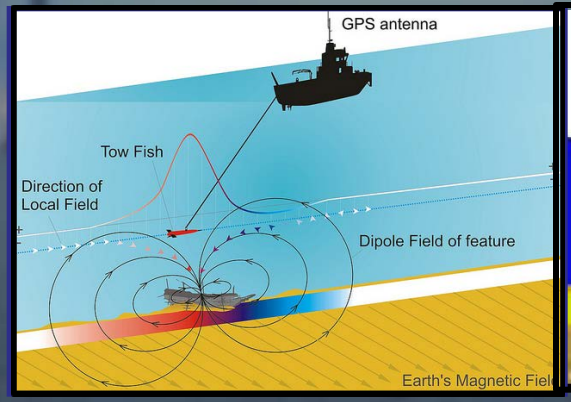
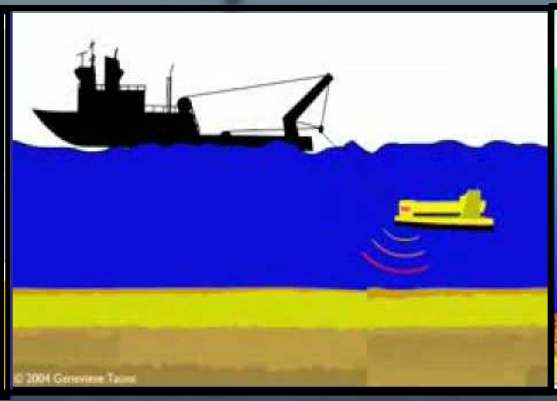
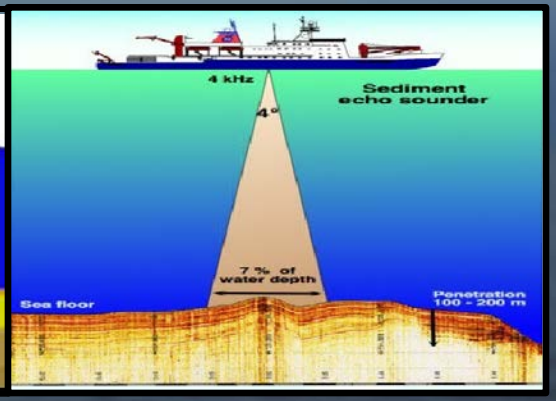
BOEM
Bureau of Ocean Energy Management

Office of Renewable Energy Programs

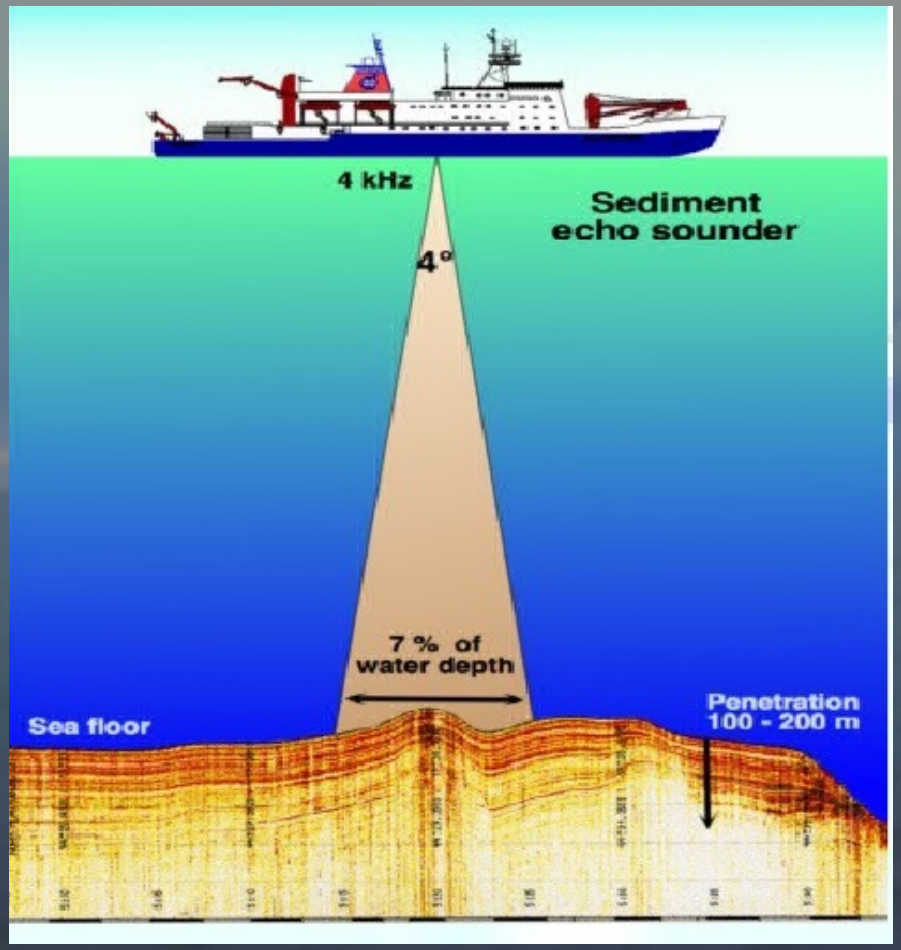
High-Resolution Geophysical Surveys







HRG Surveys



Purpose to collect geophysical info:

- Archaeological
- Geohazards
- Habitat
- Cable routes
- Sediment characteristics
- Unexploded Ordinance

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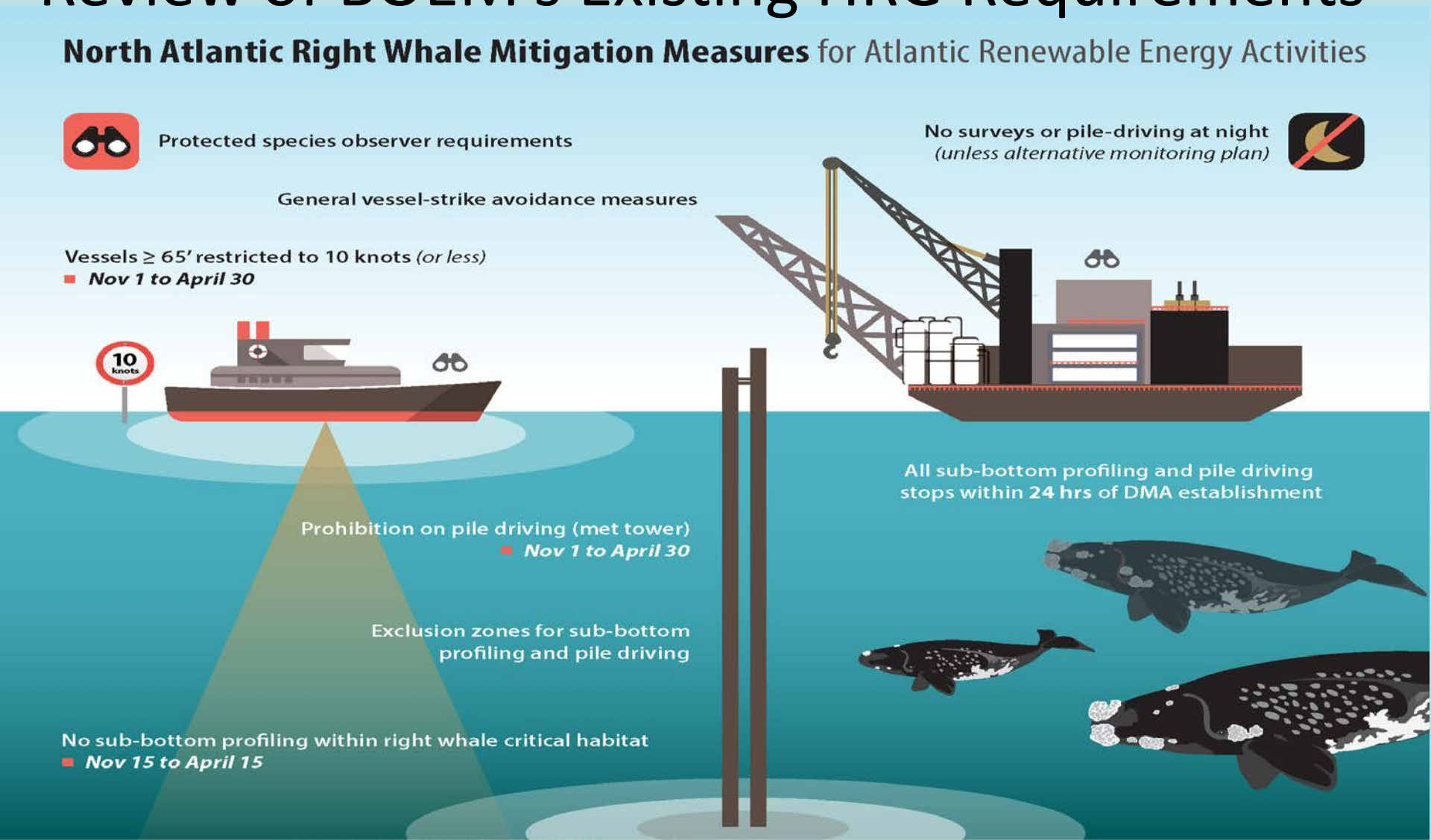
Review of BOEM's Existing HRG Requirements



Cumulative Sound Exposure Level Distances for HRG Survey Equipment

HRG SOURCE (Operating below 200 kHz)	PTS INJURY DISTANCE (m)			
	Low Frequency Cetaceans	Mid Frequency Cetaceans	High Frequency Cetaceans	Seals (Phocids)
Boomers	9	0	2	2
Sparkers, Mini-GI Gun, Bubble Gun (impulsive)	26	<1	95	13
Mini-GI airgun (impulsive)	20	0	45	8
Sub-bottom profilers	2	<1	36	<1
Multi-beam echosounder (100 kHz)	0	2	430*	<1

PTS injury distances were calculated with NOAA's sound exposure spreadsheet tool using sound source characteristics for HRG sources in Crocker and Fratantonio (2016)