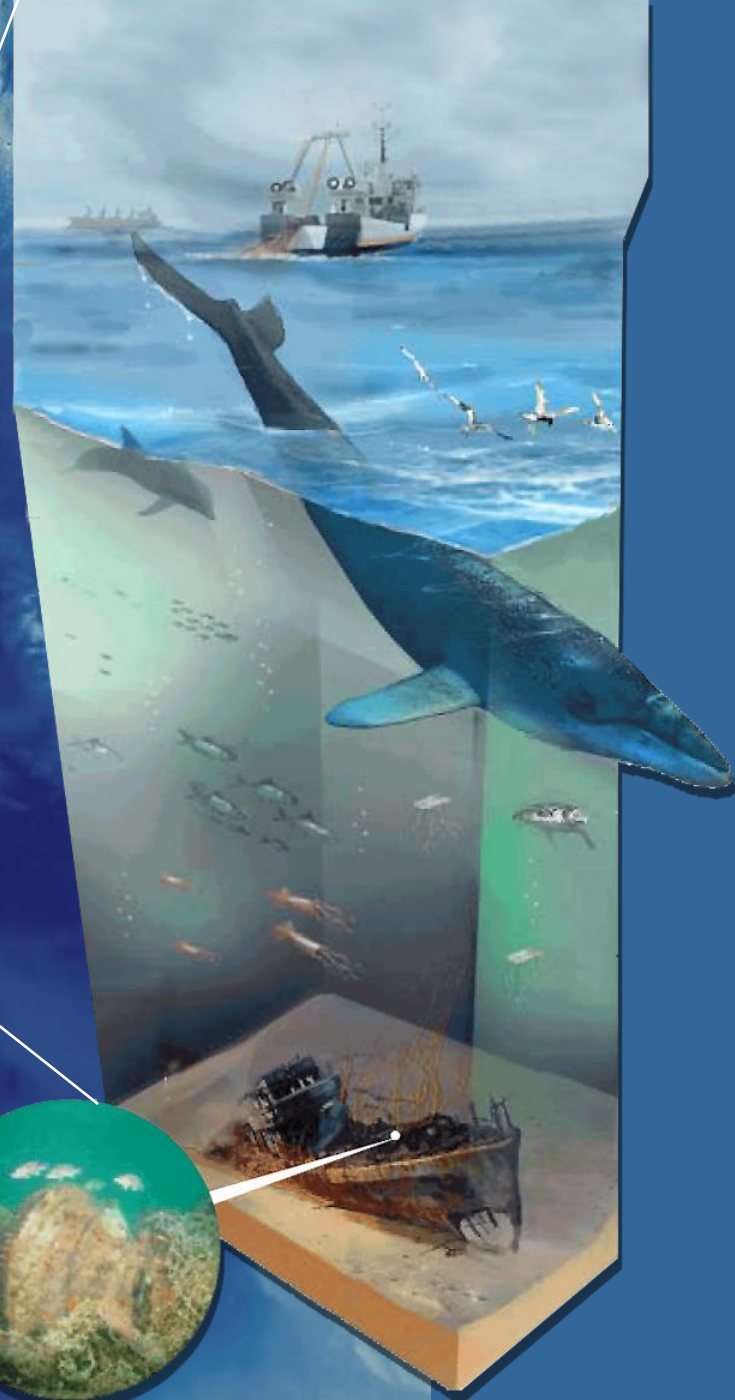


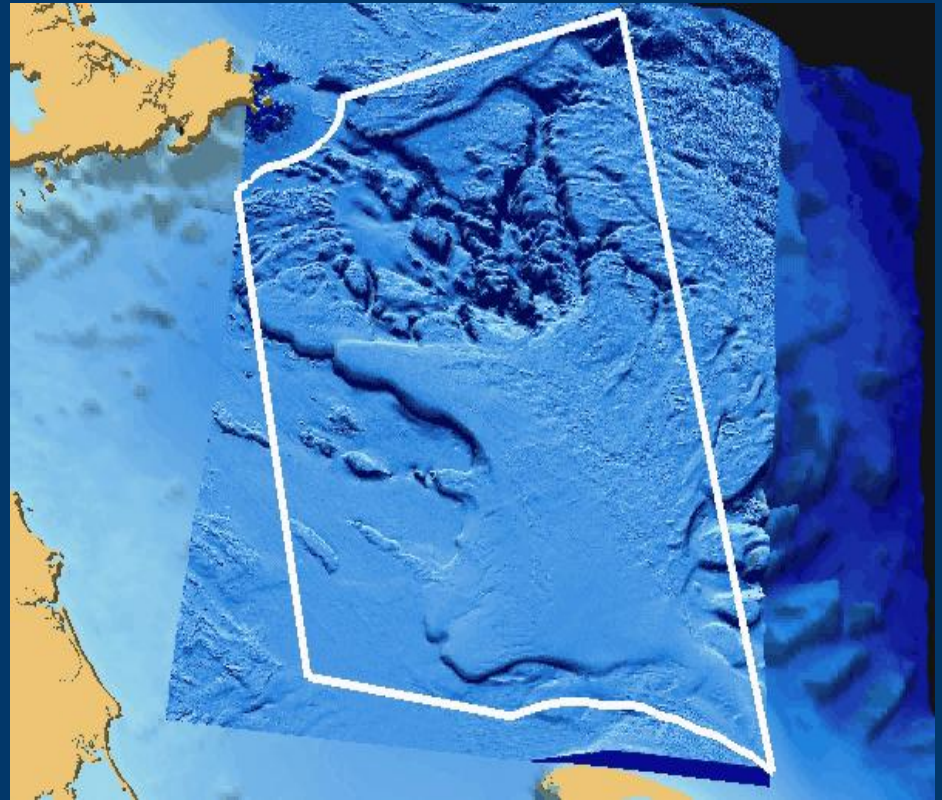
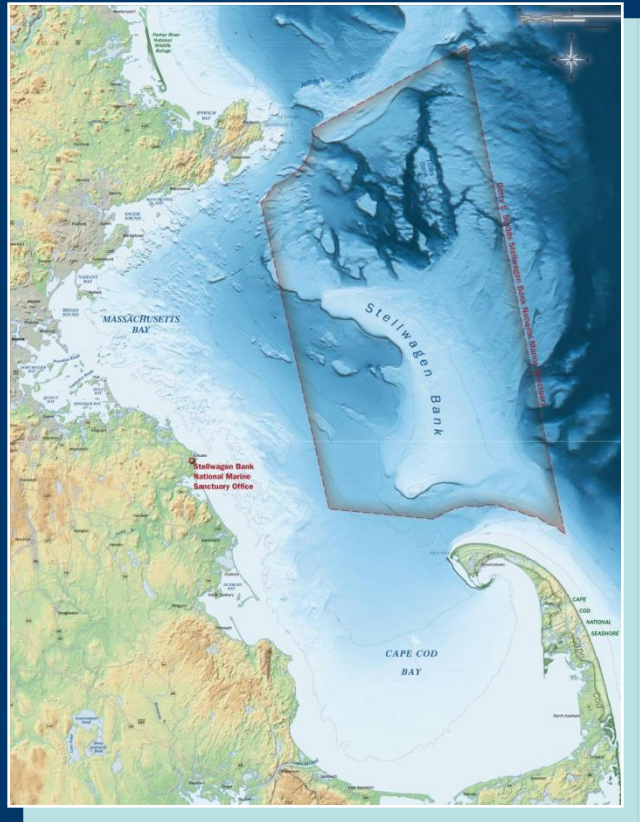
Stellwagen Bank National Marine Sanctuary

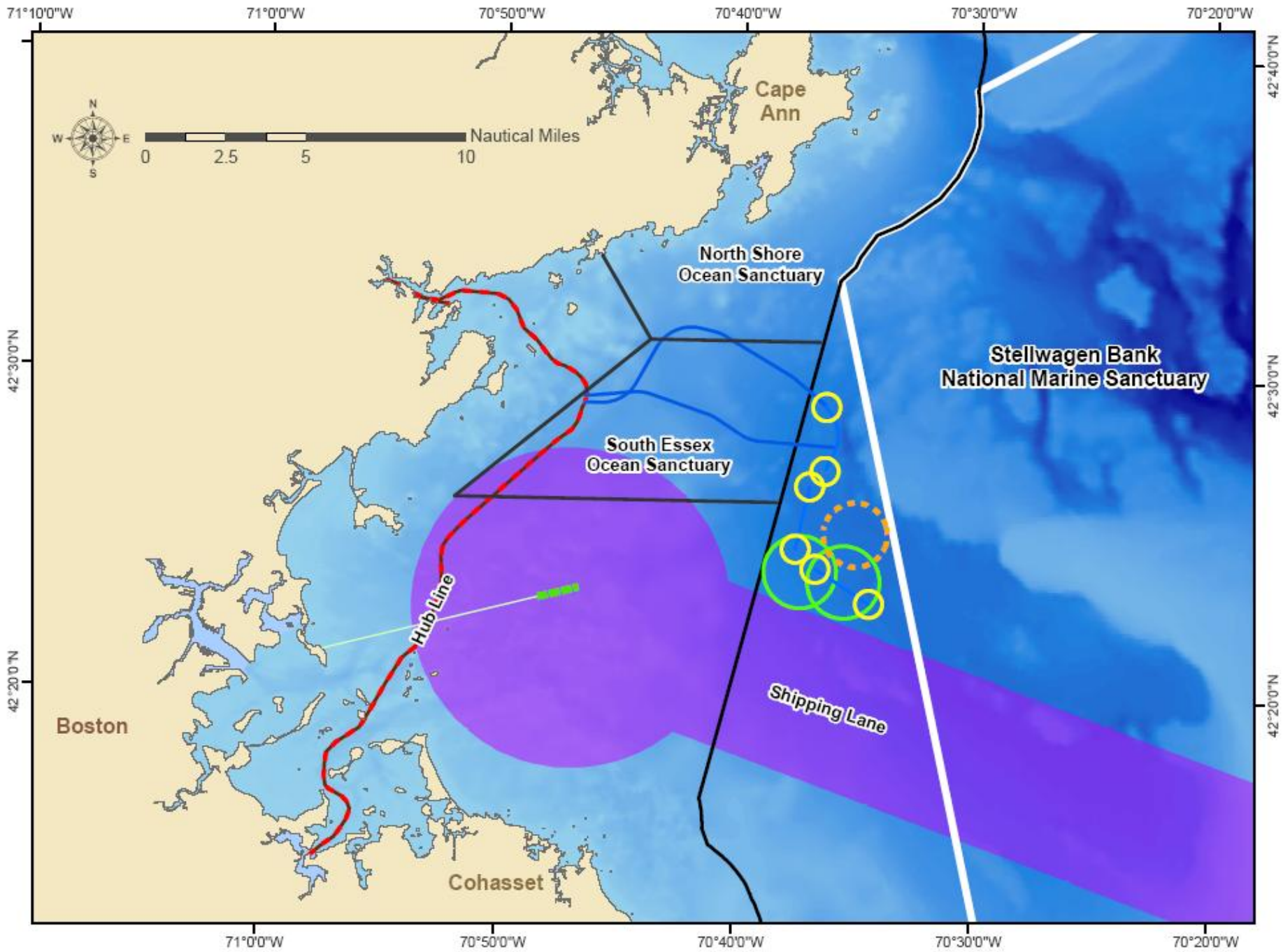
Ben Cowie-Haskell
Deputy Superintendent





GERRY E. STUDDS
STELLWAGEN BANK
NATIONAL MARINE SANCTUARY







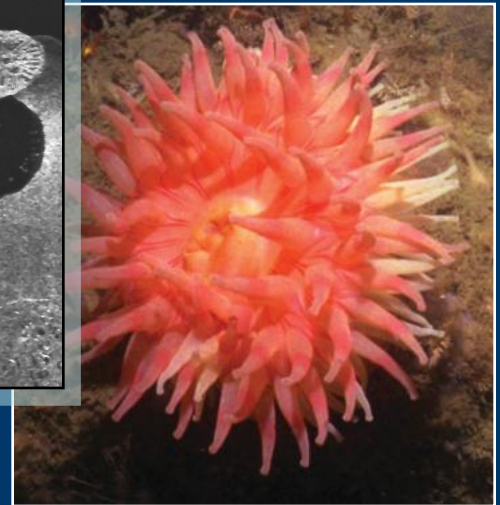
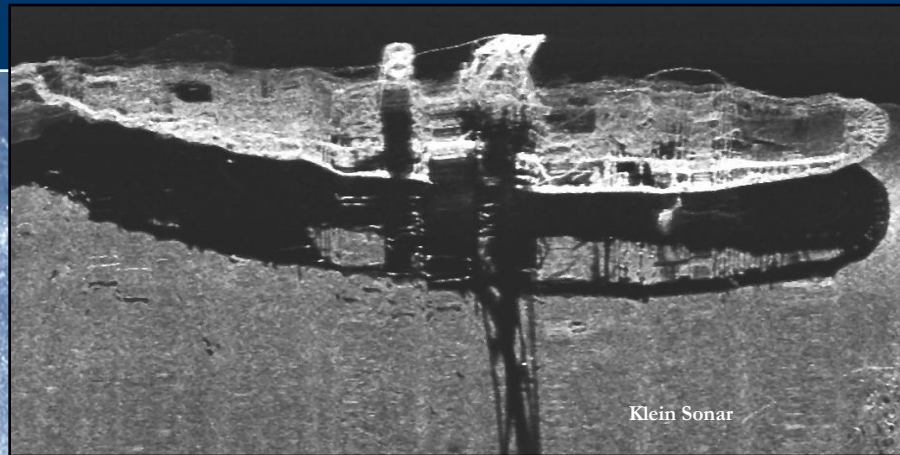
Purposes and Policies of the NMS Act

1. designate as national marine sanctuaries areas of the marine environment which are of **special national significance**
2. provide authority for **comprehensive and coordinated conservation** and management of these marine areas, and activities affecting them, in a manner which complements existing regulatory authorities
3. maintain the **natural biological communities** in the national marine sanctuaries, and to protect, and, where appropriate, restore and enhance natural habitats, populations, and ecological processes
4. facilitate to the **extent compatible with the primary objective of resource protection**, all public and private uses of the resources of these marine areas not prohibited pursuant to other authorities



Mission

To conserve, protect and enhance the biodiversity, ecological integrity and cultural legacy of the sanctuary while facilitating compatible uses



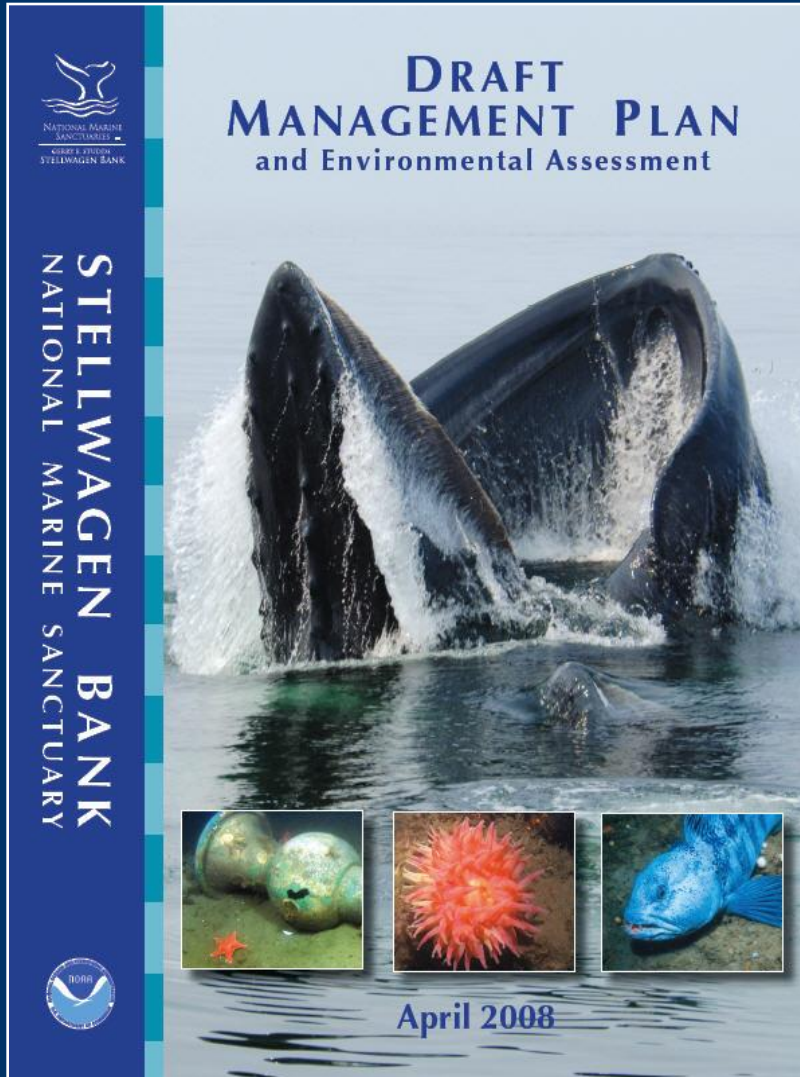


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NATIONAL MARINE SANCTUARY

**Draft Management Plan
released on May 6, 2008
Public comment period
closed on Oct. 3, 2008**

**Over 25,000 comments were
received representing all 50 states
and 9 countries.**

<http://stellwagen.noaa.gov>



STELLWAGEN BANK
NATIONAL MARINE SANCTUARY





Summary of Resource Conditions

Good	Good/Fair	Fair	Fair/Poor	Poor
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▲	Conditions appear to be improving
—	Conditions do not appear to be changing
▼	Conditions appear to be declining

#	Questions/Resources	Rating	Basis for Judgment
Water			
1	Are there specific or multiple stressors, including changing oceanographic and atmospheric conditions, affecting water quality?	—	Numerous contaminants at low levels.
2	What is the eutrophication condition of sanctuary waters and how is it changing?	—	Specific aspects of on-going monitoring, as explained in text, with references.
3	Do sanctuary waters pose risks to human health?	—	Specific aspects of on-going monitoring, as explained in text, with references.
4	What are the levels of human activities that may influence water quality and how are they changing?	—	Vessel discharges and outfall.
Habitat			
5	What is the abundance and distribution of major habitat types and how are they changing?	—	Alteration of microhabitats due to bottom dragging/dredging.
6	What is the condition of biologically-structured habitats and how is it changing?	—	Fishing gear impacts.
7	What are the contaminant concentrations in sanctuary habitats and how are they changing?	—	Limited monitoring results.
8	What are the levels of human activities that may influence habitat quality and how are they changing?	▼	Fishing gear impacts, shipping.

Living Resources			
9	What is the status of biodiversity and how is it changing?	—	Long-term changes in fish diversity.
10	What is the status of environmentally sustainable fishing and how is it changing?	—	Published and unpublished literature on regional and local groundfish populations.
11	What is the status of non-indigenous species and how is it changing?	▼	Recent invasives discovered.
12	What is the status of key species and how is it changing?	▲	Cod (keystone species).
13	What is the condition or health of key species and how is it changing?	—	Whale strikes & entanglements.
14	What are the levels of human activities that may influence living resource quality and how are they changing?	—	Stable levels of activity.
Maritime Archaeological Resources			
15	What is the quantity of known maritime archaeological resources and how is it changing?	▼	Fishing gear impacts.
16	Do known maritime archaeological resources pose an environmental hazard and is this threat changing?	—	Loss of hazardous cargo.
17	What are the levels of human activities that may influence maritime archaeological resource quality and how are they changing?	▼	Fishing gear impacts.

10 of 17 Categories Rated Fair



Compatibility Determination Action Plan

The goal of the action plan is to develop a framework to assess and evaluate whether existing or proposed human uses are compatible with the sanctuary's primary objective of resource protection.

Strategies:

- (1.1) Demonstrate the application of Sanctuary-Compatibility Analysis Process (S-CAP).
- (1.2) Refine S-CAP by incorporating results of ongoing sanctuary monitoring.



Sanctuary Compatibility Analysis Process

Hypothetical Example:

Issue: Does activity 'x' in the SBNMS harm marine mammals? Is it a use compatible with the sanctuary's purpose?

Vision: Ecological integrity is protected.

Mission: Resource protection

Goal: Protect assemblages of marine mammals

Objective: Strengthen the protection of marine mammals by assessing and minimizing behavioral disturbance, including vessel strikes to and entanglement of marine mammals, and by fostering cooperation with cross-jurisdictional partners whose activities could impact marine mammals.

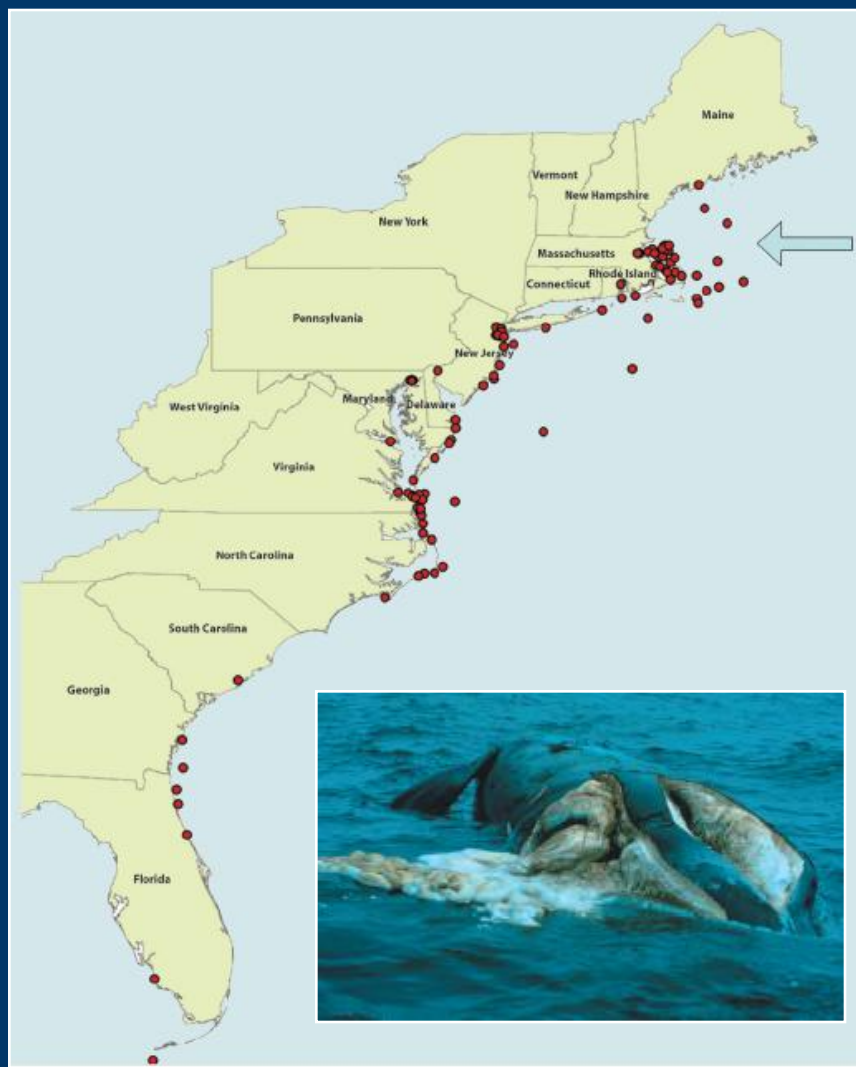
Standard: Marine mammal behavior is not altered and marine mammals are not struck or entangled by 'x' activity.

Indicators that standard is being achieved:

- No marine mammals are struck or entangled by 'x' activity.
- No change in marine mammal distribution due to 'x' activity.
- Surface-to-dive time ratio for marine mammals is within normal range and unaffected by 'x' activity.
- Marine mammal communication is unimpeded by 'x' activity.



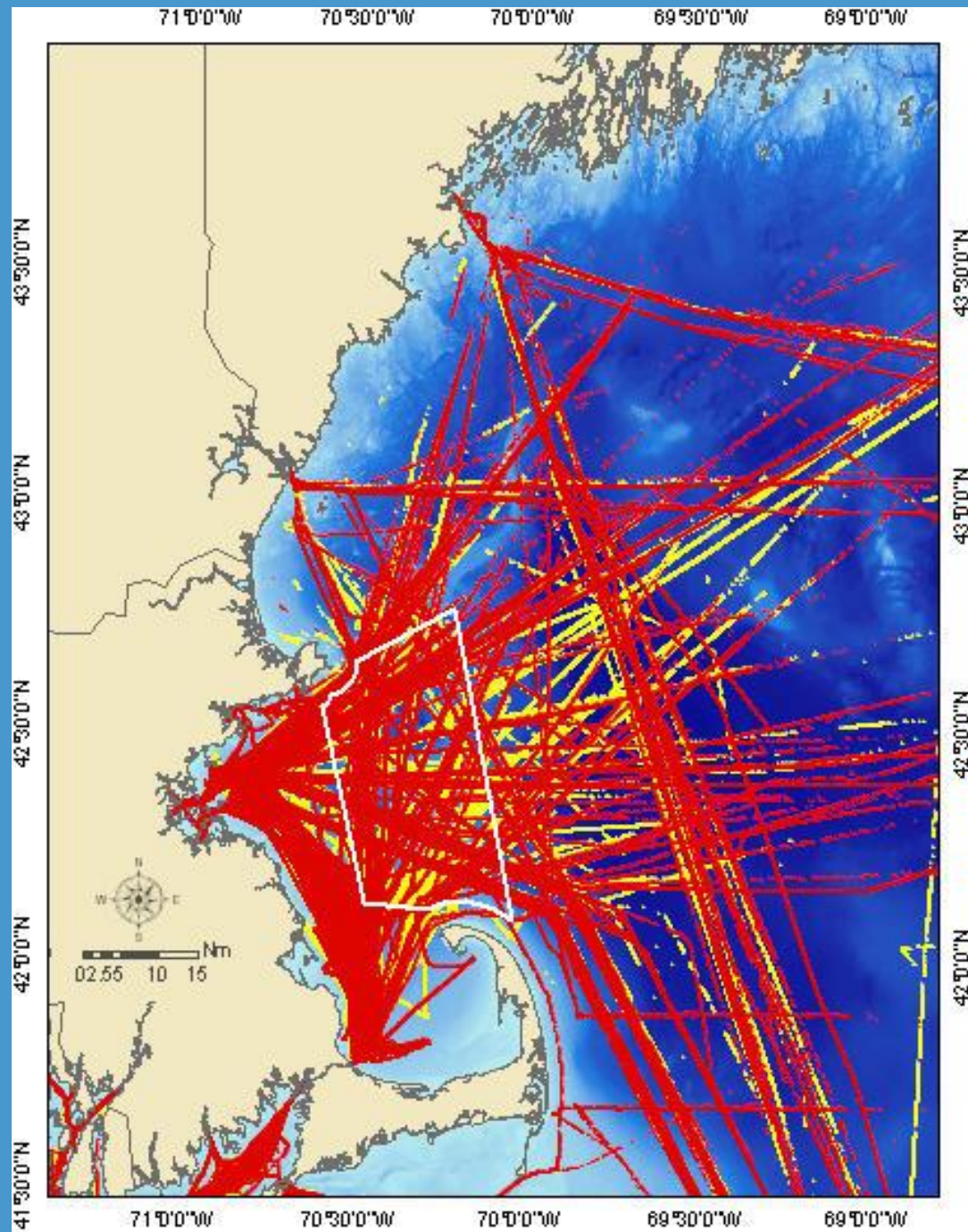
Marine Mammal Vessel Strike



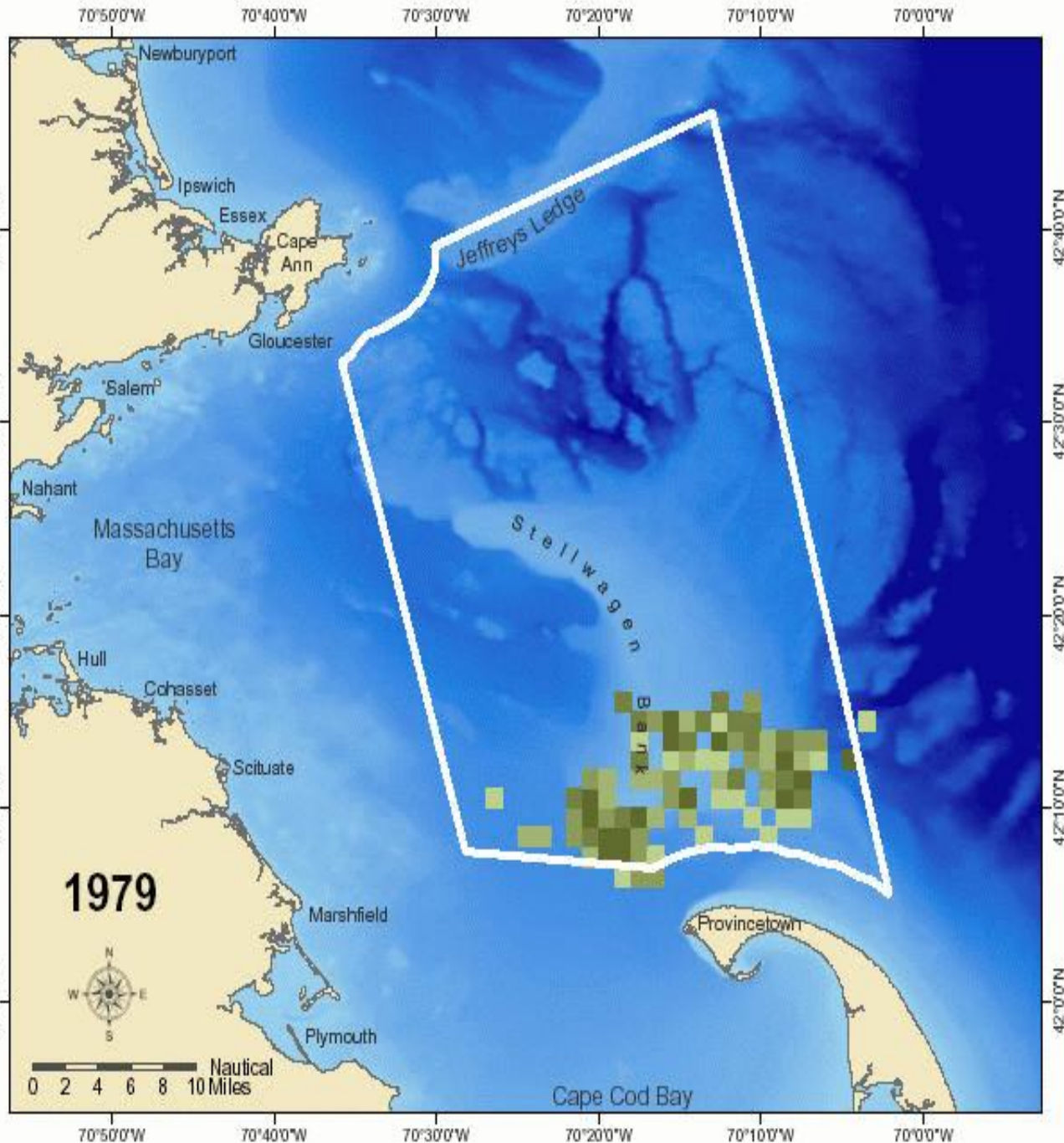
Requirements for high resolution spatial and temporal monitoring:

- Vessel distribution and behavior (e.g. speed)
- Whale distribution and behavior (e.g. communication)
- Acoustic characterization (e.g. noise budget, anthropogenic noise)
- Rate and location of whale strikes

**Vessel
Distribution and
Behavior
Monitoring-
using Automatic
Identification
System data
from US Coast
Guard**

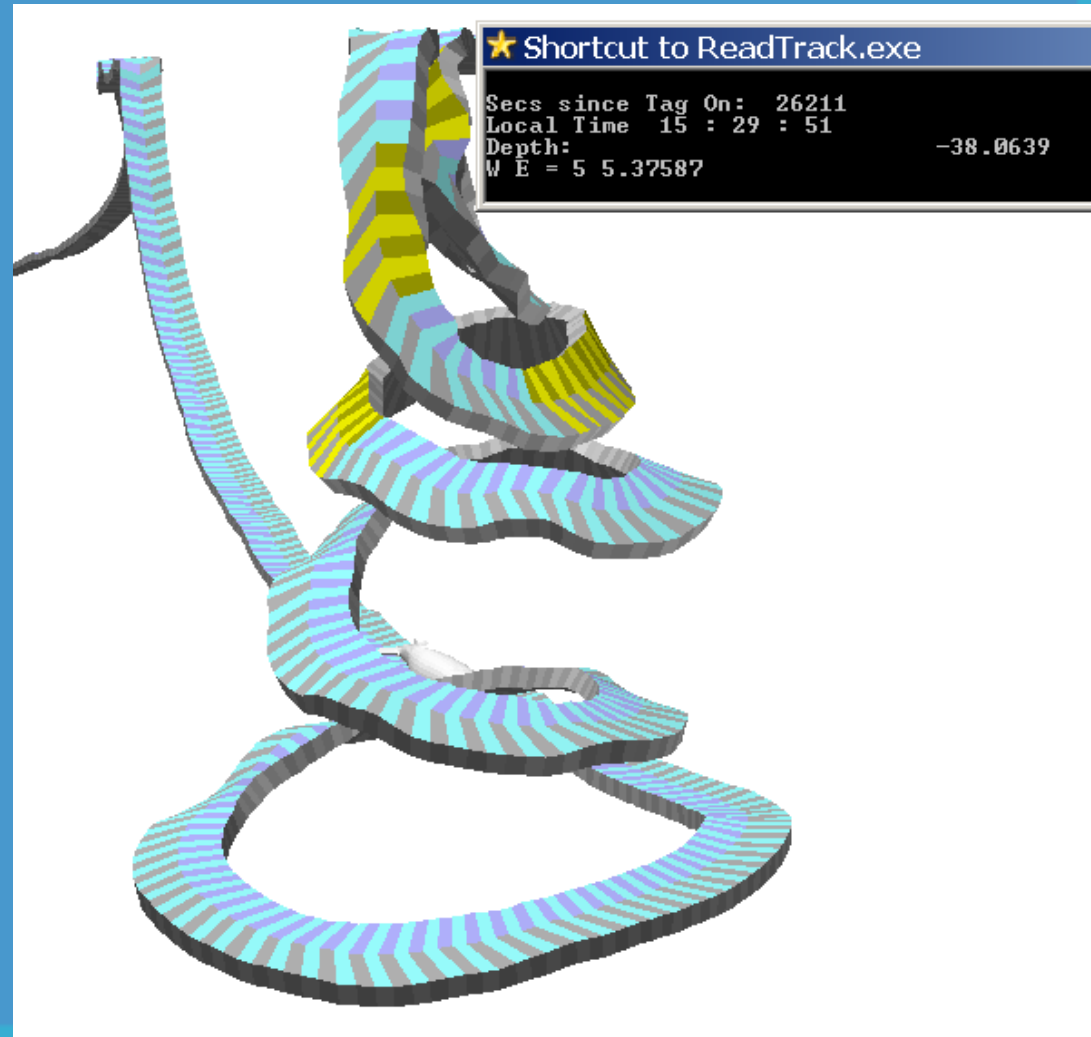


Monitoring Whale Distributions: 25-year dataset from whale watch vessels

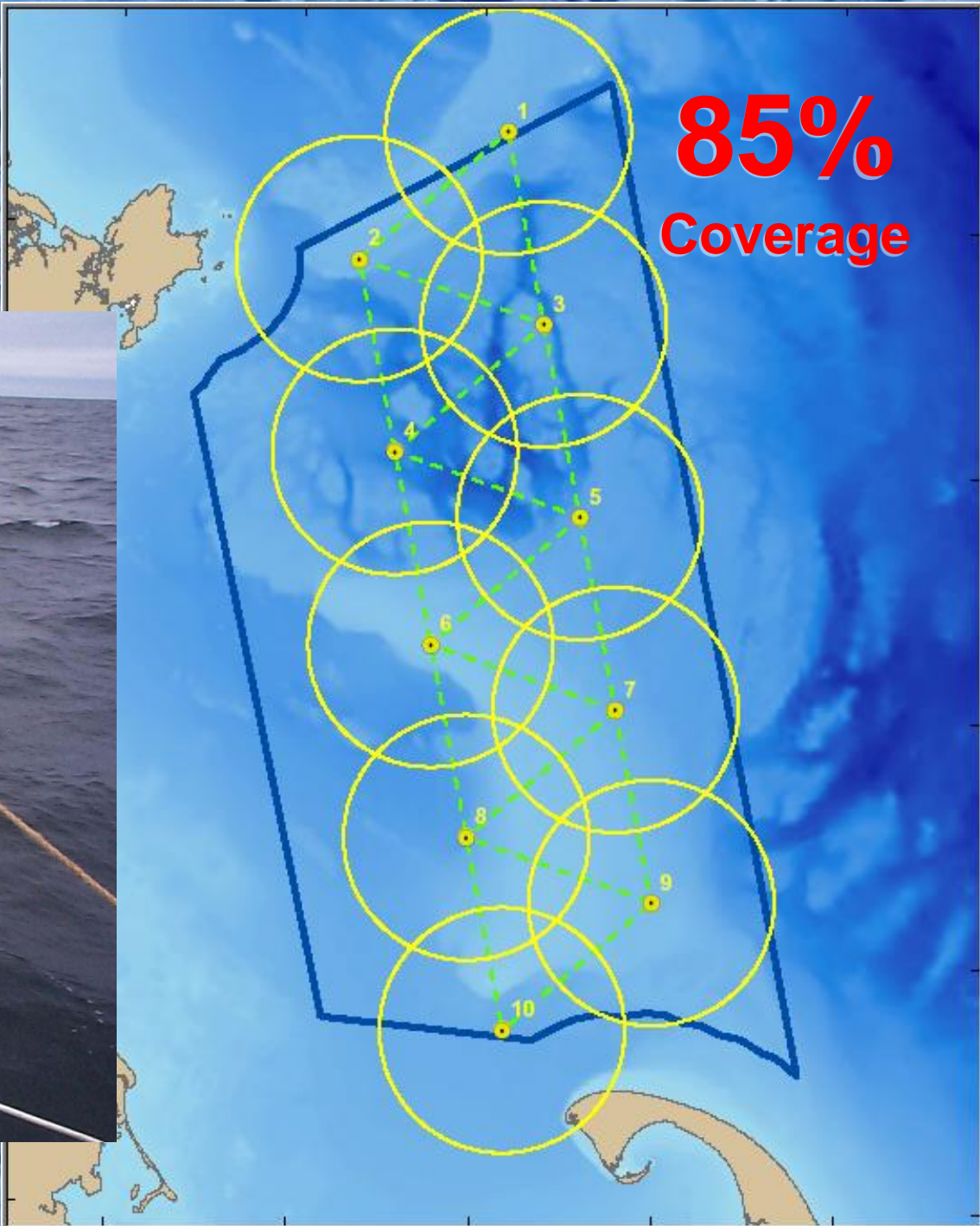
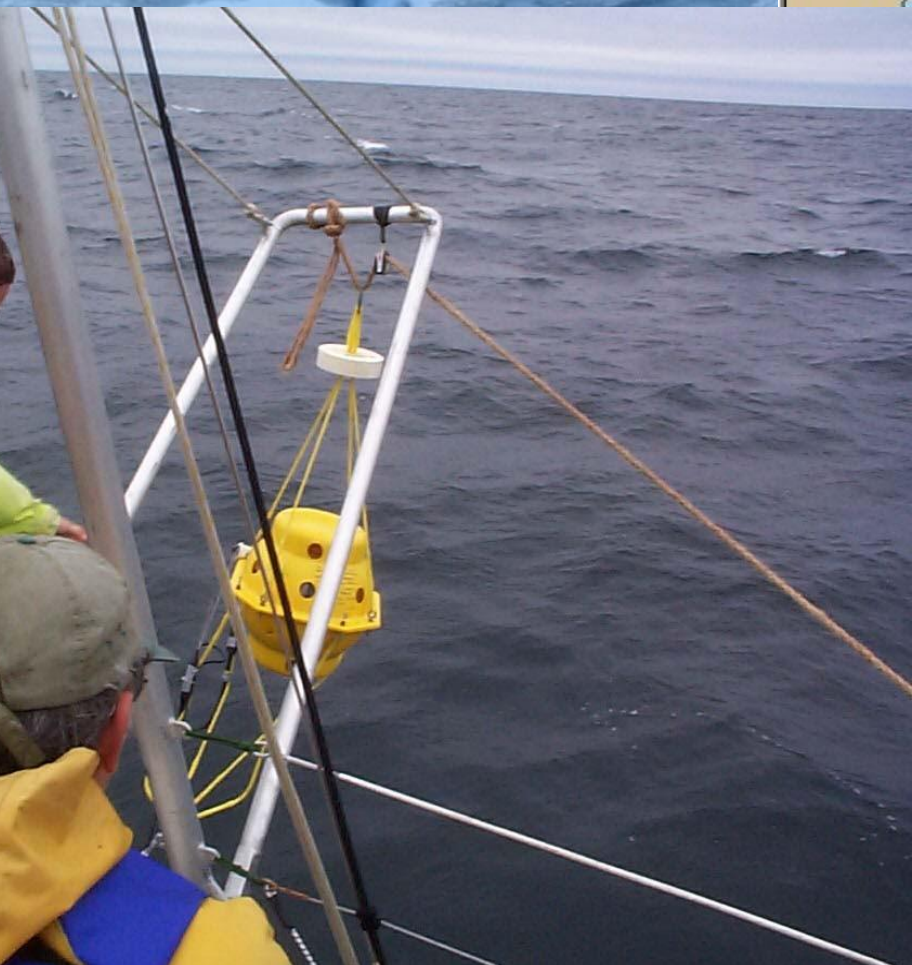


Monitoring Individual Whale Behaviors using Digital Tags and TrackPlot software

- Software designed by Colin Ware; Center for Coastal & Ocean Mapping, UNH
- Provides 3D depiction of tag/whale movements
- Georeferenced
- Contains Time Stamps



Acoustic Monitoring using Autonomous Recording Units on the seafloor





Summary

- 1. There are a number of ways to achieve compatibility such as by legal fiat or by a step-wise process**
- 2. Without a clear legal mandate to conduct compatibility determinations including guidance on what constitutes compatible uses, the onus is on the agency or manager to demonstrate that the use in question is not compatible**
- 3. In order to demonstrate that a use is not compatible, high resolution spatial and temporal monitoring is required.**