COLUMBIA RIVER SALMON RECOVERY ASSESSMENT
Assessment Interview Questions

Responses Provided by

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1. Please tell us about your background, affiliation, involvement and interests with respect to Columbia Basin salmon recovery. Have you been involved in any existing recovery planning efforts?

For over 30 years I have been involved with conservation management of resident and anadromous wild native salmonids in the Columbia River basin. I founded and worked at two conservation organizations, Oregon Trout and the Native Fish Society. I have worked with state, federal and tribal organizations as well as other conservation groups in Oregon, Washington and Idaho for the conservation and recovery of these species. The organizations I founded base their conservation work on science and work with agencies, Congress, and state legislatures to achieve policy outcomes that support protection and recovery of wild salmonids. Our concerns are with the fish rather than the fisheries and we represent the interests of our members most of whom fish and are concerned about the future of these species and the fisheries. Our focus is primarily on the authority of the fish management agencies relating to hatchery and harvest policy and programs. We are also involved in habitat restoration projects and habitat protection. I have also participated in legal action for Puget Sound chinook salmon, upper Columbia River steelhead, Oregon coast coho salmon, among others including Sandy Hatchery impacts on listed chinook, steelhead, and coho. After filing a successful petition to list Snake River chinook and l was invited by Senator Hatfield (Oregon) to participate in the Salmon Summit where state, tribal and federal agencies agreed to work on a plan to recover ESA-listed salmonids.

I have been involved through the organizations I founded in recovery efforts for Molalla steelhead and spring chinook; Sandy River spring and fall chinook, coho, and winter steelhead; mid-Columbia steelhead; Oregon Coastal coho, and Wind River summer steelhead among others. I recommended a $10 million fund be reserved for salmonid habitat when Enron took over Portland General Electric Company and served on the board that selected projects in the Deschutes, Clackamas, and Sandy rivers to improve natural production of ESA-listed salmonids.

2. How will you know Columbia Basin salmon recovery process has been successful? What outcomes will you see? What will have happened/not happened 25, 50 or 75 years from now?

The Columbia Basin salmon recovery process is successful when the wild native populations of each listed species are increasing according to a conservation plan that is river specific for each species and stock. When there is an egg deposition objective that is consistent with estimated capacity of the habitat and harvest is managed to achieve that objective for each stock in each

watershed, and when each river is managed to achieve a nutrient enrichment standard from salmonid carcasses. Recovery will be successful when hatchery introgression with wild salmonids is controlled so that the genetic and phenotypic characteristics of the wild native population are not altered through hybridization, and when naturally spawning hatchery fish with wild salmonids is eliminated. Recovery will be successful when the ecological impact of hatchery fish are no longer a factor that reduces the survival and reproductive success of wild salmonids through competition for food and rearing environments in streams, the estuary and near ocean environments, and through predation and predator attraction on wild salmonids. Recovery will be successful when stream temperatures are no longer a limiting factor, sediment fines do not clog spawning gravels, and human constructed passage barriers no longer fragment the salmonid habitat for juveniles and adults. Recovery will be successful when the chain of habitats that wild native salmonids require in freshwater to complete their life cycle are secure so that these fish can complete their life cycle according to their life history requirements. Recovery will be successful when agricultural, forest, and urban influenced streams have adequate riparian zones and large trees to provide structure and other ecological benefits to streams. Recovery will be successful when dams, reservoirs and introduced non-native and native fish species in these artificial habitats are no longer a threat to self-sustaining natural wild populations of salmonids in the Columbia River basin still available for their reproduction and rearing. In other words when the NOAA Fisheries is committed to and actually dedicates itself to achieving their VSP criteria relative to productivity, abundance, spatial distribution, and diversity for each ESA-listed species and breeding population, recovery will be successful.

Much has been said about dam removal on the Snake River in order to recover wild chinook and steelhead, but even if they were removed not solving the problems listed above will defeat recovery. State and federal governments are not organized to recover endangered salmonids because management of natural resources for commodity production is an impediment to successful recovery. The salmon are managed as a commodity not for self-sustaining natural production, conservation or for recovery. Consequently, the time line for recovery is well beyond the time frame in your question. However, if salmonids and their habitats were to be managed for salmon conservation, recovery would be remarkably fast. It would be well on its way in 25 years and complete in 50 years or ten life cycles for chinook. Restrictions on harvest and removal of hatchery fish have already resulted in strong recovery for Oregon coastal coho, Asotin Creek steelhead and spring chinook, Wind River summer steelhead, and Molalla River winter steelhead. This would indicate that while the habitat in these watersheds is not pristine the wild salmonids have the ability to increase their productivity, abundance, and diversity under existing habitat conditions. Habitat and ocean productivity are routinely used by the fishery agencies to explain declining salmonids, yet they, at the same time, avoid analysis of hatchery and harvest impacts on these species.

3. What do you see as the major issues that need to be addressed in a comprehensive, effective basin-wide recovery plan? How should Basin-wide priorities be considered and discussed with parties?

The major issues have been covered in the comments above. The only way to establish basin-wide conditions that support the recovery of ESA protected species is for the agency with the authority under federal law to enforce the Endangered Species Act. NOAA Fisheries develops a scientifically sound recovery plan for each watershed and works with the public and local agencies, tribes and states to support and implement the recovery plan. The N.W. Power Planning and Conservation Council has already developed subbasin plans. These can be used as a blue print to develop a recovery plan in each subbasin and for the whole Columbia River basin. Investing in monitoring and evaluation of results is essential and compliance monitoring is critical to make sure that the various government agencies and publics are following the recovery plan.

Management Framework: Salmonids and their habitats are managed as a commodity utilizing an industrial model of product production for the market. Consequently, fish, land, and water management agencies within state, federal and local governments view salmon and their habitats in numerical terms rather than as ecological assets that function biologically. Consequently, management to secure biological criteria such as diversity, productivity, spatial structure and spawner abundance are foreign concepts that do not fit the existing management framework. As a result wild salmonids are in decline, many have been extirpated, and most populations are protected under the Endangered Species Act. The existing and dominate management framework with its emphasis on commodity production has and will continue to preclude wild salmonid recovery and conservation. The first and most important action is to change the management framework that government now applies to salmon management. This means institutional and social change. Without this fundamental change conservation and recovery of wild salmonids is unlikely to be successful regardless of how much money is spent. Our history of spending a billion dollars a year on Columbia River salmon recovery without measurable results is a strong indicator that the present management framework is not working. We have created a salmon recovery industry rather than wild salmonid recovery.

Harvest management: Currently, harvest management of mixed stock fisheries is based on harvest rate rather than on escapement requirements to rebuild and sustain native wild salmonids in each watershed. By managing salmonids on an aggregate basis the risk to each wild population in each watershed is increased such that conservation and recovery are secondary to fisheries. In order to optimize conservation and recovery of salmonids it is necessary to replace mixed stock harvest with selective fisheries that are regulated to provide spawner abundance targets for each watershed. Targets are based on biological criteria to conserve and recover each river population by species and life history diversity. This includes nutrient enrichment criteria using salmonid carcasses for each watershed. Fisheries are managed so that biological criteria are achieved for each watershed and wild population. Compliance monitoring is required and the results are provided annually for public information. Protection of juvenile salmonids from harvest is included in a conservation requirement for each river population. Protection of wild salmonids

throughout their life cycle is necessary for conservation and recovery. This means that angling in streams for trout requires regulations for the use of lures and flies with barbless hooks so that mortality of juvenile salmonids is reduced. It also means that there can be no kill fisheries on wild resident trout.

Hatcheries: In order to maintain wild population reproductive fitness, diversity, abundance, and productivity, naturally spawning hatchery fish must be excluded so that interbreeding and ecological impacts are not a risk factor for wild salmonids. In addition, the transfer of hatchery fish among watersheds is no longer a management option so that it is possible to maintain the genetic and life history diversity of locally adapted native wild salmonids in each river. Hatcheries contribute to the decline of wild salmonids, therefore they must be evaluated in terms of that impact. Hatchery accountability for cost to produce a salmon that is harvested and for their impact on the wild salmonids is necessary in order to better define an effective hatchery. Hatcheries are paid for with public funding through Congress and utility bills and have become the largest funding asset for government agencies. Because they are publicly funded the public should be informed about the costs and benefits of their money. Hatchery economic evaluation is not balanced for it is limited to benefits without an assessment of the costs to provide those benefits. In 2002 the Independent Economic Advisory Board (IEAB) for the N.W. Power Planning and Conservation Council reviewed twelve hatchery programs in the Columbia Basin and determine that the average cost to produce a fish that is harvested at $9,000. An independent economic review of Mitchell Act funded hatchery programs pointed out that for all hatchery programs for all species, the Mitchell Act Hatchery program was a deficit spending program. As a result the government fishery agency, in this case NOAA Fisheries, fired them and found an economist that would give them the answer they wanted. It costs $68,000 per returning hatchery salmonid to the Snake River when all costs are included. When the IEAB proposed to do an economic evaluation of all Columbia River hatchery programs, it was denied. The government fish management agencies do not want a cost evaluation of producing a salmon that is harvested. The cost of the hatchery program in ecological terms is another factor that has not been addressed by the government fishery agencies, but the science clearly indicates that hatchery fish have lower survival than wild salmonids and that they have a negative impact on recovery and the investment in recovery of wild salmon. This scientific information has been accumulating for over 30 years, but the government fishery management agencies have resisted including it in management plans including biological opinions, HGMPs, harvest, recovery plans and hatchery programs.

Habitat: Wild salmonids depend on a chain of life history supporting habitat conditions throughout each natal stream. Each species utilizes the habitat differently and the habitat conditions that support their life cycle requirements must be identified and maintained. The primary environmental conditions include stream structure, shade, water temperature, sediment fines, riparian habitat as key factors to maintain the productivity of a stream for wild salmonids. These conditions must be maintained and improved by deliberate coordination among federal and state natural resource agencies and county and urban stream protection policy. Fish

management plans developed by state and federal fishery agencies do not include agreement among land and water management agencies to support the fish plan, consequently the fishery plans are primarily harvest plans and lack an ecological basis needed for recovery.

4. What are the challenges or barriers to addressing these issues?

As I stated in the section above regarding the "management framework" for salmon is not able to develop an effective salmonid recovery program. That management framework is a conceptual foundation that treats salmon no differently than a corn crop or a Douglas fir tree farm for the purpose of product production. This mindset can also be referred to as the motive of fishery management that converts a naturally diverse and productive biological system into a manufacturing process to secure continued funding and using product production to justify it. However, corn and Douglas fir are subject to disease and drought and new resistant forms of corn and growing methods have to be developed to maintain product production. Forestry has learned that Douglas fir are adapted to local conditions including elevation, aspect, and precipitation. Transplanting Douglas fir from one area to another has an impact on growth and production, leading to developing zones where seeds are collected and replanted to achieve the best results for fiber production. Douglas fir are not interchangeable because they are locally adapted. However salmon continue to be transferred among watersheds even though scientific research in the 1930s pointed out that salmon are locally adapted to their natal streams. Each river should be treated as a conservation unit based on a river specific management plan with quantifiable objectives, stated assumptions, along with a monitoring and evaluation program to verify whether objectives were achieved and assumptions are evaluated.

There are numerous barriers to salmonid recovery in the Columbia River basin. The focus has been primarily on salmon mortality at hydroelectric dams and in reservoirs, investments in habitat rehabilitation, and expanding the artificial production program. There is a consensus among the affected parties and federal, state, and tribes that these are the issues that need resolution and are the primary barriers for which funding is directed.

The barriers to salmonid recovery that are not being addressed effectively are (1) ecological and economic impacts of the artificial production and harvest programs on ESA-listed and non-listed wild native salmonids, (2) harvest management support for achieving spawner escapement objectives for subbasins, (3) nutrient enrichment of subbasins with salmon carcasses, and (4) institutional reform such that science is applied to management and that the law is followed and the truth is told. In other words the lack of agency accountability is a major barrier to salmon recovery.

Frankly, when I proposed listing Snake River chinook and lower Columbia River coho salmon in 1990, I suspected that recovery of threatened salmonids would not change because the fundamental framework of salmonid management would remain the same as before the federal listing only with more funding going toward status quo management. It has turned out that the ESA has only created what I call the Salmon Recovery Industry, where the status quo is preserved with greater funding. For example, removal of the Snake River dams, or some of them, for salmon recovery would not likely improve recovery of ESA-listed species because the salmonid management framework would still be in place. Consequently, the major barrier to salmon recovery is primarily being strangled by politics and funding. Funding has not been a barrier to

salmon recovery; it is how funding is applied to salmon recovery and the programs it supports that are the problem. For a discussion of this issue see the article by Jim Lichatowich and Richard Williams (2009) Failure to Incorporate Science into Fishery Management and Recovery Programs; Lessons from the Columbia River.

5. How might these challenges or barriers be overcome? Do you have suggestions for approaches or processes that would be most useful in addressing the above topics and why?

Since NOAA Fisheries has the authority to direct recovery actions and verify their success or failure, it is necessary for NOAA to do its job. I say this because NOAA has allowed the states and tribes to protect the status quo of salmonid management, harvest and production through a permit process rather than use their authority under the ESA to change 130 year old management framework so that threated species are recovered. For example, in the upper Willamette ESU, NOAA has allowed the state of Oregon to continue releasing non-ESU, non-native summer steelhead as mitigation for ESA-listed threatened wild winter steelhead. This program is not even logical and cannot be justified on any legal, scientific or biological basis. Yet it persists. Likewise, non-native summer steelhead are released into other rivers where they compete and spawn with ESA-listed winter steelhead. Spring/summer chinook and summer steelhead listed as threatened under the ESA are being replaced with hatchery fish of the same species in the Snake River basin, an action that is not supporting recovery of threatened salmonids. B-Run steelhead in the Snake Basin are more likely to go extinct than when they were listed. The Native Fish Society has sued NOAA Fisheries and the State of Oregon over recovery of ESA listed coho, winter steelhead, spring chinook, and chum salmon on the Sandy River only because the state management is not consistent with protected species recovery. This river is also one where non-native hatchery summer steelhead are released to compete with and interbreed with threatened wild winter steelhead. It is clear that a major barrier to recovery of ESA-listed species is due to NOAA Fisheries permitting process that allows the states to continue status quo management. The only suggestion for resolving this issue on the Sandy River and all other rivers with protected species that are at risk from federal, state and tribal fishery management is for NOAA Fisheries to follow the law. Since that is unlikely, given present governance, the only practical solution is through federal court.

6. What changes if any to the existing processes might you recommend for addressing salmon recovery in the long term? What do you think will happen if the "status quo" continues?

The primary solution is for NOAA Fisheries to implement their authority to recover species of salmonids protected by the ESA rather than sanction the status quo management of the states, tribes and federal land and water management agencies that have caused the problem of salmonid decline over the last 150 years. It is also critical that NOAA Fisheries management integrate science into their management decisions from all sources, including the NOAA Science Center. In order for that kind of institutional change to take place managers who are now in control will probably have to be replaced by people with a science or research expertise rather than government fish management experience. Lacking a deliberate institutional change that aligns management with science, the status quo will persist. If the status quo persists, salmonids will become extinct in the Northwest just as Atlantic salmon have in New England.

The logical and perhaps the unavoidable outcome from salmon management over the last 150 years is the eventual replacement of wild salmonids with artificially propagated fish, leading to

the extinction of wild salmonids and the resilience their biological diversity provides. As the cost to provide the replacement hatchery fish is discovered and becomes politically unsustainable (these are public funds after all) the hatchery programs will be losing funding support. Hatcheries are a social and political construction dependent upon public support. When we exterminate wild salmonids and lose funding for replacement hatchery salmonids, the outcome will be no sustainable commercial or sport fisheries and the economic benefits they provide. A lesson to be learned from salmon recovery efforts on the Connecticut River is that once the wild salmon were lost and the river converted to other uses, recovery of salmon is not cost effective. It is for that reason that the U.S. Fish and Wildlife Service terminated their salmon recovery program on the Connecticut River in 2013 and is likely to end salmon recovery efforts on the Merrimack River. The lesson is once the wild salmon are lost recovery is unlikely, but expensive.

7. Are you aware of, or have you participated in, any processes that you think could in some way serve as a model?

There are several successful experiments that are on-going in the Columbia River Basin that have proved to be successful. These are the management system applied to Molalla River winter steelhead, Asotin Creek, summer steelhead and spring chinook, and Wind River summer steelhead. There are others that are working such as Joseph Creek summer steelhead. Joseph Creek (Grand Ronde River) have been relatively stable even though they must pass eight mainstem dams twice to complete their life cycle and are subject to an incidental kill sport fishery, a tribal net fishery kill, and dam related morality. This population is resilient because the habitat is remote and largely protected, and no hatchery fish are released into the stream and stray hatchery fish are few in number. The only hatchery program that I am aware of that is operated to protect wild salmonids is the Warm Springs Tribes hatchery of the Warm Springs River, a tributary of the Deschutes River in Oregon. Even though the Warm Springs spring chinook salmon are not listed the hatchery design could serve as a model for salmon recovery while producing fish for harvest. The attributes of this hatchery plan is based on achieving a wild spring chinook spawner abundance goal, and blocking hatchery spring chinook from spawning naturally with wild spring chinook.

The elements that these models share support recovery:

1. The habitat is being restored or has been restored and protected; access to the entire watershed has been provided by removing barriers. Pristine habitat is not required for recovery.

2. Kill fisheries are eliminated or controlled to secure escapement requirements to the spawning and rearing habitats of the watershed.

3. An escapement (spawner abundance) requirement has been established based on an estimated carrying capacity of the watershed for each species. To be effective, ultimately, the carrying capacity of the habitat must be verified, for the fishery agencies involved tend to underestimate the capacity and the spawner abundance needed to fully seed it.

4. Hatchery fish are no longer released in the watershed, especially those of the same species being recovered, or the hatchery fish are effectively blocked from reaching the spawning and rearing habitats of the wild fish being recovered and therefore they are not interbreeding or causing ecological impacts that limit the productivity and reproductive fitness of the ESA-listed

species. The effectiveness of this arrangement has to be verified through a monitoring and evaluation program coupled with adaptive management. Since hatchery fish can cause ecological impacts in downstream areas, those impacts must be addressed and resolved. For example, some scientific research on the Columbia points out that nutritional requirements, predator attraction and predation factors that hatchery releases impose on wild salmonids is retarding recovery.

5. More than a fish recovery plan is needed. Most fish management plans are focused just on the fish. There is a lot of discussion about fish habitat constraints and very little discussion about constraints imposed by harvest and hatchery programs on the wild fish. There is typically a feel good introduction about how important conservation is, but the plan is not designed to accomplish conservation as much as to meet harvest goals. To have a chance of being effective all land and water managers in a watershed have to be included in the recovery action. However, most fish management and recovery plans do not include an agreement by habitat ownerships to help improve conditions for salmonid recovery and conservation management. Habitat owners have learned to be critical of the fishery management plans for their emphasis on harvest while seeking restraints on habitat development.

8. How can science best be incorporated into recovery planning?

The only time I have seen science penetrate management decision making has been when scientists from research divisions have become part of the executive framework of an agency. Otherwise, science is easily dismissed as an inconvenient and troublesome appendage to agency management authority. I have seen numerous scientists drummed out of an agency because they made executives uncomfortable. As I stated above, the purpose of a fishery management agency is to produce a product for commodity consumption for its users. In other words, the job of a fishery management agency is to kill fish not conserve them even if it may have an impact on the future fishery. This has been made clear by an Oregon Department of Fish and Wildlife bumper sticker that says: "We Hatch 'em and You Catch 'em." Fishery management is based on an industrial manufacturing model for product production; consequently, conservation, recovery, science, ecological thinking, broad public involvement, economic evaluation are all considered constraints on the efficiency of the manufacturing process and executive authority.

Scientists in an agency typically have to go into management in order to elevate their pay and authority within the agency. At present this is considered a poor arrangement not because the scientists are poor managers, but because they can have a different perspective that would include science in decision making and evaluate quantitatively the results of decisions. To correct this problem a fisheries department should be structured so that there is a two tier career track so that scientists can raise their pay and authority within the institution without having to become a front office executive or the head of harvest management, hatchery management or the fish division. Agencies seek MBA types as directors to run the agencies. These are typically people who have no science training or appreciation of science as an important function of the agency. By hiring research scientists as directors of fishery departments would likely improve both management and the application of science to decision making.

The structure of fishery management departments should also be changed in order to provide a framework that is more supportive of conservation and recovery of fishes. That change would place natural production as the primary function of the fishery division and the agency with harvest management and hatchery operations in a supportive role. That means that harvest

management and hatchery operations have to make sense from a conservation and recovery perspective in management decisions.

9. Is there anyone else you think we should be interviewing? Why is it important to speak to him/her?

There are several people who have had a long association with fish management agencies and have contributed substantially to our knowledge about salmonid management, scientific research, and agency function.

Jim Lichatowich

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Jim has conducted research projects for ODFW, was the assistant chief of fisheries, worked for Point-No-Point tribe on the Olympic Peninsula, Washington, and is the author of *Salmon Without Rivers*, and has a second book on salmon management due to be published by OSU Press *Salmo, People, and Place*. Jim is very well read in many disciplines and knowledgeable about the problems and solutions of salmon management.

Sam Wright

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Sam has a long career with state fishery agencies in the state of Washington working with salmon and trout fisheries. He is very knowledgeable and based on his petition, Puget Sound steelhead were listed as a protected species under the ESA. He is now retired.

10. What should we have asked that we did not?

The role that institutional barriers play in salmonid recovery should be specifically addressed in your questions. The decline of wild salmon and resulting degradation of the fishery and ecological benefits they provide society are all due to our view of nature and the institutions we have designed to manage natural resource utilization. We tend to overlook government institutions as a cause of natural resource decline when in fact by any measure institutional structures, policies, laws, and their conceptual framework have failed to sustain salmon on the N. E. and N.W. coasts of North America.