

8.1 National Academy of Sciences Report

Due to the controversy surrounding the basis for Klamath Project water allocation decisions in 2001, the Department of the Interior initiated a review of the situation by the National Academy of Science. Accordingly, the National Research Council formed the Committee on Endangered and Threatened Fishes in the Klamath River Basin (Committee), made up of scientists and other experts, to develop both a narrowly-focused interim report on the 2001 situation and a broader final report about the biological requirements of listed fish in the Klamath Basin.

The prepublication version of the Interim Report from the Committee, entitled “Scientific Evaluation of Biological Opinions on Endangered and Threatened Fishes in the Klamath River Basin” was released to the public in February 2002 (Interim NRC Report, National Academy Press 2002). Although the substance of the Interim NRC Report is “final,” a final interim report will reportedly be available in April 2002. The “Statement of Task” (Appendix to the Interim NRC Report) included the following language regarding the Interim NRC Report:

The interim report will focus on the February 2001 biological assessments of the Bureau of Reclamation and the April 2001 biological opinions of the U.S. Fish and Wildlife Service and National Marine Fisheries Service regarding the effects of operations of the Bureau of Reclamation’s Klamath Project on listed species.

The committee will provide a preliminary assessment of the scientific information used by the [USBR], [USFWS], and the [NMFS], as cited in those documents, and will consider to what degree the analysis of effects in the biological opinions of the [USFWS] and [NMFS] is consistent with that scientific information.

The committee will identify any relevant scientific information it is aware of that has become available since the [FWS] and [NMFS] prepared the biological opinions. The committee will also consider any other relevant scientific information of which it is aware.

NMFS is grateful to all members of the Committee for volunteering to undertake an expedited review of 2001 proposed and implemented Project operations, and looks forward to the final report that will provide additional valuable information. By definition, the Committee’s interim report task was different from NMFS’ Endangered Species Act section 7 responsibilities (i.e., ESA section 7 consultation consistent with the implementation regulations [50 CFR ' 402]). Although the context is different, additional data, analyses, and current conclusions always move the understanding of the Klamath River forward.

The conclusions of the Interim NRC Report with regard to coho salmon seem to be: (1) there is a paucity of data about coho salmon in the Klamath River Basin, but that population levels are unknown but probably low; (2) operation of the Klamath Project consistent with Reclamation’s January 22, 2001, biological assessment may not be

scientifically supported; (3) substantial improvements in the amount of coho salmon habitat in the mainstem Klamath River cannot currently be attained in dry years, relative to river flows in the last decade; (4) factors limiting Klamath River coho salmon production are not related to conditions under the Project's control, at least during dry years; (5) current hatchery practices are flawed; (6) there is no substantial scientific foundation for changing the operation of the Project to maintain higher Klamath River mainstem flows for the threatened coho salmon (e.g., those flows recommended in the NMFS April 6, 2001, biological opinion RPA); (7) there is no substantial scientific evidence supporting changes in Project operations, nor the resulting IGD flows, relative to the past 10 years; (8) avoiding coho salmon stranding due to downward ramping rates at IGD seems reasonable and prudent; and, (9) that the Committee's conclusions are subject to modification in the future if scientific evidence becomes available to show that modifications of flows would promote the welfare of Klamath River coho salmon.

Regarding the availability of population data, the Interim NRC Report acknowledged that "[s]tocks of native coho salmon have declined greatly in the Klamath River Basin over the past several decades" and that "...standard methods for observing and counting spawning [coho salmon] are not easily applied, and the size of the spawning population is unknown." These conclusions are consistent with the NMFS 2001 biological opinion addressing Klamath Project operations, and this biological opinion.

NMFS agrees that the amount of mainstem Klamath River coho salmon spawning is probably not currently limiting coho salmon population recovery. But the extent of mainstem spawning prior to pre-dam and water development activities is unknown, as is the extent of mainstem spawning in the future that may support recovery of listed coho salmon.

Preliminary coho salmon fry habitat modeling, conducted according to commonly accepted methods, produced results suggesting that within the available range of flow magnitudes, suitable fry habitat was expected to increase with increasing flow. Depending on the method of calculation, the estimated mainstem Klamath River coho salmon fry habitat available under the NMFS 2001 biological opinion RPA is about 10 to 200% higher than that available under Reclamation's proposed Project operations as described in their January 22, 2001, biological assessment (see related information provided in the April 6, 2001, NMFS biological opinion). This also appears to be the case for chinook salmon fry. The Committee apparently has limited confidence in the estimates of the amount of suitable habitat available under various flow magnitudes, noting that such estimates in their final form require "...extensive field measurements that are not yet available." The draft Phase II flow study report (Hardy and Addley 2001) includes extensive descriptions of the various methods (including field measurements) used to develop the currently available estimates of fish habitat in the Klamath River for the Committee's continued consideration.

The Interim NRC Report also indicates that coho salmon smolts require adequate habitat, but does not provide any relevant conclusions. Available information, apparently without exception, indicates that smolt survival is expected to increase with

mainstem flow magnitudes in the spring. As these fish have survived sometimes difficult freshwater habitat conditions, and in consideration of the populations apparent status (and associated uncertainty), it seems prudent that management of the Klamath River mainstem should provide for expected increases in smolt survival as these fish will contribute to the adult population.

Although coho salmon have been found in the Klamath River when water temperatures have been elevated (apparently in contrast to investigations in the Mattole River), the NMFS shares the Committee's deep concern about elevated water temperatures in the mainstem Klamath River during the summer and that dramatic improvements cannot be made simply by releasing more IGD water. However, modeling results and temperature data indicate that modest temperature improvements (both daily mean and maximum) are expected under some IGD release scenarios. Further, decreases in mainstem temperatures that can probably be realized are similar to the difference between some tributary temperatures and those in the mainstem (e.g., see McIntosh and Li 1998), so that consistent with the expectation that tributary confluence areas may provide survival benefits for coho salmon fry and juveniles in the mainstem, decreases in mainstem temperatures may also provide such benefits.

The Interim NRC Report apparently concludes that thermal refuge areas associated with tributary confluences in the mainstem Klamath River may be important for coho salmon, and that "[a]ddition of substantial amounts of warm water could be detrimental to coho salmon by reducing the size of these thermal refuges." By extension, readers of the Interim NRC Report must conclude that the Committee believes alternative IGD flow regimes could also not be detrimental to coho salmon (i.e., beneficial). For example, it is currently unknown whether the amount of suitable habitat (in terms of temperature, water depth and velocity, and cover components) and the associated "carrying capacity" of individual thermal refuges would be increased or decreased under specific IGD release regimes, relative to other specific flow regimes. Indeed, the relationship between mainstem flows and total thermal refuge carrying capacity may be different for different thermal refuges and vary with water supply conditions and meteorology. Finally, given that apparently little to no tributary accretions contributed to mainstem flows between IGD and Seiad Valley during August 2001 (Figure XX), another question to be considered must be: How much water should be in the mainstem between IGD and Seiad Valley (i.e., IGD releases), given the expected mainstem thermal regime and physical habitat conditions?

Given the considerable uncertainty about how to optimize salmonid carrying capacities in the mainstem Klamath River in the summer, NMFS believes that experiments should be conducted with the goal of providing scientific evidence and foundation for summer management of the river.

NMFS agrees with the Interim NRC Report's conclusion that habitat degradation in some tributaries is contributing to the decline of Klamath River coho salmon, although NMFS is unaware of any scientific evidence that this situation is limiting or that any other measures taken to improve coho salmon survival or production would be overwhelmed or negated by poor tributary conditions. The fact remains that all

individual coho salmon must use the mainstem as juveniles transforming to smolts, and as adults. By extension, the survival of all coho salmon that enter the mainstem will be affected by mainstem habitat conditions. During ESA section 7 consultation, NMFS has no choice but to consider information and develop life stage survival expectations, regardless of the absence or paucity of “scientific” evidence or foundation.

NMFS also agrees with the Interim NRC Report’s apparent conclusion that recent Iron Gate Hatchery practices are probably not optimum. Further, NMFS is aware that the CDFG has accomplished changes in some practices that are expected to benefit the naturally-spawned coho salmon population, and is currently evaluating other changes to their program that could provide additional benefits. For example, hatchery access for returning hatchery-produced adults has been improved for a number of years, and the practice of returning “excess” hatchery adults to the river has been curtailed and this should result in less straying into tributaries. Also alternative hatchery production rearing practices and release strategies for some species are currently being considered, and this could lead to additional release timing flexibility.

The Committee concluded that there is no substantial scientific foundation for changing the operation of the Project to maintain higher flows in the mainstem for coho salmon (presumably relative to the past decade), but no specific definition of “substantial scientific foundation” was offered. Although the Committee offered similar conclusions about Reclamation’s proposed Project operations as described in their January 22, 2001, biological assessment, the Committee apparently based this solely on the possibility that lower IGD flows (e.g., lower than 398 CFS) than have been observed before could result. The Committee seems to simply be saying that, if certain low magnitudes of flow have occurred before they are acceptable, if they have not occurred before, there is no substantial scientific foundation and such flows are not acceptable. NMFS observes that this does not seem to be a responsible way to view Klamath River management in light of the complex problems at hand, and not consistent with ESA evaluation processes. Regardless of the definitions and standards used by the Committee, and in which particular instances they should apply, readers of the Interim NRC Report reader must also conclude that Project operations prior to 1996, and the resulting IGD flows, do not have a substantial scientific foundation. Finally, NMFS observes that it is not likely (i.e., very low probability) that IGD flows that consist of water that others cannot use or store (e.g., IGD flows in the early 1990s) are flows that provide appropriate survival levels for literally all coho salmon that must occupy and depend upon the river.

NMFS agrees with the Interim NRC Report conclusion that avoiding coho salmon stranding due to excessively rapid downward ramping of IGD flows seems reasonable and prudent. In the April 6, 2001, biological opinion NMFS noted that 7 coho fry were stranded during IGD flow changes in April 1998, and included a recommendation of alternative ramping rates in their RPA. This is consistent with NMFS’ belief that steps, both long- and short-term, must be taken to increase the expected survival of this coho salmon life stage. Further, such steps are appropriate even prior to developing a substantial scientific foundation for individual measures, and with the knowledge that

some of these measures (including less dramatic ramping ramps) require that more water volume be allocated to IGD releases during portions of the year.

As with any conclusions drawn from the consideration of flow management and the resultant affects to Klamath River salmon populations, NMFS is pleased to know that the Committee may modify the conclusions described in the Interim NRC Report if "...scientific evidence becomes available to show that modifications of flows would promote the welfare of Klamath River coho salmon." Although the Committee does not offer any prediction about when such evidence may become available in the future, NMFS observes that scientific evidence that is robust enough to provide absolute confidence that any Project operational regime is consistent with the short- and long-term survival and recovery of Klamath River coho salmon may not be available within the next decade. This is particularly true if costly and time-consuming investigations to develop this evidence (e.g., statistically valid survival estimates, or 'cause and effect' determinations) are not initiated immediately. Although the recommendation to manage Klamath Project operations with regard to mainstem flow as close as possible to the 1990 to 2000 period is not explicitly offered in the Interim NRC Report, it is a common perception that this is the Committee's recommendation (e.g., see Reclamation's February 27, 2002, biological assessment addressing Klamath Project operations) in lieu of additional, high quality and site-specific scientific evidence that may or may not be developed in the future.

In summary, while NMFS may agree with the Committee's conclusion that there is no substantial scientific foundation for changing mainstem Klamath River flow management, NMFS cannot agree with the perceived Committee recommendation that absent conclusive scientific evidence the Project should be managed as it was in the 1990 to 2000 period. Instead, NMFS must also determine and consider expectations about the resulting effects to Klamath River coho salmon populations based on the best available information. NMFS cannot ignore selected information simply because it does not meet various standards applied by various interests. Finally, NMFS must consider these expectations in the context of tremendous uncertainty as to the status of the species, and after explicitly determining what other activities that adversely affect the fish (e.g., activities not subject to ESA section 7 consultation) are reasonably likely to occur. This includes the cumulative effect of substantial water management activities outside of the Project boundaries.