

From: Don Chapman
Sent: Friday, February 25, 2011 7:02 PM
To: Rocky Barker
Subject: Bend speech to Oregon AFS Chapter

Rocky: I promised to send the Bend speech to you. Here it is:

Bend speech notes "Perspectives from the Idaho high country"

Thanks to Colleen and your AFS chapter for inviting a really old fish guy to speak today. As a result of being around a long time, I watched Indians fishing on Celilo falls. And when I drove in 1951 to Winthrop, on the Methow River, to spend the summer as a smokejumper, I saw the Columbia River when only Bonneville and Rock Island lay athwart the river. I'll come back to river history later.

At age 80, I'm taking the liberty of acting for a few introductory minutes as a self-appointed link to a bit of history of fishery management in the Columbia basin. In this day of rapid transport, instant communications, and hand-held devices that do more than a room-sized IBM360 once did, a nod to the past seems justifiable.

Secondly, I'll segue into some comments on modern management models, fish politics, and climate warming. If you watch movie DVDs, you know they often tell you the film producers are not responsible for the opinions expressed in the recorded movies. Unlike them, I alone am responsible for the statements that some of you won't like. Colleen, in charge of recruiting me for the program, cannot be blamed, as she does not know what I will say.

First, the introductory history. As you well know, fishery science has moved from strong emphasis on descriptive to correlative to mechanistic research. Some of the first

descriptors actually came from the Native American culture, where fish run timing and fishing locations can be found in the names of components of the subsistence round.

The Lewis and Clark diaries usefully noted that members of the party took a small canoe 10 miles up the Columbia from the Snake mouth in mid-October 1805. There they found salmon carcasses and dying fish abundant along the starboard shore (that would be river left, looking downstream) in what is now called the Hanford Reach of the Columbia River. This suggests that the peak of spawning upstream in the Reach was over. Fish begin to spawn now in late October in the Reach, and peak spawning arrives in early November; a result of adaptation of Chinook to warmer winter incubation conditions. This I see as an important indication of adaptability, a trait that main-stem Chinook will surely need as the climate warms.

The diaries of Reverend Spaulding, in the 1840s, tell us that fall Chinook were not available in the Clearwater River in September, because he had to travel from his mission at Lapwai down the Clearwater to the Snake to obtain Indian-caught salmon. The river winter temperature units and ice scour probably precluded significant use by fall Chinook of the lower Clearwater and lower Salmon River. Now we have, as a result of hatchery intros and warm winter flows out of Dworshak, fall Chinook spawning and incubating in the lower Clearwater, more evidence of adaptability.

Professional fisheries papers go back to McDonald, who in 1895 warned of drastic overfishing in the Columbia River. His wakeup call should have been no surprise, with up to 1,200 sail-powered gillnet vessels, 45 fishwheels, 240 traps, and 40 beach seines operating in the lower river.

In the Idaho realm, Evermann (1896) traipsed on foot and horse through the upper Snake basin in the early 1890s, sampling and carefully describing distributions, run timing,

catches, and morphology of Chinook and sockeye. These days, when we hop in a pickup and drive to those same areas, we can appreciate Evermann's obstacles and hard work.

The lower Columbia catch data published in Bureau of Fisheries documents for the latter half of the 1800s provide invaluable bases for assessing pre-development fish abundance. Run estimates have ranged from the Council Staff's 16 million fish to my 8.8 million, dependent on whether the calculation assumed a low harvest rate or my higher one.

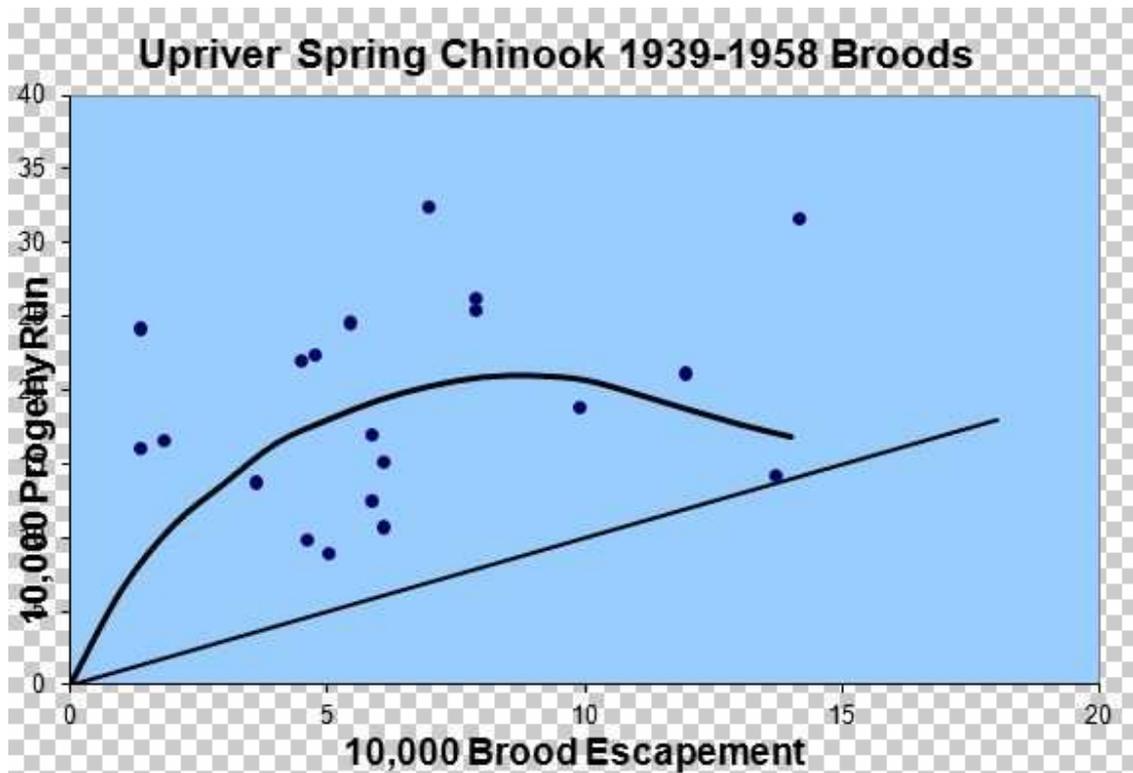
Using catch data, Thompson (1951) showed how overfishing had extirpated the late-spring and summer heart of the bell-shaped distribution of Chinook runs by the end of the 1800s. Clearly, McDonald's warnings of overfishing came too late for that most important run component.

Harvest rates in-river exceeded 80% on summer Chinook as late as 1940. Internal combustion engines had allowed trollers to move into the ocean as early as 1910, and ocean harvest of summer/fall fish jacked up total fishing rate to well over 90% in many years. Meanwhile, environments for anadromous fish shrank and deteriorated.

Canadian biologists dominated top tier fisheries research of the 1950s, including my heroes Bill Hoar, Pete Larkin, and especially Bill Ricker. Adjectives appeared like compensatory, depensatory, density-dependent, density-independent. Group and individual selection advocates debated, with Wynn-Edwards and Andrewartha and Birch providing excellent fodder for ecology classes.

When I moved from Oregon State University to the Oregon Fish Commission as Director of Research for a stint in 1962-63, harvest of spring Chinook usually was an arbitrary 50%, and test fishing established opening dates for gill netters. Immersed in academic

baths of Ricker curves and work of Beverton and Holt, I urged that we begin using a Ricker model and move harvest toward maximum sustained yield, or MSY.



I was far too sanguine in expecting production models to work for us. I mentioned earlier that I passed only two dams *en route* to Winthrop in 1951; Bonneville and Rock Island. By then, The Dalles and McNary dams were under construction. The Snake River dams and John Day soon would follow, along with Priest Rapids, Wanapum, Rocky Reach, and Wells. Plus the tragic construction of Dworshak Dam on the North Fork Clearwater; “tragic” not too strong a word if you are familiar with the pristine tributary spawning areas of Kelly and Cayuse creeks.

Of course Grand Coulee and Chief Joseph were already in place long before. By 1962, private power had won approval over public power for the Hells Canyon complex and

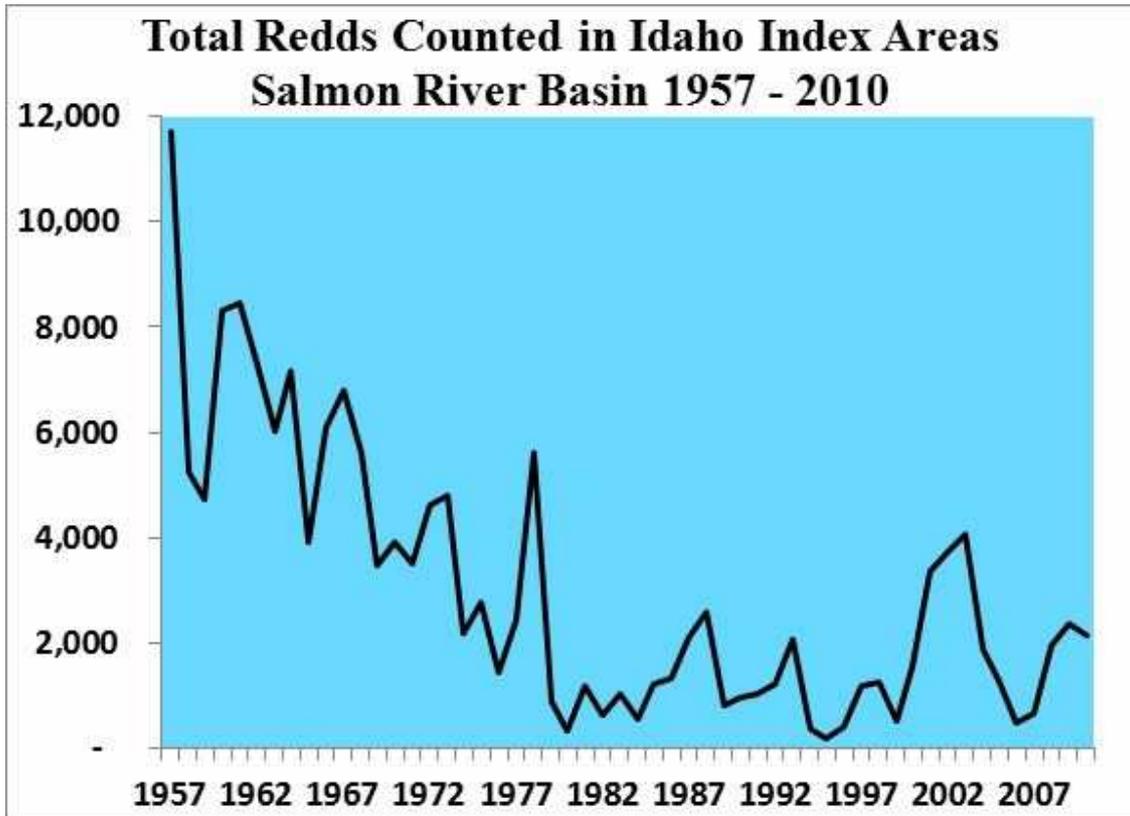
Idaho Power was completing it, not without significant fish mortalities. Although managers could transport adult fish to spawn upstream from the complex, we soon learned that juvenile Chinook and steelhead could not find their way downstream through long, deep reservoirs there, nor could they be strained out of the water column if they did.

Upriver runs in the Snake consisted entirely of wild fish in the early 1960s, a period studied by Howie Raymond in his seminal 1979 paper in TAFS. Run composition changed rapidly with Hells Canyon relocation to hatcheries of spring and fall Chinook and steelhead. And hatchery miscegenation had been underway for over 20 years in the upper Columbia as fish produced above Grand Coulee were trapped at Rock Island and distributed with little or no attention to genetic issues.

In summary, I think our push for production models for Columbia River runs was pretty much a useless exercise. More on the present pertinence of that statement later.

So the productivities for salmon and steelhead were changing apace by the mid-1960s. Instead of the dynamic equilibrium prerequisite to use of stock-recruit models that require empirical data for development, we had a deteriorating physical environment. By dynamic equilibrium, I mean that a given escapement produced more or less progeny adults year to year, depending on ocean and stream conditions, but that the mean performance over a series of years should remain stable.

Environmental advocates in the 60s were faced with very strong opposing political forces. Some things never change. Earth Day was not to come until 1970. The 1970s and 80s, including the infamous low-flow year of 1977 and completion of the four lower-Snake dams, were not a good period for anadromous fish.



In 1980, hope for fish rekindled with passage of the Northwest Power Act. The Act specified that the program must consist of measures to protect, mitigate and enhance fish and wildlife affected by the hydroelectric system while assuring the Pacific Northwest an adequate, efficient, economical and reliable power supply.

Hope in 1980 was somewhat misplaced, as it turned out. I was there at the beginning and as the Council's program unfolded. The power supply got the lion's share of significant action; but the fish have ended up with much shorter shrift. The Northwest Power Act specified that the Council's program must use the best available scientific knowledge. It does not.

The Council formed by the Act has two members from each northwest state. Each member serves for three years. With occasional and not exclusive exceptions like

Oregon's Ted Hallock, Kai Lee of Washington, those members have been political hacks and governors' cronies, not the types we should expect to do the necessary heavy lifting for fish .

If effects of the hydro system on anadromous fish were a major concern of the Council, as the Act mandated, should we not expect that in 30 years since 1980 the four state governors might have appointed more than a few salmon biologists or experienced fishery administrators among the more than 80 Council appointments? I cannot point to one --- can you?

Most experienced and objective salmon biologists know that the best available science tells us that removal of the four lower Snake dams will produce substantial increases in adult salmon and steelhead returns. My own rough estimate has been that about 28% more adult wild spring Chinook and steelhead should arrive at the mouth of the Columbia, and I would expect a very positive benefit for fall Chinook as spawning habitat developed. Recall that Mains and Smith in the 1950s trapped egg-sac Chinook fry in the lower Snake upstream from Sacajawea Park, indicative of spawning in the lowest segment of the river. Removal of Snake River dams would also benefit the Pacific lamprey, the "forgotten species."

But the BPA Administrator persists in acting as if the Pacific Northwest would wither on the vine if we had to substitute conservation and other alternatives for the puny 1,000 megawatt output of the four projects. Note that by comparison, McNary Dam alone can put that many MW into the power grid.

And Idaho commodity interests are just sure that the next step that would follow Snake River dam removal would be attacks on irrigation storage and diversion dams in the Snake River plain. As wags would put it, the irrigators aren't paranoid, they just think

the enviros are out to get them. Some environmental advocates didn't reduce commodity paranoia when they unrealistically said the lowest four Columbia River dams might be next candidates for elimination.

Meanwhile, to protect dams, BPA offered almost a billion dollars to get tribes and states out of fish litigation. I have called BPA corrupt. I believe I apply that term fairly for an administration that bribes state and tribal litigants, as BPA has. In that connection I admire and applaud the State of Oregon and the Nez Perce and Spokane tribes for their refusal to take the bribes to drop litigation.

Public monies built the concrete and steel dams athwart publicly owned water, and now profits from power yielded by turbines built with public funds are used to bribe litigants out of lawsuits about conservation of publicly owned fish. I simplify only a little. Is it any wonder I use the word "corrupt?" BPA acts as if it owns the river, the fish and wildlife of the basin, and several elected representatives. Its mantra is "You can't screw with the federal dam system."

I participated in 2006-07 with Jim Martin, Fred Olney, Ed Chaney, Rod Sando, Bert Bowler and several others in a "Council of Elders," (the name possibly a result of the average age of the group) an exercise aimed at improving how money and management are used in fish conservation efforts on the Columbia River. We hoped to influence the incoming Obama administration. We produced a document that discussed priority changes. In one of those we recommended a National Academies study of dam removal. Another recommended stripping BPA of its fish and wildlife staff and moving all responsibility for management to the Fish and Wildlife Service. Reaction to that report? The Administration never reacted. The recommendations did slightly piss off the Pork Alliance, a group I'll mention again later.

Meanwhile, NMFS, acting as the assigned protector and conservator of dams (a designation apparently common to the current and most-recent administrations), considers the four lower Snake dams as a natural part of the river, sort of like the soils and terrain of the Snake canyons. To justify no-jeopardy conclusions, it proposes inadequate BiOps with guesses about survival benefits of such measures as habitat improvement. And it offers up a supplemental proposal with action triggers that inevitably would suffer extended time lags for implementation; triggers based on fish numbers similar to the low populations of the 1990s.

“Trigger” implies some sort of quick action to follow, such as harvest reduction or dam removal. Imagine if you will how long it would take to negotiate reduced harvest provisions of *U.S. v. Oregon*. And how much greater time lag would we see if dam removal (no, not removal, but *study* of removal) were “triggered.”

The agency has admitted that some stocks, for example wild B-run steelhead, have not been replacing themselves, generation to generation. (By the way, we still allow up to 20% harvest impact on these ESA listed fish). But NMFS offers lip service and untargeted options for rectification. Harvest reduction for wild fish should also be on the table. More on that later.

After reading through the Supplemental BiOp, I gave NMFS scientists a passing grade for effort and detail. But I was most impressed by how much was unknown and the extent of risk. So I gave the conclusory portion of the Supplement an “F.” More on why the low grade later. My own conclusions from all that technical work were very different from those of NMFS. I see jeopardy where the BiOp does not.

The American Fisheries Society has well-critiqued provisions in the NMFS BiOps, and I will not here, except to point out one absolutely glaring salient point for Idaho wild fish.

Habitat measures for spring Chinook and steelhead, as shown in BiOps, for example those feasible, planned, or emplaced in streams like the easily-accessed Lemhi River, just don't cut it for pristine and inaccessible wild fish habitat in Idaho and Oregon primitive and wilderness areas. Only mainstem measures will help. Here I do not mean small tweaks in across-concrete survival or guesses about estuary habitat improvement. There are only two really important mainstem mitigative tools for all wild Snake stocks --- removal of dams and reduced harvest.

Snake River dam-removal advocates, shoveling sand against the commodities tide, have acquired some interesting bedfellows. One is sediment that inexorably raises the bed of Lower Granite pool. The Corps must either dredge frequently to maintain navigation depth, or try to raise the levees in Lewiston, a radical measure city fathers so far have resisted. Where that levee issue will come down (or come up), I don't know. If levees were raised, what would happen when the sediments again raise the river bottom? Maybe BPA would channel money so the Corps could bribe Lewiston to move?

Ironically, those bed-raising sediments have real value. If they were managed properly in a dam-by-dam removal, I think most of them could be held in place by irrigated vegetation as the river channel cuts to old bed level. They would provide the substrate for flourishing riparian terrace systems.

This is but one of at least dozens of considerations in evaluating dam removal. But NMFS, BPA, and politicians do not want to look at them objectively, or at all. That is, not until forced to when listed wild stocks are in truly desperate straits. A National Academies evaluation now would make sense and help shorten time lags when ESA listed stocks go more dangerously down. An Academies committee to look at dam removal should include participants from geomorphology, economics, fisheries and wildlife management, engineering, hydrology, social science, and power marketing, with

most of the participants from outside the Columbia River basin. That way, one could eliminate the nonsense evaluations like those of the BPA analysis that used nameplate MW power production instead of empirical output as the starting point for what the region's energy grid would give up by removing four Snake dams. Academy committees are low-cost, as only expenses are paid to participants.

But of course powerful interests, including what Ed Chaney has called "The Pork Alliance" that I mentioned earlier, do not want an outside evaluation, fearing the results. Ed, who has never been at a loss for descriptive words, defines the Alliance as compromised bureaucrats, monopolists, crony capitalists, entrenched pork barrel economic interests, and allied politicians who feed off public largess and each other. In the pork alliance, Ed includes electric utilities, waterway transportation, Big Ag, and energy-intensive industries. The energy faction dominates. BPA is the goose that lays the golden eggs, and thereby Ed considers it the ringmaster. The only group Ed did not specifically mention is that nasty bunch of consultants who work for the black hats!

When I was awake at night, as old guys with small bladders sometimes are, I thought about this talk. I also thought about what an economically-valuable recreational paradise could develop between Lewiston and the mouth of the Snake, in stream riparian systems on sediments currently underwater and already owned by the public. Visualize there 139 miles of free-flowing river, upland bird and big game habitat, and spawning fall Chinook, plus water-based recreation.

So how are we doing with dam-removal advocacy? Well, you remember Don Quixote, who attacked windmills. The lance that I've been using to attack the issue looks like Don Quixote's windmill-damaged one. **SHOW BROKEN LANCE**

Now, back to production models for a moment, and I hope this apparent jumping around will ultimately make sense to you. I noted earlier that stock-recruit models that we developed in the early 1960s were doomed from the start because of disequilibrium in the freshwater environments of salmon and steelhead. I maintain that we face even greater disequilibria now, albeit for somewhat different reasons.

I do not believe for a moment that anyone should rely on production models for support in allowing even minimal harvest impacts on, for example, B-run wild steelhead or spring Chinook. I believe there is presently no harvestable surplus for these fish spawned in Idaho and eastern Oregon. Models also will not tell us that we need carcass-delivered marine nutrients in granitic watersheds. Neither will they tell us that adults need density to foster competition for best spawning sites and most adaptive mates. And model statistics based on empirical data certainly will not save stocks faced with a rapidly warming world. In other words, such models are extinctosauruses when habitat changes, just as my spring Chinook model was made useless.

The snag in discussion of harvest rates on listed wild salmon and steelhead is the mixed-stock fishery, at sea and in-river for summer/fall Chinook, and in-river for sockeye, spring Chinook, and especially for B-run steelhead. Gill nets obviously do not distinguish listed wild fish and hatchery or unlisted fish. We must find ways to harvest selectively.

A WDFW group is looking at such promising tools as fish traps and purse seines as offering opportunities for more rational harvest methods. I certainly applaud that effort. For many decades, some of us have argued that the way to harvest upriver fish is to trap them alive at Bonneville Dam, kill the harvestable surplus of unlisted fish, and release the others to continue migrating in a gillnet-free river.

It should be possible to develop a co-op to direct these operations. It should also be feasible to put metal nose tags in every hatchery-produced juvenile, and to use a wire detector in fish ladder Denil inserts to divert hatchery adults for harvest or release.

I do not have time today to discuss the technical and social ramifications of this proposal. They are significant, although with respect to social issues, Nez Perce writings and anthropologic information tell me the co-op system would not be out of line with the way Native American fishers once delivered fish to tribal members.

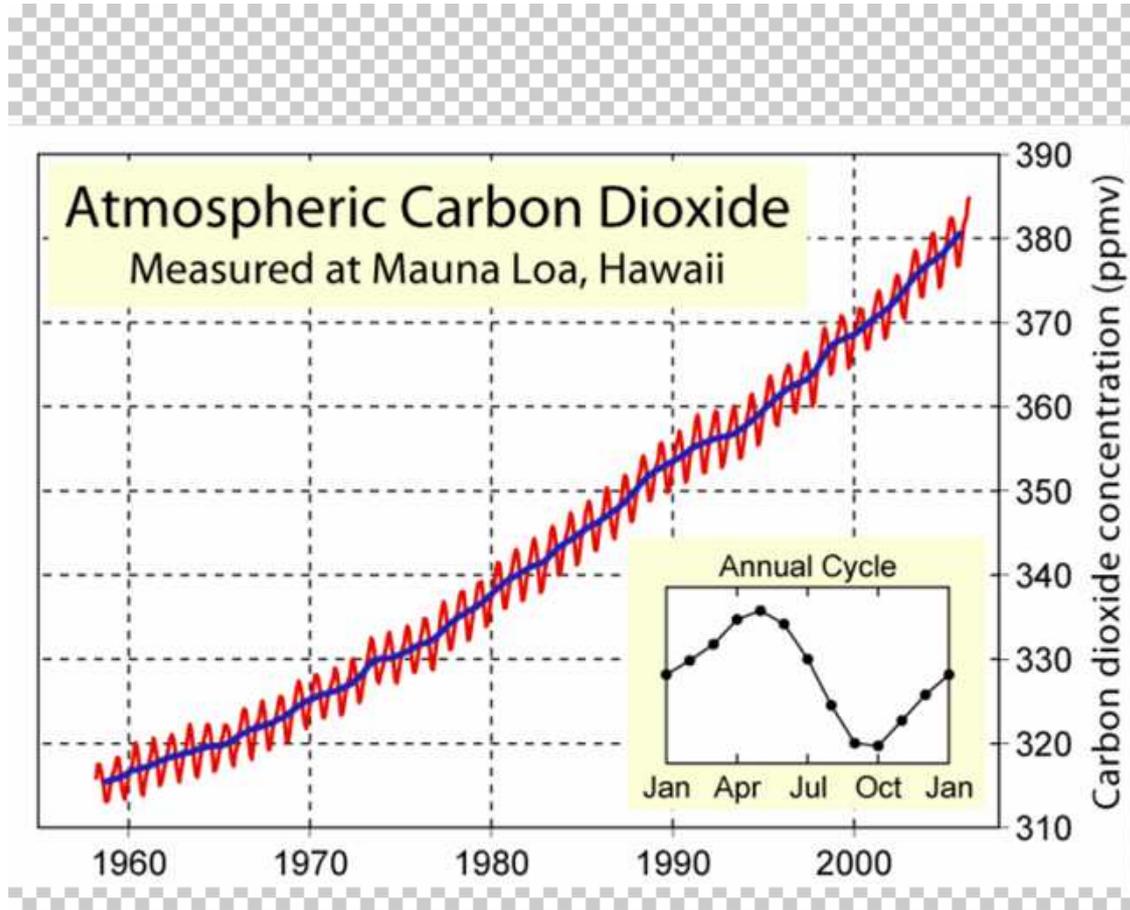
The secondary merit in this co-op proposal is that it would actually permit an increased allowable harvest. Also important, it would yield up fish of marketable quality equal to that of Alaskan salmon. Whether fish are purse-seined or trapped at Bonneville, the social issues of a greatly altered harvest system must be faced.

What luck can I report for the foregoing proposal's acceptance? SHOW OTHER SPEAR
This other broken lance is more descriptive than words. I first suggested the Bonneville trap idea about 27 years ago in a panel at a large fisheries meeting. The then-chair of the Intertribal Fish Commission accused me of being a racist as he walked out.

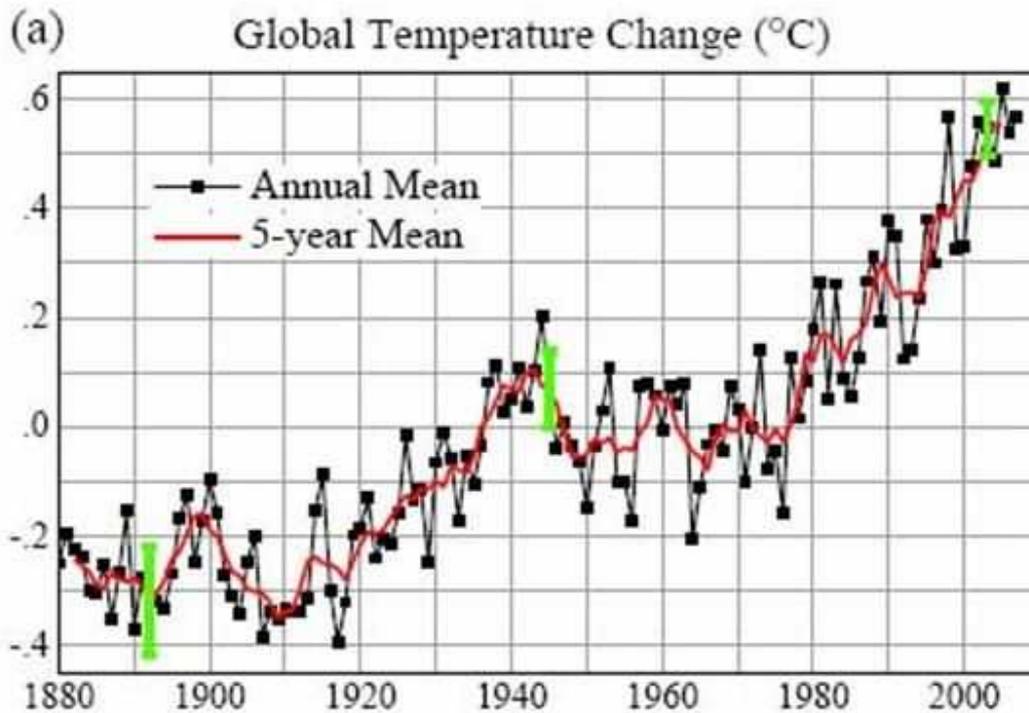
Now what urgency do I attach to a need to reduce mainstem mortality for listed salmon and steelhead? You may remember the Four Horsemen of the Apocalypse, from Revelations. They are interpreted as Conquest, War, Famine, and Death. Recall that Death rides a pale horse. A fifth horseman has been negatively postulated and described as fear, and nuclear weaponry. Another author says the Fifth Horseman is a new age of international tolerance and accord. Good luck with that one.

I have the temerity to define differently the fifth horseman. He also rides a pale horse. He is called "Warming," and he has the other four in trail.

We are in the midst of what I consider to be a cataclysmic environmental shift. The first of my last four graphs shows a Keeling curve of carbon dioxide data from the top of Mauna Loa.



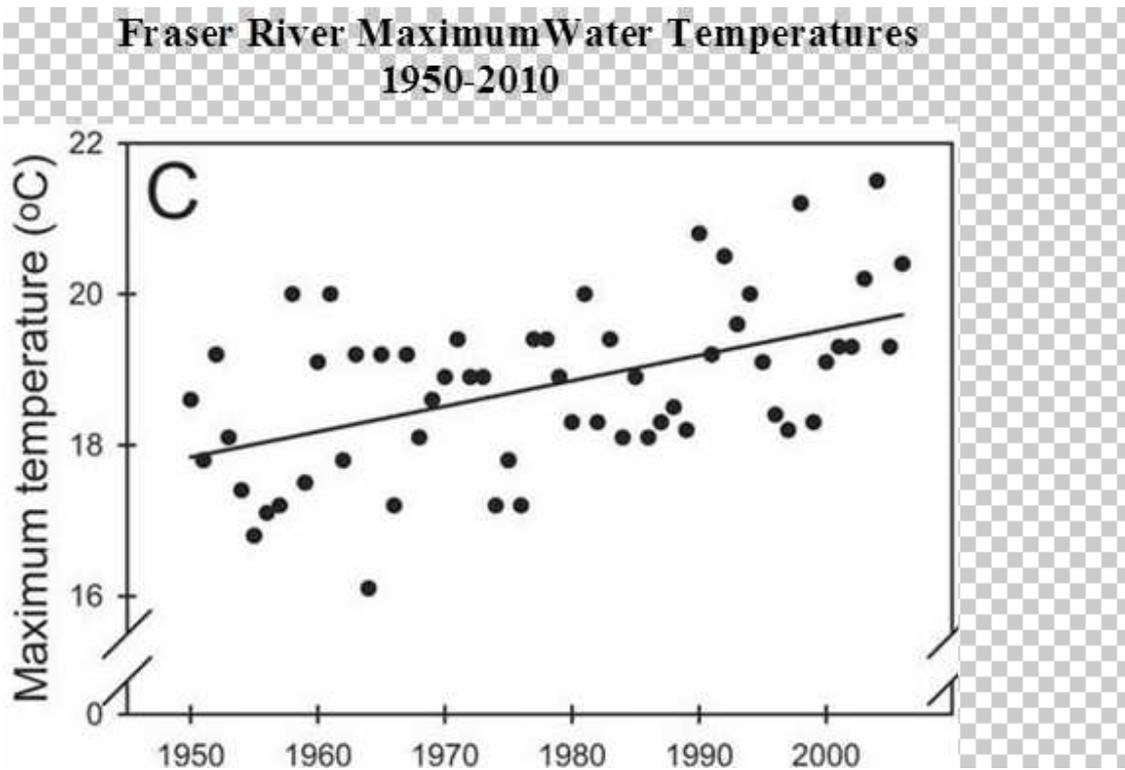
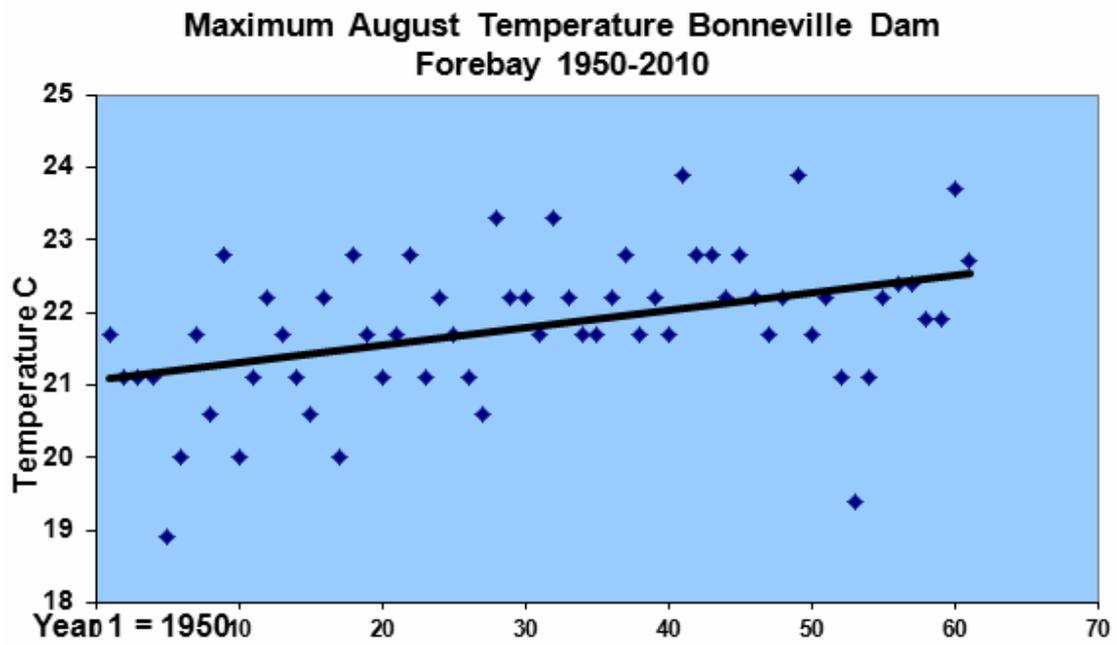
The CO2 level reached 390 ppm two months ago, so the curve is already out of date.



Global temperature change has been upward over the last 50 years.

But for us in this room today, the next two graphs are the critical ones. The first shows the upward trend in maximum water temperature in the Columbia River; up about 1.5 C since 1950.

I chose this 60 year period at Bonneville to conform to the data period available in this final graph, which depicts the upward trend for maximum water temperature in the undammed Fraser River; also up about 1.5 C since 1950.



I could have added Barthelow's graph that indicates a 0.5 C rise per decade in Klamath River temperatures downstream from Iron Gate Dam. But the Fraser River graph helps spike the assumption that dams have majorly contributed to warming on the Columbia. Inland basin air temperatures do that. The Fraser River trend does not bode well for sockeye, whose stored energy levels are precisely adapted for migration and spawning.

I hope you agree with me that these two graphs are truly frightening for the future of migrating adults in summer.

Some of our colleagues have pointed out the difficulties of convincing the American public that warming is real, and that humans contribute to it with carbon mining. Demagogues like Beck and Limbaugh pooh-pooh human influences. Politicians often supported by big oil like Senator Inhofe of Oklahoma and Congressman Joe Barton of Texas certainly continue to contribute to public misunderstanding.

I have no quarrel with the few scientists who produce legitimate information and hypotheses counter to the IPCC and other predictions. But I have tracked down several pseudo-experts who deny warming and sought their funding sources. The latter usually involve far right-wing groups or big oil and coal. We are a long way, perhaps an insurmountable distance, from timely actions to reduce carbon dioxide, methane, and nitrous oxide inputs to the atmosphere. Unfortunately, warming and its causes are now a part of the bitter and unproductive partisanship of American politics. I expect the current House of Representatives to further the misunderstanding, as well as attack the Endangered Species Act. That attack is already underway against wolves, with a proposal to prevent court review. Idaho's Representative Simpson is leading the charge.

You already know the dire predictions of effects on salmon and steelhead as climate continues to warm. We are going to lose many demes. I expect the high-elevation

tributaries of eastern Oregon and Idaho to provide valuable refugia for some wild stocks. For that reason I reject the NMFS contention that removing the four lower Snake dams is impractical because it would only benefit a 4 of the 13 Columbia River listed wild groups. That contention is just foolish at best and disingenuous at worst.

For some low-elevation stocks, adaptations may help them survive in a warming world. For example, I would expect summer/fall Chinook to migrate and spawn considerably later than they now do. Adaptation may cause summer steelhead to move through the lower Columbia and Snake either earlier or later. Tom Quinn reported that sockeye already move about two weeks earlier than they once did. But adaptability has limits. The mainstem temperature graph, scary as it is, also signals habitat shrinkage elsewhere, like the upward elevational shift in the lowest tolerable habitat for one- and two-summer juvenile residents in tributaries.

Models, based on historical recruit returns for given escapements in that environmental dynamic equilibrium that one assumes when using production data, cannot help us to protect high-elevation demes that may be the only ESA listed groups able to weather the heat storm brought by the Fifth Horseman. That heat storm obviously will not confine its effects to freshwater environments. Ocean productivity and survival parameters will not escape change.

Ed Chaney's "Pork Alliance" loves to tout recent good return years for sockeye, spring Chinook, and steelhead, with the statement "We must be doing something right." The Alliance never tells the public that only 25% of the returns are wild. Or that those wild returns are but one or two percent of pre-development Snake River runs.

I have yet to hear a mouth-piece for the Pork Alliance express concern about wild fish that face ongoing warming, or the need for high-elevation deme refugia. Nor have I

heard one warn that the ocean, itself subject to effects of climate change, is a fickle mistress that can turn on us at any time with altered productivity and lower fish survival. Instead, all the mouth-piecing is really about hatchery returns.

Speaking of mouth-piecing, I recently found a letter to the editor in the Idaho Statesman, authored by Terry Flores, employed by the Pork Alliance. She stated that fish survival through the lower Snake River is higher now than it was before the dams were built. That's totally cool! Her assertion means we should build more dams to recover listed fish!

The only pre-dam survival rate I know of was published in Raymond's 1979 paper. It estimated 89% smolt survival in the early 60s, before Lower Monumental, Little Goose, and Lower Granite were built, between the Whitebird Salmon River trap and Ice Harbor Dam. Brief examination of recent smolt survivals gives the lie to the Flores assertion.

The hatchery returns to which the Alliance refers may come at a price in wild fish survival. I understand debate is underway in the region about the desirability of reducing hatchery outputs. All to the good, a healthy discussion is warranted. Some of my temporal colleagues through the last 50 years went too far in touting hatcheries as a substitute for lost natural habitat. In that debate, harvest advocates, including those in Zone 6, will be unwilling to give up catch to improve wild listed fish numbers. I believe that most gillnetters, whether in zones 1-5 or zone 6, really don't care about listed wild fish, except as a nuisance restriction on harvest.

I summarize the foregoing comments by stating that we now face an environmental crisis at least as significant as the eras of overfishing and dam construction. Warming effects on fish and habitat are the issues of our (your) time. I contend that we must sharply and pre-emptively increase mainstem survival of Snake River smolts and adults to give wild

demes the best possible chance for perpetuation. That increase will have to come largely from dam removal and wild-fish harvest reductions. And, finally, I emphasize that the 2010 Supplemental BiOp and AMIP do not constitute the best science mandated by the Federal Power Act. They certainly do not lead us toward restoration of listed wild fish.

The Fifth Horseman cometh. And he comes at a canter, accompanied in trail by the other four horsemen of world conflict, war, famine, and death.