

850 F.Supp. 886

United States District Court,
D. Oregon.IDAHO DEPARTMENT OF
FISH AND GAME, Plaintiff,

v.

NATIONAL MARINE FISHERIES
SERVICE, et al., Defendants.Civ. Nos. 92-973-MA (Lead), 93-1420-
MA and 93-1603-MA. | March 28, 1994.

Action was brought contesting biological opinion issued by National Marine Fishery Service (NMFS) covering effect of Federal Columbia River Power System (FCRPS) operations on endangered salmon populations. On cross motions for summary judgment, the District Court, [Marsh, J.](#), held that: (1) biological opinion was arbitrary and capricious and otherwise not in accordance with Endangered Species Act (ESA); (2) court would not impose bright-line definitions upon hydrosystem's existence versus operations or terms survival versus recovery; and (3) NMFS arbitrarily and capriciously discounted low-range assumption without well-reasoned analysis and without considering full range of risk assumption.

Summary judgment for plaintiff.

West Headnotes (5)

[1] Environmental Law**🔑 Consultation**

Biological opinion issued by National Marine Fisheries Service (NMFS) to cover effect of Federal Columbia River Power System (FCRPS) operations on endangered salmon populations was arbitrary and capricious and otherwise not in accordance with Endangered Species Act (ESA) with respect to chosen jeopardy standard and consideration of reasonable and prudent alternatives to avoid jeopardy; NMFS failed to articulate rational connection between facts, circumstances, and myriad of factors contributing to decline of listed species, and choice of standard by which to measure future

success against. Endangered Species Act of 1973, § 7(a)(2), 16 U.S.C.A. § 1536(a)(2).

[15 Cases that cite this headnote](#)**[2] Administrative Law and Procedure****🔑 Scope of Review in General**

In instance in which agency judgment involves technical expertise or in which specialists express conflicting views, judicial review is limited to assessment of whether agency conducted reasoned evaluation of relevant information and reached decision that, although perhaps disputable, was not arbitrary or capricious.

[Cases that cite this headnote](#)**[3] Environmental Law****🔑 Consultation**

In action challenging biological opinion issued by National Marine Fishery Service (NMFS) to cover effect of Federal Columbia River Power System (FCRPS) operations on endangered salmon populations under Endangered Species Act (ESA), court would not impose bright-line definitions upon hydrosystem's existence versus operations or terms of survival versus recovery; where consultation parameters and recovery measures begin is not proper matter for judicial bright-line decisionmaking and, in any event, such distinction should not be premised upon nature or quality of agency activity, but instead, pursuant to mandate of ESA, must focus upon listed species. Endangered Species Act of 1973, § 7(a)(2), 16 U.S.C.A. § 1536(a)(2).

[15 Cases that cite this headnote](#)**[4] Administrative Law and Procedure****🔑 Record**

In reviewing administrative action, court's review is generally limited to pertinent administrative record and any affidavits proffered by defendants which provide background or explain the record.

[Cases that cite this headnote](#)

[5] Environmental Law**🔑 Consultation**

National Marine Fishery Service (NMFS) arbitrarily and capriciously discounted low-range assumptions without well-reasoned analysis and without considering full range of risk assumptions with respect to biological opinion issued to cover effect of Federal Columbia River Power System (FCRPS) operations on endangered salmon populations under Endangered Species Act (ESA); NMFS failed to adequately explain why it preferred uncertain favorable model results and rejected other equally uncertain model results tending to undermine no jeopardy conclusion and, in light of perilously low numbers of salmon, NMFS should have fully considered enhanced risks associated with small populations prior to discounting low-range assumption. Endangered Species Act of 1973, § 7(a)(2), 16 U.S.C.A. § 1536(a)(2).

[14 Cases that cite this headnote](#)

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OPINION

[MARSH](#), District Judge.

The Idaho Department of Fish and Game (IDFG) filed this suit against the National Marine Fisheries Service (NMFS), the U.S. Army Corps of Engineers (COE) and the U.S. Bureau of Reclamation (BOR) challenging defendants' actions in operating the Federal Columbia River Power System (FCRPS) in 1993. IDFG claims that defendants have violated the Endangered Species Act (ESA), 16 U.S.C. § 1536, by: (1) failing to insure that FCRPS operations are not likely to jeopardize listed species; (2) omitting consideration of all relevant scientific factors; (3) failing to include all reasonable and prudent mitigation measures to reduce incidental take of listed species; (4) limiting consideration of short and long term impacts and measures to the immediate nine-month operational period under consideration; and (5) operating the FCRPS between April 15 and May 26, 1993 prior to completion of the biological opinion.

IDFG now moves for summary judgment on all claims and federal defendants filed a cross-motion for summary judgment. During oral argument on March 18, 1993, I denied the federal defendants' cross-motion for summary judgment insofar as it raised challenges to IDFG's standing. From my review of the submissions, I found that IDFG identified a sufficiently particularized interest in the controversy to justify avoidance of the *parens patriae* bar to jurisdiction.¹ I also

rejected defendants' claim of mootness except as it related to the technical violation of the ESA relative to the 40-day "gap," an action I was assured was not likely to be repeated with respect to 1994–1998 consultations.² The following addresses my conclusions on the remainder of the parties' cross-motions for summary judgment.

DISCUSSION

To bring the current conflict into context, I begin this discussion with a brief summary of the court's involvement with Columbia and Snake River anadromous resources and review decisions addressing the impact of the ESA since the Snake River salmon listings. I then discuss the pending motions in two sections: I. an analysis of the claims and defenses relative to NMFS' jeopardy standard; and II. an analysis of whether defendants should have re-initiated consultation upon receipt of new life-cycle information from State and Tribal authorities.

Case History: Overview

Judicial review of Columbia River fisheries management began in the late 1960's with the state-tribal fishing allocation and regulation disputes addressed in *United States v. Oregon*, Civ. No. 68–513, *Sohappy v. Smith*, 302 F.Supp. 899 (D.Or.1969), and *United States v. Washington*, Civ. No. 9213. By 1977, the Oregon and Washington actions were consolidated, insofar as they related to regulation of fishing in the Columbia River, into a single action under the heading of *889 *United States v. Oregon*, Civ. No. 68–513–MA. See generally, *United States v. Oregon*, 699 F.Supp. 1456, 1458–60 (D.Or.1988), *aff'd*, 913 F.2d 576 (9th Cir.1990), *cert. denied*, 501 U.S. 1250, 111 S.Ct. 2889, 115 L.Ed.2d 1054 (1991). In 1988 these actions were partially settled with my adoption of the Columbia River Fish Management Plan (CRFMP). *Id.* The CRFMP provides a framework for protecting, rebuilding and enhancing salmon runs and for allocating and planning in-river harvest activities with judicial review available in certain limited circumstances. See e.g. *United States v. Oregon*, Civ. No. 68–513–MA, Opinion of Feb. 29, 1992, 1992 WL 613238.

Following the listing decisions in late 1991 and early 1992,³ power, industry and irrigation groups filed four separate actions challenging the validity of biological opinions issued for 1992 hydropower operations, harvests and habitat management activities and the failure of NMFS and the

federal agencies proposing such activities ("action agencies") to conduct consultations on hatchery activities. On April 1, 1993, I engaged in an overview of the difficulties—both human induced ecological factors⁴ and overlapping legislation—and ultimately issued a ruling denying standing under Article III of the United States Constitution. *Pacific Northwest Generating Co-op v. Brown*, 822 F.Supp. 1479 (D.Or.1993), *appeals dktd.*, Nos. 93–35531, 35532, 35536 (9th Cir.) ("*PNGC v. Brown*").

The next ESA claim was filed by a coalition of environmental groups and tribes who sought to halt the early spring juvenile salmon transportation program, a sub-issue within the hydrosystem mortality category. *NRIC v. NMFS*, Civ. 93–870–MA. On April 30, 1993, I denied the plaintiffs' motion for a preliminary injunction and declined to halt transportation on the basis that NMFS' approval of a COE permit was neither arbitrary nor capricious given conflicting scientific evidence. Further, I noted that any injunction against transportation would immediately necessitate some form of replacement system management—such as an improved spill program⁵—and found that this was a particularly inappropriate task for the federal judiciary. However, in December, 1993, I held in the same case that the COE violated the National Environmental Policy Act (NEPA), 42 U.S.C. § 4331, *et seq.*, in its analysis of flow measures in a 1993 Supplemental Environmental Impact Statement (SEIS) by narrowly limiting the scope of that process to exclude transportation as a related action. My order limited relief to a re-initiation of consultation and rejected plaintiffs' request for an injunction against transportation in order to avoid judicial micro-management of the Columbia River power system.

Our third confrontation over the listed salmon involved the habitat "H" of the human-induced contributions to the salmon's decline. In *PRC v. Robertson*, 92–1322–MA, Opinion of October 25, 1993, I found that the Forest Service (FS) violated the ESA by failing to engage in consultations on Land Resource Management Plans (LRMPs) for the Wallowa–Whitman and Umatilla forests. I found that the LRMPs affected salmon *890 habitat by providing broad guidelines which, in turn, influenced site specific activities. In determining the scope of relief, I ordered the FS to commence consultation under the § 7 process, and enjoined any future site specific land management activities prior to completion of consultation. I rejected plaintiffs' argument that all on-going site-specific activities should also be enjoined on the basis that the FS had already determined that the site

specific activities in issue did not constitute irreversible or irretrievable commitments of resources enjoinable under ESA § 7(d).

The next conflict again related to a sub-issue under the hydropower “H” of the human-induced mortality framework. Environmental groups sought to compel ESA § 7 consultations on Pacific Northwest Coordination Act (PNCA) data submittals used to determine firm energy loads and to allocate available resources among hydropower projects. *NRIC v. NMFS*, Civ. 93–1420–MA. On February 11, 1994, I rejected the argument, and found that the PNCA data submittals were neither “agency actions” nor irreversible commitments of resources given the overall process' deference to non-power resources, such as salmon, and the existence of parallel ESA consultations.

The final dispute prior to this motion was directed against the states of Oregon and Washington for their enforcement of Compact⁶ regulations permitting a winter 1994 Columbia River commercial gillnet harvest of salmon. *Peterson v. Washington, et al.*, Civ. No. 94–167–MA (Hearing dated Feb. 18, 1994). Ken Peterson, the Chief Executive Office of Columbia Aluminum Corporation⁷, and his two minor children sought a temporary restraining order to halt the fishery authorized pursuant to the CRFMP. Plaintiffs claimed that the states of Oregon and Washington violated the ESA by failing to obtain § 10 permits following § 7 consultation and NMFS' issuance of a § 7(b)(4) incidental take statement. In an oral ruling, I denied plaintiffs' motion finding a minimal chance of success based both upon defendants' jurisdictional challenges under the Eleventh Amendment and the ESA 60-day notice requirement, and upon the similarity of plaintiffs' legal arguments to claims rejected in prior rulings within *PNGC v. Brown*, 822 F.Supp. at 1509–10.⁸

IDFG's present motion, and Oregon's joinder therein, is a departure from these past cases in that, although the claims are again raised against the hydropower “H” of the problem framework, the nature of the relief sought potentially extends to all four of the human-induced factors that have historically contributed and continue to contribute to the listed species' decline. Attention is now beginning to shift from the problems confronting the listed species to the solutions to stabilize their rapidly dwindling populations.

IDFG furthers this shift in emphasis by directly challenging the adequacy of the 1993 Biological Opinion issued by NMFS to cover FCRPS operations from April 1993 through January

of 1994. Idaho is joined in this effort⁹ by intervention memoranda filed by *891 the State of Oregon and amicus briefs from the State of Alaska¹⁰ and *USA v. Oregon Treaty Tribes*.¹¹

The primary focus of challenge is upon NMFS' selection of, and the action agencies' acceptance of, a framework or methodology for analyzing whether jeopardy would exist to listed Snake River species from proposed government activity. In applying this jeopardy standard to 1993 hydropower operations, NMFS found that the proposed operations represented a significant reduction in mortality (3–11% overall). Based upon this anticipated reduction, NMFS then determined that the long range goal of “stabilizing” the species' population levels, to 1990 levels by the year 2008, was possible to a confidence level of approximately 60–70%.

Defendant–Intervenors Pacific Northwest Generating Cooperative (PNGC), Direct Service Industries (DSIs), and the Public Power Council (PPC) argue against Idaho's motion, but claim that, although 1993 hydropower operations were unlikely to harm the listed species, NMFS acted arbitrarily and capriciously in recommending flow targets far in excess of amounts supportable by credible science. PNGC, PPC and the DSIs argue that, since 1993 proposed hydropower operations were expected to result in a reduction in mortality, the ESA's survival standard was met as a matter of law and NMFS' inquiry should have ended there.

Federal defendants argue that NMFS did a remarkable job given the limited scientific information available, that NMFS fully considered all relevant information and that the criticisms of IDFG, Oregon and amicus are nothing more than scientific disputes beyond the purview of judicial review.

Thus, the basic dispute raised by these motions is whether NMFS and the action agencies complied with the mandate of the ESA or whether they failed to do so. All parties agree that the APA's “arbitrary, capricious or otherwise not in accordance with the law standard” applies to this decision.

Underlying this simple format are two “bombshell” issues¹²: (1) is NMFS using the correct jeopardy standard in 1993 biological opinions issued with respect to listed Snake River salmon which, if continued, would affect future operations and biological opinions; and (2) where do defendants' ESA obligations under § 7(a)(2) to avoid jeopardy end and either discretionary, voluntary conservation measures to promote

recovery under § 7(a)(1) or true recovery plans under § 4 begin?

The Jeopardy Standard

The Endangered Species Act provides that a federal agency must “insure” that any action it authorizes or funds is “not likely to jeopardize the continued existence,” of an endangered or threatened species or result in the destruction or adverse modification of a listed species' critical habitat. 16 U.S.C. § 1536(a)(2) (hereinafter “§ 7(a)(2)”). When a federal agency proposes an action which may affect a listed salmon species, it must consult with NMFS either formally or informally. See *Pacific Rivers Council v. Robertson*, Civ. No. 92–1322–MA, Amended Opinion at pp. 13–15 (Oct. 25, 1993). If formal consultation is undertaken, the process leads to the preparation of a biological opinion (BO), such as is under attack in this case.

When involved in section 7 formal consultation such as here, NMFS has, since 1993, employed a “two-step” process for assessing jeopardy posed by a proposed agency action to listed Snake River salmon. In the preparation of the BO under consideration here, NMFS applied the statutorily mandated *892 “jeopardy” standard to the listed Snake salmon species in two ways: (1) does the proposed action (i.e. hydropower operations for 1993) achieve an interim goal of reducing mortality relative to an environmental base period (1986–90); and (2) are all proposed Columbia River actions (i.e. hydropower operations, harvest, hatchery releases and habitat modifications) reasonably likely to reduce salmon mortality over the long term such that populations will stabilize? ¹³

A review of the parties' submissions discloses the existence of an unusual coalition. IDFG, the states of Oregon and Alaska, the *USA v. Oregon Indian Treaty Tribes*, the BPA ¹⁴, PPC, DSIs ¹⁵, PNGC, non-tribal fishing groups ¹⁶, and environmental organizations ¹⁷ all appear to agree that NMFS' jeopardy standard is significantly flawed. Although there is sharp disagreement over where the flaws exist and what should be done to remedy the jeopardy standard, the dissatisfaction is nearly universal. ¹⁸

Based upon my review of the law, I find that I may answer the broader question of whether NMFS' jeopardy standard constitutes a reasonable and scientifically sound basis for assessing the likelihood of stabilizing the species without having to address the more difficult policy choices that will

have to be made regarding the allocation of the burden of insuring the listed salmon's likelihood of survival.

1. Baseline Analysis

a. Temporal Scope: '86–'90

[1] NMFS chose to evaluate the individual proposed activities and their alternatives in a manner intended to determine if there would be a “significant” reduction in mortality relative to a 1986–1990 base period. ¹⁹ NMFS explained its selection of the 1986–90 base period as follows:

“The base period represents the most recent series of years prior to consideration of the species for listing and implementation of the initial actions in 1991 designed to improve the status of the stocks. The period is long enough to encompass a full life cycle and includes a recent series of years subject to relatively consistent management practices. The base period selected is also consistent with that used during most of the 1992 consultations ... Additional based periods may be considered for a particular action if it can be demonstrated that they better represent a recent series of years managed on a consistent basis prior to listing and implementation *893 of actions designed to improve the status of the listed species.”

Idaho Ex. 1, 1993 FCRPS Biological Opinion, Appendix 1, at p. 8

[2] I first must determine whether this explanation of its choice demonstrates that NMFS considered relevant facts and “articulated a rational connection between the facts found and the choices made” and that reliance on the choice by the action agencies was reasonable. *Northwest Motorcycle Assn. v. USDA*, 18 F.3d 1468, 1470 (9th Cir.1994). ²⁰ This is especially so in an instance in which agency judgment involves “technical expertise,” or in which specialists express conflicting views. In such a case, judicial review is limited to an assessment of whether the agency “conducted a reasoned evaluation of the relevant information and reached a decision that, although perhaps disputable, was not arbitrary or capricious.” *Mt. Graham Red Squirrel v. Espy*, 986 F.2d 1568, 1571 (9th Cir.1993).

From my review of the record, NMFS selected this critical variable in its jeopardy equation by reference to “consistent management practices,” a factor which necessarily focuses more upon system *capability* than upon the needs of the species. The reference to the baseline as being consistent with the prior series of years is incorrect in that it is

significantly shorter than base periods used in prior years. In 1992, NMFS employed a single-step jeopardy process which compared anticipated reductions in mortality against a 1984–1990 baseline for juveniles and a 1975–1990 baseline for adults passage counts. It is clear that a longer base period which includes years of higher abundance levels would have encompassed higher escapement levels and would have resulted in a higher goal.²¹ Finally, although NMFS recognizes that modifications to the baseline might be appropriate, there is no evidence it considered alternative baselines. Oregon and Idaho point to the fact that '86–'90 were record low years for the species which had great influence on NMFS' to list the species in the first place.

Based on the foregoing, I find that NMFS' selection of the '86–'90 baseline is arbitrary and capricious because the agency failed to consider relevant facts such as the drought condition and low run numbers of the species during the base period. NMFS also failed to articulate a rational connection between the facts, circumstances and myriad of factors contributing to the decline of the listed species and the choice of a standard by which to measure future success against. Instead, NMFS focussed on the system capabilities tending to the status quo rather than stabilization of the species. Finally, NMFS failed to conduct a reasoned evaluation of all available information when it adopted a standard which was based upon an undesirable period of years for the listed salmon.

b. Substantive Scope: Recovery vs. Survival

[3] Once a suitable base period is established, NMFS must then look at the scope and nature of the proposed “activity” submitted for consultation. Intervenor-defendants,²² argue that any analysis of the scope of hydropower operations on salmon mortality must distinguish mortality attributable to the physical existence of the dams from the annual hydropower operation of the dams. Intervenor-defendants claim that a “reliable” comparison of relative causes of mortality *894 should include a section on mortality attributable to the “natural ecosystem” which term they contend should include the dams.

[4] The threshold problem with intervenors' argument is that such a distinction does not appear in the record before the court. NMFS did not segregate mortality attributable to existence from that attributable to operation, nor did it distinguish existence and operation mortality from “natural” downstream mortality. A court's review is generally limited to the pertinent administrative record, and any affidavits

proffered by defendants which provide background or explain the record. See *National Audubon Soc. v. United States Forest Service*, 4 F.3d 832, 841–42 (9th Cir.1993). NMFS made concededly rough estimates of passage mortality proffered for the purpose of relative comparison. The affidavits submitted by defendants from Doug Neeley, a statistician with a private consulting firm, and BPA biologist Tim Fisher, confirm that further apportionment, although desirable, is not possible with any degree of reliability.

Further, there is no dispute that dam existence is properly part of the “environmental baseline,” as defined by 50 C.F.R. 402.02. The idea that the dams are immutable and uncontrollable like the weather ignores decades of fish protection improvements (such as bypass facilities and ladders) and other structural and operational enhancements.

I find that the relevance of the existence vs. operations issue in this case is limited to IDFG's claim that the federal defendants impermissibly based their no jeopardy finding in part on the purported absence of measures that could be implemented within the nine month duration of the BO. While the ESA exempts any construction projects predating November 10, 1978 from *consultation* requirements under § 7(a)(2), the ESA places no temporal limits on the types of actions (i.e. past or present) which may be considered by an agency in proposing “reasonable and prudent alternatives,” or measures. Thus, operational changes as well as systemic or facility changes to the dams' existence may well be available.

Idaho avoids specifying what the “absence of” long term remedial measures refers to, but Oregon has noted that no one in this case is seeking the removal of all dams.

Intervenor-defendants also argue that when examining “scope” a line must be drawn between construction and operation based upon the different processes prescribed for avoiding jeopardy under section 7 and promoting recovery under section 4. Intervenor-defendants argue that NMFS crossed this line by imposing requirements upon the hydrosystem under the guise of “reasonable and prudent alternatives” to insure survivability and recovery in the section 7 consultation process when in reality they should be addressed as measures designed to promote recovery under section 4.²³

“Recovery” as used in section 4 of the ESA, is defined in the regulations to mean “improvement in the status of listed species to the point at which listing is no longer

appropriate.” 50 C.F.R. 402.02. The term “survival” is found within the definition of the section 7(a)(2) phrase “jeopardize the continued existence of” but no where is the term “survival” separately defined.²⁴ “Jeopardize,” as used in section 7, however, is defined as engaging in an action “that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival *and recovery* of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species.” 50 C.F.R. 402.02 (emphasis added).

Records from the Department of the Interior explaining the rule making process which resulted in 50 C.F.R. 402.02, *et. seq.*, indicate that it contemplated that, “in many cases ... the difference between injury to survival and to recovery [will be] virtually zero.” *Id.*

***895** Legislative history indicates that there is no bright line between construction and operations for the purpose of assessing combined effects of actions, just as there are no lines clearly drawn between the concepts of “survival” and “recovery.” Regulations, 40 C.F.R. 402.02, define “combined effects” as direct and indirect effects of an action that are interrelated or interdependent. Instead of a “bright-line,” Congress has provided a gray segment which again focusses more upon the *species* than upon the activity. This “grey segment” consists of four different procedures which sound alike, but, according to Congress, are very different:

- (1) “Reasonable and Prudent Alternatives,” included in a biological opinion;
- (2) “Reasonable and Prudent Measures,” which refer to those measures necessary to “minimize” incidental take; and
- (3) “Conservation Recommendations,” which NMFS *may* suggest to an action agency and which may be voluntarily undertaken by the agency in its discretion; and
- (4) “Recovery Plans.”

Intervenor-defendants contend that these are discrete categories under sections 7 and 4 and argue that NMFS failed to appreciate the differences. There are several critical differences between these provisions. NMFS must provide reasonable and prudent alternatives pursuant to § 7(a)(2) upon a finding of jeopardy and the action agency must adopt an alternative or risk violating the ESA. Alternatives within the § 7(a)(2) process must be “consistent with the intended

purpose of the action [and such] that they can be implemented within the scope of the Federal agency's legal authority and jurisdiction, [and in a manner] that is economically and technologically feasible.” 50 C.F.R. 402.02; 51 Fed.Reg. at 19937. If NMFS determines that there are no reasonable and prudent alternatives, it would have to issue a “jeopardy” BO without alternatives. 51 Fed.Reg. at 19937.

Reasonable and prudent “measures” under § 7(b)(4) are employed only if the amount of specified incidental take is likely to exceed the incidental take permit. Although there is no similar scope limitation specified for “reasonable and prudent measures” in the regulations, legislative history indicates that Congress also intended that an action “go forward essentially as planned,” so that “measures” should be “minor changes that do not alter the basic design, location, duration, or timing of the action.” *Id.*

Conservation recommendations are voluntary—that is, NMFS may or may not make recommendations and the action agency may or may not act upon them. In contrast to the limited scope of reasonable and prudent alternatives and measures, the term “conservation recommendations” is broadly defined to include any suggestions to “minimize or avoid adverse effects” on a listed species. 50 C.F.R. 402.02. This regulation is consistent with the broad statutory definition of “conservation” which includes “all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which measures provided pursuant to this chapter are no longer necessary,” *i.e.* to a point of “recovery.”

Section 4 recovery is mandated by a process which is separate and distinct from a § 7 consultation. Section 4 recovery plans refer to “conservation,” which suggests that recovery plans have a similar broad scope.

The reason I stress the importance of understanding these various concepts is because defendants intimated that *if* I found the BO invalid because NMFS arbitrarily and capriciously failed to adequately consider or explain the jeopardy standard, things will be tougher on all other activities—*i.e.* harvest, habitat and hatcheries. *See* Government's Opposition Memo at p. 43, n. 44.

Based upon my analysis of the ESA and its legislative history, I expressly reject any attempt to impose bright-line definitions upon the hydrosystem's “existence” vs. “operations” or the terms “survival” vs. “recovery.” Where section 7 consultation

parameters end and section 4 recovery measures begin is not a proper matter for judicial bright-line decision making and in any event, such a distinction should not be premised upon the nature or quality of an agency activity, but instead, pursuant to the mandate of the ESA, must focus upon the listed species. “Congress *896 intended that the ‘jeopardy’ standard be the ultimate barrier past which Federal actions may not proceed absent the issuance of an exemption.” 51 Fed.Reg. at 19934. Thus, NMFS should have the discretion to determine the appropriate scope of reasonable and prudent alternatives and measures with a single guiding standard in mind—that is jeopardy.

Thus, for example, if NMFS determines that the installation of a bypass facility is needed to avoid jeopardy, then this may constitute a permissible “reasonable and prudent alternative,” providing it is economically and technically feasible and consistent with the scope of the proposed agency action. Further, avoiding activity-based distinctions gives NMFS the flexibility to consider a single activity in two different lights—for example, minimum flow targets may constitute a “reasonable and prudent alternative,” while flows above minimums during peak migration periods may constitute a “conservation recommendation.” See e.g. Whelan Affidavit, Ex. 6, Briefing on 1993 Federal Columbia River Power System Consultation, p. 17250 (2/14/93).

In any event, NMFS should provide sufficient reasoned analysis of its consideration of alternatives and measures considered within the section 7 consultation process to permit judicial review. See, *Northwest Motorcycle Assn.*, 18 F.3d at 1479.

2. Combined Effect Analysis (CEA)

[5] To recap, reductions by individual actions through reference to the '86–'90 baseline is step one of NMFS' Jeopardy analysis. Step two is a combined effects analysis which includes two sub-steps: (1) life cycle models (LCMs)²⁵; and (2) use of results from life-cycle models in risk assessments which result in “confidence” levels—i.e. the probability of reaching a stability goal. There are three LCMs addressed in the BO and elsewhere in the record:

(1) BPA's Stochastic Life–Cycle Model “SLCM;”

(2) Northwest Power Planning Council's (NPPC)²⁶ System Planning Model “SPM;” and

(3) State and Tribal Fisheries Agencies' (STFA) Empirical Life–Cycle Model “ELCM.”

As explained in the affidavit of Charles Pinney, COE fisheries biologist, LCMs were not designed to predict raw numbers, but instead “compare trends between alternative actions.” LCMs simulate the life cycle of salmon from subbasin spawning through downstream migration to the ocean and back upstream to the subbasin of origin. Each model produces a low, medium and high range assumption.

There are several substantive differences among the LCMs including: (1) NPPC's SPM only applies to spring chinook, while the other models apply to spring/summer and fall chinook (there are no LCMs for sockeye); (2) NPPC's SPM model is a “process” model which looks at causes and effects while the BPA's SLCM and the STFA's ELCM are both “empirical” models which rely on past trends to predict the future; (3) BPA's model uses a higher transport to control ratio (2.1:1 fall; 1.6:1 spring/summer) than that used in the STFA model (1:1); and (4) the STFA model assumes a greater flow/survival relationship than does the BPA model.

The analytic process uses the “Dennis Model” (a statistical model) to project population abundance approximately four generations beyond 1992—four 4–year life-cycles, which explains the 2008 target date for stabilization. Target population levels are determined by reference to the 1986–90 population base period, which figures are then used to *897 define the ratio of the target populations against the predicted population in the absence of any improvements as measured against proportional improvements needed to meet the target. This process results in a value referred to as a “benefit ratio.” Benefit ratios derived from the LCMs are compared against benefit ratios derived from historical data trends to determine if there is a “reasonable certainty” of achieving population targets assuming systemic improvements.

Using the models, NMFS summarized the combined effects of each individual action proposed for the 1993 FCRPS operations (i.e. mortality “as a result of passage through the FCRPS, including immediate and delayed mortality of transported fish”) as follows:

* 55–77% mortality for juvenile Snake River sockeye²⁷;

—Adult sockeye losses are “not quantifiable;”

* 54.5–76.7% mortality for spring/summer juvenile chinook and 33.41% for adults which represents a 3–11% reduction in mortality from the base period;

* 81–93% mortality for juvenile fall chinook and 41% for adults which represents a 5–9% reduction from the base period.

Model outputs resulted in a wide range of assumptions regarding the probability of success in stabilizing the spring/summer chinook populations: low end assumptions ranged from 41–46%, mid-range assumptions ranged from 46–56%, and high end assumptions ranged from 61% to 82%. NMFS rejected low assumptions on the grounds that they failed to account for improvements in land management and hatchery activities and it was “unlikely” that such improvements would have “no benefit.” Combined effects analysis for fall chinook resulted in probabilities of 70–99% of meeting the stability goal by 2008. However NMFS questioned the validity of each of the fall chinook results, finding them “counter-intuitive” because they produced population increases even in the absence of survival improvements to hatchery programs, predator removal, bypass improvements, and numerous other factors which should have been reflected in the model results.

Based upon these results, NMFS concluded that 1993 FCRPS operations were “expected to result in a meaningful decrease” of 2.5% to 11.4% in mortality of spring/summer chinook relative to the base period and a “meaningful decrease” of 5.1–8.9% in mortality for fall chinook relative to the base period. In addition, NMFS noted that the 60–70% probability of achieving 1990 population levels for spring/summer chinook by 2008 represented a “reasonable certainty” of stabilization. Based upon these findings and conclusions, NMFS issued a “no jeopardy” BO on May 26, 1993.²⁸

NMFS' reliance upon the three models is guardedly optimistic at best as evidenced by the many disclaimers appearing throughout the BO, appendices and attachments regarding the “uncertainties” inherent in model results. Because of this high degree of uncertainty, NMFS states that it “will emphasize step one of the jeopardy analysis.” The models are very new and their proponents openly admit that LCMs contain a number of what can best be described as educated guesses premised upon “crude assumptions.”

Three disputed issues arise with respect to NMFS' use of the models: (1) was it arbitrary and capricious to consider and then disregard low range assumptions (STFA model

results being the lowest) in analyzing the likelihood of reaching stability goals; (2) in examining the likelihood of stabilization, did NMFS fail to consider additional risks posed from in-breeding and the “extinction vortex,”²⁹ i.e. did NMFS misapply the Dennis Model to such a significant degree as to undermine the no jeopardy conclusion; and (3) should NMFS have engaged in the second step of the jeopardy analysis at all?

Defendants raise the “scientific dispute” defense to each of these claims arguing that, at best, plaintiff and amicus arguments relate to philosophical differences of opinion. Thomas Wainwright, a NMFS fisheries biologist, contends that IDFG and Dennis overstate the role and importance of the models to the CEA analysis.

However, NMFS explains that:

“the definition of ‘reasonable certainty’ (of recovery) is not a scientific question, so we address it by presenting results for several traditional confidence levels. While the selection of a specific confidence level is essentially a policy decision regarding acceptable risk, it would be noted that even at the 50% level, the expected population trend at the end of the time frame must be substantially upward not flat.”

NMFS Hydro BO, Appendix 2, p. 6.

Again, judicial review focusses upon whether there has been a reasoned evaluation of the best scientific data available and a rational connection between the facts found and the conclusions drawn. Scientific uncertainty may contribute to the complexity of a problem, but the existence of a scientific dispute should not insulate an agency from meaningful, but limited, judicial review. The controversy surrounding stabilization confidence levels involves a mixed question of policy, law and science and therefore, must be distinguished from the more typical scientific differences of opinion addressed in *Mt. Graham Red Squirrel v. Espy*, 986 F.2d 1568, 1576–78 (9th Cir.1993) (dispute over trapping and tagging portion of monitoring plan) and this court in *NRIC v. NMFS*, Civ. 93–870–MA, Opinion at pp. 5–7 (April 30, 1993) (scientific dispute over transportation benefits, detriments and data criticisms).

Given the admitted high degree of uncertainty in the jeopardy analysis, there is no rational explanation for defendants to disregard only the low end, worst case assumptions. Further, the government offers no explanation for its failure to consider in-breeding and the “extinction vortex” as additional risks undermining confidence levels.³⁰ IDFG and Oregon point to weaknesses in the BPA model results which might have supported dropping high range assumptions. Had NMFS not discounted the low range assumptions, the confidence levels would have been approximately 50% for spring-summer chinook instead of the 60–70% cited by NMFS in its conclusion.

Again, my task in reviewing the BO is not to find that 60–70% is or is not an unacceptable standard under the ESA, nor is it to tell the defendants to find a way to raise confidence levels to 90–100%. The mandate of ESA § 7(a)(2) is that each agency “insure” that any action authorized is “not likely” to jeopardize the continued existence of a species. Whether, upon remand, NMFS would find that a 50% confidence level meets this statutory mandate is not a claim ripe for decision.

I find that NMFS arbitrarily and capriciously discounted low range assumptions without well-reasoned analysis and without considering the full range of risk assumptions. *899 Unlike the transportation issue, this is not a purely scientific dispute but rather an issue of NMFS' failure to adequately explain why it prefers uncertain favorable model results and rejects other equally uncertain model results tending to undermine a no jeopardy conclusion. Especially in light of the perilously low numbers of Snake River sockeye and fall chinook expected in 1993 (5, and 242–246, respectively), I also find that NMFS should have fully considered the enhanced risks associated with small populations prior to discounting low range assumptions.

The defendant-intervenors' argument that any agency proposal found to result in improved “survival” as a matter of law could *not* be said to have “reduced both the likelihood of survival and recovery” so as to constitute jeopardy, is rejected for two reasons. First, NMFS does not analyze actions in terms of “improved survival” and specifically rejected that approach in its 1992 biological opinion. Instead NMFS determines if the action as proposed will constitute a “reduction in mortality,” a recognition that the two concepts are not necessarily equivalents. Level of mortality is examined in relation to individual practices while survival focusses upon the hazards posed to an entire life-cycle. Second, defendants' position is contrary to legislative intent

(i.e. that there may be no clear distinction between survival and recovery) and could lead to an incongruous result. For example, if 100 listed species are expected to survive downstream juvenile migration in 1993, and 99 survived in 1990, PPC's argument would mandate a “no jeopardy” finding—even though a 100 survival level may still be considered so low as to constitute a continued threat to the species' existence.

II. Failure to Re-Initiate Consultation

Oregon and Idaho also contend that NMFS violated the ESA regulation 402.16 by failing to re-initiate consultation upon receipt of STFA's revised and updated life cycle (ELCM) model analysis. The States contend that their updated model results constituted “new information” tending to show a further reduction in the probability of achieving NMFS stability goal.

The STFA apparently discovered an error in their fall chinook juvenile “FLUSH” model which altered results initially reported to NMFS in late February, 1993. Sometime in March or April of 1993, STFA submitted revised model runs to NMFS which were never incorporated into NMFS' BO. Chris Toole, a NMFS biologist discovered the error and drafted a memo to Gary Smith, Acting Regional NMFS Director (and others), addressing the omission and indicating that it would have amended portions of the combined effects analysis. Whelan Affidavit, Ex. 5, Memo from Chris Toole (NMFS) (6/12/93). Toole reported that an Oregon Department of Fish and Wildlife biologist (Howard Schaller) thought the BO was “overly optimistic in light of the newer model results.” *Id.* Toole felt that the revision constituted “significant new information,” but declined to take a position on whether it would or should trigger re-initiation of consultation since he questioned whether it would have altered the outcome given the admittedly “counter-intuitive” results obtained from the LCMs for fall chinook. *Id.*

NMFS has not proffered an explanation for its refusal to re-initiate consultation. Federal defendants do not directly respond to this argument, but their response generally is that the states failed to identify any “relevant” scientific information which NMFS failed to consider.

Because I find it was arbitrary and capricious for NMFS to disregard low end assumptions and remand on this point, NMFS should consider and address updated STFA model results upon remand.

Conclusion

As is true in so many of these cases, the merits of the dispute are only a portion of the problem. What compels a party to file an action against the federal government in an environmental case generally is the sense that having been called upon to contribute resources to aid the federal agencies in problem solving and having expended time, energy and money coming up with analyses and recommended solutions it should not be ignored or, as in this case, ultimately have its *900 views discredited. Thus, the underlying root of the litigation problem is the feeling of these parties that the federal government is simply not listening to them. As Steven Huffaker, IDFG Director, commented in his deposition, there are a lot of good alternative solutions being studied and proffered by several agencies, i.e. “everybody has got a plan to save the salmon,” but many of these recommendations have fallen on deaf ears. Huffaker's comments are echoed by Oregon in the opening of its reply memo:

“Oregon was extremely disappointed with the level of participation afforded to us in the consultation process. Our disappointment continues with respect to the 1994–1998 consultation on the (FCRPS) in which we were asked to, and did, commit extensive staff time and resources to the task of information generation but were then left out of the discussion of conclusions.”

I heard very similar comments raised by the Tribes and environmentalist organizations during hearings on the transportation issue in the *NRIC v. NMFS*, Civ. 93–870–MA, and again from PPC, PNGC and the DSIs during the pendency of their claims in *PNGC v. NMFS*, Civ. 92–973–MA.

Federal defendants are under no legal obligation to listen and respond to salmon plans from every corner of the Northwest, but the ESA does impose substantive obligations with respect to an agency's consideration of significant information and data from well-qualified scientists such as the fisheries biologists from the states and tribes. See 16 U.S.C. § 1536(a) (2), (“Section 7(a)(2)”) (each agency “shall use the best scientific and commercial data available”); and 50 C.F.R. 402.14 (agencies requesting consultation must submit best scientific and commercial data available).

I started this opinion by drawing attention to a few surprising critical points of agreement I discovered in reviewing the voluminous and complicated record in this case and I want to end on the same note. When we set aside the finger pointing, accusations, and recriminations, the maxim that those that appear farthest apart are sometimes right next to each other applies with full force to this case. In this instance, I think the choice is clear and that I have a rare opportunity to tell all of these players (save a few government agencies) that, at least with respect to broad points of agreement regarding the standard by which NMFS measures success, they are all absolutely right. NMFS has clearly made an effort to create a rational, reasoned process for determining how the action agencies are doing in their efforts to save the listed salmon species. But the process is seriously, “significantly,” flawed because it is too heavily geared towards a status quo that has allowed all forms of river activity to proceed in a deficit situation—that is, relatively small steps, minor improvements and adjustments—when the situation literally cries out for a major overhaul. Instead of looking for what *can* be done to protect the species from jeopardy, NMFS and the action agencies have narrowly focussed their attention on what the establishment is capable of handling with minimal disruption.

I fully recognize that stability and recovery are two distinct legal concepts under the ESA. However, in examining the circumstances that confront listed Snake River salmon—the myriad of both human-induced and natural contributions to mortality, their unique life-cycle and geographic range—the two concepts are in many instances virtually indistinguishable. Where stability ends and recovery begins is a crucial question which must be fully explored by the federal defendants in examining what changes can be made to river operations to avoid what many commentators believe will be the inevitable extinction of these species.

Based on the foregoing, although the two-step framework for jeopardy analysis may be appropriate, I find that defendants' 1993 Biological Opinion on Hydropower operations is arbitrary and capricious and otherwise not in accordance with the meaning and underlying purposes of the Endangered Species Act, § 7(a)(2), with respect to the chosen jeopardy standard and their consideration of reasonable and prudent alternatives to avoid jeopardy. Accordingly, IDFG's motion for summary judgment (# 102) is granted and the remainder of federal defendants' cross-motion for summary judgment (# 320) is denied. *901 Defendants shall re-initiate consultation consistent with my findings and should complete any re-initiation within 60 days, unless extended by leave of

court. I will hold a status conference to discuss this further on Friday, April 8, 1994 at 10:00 a.m.

In its opening memorandum, IDFG also sought an order that the COE and BOR should be "enjoined from continuing to operate the FCRPS in a manner that jeopardizes the listed Snake River salmon." During oral argument, IDFG agreed that the court should not direct river operations in the interim

pending completion of consultations and thus, the relief sought should be limited to a remand back to the agencies. I agree. Accordingly, IDFG's request for injunctive relief is MOOT.

Parallel Citations

38 ERC 1842, 24 Env'tl. L. Rep. 21,384

Footnotes

- 1 The affidavit and deposition excerpts of Steven Huffaker, Director of IDFG, establish that the IDFG has a direct interest in the listed species' recovery through its participation in captive rearing, hatchery and recovery programs which are independent of any incidental benefits to its populace. See *Alfred Snapp, Etc. v. Puerto Rico*, 458 U.S. 592, 601, 102 S.Ct. 3260, 3265–66, 73 L.Ed.2d 995 (1982). Cases relied upon by the federal defendant are factually distinguishable. See *Nevada v. Burford*, 918 F.2d 854 (9th Cir.1990) (state NEPA challenge to federal grant of a research right of way over federally owned land), *cert. denied*, 500 U.S. 932, 111 S.Ct. 2052, 114 L.Ed.2d 458 (1991); and *State of Iowa v. Block*, 771 F.2d 347, 352–355 (8th Cir.1985) (State action to compel disaster relief payments to citizens); see also *Wyoming v. Lujan*, 969 F.2d 877 (10th Cir.1992) (state lacked standing to seek loss of royalty income against Interior Secretary); *Compare City of Las Vegas v. Lujan*, 891 F.2d 927 (D.C.Cir.1989); and *Douglas Co. v. Lujan*, 810 F.Supp. 1470, 1476 (D.Or.1992) (Hogan) (county could raise NEPA challenge against FWS since designation of critical habitat would "profoundly" affect quality of life in Douglas County).
- 2 I set forth the standards governing mootness in ESA cases in some detail in *PNGC v. Brown*, 822 F.Supp. 1479, 1499–1506 (D.Or.1993). At least with respect to mootness, other than the duration element of the anticipated 1994–1998 biological opinion, as I found with respect to 1992 consultations, 1993 operations and analyses of operations are capable of repetition and yet likely to evade review.
- 3 Snake River sockeye salmon were listed as "endangered" on December 20, 1991. Snake River spring/summer chinook and fall chinook were listed as threatened species on May 22, 1992.
- 4 The "4 Hs" refer to human-induced mortality identified by NMFS in the listing decisions and include hydropower, habitat management, harvests and hatcheries. See, Ex. A to Stipulated Facts, *PNGC v. Brown*, Civ. 92–973–MA, June 1991, NMFS paper entitled "Factors For Decline A Supplement to the Notice of Determination for Snake River Spring/Summer Chinook Salmon Under the Endangered Species Act." Other natural, uncontrollable contributors to salmon mortality include drought, fire, and El Nino's depletion of the ocean food supply. *Id.*, at p. 52.
- 5 There are four ways the listed species may navigate the eight mainstem Columbia and Snake River hydroelectric projects while migrating from upriver areas to the ocean: (1) spill over the dams; (2) passage through turbines; (3) bypass to transportation facilities; and (4) bypass back into the river. Of these options, spill is believed to have lowest mortality (0–3%) compared against turbine passage (6–32%) and bypass (1–3%). See Ex. A to Stipulated Facts, Civ. 92–973–MA, "Factors For Decline," pp. 9–11. However, spill must be carefully managed to avoid gas supersaturation and timed to coincide with peak migration. *Id.*, at p. 10–11.
- 6 The "Compact" was created by federal statute in 1918 and is a coordination compact relating to anadromous fish management between the states of Oregon and Washington. Act of April 8, 1918, Pub.L. No. 65–123, 40 Stat. 515 (1918).
- 7 Columbia Aluminum was named as a plaintiff in the original action filed by the DSIs, *ALCOA v. NMFS*, 92–1260–MA (later consolidated with 92–973–MA), but was not named in the third party cross-complaint filed against defendants in this action, *IDFG v. NMFS*, Civ. 93–1603–MA.
- 8 I have been advised that a similar action was also filed on February 15, 1994 in the Western District of Washington and is currently pending before Judge William Dwyer.
- 9 Of the three complaints before me in this consolidated action, IDFG's claims 1, 2 and 5 encompass intervenors' cross-claims 1 & 3 in *PNGC v. NMFS*, Civ. No. 92–973–MA, and plaintiffs' claims 6, 7, 12 & 13 in *NRIC v. NMFS*, Civ. No. 93–1420. Neither cross-claimant in the 92–973 action, nor plaintiffs in the 93–1420 case have filed any memoranda relative to the pending cross-motions for summary judgment.

Adam Berger, counsel for both intervenor cross-claimants in Civ. No. 92–973–MA and plaintiffs in Civ. 93–1420, was present in the courtroom during oral argument on the present cross-motions on March 18, 1994. In response to my

questioning, Mr. Berger acknowledged that there may be some overlap in the claims such that *res judicata* might bar further litigation of certain issues by his clients.

Robert Costello, attorney for the State of Washington, was also present and acknowledged that his client would be bound by this ruling.

- 10 Alaska joins in Idaho's motion and "adopts" arguments made by Idaho in support of its motion for summary judgment relative to NMFS' "no jeopardy" finding. Alaska also raises collateral issues regarding harvest reductions.
- 11 To date, these include the Warm Springs Tribe, Yakama Nation, Nez Perce Tribe and Umatilla Tribes. *See United States v. Oregon*, 787 F.Supp. 1557 (D.Or.1992) (Confederated Tribes of the Colville Reservation appeal pending).
- 12 "On the question of the jeopardy standard, I was left with the impression that we (NMFS) are in substantial disagreement with the three operating agencies. I thought Walt Pollock (BPA) used an apt metaphor in expressing his discomfort that we have buried a bomb." Whelan Aff., Ex. 4, Memo from Brian Brown (NMFS) to Merritt Tuttle (NMFS) (9/7/92).
- 13 This jeopardy "process" is fully explained in Appendix 1 to NMFS' 1993 FCRPS Biological Opinion.
- 14 BPA 1993 ROD on Flow Measures SEIS, p. 29–30 (questioning use of '86–'90 baseline of water conditions); Appendix 1, p. 6; Appendix 1, p. 14: (survival rather than reduction in mortality is a better measure ... NMFS should use a more rigorous no jeopardy standard ... BPA is particularly concerned because standard employed allows for continued decline prior to increase .. NMFS could insist upon a higher level of confidence ... [NMFS] should consider using the entire pre-recovery eight dam era ('78–'92) as a base period).
- 15 See Idaho's Reply Ex. 2, DSIs Sept. 1993 60–day notice of intent to sue letter re: 1993 ocean and in-river harvests ("NMFS' selection of this target number [Snake fall average from '86–'90 base period] is not adequately supported by the record or by sound scientific analysis").
- 16 See *NRIC v. NMFS*, Civ. No. 93–1420–MA, and cross-claims in *PNGC v. Brown*, Civ. No. 92–973–MA.
- 17 See footnote 13.
- 18 Within this conflict are the sharply divided scientific disputes over transportation benefits, flow-survival relationships and mortality allocation figures used by NMFS for comparative purposes. Scientific advocates on all sides accuse each other of a lack of sufficient scientific backing, and to this I quote the following: "[O]pportunities to save fisheries have been squandered because of concerns for adequate data. This lesson was clearly noted for another Pacific fishery. The California sardine fishery is a monument to the failure to act in time, and to the insistence of having conclusive scientific evidence before acting." PPC, et al., Ex. H, Nehlsen, Williams & Lichatowich, "Pacific Salmon at the Crossroads: Stocks at Risk from California, Oregon, Idaho and Washington," *Fisheries* Vol. 16, No. 2, p. 16 (March–April 1991).
- 19 Individual activities analyzed in the 1993 hydro BO include: flow augmentation, spill, project operation and maintenance, transportation, predator removal, and law enforcement.
- 20 An action agency's reliance upon the choice or basis of a biological opinion issued by NMFS must be "reasonable" to satisfy the act's substantive obligations. *PNGC v. Brown*, 822 F.Supp. 1479, 1487–88 (D.Or.1993), citing *Pyramid Lake Paiute Tribe v. U.S. Dept. of Navy*, 898 F.2d 1410, 1415 (9th Cir.1990). An agency that attempts to proceed with an action in the face of a jeopardy finding "will almost certainly be found to have acted arbitrarily and capriciously." *Lone Rock Timber Co. v. U.S. Dept. of Interior*, 842 F.Supp. 433, 435 (1994), citing *Hill v. TVA*, 549 F.2d 1064, 1070 (6th Cir.1977), *aff'd*, 437 U.S. 153, 98 S.Ct. 2279, 57 L.Ed.2d 117 (1978).
- 21 Charles Petrosky, an IDFG fisheries biologist, explains that the 1986–90 baseline period chosen by NMFS is "misleading" because this was a "period of sustained drought," and thus, "survival gains in 1993 are in large part due to the happenstance of increased run-off." Petrosky Affidavit, p. 7–8.
- 22 Defendants raise similar points within their standing argument.
- 23 Section 4(f) directs the Secretary to develop and implement a recovery plan for the "conservation and survival" of the species. The Secretary may appoint a recovery team to assist in accomplishing this task. Last October, I received a copy of the Recovery Team's first draft.
- 24 Legislative history reveals that a definition of "survival" was considered, but rejected "because this concept [survival] varies widely among listed species." 51 Fed.Reg. 19934 (June 3, 1986).
- 25 There are also three Juvenile Passage Models which analyze juvenile passage from spawning ground to mouth of the Columbia River: (1) the BPA's Columbia River Salmon Passage "CRiSP.0–.1.4" series; (2) the Northwest Power Planning Council's Passage Analysis Model "PAM;" and (3) State and Tribal Fisheries Agencies' Fish Leaving Under Several Hypotheses Model "FLUSH."
- 26 NPPC was created in 1980 by the Northwest Power Planning Act, 16 U.S.C. § 839. Section 839b(h) of the Act mandated the development of a fish and wildlife program.

- 27 NMFS notes that because Snake River sockeye populations are so low, there are no precise figures for reductions in mortality. NMFS assumes, however, that actions will impact listed sockeye in a similar manner as spring/summer chinook.
- 28 There is a fine line between jeopardy and no jeopardy. In the Draft BO of May 5, 1993, NMFS estimated reductions in mortality for spring/summer juveniles of 1.15–9.76%, and 32.8% for adults. Fall juvenile mortality reductions ranged from 2.63 to 13.3%, but anticipated adult mortality dropped from 72.9% to 41%. Juvenile sockeye mortality estimates in the draft BO (58–79%) are nearly identical to estimates in the final version (55–77%).
- 29 Brian Dennis, the author of the Dennis model, describes the “extinction vortex” as the increased risks associated with “severely low levels” of species populations from random events such as environmental catastrophes (drought, fire) and in-breeding. Dennis criticizes NMFS for its failure to extend his model analysis in such a way as might have shown a larger degree of uncertainty in NMFS' estimates of populations levels needed to achieve stability goals.
- 30 Wainwright claims that NMFS did consider the special risks associated with “unacceptably low” populations levels during the consultation period, but cites to the BO attachment at pages 4–22. This citation identifies model “uncertainties” such as the relationship between juvenile survival and flow, but does not mention special risks from low level populations. Three paragraphs on inbreeding and “genetic bottlenecks,” appear at page 12 of Appendix 1 in a section addressing “genetic considerations,” but simply notes that there is “no consensus regarding the minimum acceptable effective size for a population.” There is evidence in the record that at least one NMFS biologist considered these risks (Idaho Ex. 21, Memo from Michael Schiewe (NMFS) to Gary Smith (NMFS), 12/23/92), but they were not addressed in the risk factor section of the BO.