

Scenarios Workgroup

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Dimensions of scenarios

- Flow
 - ROD hydrograph
 - Natural hydrograph
 - Flatline hydrograph
- Habitat (physical)
 - Most of the combinations below are habitat conditions, so could be states
- Temperature (currently limited opportunities)
 - Warm
 - Cool
 - Cold
- Escapement
 - Pre-dam escapement (high)
 - Current (10yr geo mean – Medium)
 - 2015 (Low)
- Aquatic / terrestrial productivity – can this be more than P/Cmax in model
 - Low
 - Medium
 - High

Necessary combinations of scenario dimensions (states of nature)

- ROD hydrograph
 - Is this a ROD determined acre-feet or Q/d?
- Natural hydrograph
 - What does this look like – natural in upper 10mi, or across 40mi
- Flatline hydrograph
- Pre-dam conditions
- Pre-ROD conditions
- ROD mechanical restoration strategy
- ROD / Current conditions (2012, 2016)
- Best Case restoration (138% from Beechie Pass)
- Flow Study Goal (400% habitat -> 200% fish) – hypotheses, bottlenecks, targets
- End of Phase 2
- End of Phase 2 + 10, 50, 100yr
- LWD heavy restoration plan
- Channel / Habitat Evolution trajectories (50 – 100yr) –
 - need to work out patterns, e.g., Gravel augmentation range
- Climate change
- Food / capacity limitation (density dependence in growth as well as movement)
- Tributary habitat improvement
- Fall flows

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Outputs

- Adult equivalents from juveniles passing NF
- Adult equivalents / spawner (FW productivity)

Questions for fish model development

- Size specific and flow specific movement (couple flow settings to fish distribution)
- Density dependent growth / survival, to allow for productivity variation
- Need to be able to explore changes in habitat quality (survival / growth) and habitat quantity (capacity)
- Can you do a parameter space exploration to back into 200% goal?
- Need to get model to address Coho and Steelhead as well
- What about river morphodynamics? How to capture changing initial/boundary condition? How to test the hypothesis that a dynamic river is “better” for fish?