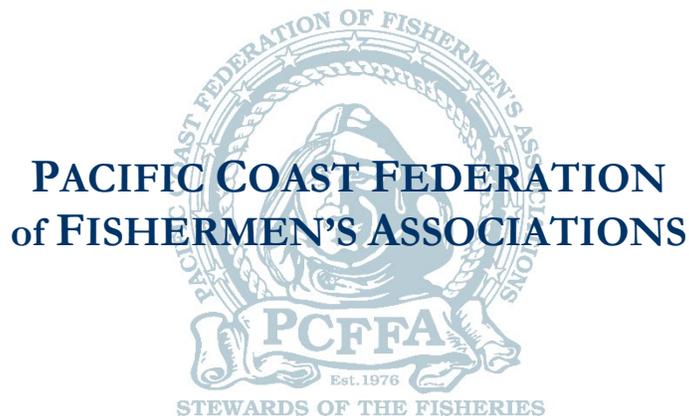


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## PCFFA STATEMENT ON THE VALUE OF SALMON TO THE STATE OF OREGON

28 October 2022

There are many rule-making processes now underway in Oregon as part of major public programs to recover and restore the valuable salmonid habitat resources of this state that, unfortunately, have suffered in recent decades from steep declines. As more and more salmonid habitat has been blocked, dewatered, over-logged, over-grazed or industrialized, this historic loss of a major Oregon natural resource has had tragic consequences for many salmon-dependent economies, communities and jobs.

Many of those salmonid species (such as salmon and steelhead) are also the basis of economically and culturally important commercial, recreational, and Tribal fisheries which have *enormous* value to Oregon and the Pacific Northwest economically, ecologically and culturally. They are also a valuable food resource for America's tables.

Yet all too often these "salmon values," including the enormous socio-economic benefits to the people of Oregon from salmonid habitat restoration and watershed protections, are often ignored in the typical costs vs. benefits analyses for watershed protection measures. These "salmon values" (both monetizable and non-monetizable) should instead all be factored into the analysis as benefits of any proposed watershed restoration rules, and as losses when those rules are weakened, as noted below and in Appendix A.

### 1.0. Identifying and Accounting for Non-monetized Values

In the following discussion of the value of intact river ecosystems, we use the Pacific Northwest's salmon and steelhead runs (both classed as "salmonids" as closely related species<sup>1</sup>) and their related commercial, recreational and Tribal fisheries as but one obvious example of the

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<sup>1</sup> For purposes of this discussion, unless a specific species is referred to, all salmonids are included in the commonly used term "salmon," including coho, Chinook, sockeye, chum, pink salmon, steelhead and cutthroat. All are anadromous, all are in the genus *Oncorhynchus*, and all require similar watershed characteristics.

many economic and other societal values that will be improved by having more protective Oregon water quality standards than currently exist.<sup>2</sup> Salmon harvests are also monetarily quantifiable in terms of “fiscal and economic effects.” But additionally, there are numerous other salmon-related values and benefits that will flow from improved water quality standards in Oregon, including both cultural and ecosystem benefits, which are termed “non-monetized values,” but which – although difficult to translate directly into dollars – are nonetheless of *great value* to the Pacific Northwest as well as to society as a whole, including multiple other stakeholder groups, communities and economies.

These non-monetized cultural and ecosystem values cannot just be ignored! When asking the bigger question not just of monetary values, but rather, “What are all the values of an intact and functioning riverine ecosystem?” these so-called “non-monetized values” may include multiple cultural, lifestyle, food production, clean water and other social benefits that, if they could be monetized, would likely *greatly exceed* in monetary value whatever purely localized monetary value could be obtained by industrializing (or polluting) those same river systems.

Indeed, Oregon’s still relatively healthy river systems and watersheds are a major component of what makes life livable in our state, providing multiple benefits which in turn create multiple economic opportunities, including providing the vast majority of Oregonian’s potable drinking water for its growing population. Those healthy (and especially important, unpolluted) river systems also support nearly all of our state’s irrigated agriculture, which in turn provides jobs as well as healthy food for Oregon’s citizens. They also support a multitude of other industries and communities.

Even well-water sources depend, ultimately, on inflows that are unpolluted and naturally filtered through soils into aquifers that also must remain unpolluted. Other states (notably California) are suffering from growing pollution problems in their remaining aquifers, problems which in turn are closing down drinking water wells in a number of towns and cities, and forcing the closures of some farms and related businesses. That could be Oregon’s fate also – but for our strong water quality standards, which will also be improved by the proposed Rules.

## **2.0. Economists’ Guidance Principles for Salmon Restoration Project Costs vs. Benefits Analysis**

When considering whether or not to go forward with any particular salmon habitat restoration proposal (water quality improvements being one type of this restoration), one needs to look objectively at both the social costs as well as the social benefits of such an action, and on both sides of the equation. This is usually done at the agency decision-maker level through some type

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<sup>2</sup> Since salmon are a highly migratory set of species, and circulate widely throughout the North Pacific Ocean, Oregon-origin salmon runs are a major component of the entire Pacific Northwest’s salmon fisheries, especially since Oregon-origin salmon mostly migrate north into cooler waters where they can be harvested in Washington, British Columbia and Alaska fisheries. Oregon also shares the world’s most important salmon producing river – the Columbia River – as its northern border with Washington. Oregon’s water quality protections thus contribute to the health of all Pacific Northwest salmon fisheries, because Oregon-origin and Columbia basin-origin salmon runs are all protected by those standards.

of “costs-benefits” analysis. DEQ Staff are required to do something similar in assessing the impacts of the proposed Rules.

However, as a number of professional natural resource Economists have noted, while purely economic costs of compliance are important in many analyses of impacts, both the economic and non-monetized social benefits of salmon habitat restoration proposals are often given short-shrift or ignored in most current, standard, agency “costs-benefits” analyses. *This initial analytical bias greatly distorts the economic balance sheet and thus unfairly pre-biases public policy decision-making toward one end of the spectrum.*

Professional Economists tell us that in any legitimate “costs vs. benefits” analysis, we must account for the fact that salmon recovery (and by extension, water pollution mitigation efforts) will generate economic benefits as well as costs. To understand the net benefit (a net cost if negative) to the economy as a whole, one must consider the effects on the production of all goods and services. The effects on goods and services that are traded in markets, such as commercial salmon, timber production, and agricultural production, should receive the same consideration as those, such as recreational fishing, clean streams, and biodiversity (i.e., non-market values) that are not. Economists also tell us that a full accounting must be provided of the true value of each affected good or service, taking into account the market price, where appropriate, as well as all factors, such as subsidies, taxes, and environmental externalities, that may distort the level of supply or demand.

In addition, a true “costs vs. benefits” analysis should take into account “the costs of doing nothing.” In a highly degraded system (which all too many Oregon watersheds are now suffering from) and in streams with already poor water quality resulting from human-caused pollution, there is an often very large social cost of maintaining the degraded *status quo*. That social cost is a net drag on the economy that could include economic costs that are monetizable as well, including: (a) greatly depleted (even ESA-listed) salmon runs, which then foreclose harvest opportunities and cost coastal fishing-dependent communities jobs and incomes; (b) additional water treatment costs to local municipal water providers who are required to filter out pollutants and treat water for additional pathogens; (c) lost recreational activities because of health-code restrictions on recreational use of polluted water bodies (including closures caused by toxic algae blooms that are becoming much more common), thus reducing the recreation-based income of local affected communities ; (d) loss of local property values triggered by poor water quality as well as the above impacts. These externalized costs of water pollution to society, especially to many water quality-dependent businesses, as well as from pollution-caused threats to public health, are often ignored in typical costs vs. benefits analysis – *but this “cost of doing nothing” can be very high.*

That said, attached for reference are two well-respected Guidance Letters from numerous western-based professional resource Economists that contain principles of costs-benefits analysis they believe should apply to all salmon habitat and water quality protection efforts such as those proposed by DEQ’s Rules, as well as to all other western U.S. natural resource decisions. (See APPENDIX A)

### 3.0. The Value of Pacific NW Salmon

There are a multitude of good policy as well as economic, ecological and cultural reasons for the protection and restoration of the Pacific Northwest's dwindling salmon runs. Furthermore, since Oregon's and the Pacific Northwest's salmon runs are all highly migratory, the value they bring to society is distributed over a wide geographical region, from at least central California to southeast Alaska, where these salmon, when harvested, provide food, jobs and economic value to many people and businesses, and support multiple food chains and ecosystems.

#### 3.1. Salmon Ecosystem Benefits

The once-great salmon runs of Oregon and the Pacific Northwest never existed in an ecological vacuum, but are instead an integral part of an entire food-web that still supports many other species. Salmon are a major or important food source not just for humans, but for at least 138 species of birds, mammals, amphibians and reptiles native to the Pacific Northwest that have been identified by scientists as predators or scavengers of salmon at one or more stages of the salmon lifecycle. Of this group of 138 species, 9 species have a *strong-consistent* relationship with salmon, and another 58 have a *recurrent* relationship with salmon. Yet another 25 species have *indirect* relationships that depend upon healthy salmon runs to support their direct prey base.

As a recent survey of these salmon-driven ecological relationships notes:

“Salmon act as an ecological process vector, important in the transport of energy and nutrients between the ocean, estuaries, and freshwater environments..... As a seasonal resource, salmon directly affect the ecology of many aquatic and terrestrial consumers, and indirectly affect the entire food web.”<sup>3</sup>

Indeed, the return of salmon back to their natal watersheds as adults is the one known mechanism for returning irreplaceable land-based nutrients, otherwise lost by erosion, back to the land. But as the region's salmon runs have collapsed, so has this important nutrient recycling mechanism. Recent calculations by Gresh, *et al.* indicate that only about 3 percent of the marine-derived biomass once delivered annually by anadromous salmon to the rivers of the Puget Sound, the Washington coast, Columbia River, and the Oregon coast is currently still reaching those streams.<sup>4</sup> *In other words, lack of returning salmon in recent decades is starving whole inland ecosystems, with unknown ultimate consequences.*

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<sup>3</sup> Species numbers and quote from introductory Abstract in Cederholm, C. J., D. H. Johnson, R. E. Bilby, L. G. Dominguez, A. M. Garrett, W. H. Graeber, E. L. Greda, M. D. Kunze, B. G. Marcot, J. F. Palmisano, R. W. Plotnikoff, W. G. Percy, C. A. Simenstad, and P. C. Trotter. 2000. *Pacific Salmon and Wildlife – Ecological Contexts, Relationship, and Implications for Management. Special Edition Technical Report*, Prepared for D. H. Johnson and T. A. O'Neil (Managing directors), Wildlife-Habitat Relationships in Oregon and Washington. WA Dept. of Fish & Wildlife, Olympia, WA. (Hereinafter “Pacific Salmon and Wildlife.”) Available at: <https://wdfw.wa.gov/publications/00063> (last viewed 10/27/22).

<sup>4</sup> Gresh, T. J., Lichatowich, and P. Schoonmaker. 2000. An estimation of historic and current levels of salmon production in the Northeast Pacific ecosystem: Evidence of a nutrient deficit in the freshwater systems of the Pacific Northwest. *Fisheries* 25(1):15-21. Available from American Fisheries Society at: <https://fisheries.org/books-journals/fisheries-2/> (last viewed 10/27/22).

Table 2.2.1-1: The nine wildlife species identified as having (or historically had) a strong, consistent relationship with salmon in Oregon and Washington. An “X” identifies the life stage(s) of salmon applicable to the species (from Appendix 1, *Pacific Salmon and Wildlife, supra*).

	Incubation	Freshwater Rearing	Saltwater	Spawning	Carcass	Comments
Common Merganser	X	X	X			
Harlequin Duck	X		X			Strong relationship w/drift eggs and alevin; indirect relationship with carcass-derived insects.
Osprey		X	X	X		
Bald Eagle			X	X	X	Strong relationship w/salmon; also indirect relationship – feeds on gulls, terns, and waterfowl that eat salmon; occasionally have been seen catching and consuming smolts.
Caspian Turn		X	X			
Black Bear				X	X	
Grizzly Bear				X	X	
Northern River Otter		X		X	X	
Killer Whale			X			

**The Plight of Southern Resident Killer Whales as an Example of this Biological Interdependence:** As just one current popular example of the intimate food-web dependency of many species on healthy Northwest salmon runs, consider the plight of endangered Southern Resident killer whales (*Orcinus orca*). In 2005, due to their small population size and significant threats to their survival, NOAA Fisheries issued a final rule designating Southern Resident killer whales as “endangered” under the U.S. Endangered Species Act.<sup>5</sup> Scientific studies have shown that this whale population is food-limited, with declines in survival,<sup>6</sup> fecundity,<sup>7</sup> and social cohesion<sup>8</sup> during years with low Chinook salmon availability.

As it turns out, these orcas depend almost exclusively on salmon, with salmonids comprising over 98 percent of their diet.<sup>9</sup> Of that, roughly 80 percent of their diet is Chinook salmon. As many key salmon runs have declined, lack of prey, principally of their favored Chinook, is among the greatest threats to Southern Resident killer whale recovery and survival. The science shows that these orcas are feeding on salmon off the outer coast of Washington, Oregon, and California

<sup>5</sup> 70 Fed. Reg. 69,903 (November 18, 2005).

<sup>6</sup> Ford JKB, Ellis GM, Olesiuk PF, Balcomb KC III (2009). Linking killer whale survival and prey abundance: food limitation in the oceans’ apex predator. *Biol Lett* 6:139–142.

<sup>7</sup> Ward EJ, Holmes EE, Balcomb KC (2009). Quantifying the effects of prey abundance on killer whale reproduction. *J Appl Ecol* 46:632–640.

<sup>8</sup> Parsons KM, Balcomb KC III, Ford JKB, Durban JW (2009). The social dynamics of the southern resident killer whales and implications for the conservation of this endangered population. *Anim Behav* 77:963–971.

<sup>9</sup> Ford MJ, Hempelmann J, Hanson MB, Ayres KL, Baird RW, Emmons CK, et al. (2016). Estimation of a Killer Whale (*Orcinus orca*) Population’s Diet Using Sequencing Analysis of DNA from Feces. *PLoS ONE* 11(1): e0144956.doi:10.1371/journal.pone.0144956.

between January and June, and that these orcas concentrate near the mouth of the Columbia River at times that coincide with the return of spring Chinook.<sup>10</sup>

The 2008 NOAA Fisheries Southern Resident killer whale recovery plan states: “Perhaps the single greatest change in food availability for resident killer whales since the late 1800s has been the decline of salmon in the Columbia River basin.”<sup>11</sup> Salmon restoration efforts at a region-wide basis are necessary to help achieve Southern Resident killer whale recovery goals. Oregon DEQ’s improvements to existing salmon habitat protection Rules under consideration are an important element of Oregon’s statewide salmon restoration efforts.

**Salmon and Healthy Forests:** Ecologically, trees need salmon as much as salmon need trees. Throughout the Pacific Northwest and northern California, where forest soils are often nutrient-poor, the salmon lifecycle is an important driver of the overall forest nutrient cycling system that supports forest health. Salmon are “anadromous” – this means they start their lives in freshwater lakes, streams and rivers, then migrate to saltwater where they spend, according to species, from two to seven years at sea before returning to freshwater to spawn and then die.

But when they return to spawn then die, salmon become a conveyor belt for key forest nutrients to come back from the ocean to land. For example, an adult chum salmon returning to spawn contains an average of 130 grams of nitrogen, 20 grams of phosphorus and more than 20,000 kilojoules of energy in the form of protein and fat; a 250-meter reach of salmon stream in southeast Alaska, for instance, receives more than 80 kilograms of nitrogen and 11 kilograms of phosphorous in the form of chum salmon tissue in just over one month.<sup>12</sup>

As the bodies of spawning salmon break down, nitrogen, phosphorus and other nutrients become available to streamside vegetation. According to Robert Naiman of the University of Washington, streamside vegetation in the Pacific Northwest gets just under 25 percent of its nitrogen from salmon. Other researchers report up to 70 percent of the nitrogen found in riparian zone foliage comes from salmon. One study concludes that trees on the banks of salmon-stocked rivers grow more than three times faster than their counterparts along salmon-free rivers and, growing side by side with salmon, Sitka spruce take 86 years, rather the usual 300 years, to reach 50 cm thick.<sup>13</sup>

In short, if the Pacific Northwest loses its salmon runs, this places many of its native forests at long-term ecological risk as well.

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<sup>10</sup> Haneson MB, Emmons CK, Ward EJ (2013) Assessing the coastal occurrence of endangered killer whales using autonomous passive acoustic recorders. *J. Acoustic Soc. Am.* 134(5) 3486-3495.

<sup>11</sup> 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.

<sup>12</sup> For an overview of the many studies of this phenomenon, see Robert J. Naiman, et al. Pacific Salmon, Nutrients, and the Dynamics of Freshwater and Riparian Ecosystems, *Ecosystems*, Vol. 5, No. 4 (June 2002), pp. 399-417, available on the Internet at: <https://www.jstor.org/stable/3658977>

<sup>13</sup> Helfield, James M., “Effects of Salmon-Derived Nitrogen on Riparian Forest Growth and Implications for Stream Productivity”(2001). *Environmental Sciences Faculty Publications*. 19. [https://cedar.wvu.edu/esci\\_facpubs/19](https://cedar.wvu.edu/esci_facpubs/19); Reimchen, T., et al. 2003. Isotopic evidence for enrichment of salmon-derived nutrients in vegetation, soil and insects in riparian zones in coastal British Columbia. *American Fisheries Society Symposium* 34:59–69.

**Salmon and Healthy Estuaries:** Salmon occupy the estuaries of the Pacific Northwest in two life-stages: (1) as very small out-going juvenile smolts that are adapting to ocean life in brackish salt-water marshes and estuaries as a transition stage to ocean migrations, and; (2) as returning, in-migrating adults. In the first stage they are important prey species for many other types of fish, but in the adult stage they are both predator as well as important prey to marine mammals such as sea-lions and orcas, and to much larger fish. In both roles they are an important contributor to the ecological health of the region's estuaries, as well as linked to the overall health of these estuaries as critical habitat for many other species.

All river estuaries are ecologically important. As an example, the Columbia River estuary ecosystem contains more life per square inch than the richest farmland and provides for multiple species of wildlife. The greater number of distinct habitats there are within an ecosystem, the more species it supports, the more ecological processes and functions it provides, and the better it withstands disturbances. Unfortunately, its historically wide range of complex, diverse habitats is now greatly diminished in the lower Columbia estuary. In the last 100 years more than 114,000 acres of lower Columbia River estuary floodplain have been converted to agricultural, urban, or other uses – a habitat loss in excess of 50%. Loss of critical estuary habitat has also been a factor driving regional salmon declines. Similar losses have occurred in many of Oregon coastal estuaries as well. Therefore, restoration of critical estuarine habitat for salmon should also be a part of any comprehensive salmon restoration strategy.

**Salmon as Highly Migratory Ocean Species:** Most salmon species are highly migratory, and once they reach the ocean they can travel literally thousands of miles both north and south as they search for food and grow to maturity, with established coastal-shelf migration routes down the west coast to as far south as San Diego, and far north well into the waters of southeast Alaska. See Chart 1.

Oregon coastal salmon thus constitute a significant portion of ocean harvests in all these other areas. More important, these widely migrating salmon become a major component of the entire west coast ocean ecosystem, in the roles of both predator and prey, during the years of their whole juvenile and adult life stages in the oceans. Their value in supporting and contributing to abundant ocean ecosystems and food webs is of incalculable (but clearly large) value to those rich ocean biological systems.

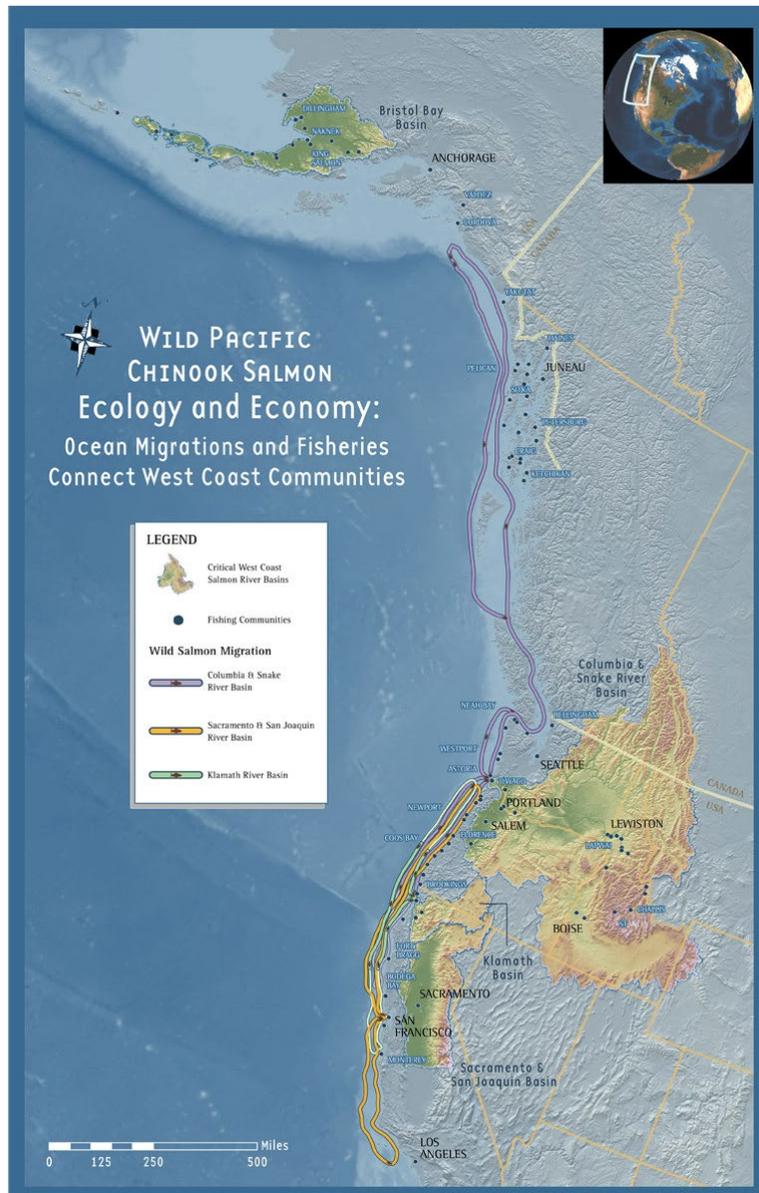
### 3.2. Specific Salmon Economic/Monetary Benefits

Commercial, recreational and Tribal subsistence fisheries support many communities and economies in the Pacific Northwest, including (as examples) the following:

**Ocean Commercial Salmon Fisheries:** Commercial salmon fishing generates thousands of jobs in smaller coastal Pacific Northwest communities that lack the diversity of economic opportunity present in major urban areas.<sup>14</sup> Oregon's valuable commercial and recreational salmon fisheries are no exception.

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<sup>14</sup> Community Attributes Inc., *Washington State Maritime Sector Economic Impact Study* at 37-40 (2017) at: <https://www.maritimefederation.com/wmf-2017-impact-study.html>. See also Wash. Dept. of Fish and Wildlife, *Final Report: Economic Analysis of the Non-Treaty Commercial and Recreational Fisheries in Washington State* at



**Chart 1: Ocean migration routes of the major west coast salmon runs.**

According to the Oregon Department of Fish & Wildlife, even greatly reduced in size as they have been in recent years, Oregon’s ocean coastal commercial salmon fisheries still generated an average over the years 2010-2017 of 396,728 landed pounds of salmon in its multiple coastal ports, representing an *ex-vessel* (i.e., essentially at the wholesale price at the boat-processor delivery point) of an average of \$2,073,481 – which would have created, because of typical economic

<https://wdfw.wa.gov/publications/00464>. [hereinafter *Final Report*]; Gordon Gislason & Gunnar Knapp, *Economic Impacts of Pacific Salmon Fisheries*, Pacific Salmon Comm’n, at 27 (2017), available for download at: [www.psc.org/download/333/special-reports/9337/economic-impacts-of-pacific-salmon-fisheries.pdf](http://www.psc.org/download/333/special-reports/9337/economic-impacts-of-pacific-salmon-fisheries.pdf).

multipliers, more than \$5,000,000 in net economic impacts to mostly poor Oregon coastal communities through the chain of commerce.<sup>15</sup>

Oregon coastal salmon landings during 2019, however, were improved over seriously depressed immediately prior year averages: 985,000 landed pounds, valued at (*ex-vessel* prices) \$4.1 million – an increase of 34,000 pounds (4%) but a decrease of \$1.5 million (27%) *ex-vessel* value compared with landings for 2018. In that same year, Washington’s salmon landings (to which Oregon-origin salmon contribute) were 7.2 million pounds valued at \$13.1 million *ex-vessel* prices.<sup>16</sup> But both of these harvests were still far below what was landed in earlier decades, reflecting overall declines of salmon runs coastwide.

Because Oregon-origin coastal Chinook salmon are also highly migratory, most of them seeking colder and food-richer upwelling waters by swimming (once they have hit the ocean) northward up the coast to enter Washington State’s ocean salmon fisheries. While it is true historically (and even today) that many more salmon came from Oregon’s rivers and tributaries emptying into the mighty Columbia River than came from purely coastal rivers, Oregon-origin salmon (particularly Chinook) from both Columbia Basin and coastal river contribute significantly to ocean commercial salmon fisheries landings offshore the coast of Washington, British Columbia and even Southeast Alaska.<sup>17</sup>

Alaska’s fishing families also depend heavily on the Columbia River’s salmon runs (a large portion of which originate in Oregon) because so many of the salmon caught off the coast of Southeast Alaska are from the Columbia River Basin.<sup>18</sup> In 2019, commercial salmon landings in Alaska were 827.1 million pounds, valued at \$673.4 million (again the *ex vessel* price).<sup>19</sup>

The Columbia River Basin was historically the largest salmonid producing river in the world, with annually returning salmon runs estimated at between 5.0 and 16.3 million returning adults, including spring, summer and fall runs of Chinook, as well as coho, chum, sockeye and both winter and summer runs of steelhead.<sup>20</sup> Even though most of the juvenile salmon emerging from the Columbia estuary would normally migrate northward where they would contribute heavily to Washington, British Columbia and southeast Alaska ocean fisheries, Columbia River-origin salmon runs are still so large that they also contribute significantly to ocean salmon fisheries

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<sup>15</sup> See ODFW publication (Sept. 2019): [https://www.dfw.state.or.us/MRP/docs/Backgrounder\\_Comm\\_Fishing.pdf](https://www.dfw.state.or.us/MRP/docs/Backgrounder_Comm_Fishing.pdf).

<sup>16</sup> National Marine Fisheries Service (NMFS), *Fisheries of the United States (FUS 2019)* at xxii and xxiii (2019), available for download at <https://www.fisheries.noaa.gov/resource/document/fisheries-united-states-2019>.

<sup>17</sup> Typically about 50% of the salmon harvested in the abundant Southeast Alaska ocean fisheries originated from the Columbia Basin, with perhaps half of those coming from Oregon natal streams and rivers. In short, perhaps about 25% of the salmon landed in southeast Alaska fisheries could have originated from Oregon’s Columbia Basin rivers, with additional fish from Oregon coastal streams from outside the Columbia Basin also significantly contributing.

<sup>18</sup> See Penelope Crane, W. D. Templin, D. M. Eggers & L.W. Seeb. *Genetic Stock Identification of Southeast Alaska Chinook Salmon Fishery Catches* (January 2000), Alaska Dep’t of Fish and Game, available through <https://www.adfg.alaska.gov>.

<sup>19</sup> *Fisheries of the United States (FUS 2019)* at xxii, *supra*.

<sup>20</sup> See *A Vision for Salmon and Steelhead, Phase 2 Report* of the Columbia Basin Partnership Task Force, pg. 44 for a comparison of several different estimates of historic run sizes: <https://www.fisheries.noaa.gov/vision-salmon-and-steelhead-goals-restore-thriving-salmon-and-steelhead-columbia-river-basin#:~:text=MAFAC%20convened%20the%20Columbia%20Basin,and%20its%20salmon%20and%20steelhead>

throughout the Oregon and northern California coastlines. This is in addition to the also significant contribution of Oregon coastal-only salmon runs, also highly migratory.

A “snapshot” economic study of the impacts of salmon fisheries on the entire Pacific Northwest for the year 1988 showed that commercial salmon fishing in northern California contributed more than \$95 million in personal income impacts to the regional economy, supporting 4,000 family-wage jobs, and the recreational salmon fishery in that state contributed \$372 million and supported 19,000 family wage jobs; Oregon’s commercial salmon fisheries in 1988 generated \$89 million, supporting 4,450 family-wage jobs, while its recreational salmon fishery generated \$186 million, supporting 9,500 family-wage jobs. Idaho has no commercial salmon fishery, but recreational salmon and steelhead fishing that same year in Idaho generated nearly \$93 million in income, supporting 4,750 family-wage jobs.<sup>21</sup> These numbers show the great potential that salmon watershed restoration efforts have to return great economic value to once salmon-dependent communities, if we can only clean up their habitat and give them a way to get there.

From boat builders to seafood processors, even greatly reduced in recent years, commercial salmon fishing still generates many thousands of additional jobs throughout northern California, the Pacific Northwest and Alaska. Like direct the commercial fishing jobs, many of these additional jobs generated by the salmon fishing industry are located in smaller coastal communities whose economies are heavily dependent on the fishery.<sup>22</sup>

**Oregon’s Inland Recreational Fisheries:** In-river recreational fishing (particularly for much prized steelhead) is also a major economic driver in the Oregon economy, especially in smaller rural communities.

According to a recent economic impacts study by the American Sportfishing Association (ASA), *Economic Contributions of Recreational Fishing in Oregon* (published Jan. 21, 2021) in 2018 year alone (as a typical sample year) ASA estimated that 569,600 Oregon recreational anglers spent \$871.8 million.<sup>23</sup>

**Tribal Subsistence and Some Tribal Commercial Fisheries:** There are also multiple Tribal Nations throughout the Pacific Northwest, including in Oregon, to whom the U.S. owes Treaty obligations to provide for the protection of their native river systems and the salmon runs that use those systems. The value of the Tribal fisheries to their people and their Tribal economy, both subsistence fisheries and small commercial fisheries, cannot be easily quantified but is clearly enormous in terms of support for Tribal cultures and providing these sovereign First Nations and their communities a secure economic future, as noted below.

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<sup>21</sup> The Economic Imperative of Protecting Riverine Habitat in the Pacific Northwest, Pacific Rivers Council (January, 1992) Publication No. 5 (1992). These numbers are much greater in 2022 dollars than cited in 1988 dollars in the original report.

<sup>22</sup> See *Final Report*, *supra* n.6, at 12 (These jobs are “important at the community level along the Washington Coast, the Strait of Juan de Fuca, and the Puget Sound areas.”).

<sup>23</sup> For the ASA Oregon Report see: <https://asafishing.org/state-reports/economic-impacts-of-recreational-fishing-oregon/>. For a wider Northwest economic impacts summary report see: <https://www.psc.org/download/333/special-reports/9337/economic-impacts-of-pacific-salmon-fisheries.pdf>.

### 3.3. Salmon Cultural Values

Writer Tim Egan once defined the Pacific Northwest as “Wherever salmon can get to.” In fact, salmon are a major cultural icon for the entire region, and are woven into the lives and cultures of many communities throughout northern California, Oregon and Washington. Coastal fishing-dependent communities celebrate the return of the salmon every year, and hundreds of inland communities and businesses depend upon recreational salmon fishing as a regular part of their incomes and annual family recreational.

But nowhere is the connection between salmon and culture more direct than within the various Native American communities throughout the region. Restoring the salmon runs these Tribes depend upon for both their subsistence and fish marketing economies, their cultures and their futures as Tribal people is a legal as well as high moral obligation.

In the words of these sovereign Tribal governments whose lands span the Columbia basin, from the recent Columbia Basin Partnership’s 100-year salmon and steelhead restoration plan, *A Vision for Salmon and Steelhead*, the Columbia River Treaty Tribes particularly remind us:

“The Columbia River Treaty Tribes are still here and are still committed to the same ancient covenant with salmon. We will continue to speak for those that cannot. Columbia River Treaty Tribes have been fighting for the rights and perpetuation of Columbia River salmon since 1855 and will always hold the government, and those that settled here, accountable to the intent of the treaties that were signed.... The treaty tribal baseline for tribal salmon restoration and harvest remains 1855. This entitlement is a fair share of the salmon harvest from all streams in their ceded areas – measured at the fully functioning product levels observed in the mid-1800s. This was the tribal entitlement at the time of treaty signing. It is still so today, and into the future.”

And as to looking at the “costs” of salmon protections, the Columbia River Treaty Tribes also have this to remind us of:

“Over the last 200 years, tribal resource losses, including reduced availability of salmon and steelhead, are a direct consequence of the resource gains of others in the Columbia Basin. It is a false equivalency to propose that all parties on this Task Force should be willing to give up equally, because historical gain/loss balances weight heavily against tribes.....”

“Rather than debating how many salmon we need to meet everyone’s needs, we should also ask how many apples the river reasonably needs to produce. How many potatoes do we need? How many cows do we need? And to what cost are we willing, as a society, to pay in the currency of salmon for the various economies the region now supports? To date, most can only demonstrate their anxiety by the money they will lose and how it will hurt them, you, or me right now. Few have talked about their own ability for adaptation and change.”<sup>24</sup>

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<sup>24</sup> Quotes from Tribal Statement in *A Vision for Salmon and Steelhead, Phase 2 Report of the Columbia Basin Partnership Task Force*, supra., pages 110 & 114-115.

#### 4.0. Declining Salmon Runs Threaten Entire Communities

One of the most dramatic natural resource tragedies of our times, and one that has directly affected our coastal commercial salmon fishing industry by destroying thousands of fishing jobs coastwide, has been the thoughtless and sometimes deliberate destruction of the west coast's once abundant salmon-bearing rivers. Everywhere on the west coast (both U.S. and Canada) these once abundant wild salmon runs are in steep decline, with many of them already extinct.

The steady decline of west coast salmon runs was an unacknowledged disaster until the prestigious American Fisheries Society (AFS) published a peer-reviewed, comprehensive scientific survey of the problem in "Pacific Salmon at the Crossroads: Stocks at Risk from California, Oregon, Idaho, and Washington," (Nehlsen, *et al.*, *Fisheries*, Vol 16, No. 2, pp. 4-21 (March-April, 1991)).<sup>25</sup> That first-ever rigorous survey of all west coast salmonid stocks found that of the 214 separate stocks still existing, 101 were at high risk of extinction, 58 at moderate risk of extinction, 54 of special concern, and one (California Central Valley winter-run Chinook) already by that time classed as threatened with extinction under the federal Endangered Species Act (ESA) and as endangered under California's separate ESA statute. *It also found from historical records that at least 106 to more than 200 other distinct stocks of salmonids had already by that time been extirpated from their native habitat.*

Human actions driving salmon declines are many: thoughtlessly over-engineered rivers with too many dams that block migratory salmon and destroy downstream water quality; massive dewatering of key salmon-producing rivers, some of which – like the once great San Joaquin River in California – were totally dewatered for decades; poorly thought out logging and agricultural practices that drive sediment loads up to fatal levels for fish, and fill our rivers with toxic, fish-killing pesticides; widespread land-use, urbanization and water diversion policies that ignore natural river processes and fish needs, and which destroy key salmon spawning and rearing habitat from estuaries to far inland. Widespread and accelerating climate change (also driven by human-generated greenhouse gases) just exacerbates all these problems.

Even though greatly diminished from historic baselines, and both coastal Oregon and Columbia-origin salmon runs still contribute greatly to the Pacific Northwest's economy, for decades salmon have also been disappearing from the Pacific Northwest at alarming rates. Once too numerous to count, these fish today persist at only a small fraction of their historic abundance.

The collapse of what were once the world's largest runs of salmon has led the National Marine Fisheries Service (NMFS, also known as "NOAA Fisheries") to protect 28 different salmonid populations as either threatened or endangered under the federal Endangered Species Act.<sup>26</sup> For many other populations it is too late – *they are already extinct*. The industrialization and pollution of Oregon's watersheds in ways, including diminished water quality, that have caused the elimination and degradation of available salmon spawning and rearing habitat has been a major factor in these declines.

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<sup>25</sup> Available from AFS archives at: <https://fisheries.org/books-journals/fisheries-2/>

<sup>26</sup> See NOAA Fisheries ESA listed salmon & steelhead list at: <https://www.fisheries.noaa.gov/species/pacific-salmon-and-steelhead>.

Despite some recent efforts to recover damaged salmon runs, Oregon's once-abundant salmon are still very much in trouble, and so are the Oregon commercial fishing families and coastal communities who depend upon them for their livelihoods. Salmon landings in our Oregon commercial ocean fisheries have dropped off dramatically in recent years, with long-term trends downward, in spite of annual fluctuations (see Chart 2).<sup>27</sup> To separate out the long-term trends from annual fluctuations, we simply take landing averages derived from several-year periods, and then compare those to similar ranges of other years, such as these ranges:

1950-1960 average annual landings = 10,910,050 pounds  
2010-2020 average annual landings = 2,651,122 pounds

LOSSES between these two periods = 76% lost productivity

What those losses mean in practice is that, as compared to the average landings in the years 1950-1960, some 8,258,928 landed pounds of salmon are now effectively missing annually, on average, from Oregon's commercial ocean salmon fisheries. At an *ex vessel* price of \$3.33/pound landed (which was what was received in 2020, using the figures in Chart 2), this means that *more than \$27.5 million dollars in economic value has been taken from Oregon's coastal salmon-dependent communities, on average, each recent year because of pervasive salmon declines*. This has meant lost jobs, collapsing fisheries infrastructure, and lost economic opportunities for these communities' futures.

Oregon salmon runs also contribute considerable numbers of salmon to viable ocean salmon fisheries in Washington State, where north-migrating Oregon-origin salmon are intermingling with stocks from other states, and thus Oregon-origin salmon greatly contribute to Washington State ocean salmon harvests.

When fewer Oregon-origin salmon migrate into and though Washington's waters, however, this translates directly into lower salmon catch limits, shorter seasons, and a reduced ability for commercial fishing families to earn a living. Chinook (king) salmon and Coho salmon are also the most commercially valuable of western Washington's salmon species,<sup>28</sup> and these are the species that have seen some of the steepest declines in Oregon as well as in Washington.<sup>29</sup> From 1950 to 1955 in Washington, commercial landings of Chinook salmon averaged 10,248,683 pounds and coho averaged 11,779,067 pounds, but from 2011 to 2016, chinook landings averaged only 5,866,870 pounds, a reduction of about 43%, and coho landings averaged only 3,102,894 pounds,

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<sup>27</sup> Nat'l Marine Fisheries Serv., Annual Commercial Landing Statistics (searchable by state, species, and year), <https://www.fisheries.noaa.gov/national/sustainable-fisheries/commercial-fisheries-landings>. Sorted from 1950 to 2020 for Chinook and Coho salmon (pink, chum and Sockeye salmon are not usually caught in Oregon ocean commercial fisheries so landings for those species are not significant in Oregon ocean commercial fisheries).

<sup>28</sup> See Gislason & Knapp, *supra* n.6, at 12 Exh. 2 (compare weight landed with *ex-vessel* value).

<sup>29</sup> See Wash. State Recreation and Conservation Office, Governor's Salmon Recovery Office, *State of Salmon in Watershed 2016* at 2 (showing declining trend in non-Tribal Chinook and Coho harvests from the 1970s through 2015), <https://stateofsalmon.wa.gov/>

a reduction of about 74%.<sup>30</sup> This is the same pattern of declines as in Oregon’s salmon populations, and for many of the same reasons – *pervasive loss of in-stream spawning and rearing habitat*.

And these numbers represent only the declines in ocean salmon harvests. Similar declines have occurred in inland recreational salmon fisheries, particularly in the Columbia Basin, as well as declines of harvestable salmon for the various Treaty Tribes who have a right to catch fish that all too often these days are simply not there!

**The good news is that much of what has been lost over the past decades in salmon economic contributions could be recaptured through appropriate salmon habitat restoration investments.** The restoration work needed to return Oregon’s salmon runs back to health are thus not purely “costs”-- they are investments that over time, and with the return of these salmon, will generate more jobs and prosperity for our rural coast economies indefinitely and on a sustainable basis. It also means investing in improved water quality in our coastal and inland salmon-bearing rivers, which is the whole point of currently proposed TMDL water quality standards improvements.

Salmon watershed restoration also includes investing not only in the protection and restoration of Oregon’s coastal salmon-producing watersheds, but also for salmon produced in Columbia River watersheds, as for instance in the Columbia Basin Partnership’s currently active 100-year salmon restoration plan.<sup>31</sup> One estimate of how much purely monetary value such a Columbia Basin salmon restoration program could return to our Pacific Northwest economy is that restored salmon fisheries in the Columbia Basin could generate up to \$500 million/year in regional personal income and support up to 25,000 additional family wage jobs.<sup>32</sup>

Learning to make those watershed restoration and water quality investments wisely and efficiently is one of the underlying themes of Oregon’s ongoing efforts to restore its damaged salmon runs – and is ultimately also the purpose of this Rulemaking.

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Salmon Values Report (OR) (10-28-22)

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<sup>30</sup> National Marine Fisheries Service (NMFS), *Annual Commercial Landing Statistics*, supra, for Washington numbers.

<sup>31</sup> See citation in footnote 19.

<sup>32</sup> *The Cost of Doing Nothing: The Economic Burden of Salmon Declines in the Columbia River Basin*, Institute for Fisheries Resources (Oct. 1996), available at: <http://pcffa.org/wp-content/uploads/2016/10/CDNReport-Columbia.pdf>. These numbers are also in 1996 dollars, so would be higher today given changes in the value of money over time.

**CHART 2: OCEAN COMMERCIAL SALMON LANDINGS  
IN THE STATE OF OREGON  
(Chinook and Coho salmon only)**

YEAR	Pounds	Metric Tons	<i>Ex Vessel</i> Value
1950	11,194,000	5,078	2,509,761
1951	13,173,500	5,975	3,282,294
1952	12,266,800	5,564	2,573,092
1953	9,685,400	4,393	1,989,508
1954	8,153,000	3,698	1,824,483
1955	12,230,100	5,548	3,098,872
1956	13,952,300	6,329	4,014,994
1957	10,927,000	4,956	2,820,523
1958	7,479,700	3,393	2,410,984
1959	4,753,600	2,156	1,489,460
1960	5,285,100	2,397	2,074,687
1961	6,912,800	3,136	2,531,718
1962	7,130,000	3,234	2,550,455
1963	8,198,700	3,719	2,591,074
1964	9,802,100	4,446	3,036,117
1965	11,570,400	5,248	3,442,846
1966	12,355,000	5,604	3,971,916
1967	16,011,400	7,263	5,722,746
1968	9,562,100	4,337	3,553,894

The Value of Salmon to Oregon  
28 October 2022

1969	10,176,300	4,616	4,126,915
1970	19,396,000	8,798	8,974,127
1971	16,795,500	7,618	5,595,758
1972	11,571,800	5,249	6,471,882
1973	16,904,700	7,668	11,765,135
1974	15,188,100	6,889	12,796,698
1975	12,375,900	5,614	9,422,249
1976	15,246,700	6,916	18,895,482
1977	10,257,176	4,653	16,354,814
1978	8,691,429	3,942	12,024,512
1979	10,965,282	4,974	21,849,449
1980	7,209,972	3,270	10,936,910
1981	6,595,933	2,992	10,734,465
1982	8,563,376	3,884	12,354,579
1983	2,586,279	1,173	2,980,345
1984	2,940,843	1,334	4,433,389
1985	5,674,745	2,574	8,526,602
1986	13,415,519	6,085	14,970,122
1987	14,542,534	6,596	26,380,110
1988	17,441,956	7,912	38,499,238
1989	11,447,111	5,192	14,076,519
1990	5,244,099	2,379	9,437,230
1991	5,216,452	2,366	5,750,836
1992	2,123,329	963	3,530,246

The Value of Salmon to Oregon  
28 October 2022

1993	1,697,997	770	2,348,154
1994	1,209,282	549	1,422,401
1995	2,792,859	1,267	3,551,677
1996	2,828,275	1,283	3,283,966
1997	2,234,306	1,013	2,768,342
1998	1,971,040	894	2,587,673
1999	1,549,070	703	2,040,279
2000	3,123,204	1,417	4,026,514
2001	5,254,772	2,384	5,841,059
2002	6,115,468	2,774	6,932,424
2003	6,719,581	3,048	8,868,128
2004	5,929,546	2,690	12,988,978
2005	4,681,290	2,123	10,434,476
2006	1,777,806	806	4,931,865
2007	1,341,732	609	4,622,494
2008	1,789,490	812	4,117,299
2009	2,281,782	1,035	3,529,415
2010	2,746,295	1,246	7,676,296
2011	2,387,824	1,083	6,719,210
2012	1,918,901	870	6,935,089
2013	3,502,259	1,589	12,415,609
2014	6,374,659	2,892	20,066,563
2015	3,134,308	1,422	11,826,615
2016	1,818,812	825	8,259,155

The Value of Salmon to Oregon  
28 October 2022

2017	1,184,322	537	5,529,111
2018	950,632	431	5,653,121
2019	992,740	450	4,148,577
2020	1,500,464	681	4,997,309

1950-1960 average annual landings = 10,910,050 pounds

2010-2020 average annual landings = 2,651,122 pounds

LOSSES as between these two periods = 76% lost productivity

Data from National Marine Fisheries Service (NMFS), *Annual Commercial Landing Statistics* (searchable by state, species, and year), <https://www.fisheries.noaa.gov/national/sustainable-fisheries/commercial-fisheries-landings>. Sorted from 1950 to 2020 for Chinook and Coho salmon only (Pink, Chum and Sockeye salmon are not usually caught in Oregon ocean commercial fisheries so landings for those species are not significant in Oregon ocean commercial fisheries). Values are estimated *ex vessel* (i.e., wholesale at the dock by processors) prices, and are not adjusted for inflation in annual citations. These are also raw pounds, not dressed pounds.

## **APPENDIX A**

### **Economists' Guidance Principles for Salmon Restoration Costs vs. Benefits Analysis**

References:

A Letter from Economists to Governors of Oregon (Kitzhaber), California (Wilson), Washington (Loche) and Alaska (Knowles) and Premier of British Columbia (Clark). (Sept. 9, 1998) [77 signatures]

A Letter from Economists to President Bush and the Governors of Eleven Western States Regarding the Economic Importance of the West's Natural Environment. (December 3, 2003) [95 signatures]

09 September 1998

Governor John A. Kitzhaber  
State Capitol Building  
Salem, Oregon 97310

Governor Tony Knowles  
Office of the Governor  
P.O. Box 110001  
Juneau, Alaska 99811

Governor Gary Locke  
Office of the Governor  
P.O. Box 40002  
Olympia, Washington 98504-0002

Governor Pete Wilson  
State Capitol Building  
Sacramento, California 95814

Premier Glen Clark  
Office of the Premier  
Room 156, West Annex  
Parliament Buildings  
Victoria, BC V8V 1X4 Canada

Dear Governors Kitzhaber, Knowles, Locke, and Wilson, and Premier Clark:

Decisions regarding the management of Pacific salmon, many of which are experiencing deep declines in numbers, can affect a vast landscape along the western edge of North America and markedly influence the region's future economy. With this letter, we hope to help lay the foundation for the public debate over the economic aspects of these decisions.

Most of the discourse on the economic issues of salmon recovery has focused too narrowly, concentrating almost exclusively on the costs of recovery. Costs are indeed important, but they tell only part of the economic story. We encourage you and the members of your Administrations to adopt a broader perspective and consider the full range of economic consequences of salmon-management decisions. Toward this end, we recommend that you examine and weigh all these factors:

\* Costs, Benefits, and Net Benefits.

Salmon recovery will generate economic benefits as well as costs. To understand the net benefit (a net cost if negative) to the economy as a whole, one must consider the effects on the production of all goods and services. The effects on goods and services that are traded in markets, such as commercial salmon, timber production, and agricultural production, should receive the same consideration as those, such as recreational fishing, clean streams, and biodiversity, that are not. A full accounting must be provided of the true value of each affected good or service, taking into account the market price, where appropriate, as well as all factors, such as subsidies, taxes, and environmental externalities, that distort the level of supply or demand. Some of the benefits and costs will manifest themselves in the

immediate vicinity of the resources affected by salmon recovery, while others will manifest themselves at greater distances.

\* Jobs, Incomes, and Transitions.

Salmon recovery will have diverse impacts on labor markets, increasing some demands for labor and decreasing others. It also may affect the spatial distribution of the supply of labor by influencing the location decisions of some households. To understand the resulting impacts on jobs and incomes, one must consider the salmon-related changes in demand and supply against the backdrop of the markets' ability to adjust. One should examine both the overall change in jobs and incomes as well as the transitions for affected workers, their families, and their communities.

\* Distribution of Economic Consequences.

The positive and negative effects of salmon recovery will not be distributed equally. Identifying the winners and losers can create opportunities to explore options for breaking political gridlock—by clarifying mechanisms, for example, for the winners to provide some compensation to the losers.

\* Rights and Responsibilities.

Owners of natural resources affected by salmon-recovery measures have both rights regarding their use of these resources and responsibilities not to exercise these rights in ways that unreasonably restrict the rights of others. This is true of both private- and public-property owners. To understand the costs and benefits associated with salmon recovery, one first must have a clear understanding of the relevant rights and responsibilities, because society might assign very different values to two recovery actions that are otherwise identical but one restricts a property owner's rights and the other forces it to comply with its responsibilities.

\* Uncertainty and Sustainability.

Nobody can eliminate the uncertainty regarding how salmon-recovery decisions will affect salmon populations and the economy, and it is inevitable that some decisions will not yield the desired outcomes. Reversing undesired outcomes is always costly, however, some outcomes are less costly to reverse than others. Some, of course, are irreversible. To understand the full economic consequences of salmon-recovery decisions, one should consider the potential reversal costs if the decision should yield undesired outcomes.

\* Looking Beyond Salmon.

To understand the full consequences of salmon recovery, one must look beyond those tied to the salmon, themselves, and examine those linked to the productivity and use of the surrounding ecosystem. Changes in ecosystem productivity may occur through the restoration of the ecological functions of salmon-bearing streams and the surrounding watersheds that will accompany salmon recovery. Changes in the use of the resources of the larger ecosystem may have both positive and negative effects on the economy.

We hope you will consider the factors outlined here, and use this outline to improve the public's understanding of the full economic consequences of salmon recovery.

Sincerely,

W. Ed Whitelaw  
University of Oregon/ECONorthwest

Ernest Niemi  
ECONorthwest

And the following co-signing economists:

Russ Beaton, Willamette University  
Peter Berck, University of California Berkeley  
Bruce Blonigen, University of Oregon  
Peter Bohmer, Evergreen College  
Richard Brinkman, Portland State University  
Gardner Brown, University of Washington  
Walt Butcher, Washington State University  
Kevin Calandri, California State University Sacramento  
Arthur Caplan, Weber State University  
Ken Casavant, Washington State University  
Laura Connolly, Oregon State University  
Jeffrey Connor, Oregon State University  
Robert Curry, California State University Sacramento  
Elizabeth E. Davis, Oregon State University  
Robert Deacon, University of California Santa Barbara  
David Donaldson, University of British Columbia  
Bryan Ellickson, University of California Los Angeles  
Mark Evans, California State University Bakersfield  
Anthony Fisher, University of California Berkeley  
David E. Gallo, California State University Chico  
Alan Gin, University of San Diego  
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Theodore Groves, University of California San Diego  
A.R. Gutowsky, California State University Sacramento  
Steve Hackett, Humboldt State University  
Brent Haddad, University of California Santa Cruz  
Dan Hagen, Western Washington University  
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Richard B. Howarth, Dartmouth  
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Roger Noll, Stanford University  
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Kate Stirling, University of Puget Sound  
Joe Story, Pacific University  
Rod Swanson, University of California Riverside  
Paul Thorsnes, Grand Valley State University, Michigan  
Victor Tremblay, Oregon State University  
Charles Vars, Oregon State University  
John F. Walker, Portland State University  
Norm Whittlesey, Washington State University  
Yung Yang, California State University  
Ross Youmans, Oregon State University  
Zenon X. Zygmunt, Western Oregon University

Note: Affiliations are for informational purposes and do not imply consent by organizations.

cc: David Anderson, Minister, Fisheries and Oceans, Canada  
Will Stelle, National Marine Fisheries Service

**December 3, 2003**

**A Letter from Economists to President Bush and the Governors of Eleven Western States Regarding the Economic Importance of the West's Natural Environment.**

To:

President George W. Bush  
The White House  
1600 Pennsylvania Avenue NW  
Washington, DC 20500

The Honorable Dave Freudenthal, Governor of Wyoming  
State Capitol Building  
Cheyenne, WY 82002-0010

The Honorable Kenny Guinn, Governor of Nevada  
State Capitol  
101 North Carson Street  
Carson City, NV 89701

The Honorable Dirk Kempthorne, Governor of Idaho  
700 West Jefferson, 2nd Floor  
P.O. Box 83720  
Boise, Idaho 83720-0034

The Honorable Ted Kulongoski, Governor of Oregon  
160 State Capitol  
900 Court Street  
Salem, Oregon 97301-4047

The Honorable Gary Locke, Governor of Washington  
PO Box 40002  
Olympia, WA 98504-0002

The Honorable Judy Martz, Governor of Montana  
P.O. Box 0801  
204 State Capitol  
Helena, MT 59620-0801

The Honorable Janet Napolitano, Governor of Arizona  
1700 West Washington  
Phoenix, AZ 85007

The Honorable Bill Owens, Governor of Colorado  
136 State Capitol  
Denver, CO 80203-1792

The Honorable Bill Richardson, Governor of New Mexico  
Office of the Governor  
Room 400, State Capitol Building  
Santa Fe, NM 87501

The Honorable Arnold Schwarzenegger, Governor of California  
State Capitol Building  
Sacramento, CA 95814

The Honorable Olene Walker, Governor of Utah  
210 State Capitol  
Salt Lake City, UT 84114

Dear Mr. President;  
Dear Governor Freudenthal;  
Dear Governor Guinn;  
Dear Governor Kempthorne;  
Dear Governor Kulongoski;  
Dear Governor Locke;  
Dear Governor Martz;  
Dear Governor Napolitano;  
Dear Governor Owens;  
Dear Governor Richardson;  
Dear Governor Schwarzenegger;  
Dear Governor Walker:

We are economists, and we are writing to express our concern about federal and state actions that harm the West's natural environment and, as a result, the economic outlook for this region's workers, families, firms, and communities.

The West's natural environment is, arguably, its greatest, long-run economic strength. The natural landscapes of the western states, with wide open spaces, outdoor recreational opportunities, and productive natural-resource systems underlie a quality of life that contributes to robust economic growth by attracting productive families, firms, and investments. The West's natural environment, however, faces serious challenges that threaten to undermine its contribution to the economy. These include air and water pollution, urban sprawl, the extension of roads and other development into roadless public lands, and fragmentation of habitat for native fish and wildlife.

The economic importance of the West's natural environment is widely recognized. Last year, for example, the Western Governors' Association, recognizing that "There is a lot at stake," reaffirmed its adoption of the Enlibra Principles for guiding policy and decision-making regarding natural resources and the environment.<sup>1</sup>

The seventh of these principles is, "Recognition of Benefits and Costs – Make Sure All Decisions Affecting Infrastructure, Development and Environment are Fully Informed."<sup>2</sup> We endorse this principle, and we commend each of you for your commitments to apply it to the actions of your administration. Despite your commitments, however, many state and federal actions are causing additional environmental degradation, increasing the risks of future degradation, or slowing efforts to reverse past degradation. These actions harm the economy—across the West and in each of the states. They diminish the economic well-being of many residents, divert natural resources from their highest and best use, reduce the

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<sup>1</sup> Western Governors' Association, "Principles for Environmental Management in the West." [http://www.westgov.org/wga/policy/02/enlibra\\_07.pdf](http://www.westgov.org/wga/policy/02/enlibra_07.pdf). p. 2.

<sup>2</sup> Ibid. p. 6.

environmental amenities that are essential ingredients of the West's quality of life, and pass to future generations the costs of cleaning up this generation's environmental messes.

We ask each of you to renew and strengthen your efforts to secure for the West both a healthy environment and a prosperous economy. Toward this end, we ask you to initiate a review of your administration's actions affecting the environment and the economy. This review should:

- Identify actions having a significant impact on the environment and fully describe the benefits and costs of each.
- Reinforce those actions that strengthen the economy by protecting or restoring environmental quality.
- Arrest those actions that damage the economy by degrading the environment.

In the remainder of this letter we describe the linkage between environmental quality and economic prosperity, identify some of the environmental policies and activities harmful to western economies, and express eight principles for capitalizing on the environment-economy linkage.

## **Environmental Quality Is a Major Source of the West's Long-Run, Economic Strength**

In the distant past, the West's natural resources were widely abundant and important to the economy primarily when they were converted into something else. We converted forests, mineral deposits, and streams into lumber, metals, and hydroelectricity; valleys, wetlands, and hillsides into agricultural and urban landscapes; and land, water and air into waste repositories.

Today, conditions have changed.

**Some important elements of the environment are scarcer.** The population and distribution of many native species have diminished markedly. Similarly, the supplies of roadless lands, free-flowing rivers, and unexploited marine areas have diminished and, although there have been some notable improvements recently, much of the West's air and water remains degraded.

**The structure of the western economy has changed.** Though still important, extractive industries (logging, mining, and commercial fishing) and agriculture now play a smaller economic role because their ability to generate new jobs and higher incomes has declined. Across most of the West, a community's ability to retain and attract workers and firms now drives its prosperity. But if a community's natural environment is degraded, it has greater difficulty retaining and attracting workers and firms.

**The economic costs of environmental degradation are rising.** As the West's population increases, so too do the damages (current and future) from exposure to hazardous pollution and the degradation of environmental amenities. As their habitats

shrink, many native species face an increased risk of extinction. Reversing this trend becomes more expensive over time. As ecosystems are degraded, they provide fewer economically valuable services, such as cleansing the water in streams, and communities therefore must provide replacement services with water-treatment plants and other costly investments.

**The economic benefits of protecting and restoring environmental quality are large and increasing.** As the West's population increases, the West enjoys greater economic benefits by avoiding exposure to hazardous pollution, maintaining scenic natural vistas, extending the availability of recreational opportunities in clean environments and on public lands, and sustaining the existence of undeveloped lands and healthy ecosystems.

**Misleading price signals slow economic growth.** Inefficient pricing of many natural resources encourages waste and diminishes economic productivity by allocating resources to low-value uses, while higher-value uses languish. Subsidies to irrigation, logging, public-land ranching, and mining prop up activities that would not take place under efficient, market conditions. Underpricing of urban roads, municipal-industrial water, and pollution emissions sends false signals regarding the true cost of urban sprawl, and the true value of free-flowing streams, and clean air and water.

**Climate change poses significant economic risks.** Global warming threatens to alter winter snow fall in the West's mountains, increasing the risk that runoff in important rivers will fall short of summer demands for water; raise sea levels, increase the risk of coastal flooding, change the distribution of habitats, and increase the risk of extinction for some threatened and endangered species.

As these and related changes evolve, the economic health of western communities increasingly will depend on the health of the environment. Long-run prosperity will derive from efficient, effective efforts to conserve increasingly scarce environmental resources, protect high-quality natural environments, reverse past environmental degradation, and manage congestion in both urban areas and on public lands with high recreational use. Resource-management policies and economic-development activities that significantly compromise the environment will likely do more economic harm than good.

### **Many Current Policies and Activities Degrade or Threaten the West's Environment and Jeopardize the West's Prosperity**

Numerous governmental policies and activities affecting the West's natural resources, which purportedly help the West's economies, are doing just the opposite. Here are a few examples:

**Inadequate investment in parks.** The federal government has failed to maintain the infrastructure and environmental quality of national parks. State and local governments have done the same with their own parks. These failures have weakened the West's economies by reducing the attractiveness of nearby communities to workers and firms and by eroding the foundation for the outdoor recreation and tourism industries.

**Reduced protection for roadless public lands.** By opening roadless lands to vehicular traffic, mining, logging, grazing, and other development, usually at a net cost to the US taxpayer, the federal government has expanded the supply of that which is already plentiful and common at the expense of that which is increasingly scarce and unique. Such actions fail to account for the benefits non-motorized visitors receive from these lands and for the loss of the considerable economic benefits—recreation, high-quality water, wildlife habitat, spiritual values, and more—that public lands provide when they are undeveloped. The loss of these benefits undermines one of the cornerstones of economic strength for communities throughout the West.

**Slow action to conserve threatened and endangered species.** Congress has failed to provide adequate funding, and federal agencies have dragged their feet when called upon to conserve threatened and endangered species. These actions jeopardize the economic outlook for western communities by increasing the risks to species with high economic value, protecting inefficient and often subsidized activities harmful to both the species and the economy, and raising the ultimate costs of conserving the species.

**Slow clean-up of polluted sites.** Federal agencies have not requested and Congress has not provided adequate funding to clean-up Superfund sites promptly. Some state and local governments have slowed the clean-up process. Delayed clean-up of these sites harms the economy by extending westerners' exposure to hazardous materials, diminishing the value of nearby properties, impeding economic-development activities near polluted sites, and giving polluters additional incentives to pollute in the future.

**Ineffective response to risks of global warming.** Current research results are sufficiently robust to conclude that global warming poses significant economic risks to the West, including increases in coastal flooding, more frequent severe storms, and reductions in snowpack resulting in lower summer flows of important rivers and streams. These risks are perpetuated and strengthened by the failure of Congress and the White House to take decisive action to curb emissions of carbon dioxide and other global greenhouse gases.

**Inefficient management of public forests.** Federal and state forest managers emphasize the production of logs, forage, minerals, and other commodities without fully accounting for adverse impacts on services, such as recreation, provision of clean water in streams, sequestration of carbon, and the existence of roadless lands. These actions reduce the overall value of goods and services derived from public forests.

**Lack of appropriate incentives for resource conservation.** With subsidies and inefficient pricing, federal, state, and local policies encourage waste and discourage conservation by hiding from consumers the full costs of resource-intensive activities, such as exploration for oil and gas, irrigation, public-land grazing, and congestion on urban roadways and at public-land recreation sites.

**Unreasonable exemptions from environmental review.** Federal resource managers have granted exemptions for military operations, logging, exploration for oil and gas, operation of motor vehicles on roadless public lands, the use of some pesticides, the emission of air pollution, and other activities. Also, de facto exemptions occur when federal and state agencies fail to enforce environmental laws. The economy is harmed when activities are allowed to proceed even though their economic costs outweigh their benefits.

**Unnecessarily divisive approaches to economic/environmental issues.** The costs—to individual workers, families, firms, communities, and the economy as a whole—of the changing relationship between the economy and the environment are worsened by federal, state, and local actions that promote misunderstanding and divisiveness rather than cooperative problem-solving. Especially divisive and costly are proposals and decisions that presume the economic benefits of an increase in an extractive, agricultural, or development activity necessarily exceed the costs, even when the evidence indicates otherwise. Recent examples include proposals or decisions to:

- Encourage road development, vehicular traffic, and other development on lands with roadless or wilderness qualities, including national parks, national forests, and lands administered by the Bureau of Land Management.
- Promote energy consumption rather than conservation.
- Relax restrictions on emissions of water and air pollution.
- Forgo U.S. leadership of efforts to shape a prompt, efficient and global response to climate-change risks.
- Relax restrictions on the use of or exposure to potentially harmful substances.

### **We Encourage You to Adopt Initiatives that Promote Both a Healthy Environment and a Healthy Economy**

We ask each of you to initiate a review of the economic effects of actions taken by your administration that have a significant impact on the environment. The primary objective of this review should be to identify and correct those actions that are harming the economy by degrading the environment. It also should highlight the merits of those actions beneficial to both the environment and the economy. We urge you to act promptly.

We also urge you to implement appropriate policies and procedures to increase the likelihood that future governmental actions will capitalize on and reinforce the evolving relationship between the West's environment and its economy. These initiatives should incorporate these eight principles:

- Principle #1: Environmental protection has economic benefits as well as economic costs. It has positive as well as negative impacts on jobs and incomes.
- Principle #2: Some economic interests in natural resources are mostly local but, increasingly, the interests are broader in geographic scope: regional, national, and even global.
- Principle #3: To discourage waste, prices for the use of environmental resources should reflect the full costs and benefits to the economy, exclusive of subsidies.
- Principle #4: Given their stewardship responsibilities regarding the environment, it is appropriate for governments to encourage or undertake activities that protect the environment and to discourage or prohibit those that do not. It is also appropriate for government to own and use land and water resources to

protect the environment and to support others who desire to own and use resources for the same purpose.

**Principle #5:** Governments should continually seek to improve the efficiency of their environmental- and resource-management programs without compromising their responsibilities. These programs may include a mixture of regulations, incentives, and public ownership of resources. They should aim to bring about as high a level of environmental quality as possible for a given expenditure.

**Principle #6:** To understand the full, potential economic consequences of a pending resource-management decision, one should consider the potential reversal costs if the decision should yield undesirable outcomes.

**Principle #7:** The benefits and costs of environmental protection and degradation fall unevenly on different groups. Anticipating and mitigating these effects can reduce the controversies over the West's environment and economy. Having the winners compensate the losers, for example, could serve this principle.

**Principle #8:** Owners of natural resources have both rights and responsibilities. Both private- and public-property owners have rights to use their properties in ways that do not unreasonably harm others or restrict their rights. Clarifying and respecting the rights of all parties—including future generations—affected by the uses of environmental resources remains a necessary condition for effective environmental management.

## **Conclusion**

**We are not saying** that resource-intensive industries (agriculture, timber, commercial fishing, and mining) do not play an important role in the West's economies. They are important today, and we expect they will remain important in the future.

**We are not saying** that the shift away from industries and activities harmful to the environment will not hurt some workers, families, and communities. It has in the past and it will in the future.

**We are not saying** that protecting and improving the environment can be accomplished without costs, nor are we saying that governmental entities should disregard such costs. To the contrary, we are calling for consideration of the full range of costs and benefits of policies, decisions, and activities that affect the western environment and, hence, its economy.

**We are not saying** that no progress is being made in capitalizing on the link between environmental health and economic prosperity. Many private-sector firms and public agencies have taken actions to reduce their negative impact on the environment and found that they saved money.

**Rather, we are saying** that nearly all communities in the West will find they cannot have a healthy economy without a healthy environment. Moreover, there exist many opportunities in the West to improve both the environment and the economy, for example, the elimination of inefficient subsidies would make more money available for other public services or to reduce debt. The longer these opportunities languish, the fewer will be the West's jobs, the lower its incomes, and the poorer its communities. Conversely, the sooner we seize these opportunities, the sooner the West will enjoy more jobs, higher incomes, and greater prosperity.

**We are saying** that the economic pressures to arrest and reverse environmental degradation will increase. Those who promise that workers, firms, and communities tied to environmentally harmful activities can avoid these pressures if only the environmental laws, such as the Endangered Species Act, were set aside raise false hopes. The pressures are independent of specific laws. Even if such laws are repealed, the costs of environmentally harmful activities will continue to rise and jeopardize the economic outlook for affected communities. Public officials can best promote long-run economic prosperity in the West by encouraging efficient transitions away from harmful activities toward those beneficial to both the environment and the economy.

**We are requesting** that you recognize the important role the environment plays in western economies and take the steps we've identified to strengthen these economies by protecting and enhancing the quality of the region's natural environment.

Sincerely and respectfully,

*The following individuals have endorsed the contents of this letter. Institutional references are provided for identification only.*

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