



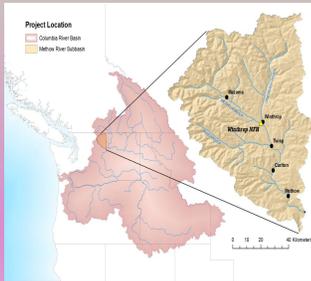
Does tank geometry matter? Evaluating juvenile rearing of summer steelhead at Winthrop National Fish Hatchery



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Background

- Winthrop National Fish Hatchery (WNFH) has dual roles for mitigating and recovering Upper Columbia summer steelhead trout. Through an integrated conservation program, WNFH seeks to increase natural spawner abundance and distribution in the Methow Subbasin.
- WNFH produces age-2 smolts (S2) due to low water temperatures.
- Studies at NOAA Manchester showed lower early maturation rates in steelhead reared in circular tanks than those in WNFH raceways.
- WNFH is scheduled to replace a primary bank of raceways with circular tanks.



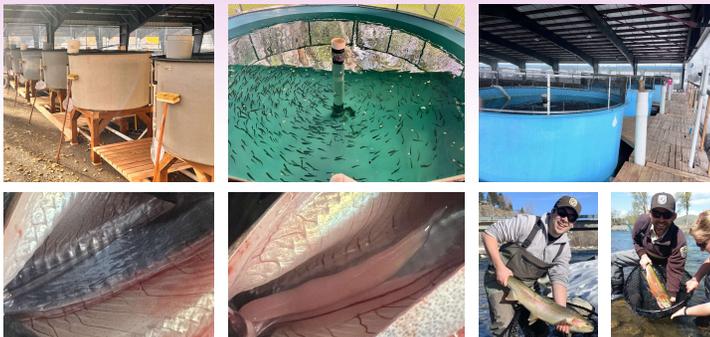
Location of Winthrop National Fish Hatchery



Winthrop National Fish Hatchery in winter

Rearing Goals: Circular vs. Raceway

- Comparable growth and survival at release
- Similar or lower precocity and early maturation at release
- Equivalent or improved outmigration travel time and survival



Juvenile Rearing and Sampling

- Stocked in six, 210-gallon tanks, aligned with timing of ponding into raceways (October to May)
- Transferred to four, 1,900-gallon tanks for grow out (post-marking in May)
- Sampled for individual lengths and weights monthly

Recent Sampling During PIT-Tagging



"Historic" Juvenile life stages:

1) parr, 2) transitional, 3) smolt, 4) precocial male



Current Visual Assessment

- Influenced by tank color – most fish looked transitional or smolty
- Few parr or obvious residuals; every fish evaluated during tagging

Initial Results

- Fork length was similar through rearing
- Fish per pound varied – fish in circular tanks received 0.25-0.50 % body weight more feed than fish in raceways in winter 2024/2025
- Sample size and collection methods between groups should be considered

