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April 2, 2013

MEMORANDUM

TO: Council members

FROM: Peter Paquet, Manager Wildlife & Resident Fish

SUBJECT: Summary of Hatchery and Supplementation Issues

BACKGROUND

Few dispute the importance of the influence of hatchery fish on natural spawning salmon and steelhead. The ISRP has long identified supplementation, along with other hatchery issues, as an important element of hatchery effects that must be better understood. The Council has followed the supplementation issue closely for many years as protocols were developed and has supported the deployment of those protocols throughout the region. Time will be required to get the results needed by the region to make an accurate determination of what effects hatchery fish do have on natural fish populations. The issue is important to tribes, states and the sport and commercial fishing communities, who do not have a viable alternative tool to support fish populations experiencing low abundance numbers. Recent work by the Hatchery Scientific Work Group (HSRG) sought to explore how wild and hatchery fish could be integrated with minimal adverse effects.

The Council's Fish and Wildlife Program has provided for the use of artificial fish production facilities under the following conditions: 1) in an integrated manner to complement habitat improvements by supplementing native fish populations up to the sustainable carrying capacity of the habitat with fish that are as similar as possible, in genetics and behavior, to wild native fish; or 2) in a segregated manner to maintain the genetic integrity of the local populations in order to expand natural production while supporting harvest of artificially produced stocks; or 3) to replace lost salmon and steelhead in blocked areas.

The Program also acknowledges the need to determine how artificial production activities can play a role in providing significant harvest opportunities throughout the basin while also protecting and rebuilding natural spawning populations. The region has responded to the

Program direction by adopting and implementing the recommendations of the Ad Hoc Supplementation Work Group and through continuous adaptation of artificial production techniques.

The science related to and understanding of artificial production is complex and rapidly evolving, and may take some time to fully understand. Over the last several months the Council has heard from experts representing tribes, states and federal agencies on various aspects of artificial production and related issues with particular emphasis on the use of supplementation. While it is clear that the region has recognized and embraced the need for hatchery reform it is also true that there is not universal agreement as to what measures would be required for its implementation. The following provides a summary of what we have learned.

- It appears that for the foreseeable future, hatcheries will play a vital role in mitigating for habitat loss, including operation of the hydropower system, and the implementation of treaty rights. They are often seen as a recovery tool that can help rebuild natural production. The social, cultural, and economic benefits of salmon and steelhead harvest are immense and they provide significant harvest opportunity and economic value.
- Hatcheries provide mitigation for the loss of habitat quantity and quality that has resulted from the construction and operation of dams and other development activities. They are a substitute for lost or degraded habitat. Within the Columbia River Basin approximately 50% of the habitat that was available historically to anadromous fish is no longer accessible.
- The purpose of most hatchery production is to provide fish for harvest. However, in recent years a number of programs have been operated for purposes of supplementing depressed stocks to aid in recovery and some hatcheries are part of these supplementation programs. There is general agreement that supplementation can be defined as the use of artificial propagation in an attempt to maintain or increase natural production, while maintaining the long-term fitness of the target population and keeping the ecological and genetic impacts on non-target populations within specified biological limits (RASP 1992). However, there is a lack of consensus among management entities on how best to achieve these goals as was evidenced by the differences in policies and programs that were presented to the Council by the fish and wildlife managers.
- Hatchery actions have associated risks to natural production; realized impacts vary by species and population. There is significant scientific evidence documenting negative impacts of traditional hatchery programs on natural populations and extensive hatchery criticism. Supplementation is not a proven or disproven management endeavor and holds risks, some of which are high and may be long term.
- Hatchery operations for both harvest and recovery have evolved and continue to be refined at an accelerated rate. Recommendations for hatchery reform (HSRG and HRT) in the Columbia River Basin have recently been completed. These initiatives have the goal of reducing the risks posed by hatchery fish while providing fish for harvest. Both efforts identified the need to follow either a segregated management strategy or an integrated management strategy. Segregated approaches follow management strategies

where hatchery-produced adult salmon and steelhead are prevented from escaping into wild/natural fish production areas. Integrated strategies follow guidelines for supplementation that theoretically protect the fitness and genetic identity of wild/natural salmon and steelhead. Findings and recommendations from HRT and HSRG efforts have been presented to Council. Information from refined and reformed hatchery programs has only recently begun to be included in the published literature.

- Modern hatchery programs can have the dual objectives of supporting fisheries and re-introduction and recovery efforts. Hatcheries are viewed biologically as a type of habitat; fish are managed as components of sustainable populations, and populations, both hatchery and wild, are managed for maximum viability with quantified conservation and harvest goals for populations. These programs use the same scientific principles for managing each population, regardless of whether they spawn in the wild, in the hatchery or both.
- To adaptively manage and minimize risks, there is a need to continue the rigorous and coordinated research, monitoring, and evaluation that is currently ongoing in the Basin.
- There is a need to pursue collaborative efforts to evaluate hatchery effectiveness at a regional scale. There is ongoing work lead by NOAA through the development of Hatchery Genetic Management Plans (HGMP), and the proposed Columbia River Hatchery Effectiveness and Effect Team (CRHEET) that will aim to address how to conduct hatchery specific effectiveness and how to assess regional hatchery effectiveness.