

## Supplemental Materials

Table S1. North Atlantic beaked whale species-specific characteristics of their echolocation signals as reported in the literature. Only studies where the acoustic data collected was confirmed with visual sightings are reported. For each species, the median values are reported except for those denoted with \*, indicating a single value from the most on-axis click, and \*\*, indicating mean values. Characteristics with more than one value represent encounter or individual level medians/means. Cases where the characteristic was not measured were left blank.

Species	Peak frequency (kHz)	Centroid frequency (kHz)	Inter-click-interval (ICI, s)	Reference
Northern bottlenose whale ( <i>Hyperoodon ampullatus</i> )	25.9	27.4	0.4	(Clarke et al., 2019)
Goose-beaked whale ( <i>Ziphius cavirostris</i> )	40*	42*	0.39, 0.41	(Zimmer et al., 2005)
Blainville's beaked whale ( <i>Mesoplodon densirostris</i> )	–	38.3	0.37**	(Johnson et al., 2006)
Gervais' beaked whale ( <i>Mesoplodon europaeus</i> )	–	–	0.27**	(Gillespie et al., 2009)
Sowerby's beaked whale ( <i>Mesoplodon bidens</i> )	65.8	65.8	0.24	(Clarke et al., 2019)
	–	72.2	0.14, 0.17	(Visser et al., 2022)
True's beaked whale ( <i>Mesoplodon mirus</i> )	43.1, 43.5	–	0.17, 0.19	(DeAngelis et al., 2018)

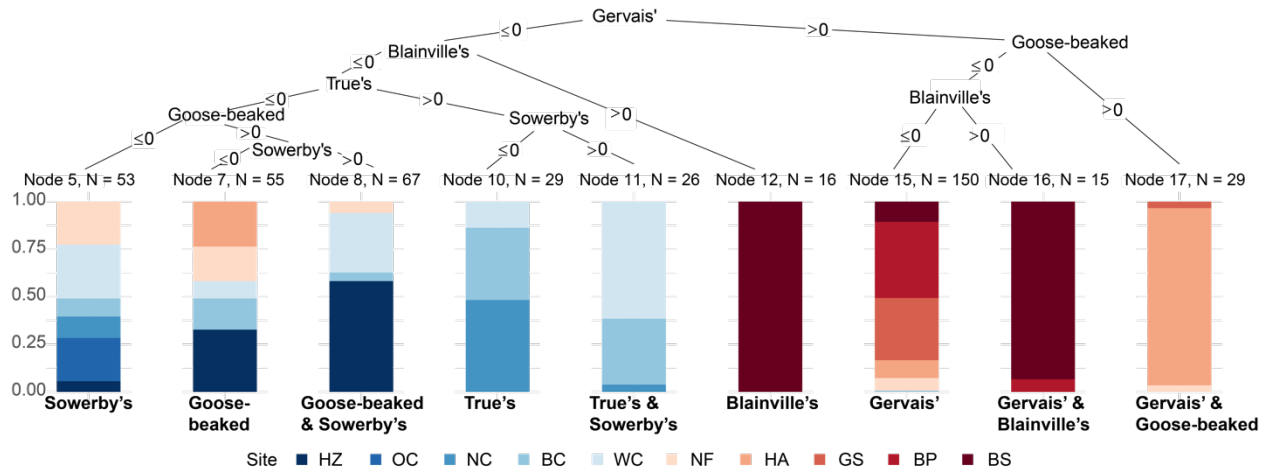


Figure S1. Daily co-occurrence of beaked whale species across 10 of the 11 HARP sites. Each node represents the proportions of sites at which the different species combinations occurred (0 to 1). Species combinations are labeled beneath each node. N represents the total number of days in which that species combination was present across all sites in the node. Sites are color-coded with blues signifying northern sites, reds signifying southern sites, and lighter colors representing the Mid-Atlantic Bight. HARP abbreviations are HZ= Heezen Canyon, OC= Oceanographer Canyon, NC= Nantucket Canyon, BC= Babylon Canyon, WC= Wilmington Canyon, NF= Norfolk Canyon, HA= Cape Hatteras, GS= Gulf Stream, BP= Blake Plateau, BS= Blake Spur, JA= Jacksonville.

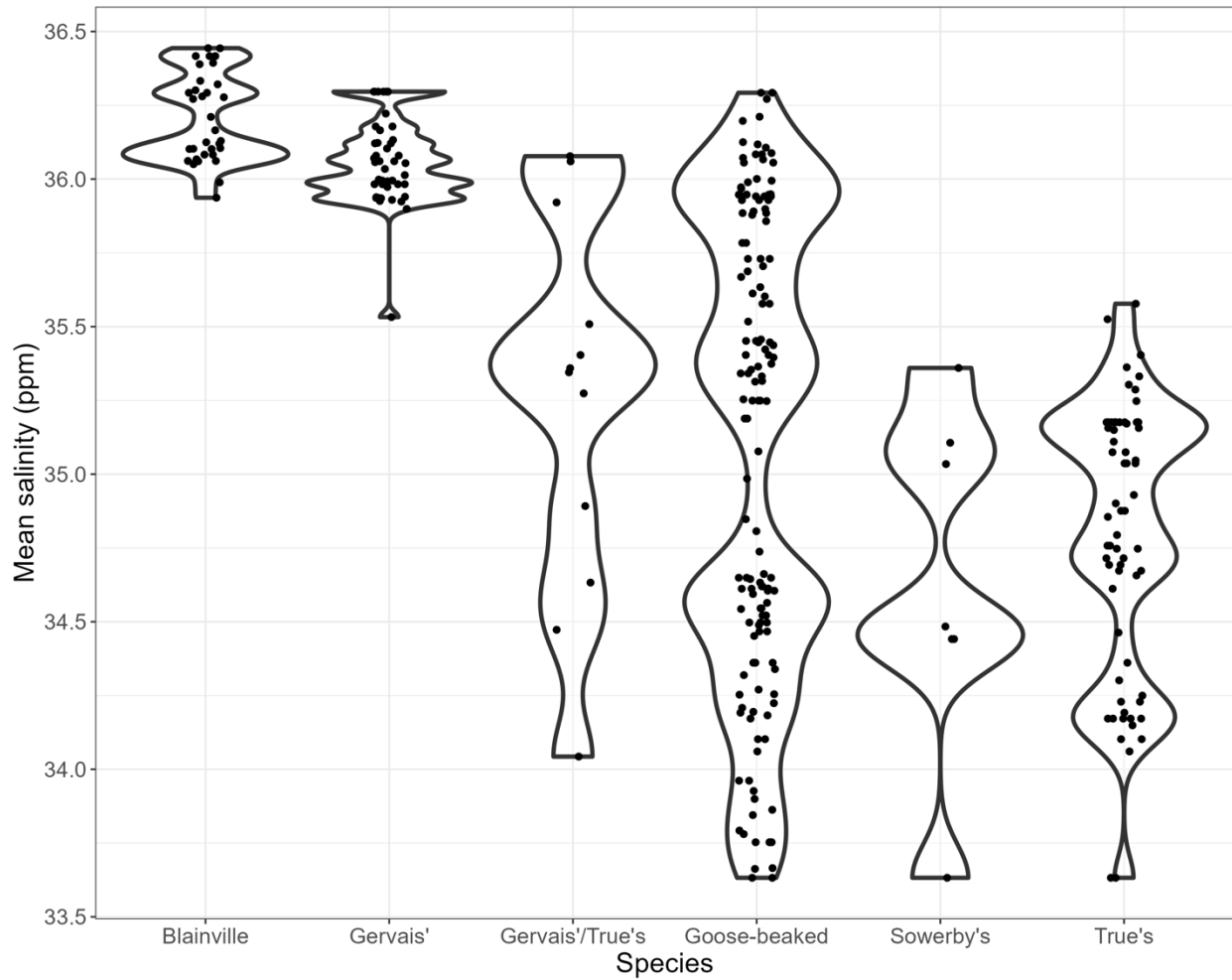


Figure S2. Mean salinity values from the HYCOM models attributed to the beaked whale detected events from the towed hydrophone array dataset.

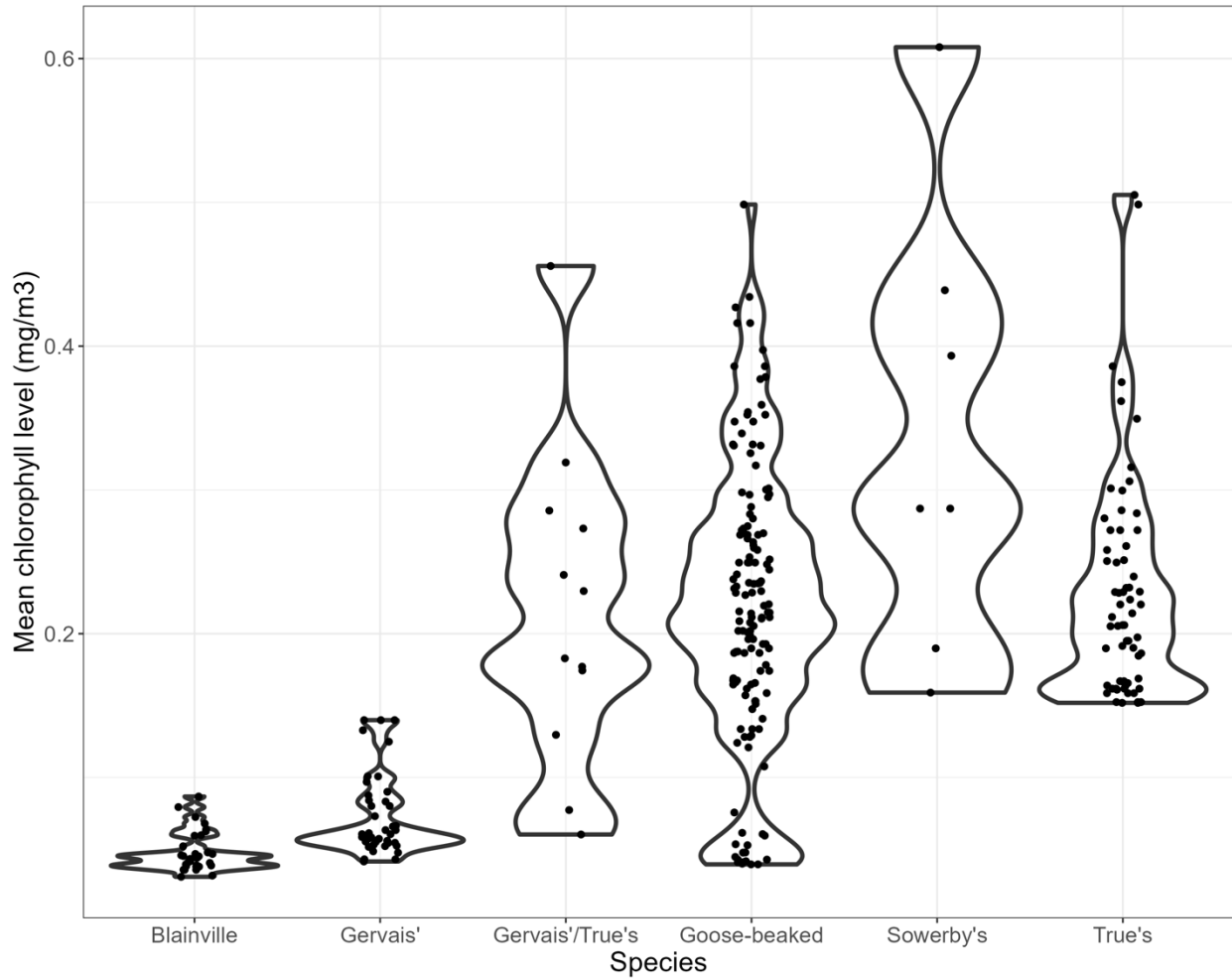


Figure S3. Mean chlorophyll values from the erdMBchl<sub>a</sub>8day dataset attributed to the beaked whale detected events from the towed hydrophone array dataset.

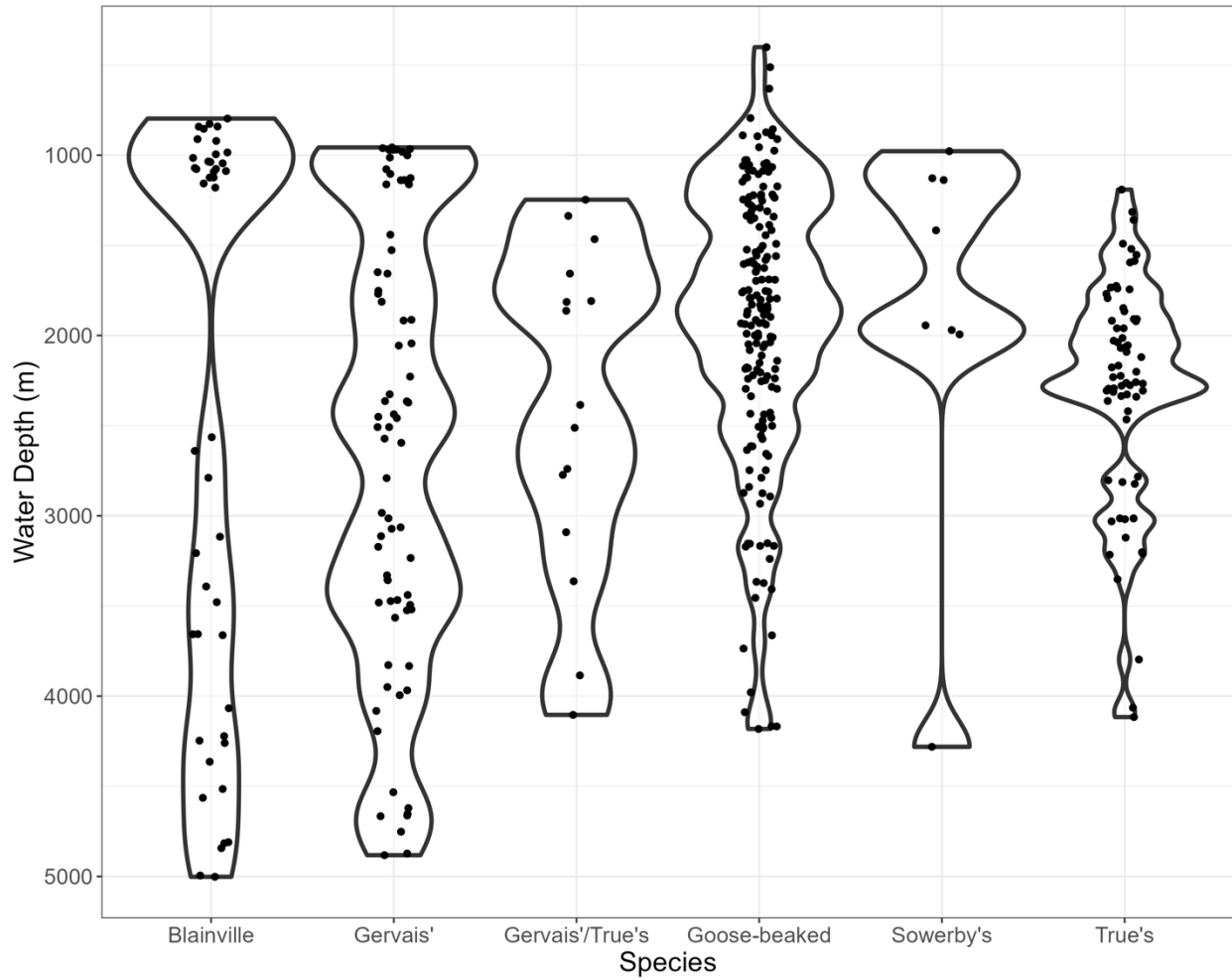


Figure S4. Depth values from the GEBCO bathymetric dataset attributed to the beaked whale detected events from the towed hydrophone array dataset.

## LITERATURE CITED

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