

Supplement

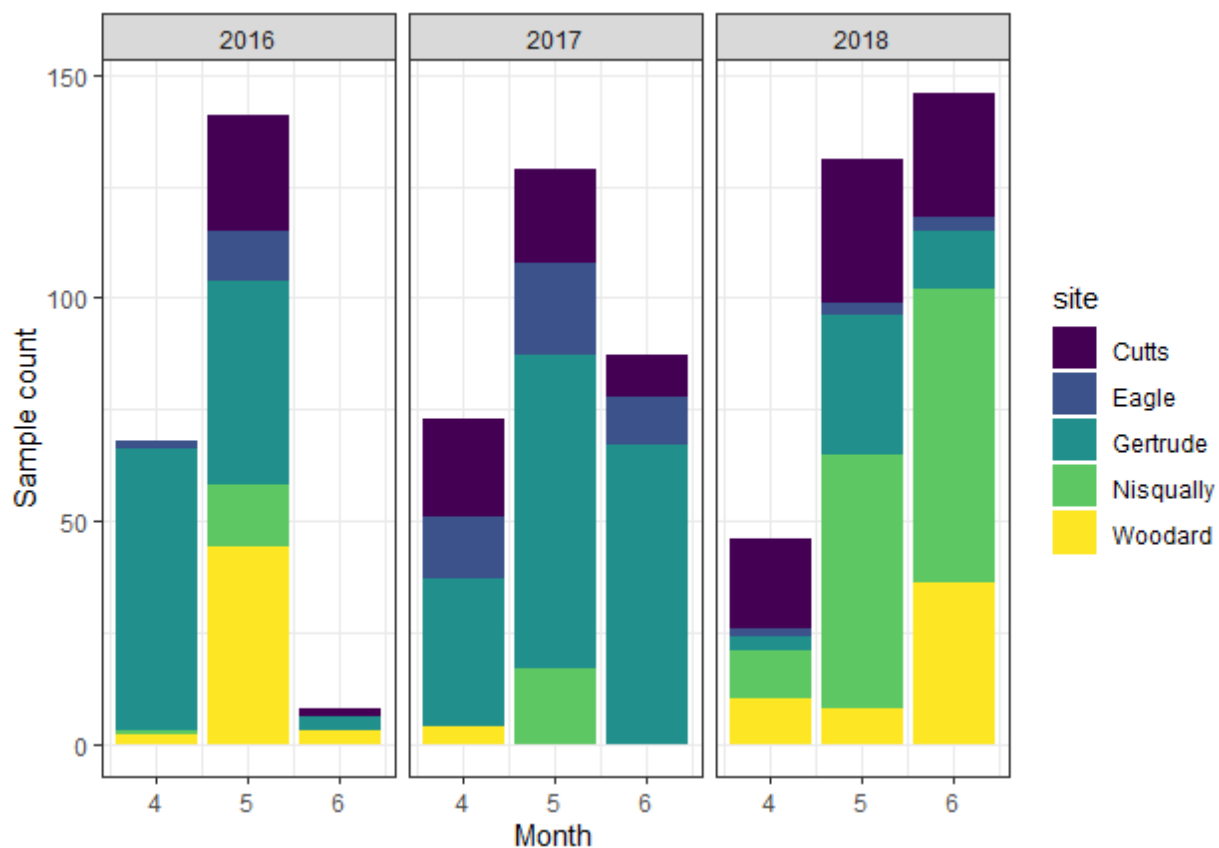


Fig. S1. Harbor seal scat sample count by month for each of the major haulouts in South Puget Sound, collected in 2016, 2017, and 2018 (data from Thomas et al. 2022).

Table S1. Acoustic tagged steelhead sample information, with smolt mean length in millimeters (\pm SE), mean weight in grams (\pm SE), and release date range by year and tag type.

Year	Tag type	Number released	Length	Weight	Release dates
2014	V7	100	195 (\pm 3)	72 (\pm 4)	4/29 – 5/21
2015	V7	99	201 (\pm 2)	76 (\pm 3)	4/30 – 6/5
2016	V7	149	201 (\pm 2)	76 (\pm 2)	4/26 – 6/2
2017	V7	98	206 (\pm 2)	80 (\pm 2)	4/26 – 6/1
2018	V7	204	210 (\pm 2)	91 (\pm 2)	4/26 – 6/7
2019	V7	110	215 (\pm 2)	100 (\pm 4)	4/25 – 6/5
2019	V7T	100	212 (\pm 2)	97 (\pm 4)	4/25 – 6/5
2021	V7T	160	204 (\pm 2)	80 (\pm 2)	5/4 – 6/8

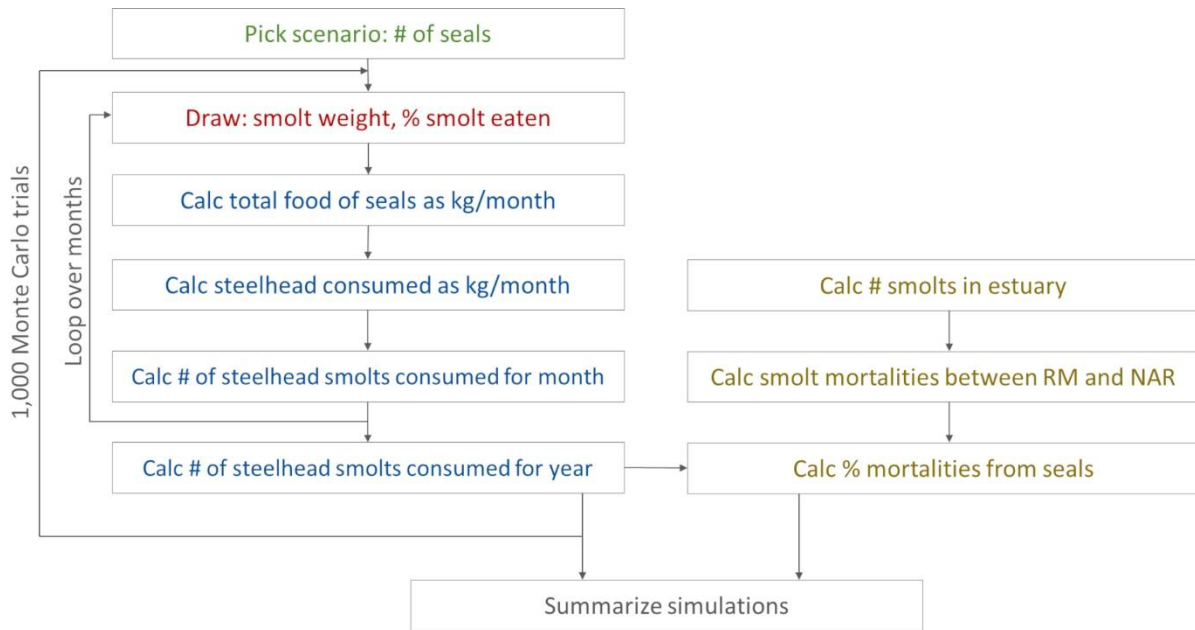


Fig. S2. Conceptual diagram of the prey consumption model simulation, carried out using R (version 4.3.0).

Table S2. Harbor seal scat samples containing steelhead DNA, including the percent of each scat sample attributed to steelhead (Relative Read Abundance [RRA]) and whether hard parts analysis found bones indicative of ‘juvenile’ or ‘adult’ *Oncorhynchus* prey, or found ‘none’. Data summarized from Thomas et al. (2022).

Sample ID	Collection Date	Collection Site	RRA	Hard Parts
Pv16.252	9-May-16	Nisqually	100.0	juvenile and adult
Pv16.462	2-May-16	Gertrude Island	43.1	juvenile
Pv16.471	2-May-16	Woodard Bay	2.5	none
Pv17.288	30-Apr-17	Cutts Island	3.8	none
Pv17.450	26-May-17	Gertrude Island	48.3	juvenile
Pv17.474	7-Jun-17	Eagle Island	8.1	none
Pv18.111	19-Apr-18	Cutts Island	6.2	none
Pv18.127	14-May-18	Cutts Island	25.9	none
Pv18.128	14-May-18	Cutts Island	92.5	none
Pv18.325	1-Jun-18	Gertrude Island	48.6	Juvenile
Pv18.341	1-Jun-18	Woodard Bay	5.6	none
Pv18.418	15-Jun-18	Gertrude Island	13.1	juvenile
Pv18.434	15-Jun-18	Cutts Island	34.3	none
Pv18.435	15-Jun-18	Cutts Island	5.9	juvenile
Pv18.872	7-May-18	Nisqually	39.8	juvenile
Pv18.887	7-May-18	Nisqually	29.0	none
Pv18.904	22-May-18	Nisqually	4.9	none
Pv18.921	23-May-18	Nisqually	5.3	juvenile
Pv18.932	8-Jun-18	Nisqually	51.9	juvenile
Pv18.948	8-Jun-18	Nisqually	95.7	juvenile



Fig. S3. The number of Nisqually River steelhead smolts consumed by harbor seals in South Puget Sound per year (2016-2018) was simulated as described in the Methods section under a mean seal abundance scenario ('N seals: mean'), then compared to results of two sets of simulations using the average smolt weight ('Known smolt weight') and average percent diet comprised of steelhead ('Known % eaten') with no associated standard deviations to examine the contribution of parameter error estimates to the model calculations.

Table S3. Location, time and tidal stage during predation events in the Nisqually River estuary. Three pairs of receivers were deployed in the same estuary locations each year (pair 1: downstream = rkm 0.2 and upstream = rkm 0.6, pair 2: downstream = rkm 1.1 and upstream = 1.3, pair 3: rkm downstream = rkm 3.9 and upstream = rkm 4.1; see Figure 1). Tidal height of each predation event was projected using NOAA 6-minute interval water level data from station [9446484](https://doi.org/10.3354/meps14639) Tacoma, WA.

Year	Transmitter	Receiver pair	Tidal height (meters)	Date and time of predation (m/d hh:mm:ss)	Tide phase
2019	6633	1	3.6	5/20 5:03:53	flood
2019	6626	1	2.2	5/24 5:12:19	flood
2019	6649	3	3.3	5/24 21:33:15	flood
2019	6639	1	2.0	5/25 6:37:43	flood
2020	1820	2	3.6	5/6 3:39:43	ebb
2020	1813	2	3.2	5/9 5:29:55	ebb
2020	1762	3	2.2	5/11 1:55:53	flood
2020	1777	3	2.3	5/13 2:47:07	flood (<30 min from slack)
2020	1756	2	2.8	5/13 22:58:48	ebb
2020	1800	3	3.1	5/21 3:40:12	ebb
2020	1793	1	2.0	5/22 5:58:46	ebb
2020	1012	1	2.7	5/23 5:25:31	ebb
2020	1015	3	2.3	5/24 6:20:04	ebb
2020	974	3	2.2	5/30 2:30:53	ebb (<30 min from slack)
2020	965	3	2.2	5/30 2:31:12	ebb (<30 min from slack)
2020	975	2	2.2	5/30 3:09:06	slack
2020	955	2	3.0	5/30 6:36:58	flood
2020	980	2	3.3	6/3 2:42:58	ebb
2020	968	2	3.3	6/3 2:47:47	ebb
2020	977	3	2.3	6/3 4:33:40	ebb

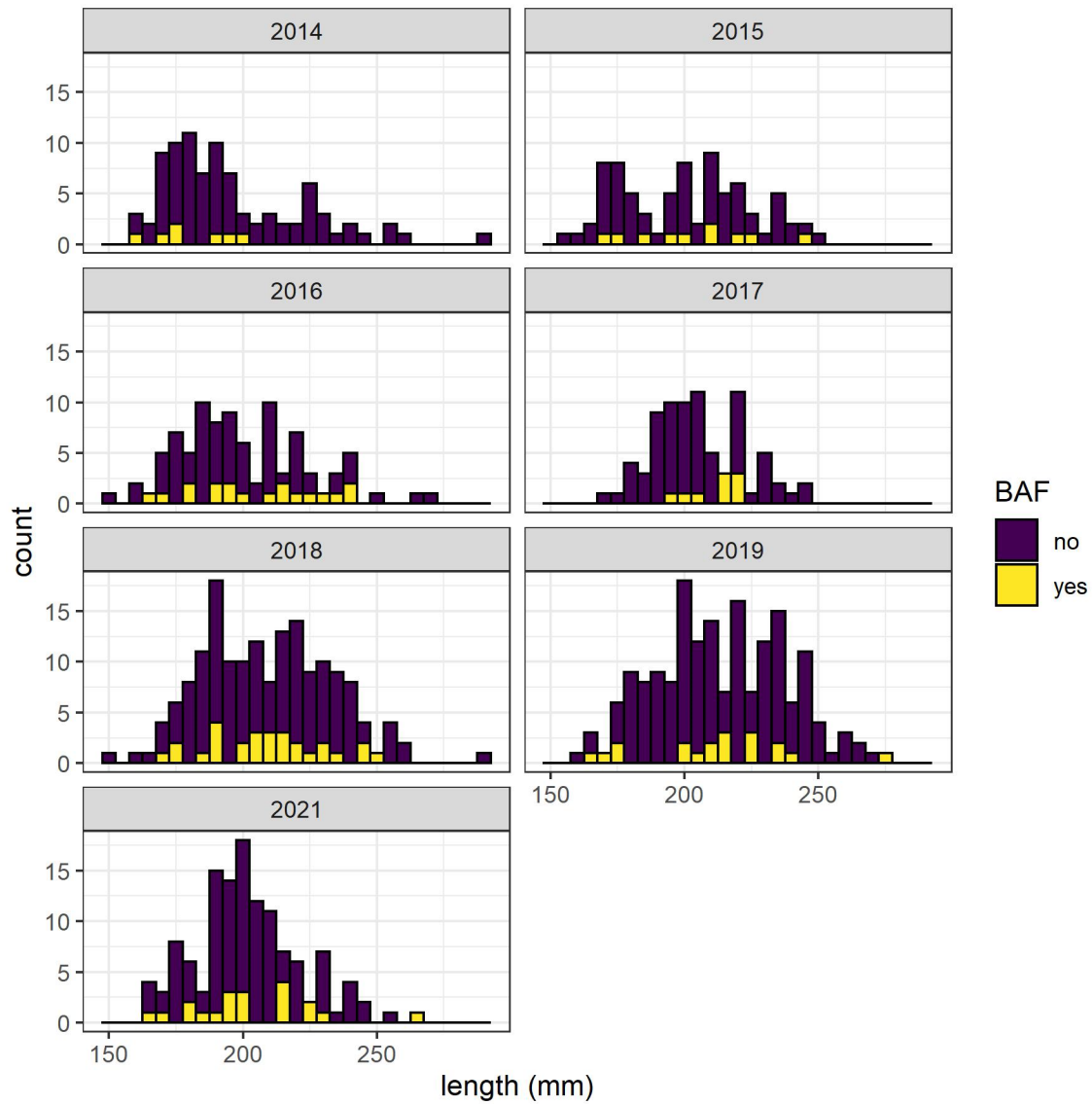


Fig. S4. Histogram comparing the length of acoustic tag implanted steelhead smolts displaying back and forth behavior (BAF), indicating consumption (“yes”), to those that did not (“no”).