Pelton Round Butte Fish Committee

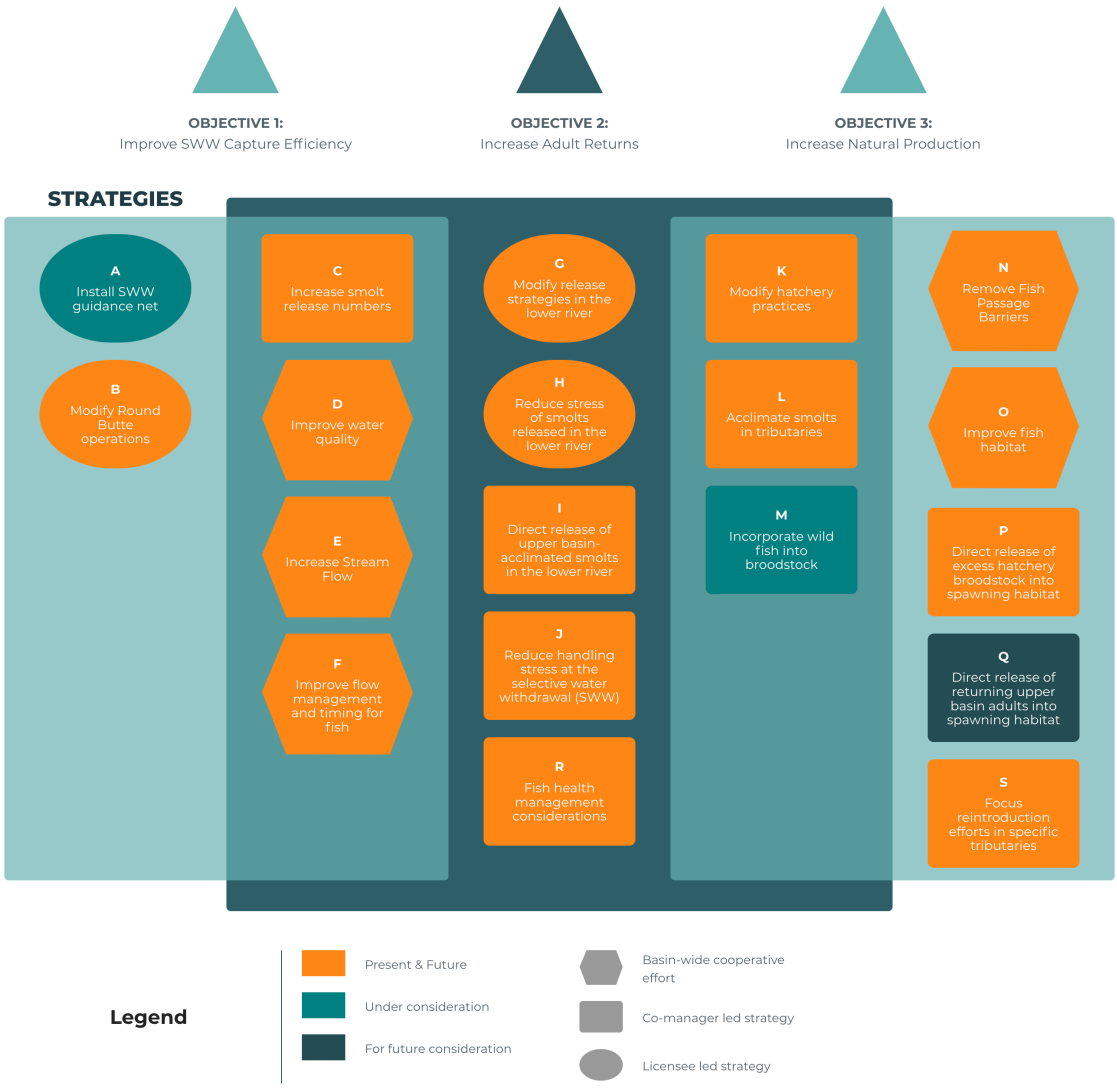
Reintroduction Road Map

The reintroduction road map is a high level guide to strategies current and future, to impact the goal of returning self-sustaining and harvestable runs of spring Chinook, sockeye and summer steelhead to the Upper Deschutes Basin. Learn more about the history and purpose of our work in the Executive Summary.

The road map is organized by objectives with each strategy represented by a shape that indicates who is responsible and a color to illustrate whether strategies are current or planned.

Overview of Reintroduction Road Map

Goal: self-sustaining and harvestable runs of Chinook, sockeye, and steelhead.



STRATEGY

G: Modify Release Strategies in the Lower River

Description: Multiple studies provided indirect evidence that predation may be playing a substantial role in mortality of Chinook, sockeye, and steelhead smolts released below the Re-Regulation Dam. Radio-tagging revealed low smolt survival to the mouth of the river, with the highest mortality occurring between release and Trout Creek (Hill and Quesada 2016). Several potential mortality factors including disease, parasites, tagging/handling/transport mortality were considered, but avian and piscine predation were thought to be the most likely sources of smolt mortality below the Re-Regulation Dam. It has been shown that night-released Chinook and steelhead smolts have a significant survival advantage. Increased survival was present at the mouth of the Deschutes and persisted to Bonneville Dam (Mendez and Hill 2016).

Anticipated Outcome: Increase survival by modifying release strategies in the lower river to night releases of smolts by species and, likely, by water year/environmental conditions. Night releases of steelhead and Chinook smolts increased survival to the mouth of the Deschutes to 48% and 88%, respectively, over comparable day releases (Mendez and Hill 2016). The same relative smolt survival benefit would be expected for sockeye. As a result of the increased survival to the Columbia River, we expect this strategy to increase adult return numbers. Although, the effect will likely be minimal compared to the effect of ocean conditions on return rates and will require several years of returns to evaluate.

Evaluation Method: Results of the two years of study were definitive enough that this strategy has been implemented. An additional check on the effectiveness of this strategy will be to compare adult return rates from years where this strategy was implemented (2017-2021) to years

before it was implemented (2012 to 2017). Re-evaluation of the strategy to integrate utilization of the stress relief pond (Road Map Strategy H), constructed in 2021 at the Re-Regulation Dam in 2021, should be considered. Additionally, future re-evaluation of this strategy should be considered if there are significant reintroduction program changes.

Timeline: Present and Future – Started in 2017; anticipated to continue into future.

Lead Organization/Agency: Licensees.

Fish Committee Role: Information is brought to the Fish Committee for input.

Related Studies/Actions/Decisions:

2021 – Stress relief pond constructed (see Strategy H). Studies in 2022 will help assess the release timing to minimize predation, etc.

2017 - 2021 – Smolts are processed at the Selective Water Withdrawal (SWW) in the morning, then held at the SWW until the evening when they are loaded onto the trucks and released into the lower river.

2016 – Juvenile migration T&V study. Survival to the mouth of the Deschutes River was estimated for two release groups (day/night) each of Chinook, steelhead, and sockeye smolts. Predation between the release site and Trout Creek, indirectly identified as a significant mortality factor, was reduced by releasing smolts at night.

2015 – Juvenile migration T&V study. Identified reaches in the lower Deschutes River where mortality might be occurring by using fixed radio telemetry stations and mobile tracking. Identified the river reach between the release site and Trout Creek as having the lowest survival for smolts of all three species.

2014 – Juvenile migration T&V study. Predation was thought to be an issue so day and night releases were done. However, releases were not paired; day releases occurred one week earlier during a period when

flows were higher. Additionally, day releases coincided with large releases of hatchery steelhead potentially “swamping” predators and leading to biased survival rates.
