

SUPPLEMENTARY MATERIALS

Figure S1: The total number of SPLASH tagged bowhead whales in all areas (●) and Cumberland Sound (●) by month with data pooled across years (2012–2015). All animals were tagged during the summer in Foxe Basin (July) and Cumberland Sound (August) during 2012 and 2013. One tag transmitted for only 13 days (PTT 128149) during July 2013 after deployment, making August the month with the maximum number of tagged animals ($n = 25$) when all years are combined.

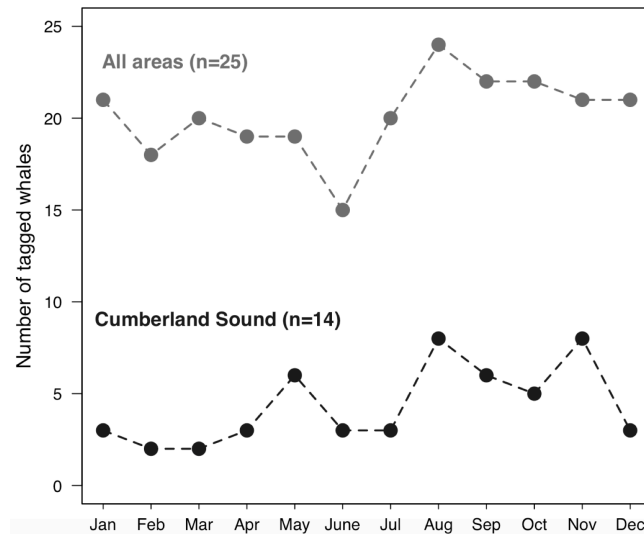


Figure S2: Percentage of the Total number of locations for 14 SPLASH tagged bowhead whales (n = 2, 044) in Cumberland Sound by month and year based on HSSSM predicted locations. No animals were found in Cumberland Sound during the spring of 2012 as the whales were first tagged during the summer of 2012.

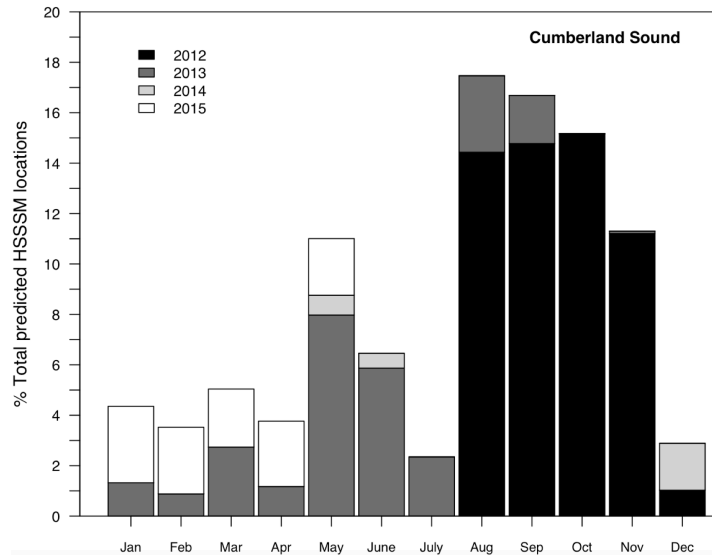


Table S1. Summary dive information for n=13 SPLASH tagged whales with HSSSM locations inside Cumberland Sound. The total number of dives (Sum) for the entire tag attachment period are reported for each Platform Transmitter Terminal (PTT) along with the average number of daily dives (Mean), associated standard deviation (SD), and the minimum, maximum and median number of dives per day. Instances where low sample sizes prevented the calculation of a standard deviation are indicated (~).

PTT	Sum	Mean	SD	Min	Max	Median
114495	342	57	32.099844	2	94	65
114496	3	3	~	3	3	3
114499	1	1	~	1	1	1
114502	4038	26.56579	24.511565	3	105	19
114503	835	36.30435	29.355865	4	105	25
114504	3817	19.085	21.281265	1	130	10.5
114505	2736	24.21239	13.162074	1	60	22
114506	658	36.55556	22.542045	5	107	35
114507	1198	19.32258	12.136889	5	70	18
114508	2847	31.63333	16.712002	5	109	31
114509	2015	19.9505	14.479901	1	89	18
128152	2472	16.7027	9.223203	1	39	15
128154	14	3.5	1.290994	2	5	3.5

Table S2. The standard deviation (SD) of the random effects (Random) intercepts are provided for the ‘best’ linear-mixed effects models (Model) that had the lowest AIC value. The models are organized by random effects and the fixed effects (Fixed) are also provided. These models correspond to those in Table 3 and Table 4. The fixed effects include shape (Square, U, V and unknown), season (summer, fall, winter, spring) and day.night (i.e., categorical variable where each dive is classified as occurring during the day or night based on the time of sunset and sunrise during early and late August 2012).

Model	Fixed	Random	SD
		Minimum dive duration (mins)	
3	Shape*Season	PTT	0.49
		PTT/Year	65.93
		PTT/Year/Month	160.27
		PTT/Year/Month/Day	185.40
		Maximum dive depth (m)	
6	Shape*Season	PTT	0.12
		PTT/Year	40.54
		PTT/Year/Month	39.58
		PTT/Year/Month/Day	55.66
		Early August maximum Square dive depth (m)	
7	day.night	PTT	36.88
		PTT/Year	36.88
		PTT/Year/Month	36.88
		PTT/Year/Month/Day	54.98
		Early August Minimum Square dive duration (mins)	
8	day.night	PTT	100.68
		PTT/Year	100.68
		PTT/Year/Month	100.68
		PTT/Year/Month/Day	151.93
		Late August maximum Square dive depth (m)	
9	day.night	PTT	20.01
		PTT/Year	20.01
		PTT/Year/Month	20.01
		PTT/Year/Month/Day	53.16
		Late August Minimum Square dive duration (mins)	
10	day.night	PTT	54.43
		PTT/Year	54.43
		PTT/Year/Month	54.43
		PTT/Year/Month/Day	178.61