



# FISH PASSAGE CENTER

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## MEMORANDUM

TO: Rod Sando, CBFWA  
*Michele DeHart*

FROM: Michele DeHart

DATE: August 7, 2002

RE: Prediction of adult returns based upon Spring Chinook Jack Counts and Steelhead adult counts at dams.

In response to your questions regarding spring chinook jack counts and steelhead returns in 2002, **I recommend caution.** There are a lot of details to account for when considering the dam counts. This is particularly true if you are attempting to relate adult returns to a specific out migration year. Many of the recent declarations of success based upon dam counts might be misleading to policy makers and the public. Recent history has shown us the danger of predictions, as those recently reported by the article in the Oregonian. The same types of predictions based upon dam counts have been presented in past years and turned out to be erroneous.

- **There is nothing in the adult return data, or the PIT tag data that weakens the NMFS scientific basis for migration flows or spill for fish passage for in-river migrants. The success of the mass transportation of smolts in 2001 will not be determined until all of the adult return data is analyzed.**
- **To date the steelhead return data reflects out migrants primarily from 2000 and 1999.**

### **Spring Chinook returns**

The attached memorandum from Michael Schiewe, NMFS to Usha Varanasi, NMFS was circulated in August of 1997. The memorandum, like the June 24, 2002 memorandum from Michael Schiewe to Brian Brown, NMFS, predicts returns from transportation, based upon returns of two-ocean fish. The prediction is based upon an assumption of proportion of age composition in the return from the 1995 out-migration year. The memorandum also based, upon partial tag returns predicts that there is no effect of bypass passage. Several fishery management agencies raised their concerns with the NMFS memorandum at subsequent meetings. Concerns were documented in writing and provided to NMFS. A few examples are attached.

Once the complete adult return data was analyzed it became apparent that the assumptions and conclusions in the NMFS memorandum and their early conclusions were inaccurate. Management actions or decisions on the basis of the August 1, 1997 memorandum would have been wrong.

### **Steelhead dam counts**

Statements have been circulated regarding the steelhead dam counts relative to the ten-year average. Some individuals are observing the steelhead dam counts as evidence that the 2001 out migration conditions did not impact adult returns. The FPC recommendation is that the actual impact of the 2001 out-migration conditions will not be understood until all of the adult return data is complete. The following points explain the basis of our cautious recommendation.

- The steelhead adult dam counts that have occurred prior to June 1, 2002 are comprised of individuals that out-migrated as juveniles in 1999 and 2000. These fish hold over in various parts of the river and continue their upstream migration in the spring of 2002. The steelhead count at Lower Granite Dam on May 30, 2002 was 12,424. The steelhead count at Lower Granite on August 2, 2002 is 17,764. Thus far 70% of the adult return of steelhead to Lower Granite Dam to date, is comprised of fish that out migrated in 2000 and 1999.
- Adult steelhead that returned as adults after June 1, 2002 will mainly be comprised of juvenile fish that migrated to the ocean in 2000 and 2001. (with a small proportion from 1999).
- Sampling takes place at Bonneville Dam to determine the age composition of returning adults, as well as hatchery/wild origin and length.
- Most steelhead returning to the Columbia basin are 1 ocean fish, and are referred to as the A-run. Steelhead originating from the Snake River include larger proportions of 2-ocean fish. B-run fish in particular, which return to Dworshak Hatchery, and the Clearwater River and Middle Fork and South Fork Salmon River in Idaho are referred to as B-run and are comprised of large proportions (up to 85%) of 2- ocean fish. About half the Snake River wild steelhead are 2-ocean fish.
- This means that the steelhead return in 2002 is only giving us a portion of the information about the 2001 out migration. Much of the 2002 adult return is coming from the better out-migration conditions that occurred prior to 2001 when Biological Opinion flow and spill measures were implemented to a greater degree. The proportion of fish in the 2002 adult return that returned from the 2001 out-migration can only be determined by length/scale analysis and PIT tag returns.

In summary, while there is regional hope that good ocean conditions and maximum transportation of smolts in 2001 averted a disaster, it is too soon in the process to declare victory. Historical information suggests the need to proceed with caution.

August 22, 1997

Mr. Mike Field  
Northwest Power Planning Council  
Third Floor  
450 W State  
Boise ID 83720

Dear Mike:

Here are copies of the Commission position and the memo from Schiewe to Stelle on the 1995 pit tag data. As I said, I think it unprofessional to start talking about the conclusions of a scientific study before the data are all in and the analysis is complete. When people do that they are playing politics, not doing science.

I do not refute the 1997 data that are in, which say the survival benefit of fish collected, marked and transported is 2:1 over fish collected, marked and returned to the river for the adults which have returned. I disagree with the speculation about what will occur when the 1998 adults return. Mike Schiewe says they expect survival to be 1.8% for wild fish. For that to occur, 86% of the wild fish in the "class of 95" would have to be 3-ocean (i. e., return in 1998 rather than 1997). We have rarely seen that high a proportion of 3-ocean wild fish. I have asked staff to get the data on historic age composition of wild fish for the September 15 meeting.

However, even if we buy the NMFS prediction (which I don't), the survival rate of 1.8% is below what the NMFS/NPPC science group says is needed for recovery, which is 2% to 6%. Put that in the context that we did everything that was politically and/or biologically possible for the "class of 95," and that we had an extremely good water year and a productive ocean environment, and you reach my logical conclusion: you can't get to recovery via transportation. Since 1975, only on one occasion is there documentation of transported fish surviving at over 2%. Most of the data set is far below this minimum requirement.

Before I leave for my new job, I'd like to make my other misgivings with NMFS approach to transportation research a matter of record. The margin note in the last paragraph of Schiewe's memo is a major point of contention. My staff claims that the initial data on the returns of adults that were not detected at any of the dams, i.e. those which either went through turbines, over spillways, or got to the ocean by divine intervention, survived at the same rate as detected fish, not at a lower rate. We need to get that one straightened out. My long-standing concern is accurately described by Schiewe in the first part of the paragraph. If the trip through the collection/bypass system compromises long-term survival, the transport benefit ratios are only relevant in terms of collected fish, and cannot be used to represent what is happening to all the fish. That would help explain the answer to the main question, which is "if transportation is working so well, where the heck are the adults?"

Mr. Mike Field  
August 22, 1997  
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I don't claim to be the guy with all the answers. I just have spent a long time looking at the fate of Snake River fish over time, and have come to the obvious conclusion they are going extinct in spite of transportation "benefits." I will leave you policy makers and a host of very competent scientists to continue the debates, and move on to other species of wildlife. But I think eventually you will conclude that the only way to have recovered Snake River chinook was to have allowed them to migrate to the ocean on a normal schedule without handling them. Good luck.

Sincerely,

Steven M. Huffaker, Chief  
Bureau of Fisheries

c: Michael Schiewe, NMFS

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UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL MARINE FISHERIES SERVICE

Northwest Fisheries Science Center  
Coastal Zone & Estuarine Studies Divi:  
2725 Montlake Boulevard East  
Seattle, Washington 98112-2097

August 1, 1997

FYI  
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DAC  
SWK  
BB  
-CP

MEMORANDUM FOR: F/NW - William Stelle  
THRU: F/NWC - Usha Varanasi  
FROM: F/NWC1 - Michael H. Schiewe  
SUBJECT: Preliminary Results--1995 Smolt  
Transportation Study

In spring 1995, Coastal Zone and Estuarine Studies Division staff PIT tagged nearly a quarter-million spring/summer chinook salmon smolts to test transportation vs. inriver migration from Lower Granite Dam. The 2-ocean-age adult fish from this study have returned this spring and summer, with 3-ocean-age fish due back in spring/summer 1998.

The 2-ocean-age adult returns are virtually complete to Lower Granite Dam. As of 21 July 1997, we recovered 702 fish (604 hatchery and 98 wild). On average, twice as many adult fish returned from juveniles transported to below Bonneville Dam compared to those released into the tailrace of Lower Granite Dam (T/I = 2.0). We do not expect the transport-to-inriver return ratio to change appreciably when returns of 3-ocean-age fish are complete next summer. Further, based on previous return patterns, we expect that the total return of 3-ocean-age fish will be roughly equivalent to the total return of 2-ocean-age fish; however, the proportion of hatchery and wild fish in the 3-ocean-age component will be the reverse of those in the 2-ocean-age component.

To date, the adult return rates of transported hatchery and wild fish to Lower Granite Dam are approximately 0.44 and 0.25%, respectively. When adult returns are complete next summer, we anticipate the total return rates of transported hatchery and wild fish will be approximately 0.51 and 1.80%, respectively. The adult return rate for wild fish is a conservative estimate because roughly 15-20% of the hatchery smolts were either not fin-clipped or were poorly fin-clipped, and thus were indistinguishable from wild fish when PIT tagged at the dam. Furthermore, to adjust these current return rates so that they are comparable to estimates made prior to Snake River hydropower system development, the return rates will require adjustment for losses of adult fish between Ice Harbor and Lower Granite Dams and for harvest in lower river fisheries. This will increase estimated return rates of transported wild fish to about 2.3%.

KMF  
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86% f  
to be  
1.30  
1.80+0





which is consistent with return rates observed prior to full Snake River hydropower development. *These were actually (3.7 2-6.12) a false*

In recent years, several questions have been raised regarding the NMFS experimental approach to evaluating transportation effects. Concern exists that handling and tagging fish as smolts at dams compromises their survival to adulthood; hence, the fish that we release inriver are not representative of unhandled fish passing the dam and are therefore not appropriate controls for the transportation experiments. It has also been suggested that, during the smolt migration, passage through one or more smolt bypass systems at dams is more detrimental than passage through turbines and/or spillways. To examine these concerns, we compared the adult returns of fish arriving at Lower Granite Dam that were PIT tagged as parr at hatcheries vs. hatchery fish that were collected as smolts at the dam, PIT tagged, and released to continue their migration. For the 1995 smolt outmigration, there is virtually no difference in the adult return rates between these two groups of fish. Furthermore, return rates were lower for fish never detected passing through a smolt bypass system than for those detected passing through one or more of them. Thus, concerns about the transportation study design and smolt bypass systems appear unfounded.

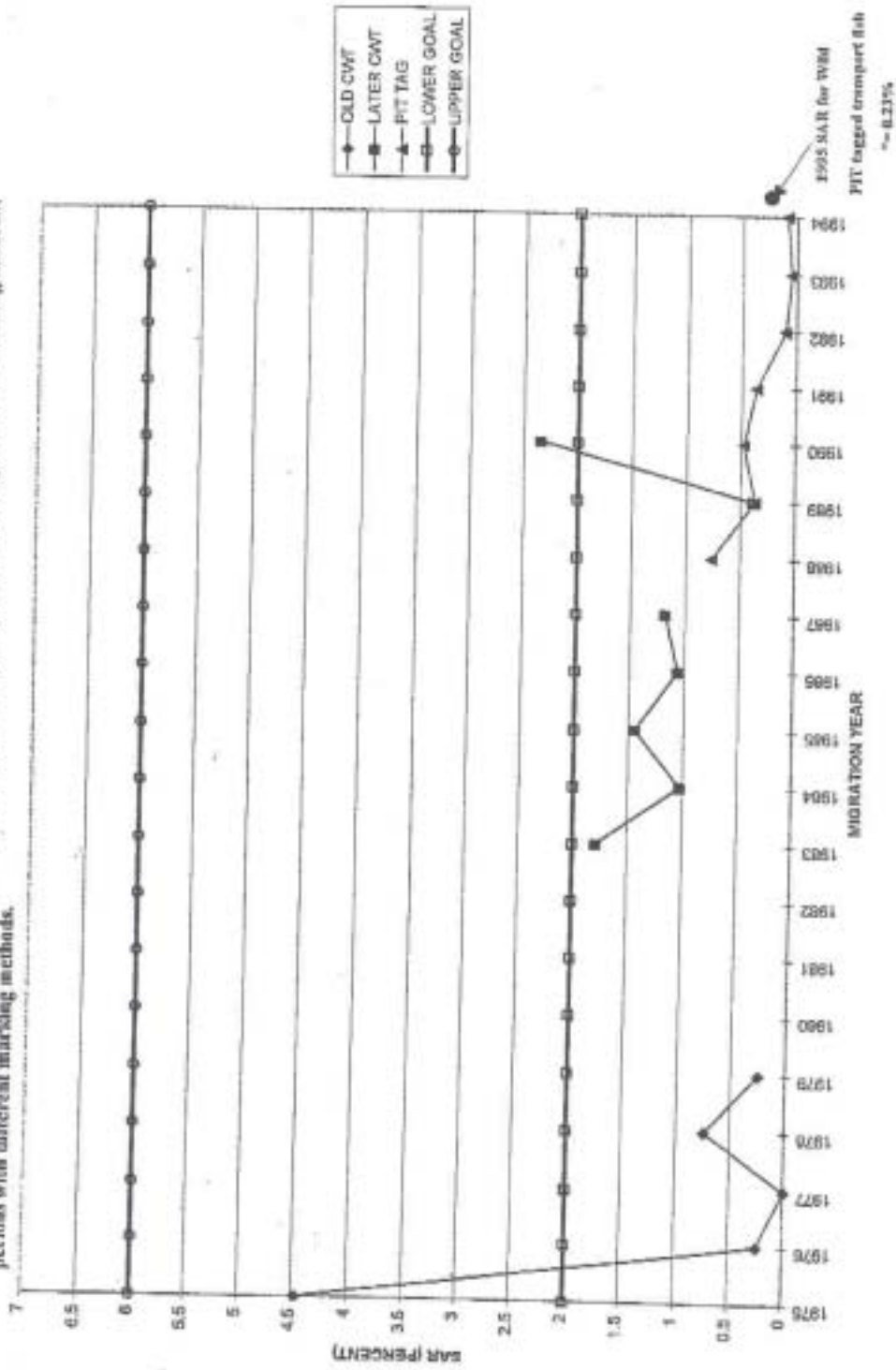
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If you have any questions regarding this information, please contact Dr. John Williams or myself.

- cc: F/NWO - Donna Darm, Brian Brown, Chris Toole
- F/NCWL - John Williams, Gene Matthews, Jerry Harmon

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Figure 1. Smolt to Adult (SAR) values for transported fish observed as part of the transport research during different periods with different marking methods.





**IDAHO FISH & GAME**

600 South Walnut / Box 25  
Boise, Idaho 83707-0025

August 22, 1997

Philip E. Batt / Governor  
Stephen P. Mealey / Director

The Honorable Philip E. Batt  
Governor of Idaho  
Statehouse Mail  
Boise ID 83720

Dear Governor:

Yesterday you asked me to find out how the current report of new studies documenting the relative success of barging smolts vs leaving them in the river relates to the Commission's position that transportation/flow augmentation is not a viable long-term solution. Preliminary PIT tag data on adults returning from the 1995 outmigration indicate a 2:1 advantage for barged fish. Regrettably, even with this advantage, survival of barged fish is still far below that necessary to turn the corner toward recovery. Copies of a memorandum describing that data and a memorandum from the Fisheries Bureau to Mike Field on this subject are enclosed for your information.

The data I showed you (Figure 1) is the long-term track record of survival for Idaho spring/summer chinook salmon. In order to affect recovery, the scientists working under NMFS and NPPC direction say smolt-to-adult survival must reach at least 2%. Although barged, fish may have survived better than in-river fish for the "class of '95" outmigrants, the smolt-to-adult survival of these barged fish will still be less than 2%. The 1995 year class had the benefit of an excellent water year and very productive ocean conditions. Their survival rate is the very best we can hope for with the current hydropower system operations in place.

The Commission has tracked the scientific debates over salmon recovery for over two decades. During the early years the Commission supported transportation as an experimental, interim recovery tool. Since that time the runs have continued to decline despite the best anyone could do with water budgets and improvements to collection and transportation of smolts. The Commission believes the verdict is in: barging and the flow augmentation it takes to make barging work have failed to reverse the declines. There is no scientific basis to conclude that improvements to barging and flow augmentation will work, and this approach increases the risk that Idaho water will be seen as a major component in the long-term solution.


The Commission believes the biological evidence is sufficient, and the fish cannot afford another iteration of scientific debate. If a long-term solution is to be gained, the focus must shift to address the social and economic issues associated with recovery options. The Commission's position clearly states the need for social and economic factors to be considered in recovery decisions, and the need for societal involvement in and acceptance of final solutions. Until a long-term solution is developed and implemented, the Department will continue to support an interim spread-the-risk policy that strikes a logical balance between in-river and transported smolts. This balance is determined annually based on snow pack and projected river conditions.



The Honorable Philip E. Batt  
August 22, 1997  
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I appreciate the opportunity to clarify the Commission's position on the 1999 decision point for anadromous fish recovery. I believe its position is very consistent with the steelhead listing comments submitted by the State of Idaho last January, and gives strong consideration to the broad interests of the State. I would be happy to meet personally with you to address any additional comments or questions you might have. We look forward to continuing our active partnership with your office, our congressional representatives and the NPPC as we collectively work toward salmon and steelhead recovery.

Sincerely,

A handwritten signature in cursive script that reads "Stephen P. Mealey". The signature is written in dark ink and is positioned above the printed name and title.

Stephen P. Mealey  
Director

Enclosure

\*\* TOTAL PAGE.08 \*\*

