Supplementary Material 1. Tables

Table S1. Stage numbers, ages, numbers, and descriptions.

Stage Number	Age	Stage Name	Description
1	1	Parr	
2	2	Smolt	
3	3	Age 3 Maiden S	Maiden that spawns
4	3	Age 3 Maiden H	Maiden harvested
5	3	Age 3 Immature	Remaining in ocean
6	4	Age 4 Maiden S	Maiden that spawns
7	4	Age 4 Maiden H	Maiden harvested
8	4	Age 4 Repeat S	Repeat that spawns
9	4	Age 4 Repeat H	Repeat harvested
10	4	Age 4 Immature	Remaining in ocean
11	5	Age 5 Maiden S	Maiden that spawns
12	5	Age 5 Maiden H	Maiden harvested
13	5	Age 5 Repeat S	Repeat that spawns
14	5	Age 5 Repeat H	Repeat harvested
15	5	Age 5 Immature	Remaining in ocean
16	6	Age 6 Maiden S	Maiden that spawns
17	6	Age 6 Maiden H	Maiden harvested
18	6	Age 6 Repeat S	Repeat that spawns
19	6	Age 6 Repeat H	Repeat harvested

Table S2. Fecundities, transition rates, and abbreviations used in the projection matrices.

Parameter	Values
Eggs/Age 3 Female	3200
Eggs/Age 4 Maiden Female	4000
Eggs/Age 4 Repeat Spawning Female	3400
Eggs/Age 5 Maiden Female	5000
Eggs/Age 5 Repeat Spawning Female	4300
Eggs/Age 6 Maiden Female	6000
Eggs/Age 6 Repeat Spawning Female	5400
sr (Proportion females)	0.5
ef (Egg-fry survival)	0.2
α (Fry-parr maximum survival rate)	0.2, 0.4
β (Fry capacity parameter)	Variable
fp (Fry-parr survival rate)	$\alpha/(1 + fry/\beta)$
ps (Parr to smolt survival)	0.3, 0.4
S23 (Smolt-Age 3 survival)	0.2
Mat3 (proportion of ocean age 3 that mature)	0.0278, 0.0422
Mat4 (proportion of ocean age 4 that mature)	0.2227, 0.3564
Mat5 (proportion of ocean age 5 that mature)	0.3884, 0.4366
Sp3S (proportion of age 3 maiden spawners that survive to re-enter the ocean)	0.5
Sp4S (proportion of age 4 maiden spawners that survive to re-enter the ocean)	0.6
Sp5S (proportion of age 5 maiden spawners that survive to re-enter the ocean)	0.7
S34 (Ocean survival age 3 to age 4)	0.73, 0.92
S45 (Ocean survival age 4 to age 5)	0.74, 0.93
S56 (Ocean survival age 5- age 6)	0.75, 0.94

Table S3. Summary of model results for 25 year simulations of each of the eight parameterizations of the steelhead life-cycle model under equilibrium (no harvest) conditions. *: cohort smolt-to-adult, egg-to-smolt, and spawner-to-spawner measured for maiden (first-time) spawners only. **: cohort smolt-to-adult, egg-to-smolt, and spawner-to-spawner measurements including separate accounting of repeat spawners.

Parameters/Model Number	1	2	3	4	5	6	7	8
Mean Fecundity at stable age	4924	4924	4924	4924	4832	4832	4832	4832
Egg-to-Fry	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Alpha	0.2	0.2	0.4	0.4	0.2	0.2	0.4	0.4
Beta	1/6383700	1/4399000	1/2708000	1/1955700	1/3245000	1/2326800	1/1485200	1/1090700
Parr-Smolt	0.3	0.4	0.3	0.4	0.3	0.4	0.3	0.4
Smolt-Ocean Age 3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
pMat4	0.2636	0.2636	0.2636	0.2636	0.3306	0.3306	0.3306	0.3306
pMat5	0.3648	0.3648	0.3648	0.3648	0.3974	0.3974	0.3974	0.3974
Ocean Age 3-to-Ocean Age 4	0.73	0.73	0.73	0.73	0.92	0.92	0.92	0.92
Ocean Age 4-to-Ocean Age 5	0.74	0.74	0.74	0.74	0.93	0.93	0.93	0.93
Ocean Age 5-to-Ocean Age 6	0.75	0.75	0.75	0.75	0.94	0.94	0.94	0.94
Female Spawners at EQ.	39,817	39,560	39,282	39,150	40,469	40,300	40,117	40,038
Proportion Repeat Spawners	0.235	0.235	0.235	0.235	0.286	0.286	0.286	0.286
Fry-Parr at Equilibrium	0.049	0.037	0.049	0.037	0.029	0.021	0.029	0.021
Total Fry	39 188 957	38 936 845	38 662 997	38 532 736	39 110 847	38 946 025	38 771 453	38 693 191
Total Parr	1 926 005	1 435 288	1 900 214	1 420 379	1 113 266	831 380	1 103 609	825 993
Total Smolt	577 802	574 115	570 064	568 152	333 980	332 552	331 083	330 397
Fry-to-Smolt	0.0148	0.0148	0.0148	0.0148	0.0086	0.0086	0.0086	0.0086
Egg-to-Smolt	0.0030	0.0030	0.0030	0.0030	0.0017	0.0017	0.0017	0.0017
Cohort Smolt-to-Adult*	0.105	0.105	0.105	0.105	0.172	0.172	0.172	0.172
Egg-to-Adult*	0.000311	0.000311	0.000311	0.000311	0.000295	0.000295	0.000295	0.000295
Spawner-to-Spawwenr*	1.54	1.54	1.54	1.54	1.46	1.46	1.46	1.46
Cohort Smolt-to-Adult**	0.138	0.138	0.138	0.138	0.237	0.237	0.237	0.237
Egg-to-Adult**	0.000408	0.000408	0.000408	0.000408	0.000406	0.000406	0.000406	0.000406
Spawner-to-Spawner**	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.02