



State of Washington
DEPARTMENT OF FISH AND WILDLIFE

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April 1, 2002

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Mr. Mark Walker
 Northwest Power Planning Council
 851 SW 6th Avenue, Suite 1100
 Portland, Oregon 97204

Dear Mr. Walker:

Staff from the Washington Department of Fish and Wildlife (WDFW) have reviewed the January 21, 2002, report entitled, "Mainstem Passage Strategies in the Columbia River System: Transportation, Spill, and Flow Augmentation," (Giorgi, et. al. 2002) prepared by BioAnalysts, Inc. for the Northwest Power Planning Council. We offer the following comments.

The scope for Giorgi, et. al. (2002), was to answer four questions:

- What scientific literature inform us regarding the benefits, shortcomings, or risks associated with each passage strategy, as compared to other passage options?
- Which aspects of the scientific information are in dispute?
- What are the critical uncertainties attending each strategy?
- What is being, or could be, done to reduce uncertainty and disputes?

A very useful portion of this document is the identification of critical uncertainties in the effectiveness of transportation, spill, and flow augmentation on increasing survival of juvenile anadromous salmonids as they outmigrate through the Federal Columbia River Power System (FCRPS). We understand that this document is not a complete treatment of the risks of the FCRPS on anadromous salmonids in the Columbia River basin. We agree that differences between salmonid species and the environment of the Columbia River each year confound the results of many studies. Recent improvements in radio tracking and tagging technologies allow the region to conduct more precise estimates of the effects of the FCRPS on juvenile and adult anadromous salmonids.

It is also critical to view incremental measurements of survival and mortality in the context of total system passage and, ultimately, adult returns. Recovery of Endangered Species Act (ESA) listed stocks and the productivity of non-listed stocks is, in time, judged on adult returns and adult to adult performance. Life cycle assessments are critical to better understanding the full efficacy of in-river passage survival improvements. The capability of smolts relative to performance (survival) in the estuary and ocean environments can be heavily influenced by their condition and vitality when they arrive below Bonneville. In-river survival is critical, but surviving in a stressed condition and/or with an eminent disease infection can result in poor adult returns despite relatively good smolt survival.

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Transportation

Giorgi, et. al. (2002), writes that most estimates of the efficacy of transportation have weak statistical foundations. We agree that the only way to advance toward more quantitatively robust analyses is to increase the sample size of returning adults from experimental lots. Ideally, increasing the number of tagged juvenile fish in the system would be the most direct method of accomplishing this objective. However, the region may have to compromise between increased tagging effort and relying on improvements outside of the FCRPS (e.g., improvements in ocean survival) to provide increased numbers of returning adults.

In addition to suffering from low adult return rates, especially for wild smolts, the smolt transport evaluations conducted to date have been limited and biased by the logistical requirement to intercept and collect all study fish. This creates the situation where the "in-river" controls have been collected as though they would be transported and then released to the river to continue migration. This does not give us data for the critical question of how smolts would perform if they were actually bypassed via the juvenile "bypass facilities" instead of being collected and then released. Fortunately, the technology for Passive Integrated Transponder (PIT) tag detection is advancing and a test of full flow bypass PIT tag detection will be conducted at McNary Dam in 2002.

The use of undetected smolts as representing in-river migrants in more recent evaluations represents an improved methodology, but is hampered by the requirement to estimate the number of undetected smolts arriving below Bonneville. Also, all "bypassed" smolts with PIT tags have gone through 90+ percent of the collection for the transport process before being allowed to return to the river. To date, this has been necessary to document the passage of the PIT tags. If the full flow bypass PIT tag detection test at McNary proves effective, we will be on the verge of the capability to finally evaluate the management scale application of bypass versus transportation.

Specifically, WDFW supports research identified by Giorgi, et. al. (2002). These studies include the homing fidelity of adult salmonids that were transported as juveniles. Also, the direct mortality of juvenile salmonids incurred from the time of collection through release from either barge or truck should be more thoroughly evaluated. Studies to elucidate the variety of parameters included in the parameter *D* need to be more thoroughly investigated. We agree that a standardization of methods, protocols, and statistical analyses for conducting studies of transportation, spill, and flow augmentation is also a necessary goal for the region.

Spill

WDFW supports the conclusion that spillways generally appear to be the safest passage routes for smolts. However, the rather broad brush statement that increased spill levels and may decrease survival is not well supported by the data presented in Table 2.1. The only consistent reduction in survival with increased spill occurs at The Dalles. This is likely a site specific condition associated with a unique tailrace configuration. To imply that decreased survival with

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increasing spill is a generic, system wide situation is highly misleading. In addition, indicating that a fixed spill operation at a low level of spill would be the "most benign," overlooks the obvious benefit of providing smolt passage via spill rather than through turbines. The Dalles, at 65 percent spill, may be the one case where spillway and turbine survival are nearly equal.

We agree that further studies on the efficacy of spill, as identified by Giorgi, et. al. (2002), are necessary, especially in below normal water years. We understand that it is very difficult, in a system as complex as the FCRPS, to isolate a single variable and its effect on survival. In fact, many variables such as flow, temperature, turbidity, and spill are synergistically related and it is not appropriate or desirable to attempt to separate their effects.

Flow Augmentation

Current system operations, under the 2000 National Marine Fisheries Service Biological Opinion, specify flow targets rather than specific volumes designated for augmentation. This creates the situation where "augmentation" may or may not occur in a given year or season. The variable and intermittent nature of the current "flow augmentation" operations makes it nearly impossible to isolate an action to evaluate. The general range of flow variability is principally due to variation in uncontrolled runoff. Assessing the survival of juvenile migrants between years with variable flow rates is informational, but assigning an incremental benefit to "augmentation" and separation of that benefit from the synergistic effects of temperature, turbidity, and spill will be extremely difficult, if not impossible. The opportunity to create an augmentation effect is greatest in years with runoff volumes which are well below average. These situations should be a priority for evaluation, with a potential before, during, and after augmentation assessment.

Conclusions

WDFW supports assessment opportunities that will work to provide more definite conclusions on the benefits of transportation, spill, and flow augmentation. Active management of the FCRPS to the benefit of anadromous salmonids requires that questions about the efficacy of these issues be resolved as feasible. We appreciate the opportunity to comment on this document. Please contact me at 360.902.2812 if you have any questions regarding these comments.

Sincerely,



B. Shane Scott, Columbia River Policy Coordinator
Intergovernmental Policy

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cc: Bill Tweit

