Table 1. The range of realized Lower Granite simulation input values observed between 2000 and 2015.

|  |  |
| --- | --- |
| Variable | Realized |
| N at LGR | 50k to 200k total (2000-2015 data) |
| n Pops | 7 MPGs and 43 populations |
| Mean of Pops Average Run Timing | Spring – 140 jd, Summer – 171 jd (2015 data) |
| Std. Dev. of Pops Average Run Timing | Spring – 16, Summer – 25 (2015 data) |
| H proportion of all fish | 70% to 80% (2010-14 trap data) |
| HNC proportion | 15% of wild component (2014 data) |
| Proportion of populations with HOR | ~0.50 |
| Proportion of populations with HNC | ~0.10 |
| Fall Back | 7-10% for Steelhead at MCN(Wagner 1990 and Wagner and Hillson 1991)  0.6 – 5.8% Sp/Sm Chinook at LGR in 1996-2001; 2.7 – 8.4% steelhead (Boggs et al. 2004) |
| Re-ascension rate | 3% - 12% (avg ~ 6%) (LGR pit tag data 2010-2015)  0.5 – 1.0 after fallback Sp/Sm Chinook - 1996-2001; and 0.36-0.67 for steelhead (Boggs et al. 2004) |
| Night Passage Rate | 4% - 9% (avg ~6%) (pit tag data 2010-2015),  nothing in Boggs et al. 2004 |
| Window Viewing Rate | 50/60 minutes during day (USACE expands counts by 1.2 with no error) |
| Window Observation Error Rate | 0 – 12% for counts > 100 fish (Hatch et al. 1992) |
| Previous Mark Rate | 3.5% to 6.5% (2010-15 trap data) |
| Ladder det prob | 0.99 |
| Start/End date | March 1 / August 17 |
| Trap rate | Max of 800/day, set relative to total run size |

**Static LGR Simulation Inputs**

* Total LGR escapement: 100,000
* N.pops = 17 spring and 5 summer
* Proportion of populations with AD-clip hatchery origin: 0.50
* Proportion of populations with hatchery no-clip origin: 0.20
* Window viewing rate = 50/60 minutes (expansion rate of 1.2)
* Probability of fish previously tagged = 0.05
* Ladder detection probability = 0.99

**Proposed Variable LGR Simulation Inputs**

* Trap rate: constant (0.15) and shut-down (constant at 0.15 and 0.00 for 3 weeks)
* Re-ascension/night passage: equal (Fallback-6% = Night passage-6%) and unequal (Fallback-10% ≠ Night passage-5%), Re-ascension always = 100%
* Window counts: no error, small error (+5%) and large error (+15%)

Table 2. Twelve Lower Granite scenarios are proposed for simulation to complete appendix 2.

|  |  |  |  |
| --- | --- | --- | --- |
| Scenario | Trap Rate | Fallback/Night Passage | Window Counts |
| 1 | 0.15 | Equal – 6% | No Error |
| 2 | 0.15 + 3 week shut down | Equal – 6% | No Error |
| 3 | 0.15 | Unequal – 10%/5% | No Error |
| 4 | 0.15 + 3 week shut down | Unequal – 10%/5% | No Error |
| 5 | 0.15 | Equal – 6% | 5% |
| 6 | 0.15 + 3 week shut down | Equal – 6% | 5% |
| 7 | 0.15 | Unequal – 10%/5% | 5% |
| 8 | 0.15 + 3 week shut down | Unequal – 10%/5% | 5% |
| 9 | 0.15 | Equal – 6% | 10% |
| 10 | 0.15 + 3 week shut down | Equal – 6% | 10% |
| 11 | 0.15 | Unequal – 10%/5% | 10% |
| 12 | 0.15 + 3 week shut down | Unequal – 10%/5% | 10% |

Table 3. The proposed branching model scenarios for simulation to complete appendix 4 (LGR Wild Escapement = 25,000).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Scenario | Valid Tags (n) | Tag Rate | Trap Operation | Main Branch ID | Branch Escapement | Detection Probabilities |
| 1 | 2000 | 0.08 | Constant | 1 | 250 | 0.50/0.50 |
|  |  |  |  | 2 | 250 | 0.50/0.95 |
|  |  |  |  | 3 | 250 | 0.95/0.95 |
|  |  |  |  | 4 | 1000 | 0.50/0.50 |
|  |  |  |  | 5 | 1000 | 0.50/0.95 |
|  |  |  |  | 6 | 1000 | 0.95/0.95 |
|  |  |  |  | 7 | 3000 | 0.50/0.50 |
|  |  |  |  | 8 | 3000 | 0.50/0.95 |
|  |  |  |  | 9 | 3000 | 0.95/0.95 |
|  |  |  |  | Black Box | 12250 | N/A |
| 2 | 4000 | 0.16 | Constant | 1 | 250 | 0.50/0.50 |
|  |  |  |  | 2 | 250 | 0.50/0.95 |
|  |  |  |  | 3 | 250 | 0.95/0.95 |
|  |  |  |  | 4 | 1000 | 0.50/0.50 |
|  |  |  |  | 5 | 1000 | 0.50/0.95 |
|  |  |  |  | 6 | 1000 | 0.95/0.95 |
|  |  |  |  | 7 | 3000 | 0.50/0.50 |
|  |  |  |  | 8 | 3000 | 0.50/0.95 |
|  |  |  |  | 9 | 3000 | 0.95/0.95 |
|  |  |  |  | Black Box | 12250 | N/A |
| 3 | 2000 | 0.10 | 3 week shut down | 1 | 250 | 0.50/0.50 |
|  |  |  |  | 2 | 250 | 0.50/0.95 |
|  |  |  |  | 3 | 250 | 0.95/0.95 |
|  |  |  |  | 4 | 1000 | 0.50/0.50 |
|  |  |  |  | 5 | 1000 | 0.50/0.95 |
|  |  |  |  | 6 | 1000 | 0.95/0.95 |
|  |  |  |  | 7 | 3000 | 0.50/0.50 |
|  |  |  |  | 8 | 3000 | 0.50/0.95 |
|  |  |  |  | 9 | 3000 | 0.95/0.95 |
|  |  |  |  | Black Box | 12250 | N/A |
| 4 | 4000 | 0.20 | 3 week shut down | 1 | 250 | 0.50/0.50 |
|  |  |  |  | 2 | 250 | 0.50/0.95 |
|  |  |  |  | 3 | 250 | 0.95/0.95 |
|  |  |  |  | 4 | 1000 | 0.50/0.50 |
|  |  |  |  | 5 | 1000 | 0.50/0.95 |
|  |  |  |  | 6 | 1000 | 0.95/0.95 |
|  |  |  |  | 7 | 3000 | 0.50/0.50 |
|  |  |  |  | 8 | 3000 | 0.50/0.95 |
|  |  |  |  | 9 | 3000 | 0.95/0.95 |
|  |  |  |  | Black Box | 12250 | N/A |