

Supplement C

Detection probabilities

Antenna detection probabilities were generally high at all antennas for both tag sizes and detected a reasonably high number of fish at each antenna (Table SC1, SC2). The detection probability at FWCE ranged from 72-83% for 12- 23-mm tags, and the detection probability at FWCP ranged from 78-92% for 12- 23-mm tags. These detection probabilities were high enough to give us a confident estimate of the number of fish migrating over the spillway (f). We could not calculate a detection probability for the SW antenna because detection probability and stopping rate are confounded at the farthest downstream antenna. The fraction of fish that moved past the SH antennas when they were operational, accounting for non-operation of this station when both antennas were offline simultaneously was 83% (95% CI: 65-100%).

Table SC1: Detection probabilities and 95% credible intervals for 12-mm and 23-mm tags at each antenna site.

Antenna site	Model parameter	Tag size	
		12 mm	23 mm
ALP	p_1	94% (90-97%)	96% (94-98%)
FWCE	p_2	72% (27-94%)	83% (63-96%)
FWCP	p_3	78% (28-99%)	92% (76-100%)
BLP	p_4	64% (54-74%)	68% (56-82%)
SH1	p_5	50% (36-65%)	53% (37-71%)
SH2	p_6	64% (48-80%)	71% (50-100%)

Table SC2: The number of spawners and juvenile outmigrants detected at each antenna site. The number of detections are categorized by PIT tag size because the larger 23-mm PIT tags have a greater detection distance and a higher detection probability.

Antenna site	Spawners/Kelts	Juvenile Outmigrants	
	23 mm	12 mm	23 mm
ALP	82	198	76
FWCE	4	17	4
FWCP	1	16	3
BLP	44	16	14
SH1	28	0	4
SH2	33	2	8
SW	53	6	7