

## Seasonal Trends in Acoustic Detection of Marine Mammals in Baffin Bay and Melville Bay, Northwest Greenland

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### APPENDIX 1: VALIDATION OF AUTOMATED DETECTIONS

The validated manual analysis results for the summer 2013 and overwinter 2013–14 data were compared to the automated detector results, using a maximum likelihood estimation algorithm, to determine species-specific detector thresholds. The algorithm maximized the detection probability while minimizing the number of false detections, producing corresponding precision (P) and recall (R) values (Tables S1 and S2).

The process was not carried out on the summer 2012 data because extremely noisy conditions, coupled with low-sensitivity hydrophones, rendered the automated detectors inadequate: more than 98% of automated detections were false. Therefore, marine mammal presence in summer 2012 was determined solely by manual analysis.

TABLE S1. Summer 2013 thresholds for detections with the precision (P), recall (R), and F-score (F) before the threshold is applied (original) and afterward (threshold).

Species	P <sub>original</sub>	R <sub>original</sub>	F <sub>original</sub>	Threshold	P <sub>threshold</sub>	R <sub>threshold</sub>	F <sub>threshold</sub>
Narwhal	0.32	0.92	0.15	50	0.91	0.77	0.88
Sperm whale	0.51	0.89	0.22	211	0.78	0.64	0.75

TABLE S2. Overwinter 2013–14 thresholds for detections with the precision (P), recall (R), and F-score (F) before the threshold is applied (original) and afterward (threshold).

Species	P <sub>original</sub>	R <sub>original</sub>	F <sub>original</sub>	Threshold	P <sub>threshold</sub>	R <sub>threshold</sub>	F <sub>threshold</sub>
Narwhal	0.9	0.9	0.36	3	0.94	0.85	0.92
Sperm whale	0.61	0.84	0.26	7	0.88	0.57	0.79
Beluga whale	0.24	0.96	0.11	97	0.5	0.78	0.54
Bearded seal	0.98	0.62	0.35	4	1	0.49	0.83

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