

Upper Lewis EDT Analysis

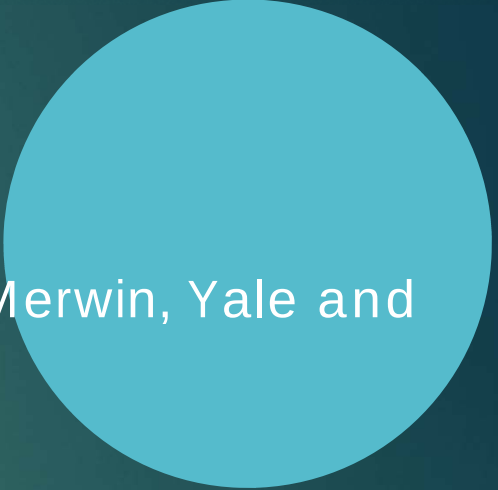


Major Assumptions

- PHASE 3 PROJECT CONFIGURATION
 - Trap-and-haul – Juvenile each project
 - Adult volitional
- FISH PASSAGE SURVIVAL RATES BASED ON SETTLEMENT AGREEMENT
 - ODS of 80 percent
 - UPS of 99.5 percent (modeled 100 percent)
- SAR VALUES PROVIDED BY WDFW
- NO HARVEST IN MARINE OR FRESHWATER FISHERIES

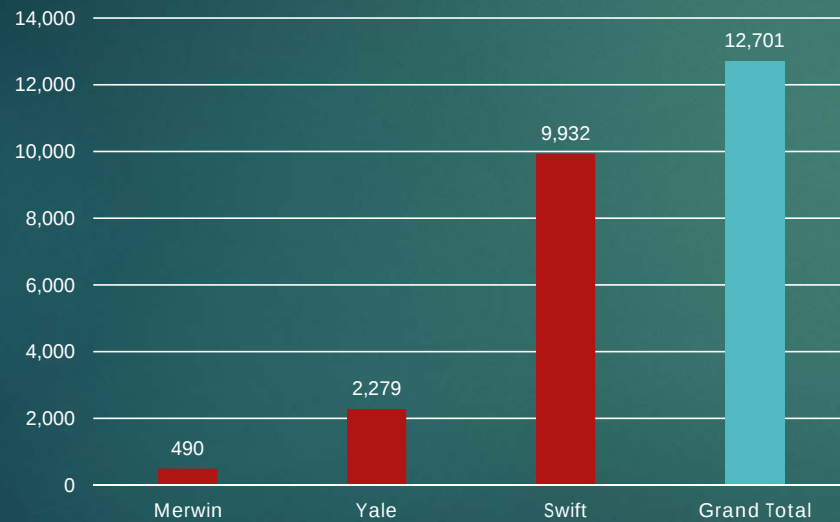


Analyses

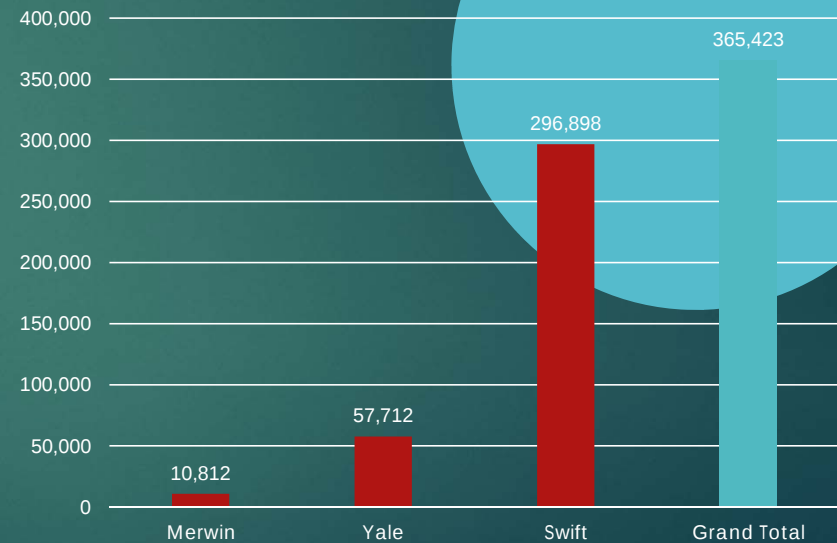
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- Estimates of fish production by geographic area (Merwin, Yale and Swift)
 - Estimates of fish production by stream
 - Habitat limiting factors

Fish Production by Geographic Area- Current Condition (No Fitness Loss)

Adult Fish Production by Geographic Area

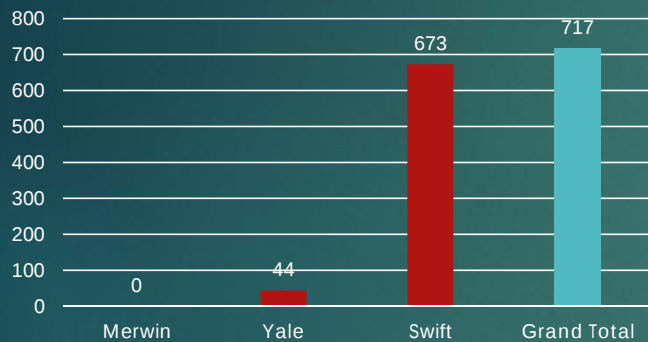


Juvenile Fish Production by Geographic Area

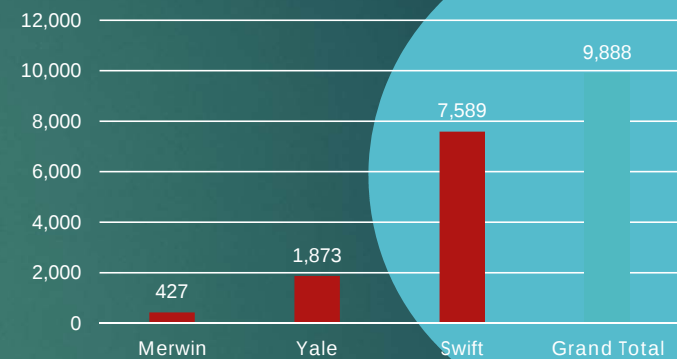


Adult Fish Production by Geographic Area – Current (No Fitness Loss)

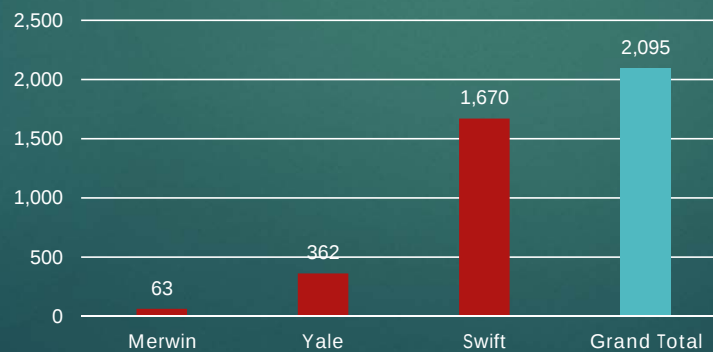
Spring Chinook



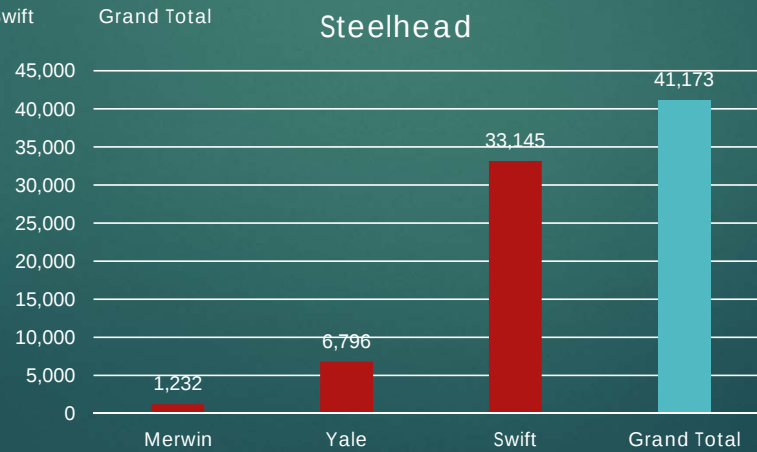
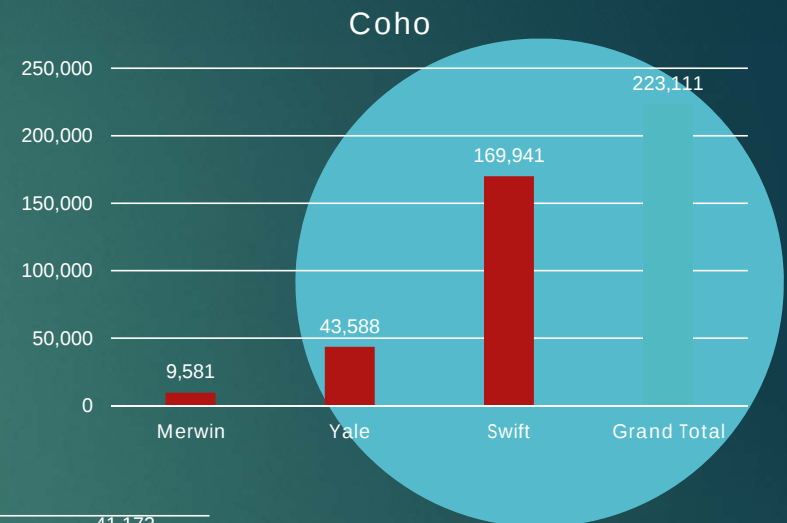
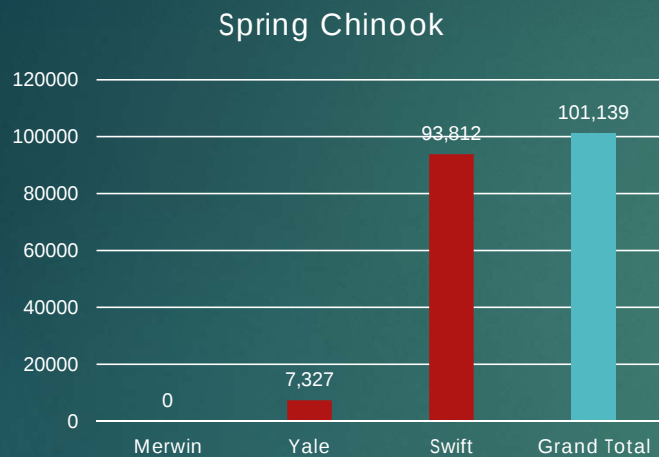
Coho



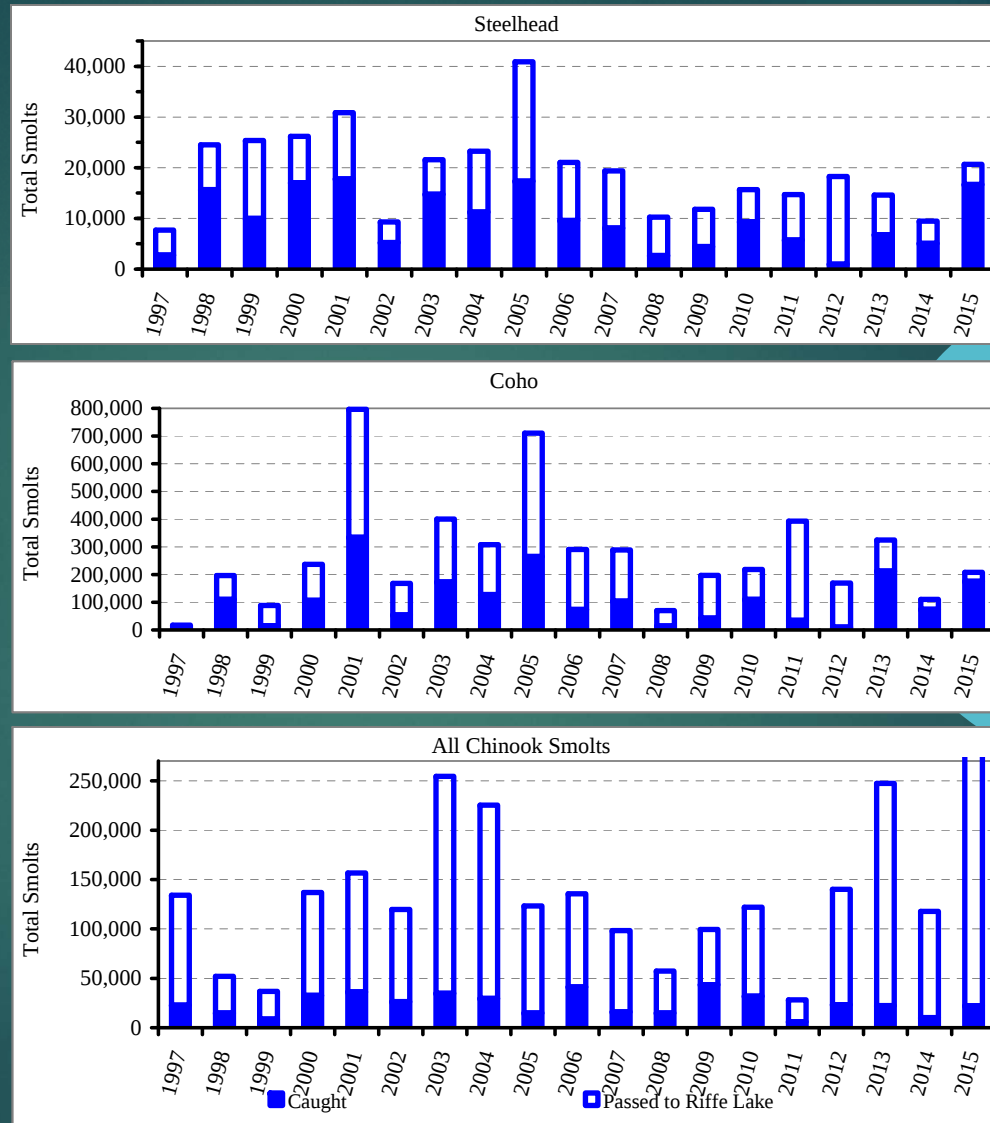
Steelhead



Juvenile Fish Production by Geographic Area – Current (No Fitness Loss)



Cowlitz Falls



EDT 2004

27,600

408,000

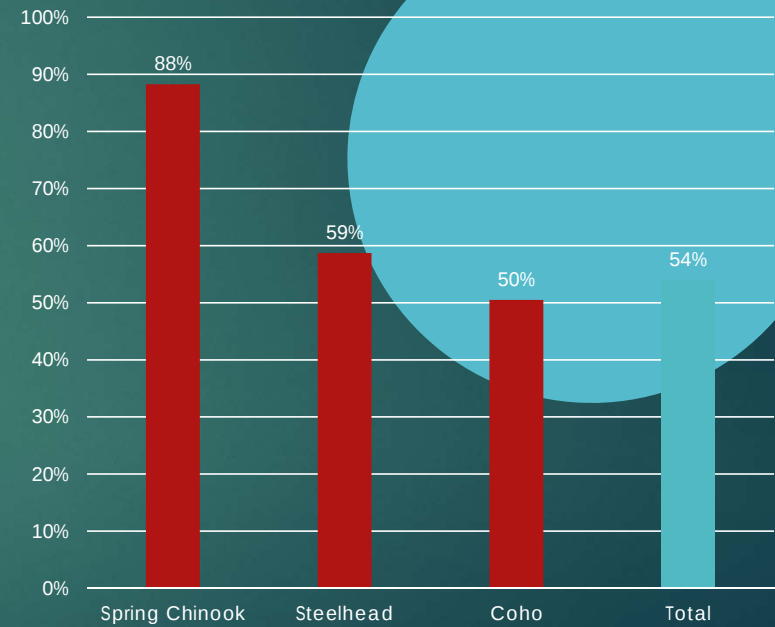
124,000
spring

323,000
fall

Adult Fish Production by Geographic Area – Current and Historical

	Current	Restored	
	Adult Abundance	Adult Abundance	% Change
Spring Chinook	717	1,350	88%
Yale	44	70	60%
Swift	673	1,280	90%
Coho	9,888	14,881	50%
Merwin	427	690	62%
Yale	1,873	2,179	16%
Swift	7,589	12,012	58%
Steelhead	2,095	3,325	59%
Merwin	63	105	67%
Yale	362	521	44%
Swift	1,670	2,699	62%
Total	12,701	19,556	54%

Percent Improvement in Adult Production by Species



Stream reaches set to historic – Reservoirs in place

Limiting Factors Analysis - Merwin

Coho				
Stream	Limiting Factor	% Change Adult Abundance per Kilometer	Total Kilometers	Total % Increase in Adult Production
Brooks Creek	Channel Stability	0.38%	3.375	1.28%
Indian George Creek	Key Habitat	0.10%	1.448	0.15%
Buncombe Hollow Creek	Channel Stability	0.06%	1.287	0.08%
Jim Creek	Key Habitat	0.08%	0.965	0.08%
Jim Creek	Channel Stability	0.07%	0.965	0.07%
M14	Key Habitat	0.03%	1.931	0.06%
Buncombe Hollow Creek	Key Habitat	0.03%	1.287	0.04%
M14	Channel Stability	0.02%	1.931	0.04%
M14	Sediment load	0.02%	1.931	0.03%
Steelhead				
Stream	Limiting Factor	% Change Adult Abundance Per Kilometer	Total Kilometers	Total % Increase in Adult Production
Brooks Creek	Width	0.12%	3.375	0.40%
Brooks Creek	Food Index	0.10%	3.375	0.34%
Indian George Creek	Channel Stability	0.09%	1.448	0.14%
M14	Food Index	0.03%	1.931	0.05%

Limiting Factors Analysis - Yale

Coho				
Stream	Limiting Factor	% Change Adult Abundance Per Kilometer	Total Kilometers	Total % Increase in Adult Production
Speelyai 2A	Channel Stability	0.12%	4.5	0.53%
Dog Creek	Sediment load	0.17%	2.25	0.39%
Siouxon 2	Channel Stability	0.22%	1.5	0.33%
Siouxon 2	Key Habitat	0.21%	1.5	0.31%
Cougar Creek 2	Key Habitat	0.11%	2.74	0.31%
Siouxon 1	Channel Stability	0.14%	1.93	0.27%
Siouxon 1	Key Habitat	0.14%	1.93	0.27%
Cougar Creek 2	Width	0.08%	2.74	0.22%
NF Siouxon	Channel Stability	0.06%	3.38	0.20%
Rain Creek	Width	0.13%	1.43	0.19%
Siouxon 1	Width	0.09%	1.93	0.17%

Spring Chinook				
Lewis 12	Temperature	0.28%	4.34	1.22%
Lewis 12	Habitat diversity	0.14%	4.34	0.62%
Lewis 12	Width	0.11%	4.34	0.46%
NF Siouxon	Channel Stability	0.07%	3.38	0.23%
Cougar Creek 2	Habitat diversity	0.05%	2.74	0.15%
Siouxon 2	Key Habitat	0.05%	1.5	0.08%
Siouxon 1	Width	0.03%	1.93	0.05%
Steelhead				
Lewis 12	Width	0.29%	4.34	1.27%
Speelyai 2A	Channel Stability	0.26%	4.5	1.19%
Siouxon 1	Width	0.32%	1.93	0.61%
Cougar Creek 2	Key Habitat	0.15%	2.74	0.41%
Speelyai (Canal)	Habitat diversity	0.64%	0.48	0.31%
NF Siouxon	Channel Stability	0.05%	3.38	0.15%
Dog Creek	Food Index	0.06%	2.25	0.13%
Rain Creek	Width	0.06%	1.43	0.08%
Siouxon 2	Channel Stability	0.04%	1.5	0.07%

Limiting Factors Analysis - Swift

Coho				
Stream	Limiting Factor	% Change Adult Abundance Per Kilometer	Total Kilometers	Total % Increase in Adult Production
Clear Creek	Habitat diversity	0.36%	9.9	3.58%
Rush Creek	Key Habitat	0.61%	4.02	2.46%
Muddy R 1	Key Habitat	0.31%	7.08	2.23%
Lewis 18	Key Habitat	1.54%	1.27	1.96%
Clear Creek Lower	Key Habitat	0.13%	9.9	1.31%
Clear Creek Lower	Food Index	0.13%	9.9	1.25%

Spring Chinook				
Muddy R 1	Food Index	0.28%	7.08	1.98%
Muddy R 1	Key Habitat	0.26%	7.08	1.82%
Rush Creek	Key Habitat	0.44%	4.02	1.76%
Muddy R 1	Habitat diversity	0.25%	7.08	1.74%
Spencer Creek	Key Habitat	1.37%	0.97	1.33%

Steelhead				
Pine Creek 6	Key Habitat	0.55%	4.43	2.42%
Muddy R 3	Channel Stability	0.39%	5.63	2.20%
Rush Creek	Key Habitat	0.51%	4.02	2.04%
Muddy R 1	Food Index	0.19%	7.08	1.36%