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COLUMBIA RIVER INTER-TRIBAL FISH COMMISSION

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November 26, 2003

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Mark Walker
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Portland, Oregon 97204

Dear Mr. Walker,

The Columbia River Inter-Tribal Fish Commission (CRITFC) has received and reviewed the draft document Artificial Production Review and Evaluation. We offer the following comments related to the goals and objectives of the APRE for your consideration. We have also attached a technical review of the document.

Since the inception of this process in 1997, the CRITFC has participated in the process with the expectation that it would result in a set of recommendations for reforming the numerous anadromous salmon hatcheries in the Columbia River system. CRITFC was of the opinion that such a mandate was necessary in order to accelerate discussion and implementation of hatchery reform. However, we find that the APRE process has fallen short of its stated goals. The only changes made during this time period were superficial and appear to be designed to ensure continued existence of the current programs and to secure continued funding (i.e., implementation of mass marking of hatchery-reared salmon).

Beginning in 1982, CRITFC has provided numerous proposals for the reform of fish hatcheries of the Columbia River system. Our initial endeavor was well received by the Northwest Power and Conservation Council (NWPCC) because members of the Council saw the value of using the hatcheries to restore naturally spawning salmon populations. At that time, Senator Hatfield of Oregon was also strongly in favor of reforming fish hatcheries and he included appropriations language that was critical of the fishery agencies practice of using the hatcheries to simply feed various fisheries. Following that first effort, little progress had been made until the congressional direction in 1997 mandated the current process. CRITFC's approval of the 1999 report was predicated on the assumption that "an *ad hoc* team to oversee the implementation of hatchery reforms" would be created. The current mandate was approved in January 2000, when the NWPCC elected not to follow the recommendations of the CRITFC and failed to establish the *ad hoc* team. Now, more than six years after the initial request was made, the process has resulted in a study with insufficient guidance for hatchery reform and which focuses on elements of animal husbandry rather than on meeting Columbia Basin goals.

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Although the current document in some areas has broadened the scope of the discussion on the use of hatcheries to maintain healthy anadromous fish runs it lacks an overall objective review of the hatchery programs on the Columbia River system. We are concerned that this document does not go far enough to provide recommendations to alter the political landscape. This is illustrated in the comment made on page 53 that upper river hatcheries were "built primarily to contribute to rebuilding natural populations while providing a harvest benefit, especially for tribal fisheries." This statement is incorrect. Most hatcheries built in the upper Columbia River system and particularly in the Snake River were built for sport fishers[1]. Tribes were not considered. Even the hatcheries built in Bonneville Pool and its tributaries were for the non-Indian commercial fishers[2]. In the case of Mitchell Act hatcheries, no facilities were constructed above Celilo Falls until The Dalles Dam was constructed. As for the hatcheries in the Snake River system, with the exception of the Snake River fall Chinook program at Lyons Ferry Hatchery, all programs were conceived and developed for the sport fishers.

There was no consideration for the naturally spawning stocks in the Lower Snake River Compensation Plan. Current captive rearing programs, now called conservation programs, came about as stocks were being considered for listing under the Endangered Species Act. They also offered the fishery agencies an opportunity to use facilities that were only partially full due to egg shortages. It is incorrect to now claim that these actions were planned. Examination of the Snake River sockeye captive-rearing programs demonstrates that such an approach has been unsuccessful. Millions of dollars that could have been used for restoration of not only sockeye in the Snake River but other stocks was spent on these programs, yet we have observed little change. The program as developed has offered little benefit to sockeye restoration, while providing large sums for hatchery operations.

The discussion of harvest is incomplete; it lacks any tribal perspective on how the tribes manage their various mainstem and tributary fisheries. This oversight could have been avoided by consultation with someone familiar with tribal fisheries. Rather, it appears that the Council has adopted the harvest management scenario based on mass marking and selective fisheries. Such management decisions have generated much technical and policy debate that have yet to be resolved. However, the document does not discuss the issues herein. It also appears that the continuing reference to the hatchery review process that occurred in Puget Sound is being fostered upon the Columbia River system. The two areas have different constraints on population health, and the approaches proposed in the Puget Sound may not work on the Columbia River system. From the Commission's perspective, the use of the hatchery-reared salmon to simply feed various fisheries will reduce the resources available for using hatcheries to restore naturally spawning stocks. The mass marking of hatchery-reared steelhead has been ongoing for more than twenty years yet the practice has not demonstrated significant benefits or conservation value to natural stocks. In the case of mid-Columbia steelhead, both the naturally spawning and hatchery

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[1] Donald R. Johnson, Regional Director, NMFS, John D. Findlay, Regional Director, BSF&W, A Special Report on the Lower Snake River Dams: Ice Harbor, Lower Monumental, Little Goose, Lower Granite, Washington and Idaho, September 1972, 41 pages, attached to Special Report Lower Snake River Fish and Wildlife Compensation Plan Lower Snake River, Washington and Idaho, U.S. Army Engineer District, Walla Walla, June 1975, 95 pages, 4 appendices

[2] Report of Activities to June 30, 1956, Fishery Development Program of the Columbia River, USFWS, September 1956, 66 page

components of the run are listed as endangered yet most of the hatchery- reared steelhead are adipose-clipped and harvested in a sport fishery.

The CRITFC believes that the restoration of salmon in the Columbia Basin will require actions to reduce mortalities in the hydrosystem, improve habitat quality and quantity, control harvest through sound management approaches, and provide opportunities for artificial propagation in areas where populations cannot sustain themselves. Hatcheries, if using appropriate broodstock and husbandry techniques, are a necessary and appropriate tool to improve returns of salmon to the rivers and streams of the Columbia River system.

Although the original hatchery programs were conceived and developed primarily to feed ocean and lower Columbia River non-Indian commercial fisheries, that objective has now changed and the hatcheries are being used primarily for the benefit of sport fishers. Because of the nature of sport fisheries, it is possible to develop mark-selective fisheries that target fin-clipped hatchery fish and release unclipped fish. There is little or no discussion in the review about post-release or pre-spawning mortalities of the released fish, or of other incidental mortalities due to the sport fishery.

Although there is reference on page 20 to the Columbia River Fish Management Plan as one of the processes guiding fisheries on the Columbia River, it must be noted that the plan expired in December 1998 and the parties to *U.S. v. Oregon* have been attempting to negotiate a new plan since that time. The parties are currently managing fishing seasons through short-term agreements based upon predicted adult returns.

Thank you for the opportunity to provide these comments and we trust that the Council will give them careful consideration. We also have attached technical comments on the draft document circulated to CRITFC. The Commission is optimistic that the Council will ensure that the document is revised and that a recommended hatchery reform program is developed and provided to Congress. We look forward to continuing to assist the Council, the region, and Congress in this important task.

Sincerely,

Olney Patt, Jr.

Olney Patt, Jr.
Executive Director

cc: (Without Appendix)
Tribal Fisheries Program Managers
Oregon Department of Fish & Wildlife
Washington Department of Fish & Wildlife
Idaho Department of Fish & Game
U.S. Fish & Wildlife Service
NOAA Fisheries, National Marine Fisheries Service

Comments on the Artificial Production Review and Evaluation draft report

November 26, 2003

CRITFC staff have reviewed the Artificial Production Review and Evaluation draft report prepared by the Northwest Power Planning and Conservation Council. We are pleased that you have chosen to get your information directly from the source: hatchery managers. We feel that this approach is a big step forward towards a better understanding of the current artificial production system. While we recognize this evaluation is part of the process, we are eager for implementation of hatchery reform.

Comments on the APRE draft report:

1. In scientific publications, it is expected that the authors include a comprehensive review of all available pertinent literature. The literature used in the development of this document is lacking in scope, thereby omitting pertinent research, and biasing the report. See appendix for a more complete listing of relevant research on artificial production.

2. Page 13. Hatchery development. Final paragraph and page 14 first paragraph This section needs clarification. We believe the point that should be made is that the old fish factory (farming style) hatcheries were not working. Because of the species chosen for rearing and release locations, salmon populations continued to decline regardless of the number of fish the hatcheries produced.

3. Page 31. Environmental context. Though ocean conditions play some role in overall salmon survival, a substantial percentage of mortality occurs in freshwater, particularly in the Columbia Basin where there is extensive hydrosystem development (Budy et al. 2002). Decreases in fish abundance between the 1950's and 1970's despite increased hatchery production coincided with major dam construction, subsequent habitat loss, fish passage problems (e.g. lower Snake R. dams), and failure to release salmon in natural production areas. Once released from the protected hatchery environment, hatchery-origin fish have to survive in the same habitat conditions as natural origin fish.

4. Page 32. Ecological Context: Intra-species effects. One thing to keep in mind when evaluating the effects of intra-specific interactions is that these effects occur naturally and are not exclusively hatchery driven. For example, what are the potential intra-specific competitive effects of the large Hanford fall chinook populations on the listed Snake River fall chinook population (migration, estuary, ocean, straying)? Many of the potential negative intra-specific effects of hatchery fish are under management control. Hatchery practices that can be

modified to reduce potential competitive intra-specific interactions include modifications to fish size, density, behavior, and feeding regimes (see Campton 1995).

5. Page 33. Ecological Context: Inter-species effects. There is the potential for hatchery fish to contribute to inter-specific ecological interactions, although many of these can be controlled through adjustments to management (see Campton 1995). More importantly, many other species are propagated and released into the Pacific Northwest ranging from large- and smallmouth bass, lake trout and tiger muskellunge among others. These non-native species also have a high potential for negative impacts on salmonids and yet are rarely discussed.

6. Page 35. Genetic Aspects. Even though the bias for negative genetic impacts is acknowledged here, these sections could use some discussion of alternate viewpoints such as hatchery programs that do not contribute negative genetic effects (e.g. Methow State Fish Hatchery) or hatchery programs designed to improve the genetic integrity of imperiled populations (e.g. captive broodstock programs) . As currently written, the lasting impression is biased towards negative genetic interactions.

7. Page 35. Genetic Aspects: Genetic Effects of Hatchery Programs. This section relies heavily on local adaptation as the catalyst for genetic change, while ignoring genetic drift, mutation, founder effects, and even hybridization. Genetic change is an important evolutionary mechanism and is not always negative. Population genetic differences are only differences in gene frequency and by definition are supposed to be selectively neutral. Gene frequencies can give an idea of relatedness, but cannot provide information as to the mechanism driving those differences. Local adaptation is often cited as the cause for population genetic diversity as measured by allele frequencies; however, this is an assumption as likely as any of the other driving forces listed above (Adkison 1995, Hensleigh and Hendry 1998, Taylor *et al.* 2001). The genetic integrity of a hatchery population relative to the natural population is under management control; husbandry techniques can be adjusted to minimize, eliminate or even improve the genetic variability/integrity of natural populations. Further, genetic drift observed as changes in gene frequencies in hatcheries is artificial and therefore meaningless except in a management context to indicate the level of self-recruitment in the hatchery broodstock.

8. Page 36. Types of Genetic Effects Resulting from Artificial Production: Direct genetic effects. Again, this section relies heavily on local adaptation as the driving force for genetic change. In cases where distant populations are propagated (coastal vs inland) these concerns may be valid, but if an integrated hatchery population is established with local broodstocks it is more difficult to make an argument for direct negative genetic effects. Population genetic differences can arise from a variety of reasons (genetic drift, mutation, hybridization, founder

effects, etc.) and it has yet to be determined whether population exchanges of those differences are detrimental.

At this point, domestication selection (natural selection for the hatchery environment) is predominantly speculation, and if supporting publications exist, they should be cited. Theoretically, domestication selection would have to select for heritable traits that would only be beneficial in the hatchery environment (see Hard 1995 for discussion of testable heritable traits versus inference from molecular markers). If natural selection is the primary driving force, then it would be difficult to achieve domestication in an environment that significantly reduces mortality especially when there is gene flow with natural populations. Though change in adult run timing has been established as a heritable trait that can be altered through artificial production, it is typically the result of management-induced artificial selection. Apart from direct management selection, established variance in heritable traits that result from the hatchery environment alone are undocumented.

The statements regarding year-after-year supplementation disrupting and/or impeding local adaptation reducing the ability of the population to respond to environmental change should be referenced. Variation in environmental conditions from year to year could overwhelm any directional selection from hatcheries. We believe that these are purely theoretical statements; since natural selection is not the only driving force for genetic change and domestication selection for heritable traits is questionable, these statements seem unlikely and have yet to be tested empirically. Isolated salmon populations have exchanged genetic material throughout the species' history and these exchanges between hatchery and natural origin salmon may not differ from historical natural exchanges.

9. Page 36. Types of Genetic Effects Resulting from Artificial Production: Indirect genetic effects. These effects are very similar to the ecological interactions and broodstock and husbandry management can be adjusted to reduce or eliminate the potential for negative indirect interactions (see Campton 1995)

We believe that the APRE draft report offers an improved yet belated basis for hatchery evaluation and reform in the Columbia River Basin. Specific improvements over previous hatchery evaluation reports include the gathering of hatchery-related data directly from hatchery managers, acknowledgment of the variability in the types of hatchery programs and goals, the centralized accessible database, and individualized evaluation based on specific programs and specific program goals.

We found the report generally offered a more balanced review (despite lack of complete references) and perspective which better characterizes the variety of hatchery programs found in the basin than previous attempts, and the APRE offers a more realistic

characterization, evaluation and platform for recommendations for reform as a function of the type of hatchery program that is evaluated. Our primary suggestion is that this balanced approach be reflected in the Biological Context section of the paper.

However, we still have some concerns with the next steps: how will the program questionnaires be evaluated and by whom? How are recommendations made for hatchery reform and by whom? How and when does reform get implemented?

If you have any questions concerning our comments, please contact André Talbot at (503) 238-0667.

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