

Collecting Virginia Offshore Marine Mammal and Sea Turtle Data

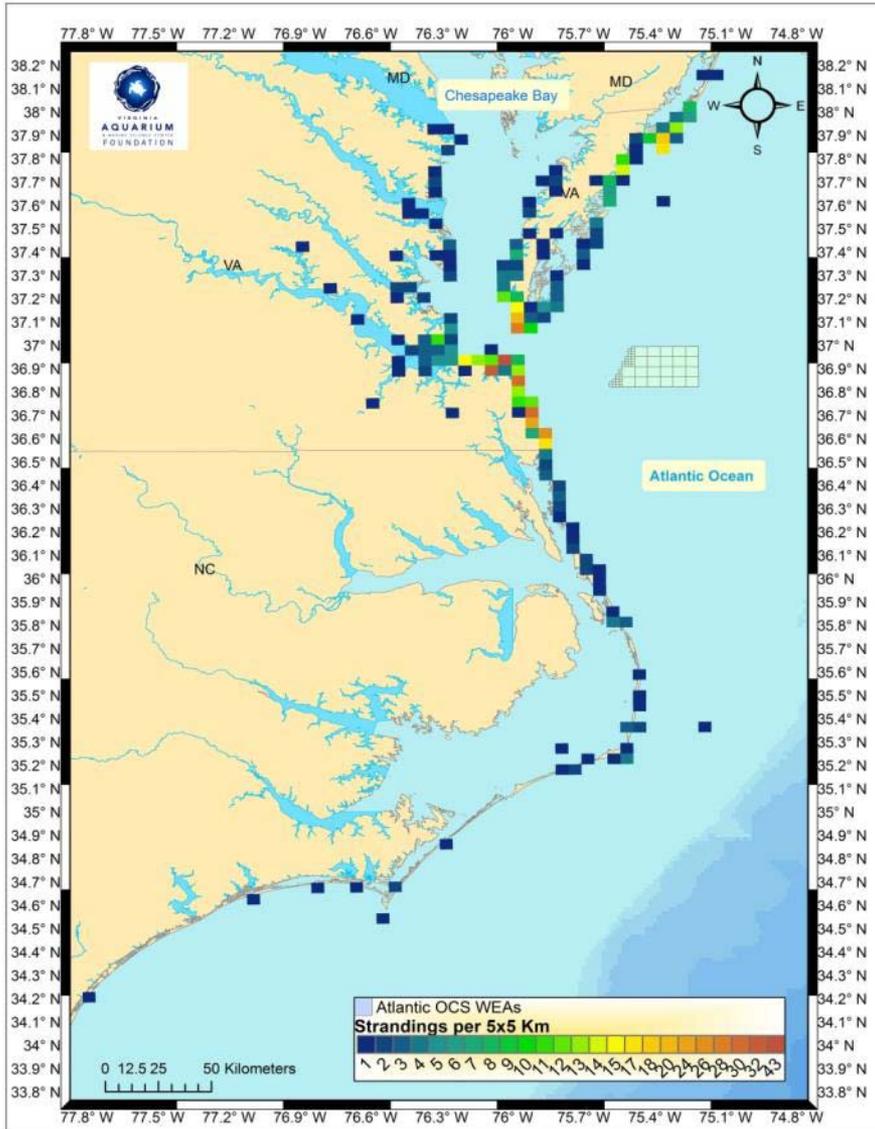
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2. Riverhead Foundation for Marine Research & Preservation, Riverhead, New York
3. University of North Carolina Wilmington, Wilmington, North Carolina

Virginia Aquarium & Marine Science Center Foundation (VAQF)

- Coordinate stranding response for dead and live marine mammals and sea turtles in the state of Virginia
- Conduct sea turtle abundance and distribution surveys as part of NOAA Section 6 Species Recovery Grant through VDGIF
- Conduct large whale photo-identification and biopsy sampling
- Conduct winter marine mammal surveys of proposed Virginia WEA and surrounding waters with NOAA Section 309 Grant through Virginia CZM Program

Virginia Stranding Data



Marine mammal strandings per 5x5 km from 2005-2010.

- From 2001 to 2010, VAQF coordinated responses to a total of 1065 marine mammal strandings and over 2,900 sea turtle strandings.
- 20 years of data related to marine mammal and sea turtle species presence, health, and anthropogenic-related mortalities.
- Most of the species present in the stranding record have no abundance or density data in the Chesapeake Bay and Atlantic Ocean coastal waters of Virginia and Maryland.

Virginia/Maryland Sea Turtle Research & Conservation Initiative

NOAA Section 6 Species Recovery Grant

Virginia Aquarium & Marine Science Center Foundation
Virginia Department of Game & Inland Fisheries
Maryland Department of Natural Resources

Primary Sub-contractors for Surveys:

Riverhead Foundation for Marine Research and Preservation
Research Unit for Wildlife Population Assessment, University of St Andrews

Overall Project Description:

“... collection of a comprehensive set of data on the life history, health and abundance of sea turtle species.”

Goal 1: Develop robust seasonal distribution and abundance estimates for loggerhead and Kemp's ridley sea turtles in the study area.

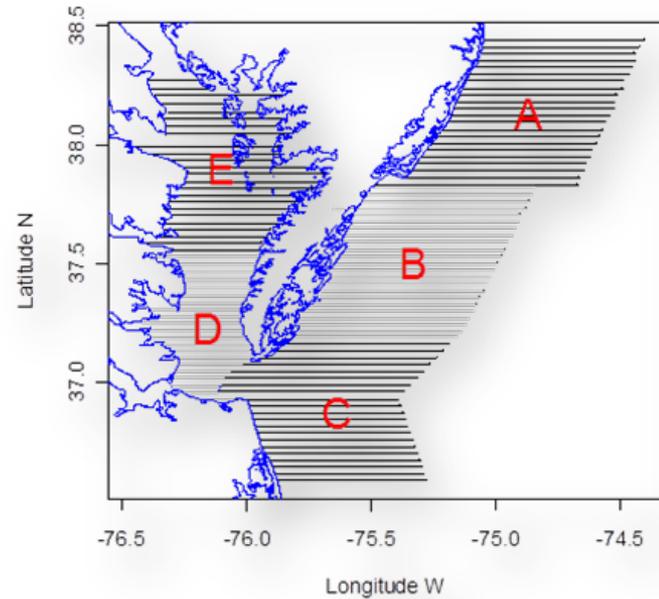
Study area includes the Chesapeake Bay and coastal ocean waters of Virginia and Maryland.

Population Assessment Action Plan

1. Quantify turtle surfacing time for calculating seasonal and annual differences in availability.
2. Conduct aerial surveys in a manner that will allow calculation of robust estimates of seasonal and annual abundance.
3. Compare abundance estimates with previous studies.

Aerial Survey - Survey Methods

- Four observers – two independent teams: Team 1 looked out port and starboard bubble windows; Team 2 looked out through a belly window and a side window
- Riverhead Foundation conducted three surveys (Spring, Summer, Fall)
- Elevation = 183 m
- Distance offshore = 50 km
- Transects = 112 transit lines, 3.3 km intervals, divided in 5 strata (A-E)

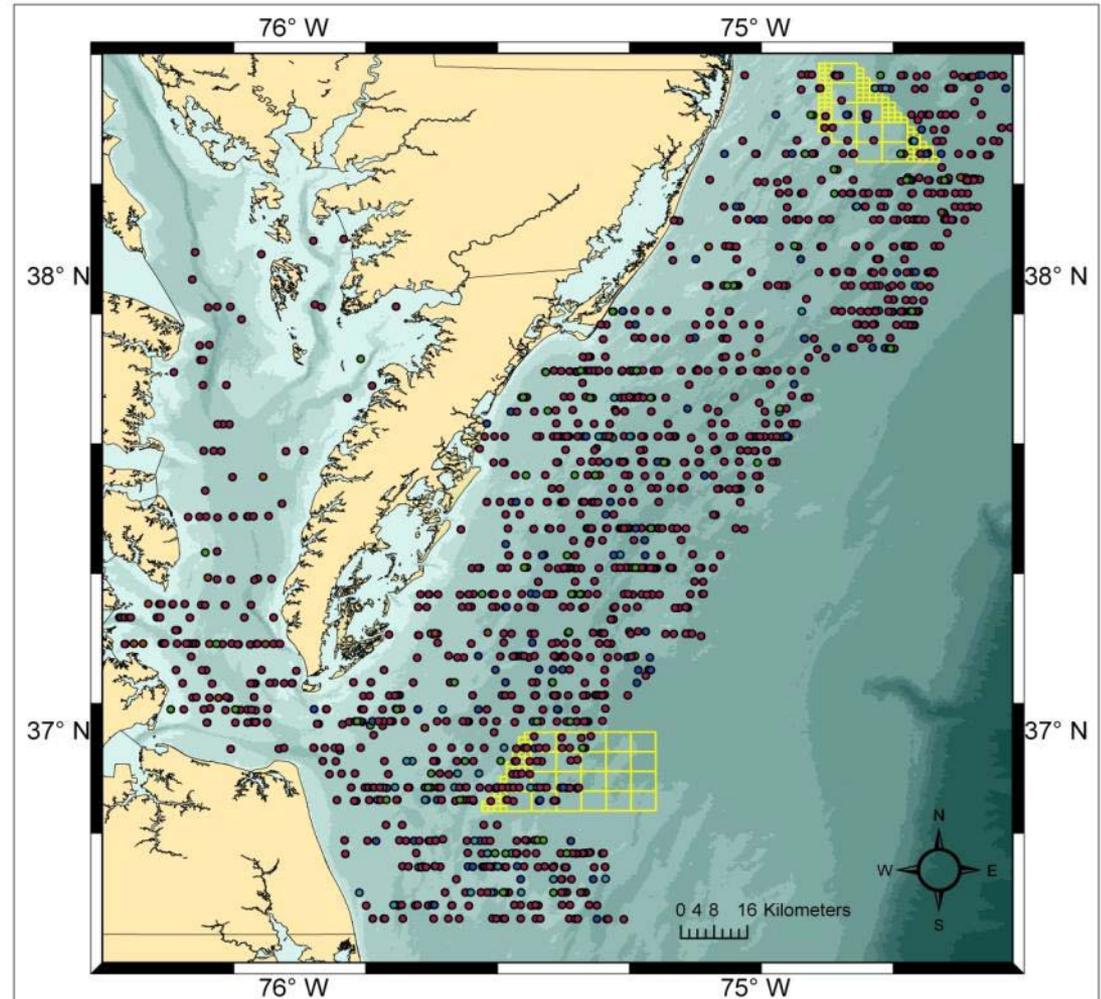


Aerial Surveys

2011 Sea Turtle Sightings

July – September
14,576km of track-line

- ☆ Kemp's ridley n=20
- ⊕ unidentified turtle n=71
- leatherback n=84
- green n=135
- loggerhead n=1262

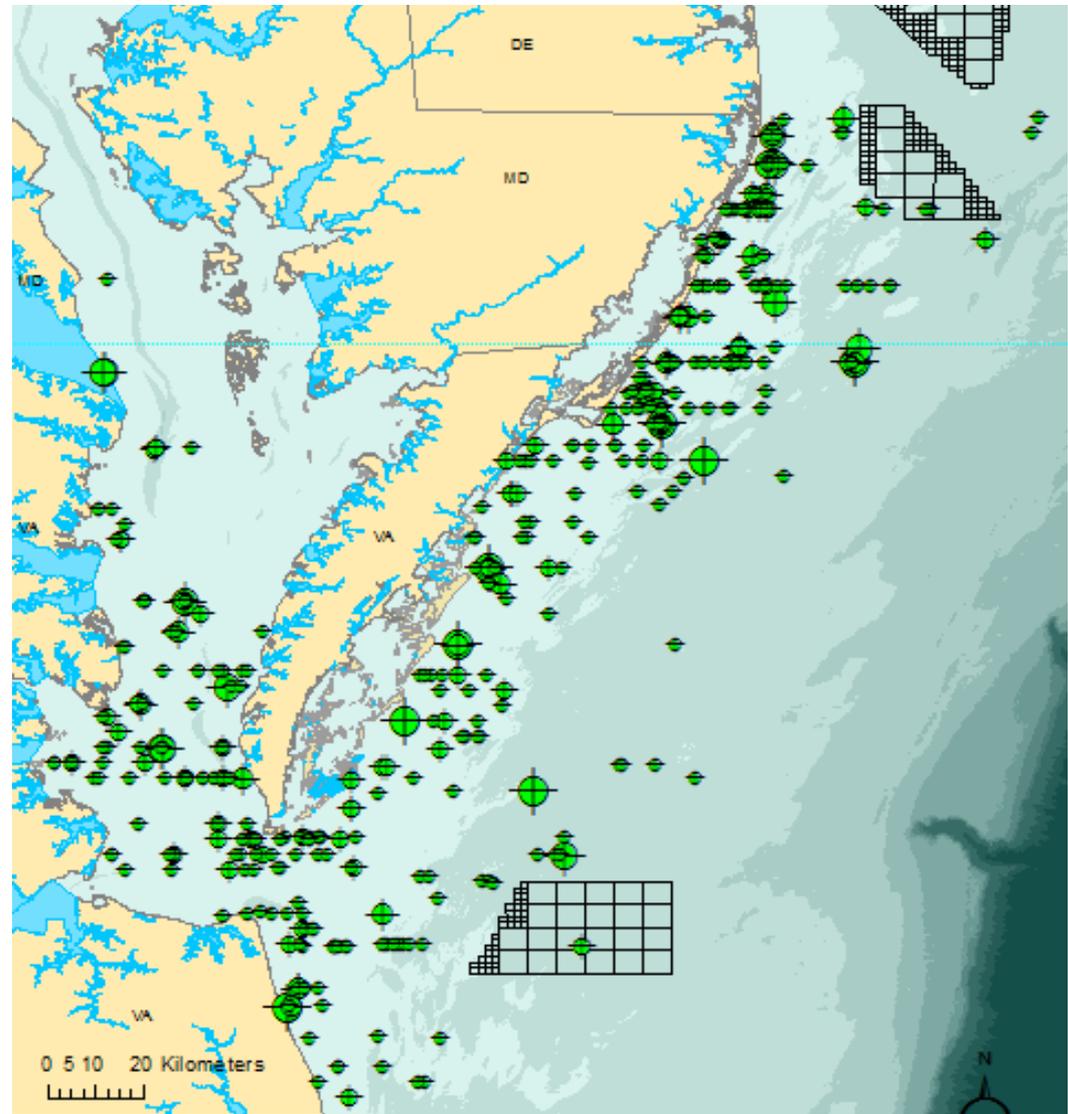
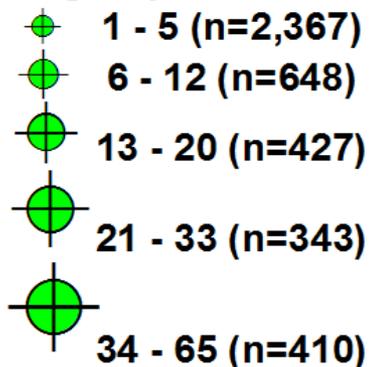


Aerial Surveys

2011 Bottlenose Dolphin Sightings

July – September
14,576km of track-line
Total sightings = 2,053
Total Animals = 4,195

Bottlenose dolphins group number



VAQF Research Vessel Ocean Explorer



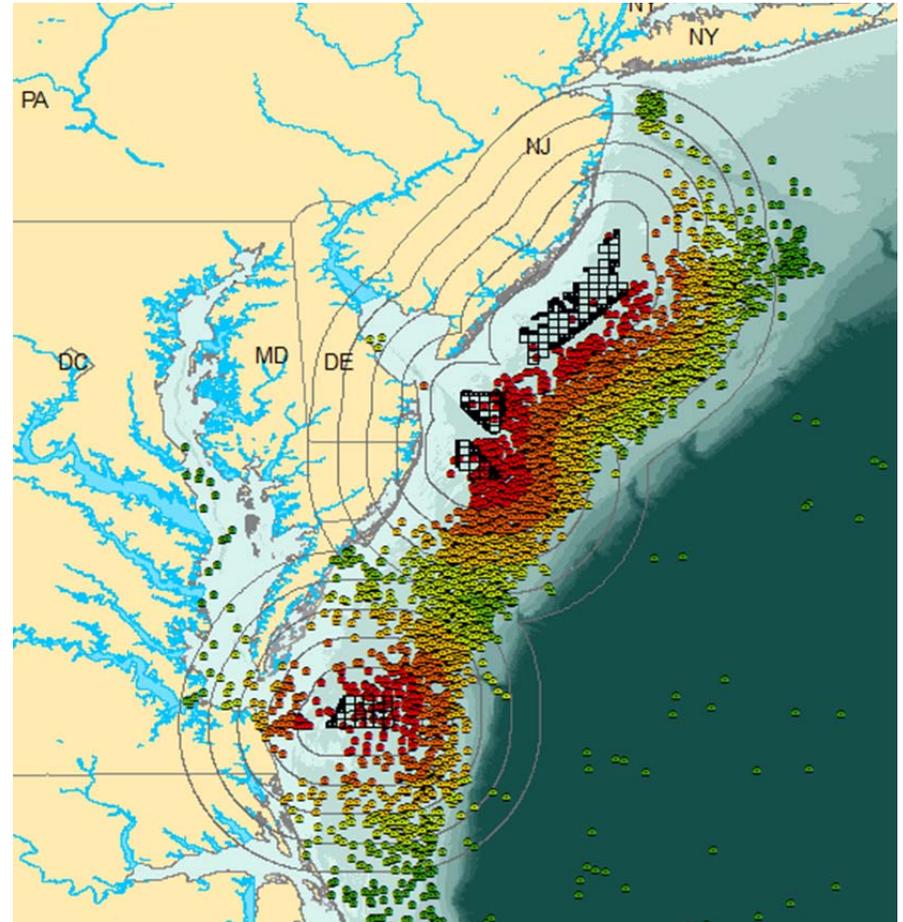
Sea Turtle Capture and Tagging



Sea Turtle Satellite Telemetry

April to November 2011

- 49 tags
- Filtered for maximum of one point-per-day for each animal
- 62% of all points were within 30nm of a mid-Atlantic wind energy area.



Map created using telemetry data
from NMFS and VAQF

2011 Abundance Estimates

Species	SPRING		SUMMER		FALL	
	Abundance	Density	Abundance	Density	Abundance	Density
Loggerhead	11,523 (0.11)	0.670 (0.11)	8,622 (0.14)	0.500 (0.14)	3719 (0.16)	0.216 (0.16)
Green	856 (0.15)	0.050 (0.15)	1,372 (0.17)	0.080 (0.17)	150 (0.43)	0.009 (0.43)
Leatherback	0	0	1,022 (0.26)	0.059 (0.26)	388 (0.35)	0.023 (0.35)
Kemp's ridley	186 (0.26)	0.011 (0.26)	54 (0.58)	0.003 (0.58)	0	0
Bottlenose dolphin	15,481 (0.18)	0.900 (0.18)	14,141 (0.19)	0.820 (0.19)	8,204 (0.24)	0.476 (0.24)

- Loggerheads had the highest abundance of all species
- Leatherbacks were not detected in spring
- Kemp's ridleys were not detected in fall
- Abundance estimates were highest in the summer for Cm and Dc
- High number of turtles were detected in the offshore boundary of survey region in spring, showing that an extended survey may be needed to count the complete population
- Dive records are vital for the model to adjust for availability bias

Boat-Based Whale Survey Methodology

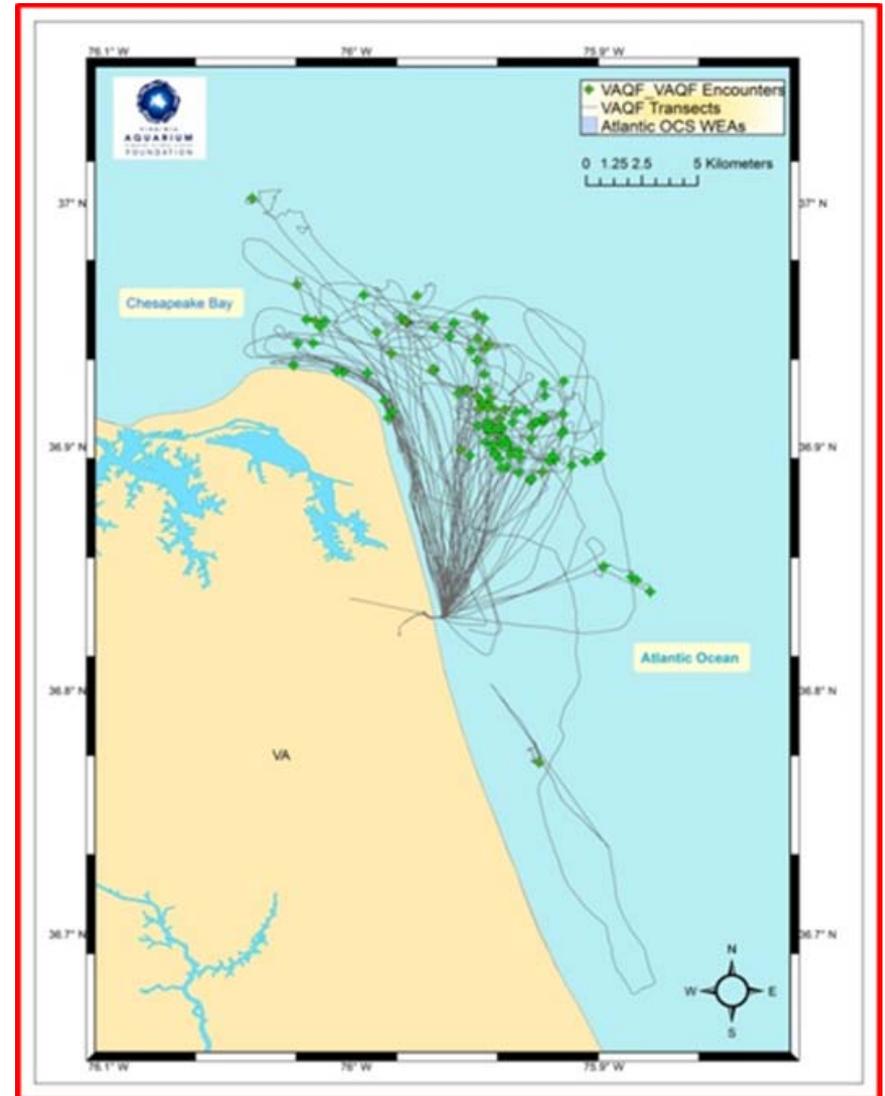
- Directed Surveys
- Dec 2011 – Feb 2012
- Photo identification
- 11 vessel surveys on VAQF research vessel
- 41 days of data from public VAQF Winter Wildlife Boat Tours



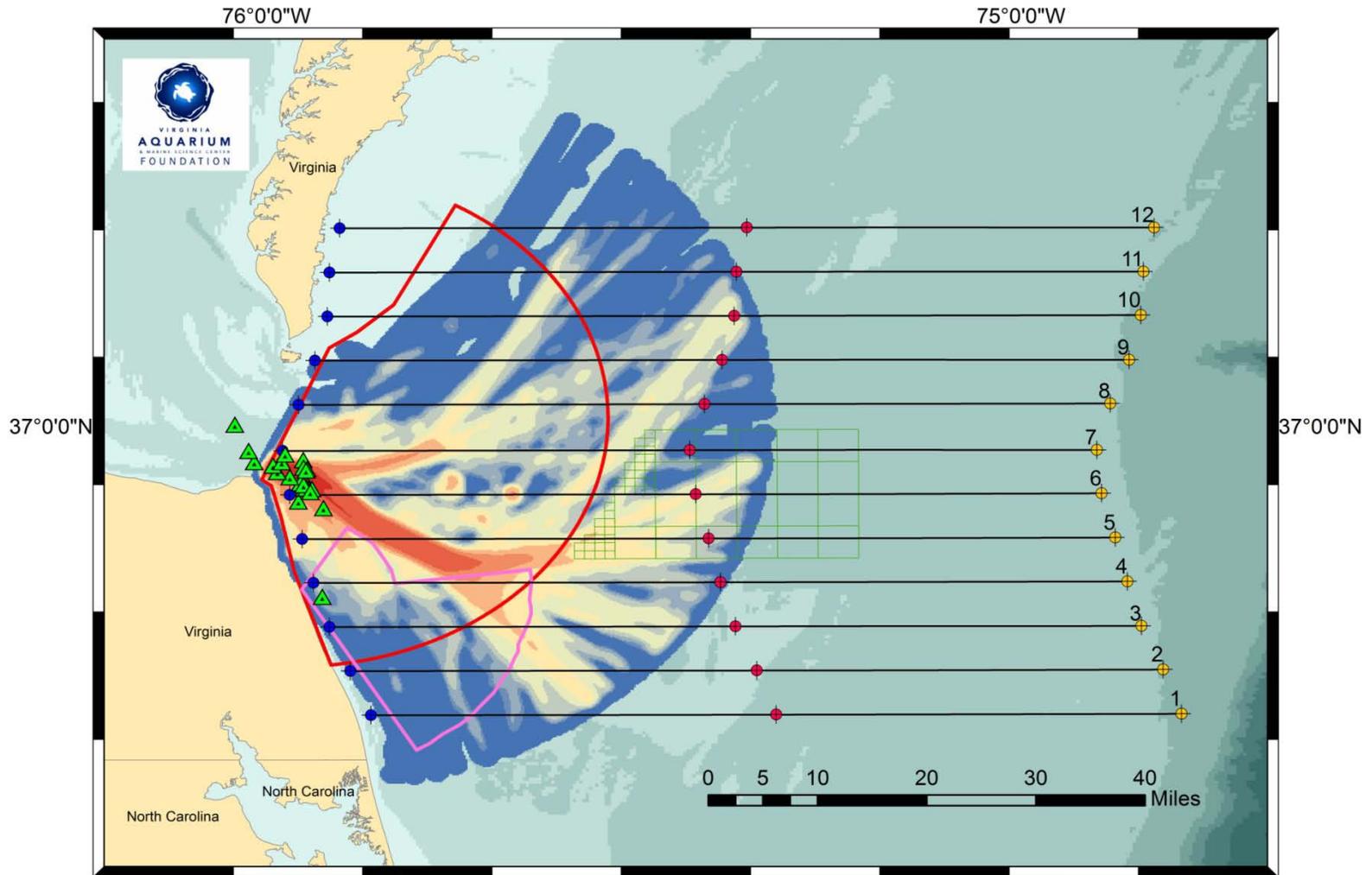
Boat-Based Whale Survey Results



- > 50 individual humpback whales
- 5 individual fin whales
- Residence times
 - Max = 69 days
 - Avg = 29 day
- 10 individuals matched
- Majority of whales sighted were from Gulf of Maine feeding stocks
- A few were from the Gulf of St. Lawrence and Newfoundland/Labrador feeding stocks



Winter Whale Surveys – Section 309 Grant

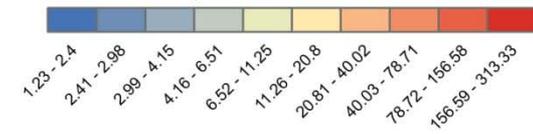


Legend

- Transects
- ▲ Whale Encounters 2012
- ◆ East Points
- ◆ Mid Points
- ◆ West Points
- WEA
- Regulated Navigational Area
- SMA

Legend

Km of Track/Km Squared



Marine Mammal Aerial Surveys

Future Effort

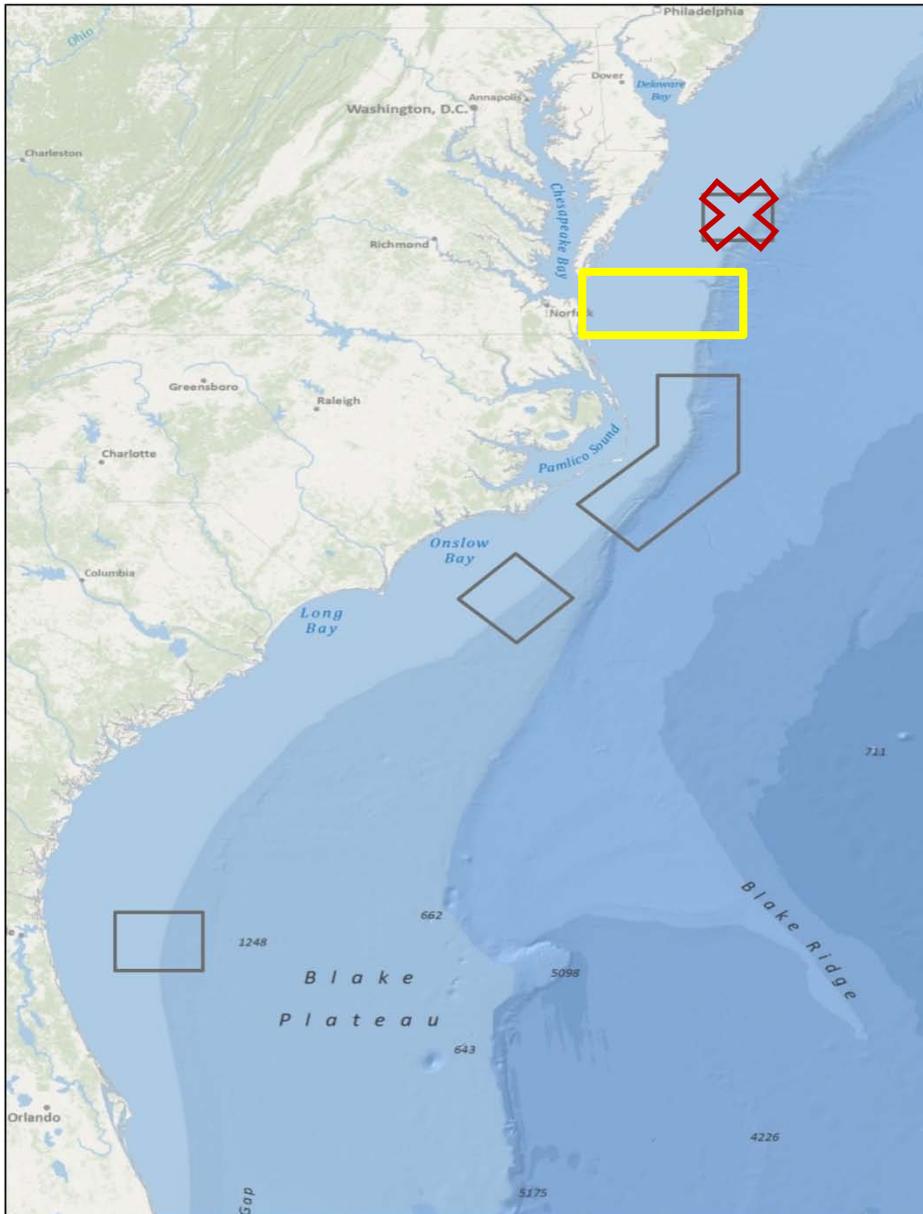
Virginia Beach

wind energy project

**Continue Cape Hatteras
monthly surveys**

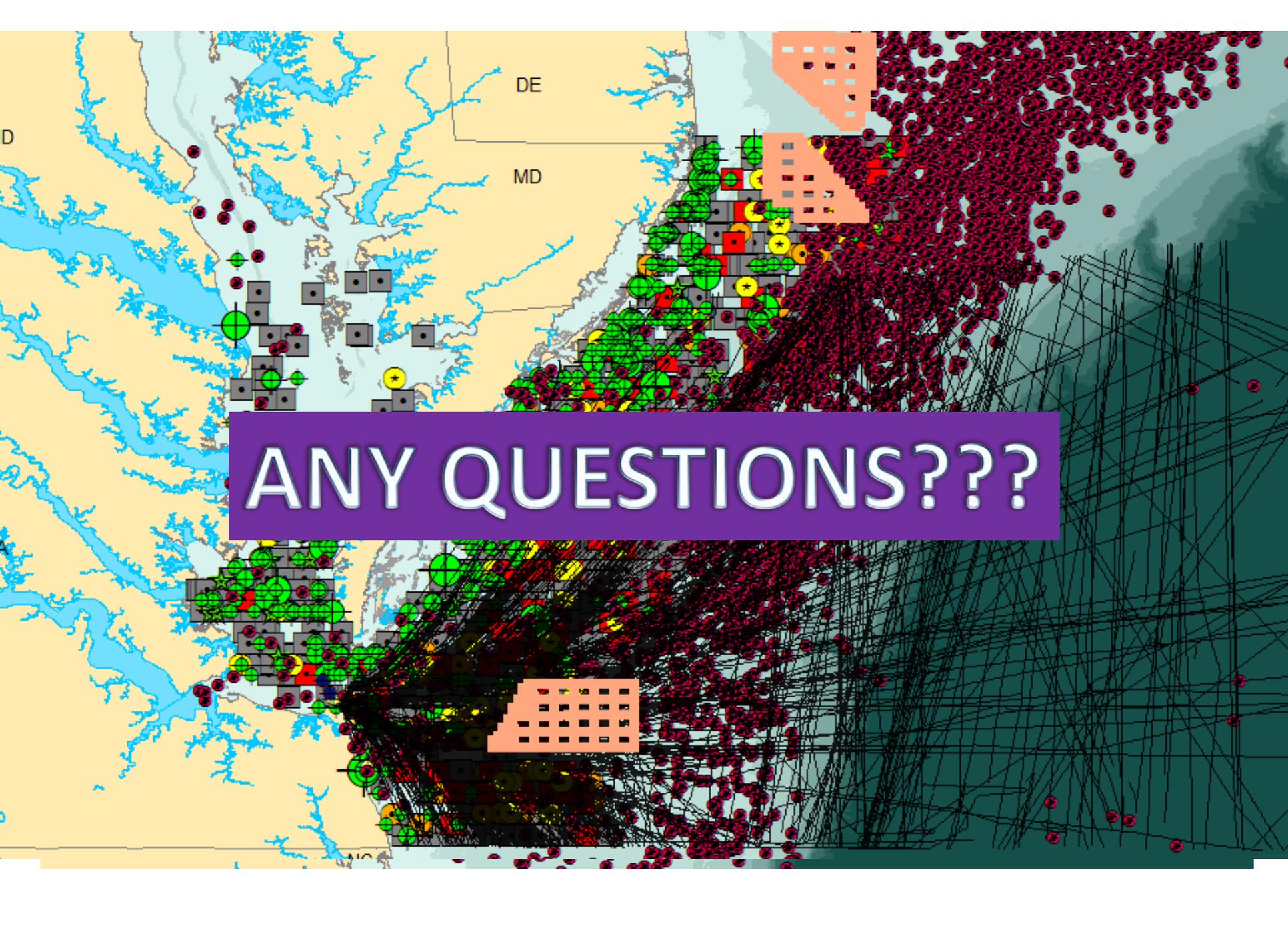
**Continue Onslow Bay
seasonal surveys**

**Continue JAX
monthly surveys**



Summary

- Data must be collected, analyzed, and **presented** in scientifically valid ways prior to its use for advising policy decisions and agency action
- Foresight and planning should go into the collection and analysis of GIS data to facilitate the implementation of spatial planning
- Marine spatial planning can be used to manage risk to protected species if both anthropogenic use information and biological monitoring data are available and accurate
- Ecological modeling in a geospatial environment can address the dynamic nature of ecological interactions on many scales



ANY QUESTIONS???