**Objectives and Sampling Requirements**

**(data required in red)**

**(unresolved question about data in purple):**

1. Determine the number and proportion of unmarked adult Chinook salmon sampled at various locations in the South Fork McKenzie River (e.g. Cougar Trap and spawning grounds below Cougar dam) in 2016-2020 that can be assigned as progeny of Chinook salmon previously released above Cougar Dam, South Fork McKenzie River in 2011-2017. (2011-2017 Outplants, 2016-2020 NOR Cougar Trap and SF SGS Individuals)
2. Estimate the TLF for Chinook salmon reintroduced above Cougar Dam in 2011-2015. These estimates include unmarked adult offspring sampled at Cougar Dam, as well as unmarked spawners encountered on spawning grounds below the dam in 2014-2019. (2011-2015 Outplants, 2014-2020 NOR Cougar Trap and SF SGS Individuals)(is there a 2020 SGS??? Why not include 2020 SGS)
3. Estimate the effects of release date and release site on the total lifetime fitness of adult spring Chinook salmon released above Cougar Dam in 2011-2015 (2011-2015 Outplants, 2014-2020 NOR Cougar Trap and SF SGS Individuals)(is there a 2020 SGS??? Why not include 2020 SGS)
4. Estimate cohort replacement rate (CRR), or “the number of future spawners produced by a spawner” for spring Chinook salmon released above Cougar Dam in 2011-2015. (2011-2015 Outplants, 2014-2020 NOR Cougar Trap and SF SGS Individuals)(is there a 2020 SGS??? Why not include 2020 SGS)
5. Estimate the effective number of breeders (Nb) for the adult salmon population reintroduced above Cougar Dam in 2011-2015. (2011-2015 Outplants, 2014-2020 NOR Cougar Trap and SF SGS Individuals)(is there a 2020 SGS??? Why not include 2020 SGS)
6. Estimate and report the annual abundance and age structure of adult Chinook salmon that return to the South Fork McKenzie River that can be confidently assigned to parents through genetic pedigree in 2016-2020. (2011-2017 Outplants, 2016-2020 NOR Cougar Trap and SF SGS Individuals)
7. Evaluate fitness differences between HOR and NOR Chinook salmon released above Cougar Dam in 2011-2015 through assignment of adult offspring returns in 2014-2020. (2011-2015 Outplants, 2014-2020 NOR Cougar Trap and SF SGS Individuals)

**Annual Sample Summary**

**Outstanding questions / missing data in purple**

**Solved discrepancies in green**

**2011**

*(ntotal = 731)(nto\_genotype = 0)*

*Parents (ntotal = 731)(nto\_genotype = 0)*

Progeny inventory and 2016 technical report results show 731 individuals outplanted above the Cougar Dam. These individuals are from both the Mckenzie Hatchery (n = 344) and the Cougar Trap (nHOR = 30, nNOR = 357), but individual level source information is unavailable on progeny. All are already genotyped.

*Offspring*

2011 offspring are considered in a prior report and not included in this study.

*Excluded*

Progeny inventory found an additional 370 SGS individuals in both the mainstem and South Fork Mckenzie that are not included because only parents are included for this year and all fish released above the dam are included in the set 731 individuals described above.

**2012**

*(ntotal = 948)(nto\_genotype = 0)*

*Parents (ntotal = 948)(nto\_genotype = 0)*

Progeny inventory and 2016 technical report results show 948 individuals outplanted above the Cougar Dam in 2012. These individuals are from both the Mckenzie Hatchery (n = 430) and the Cougar Trap (nHOR = 17, nNOR = 501). All are already genotyped.

*Offspring*

2012 offspring are considered in a prior report and not included in this study.

*Excluded*

Progeny inventory found an additional 243 SGS individuals in both the mainstem and South Fork Mckenzie that are not included because only parents are included for this year and all fish released above the dam are included in the set 948 individuals described above.

**2013**

*(ntotal = 687)(nto\_genotype = 0)*

*Parents (ntotal = 687)(nto\_genotype = 0)*

Progeny inventory and 2016 technical report results show 687 individuals outplanted above the Cougar Dam in 2013. These individuals are from both the Mckenzie Hatchery (n = 442) and the Cougar Trap (nHOR = 22, nNOR = 223). All are already genotyped.

*Offspring*

2013 offspring are considered in a prior report and not included in this study.

*Excluded*

Progeny inventory found an additional 132 SGS individuals in both the mainstem and South Fork Mckenzie that are not included because only parents are included for this year and all fish released above the dam are included in the set 687 individuals described above.

**2014**

*(ntotal = 888-889)(nto\_genotype = 491)*

*Parents (ntotal = 655 – 656)(nto\_genotype = 491)*

Progeny inventory shows 491 HOR individuals from McKenzie Hatchery and 147 Cougar Trap individuals (nHOR = 20, nNOR = 127) outplanted above the dam, and a single Cougar Trap individual with missing metadata. There were also 12 precocial males and 5 SGS individuals above the dam. Therefore the total maximum number of parents in 2015 is 656 and the minimum is 655. The proposal states that there are 683 McKenzie outplants, this is potentially explained by summing all McKenzie Hatchery outplants (491) with all Cougar NOR including those released below the dam or above Trailbridge Dam (192), and follows from a potential misunderstanding that all NOR Cougar trap samples were released above the dam.

Cougar Trap, SGS, and precocial males are already genotyped, leaving 491 potential parents to genotype.

*Offspring (ntotal = 233)(nto\_genotype = 0)*

Progeny inventory found are 23 NOR SGS individuals sampled in the South Fork McKenzie, 192 NOR individuals and a single individual with no metadata sampled at the Cougar Trap, 12 precocial males and 5 SGS individuals above the dam. Therefore the total number of potential offspring is 233. All are genotyped.

*Excluded*

70 McKenzie Hatchery individuals release above the Trailbridge reservoir, 66 Cougar Trap individuals released below the dam, and 92 SGS individuals outside the South Fork are excluded from consideration.

**2015**

*Parents (ntotal = 620 – 625)(nto\_genotype = 600)*

Progeny and tissue inventory demonstrate 600 HOR individuals from the McKenzie Hatchery, and 20 individuals from the Cougar Trap (19 HOR and 1 NOR), outplanted above the Cougar Dam. There were also 2 NOR individuals identified in SF SGS above the dam, and 3 NOR individuals with no outplant information from the Cougar trap. Therefore the total maximum number of parents in 2015 is 625 and the minimum is 620. The proposal states there are 669 HOR outplants. The 2016 technical report agrees with the progeny and tissue sample inventory (n = 619 HOR outplants), not the proposal.

Currently, only the Cougar Trap and SGS individuals are genotyped. Leaving 600 individuals to be genotyped, if we assume the tissue inventory is correct.

*Offspring (ntotal =298)(nto\_genotype = 0)*

Progeny and tissue inventory demonstrate 241 NOR individuals sampled at the Cougar Trap and 57 NOR individuals sampled during SF SGS. All are genotyped.

*Excluded Samples*

Progeny and tissue inventory found 100 HOR individuals from the McKenzie Hatchery outplanted above the Trailbridge Dam and 178 individuals from SGS samples outside the South Fork.

**2016**

*(ntotal = 885 - 898)(nto\_genotype = 519)*

*Parents (ntotal = 546 - 551)(nto\_genotype = 483)*

Progeny and tissue inventory demonstrate 475 individuals from the McKenzie Hatchery of unknown origin (NOR/HOR), and 67 HOR individuals from the Cougar Trap were outplanted above the Cougar Dam. There was an additional Cougar Trap individual with no metadata (OtsAC16SFMK\_1155), 4 NOR individuals discovered in spawning ground surveys above the dam, and 4 individuals with no metadata from the SGS. The proposed total number of 2016 parents is 546, 551 if we include the individual with no metadata.

Many discrepancies here. The proposal states there are 518 HOR individuals from the McKenzie Hatchery. This discrepancy likely stems from inclusion of individuals released above Trailbridge Dam. The proposal also states that 71 (not 67) HOR individuals were captured at the Cougar Trap and outplanted above the Cougar Dam, this error likely stems from 4 HOR Cougar trap individuals mistakenly released at a mainstem site (Forest Glen) by USACE, according to their notes. Finally, the proposal states that 302 NOR individuals from the Cougar trap were outplanted above the dam, this is likely due to confusing release sites below the dam for the 301 NOR individuals from the trap (Forest Glen, Blue River, Tailrace) with sites above the dam.

Currently, only the Cougar Trap individuals are genotyped. Leaving 484 individuals to be genotyped, if we choose to include all ambiguous individuals in the dataset.

*Offspring (ntotal = 339 - 347)(nto\_genotype = 44 (8 already counted))*

Progeny and tissue inventory demonstrate 301 NOR individuals and 2 individuals with incomplete metadata sampled at the Cougar Trap, and 36 NOR individuals sampled during SF SGS, 4 NOR individuals sampled above the dam during SGS and 4 SGS individuals with no metadata. Only the Cougar Trap individuals are genotyped.

*Excluded*

Progeny and tissue inventory found 43 McKenzie Hatchery individuals transported above Trailbridge Dam, and 134 SGS samples outside the SF McKenzie.

**2017**

*(ntotal = 718)(nto\_genotype = 468)*

*Parents (ntotal = 456)(nto\_genotype =450)*

Progeny and tissue inventory demonstrate 450 individuals from the McKenzie Hatchery of unknown origin (NOR/HOR), and 6 HOR individuals from the Cougar Trap outplanted above the Cougar Dam. The total number of 2017 parents is 456.

The proposal states that 244 NOR individuals from the Cougar trap were outplanted above the dam, this is likely due to confusing release sites below the dam for the 244 NOR individuals from the trap (Forest Glen, Blue River, Tailrace) with sites above the dam. The proposal also states 546 HOR individuals were outplanted from the Mckenzie Hatchery, but this likely stems from a typo on a single document inconsistent with an individual level sample data sheet and all other sample sizes mistaking 184 for 84 fin clips in one of the batch sample jars.

Currently, only the 6 Cougar Trap individuals are genotyped. Leaving 450 individuals to be genotyped.

*Offspring (ntotal = 262)(nto\_genotype = 18)*

Progeny and tissue inventory demonstrate 244 NOR individuals sampled at the Cougar Trap, and 18 NOR individuals sampled during SF SGS. Only the Cougar Trap individuals are genotyped.

*Excluded*

104 2017 SGS carcasses sampled outside of the South Fork were available in progeny and tissue archive, but excluded from analysis.

**2018**

*(ntotal = 156)(nto\_genotype =156)*

*Parents*

None, 2018 outplants will potentially be considered in a future study, once most of their potential offspring will have returned.

*Offspring (ntotal = 156)(nto\_genotype =156)*

Progeny and tissue sample inventory found 120 NOR individuals sampled at the Cougar Trap and 36 NOR individuals in the SGS on the South Fork. None have been genotyped.

*Excluded*

Progeny and tissue sample inventory found 541 Mckenzie hatchery outplants of unknown origin. 387 SGS carcasses found outside the South Fork.

**2019**

*(ntotal = 184)(nto\_genotype =184)*

*Parents*

None, 2019 outplants will potentially be considered in a future study, once most of their potential offspring will have returned.

*Offspring (ntotal = 184)(nto\_genotype =184)*

Progeny and tissue sample inventory found 166 NOR individuals sampled at the Cougar Trap and 18 NOR individuals in the SGS on the South Fork. None have been genotyped.

*Excluded*

Tissue and progeny inventory found about 1105 McKenzie Hatchery samples, including 381 outplants above Cougar Dam. All were excluded. Note that the proposal and draft report includes 451 hatchery outplants. This is likely explained by inclusion of 70 individuals released above the Trailbridge Dam, not Cougar Dam. 8 HOR samples from the Cougar Trap released above the dam, and 301 SGS carcasses that were either HOR or outside the South Fork were also excluded.

**2020**

*(ntotal = 225 ?) )(nto\_genotype =225 ?)*

*Parents*

None, 2020 outplants will potentially be considered in a future study, once most of their potential offspring will have returned.

*Offspring (ntotal = 225 ?) )(nto\_genotype =225 ?)*

The proposal states 225 NOR individuals were sampled at the Cougar Trap. I didn’t manage to find these fin clips during the sample inventory, nor can I find a tissue intake form or progeny entry for them!!!

I also don’t know anything about the 2020 SGS, nor can I found any information about them.

*Excluded*

Progeny and tissue inventory found 502 McKenzie Hatchery individuals that were not outplanted above Cougar Dam. This doesn’t agree with the sample intake form, but is likely due to a missing jar of wild females in the inventory. There were an additional 311 HOR individuals outplanted above the dam and XXX SGS samples either HOR or outside the South Fork excluded from the analysis.