

March 23, 2009

To: Northwest Power and Conservation Council  
Attn. Nancy Leonard  
851 S.W Sixth Avenue, Suite 1100  
Portland, OR 97204-1348

From Richard R. Whitney, Former ISAB and ISRP Member

Subject: Comments on Council's proposed list of high level indicators of progress in attaining Fish and Wildlife Program goals.

Message:

Chairman Booth's letter of March 13, 2009, solicited my comments on the proposed high level indicators. I submit the following comments with the hope that they will be considered to be constructive and helpful in assembling data that can be used to analyze and "effectively communicate the program's progress".

To begin with, the bottom line in evaluating progress, is numbers of fish added to compensate for losses due to construction and operation of the hydroelectric system, as specified in the Act. The proposed table of High-Level Indicators and Descriptions is on the right track by beginning with "Biological Indicators of Abundance".

However, finer-scale data are needed at each of the indicators listed, in order for Council to be able to consider and report upon the full effectiveness of its program. In particular, there is a need to take into account the Sub-Basin Planning initiative that was undertaken at the Council's behest. For example, the three Abundance Indicators listed as numbers 1, 2 and 3, as well as number 4, Habitat Productivity, and 5. Harvest and Hatcheries focus upon "totals", whereas evaluating the success of the Sub-basin Plans requires identifying the individual contributions of each sub-basin. I provide more detail in my comments below. Effectiveness of the Council's program can best be evaluated by summing data obtained from Biological Indicators applied to each sub-basin to arrive at a total. I do not believe this to be a particularly formidable task. Most of the ground work has been done. Imaginative application of well established methods of statistical analysis should make it feasible.

As further justification of this sub-basin approach, I point out that the concept of managing a fishery to maximize production by focusing upon individual; components (stocks) of the population, rather than upon the general mix (i.e. the total) is well established in theory.(Ricker, 1954), and in practice. Numerous practical examples could be cited, such as management of salmon and steelhead in Puget Sound, which is directed at the fish populations in individual tributaries, the sockeye salmon fishery in the Frazer River, which manages separately for stocks returning to individual lakes in the system, and many others. Put simply, this means that managing to maximize production in the tributaries (sub-basins) will bring a greater return over the long term than managing based upon total populations at Bonneville Dam or anywhere else in the mainstem. This

approach has a secondary benefit of returning increased numbers of fish to “usual and accustomed fishing grounds” of treaty tribes.

## BIOLOGICAL INDICATORS

The focus in the table is upon in-river performance, which is insufficient for an evaluation of progress in the Council’s Program, because the program incorporates the sub-basin plans. The evaluation should be viewed as an audit that takes into account all salmon and steelhead produced in the Columbia Basin. This audit needs to include: (1) All salmon and steelhead removed in ocean fisheries, including Alaskan and Canadian catches of fish that originate in the Columbia Basin, (2) All salmon and steelhead removed in Columbia River mainstem in-river fisheries, (3) All salmon and steelhead removed in sub-basin fisheries, including treaty tribal and non-tribal catches, (4) All salmon and steelhead allowed to spawn naturally in each sub-basin, (5) All salmon and steelhead utilized for taking eggs at the hatcheries. For adequate evaluation of the Council’s program the estimates at each of the five steps should be produced by sub-basin.

From this perspective, Items 1, 2 and 3. Total counts of adults at Bonneville Dam are not sufficient, although they are interesting and useful. Council should encourage detailed statistical analyses, such as are possible with the further use of coded-wire tags and PIT tags and other methods, to make abundance estimates for each sub-basin. Counts at Bonneville Dam might be one element in the procedure. I used the words “statistical analyses” above to bring forward the fact that even the total counts of fish at Bonneville Dam are themselves estimates of the number actually passing upstream – reasonably good estimates, but not to be taken as absolute values. The ISAB (or ISG?) dealt with this issue in a report in which they observed that it is not unusual to find counts at upstream dams that are significantly higher than at Bonneville Dam, an unacceptable result if the counts are successful in achieving their intended objectives. One explanation for this error, among other factors, is that at times some fish are known to “fall back” through the navigation locks or the ladders themselves, with the result that unmarked fish are counted twice when they try again. [Documented in Ted Bjornn’s and Lowell Stuehrenberg’s (separate) radio tracking studies, for example.]

4. Habitat Productivity is particularly dependent upon the Sub-basin Plans for execution and evaluation of effectiveness. The focus upon numbers of adult fish in and juvenile fish out seems overly simplistic, although those numbers should be components of the analysis. Again, the data should be assembled for each sub-basin. As I said above, Bonneville Dam counts or counts at other mainstem dams would not suffice.

The heading of this component reads “Productivity in select watersheds targeted by Council Program.” How would these be selected? It seems to me that each of the Sub-basin Plans includes a component of “Habitat Productivity “. Thus, the Council is obliged to either consider each of them or to take a random sample of plans. This seems unnecessary to me, because a monitoring and evaluation effort was required to be included in each Sub-basin Plan.

5. Harvest number and rate. The totals listed in the second column are insufficient for an adequate evaluation of progress. Again, the final analysis should address the question whether the goals in the Sub-basin Plans are being achieved. To accomplish this will require estimates of ocean fishery harvest rate for each Sub-basin, the assignment of adult counts at Bonneville Dam or elsewhere, assignment of the catch in the in-river fishery to each sub-basin, and catch data from tribal fisheries in each sub-basin. While PSMFC's coded wire tag data can be used, finer-scale analysis of in-river fishery harvest, particularly in the sub-basins may be obtained from direct observation by human samplers.

8. Hydro survival. This topic omits the mainstem above the confluence with the Snake River. This is a serious omission because it leaves out the only stock of chinook salmon in the Columbia Basin, judged to be healthy by the ISAB, namely fall chinook in the Hanford Reach. The Council has taken a particular interest in this stock, as a result of which, measures have been taken by the operators of the hydro system to stabilize flows to a degree in the Hanford Reach during the period of spawning, incubation, emergence of juveniles, and their migration through the reach. In addition, the stock of sockeye salmon in the Wenatchee River continues to maintain itself with some help from Chelan P.U.D.. These populations, as well as the others in the mid-Columbia and its tributaries clearly belong in Council's analysis of salmon and steelhead abundance.

The three P.U.D.s individually have undertaken measures to improve survival of juvenile and adult salmon in the mid-Columbia Reach up to the Canadian border and beyond. In the past, Council has incorporated these measures into the Fish and Wildlife Program. Data are available from the PUDs on survival rates past each mainstem project in the mid-Columbia Reach. Additionally, the P.U.D.s participated in development of the sub-basin plans and are collecting data on abundance of salmon and steelhead in them. In addition to sponsoring and adopting the sub-basin plans, Council itself has sponsored (through BPA funding of course) numerous projects in the mid-Columbia tributaries. I recommend including these elements among the High-Level Indicators listed by Council.

9. Life stage survival for representative populations of chinook and steelhead. Unless this/these survival estimates would be targeted to address a specific problem or question, I see little value in the data collection. The same information would be obtained at 4, for naturally produced stocks and 5 for hatchery stocks.

#### IMPLEMENTATION INDICATORS

From my perspective, these Implementation Indicators are interesting, but do not address the bottom line, which is numbers of fish added to compensate for losses due to construction and operation of the hydroelectric system, a requirement specified in the Act. They are expected to contribute by secondarily adding some fish numbers, thus their ultimate effectiveness should be reflected in the BIOLOGICAL INDICATORS.

These IMPLEMENTATION INDICATORS might be viewed as the investment part of the Council's portfolio audit, while the BIOLOGICAL INDICATORS might be viewed as the dividends received part. Perhaps the IMPLEMENTATION part of the table should be an appendix or other attachment. This would help avoid the potential for

confusion between initiatives (actions) and goals. My recommendation is that it be left out of this particular document, which would narrow its focus and provide data that would more “effectively communicate the program’s [real] progress.”

I hope that these comments and suggestions will be helpful.

Sincerely yours,

Richard R. Whitney