All Hs and Predation

Description

A coordinated management effort for improving salmon populations requires integrated actions for the improvement of habitat, harvest, hatcheries, hydropower and predation management. These are the major factors that affect the abundance, productivity, spatial structure, and diversity of salmon populations and are often lumped into the "Four Hs" or "All Hs" (which includes predation). Each of these factors independently affects the status of salmon populations, but they also have cumulative and synergistic effects throughout the salmon life cycle. For the Chehalis Basin's Strategy goals for aquatic species restoration to be successful, there needs to be a coordinated, integrated, and adequately funded set of actions that address each of the four Hs and predation. To ensure long-term success, these actions will need to be adaptively managed to incorporate the latest science and respond to changing conditions.

Potential Principles

- **Principle 1:** The state and tribal co-managers and partners of the Chehalis Basin fisheries have primary authority and responsibility for All H actions, including participating in formal processes to set annual harvest limits and developing and managing hatcheries. The Chehalis Basin Board seeks guidance from the state and tribes for appropriate actions the Board can fund and support related to All Hs.

- **Principle 2:** Habitat, which is separately addressed in the Aquatic Species Restoration Plan (ASRP), is the primary limiting factor for salmonid restoration in the Chehalis Basin, with harvest, hatcheries, hydropower, and predation playing significant but secondary roles.

- **Principle 3:** In some circumstances salmonid restoration may benefit from combining habitat restoration with other H actions, especially where stocks have low abundance and productivity.

- **Principle 4:** All retrofits, expansion, or new construction to dams or other hydropower facilities in the Basin shall avoid, minimize, and mitigate following established legal frameworks to protect salmonids and other aquatic species.

Key Components

- **Habitat –** Healthy habitat provides the greatest biological certainty for supporting salmon, as it provides the core ecosystem functions necessary to sustain salmon and other aquatic species populations over the long term. Habitat enhancement strategies designed to protect existing intact ecological functions have a greater certainty of maintaining or restoring viable populations than strategies that rely on artificial substitutions in the

ecosystem. The ASRP is how the Chehalis Basin Board intends to meet its aquatic species habitat restoration goals.

- **Harvest –** Throughout Washington state, fisheries co-managers are working to ensure that fish harvest policies are consistent with the conservation of native fish populations. Prior to promulgating annual fisheries harvests, co-managers participate in annual management planning processes to protect and manage fishery resources use. Consistent with this, in the Chehalis Basin, fishery-related mortality should not impede rebuilding naturally reproducing salmon and steelhead populations to levels that will sustain fisheries. It should protect and restore ecological functions, and be consistent with treaty-reserved fishing rights. The harvest strategy promotes the recovery of weak stocks like spring Chinook in the Chehalis Basin and supports escapement goals, which are reviewed and set by the co-managers, and will be adjusted as more habitat becomes useable and/or more productive.

- **Hatcheries –** Salmon and steelhead population restoration may take several decades. While natural populations are recovering, hatchery programs can supplement, and in some cases, help preserve, natural populations. Hatchery programs operate under the legal framework defined by U.S. v Washington. Providing harvest opportunities consistent with treaty fishing rights and conservation is a legally defined role for hatcheries. Hatchery management recommendations are periodically reviewed and updated to ensure implementation in a manner that is consistent with the goals of habitat recovery plans like the ASRP, natural production, and the long-term viability of natural spawning populations.

- **Dams/hydropower –** Two medium- to large-sized dams currently operate in the Chehalis Basin. The Wynoochee Dam is owned by the City of Aberdeen and operated by Tacoma Power, and the Skookumchuck Dam is owned and operated by TransAlta. Dams have been documented to have negative effects on habitat for salmon, steelhead, and other aquatic species. OCB is several years into investigations of ways to improve the infrastructure and management of the Skookumchuck Dam for salmonids, in consultation with TransAlta and many other partners (the Skookumchuck Dam is addressed in a separate Element). No such investigation has been initiated for the Wynoochee Dam. Dam owners should ensure that they are meeting all legal obligations to minimize and mitigate the impact of their facilities consistent with basin-wide recovery of naturally spawning fish populations.

- **Predation –** Animals that prey on salmon are a natural part of the ecosystem, but human development can tip the scales to give predators of salmon an advantage they did not historically enjoy. For instance, non-native fish species may be able to enter in tributaries to prey on juveniles where predation was limited in the past. Restoration of habitat should be done in a manner that aims to decreases the risk of predation from non-native species, such as various species of bass. An assessment of the current impact of predation from

non-native fish predators is underway in ASRP and will inform future potential actions, including programs and policies to remove more of them from Chehalis Basin rivers and streams. Pinniped predation also affects salmon returns, but the level of predation and its impact on salmon recovery in the Chehalis Basin is still unknown. Funding an assessment of pinniped predation and trends on juvenile and adult salmon and steelhead could help determine if there is a problem and be used to develop options to reduce predation.

Cost

Total Estimated 30-Year Cost: $2,000,000 to $150,000,000

This cost would be above and complementary to the proposed 30-year investment for ASRP.

Costs are estimated to vary between $65,000 and $1,000,000 per year, depending on the studies, projects and actions that are funded and advanced. These costs are based on past, current and future study estimates, implementation costs, and operating costs for a range of potential options that may or may not be undertaken by the Chehalis Basin Strategy. The 30-year cost range is higher to take into consideration major construction activities that could potentially be implemented within this timeframe, requiring a significant amount of capital funding.

More Information

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