



Development of a Decision Support Tool To Reduce Sea Turtle Dredging Entrainment Risk

Industry Briefing



Doug Piatkowski

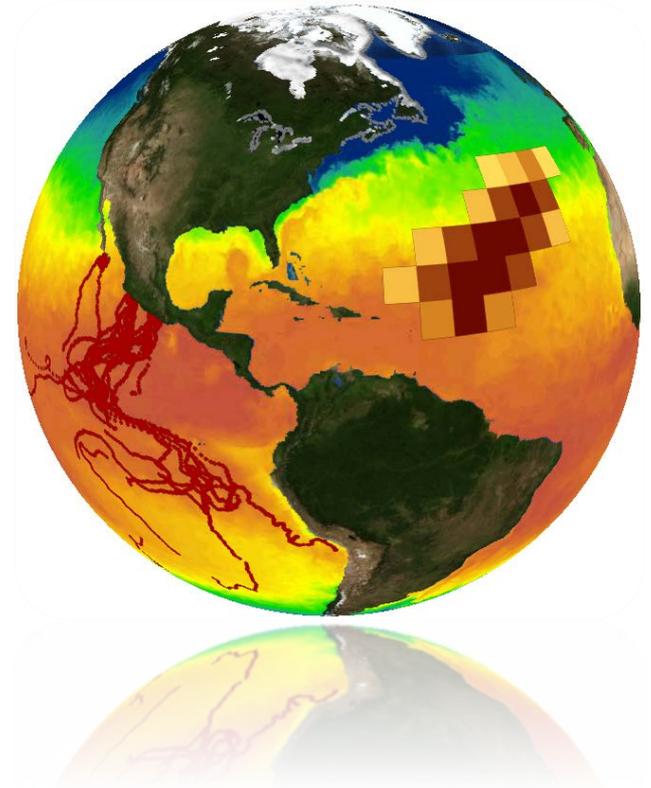
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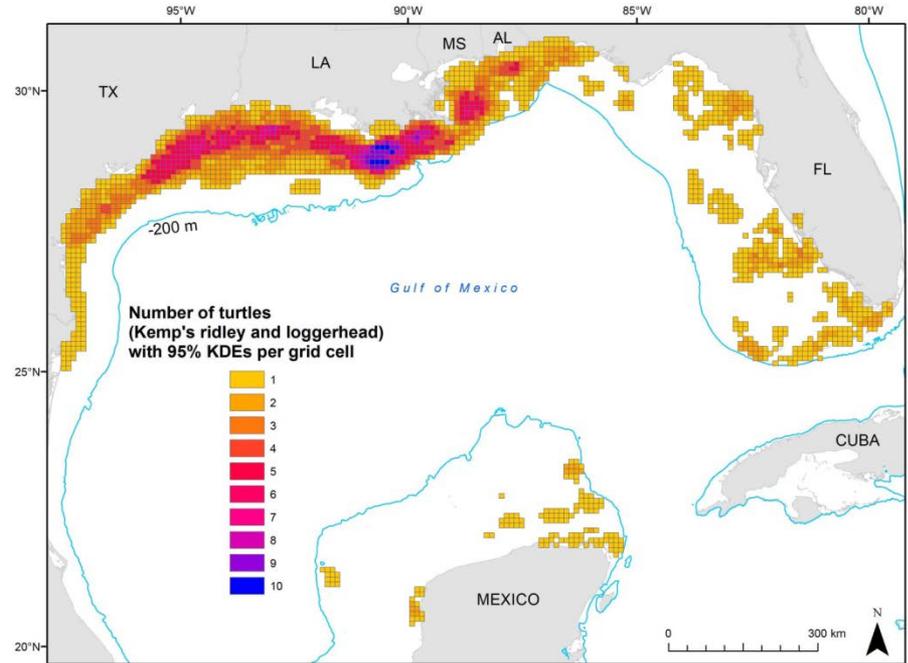
Industry Corps Hopper Dredge Management Group Meeting

May 10th 2016

- Introduce study and answer questions
- Foster early Industry engagement
- Solicit participation in future Industry stakeholder meeting



- Background
- Study Purpose
- Objectives
- Scope of Work
- Example Decision Support Tools
- What do we need from you?
- Discussion/Questions

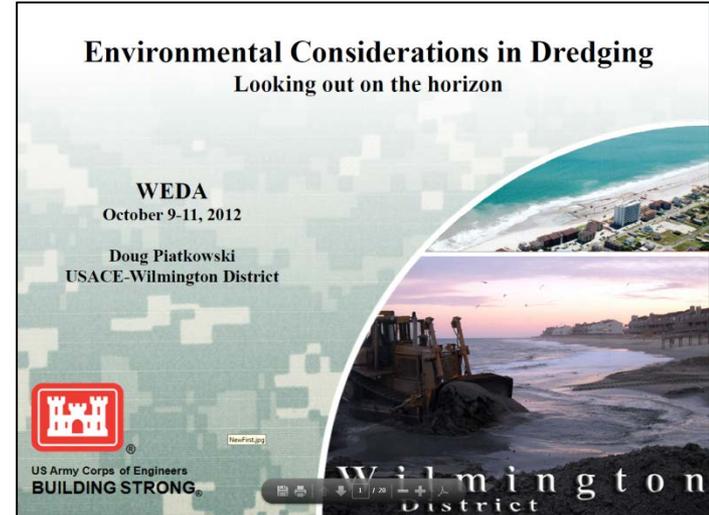


Kristen Hart, USGS



Previous Briefings:

- WEDA (2012)
- USACE Eastern Region Dredging Conference (2014)
- SE Regional Sea Turtle Meeting (2015 and 2016)



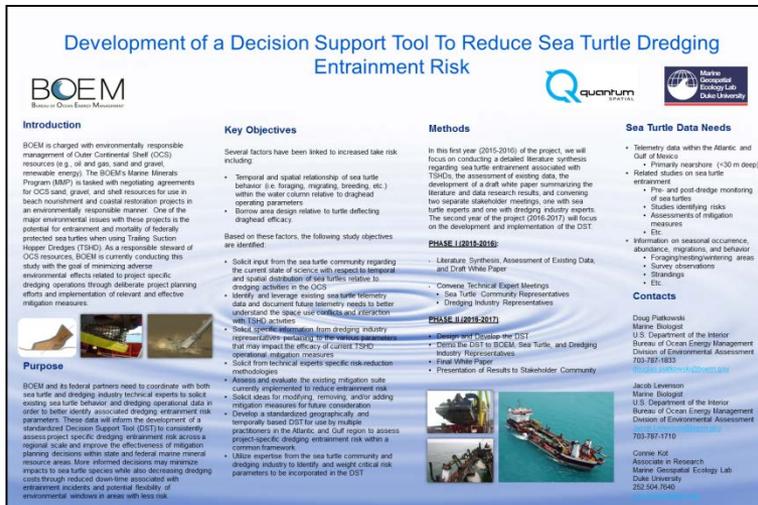
Environmental Considerations in Dredging
Looking out on the horizon

WEDA
October 9-11, 2012

Doug Piatkowski
USACE-Wilmington District

US Army Corps of Engineers
BUILDING STRONG

Wilmington District



Development of a Decision Support Tool To Reduce Sea Turtle Dredging Entrainment Risk

Introduction

BOEM is charged with environmentally responsible management of Outer Continental Shelf (OCS) resources (e.g., oil and gas, sand and gravel, renewable energy). The BOEM's Marine Mammals Program (MMP) is tasked with negotiating, agreements for OCS sand, gravel, and shell resources for use in beach nourishment and coastal restoration projects in an environmentally responsible manner. One of the major environmental issues with these projects is the potential for entrainment and mortality of federally protected sea turtles when using Trailing Suction Hopper Dredgers (TSHDs). As a responsible steward of OCS resources, BOEM is currently conducting this study with the goal of ensuring relevant environmental effects related to project specific dredging operations through deliberate project planning efforts and implementation of relevant and effective mitigation measures.

Key Objectives

Several factors have been linked to increased take risk including:

- Temporal and spatial relationship of sea turtle behavior (i.e. foraging, migrating, breeding, etc.) within the water column relative to dredged parameters
- Benthic area design relative to turtle deflecting (dredged efficacy)

Based on these factors, the following study objectives are defined:

- Solicit input from the sea turtle community regarding the current state of science with respect to temporal and spatial distribution of sea turtles relative to dredging activities in the OCS
- Identify and leverage existing sea turtle telemetry data and document future telemetry needs to better understand the space and behavior of sea turtles with TSHD activities
- Develop a standardized geographic and temporal based DST for use by multiple practitioners in the Atlantic and Gulf region to assess project specific dredging entrainment risk within a common framework
- Utilize expertise from the sea turtle community and dredging industry to identify and weight critical risk parameters to be incorporated in the DST

Methods

In this first year (2015-2016) of the project, we will focus on conducting a detailed literature synthesis regarding sea turtle entrainment associated with TSHDs; the assessment of existing data, the development of a draft white paper summarizing the literature and data research results, and convening two separate stakeholder meetings, one with sea turtle experts and one with dredging industry experts. The second year of the project (2016-2017) will focus on the development and implementation of the DST.

PHASE I (2015-2016):

- Literature Synthesis, Assessment of Existing Data, and Draft White Paper
- Convene Technical Expert Meetings
- Sea Turtle Community Representatives
- Dredging Industry Representatives

PHASE II (2016-2017):

- Design and Develop the DST
- Deploy the DST to BOEM, Sea Turtle, and Dredging Industry Representatives
- Final White Paper
- Presentation of Results to Stakeholder Community

Sea Turtle Data Needs

- Telemetry data within the Atlantic and Gulf of Mexico
 - Primarily nearshore (<30 m depth)
- Related studies on sea turtle entrainment
 - Pre- and post-dredge monitoring of sea turtles
 - Studies identifying risks
 - Assessments of mitigation measures
 - Etc.
- Information on seasonal occurrence, abundance, migrations, and behavior
 - Foraging/homing/wintering areas
 - Survey observations
 - Standings
 - Etc.

Contacts

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BOEM
BUREAU OF OCEAN ENERGY MANAGEMENT

Coastal Resiliency Planning

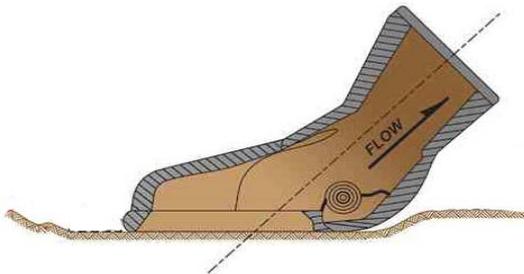
Resource Management, Strategic Planning, and Applied Science

Doug Piatkowski
Bureau of Ocean Energy Management
Division of Environmental Assessment

U.S. Army Corps of Engineers Eastern Region Dredging Conference
October 14th – 15th, 2014
South Atlantic Division Headquarters
Atlanta, GA

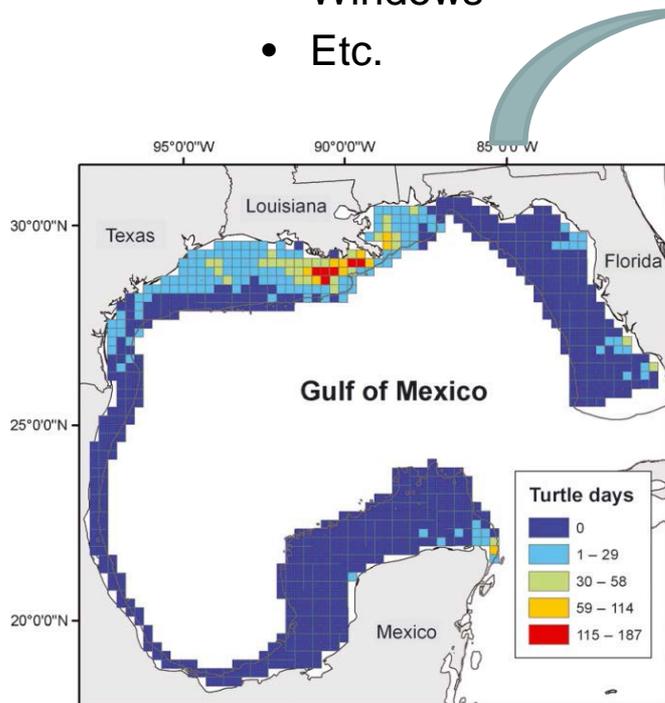


- **Established Mitigation Measures:** NMFS Biological Opinions
- **Since 1996:** >20 sea turtle mortalities associated OCS dredging.
- **Residual Risk:** Limited consideration for project specific efficacy and no risk evaluation standard
- **BOEM Needs:** Minimize entrainment risk through a standardized risk assessment framework

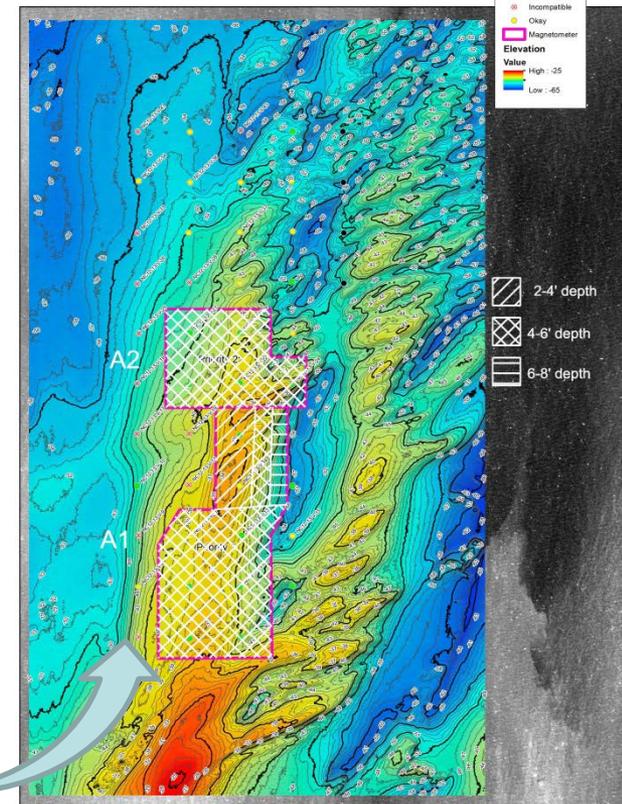


- **Minimize adverse effects to sea turtles associated with dredging operations in the OCS through:**
 - Deliberate project specific planning efforts
 - Implementation of relevant and effective mitigation measures
- **More informed decisions** could:
 - Minimize impacts to sea turtle species
 - Decrease dredging costs through reduced down-time, increased productivity, and potential flexibility of environmental windows
- **Develop a geographically and temporally based decision support tool to:**
 - Support risk based planning
 - Standardized and consistent across a regional scale to assess project-specific dredging entrainment risk within a common framework

- **Identify factors linked to increased take risk:**
 - Temporal and spatial relationship of sea turtle behavior
 - Borrow area design relative to efficacy of existing mitigations:
 - Turtle deflecting draghead
 - Trawling
 - Windows
 - Etc.



Shaver et. al. 2013



Source: USACE Wilmington District

- **Specific study objectives:**
 - Stakeholder engagement / collaboration
 - Solicit current state of science with respect to temporal and spatial distribution of sea turtles
 - Identify and leverage existing sea turtle telemetry data and document future telemetry needs
 - **Solicit Industry input on project specific risk factors that may impact the efficacy of existing mitigation measures**
 - **Solicit specific risk-reduction methodologies**
 - **Solicit ideas for modifying, removing, and/or adding mitigation measures for future consideration**
 - **Identify and weight critical risk parameters**
 - **Develop a standardized geographically and temporally based Decision Support Tool.**

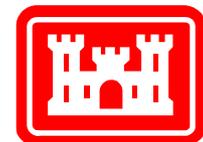
PHASE I (2015-2016):

- Literature Synthesis, Assessment of Existing Data, and Draft White Paper (**Ongoing**)
- Convene Technical Expert Meetings (**Fall**)
 - Identify risk factors:
 - Geomorphology and physical dynamics
 - Habitat type/use
 - Entrainment history
 - Sea turtle distribution, abundance, and behavior (i.e., leveraging existing telemetry data).



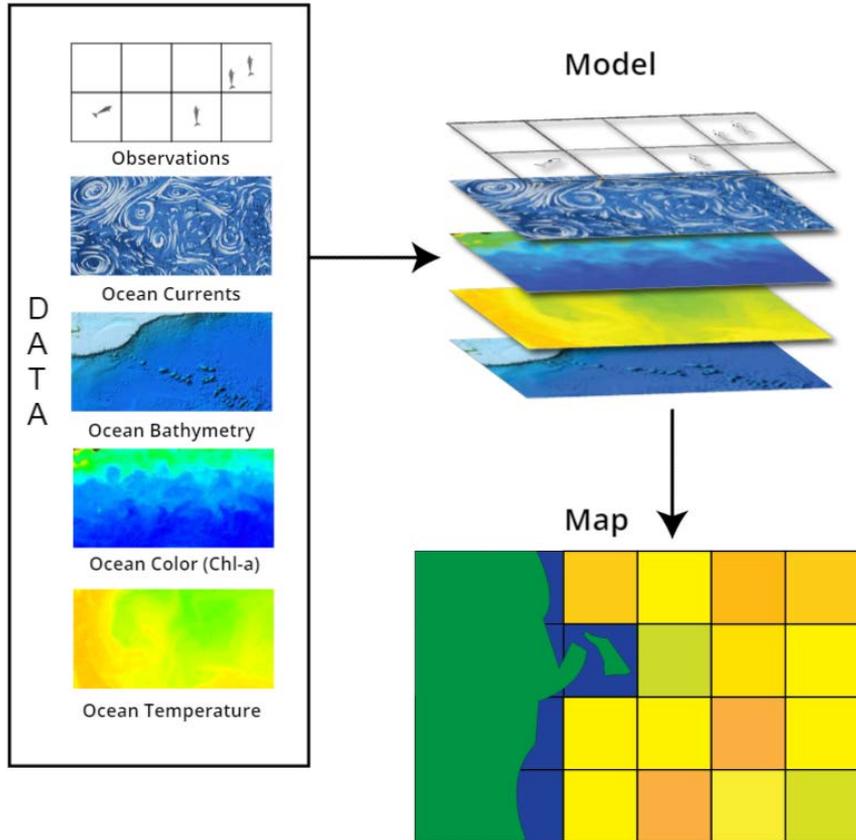
PHASE II (2016-2017):

- Design and Develop the DST
- Stakeholder demonstration / feedback
- Final White Paper
- Presentation of Results

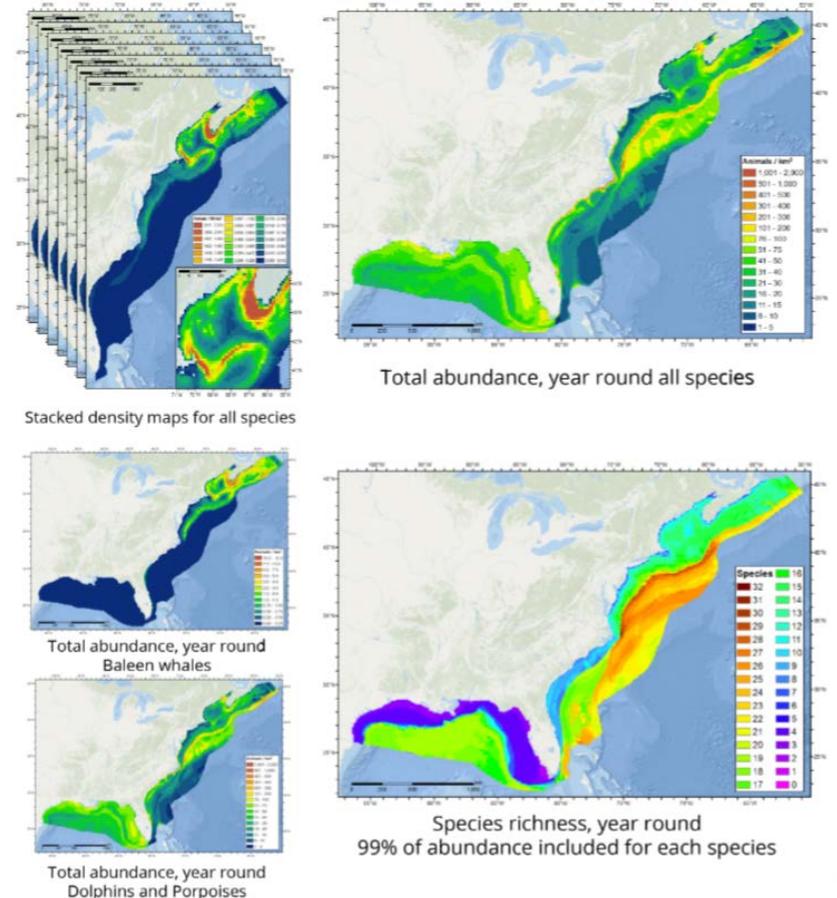


Predicting Cetacean Density with Geospatial Models to determine relative risk of offshore activities

Building a Model

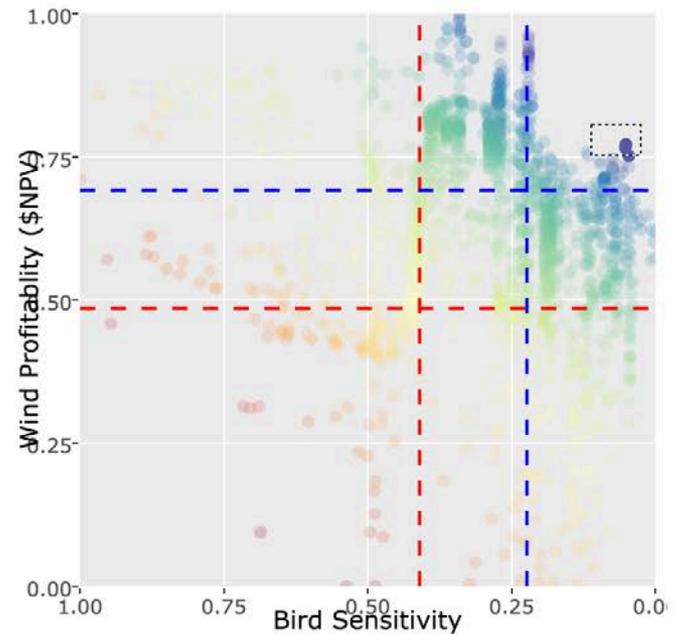
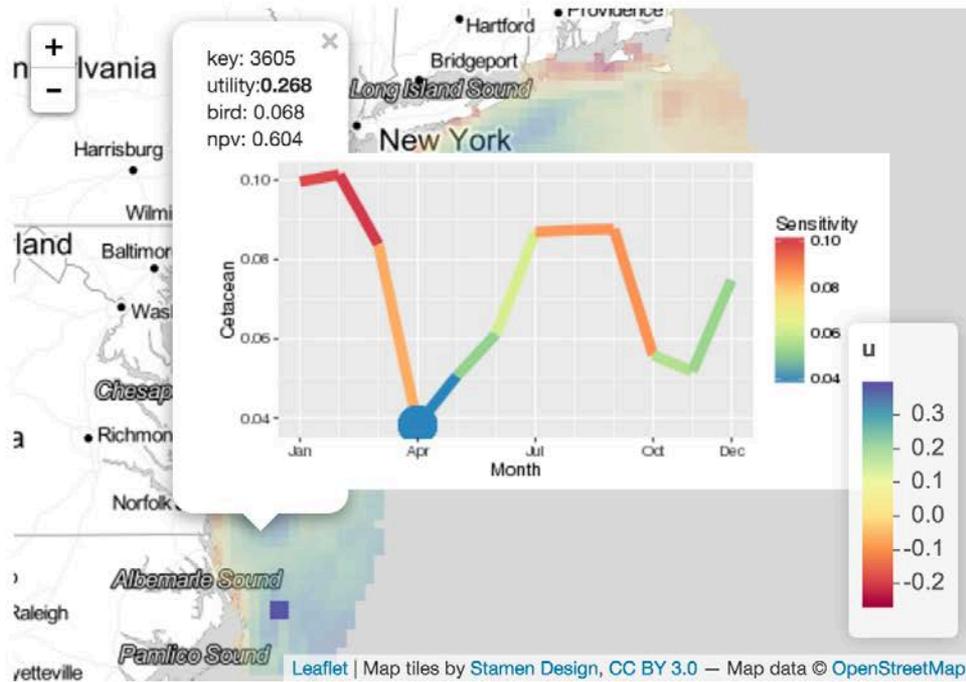


Species Richness and Diversity

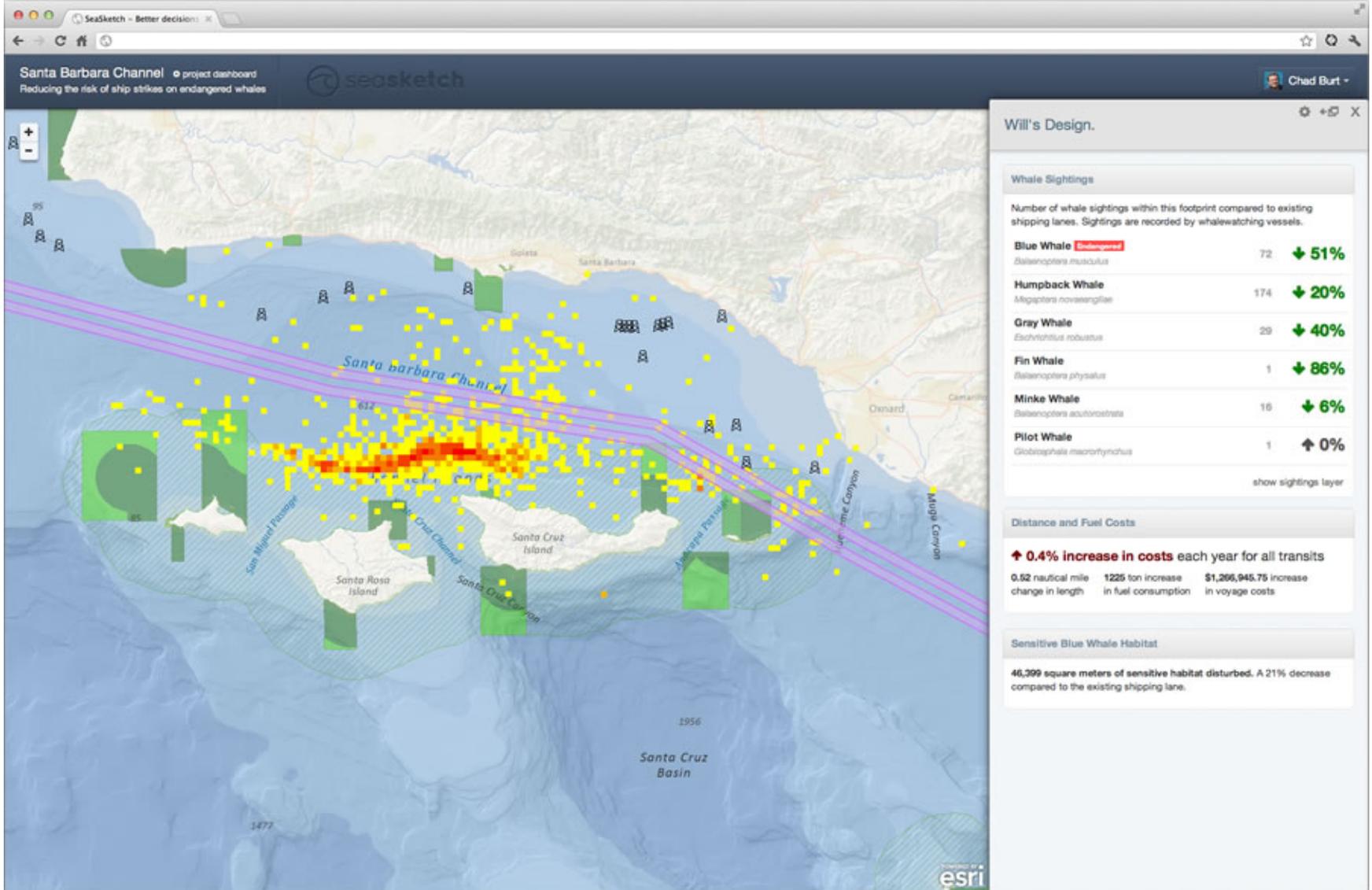


The screenshot displays the 'Cetacean & Sound Mapping' web application. At the top left is the NOAA logo. A navigation bar contains links for 'Home', 'CetSound', 'Ocean Noise Strategy', 'Partners', and 'Contact'. The main content area features a map of the Eastern United States and the Atlantic Ocean. A green shaded area on the map highlights a specific region in the North Atlantic. To the right of the map is a control panel titled 'Biologically Important Areas' with dropdown menus for 'common name', 'BIA type', and 'region'. Below these are checkboxes for months from Jan to Dec, and buttons for 'zoom to' and 'clear'. A legend is located at the bottom of the control panel. The map includes labels for major cities (Toronto, Detroit, Chicago, Boston, New York, Philadelphia, Washington, D.C., Atlanta, Miami, Havana) and oceanographic features (Hatteras Plain, Bermuda Rise, North American Basin, Sargasso Sea, Bahamas, Turks and Caicos). Depth contours are marked with values like 5863, 5648, 3293, and 7196. The bottom right corner of the map area contains the text 'POWERED BY esri' and a list of data sources: 'GEBCO, IHO-IOC GEBCO, NGS, Esri, DeLorme'.

Siting Offshore Wind Energy Development for Winning Tradeoffs in Space and Time



rank	utility	bird	npv	key
4	0.361	0.051	0.772	4138
7	0.357	0.052	0.766	4079
14	0.353	0.046	0.752	4020



What we need from you?

- **Meeting Participation**

- Up to two representatives from each company
 - Policy expertise
 - Technical/operational expertise

- **Meeting Location**

- Opportunities to leverage attendance at existing meetings (i.e. FSBPA)?
- Stand alone meeting?

- **Specific Objectives:**

- Inform Industry representatives of the study, contributing role, and the desired end state
- Solicit Industry knowledge on project-specific risk factors (physical, biological, geological, etc.) that reduce the efficacy of current mitigation practices and, if possible, rank the significance.
- Solicit ideas/recommendations for new mitigations and/or modifications of existing mitigations to reduce entrainment risk.

- **Output/Outcome:**

- Document dredging related factors for tool development
- Engage in an ongoing collaborative process



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