Northwest Power and Conservation Council

April 26, 2006

MEMORANDUM

TO: Council Members

FROM: Steve Waste, Manager for program Analysis and Evaluation

SUBJECT: ISAB Supplementation Workshop

This briefing is informational and does not require a Council decision.

On April 6 and 7, 2006 the ISAB convened a workshop to coordinate evaluation efforts of salmon/steelhead supplementation in the Columbia River basin. Coordination was one of the primary recommendations of the ISRP/ISAB in their recent report "Monitoring and Evaluation of Supplementation Projects" (ISRP&ISAB Report 2005-15; http://www.nwcouncil.org/library/isrp/isrpisab2005-15.pdf).

The ISRP/ISAB report is a follow-up on previous ISRP/ISAB reviews of artificial production, see Review of Salmon and Steelhead Supplementation (ISAB 2003-3). In these reviews, the science panels have noted that there continues to be substantial uncertainty about the long-term risks and benefits of artificial propagation to natural salmon populations, and suggested that a coordinated basin-wide supplementation monitoring and evaluation project may be the most effective way of addressing these uncertainties.

The recent ISRP/ISAB report on supplementation monitoring recommended "that NOAA Fisheries, CRITFC, and perhaps the Council jointly organize a very small workshop/work group of invited attendees that includes sponsors of supplementation projects and biostatisticians to establish a basin level evaluation". The goal of the workshop was to establish the scope and to sketch out the basic design for a coordinated evaluation effort and to discuss the experimental designs suggested by the ISRP/ISAB, and to share information.

Objectives of the Supplementation Monitoring Workshop

- To review the status of ongoing supplementation monitoring programs in the Columbia River Basin

- To discuss ongoing or proposed monitoring programs with respect to a recent set of recommendations made by the ISRP/AB in the report: "Monitoring and Evaluation of

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Supplementation Projects" ISRP&ISAB Report 2005-15

- To identify areas were greater coordination among supplementation (and population) monitoring programs would be beneficial

Initial Findings

The minutes of the workshop are still being developed. Upon completion a fuller briefing could be made to the Council. Here are some initial findings:

- Representatives of all current supplementation projects in the Columbia Basin met with two of the authors of the ISRP/ISAB supplementation memo.

- Participants reviewed project results addressing ISAB concerns about the demographic boost and long-tern fitness effects of supplementation. Little information was available on the impacts of supplementation on non-target taxa of concern.

- Participants also discussed opportunities to standardize performance metrics and increase the number of reference streams, concerns also raised in the ISRB/ISAB memo.

- Participants felt the workshop was useful and would like to continue the dialog.

- The existing projects are beginning to produce the kind of information needed to address the ISRP/ISAB concerns and should be continued.

- Standardization of key methods across projects is possible and will be discussed further.

- It is possible to increase the number of reference streams and a draft list of candidate streams was produced.

- Supplementation strategies and natural systems vary too much to allow a single approach to answer the ISRP/ISAB concerns. Stratification of both supplementation strategies and reference streams is possible, however, and would provide the most information on the issues of concern

- A coordinated assessment of supplementation should include a combination short-term intensive studies and analyses of longer-term data sets on a larger number of less intensively studies projects and streams.

- Other types of studies would also be useful and a few of these were briefly discussed.

The workshop agenda is attached to provided a listing of the specific questions the group discussed (Attachment 1.). (A Council staff prepared spreadsheet reporting monitoring and evaluation costs for on-going anadromous fish production proposals is also provided as Attachment 2.).

Attachment 1. Workshop Agenda

Thursday - April 6, 2006 (10 am to 5 pm)

I. Welcome (Ford and Roger) – set out meeting agenda and objectives

II. Overview of ISAB/RP Recommendations regarding monitoring and evaluation (M&E) of supplementation in the Columbia basin (Loudenslager and McDonald)

III. Presentations – review of M&E activities of ongoing supplementation projects (20-30 min each)

- Kalama River – Pat Hulett
- Abernathy Creek steelhead – Bill Ardren
- Hood River winter steelhead – Bill Ardren
- Umatilla River steelhead – Jesse Schwartz
- Yakima River spring Chinook (YKFP) – Dave Fast
- Wenatchee (Chiwawa) River spring Chinook – Andrew Murdoch
- Tucannon River spring Chinook – Mark Schuck
- Snake River fall Chinook - Jay Hesse
- Idaho Supplementation Studies (spring Chinook) – Dave Venditti
- NEOH (Grande Ronde, Imnaha Rivers) spring Chinook, steelhead – Rich Carmichael
- Northeast Oregon Hatchery (NEOH) program – Jay Hesse and Rich Carmichael
- Collaborative Systemwide Monitoring and Evaluation Project (CSMEP) – Chris Beasley

Friday - April 7, 2006 (8 am to 2pm)

IV. Discussion Issues

1. Review the ISAB/RP M&E recommendations:
   - Evaluate the demographic consequences of supplementation in terms of gained/lost natural production
   - Evaluate the effects of supplementation on the long-term fitness of the supplemented population
   - Evaluate impacts on abundance and productivity of non-target populations

Some of the specific methods identified for conducting these evaluations include monitoring of treatment and control streams, conducting 2+ generation genetic pedigree (or other type of marking) experiments, and improving coordination among projects to create a basin-wide evaluation structure.

Specific topics identified by ISAB/ISRP to discuss at the workshop include:

- Determine which projects to include in a basin level evaluation.
- Establish defined protocols for selected projects.
- Establish more reference (unsupplemented but monitored) streams.
- Establish an experiment to measure long-term fitness effects.

2. Do the monitoring plans of current projects address the issues above? If not, why not? Could/Should they be modified to do so? What are the logistical and financial constraints?

3. Are there advantages to be gained by greater coordination of monitoring activities across programs (for any combination of programs and spatial scales)?
   - Conceptually – Are some questions more amenable to a system-wide design?
   - Specifically – What measures are required for an assessment of changes in long-term fitness?
   - Statistical design – Do we gain statistical power? Or are the differences among programs/basins too confounding for cross-program statistical analysis? Can conclusions based on analysis of a subset of projects be generalized across the basin?
   - Cost effectiveness – Can some questions be answered at lower cost with a system-wide design? Which of these questions and ISRP/ISAB recommendations could be addressed through coordination: a) existing funding levels? b) with a "reasonable" incremental increase in funding? And, which will not be addressed because they are excessively expensive?

4. One of the key ISAB/RP recommendation is comparison of treatment and reference streams. How many projects are currently doing this? What are the results? Are there unsupplemented populations that would be good references that are not currently being monitored?

5. Which projects involve large scale pedigree studies, and how successful have they been to date? Where are 2+ generation pedigree studies feasible (logistically, technically, financially)? Can controlled (spawning channel) experiments substitute for natural studies? Do these pedigree studies also provide the only way to distinguish environmental from genetic effects of hatchery rearing?

6. If a multi-project supplementation monitoring plan makes sense, how will we gather the information from the various projects, organize and analyze the data, and then report on the results? How will we link these data to monitoring data gathered basin-wide? (Which entities or individuals will have lead responsibility for the evaluation, and how will they be linked, formally and informally, to managers of the various supplementation projects?)

7. What recommendations can be offered regarding future monitoring (and research?) actions? And, regarding design/management/monitoring of ongoing and of proposed supplementation projects?

Workshop Deliverable: A memo/report summarizing discussion and responses on the above points.

Province	Subbasin	Proposal Number	Title	Sponsor	Category	Type	ME three year Total	FY07Total	FY08Total	FY09Total	Annual average M&E costs
Anadromous Fish Production Proposals											
Mountain Snake	Clearwater	198335000	Nez Perce Tribal Hatchery Operations &	Nez Perce Tribe	Artificial Producti	Anadromous	$241,118	$2,033,220	$2,094,217	$2,177,986	$80,373
Mountain Snake	Clearwater	198335003	Nez Perce Tribal Hatchery M&E	Nez Perce Tribe	Monitoring and E	Anadromous	$4,143,998	$1,996,183	$2,031,097	$2,066,835	$1,381,333
Columbia Plateau	Umatilla	198343500	Umatilla Hatchery Satellite Facilities O&	CTUIR	Artificial Producti	Anadromous	$51,911	$1,059,166	$1,102,743	$1,143,182	$17,304
Columbia Plateau	Umatilla	199000500	Umatilla Hatchery - M&E	ODFW	Monitoring and E	Anadromous	$1,463,791	$684,278	$714,367	$745,852	$487,930
Columbia Plateau	Umatilla	199000501	Umatilla Basin Natural Production Moni	CTUIR	Monitoring and E	Anadromous	$2,167,828	$779,657	$795,314	$831,704	$722,609
Columbia Plateau	Umatilla	198802200	Umatilla Fish Passage Operations	CTUIR	Habitat	Anadromous	$251,726	$380,238	$399,249	$419,211	$83,909
Blue Mountain	Grande Ronde	198805301	Grande Ronde/Imnaha Endemic Spring	Nez Perce Tribe	Artificial Producti	Anadromous	$173,228	$9,809,858	$3,478,059	$1,014,268	$57,743
Blue Mountain	Grande Ronde	199800702	Gd Ronde Supp Lostine O&M/M&E	Nez Perce Tribe	Artificial Producti	Anadromous	$632,876	$622,578	$640,219	$657,320	$210,959
Blue Mountain	Grande Ronde	199800703	Grande Ronde Supplementation Opera	CTUIR	Artificial Producti	Anadromous	$293,956	$766,699	$637,577	$676,840	$97,985
Blue Mountain	Grande Ronde	199800704	Grande Ronde Basin Endemic Spring C	ODFW	Artificial Producti	Anadromous	$122,936	$222,041	$232,878	$244,321	$40,979
Blue Mountain	Grande Ronde	199801001	Grande Ronde Captive Brood O&M	ODFW	Artificial Producti	Anadromous	$928,713	$829,250	$867,556	$907,684	$309,571
Blue Mountain	Grande Ronde	199801006	Captive Broodstock Artificial Propagatic	Nez Perce Tribe	Artificial Producti	Anadromous	$414,056	$182,861	$187,940	$193,173	$138,019
Mountain Snake	Salmon	199107100	Snake River Sockeye Salmon Habitat a	SBT	Artificial Producti	Anadromous	$709,843	$450,900	$456,591	$460,458	$236,614
Mountain Snake	Salmon	199107200	Redfish Lake Sockeye Salmon Captive	IDFG	Artificial Producti	Anadromous	$1,422,448	$1,086,118	$1,135,362	$1,172,418	$474,149
Mountain Snake	Salmon	199204000	Redfish Lake Sockeye Salmon Captive	NOAA	Artificial Producti	Anadromous	$76,984	$824,994	$857,994	$892,312	$25,661
Mountain Snake	Salmon	199700100	Idaho Chinook Salmon Captive R	IDFG	Artificial Producti	Anadromous	$978,185	$594,773	$612,747	$631,665	$326,062
Columbia Plateau	Tucannon	200001900	Tucannon River Spring Chinook Captiv	WDFW	Artificial Producti	Anadromous	$143,000	$125,000	$102,000	$58,000	$47,667
Mainstem/Systemwide	Systemwide	199305600	Research to advance hatchery reform,	NW Fisheries Sc	Research	Anadromous	$2,831,754	$1,474,045	$1,512,513	$1,567,424	$943,918
Multiprovince	Multiprovince	199703800	Listed Stock Chinook Salmon Gamete I	Nez Perce Tribe	Artificial Producti	Anadromous	$199,000	$339,525	$354,522	$362,233	$66,333
Columbia Gorge	Hood	198805307	Hood R Prod O&M - Ws/Odfw	CTWSR	Artificial Producti	Anadromous	$8,362	$270,282	$277,906	$285,530	$2,787
Columbia Gorge	Hood	198805308	Hood River Powerdale Dam Fish Trap/(	ODFW	Artificial Producti	Anadromous	$357,180	$562,860	$589,337	$598,649	$119,060
Columbia Gorge	Hood	198805303	Hood River Production M&E - Ws	CTWSR	Monitoring and E	Anadromous	$550,970	$585,897	$544,920	$556,421	$183,657
Columbia Gorge	Hood	198805304	Hood River Production Program - ODF\	ODFW	Monitoring and E	Anadromous	$1,412,205	$536,935	$583,381	$609,659	$470,735
Mainstem/Systemwide	Systemwide	200305400	Repro Of Steelhead In Hood Riv	OSU	Monitoring and E	Anadromous	$937,639	$339,575	$353,157	$371,558	$312,546
Mountain Snake	Salmon	198909800	Idaho Supplementation Studies	IDFG / NPT / SB	Artificial Producti	Anadromous	$5,773,561	$2,014,483	$2,098,127	$2,207,751	$1,924,520
Columbia Plateau	Yakima	200203100	Growth modulation in salmon suppleme	NOAA	Monitoring and E	Anadromous	$1,003,072	$355,378	$373,601	$392,693	$334,357
Columbia Plateau	Yakima	198812025	Ykfp Management, Data, Habitat	Yakama Nation	Habitat	Anadromous	$606,165	$1,237,239	$1,268,041	$2,284,582	$202,055
Columbia Plateau	Yakima	199506325	Yakima Klickitat Fisheries Project - Mor	Yakama Nation,	Monitoring and E	Anadromous	$12,644,903	$4,529,256	$4,548,515	$4,703,475	$4,214,968
Columbia Plateau	Yakima	199506425	YKFP Policy/Plan/Technical	WDFW	Coordination	Anadromous	$724,382	$234,101	$241,404	$248,877	$241,461
Columbia Estuary	Columbia Estuar	199306000	Select Area Fisheries Enhancement Pr	ODFW	Artificial Producti	Anadromous	$1,106,497	$1,804,868	$1,779,000	$1,827,028	$368,832
Columbia Cascade	Wenatchee	199604000	Mid-Columbia Coho Restoration Projec	Yakama Nation	Artificial Producti	Anadromous	$2,680,150	$3,500,945	$2,962,228	$2,884,222	$893,383
Mountain Snake	Salmon	199604300	Johnson Creek Artificial Propation Enha	Nez Perce Tribe	Artificial Producti	Anadromous	$1,933,400	$1,275,001	$1,330,000	$1,287,999	$644,467
Blue Mountain	Snake Hells Can	199801004	Monitor and Evaluate Performance of J	Nez Perce Tribe	Monitoring and E	Anadromous	$924,608	$371,780	$365,467	$373,361	$308,203
Blue Mountain	Snake Hells Can	199801005	Pittsburg Landing Fall Chinook Acclima	Nez Perce Tribe	Artificial Producti	Anadromous	$2,356,680	$760,629	$786,486	$809,565	$785,560

Province	Subbasin	Proposal Number	Title	Sponsor	Category	Type	ME three year Total	FY07Total	FY08Total	FY09Total	Annual average M&E costs
Mainstem/Systemwide	Systemwide	200001700	Recondition Wild Steelhead Kelt	CRITFC	Research	Anadromous	$1,635,672	$945,906	$953,835	$985,931	$545,224
Mainstem/Systemwide	Systemwide	200306200	Evaluate the Relative Reproductive Suc	CRITFC	Monitoring and E	Anadromous	$1,350,110	$612,083	$645,912	$672,115	$450,037
Lower Columbia	Columbia Lower	200105300	Reintroduction of Chum Salmon into Du	PSMFC	Artificial Producti	Anadromous	$619,208	$326,113	$350,266	$375,029	$206,403
Columbia Cascade	Okanogan	200302300	Chief Joseph Hatchery Program	Colville Tribes	Artificial Producti	Anadromous	$721,844	$2,752,798	$16,811,650	$11,748,946	$240,615
						Totals:	$54,593,959				$18,197,986

Shaded rows denote captive broodstock projects

Partially shaded rows denote projects with some captive broodstock activities but also have other purposes