

## **Can intensive harvest of hatchery-produced salmon co-exist with efforts to recover naturally-produced stocks in the Columbia River basin?**

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Constraints on Columbia River mainstem salmon fisheries can result in the under-utilization of hatchery-produced fish intended for harvest. Often, these constraints are in place to ensure harvest does not hinder recovery of naturally-produced salmon and steelhead stocks, and fishery managers have a responsibility to balance the goals of wild fish recovery and providing meaningful fisheries. Commercial and recreational harvest opportunity in the Columbia River has decreased and management of the fisheries has become much more complex since stocks began being listed under the Endangered Species Act in the 1990s. Interannual variability in abundance and return timing of both hatchery and naturally-produced salmon confounds the ability to effectively utilize harvestable fish. Consequently, hatchery escapement often exceeds broodstock needs and the risk of hatchery/wild interactions on spawning grounds increases.

The Select Area terminal fisheries program provides a model of a highly selective fishery based on the concept of spatial and temporal separation of harvestable hatchery fish from stocks of concern. The program has evolved from a feasibility study into a major component of the lower Columbia River non-Treaty commercial fishery. The Select Area Fisheries program has demonstrated the ability to provide significant and relatively stable fishing opportunity; returning adult hatchery salmon produced by the project are harvested at rates greater than 90% while catch of non-local stocks are minimal. The Select Area fisheries concept allows for more efficient leverage of allowable impacts to listed stocks into harvested fish than mark-selective fisheries in the mainstem Columbia River. Existing infrastructure (hatcheries and net pen rearing sites) has allowed for reprogramming of production from other hatcheries in the basin for release in the Select Areas. This approach maintains production levels, increases the return to harvest, and reduces adverse interactions with naturally-produced populations in the original watersheds.