

## What we see is not what there is: estimating North Atlantic right whale *Eubalaena glacialis* local abundance

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**Table S1** Mean dive times, mean surface times, and median availability estimates ( $a(x)$ ), from focal-follows of right whales in Cape Cod Bay in 2016 and 2017.

Category	% surface time	Mean dive time (sec)	Mean surface time (sec)	$a(x)$	$a(x)$ variance	sample size (total time followed)
January	16	533	48	0.27	0.04	7(3.6)
February	34	256	226	0.52	0.09	9 (4.0)
March	31	219	67	0.52	0.06	22 (16.2)
April	55	88	801	0.91	0.05	48 (37.9)
All sightings	44	175	492	0.63	0.07	86(61.8)

**Table S2.** Cramer-von-Mises (CvM) and Kolmogorov-Smirnov (KS) were used to determine model goodness-of-fit for annual detection functions (models with a CvM or KS p-value > 0.05 were considered to have adequate fit), and detection probabilities ( $\hat{P}_a$ ), and associated standard error values from distance sampling analyses.

Year	CvM p-value	KS p-value	$\hat{P}_a$	s.e. $\hat{P}_a$
1998	0.751	0.564	0.663	0.156
1999	0.521	0.426	0.601	0.094
2000	0.531	0.248	0.750	0.041
2001	0.867	0.802	0.640	0.070
2002	0.970	0.965	0.708	0.104
2003	0.103	0.048	0.760	0.333
2004	0.969	0.965	0.655	0.142
2005	0.985	0.995	0.866	0.059
2006	0.431	0.392	0.703	0.163
2007	0.866	0.777	0.712	0.065
2008	0.970	0.977	0.595	0.050
2009	0.581	0.507	0.591	0.038
2010	0.668	0.785	0.599	0.046
2011	0.847	0.737	0.604	0.043
2012	0.991	0.982	0.611	0.062
2013	0.980	0.993	0.576	0.030
2014	0.930	0.858	0.507	0.035
2015	0.583	0.815	0.541	0.028
2016	0.115	0.065	0.431	0.038
2017	0.341	0.129	0.518	0.028

**Fig. S1.** The posterior distributions of the model relating distance from the target to field of view time with altitude indexed.

