. Due to the multi-use benefits of the Columbia and Snake River system, both timber and agriculture have developed niche export markets. Farmers in the region, for example, produce soft white wheat and pulses (peas, lentils, and garbanzo beans). These are niche agriculture products of which approximately 90 percent is exported overseas.

The ports allow tug and barge companies to efficiently transport millions of bushels of grain throughout the year from inland grain elevators at terminals along the Columbia and Snake Rivers to coastal export terminals. One tug normally transports four barges in a tow, with each barge capable of carrying 100,000 to 120,000 bushels. The volume of grain in one tow is equal to approximately 536 trucks or 140 rail cars. This ability to efficiently transport 400,000 bushels of grain in one tow allows U.S. farmers to compete in world export markets. Demonstrating the efficiency of the river system, wheat harvested on Monday in north central Idaho, can be loaded onto a river barge on Tuesday and by Saturday, the wheat will be on an ocean vessel sailing out the mouth of the Columbia River. Along with agricultural products, port facilities ship petroleum products, fertilizer, solid waste, logs, and wood chips.

Ports provide the region with reliable, low-cost transportation while keeping carbon emissions low. It is far less expensive to transport containers by barge to Portland compared to trucking containers to Seattle/Tacoma. Additionally, exporters have less damaged cargo problems when they can load their export containers for barge shipment versus a warehouse loading the container in Seattle. They are also able to better schedule containers for steamship sailings.

Ports are foundational to communities along the Columbia and Snake Rivers and have recently become central players in enhancing local tourism. Cruise ship visitations are growing steadily throughout the Columbia and Snake River system, including to the Lewiston Clarkston Valley. In 2018, cruise boat passengers touring on the Columbia and Snake Rivers outsold the Mississippi River for the first time. In 2019, five cruise lines with over 24,000 passengers visited Lewiston, ID and Clarkston, WA. Passengers can disembark at several communities along the waterway and spend their dollars visiting local attractions. New cruise boats are being constructed and are scheduled for Columbia and Snake River excursions in 2020.

Reservoirs behind the four dams on the Columbia River and four dams on the Snake River provide numerous recreational opportunities. Each of the reservoirs offers a river/lake environment for residents and tourists to participate in a variety of water activities. Boating, sailing, windsurfing, fishing, water skiing, paddle boarding, and jet skis are just a few of the waterway activities.

Port activities can impact salmon and steelhead recovery in several areas. For example, driving piles for a new dock expansion, developing property for a new manufacturing plant, or handling stormwater runoff, so it does not pollute a nearby stream. Maintaining port facilities and new construction can have

important consequences to fish recovery. Columbia Basin ports constantly work with stakeholders and agencies toward salmon recovery goals and incorporate a variety of measures into port projects to further recovery efforts.

Opportunities and Challenges

Ports recognize their role in mitigating for their impacts to salmon and in being good partners. Ports utilize a diverse array of measures to avoid, minimize, and mitigate for impacts to ESA-listed fish and fish habitat, and to provide benefits to multiple other species. Port activities include:

- Enhancing existing wetlands and riparian areas with streams and shrubs;
- Creating wetlands;
- Reconnecting riverine areas to associated wetlands and floodplain;
- Creating and/or purchasing credits in habitat conservation banks;
- Installing engineered log jams to create and diversify fish habitat;
- Preserving and enhancing floodplain areas with trees and shrubs;
- Incorporating sound attenuation measures during pile installation activities, including the use of bubble curtains and/or use of a pile cushion during pile driving to reduce sound impacts to fish;
- Conducting in-water work during windows when listed fish are least likely to be present;
- Designing docks to mitigate impacts to fish and fish habitat by ensuring the docks are constructed in deep water, streamline design, and minimize overwater shading;
- Monitoring fish species during projects to collect data on potential effects; and
- Collaborating with fish enhancement groups to provide matching funds on fish enhancement projects.

Port Partnership in Kalama River Salmon Enhancement

One exciting project in the Kalama River exemplifies how ports are working with various organizations to improve fish runs. Recently, the Port of Kalama provided matching funds and collaborated with the Lower Columbia Fish Enhancement Group utilizing funds from the Salmon Recovery Funding Board in an effort to further local efforts to restore and enhance habitat for salmon and steelhead on the Kalama River, a key tributary of the Lower Columbia River. The project constructed wood structures along the shoreline of the Kalama River to provide shelter and safe feeding areas for juvenile salmon. The project goal is to maximize the function of the lower Kalama River as a thermal refuge habitat to benefit multiple in-basin and out-basin salmon stocks including chinook, coho, steelhead, sockeye, and chum. A second goal is to increase the productivity of in-basin stocks and to decrease predation of all salmonids by increasing habitat complexity and diversity.

Collaboration between the Port of Kalama and its partners resulted in positive outcomes to support salmon:

- Installed 30 multi-log structures comprised of 100 instream complexity logs and 25 floodplain roughness logs along 7,000 feet of mainstem shoreline and 970 feet of side- channel shoreline;
- Enhanced 2,000,000 cubic feet of existing juvenile rearing and adult holding cover habitat;
- Increased riffle pool frequency from 1 in 6,500 feet to 1 pool every 170 feet;
- Reduced width to depth ratio from 150:3 to 125:5;
- Added 700,000 cubic feet of juvenile rearing and adult holding cover by increasing depth of existing deep-water habitat and create a minimum of 20 new pools; and
- Increased sediment sorting to create a minimum of 2,000 square feet of spawning habitat.

One significant challenge for the ports is obtaining permits to maintain port facilities. Port development projects require permits and coordination with local, state, and federal agencies, and the agencies coordinate with the Tribes. On the lower Columbia River, these agencies include city or county jurisdictions, state fish and wildlife agencies, and the state departments of Ecology or Environmental Quality. Projects that entail in-water work, such as dock repairs or construction, require the ports to obtain multiple permits to conduct work along shorelines and in- or over-water. For example, in Washington State, a port would need to obtain 8 to 12 permits for an over-water project. These permitting processes are typically lengthy and complex. Unfortunately, they can also become adversarial given the conflicts around salmon in the Columbia Basin and a litigious environment.

Ports must maintain their business viability along with operating in a strict regulatory environment. Most recently, regulatory changes in the application of the Endangered Species Act require additional mitigation for existing and new structures and a more formal process of consultation. This has significantly increased the time and expense necessary to maintain existing facilities.

The Pacific Northwest has been wrestling with proposals to breach the four lower Snake dams as a means of salmon and steelhead recovery for over 30 years. Breaching dams on the lower Snake River would end all barge shipments for Snake River ports. Similarly, should breaching be considered for Columbia dams, ports on the Columbia River would suffer the same fate. A recent study by FCS Group found that the vast majority of farmers in north central Idaho and southeast Washington could be forced into bankruptcy if the Lower Snake River dams were breached and barge transportation was lost.

These proposals would have significant impacts on Columbia Basin agriculture and industries' because there are no cost-effective alternatives for shipping by barge at this time. Private rail companies would need to spend hundreds of millions of dollars to develop the needed capacity to handle the volume of grain currently shipped on the river system. Trucking grain to coastal export ports is also not economically feasible. Even the consideration of dam breaching has a negative impact on potential investments in expanding or locating port businesses. This is especially apparent in the developing inland cruise industry. For example, the Port of Lewiston is planning to construct a new cruise boat dock to assist in the berthing of new ships. Dam-breaching proposals loom heavily over this fledgling industry.

Another example of a potentially negative impact of dam breaching is specific to the Port of Lewiston. The Port of Lewiston has shipped numerous pieces of oversized equipment from the port to the interior of the U.S. and Canada. Currently, the Columbia /Snake River corridor and U.S. Highway 12 provide a unique transportation route because there are no height restrictions. U.S. Highway 12 has no overpasses and similarly, there are highway routes in Montana that have no height restrictions. There are no alternative west coast rail or highway routes that offer such transport of cargo without height restrictions into the interior of U.S. Dam breaching would eliminate utilization of the Columbia and Snake rivers and U.S. Highways 12 and 95 as shipping routes to Canada and the interior of the U.S.

In summary, it has been said many times that "there is no silver bullet in restoring fish runs." We all must work together to achieve abundant salmon and steelhead runs. Ports along with other sectors have both opportunities to contribute to salmon recovery as well as challenges that must be addressed. We cannot pit one stakeholder against another. This will only ensure continued litigation.

The Columbia Basin Partnership Task Force has demonstrated that diverse interests can reach consensus and make a positive impact. By respecting our diverse interests and developing shared goals, we can identify the strategic investments necessary to recover our iconic salmon and steelhead runs.

DRAFT

7.7 Idaho Irrigation Perspective, by Paul Arrington, Idaho Water Users Association

It is hard to believe that early European settlers to southern Idaho considered that it would ever be a thriving agricultural oasis. Sagebrush-covered desert stretched as far as the eye could see. Yet, through this land stretched the magnificent Snake River. Beginning near Yellowstone Park, the Snake River crosses southern Idaho in a winding path. Along the way, collecting water from the Big Wood, Boise, Payette, Weiser, and other river tributaries.

Over time, forward-thinking settlers, like I.B. Perrine, recognized this desert land could be developed into prime agricultural land. Beginning in the early 1900s, canals and ditches were dug throughout the landscape. Homesteads were granted by the federal government and reservoirs were built along rivers. Water delivery entities were formed to manage systems that would take the water from the river to the fields. It didn't take long for the desert to bloom. Now, instead of sagebrush, Idaho's farmers grow potatoes, corn, beans, sugar beets, wheat, barley, and other commodities. What once was a sagebrush desert is now prime farmland used to, quite literally, feed the world. Water not needed by the crops fills up the underground aquifers and returns to the river system through spring discharges that fuel groundwater-fed irrigation. Thus, the spring flows benefit the river and an aquaculture industry that is second-to-none in the world.

Development of Idaho's river systems for water storage, hydropower, recreation, flood prevention, and other purposes has resulted in a thriving agricultural economy – none of which would be possible without storage reservoirs. Today, millions of acres are farmed throughout southern Idaho. In 2019, cash receipts from the sales of crops and livestock in Idaho totaled \$8.3 billion¹⁷ and net farm income was \$2.7 billion.¹⁸ Irrigated agriculture is responsible for over 112,000 Idaho jobs, about 12 percent of the total workforce.¹⁹ The Bureau of Reclamation (Reclamation) estimates that projects along the Snake River and its tributaries have contributed billions of dollars to Idaho's economy (Table 1).²⁰

Table 1. Estimated economic contributions from the Boise, Minidoka, Owyhee, and Palisade hydroelectric projects in the Snake River Basin.

	Boise Project	Minidoka Project	Owyhee Project	Palisades Project
Crops	\$624,575,000	\$704,104,000	\$155,250,000	\$650,900,000
Livestock	\$645,000,000	\$387,144,000	\$93,150,000	\$355,448,000
Power Generation	\$13,975,000	\$6,339,200	\$0	\$31,413,000
Flood Prevention	\$183,287,500	\$9,961,600	\$755,550	\$20,942,000
Recreation	\$33,002,500	\$28,300,000	\$4,830,000	\$16,640,400
TOTAL	\$1,499,840,000	\$1,135,848,800	\$253,985,550	\$1,075,343,400

Reclamation and Idaho irrigators continue to work hard to balance the development and management of Idaho's river systems, including for fish and wildlife. Besides managing for irrigation, flood control, hydropower generation, and recreation, many of Idaho's reservoirs incorporate operations for fish and wildlife benefits. This includes an annual release of up to 487,000 acre-feet of Idaho water for downstream flow augmentation.

¹⁷ *The Financial Condition of Idaho Agriculture: 2019* (Eborn & Taylor) (2020)

¹⁸ *Id.*

¹⁹ Taylor, Garth, *The Contribution of Irrigated Agriculture to the Idaho Economy* (2017)

²⁰ Bureau of Reclamation (2017)

Snake River Water Rights Agreement

In 2004, the State of Idaho, Nez Perce Tribe, and other water users entered the Snake River Water Rights Agreement, which was ratified and adopted by Congress in the Snake River Water Rights Act of 2004. That agreement resolved disputed tribal claims for the Snake River and its tributaries. As part of the agreement, Tribal water rights were quantified in the Snake River Basin Adjudication (SRBA), and trust funds were established for water and fisheries resources. The agreement also established a flow augmentation program, whereby up to 487,000 acre-feet of Idaho water is leased from willing parties and is passed through the Upper Snake River system (including its tributaries) to assist with downriver migration of juvenile salmon and steelhead. This water, which comes from the federal government, state of Idaho and irrigators, could otherwise be used for agricultural or other uses but is left in the river. As part of this flow augmentation agreement, a 30-year biological opinion for the Upper Snake River was adopted, with an option to review for an additional 30-years upon mutual agreement. This agreement provides water users with certainty and predictability – allowing them to manage their systems, grow their crops and support their families and communities without the fear of increased regulation or litigation. In particular:

- The United States and the Tribe waived and released all claims for water rights within the Snake River Basin in Idaho.
- The United States agreed to pay a set price for the rental of storage water for flow augmentation.
- The United States agreed that flow augmentation would only be conducted in compliance with Idaho state law, water bank rules, and local rental pool procedures.
- The agreement contains the Endangered Species Act and Clean Water Act assurances.

Opportunities and Challenges

Changing the management of Idaho's rivers, either through mandating additional flow augmentation, breaching dams, or reintroducing ESA-listed salmon and steelhead could have significant impacts on

Idaho irrigation communities and other stakeholders. These impacts – loss of annual crop production, hydropower generation, recreational opportunities, etc. – could have both economic and non-economic consequences²¹ and include:

- Lower reservoir refill probability and reduced allocation for irrigation, hydropower, recreation, fish and wildlife flows and other uses;
- Reduce reservoir head for hydropower generation during the summer/fall;
- Lost hydropower generation opportunities when augmented flows to increase flood control space exceed generation capacity;
- Altered access for boating recreation, Idaho State parks, wildlife refuge/conservation areas, etc.;
- Increased reservoir water temperatures, resulting from drafting below minimum pool elevations, encouraging greater aquatic growth, which may negatively impact fish productivity in the reservoir and downstream and may cause reservoirs to draft below

²¹ The present-day economic impact of altered river management were last studied in 1998 by Reclamation. That study, which analyzed the impacts of removing an additional 1 million acre feet from the Snake River System concluded that loss of annual production could range from \$90 million to over \$240 million, loss of annual income could range from \$46 million to over \$80 million, loss of annual hydropower generation could exceeding \$2 million and loss of annual recreational value could range from \$4 million to over \$13 million (1998 dollars).

- minimum pool requirements implemented to protect ESA-threatened species as outlined in existing BiOps;
- Reduced reliability of water supplies for future projects, including recharge operations; and
- Reduced summer/early fall flows to support barge transportation in the lower Snake River.

Finally, a determination (whether express or implied) that dam removal is the solution for fish recovery could place all river development at risk and work to undermine the significant efforts of stakeholders throughout Idaho to balance the management of Idaho's river system for multiple purpose and benefits. A consequence that could strain the friendly working relationships that now exist between agencies and stakeholders.

Idaho water users firmly believe that dams and fish can coexist and that collaborative effort can generate long-term, successful solutions that achieve the interests of many stakeholders. For Idaho water users, these efforts can result in the improved and more efficient management of this resource. The use of water supplies can be optimized to achieve multiple results, benefit all stakeholders and tribes, and create a system that is more resilient and responsive to the effects of climate change. The river system can be utilized in a manner that doesn't create "winners" and "loser" but, instead, benefits all uses.

7.8 Ocean Commercial Fishing Perspective, by Joel Kawahara, Coastal Trollers Association and Glen Spain, Pacific Coast Federation of Fishermen's Association

Ocean commercial fisheries extend along the U.S. west coast and southeast coast of Alaska. I participate in the troll sector, a hook and line method for catching salmon. Ocean salmon fisheries also occur in British Columbia and intertwine with U.S. fisheries because of the migratory nature of salmon. Conservation is managed coast-wide through the Pacific Salmon Commission. Ocean salmon fisheries are, by nature, mixed-stock fisheries, with the Columbia Basin contributing significant portions of the harvest.

The troll fishery sector is composed of relatively small boats usually employing at most one crew. Many operators do not take crew. On the U.S. west coast, Chinook salmon compose the majority of the harvest; in Alaska, Chinook and coho along with chum are the primary harvest. In agricultural terms, trollers would be very small farms, basically backyard plots generating very sparse revenue. Many trollers harvest a variety of species, including albacore tuna, groundfish, halibut, and Dungeness crab.

Estimates of economic value in an industry that harvests fish from multiple sources and with different methods in differing jurisdictions are necessarily gross estimates. In the sense that a given economic value is a measure of community benefit, I will quote the values produced in a study of the "Economic Impact of Pacific Salmon Fisheries" by the Pacific Salmon Commission. This study analyzes a value chain that includes economic impacts from harvesting through to retail use of the product. The scope of impacts extends U.S.-wide and, separately, Canada-wide.

I also use the Pacific Salmon Commission study because of the way Columbia Basin-origin salmon are intertwined with the coast-wide harvest of salmon overseen by the Commission. Changes to the status of Columbia Basin-origin salmon affect the economic values of the fisheries, most directly to troll fisheries, less so to other fisheries where Chinook contribute a smaller portion of the economic value of the harvest. These numbers include fisheries within the Columbia Basin as they are within the Pacific Salmon Commission jurisdiction.

Given those qualifications, the values of the Pacific salmon fishery, coast-wide for Alaska, British Columbia, Washington, and Oregon, during the years 2012 to 2015 averaged \$2,428 million. It's important to remember, however, that these values are for salmon runs that have already been greatly damaged and diminished by decades of habitat loss and migration blockages throughout their range. The total true potential value of these salmon runs, once restored, would be considerably greater.

Opportunities and Challenges

The ocean salmon fishery, at least the troll sector, is directly dependent on the number of Columbia Basin Chinook and coho. This connection reflects the ocean migration habits of the various sub-basins' salmon. In general, upper basin salmon migrate farther into the Gulf of Alaska than lower basin salmon. Snake River fall Chinook are exceptional in that they are present in virtually all areas within the Pacific Salmon Commission jurisdiction, as well as in Oregon and California ocean fisheries.

[additional content forthcoming in May]

7.9 Lower Columbia Community Perspective, by Steve Fick, Fishhawk Fisheries

Today, the piling that served as the foundation of the Kinney Cannery, once the largest salmon cannery in the world, now is the fir flooring in my home. Boulders from piles of ship ballast dropped along the Astoria shoreline before loading canned salmon now serve as my living room fireplace. In 1883 from thirty-nine canaries, 630,000 cases of canned salmon (the equivalent of forty-three million pounds) shipped from the Columbia River destined to markets throughout the globe. Before the inundation of Europeans, the estimated consumption of salmon by Native Americans annually stood between four and six million fish. In the decade between 1930 and 1940, the lower Columbia River community of Chinook, Washington, across the river from Astoria, was the wealthiest community per capita in the United States due to salmon. Once between six and eleven million salmon passed by Astoria annually into the 259,000 square mile Columbia Basin.

As fisheries expanded in the late 1870s, the lower Columbia River community realized catches were declining. Seasons were established to control fisheries to sustainable harvest levels. Other factors started playing into the downturn of salmon and steelhead, such as mining, logging, water pollution, overfishing by recreational users, and tributary dams. Organization of advocacy groups, such as the Columbia River Fisherman's Protective Union (CRFPU), and creation of the 1918 Columbia River Compact between Oregon and Washington, which created co-management between Oregon and Washington, helped partially recover some stocks. Construction of mainstream dams continued. Grand Coulee Dam was built without fish passage. Fish ladders could have helped mitigate the loss of two million Chinook (June Hogs) destined for the upper reaches of the Columbia River in British Columbia. These seventy-pound plus fish became extinct with the completion of Grand Coulee, affecting not only lower river communities but also Native American nations the entire length of the river. With the continued insistence of the CRFPU, fish ladders were installed during the construction of Bonneville Dam and, later, on six other mainstream hydro projects.

Opportunities and Challenges

Today, with the eight previous decades of continued downturns in salmon stocks due to irresponsible and negligent development of the Columbia River watershed, Astoria and surrounding communities want and need vibrant salmon populations. For my area residence, salmon creates opportunity and life choices. Working in a salmon plant, serving fish in a restaurant, fishing on a boat, or at a related marine business creates family-wage jobs. Philanthropic opportunities in rural Oregon are created through our sustainable natural resource-based industries, such as fisheries, timber, and agriculture. In Astoria, salmon mean scholarships for students, little league sponsors, food bank support, libraries, just to name a few. In Astoria, seasonal jobs create meaningful dollars for our youth to invest in their futures, including college and trade schools. Doctors, teachers, tradespeople, architects, and biologists all have touched my life sometimes by working or fishing for my salmon company.

Our social fabric is tied to salmon. Local community festivals, the annual Astoria Regatta, suicide, and mental health are all directly associated with the health of our salmon. If we are to sustain and recover salmon, a connection must continue to exist with those affected by their existence and expand to the rest of society who need to understand the indirect connection healthy ecosystems bring to us all.

7.10 Yakima Basin Irrigation Perspective, by Urban Eberhart, Kittitas Reclamation District, and Lisa Pelly, Trout Unlimited

A partnership between the Kittitas Reclamation District (KRD), Trout Unlimited (TU), U.S. Bureau of Reclamation (BOR), Yakama Nation, farmers, and other Yakima Basin Integrated Plan (YBIP) members applies innovative conservation practices to achieve integrated water solutions in the Yakima Basin. The partnership provides an example of a successful collaborative approach in dealing with complicated resource-related issues.

Under the umbrella of the Yakima River Basin Integrated Water Resource Management Plan (YBIP), the partners—KRD, BOR, Yakama Nation, farmers, cities, counties, state agencies, environmental interests, and others—work together in a commonsense approach to solving decades of water conflicts in the Yakima Basin. YBIP offers a 30-year vision for responding to drought and changing climate, assuring water is clean and ample, and lands are both protected and productive for growing communities and the natural environment.

YBIP’s innovative initiative has been hailed as a model for making progress on Western water issues. By developing a plan and building unusually broad stakeholder support, this new approach for water resource management sets aside historic clashes over water, helping people to work together and respond during times of drought and to continue to prepare for a changing climate. It applies collaborative and integrated approaches to solving classic Western water, fisheries, and habitat concerns. Concentrated in one basin are the thorny issues of drought, climate change, growth, maintaining a robust agricultural economy, Tribal rights, and restoring fisheries.

The plan builds on decades of work to achieve water security that began in the 1980s through the federal Yakima River Basin Water Enhancement Project. After years of litigation and successive droughts, we were able to bring irrigation districts, environmental organizations, the Yakama Nation, and federal, state, county and city governments to the table to form the Yakima River basin work group to develop the plan. In 2013, the Washington State Legislature recognized the need to find sustainable water solutions that meet both instream and out-of-stream benefits in the region and authorized funding for the initial development phase of the Yakima Basin Integrated Plan.

Goals of the 30-year water resiliency plan are to protect and enhance fish and natural resources, improve water availability and reliability, establish more efficient water markets, manage the variability of water supplies, and prepare for the uncertainties of climate change through operational and structural changes.

The Yakima Basin

The basin has a population of nearly 400,000 people and supports the federal Bureau of Reclamation's large Yakima Irrigation Project, local irrigation districts and some of the state's earliest water rights for individuals and cities. Apples, cherries, wine grapes, hops, corn, and hay are top crops produced in the watershed, supporting a \$4.5 billion agriculture growing and processing industry

The watershed is the ancestral home to the Yakama Nation, whose rights memorialized in the Treaty of 1855 recognize inherent fishing, hunting, and migration rights, including those supporting important salmon species. The river hosts a variety of endangered and threatened fish species and offers some of the best opportunities for sockeye reintroduction and habitat restoration in the state.

The region has experienced numerous droughts, including an unprecedented snowpack drought in 2015. And climate change predictions forecast the valley's precipitation will change from snow to rain.

One of the highlights of YBIP is KRD's streamflow enhancement project where they are working collaboratively with TU, BOR and the other YBIP partners to implement water conservation practices on their system that produce water for streamflow restoration in upper Yakima River tributaries that provide critical habitat for Endangered Species Act listed fish. KRD is improving instream flow in key upper Yakima River tributaries by implementing water conservation practices (e.g. lateral piping or main canal lining) in the leakiest sections of its 330+ miles of irrigation distribution system in Kittitas County, WA.

KRD identifies areas of the distribution system that are leaking water and provides cost-effective means of eliminating water loss. KRD then completes the necessary site-specific steps to conserve the water and improve the reliability of irrigation water delivery for its customers and provide conserved water for instream flow. These steps include the design, permitting, and construction necessary to complete the conservation practice.

The technical aspects of the water allocation, management, and protection are designed to provide benefits for fish, wildlife, and the environment during times of impaired stream flows in upper Yakima River tributaries—especially during drought periods. KRD accomplishes this through a three-party agreement between KRD, BOR, and the Washington Department of Ecology that specifies KRD uses the conserved water to supplement instream flows in upper Yakima River tributaries that are flow impaired and provide habitat for ESA-listed and unlisted species. The water is then delivered to improve stream flows in any of six streams, including Manastash Creek, where KRD has existing infrastructure at the creek-canal intersection to deliver a measured amount of conserved water to help restore flows.

KRD uses a committee made of local Yakima Basin fisheries and water professionals to identify which tributaries most need instream flow help on an annual basis. The committee recommends the stream for supplementation to mimic natural flows. KRD then delivers the water into the stream for ecosystem benefits. The Washington Department of Ecology administers the protection of this water.

Opportunities and Challenges

The project described below is one example of the ongoing efforts by KRD, Ecology, Trout Unlimited, and basin partners to find innovative ways to conserve water for instream flows. Traditional methods of acquiring water rights to restore flows can be more challenging and, even when the most senior water is acquired may not be sufficient to maintain flows in a stream during drought conditions. In addition to providing guaranteed water during drought years, this project also provides water during non-drought years so the environment is resilient to drought conditions. Given that "drought is a period of abnormally dry weather that persists long enough to produce a serious hydrologic imbalance," the over-appropriated streams in the upper Yakima Basin may be viewed as having an annual drought due to unnaturally dry conditions due to surface water diversions and groundwater withdrawals. Using innovative approaches to adjust the timing of water storage and deliveries, the project demonstrates that there are ways to meet the needs of both irrigators and fish.

The project improves conditions for coho, Chinook, steelhead, and bull trout, which historically had access to, and likely migrated and reared in, the lower reaches of upper Yakima River tributaries. Today, two of these species, Mid-Columbia steelhead and bull trout, are listed as federally threatened on the ESA list. Groundwater withdrawals impact all fish species by impairing already over-appropriated stream flows to the point that conditions (e.g., no water instream) are unsuitable for fish passage or occupancy. These withdrawals also impact the salmon and steelhead by restricting their access to cool headwaters

essential for spawning and rearing. Inadequate flows impair stream functions and reduce the habitat's suitability for Bull trout. Bull trout may use lower reaches of the Yakima River tributaries for feeding, migration, and overwintering when conditions are suitable. Both fish species are subject to plans for recovery and conservation within the Yakima Basin.

The project would help reduce the impacts of drought and groundwater withdrawals by providing continuous flow in tributaries that provide habitat for adult and juvenile fish.

Increased instream flows, expected at 6.93 cfs and 2,476 acre-feet per year, benefit multiple species:

- increased habitat and migratory passage for anadromous Mid-Columbia steelhead and coho and Chinook salmon;
- increased feeding-migratory-overwintering habitat for bull trout;
- increased habitat and passage for resident Westslope cutthroat and Redband rainbow trout; and
- improved ecosystem functions throughout the stream corridors.

Over the next 10 years, KRD plans to implement over 168,000 feet of conservation practices to conserve over 10,000 acre-feet per year of water for instream flow in any of at least eight upper Yakima River tributaries that are vital to the restoration of anadromous fish—the same fish fed upon by Southern Resident Killer Whales in Puget Sound—in the Yakima Basin.

Challenges ahead include funding support for continuing collaborative discussions and for implementing continuing long-term infrastructure improvements. The good news is with strong relationships among YBIP members and collaboration there is a lot of optimism for continuing to work together to overcome any and all obstacles.

7.11 Tribal Perspectives — Placeholder

[Forthcoming draft in May. Each tribal Task Force member may write their own section.]

7.12 Student Perspective — Placeholder

[Input from the student survey will be summarized in the next version.]

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