

## **Marine Mammal / Sea Turtle Work Group Meeting #2**

**Wednesday, September 24; 10:00am – 11:30am**

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**Materials:** Products created from NARWC database in the Northeast region and beyond (pages 2 – 4)

**Call in:** 1-855-244-8681 **Code/Meeting number:** 736 580 133

**Webinar Link:**

<https://dukeuniversity.webex.com/dukeuniversity/j.php?MTID=me63268e6653378eb38f8b62597642e26>

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**Agenda:**

**I. Welcome, introductions, etc. (Nick Napoli and Emily Shumchenia, NROC)**

- Roll call
- Follow-ups and outreach with work group members since Call #1
- Process for following up after this call

**II. Species (Pat Halpin, Duke University)**

- Species and groupings
- Species experts, with specific distribution knowledge
- Discussion/questions

**III. Study area boundary (Pat Halpin, Duke University)**

**IV. Data review (Pat Halpin, Duke University)**

- List of data and data products, including progress since last call
- Discussion/questions

**V. Proposed products overview (Pat Halpin, Duke University)**

- Possibilities for maps include:
  - i. Density estimates from Duke models (animals/km<sup>2</sup>)
  - ii. Uncertainty of Duke models
  - iii. Sightings per unit effort
  - iv. Simple map of sightings, not corrected for effort

**VI. Summary and Next Steps**

## Products created from NARWC database in the Northeast region and beyond

Project / Species	Product	Grid Size	Temporal Range	Geographic scope
<b>Atlantic Large Whale Take Reduction Plan March 2014</b>				
North Atlantic right whale	SPUE	10-minute	Annual, monthly	New England (not including Long Island Sound)
Humpback whale	SPUE	10-minute	Annual, monthly	New England (not including Long Island Sound)
Fin whale	SPUE	10-minute	Annual, monthly	New England (not including Long Island Sound)
North Atlantic right whale + humpback whale	SPUE	10-minute	Annual, monthly	New England (not including Long Island Sound)
North Atlantic right whale	SPUE scores derived from the effort-corrected whale sightings data	10-minute	Annual, monthly	New England (not including Long Island Sound)
Humpback whale	SPUE scores derived from the effort-corrected whale sightings data	10-minute	Annual, monthly	New England (not including Long Island Sound)
Fin whale	SPUE scores derived from the effort-corrected whale sightings data	10-minute	Annual, monthly	New England (not including Long Island Sound)
North Atlantic right whale + humpback whale	SPUE scores derived from the effort-corrected whale sightings data	10-minute	Annual, monthly	New England (not including Long Island Sound)
<b>Delaware Marine Spatial Planning, offshore wind context, final report. University of Delaware, April 2012</b>				
Fin whale	SPUE	5-minute	Annual, seasonal	Roughly VA/DE border to DE/NJ border
Sperm whale	SPUE	5-minute	Annual	Roughly VA/DE border to DE/NJ border
Unidentified large whale	SPUE	5-minute	Annual	Roughly VA/DE border to DE/NJ border
Bottlenose dolphin	SPUE	5-minute	Annual, seasonal	Roughly VA/DE border to DE/NJ border
Risso's dolphin	SPUE	5-minute	Annual	Roughly VA/DE border to DE/NJ border
Pilot whale	SPUE	5-minute	Annual	Roughly VA/DE border to DE/NJ border
Common dolphin	SPUE	5-minute	Annual	Roughly VA/DE border to DE/NJ border
Aggregated	SPUE	5-minute	Annual	Roughly VA/DE border to DE/NJ border
Loggerhead	SPUE	5-minute	Annual, seasonal	Roughly VA/DE border to DE/NJ border
Leatherback	Sightings	5-minute	Annual	Roughly VA/DE border to DE/NJ border
<b>Massachusetts Ocean Management Plan Update, March 2014</b>				
Leatherback, Loggerhead, Unid sea turtle	Sightings (data from Massachusetts Audubon Society aerial survey)	NA	Aggregate, 2002-2004	Nantucket Sound
North Atlantic right whale	SPUE	5-minute	Aggregate, 1998-2012	MA Ocean planning area
North Atlantic right whale	Interpolated SPUE (natural neighbor)	5-minute	Aggregate, 1998-2012	MA Ocean planning area
North Atlantic right whale	Interpolated SPUE (natural neighbor)	5-minute	2013	MA Ocean planning area
North Atlantic right whale	Interpolated SPUE (natural neighbor)	5-minute	Aggregate, 1998-2013	MA Ocean planning area
<b>Nichols et al. "Spatial and temporal distribution of North Atlantic right whales in Cape Cod Bay, and implications for management. Fisheries Bulletin 2008</b>				
North Atlantic right whale	SPUE	3-minute	Jan - May 1998-2002, 2 week periods	Cape Cod Bay: 42°09'N to 41°39'N and 70°00'W to 70°39'W
<b>Technical Report for the Spatial Characterization of Marine Turtles, Mammals and Large Pelagic Fish to Support Coastal and Marine Spatial Planning in New York</b>				
All endangered baleen whales	Interpolated SPUE (ordinary kriging)	5-minute	All, all seasons, seasonal	Southern New England: 38°00-41°30 N and 70°00-75°00 W
All cetaceans	Interpolated SPUE (ordinary kriging)	5-minute	All, all seasons, seasonal	Southern New England: 38°00-41°30 N and 70°00-75°00 W
Small toothed whales	Interpolated SPUE (ordinary kriging)	5-minute	All, all seasons, seasonal	Southern New England: 38°00-41°30 N and 70°00-75°00 W
All ESA-listed species	Interpolated SPUE (ordinary kriging)	5-minute	All, all seasons, seasonal	Southern New England: 38°00-41°30 N and 70°00-75°00 W
Large toothed whales	Interpolated SPUE (ordinary kriging)	5-minute	All, all seasons, seasonal	Southern New England: 38°00-41°30 N and 70°00-75°00 W
All marine mammals (cetaceans and seals)	Interpolated SPUE (ordinary kriging)	5-minute	All, all seasons, seasonal	Southern New England: 38°00-41°30 N and 70°00-75°00 W
All protected species (mammals and turtles)	Interpolated SPUE (ordinary kriging)	5-minute	All, all seasons, seasonal	Southern New England: 38°00-41°30 N and 70°00-75°00 W
All turtles	Interpolated SPUE (ordinary kriging)	5-minute	All, all seasons, seasonal	Southern New England: 38°00-41°30 N and 70°00-75°00 W
Beaked whale	Interpolated SPUE (ordinary kriging)	5-minute	All, all seasons, seasonal	Southern New England: 38°00-41°30 N and 70°00-75°00 W
Bottlenose dolphin	Interpolated SPUE (ordinary kriging)	5-minute	All, all seasons, seasonal	Southern New England: 38°00-41°30 N and 70°00-75°00 W
Fin whale	Interpolated SPUE (ordinary kriging)	5-minute	All, all seasons, seasonal	Southern New England: 38°00-41°30 N and 70°00-75°00 W

Project / Species	Product	Grid Size	Temporal Range	Geographic scope
Risso's dolphin	Interpolated SPUE (ordinary kriging)	5-minute	All, all seasons, seasonal	Southern New England: 38°00–41°30 N and 70°00–75°00 W
Harbor porpoise	Interpolated SPUE (ordinary kriging)	5-minute	All, all seasons, seasonal	Southern New England: 38°00–41°30 N and 70°00–75°00 W
Humpback whale	Interpolated SPUE (ordinary kriging)	5-minute	All, all seasons, seasonal	Southern New England: 38°00–41°30 N and 70°00–75°00 W
Leatherback turtle	Interpolated SPUE (ordinary kriging)	5-minute	All, all seasons, seasonal	Southern New England: 38°00–41°30 N and 70°00–75°00 W
Loggerhead turtle	Interpolated SPUE (ordinary kriging)	5-minute	All, all seasons, seasonal	Southern New England: 38°00–41°30 N and 70°00–75°00 W
Minke whale	Interpolated SPUE (ordinary kriging)	5-minute	All, all seasons, seasonal	Southern New England: 38°00–41°30 N and 70°00–75°00 W
Pilot whale	Interpolated SPUE (ordinary kriging)	5-minute	All, all seasons, seasonal	Southern New England: 38°00–41°30 N and 70°00–75°00 W
Kemp's Ridley turtle	Interpolated SPUE (ordinary kriging)	5-minute	All, all seasons, seasonal	Southern New England: 38°00–41°30 N and 70°00–75°00 W
North Atlantic right whale	Interpolated SPUE (ordinary kriging)	5-minute	All, all seasons, seasonal	Southern New England: 38°00–41°30 N and 70°00–75°00 W
Common dolphin	Interpolated SPUE (ordinary kriging)	5-minute	All, all seasons, seasonal	Southern New England: 38°00–41°30 N and 70°00–75°00 W
Seals (Phocidae sp)	Interpolated SPUE (ordinary kriging)	5-minute	All, all seasons, seasonal	Southern New England: 38°00–41°30 N and 70°00–75°00 W
Sperm whale	Interpolated SPUE (ordinary kriging)	5-minute	All, all seasons, seasonal	Southern New England: 38°00–41°30 N and 70°00–75°00 W
Striped dolphin	Interpolated SPUE (ordinary kriging)	5-minute	All, all seasons, seasonal	Southern New England: 38°00–41°30 N and 70°00–75°00 W
Atlantic white-sided dolphin	Interpolated SPUE (ordinary kriging)	5-minute	All, all seasons, seasonal	Southern New England: 38°00–41°30 N and 70°00–75°00 W
<b>Rhode Island Ocean Special Area Management Plan, Technical Report #10. June 2010</b>				
North Atlantic right whale	Interpolated SPUE (kriging)	5-minute	Seasonal	68°W and 74°W and north of 39°N.
Humpback whale	Interpolated SPUE (kriging)	5-minute	Seasonal	68°W and 74°W and north of 39°N.
Fin whale	Interpolated SPUE (kriging)	5-minute	Seasonal	68°W and 74°W and north of 39°N.
Minke whale	Interpolated SPUE (kriging)	5-minute	Seasonal	68°W and 74°W and north of 39°N.
Sperm whale	Interpolated SPUE (kriging)	5-minute	Seasonal	68°W and 74°W and north of 39°N.
Harbor porpoise	Interpolated SPUE (kriging)	5-minute	Seasonal	68°W and 74°W and north of 39°N.
Pilot whale	Interpolated SPUE (kriging)	5-minute	Seasonal	68°W and 74°W and north of 39°N.
Risso's dolphin	Interpolated SPUE (kriging)	5-minute	Seasonal	68°W and 74°W and north of 39°N.
Atlantic white-sided dolphin	Interpolated SPUE (kriging)	5-minute	Seasonal	68°W and 74°W and north of 39°N.
Bottlenose dolphin	Interpolated SPUE (kriging)	5-minute	Seasonal	68°W and 74°W and north of 39°N.
Short-beaked common dolphin	Interpolated SPUE (kriging)	5-minute	Seasonal	68°W and 74°W and north of 39°N.
Seals (harbor, gray and unid)	Interpolated SPUE (kriging)	5-minute	Seasonal	68°W and 74°W and north of 39°N.
Leatherback sea turtle	Interpolated SPUE (kriging)	5-minute	Seasonal	68°W and 74°W and north of 39°N.
Loggerhead sea turtle	Interpolated SPUE (kriging)	5-minute	Seasonal	68°W and 74°W and north of 39°N.
North Atlantic right whale	Aggregated sighting, stranding, and bycatch records	NA	Seasonal	68°W and 74°W and north of 39°N.
Humpback whale	Aggregated sighting, stranding, and bycatch records	NA	Seasonal	68°W and 74°W and north of 39°N.
Blue whale	Aggregated sighting, stranding, and bycatch records	NA	Seasonal	68°W and 74°W and north of 39°N.
Fin whale	Aggregated sighting, stranding, and bycatch records	NA	Seasonal	68°W and 74°W and north of 39°N.
Sei whale	Aggregated sighting, stranding, and bycatch records	NA	Seasonal	68°W and 74°W and north of 39°N.
Bryde's whale	Aggregated sighting, stranding, and bycatch records	NA	Seasonal	68°W and 74°W and north of 39°N.
Minke whale	Aggregated sighting, stranding, and bycatch records	NA	Seasonal	68°W and 74°W and north of 39°N.
Sperm whale	Aggregated sighting, stranding, and bycatch records	NA	Seasonal	68°W and 74°W and north of 39°N.
Pygmy & dwarf sperm whale & unid Kogia sp	Aggregated sighting, stranding, and bycatch records	NA	Seasonal	68°W and 74°W and north of 39°N.
Northern bottlenose whale, Cuvier's, Blainville's, Gervais's, Sowerby's, True's, unid Meso sp, unid beaked whale	Aggregated sighting, stranding, and bycatch records	NA	Seasonal	68°W and 74°W and north of 39°N.
Beluga whale	Aggregated sighting, stranding, and bycatch records	NA	Seasonal	68°W and 74°W and north of 39°N.
Harbor porpoise	Aggregated sighting, stranding, and bycatch records	NA	Seasonal	68°W and 74°W and north of 39°N.
Pilot whale (long-finned, short-finned, unid)	Aggregated sighting, stranding, and bycatch records	NA	Seasonal	68°W and 74°W and north of 39°N.
Killer whale	Aggregated sighting, stranding, and bycatch records	NA	Seasonal	68°W and 74°W and north of 39°N.

Project / Species	Product	Grid Size	Temporal Range	Geographic scope
False killer whale	Aggregated sighting, stranding, and bycatch records	NA	Seasonal	68°W and 74°W and north of 39°N.
Risso's dolphin	Aggregated sighting, stranding, and bycatch records	NA	Seasonal	68°W and 74°W and north of 39°N.
Atlantic white-sided dolphin	Aggregated sighting, stranding, and bycatch records	NA	Seasonal	68°W and 74°W and north of 39°N.
White-beaked dolphin	Aggregated sighting, stranding, and bycatch records	NA	Seasonal	68°W and 74°W and north of 39°N.
Bottlenose dolphin	Aggregated sighting, stranding, and bycatch records	NA	Seasonal	68°W and 74°W and north of 39°N.
Short-beaked common dolphin	Aggregated sighting, stranding, and bycatch records	NA	Seasonal	68°W and 74°W and north of 39°N.
Striped dolphin	Aggregated sighting, stranding, and bycatch records	NA	Seasonal	68°W and 74°W and north of 39°N.
Atlantic, pan-tropical, unid spotted dolphin	Aggregated sighting, stranding, and bycatch records	NA	Seasonal	68°W and 74°W and north of 39°N.
Harbor seal	Aggregated sighting, stranding, and bycatch records	NA	Seasonal	68°W and 74°W and north of 39°N.
Harbor seal	Haul-outs (1966-1976, 1986-1987, 1994-1999)	NA	Aggregate	68°W and 74°W and north of 39°N.
Gray seal	Aggregated sighting, stranding, and bycatch records	NA	Seasonal	68°W and 74°W and north of 39°N.
Harp seal	Aggregated sighting, stranding, and bycatch records	NA	Seasonal	68°W and 74°W and north of 39°N.
Hooded seal	Aggregated sighting, stranding, and bycatch records	NA	Seasonal	68°W and 74°W and north of 39°N.
Manatee (four individual)	Sightings 1995, 1998, 2006, 2008	NA	Aggregate	68°W and 74°W and north of 39°N.
Leatherback sea turtle	Aggregated sighting, stranding, and bycatch records	NA	Seasonal	68°W and 74°W and north of 39°N.
Loggerhead sea turtle	Aggregated sighting, stranding, and bycatch records	NA	Seasonal	68°W and 74°W and north of 39°N.
Kemp's Ridley sea turtle	Aggregated sighting, stranding, and bycatch records	NA	Seasonal	68°W and 74°W and north of 39°N.
Green sea turtle	Aggregated sighting, stranding, and bycatch records	NA	Seasonal	68°W and 74°W and north of 39°N.
<b>Massachusetts Clean Energy Center YR 2 Report Draft, May 2014</b>				
All large whales or endangered large whales?	SPUE	5-minute	Oct 2012 - Feb 2014; Seasonal, Annual	RI Stratum & MA Stratum WEA
All delphinids and harbor porpoise sightings	Sightings, observer and vertical camera	NA	Aggregate	
All sea turtle sightings (Leatherback, loggerhead, unid)	Sightings, observer and vertical camera	NA	Aggregate	
All whale sightings (right whale, fin whale, sei whale, humpback whale, minke whale, unid large whale)	Sightings	NA	Aggregate	
All seal sightings (grey seal, harbor seal, unid)	Sightings	NA	Aggregate	
<b>An Ecological Characterization of the Stellwagen Bank National Marine Sanctuary Region</b>				
Atlantic white-sided dolphin	Interpolated SPUE (Inverse Distance Weighting)	5-minute	Seasonal, Aggregate (1970-2005)	Southern Gulf of Maine Study Area
Fin whale	Interpolated SPUE (Inverse Distance Weighting)	5-minute	Seasonal, Aggregate (1970-2005)	Southern Gulf of Maine Study Area
Humpback whale	Interpolated SPUE (Inverse Distance Weighting)	5-minute	Seasonal, Aggregate (1970-2005)	Southern Gulf of Maine Study Area
Minke whale	Interpolated SPUE (Inverse Distance Weighting)	5-minute	Seasonal, Aggregate (1970-2005)	Southern Gulf of Maine Study Area
North Atlantic right whale	Interpolated SPUE (Inverse Distance Weighting)	5-minute	Seasonal, Aggregate (1970-2005)	Southern Gulf of Maine Study Area
Sei whale	Interpolated SPUE (Inverse Distance Weighting)	5-minute	Seasonal, Aggregate (1970-2005)	Southern Gulf of Maine Study Area
Dolphin/porpoise group	Interpolated SPUE (Inverse Distance Weighting)	5-minute	Seasonal, Aggregate (1970-2005)	Southern Gulf of Maine Study Area
Baleen whale group	Interpolated SPUE (Inverse Distance Weighting)	5-minute	Seasonal, Aggregate (1970-2005)	Southern Gulf of Maine Study Area
Pilot whale	Interpolated SPUE (Inverse Distance Weighting)	5-minute	Seasonal, Aggregate (1970-2005)	Southern Gulf of Maine Study Area
Species richness	Interpolation of Species Richness (uncorrected for effort; Shannon-Wiener H')	5-minute	Seasonal, Aggregate (1970-2005)	Southern Gulf of Maine Study Area
Humpback whale	Interpolated SPUE?	5-minute	Summer (1970-2005)	100m isobath of the northern flank of Georges Bank
Fin whale	Interpolated SPUE?	5-minute	Summer (1970-2005)	100m isobath of the northern flank of Georges Bank
Minke whale	Interpolated SPUE?	5-minute	Summer (1970-2005)	100m isobath of the northern flank of Georges Bank
Sei whale	Interpolated SPUE?	5-minute	Summer (1970-2005)	100m isobath of the northern flank of Georges Bank
North Atlantic right whale	Interpolated SPUE?	5-minute	Summer (1970-2005)	100m isobath of the northern flank of Georges Bank
North Atlantic right whale	SPUE over mean log density /sq m of C. finmarchicus	5-minute	Spring, summer (1970-2005)	Southern Gulf of Maine Study Area