

Pelton Round Butte Fish Committee

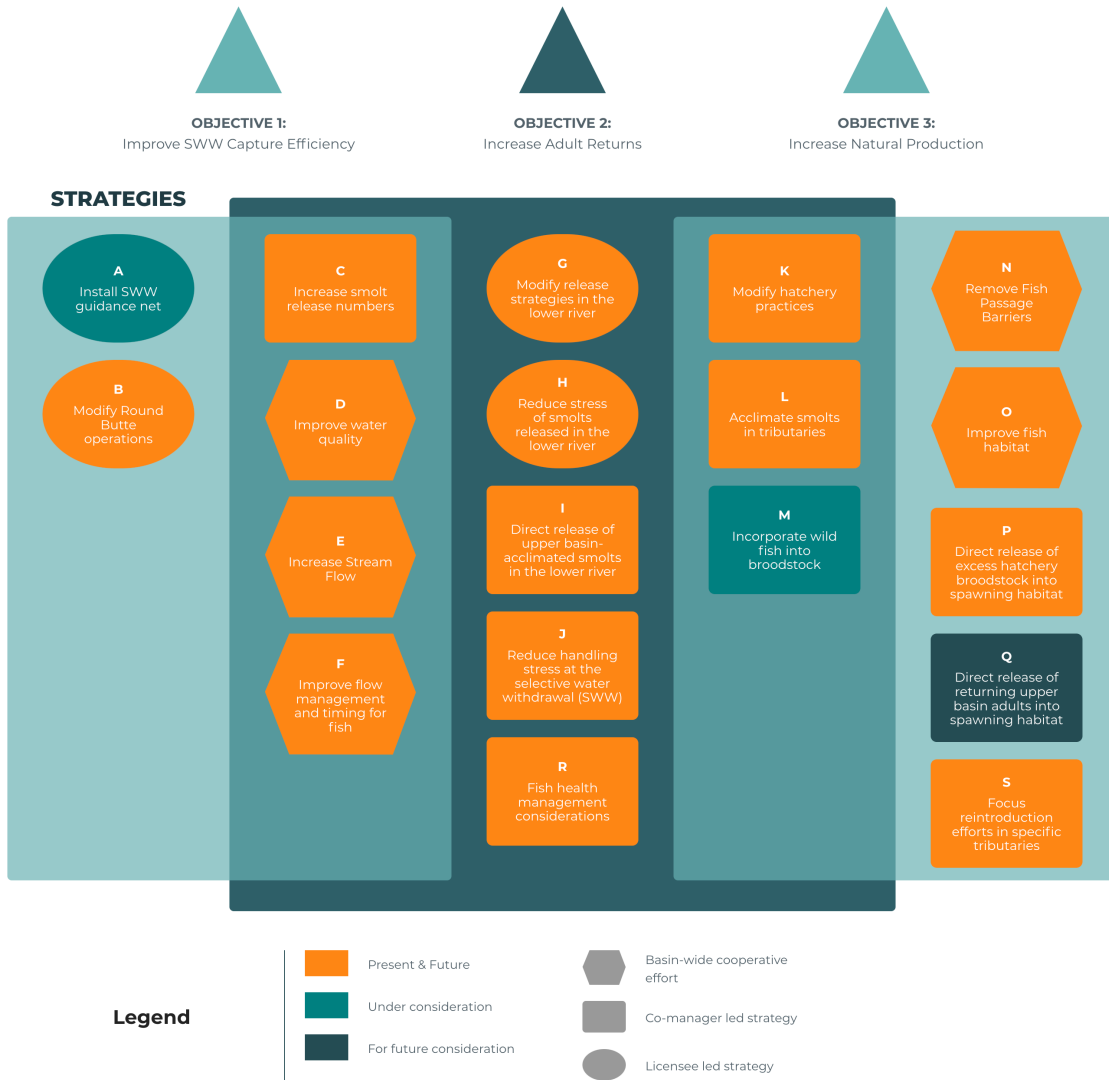
Reintroduction Road Map

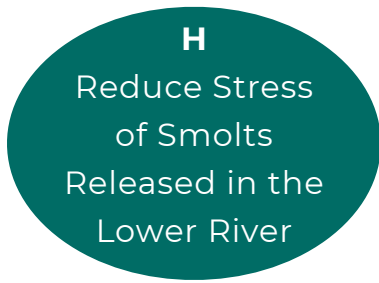
The reintroduction road map is a high level guide to strategies current and future, to impact the goal of returning self-sustaining and harvestable runs of spring Chinook, sockeye and summer steelhead to the Upper Deschutes Basin. Learn more about the history and purpose of our work in the [Executive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

H: Reduce Stress of Smolts Released in the Lower River

Description: In the critical period following release, handling/transport-related stress can cause short-term increases in susceptibility to predation and disease, as well as changes in behavioral and physiological responses to the environment. Chinook, steelhead, and sockeye smolts released below the Re-Regulation Dam suffer significant mortality during their out-migration to Bonneville Dam, with the majority occurring between release and Trout Creek (Mendez and Hill 2016). Handling/transport stress can continue to affect post-release survival and reduced performance of smolts, the effects of which may persist through adult life.

There is abundant evidence that a recovery period would greatly reduce transport-induced stress and likely enhance post-release smolt survival. Some studies suggest that a recovery period, of as little as a few hours, may be sufficient for physiological recovery from stress, prior to liberation, and can significantly improve post-release survival and performance. However, recovery of behavioral traits, like aggression, territoriality, and learning ability, probably takes several days to weeks. The recently constructed Stress Relief Pond (SRP) will be used as a tool to reduce handling and transport stress of smolts released in the lower Deschutes River. Its present operation, on a daily release schedule, will not allow identification or removal of residual steelhead.

Anticipated Outcome: Higher average smolt survival in the reach between the Re-Regulation Dam and the mouth of the Deschutes River than previous smolt release strategies. Reduced mortality of smolts during their out-migration to the mouth of the Deschutes River, specifically in the reach between the Re-Regulation Dam and Trout

Creek, although the benefits of stress recovery are expected to be species- and water year-specific. Length of stress recovery would be logistically constrained but also be a balance between the short term (up to 7 days) benefit of improved survival and longer-term negative effects of prolonged containment.

Evaluation Method: It may take several years under a specific recovery regime (and a range of water years) to develop an average survival of “recovered” smolts from release to the Deschutes mouth. This average could be compared to the baseline survival estimates developed through prior release strategies. Any significant changes to the recovery regime or smolt program that may potentially impact post-release smolt survival should initiate Fish Committee discussion of whether post-release smolt survival may have been impacted and a re-evaluation of the recovery program is warranted.

Timeline: Present and Future – Stress relief pond was constructed and operational in 2021. Pond performance and fish behavioral response will inform design and operation of permanent structures in new Pelton rearing facility.

Lead Organization/Agency: Licensees.

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

Related Studies/Actions/Decisions:

2021 – Interim stress relief pond completed in May 2021. Initial study of fish behavioral response completed in 2021; results included in 2021 Fish Passage Annual Report.

2019 – First adults from nighttime releases start returning.

2018 – ODFW acclimation studies. Acclimation of Chinook smolts in the Metolius and steelhead smolts in Whychus Creek and the Crooked River demonstrated higher survival to the Selective Water Withdrawal (SWW) than direct released smolts.

2017 - present – Based on studies described in Road Map Strategy G: Modify Release Strategies in the Lower River, PGE changed operations so that 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. At the same time, PGE began discussions and budgeting for a permanent recovery facility to alleviate the safety concerns around daily nighttime trucking and realize additional benefits from recovery.
