Arctic Biologically Important Areas

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*With special thanks to

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Jolie Harrison, Office of Protected Resources, NMFS, NOAA

Sofie Van Parijs, Northeast Fisheries Science Center, NMFS, NOAA

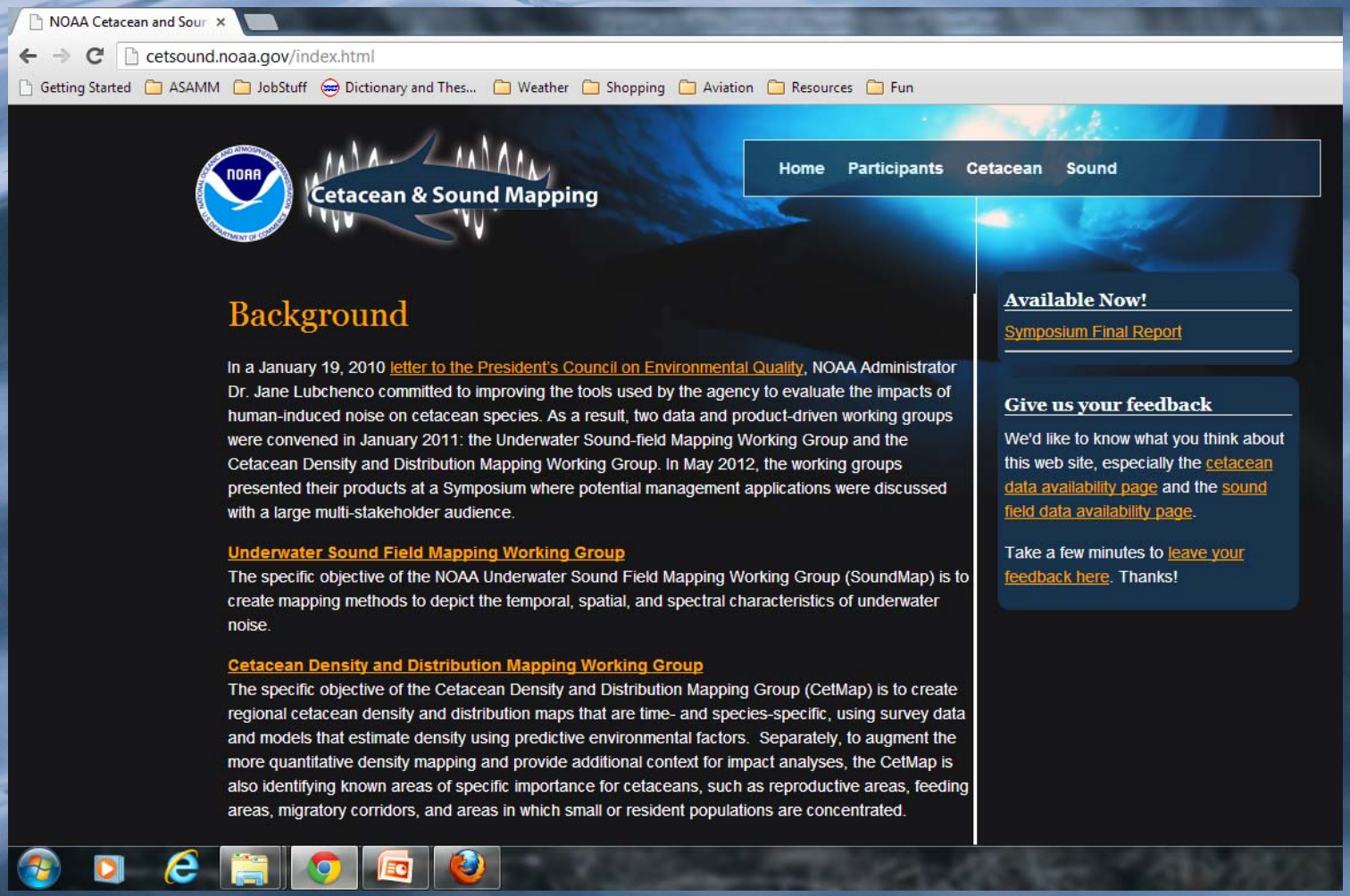
http://cetsound.noaa.gov/index.html

Outline

- Introduce CetSound and CetMap
- CetMap Biologically Important Areas (BIAs)
  - Rationale
  - Definition of BIAs
  - Expert Knowledge Solicitation
  - External Review (*in progress*)
  - Caveats
  - DRAFT Maps of Arctic BIAs
- Feedback Welcome!

INTRODUCTION TO CETSOUND AND CETMAP

HTTP://CETSOUND.NOAA.GOV/INDEX.HTML



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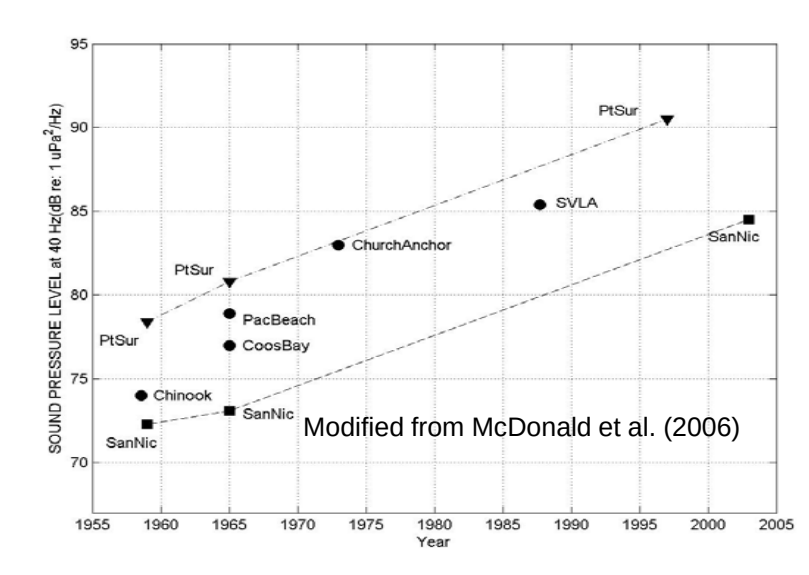
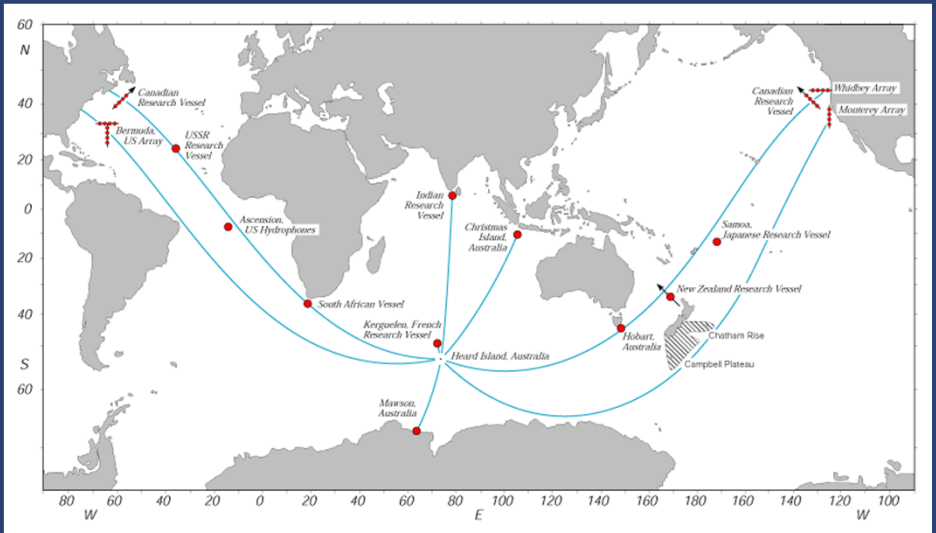
Issue: Human-induced Underwater Noise

Reality:

- Anthropogenic activities in the ocean produce noise
- Underwater sound travels long distances
- Increasing number and locations of activities
- Coastal and ocean waters are getting noisier





Environmental Impact:

- Marine animals rely heavily on sound
- Rising background noise limits their communication range and ability to sense their environment

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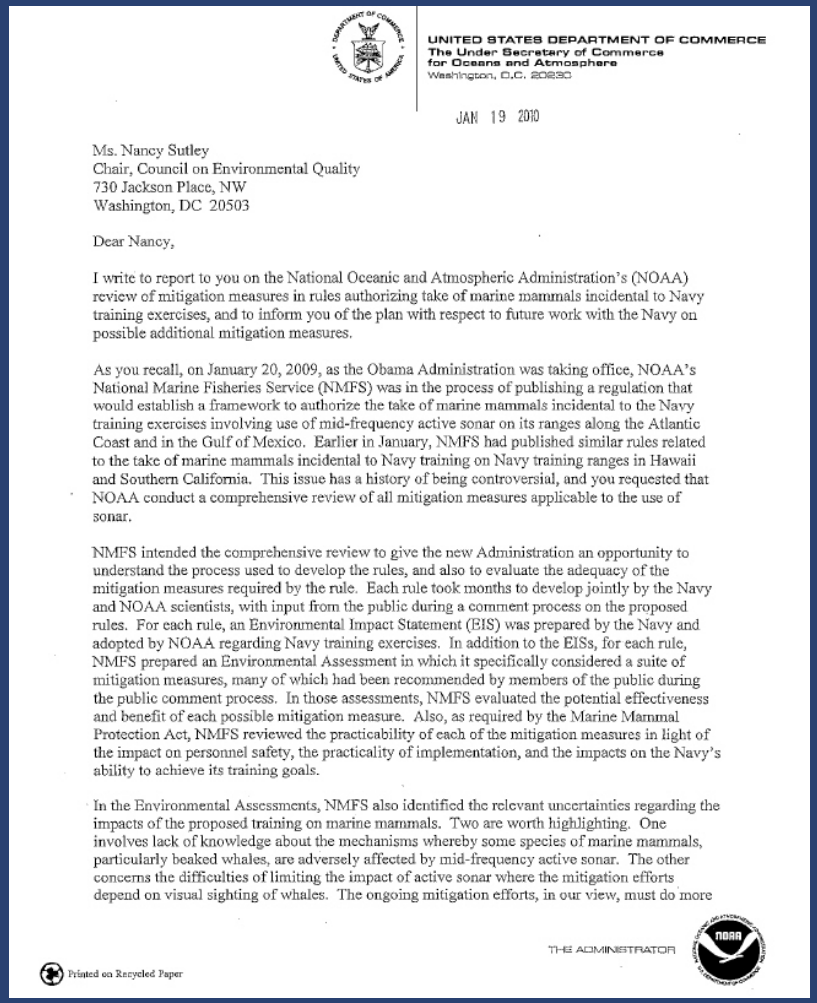
The NOAA Commitment

- 2010 Letter from Dr. Lubchenco (NOAA) to Nancy Sutley (CEQ)
- Multi-faceted commitment to address cumulative impacts of human-induced sound, including:
  - Developing tools
  - Soliciting stakeholder input



UNITED STATES DEPARTMENT OF COMMERCE
The Under Secretary of Commerce
for Oceans and Atmosphere
Washington, D.C. 20230

JAN 19 2010

Ms. Nancy Sutley
Chair, Council on Environmental Quality
730 Jackson Place, NW
Washington, DC 20503

Dear Nancy,

I write to report to you on the National Oceanic and Atmospheric Administration's (NOAA) review of mitigation measures in rules authorizing take of marine mammals incidental to Navy training exercises, and to inform you of the plan with respect to future work with the Navy on possible additional mitigation measures.

As you recall, on January 20, 2009, as the Obama Administration was taking office, NOAA's National Marine Fisheries Service (NMFS) was in the process of publishing a regulation that would establish a framework to authorize the take of marine mammals incidental to the Navy training exercises involving use of mid-frequency active sonar on its ranges along the Atlantic Coast and in the Gulf of Mexico. Earlier in January, NMFS had published similar rules related to the take of marine mammals incidental to Navy training on Navy training ranges in Hawaii and Southern California. This issue has a history of being controversial, and you requested that NOAA conduct a comprehensive review of all mitigation measures applicable to the use of sonar.

NMFS intended the comprehensive review to give the new Administration an opportunity to understand the process used to develop the rules, and also to evaluate the adequacy of the mitigation measures required by the rule. Each rule took months to develop jointly by the Navy and NOAA scientists, with input from the public during a comment process on the proposed rules. For each rule, an Environmental Impact Statement (EIS) was prepared by the Navy and adopted by NOAA regarding Navy training exercises. In addition to the EISs, for each rule, NMFS prepared an Environmental Assessment in which it specifically considered a suite of mitigation measures, many of which had been recommended by members of the public during the public comment process. In those assessments, NMFS evaluated the potential effectiveness and benefit of each possible mitigation measure. Also, as required by the Marine Mammal Protection Act, NMFS reviewed the practicability of each of the mitigation measures in light of the impact on personnel safety, the practicality of implementation, and the impacts on the Navy's ability to achieve its training goals.

In the Environmental Assessments, NMFS also identified the relevant uncertainties regarding the impacts of the proposed training on marine mammals. Two are worth highlighting. One involves lack of knowledge about the mechanisms whereby some species of marine mammals, particularly beaked whales, are adversely affected by mid-frequency active sonar. The other concerns the difficulties of limiting the impact of active sonar where the mitigation efforts depend on visual sighting of whales. The ongoing mitigation efforts, in our view, must do more

THE ADMINISTRATOR

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Initial Goals of NOAA's CetSound Effort

BIAS

Working Groups: Visualizing Impacts to Inform Actionable Policy

- **CetMap**: Compile existing and create new products to enhance & explore knowledge base for cetacean distribution & density
- **SoundMap**: New products to predict wide-ranging, long-term noise contributions from multiple human activities

Symposium: Share products, talk about *potential* management applications, & solicit input from multi-stakeholder audience.

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CetSound Process/Timeline Highlights

- Working Groups convened January 2011
  - ~35 technical experts from NOAA, Navy, BOEM, National Parks Service, academia and environmental consultancies.
  - Two analytical teams (HLS and Duke) contracted to support modeling and mapping work
  - Working groups met twice and worked throughout year
- Symposium held May 2012 in Washington DC
  - Navy, BOEM and Marine Mammal Commission on planning group
- Products are available on CetSound website (http://cetsound.noaa.gov/index.html)

Updated Periodically

http://cetsound.noaa.gov/index.html

CetMap Objective

To create comprehensive and easily accessible regional cetacean density and distribution maps that are time- and species-specific, ideally using survey data and models that estimate density using predictive environmental factors.

http://cetsound.noaa.gov/index.html

CetMap Products

1. Information Hierarchy
2. Cetacean Data Availability Analysis
3. New Density Modeling
4. **Biologically Important Areas**
5. One-stop data visualization and discovery tool for scientists and managers

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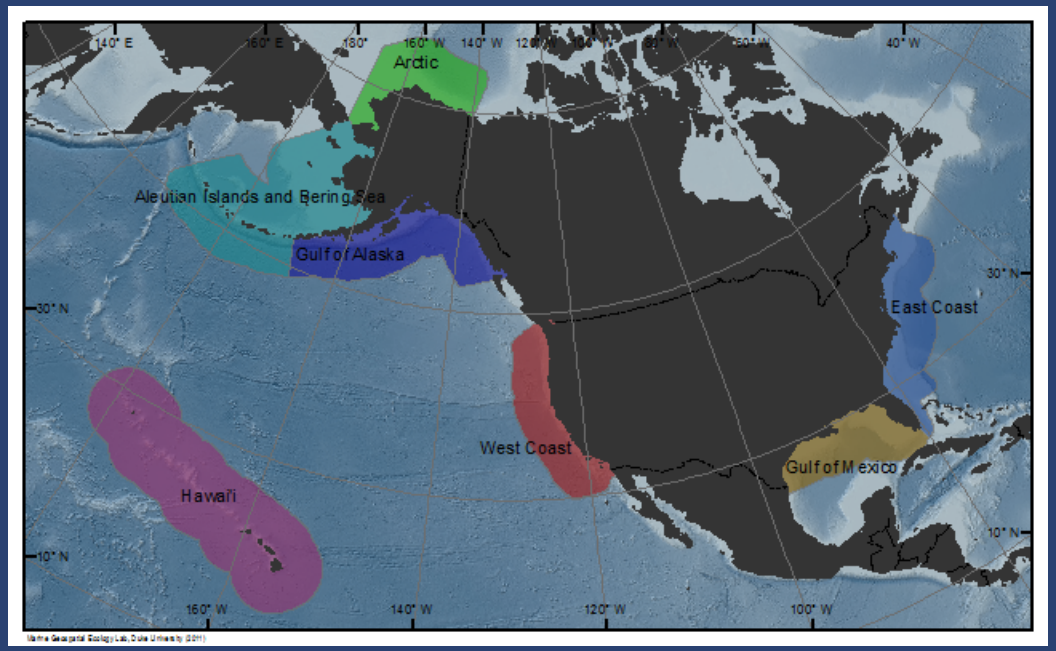
Ideal Resolution of CetMap Info



- Species or Population
- Month
- Region
  - Arctic
  - Gulf of Alaska
  - Aleutian Islands and Bering Sea
  - East Coast
  - Gulf of Mexico
  - West Coast
  - Hawaii

CETMAP BIOLOGICALLY IMPORTANT AREAS

HTTP://CETSOUND.NOAA.GOV/IMPORTANT.HTML

Cynthia Christman
NOAA/NMFS/AFSC/NMML
NMFS Permit No. 14245
Funded by BOEM (IA Contract No. M11PG00033)

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Rationale for BIAs

- Supplement quantitative information on cetacean density, distribution and occurrence
  - Identify areas where cetaceans are known to concentrate for specific behaviors, or be range-limited, but for which insufficient data exists for a quantitative mapping effort
  - Provide additional context within which to examine potential interactions between cetaceans and human activities

http://cetsound.noaa.gov/important.html

Definition of BIAs

- Cetacean species with distinct migrations
  - Reproductive Areas
  - Feeding Areas
  - Migratory Corridors
- Small or Resident Population

http://cetsound.noaa.gov/important.html

Expert Knowledge Solicitation

- Regional experts
- Best available information
  - Scientific literature
    - Books, peer-reviewed articles, gov't or contract reports
  - Published or unpublished data
  - Expert Knowledge
- Information types
    - Sighting, acoustic, tagging, genetic, photo identification, historical whaling records
- Products
  - Narratives, maps, metadata tables

http://cetsound.noaa.gov/important.html

External Review

- CetMap Working Group
- Regional experts
- Submit to scientific journal for peer-review and publication

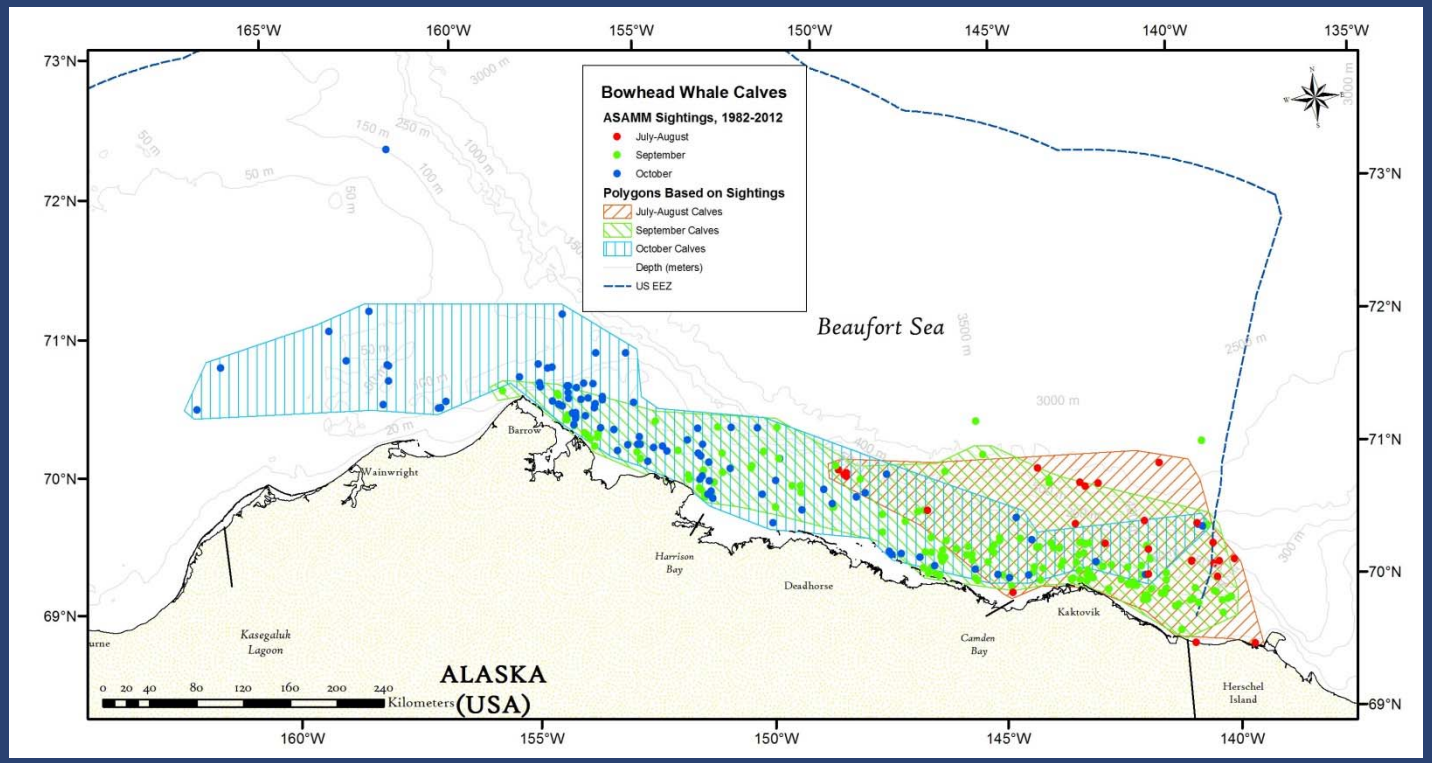
http://cetsound.noaa.gov/important.html

CetMap BIA Caveats

- US EEZ only
- *Known* areas
- Variability in quantity and type of data used to define BIAs
- Consult summaries and metadata tables
- BIAs are *not* equivalent to habitat or range

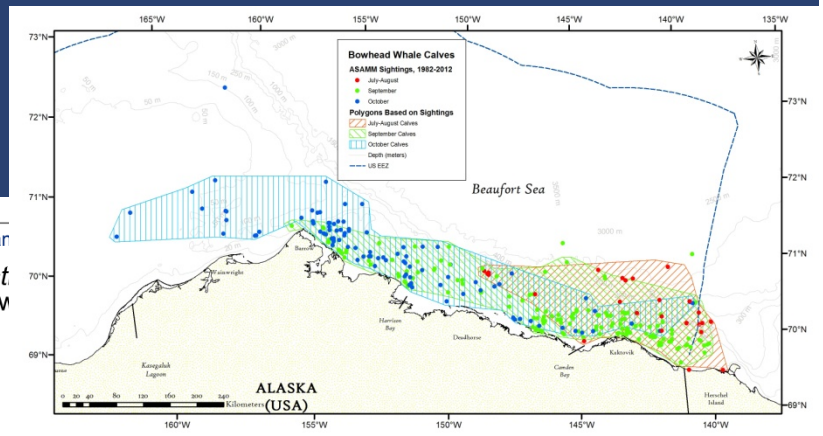
Bowhead Whale Cow-calf BIAs

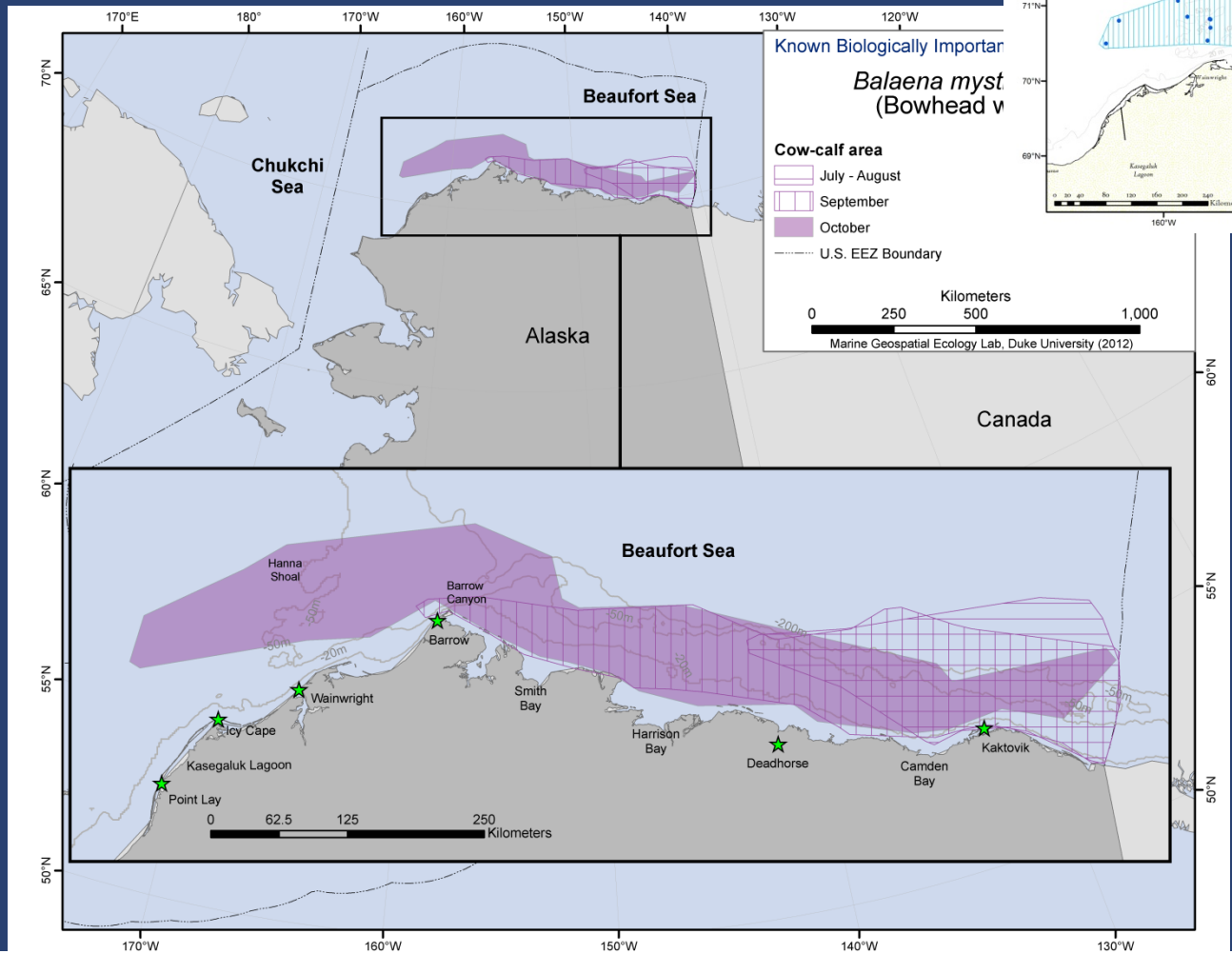
From aerial survey sightings…



Bowhead Whale Cow-calf BIAs

…to BIAs





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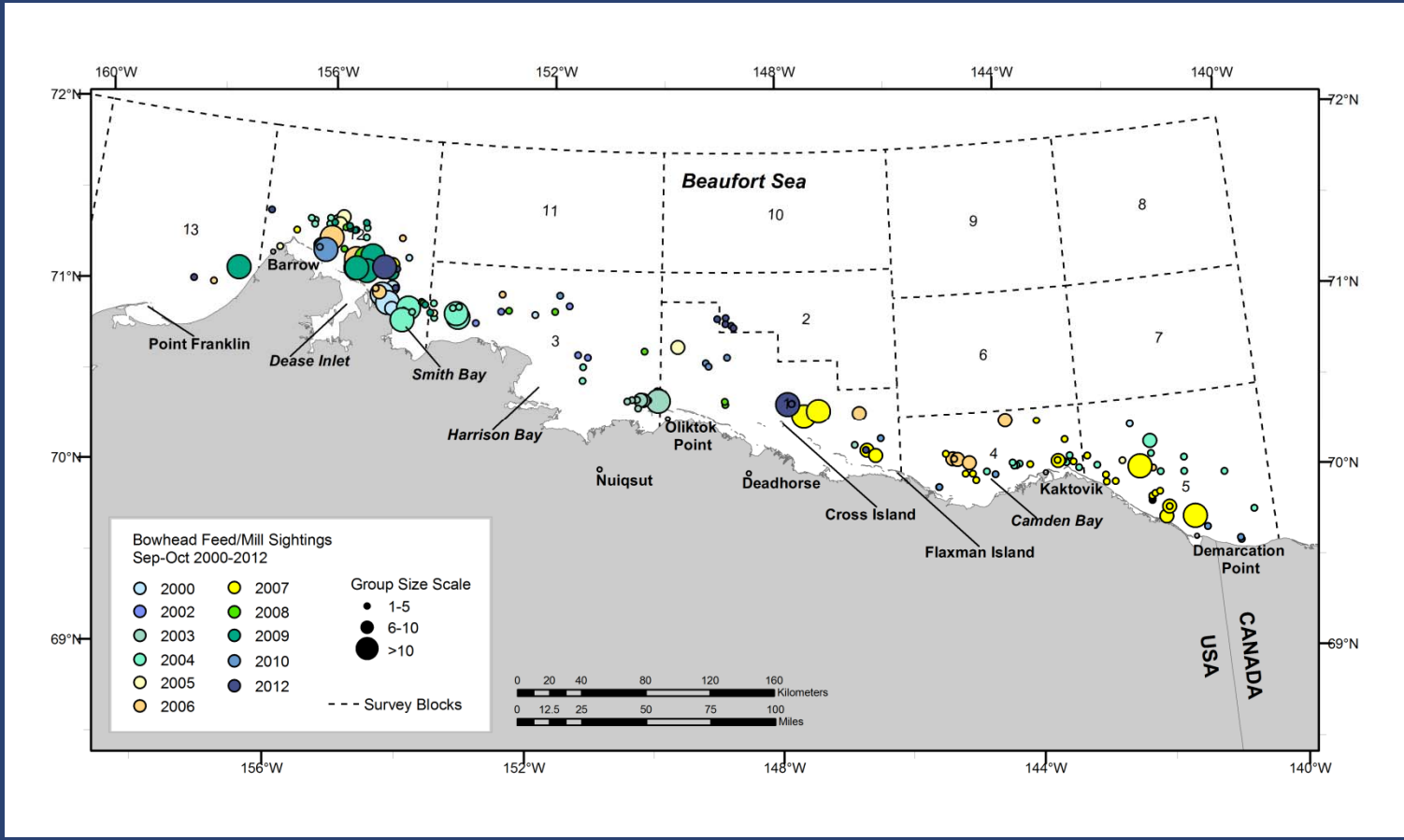
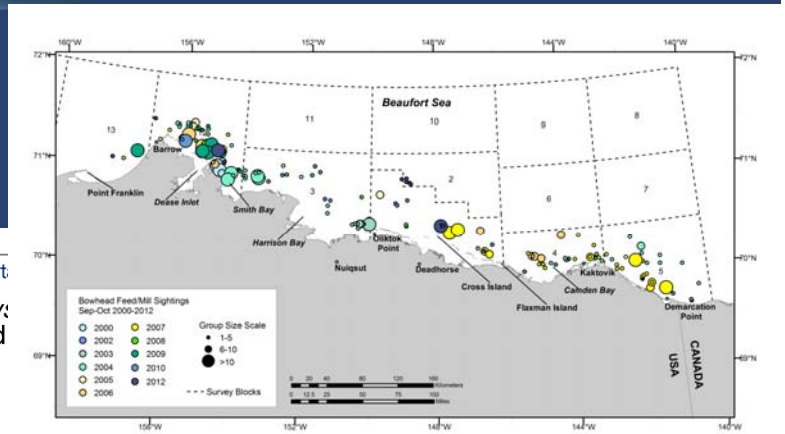
Bowhead Whale Feeding BIAs

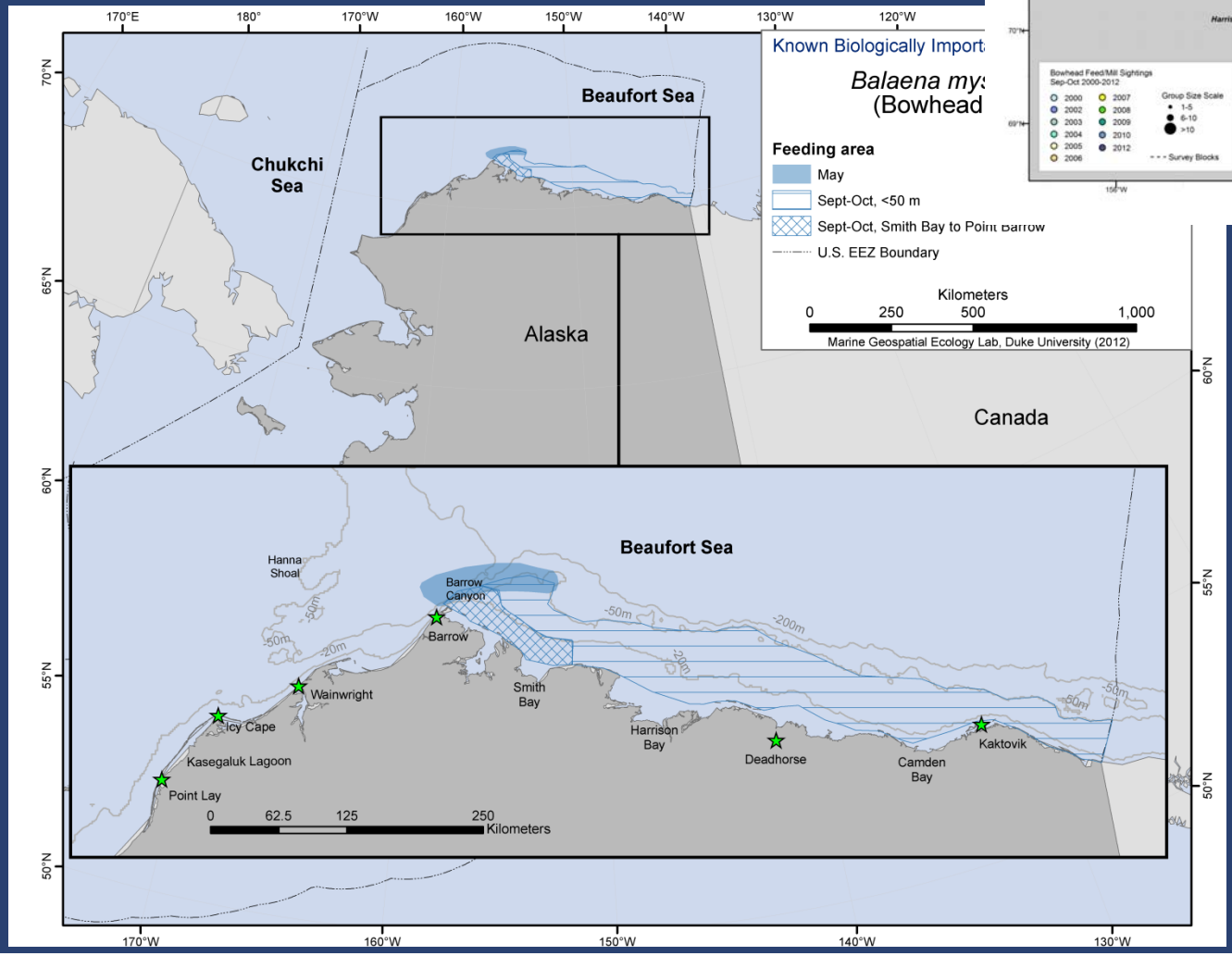
From aerial survey sightings…



Bowhead Whale Feeding BIAs

…to BIAs





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Bowhead Whale Spring Migration BIA

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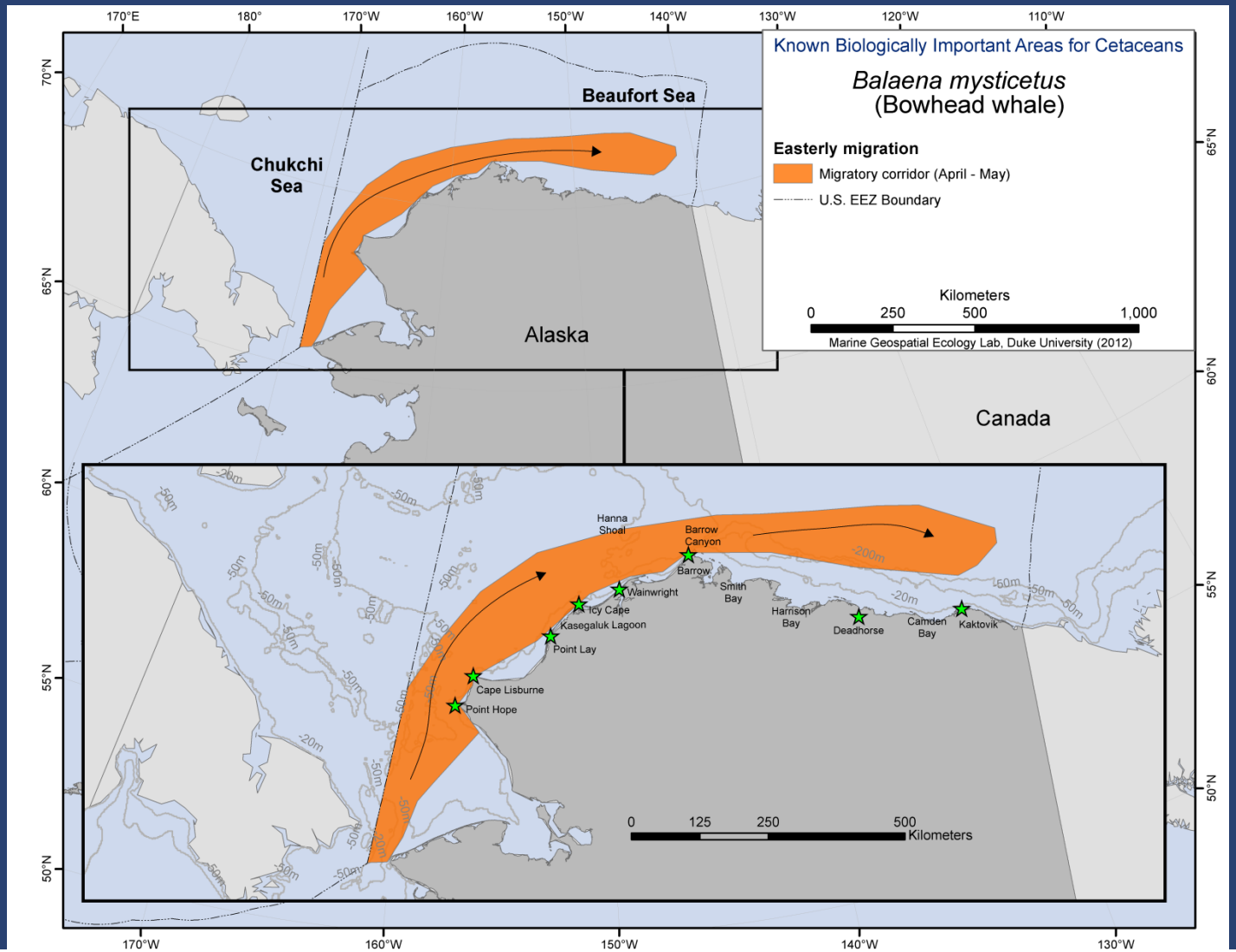

Bowhead Whale Summer Migration BIAs

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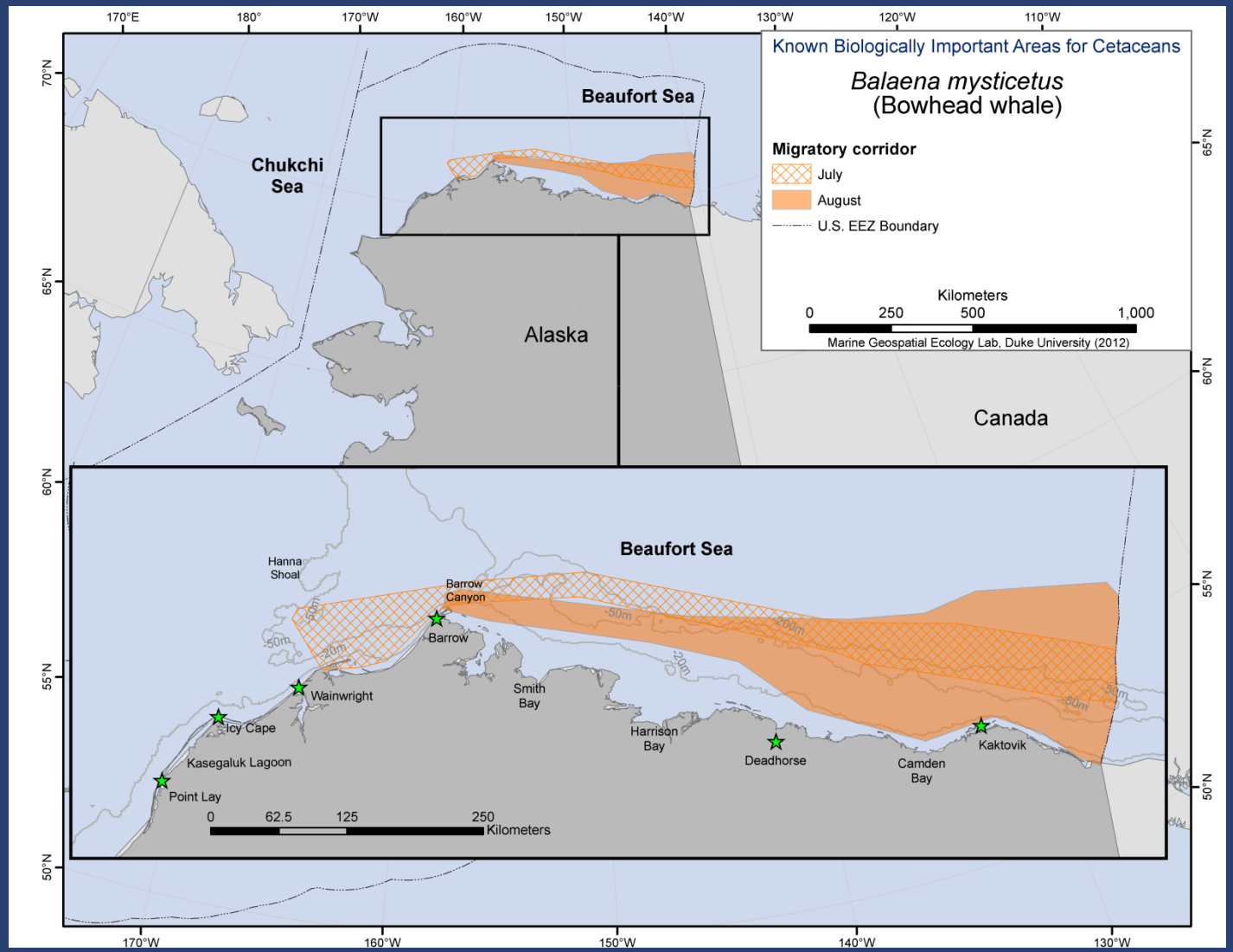

Bowhead Whale Fall Migration BIA

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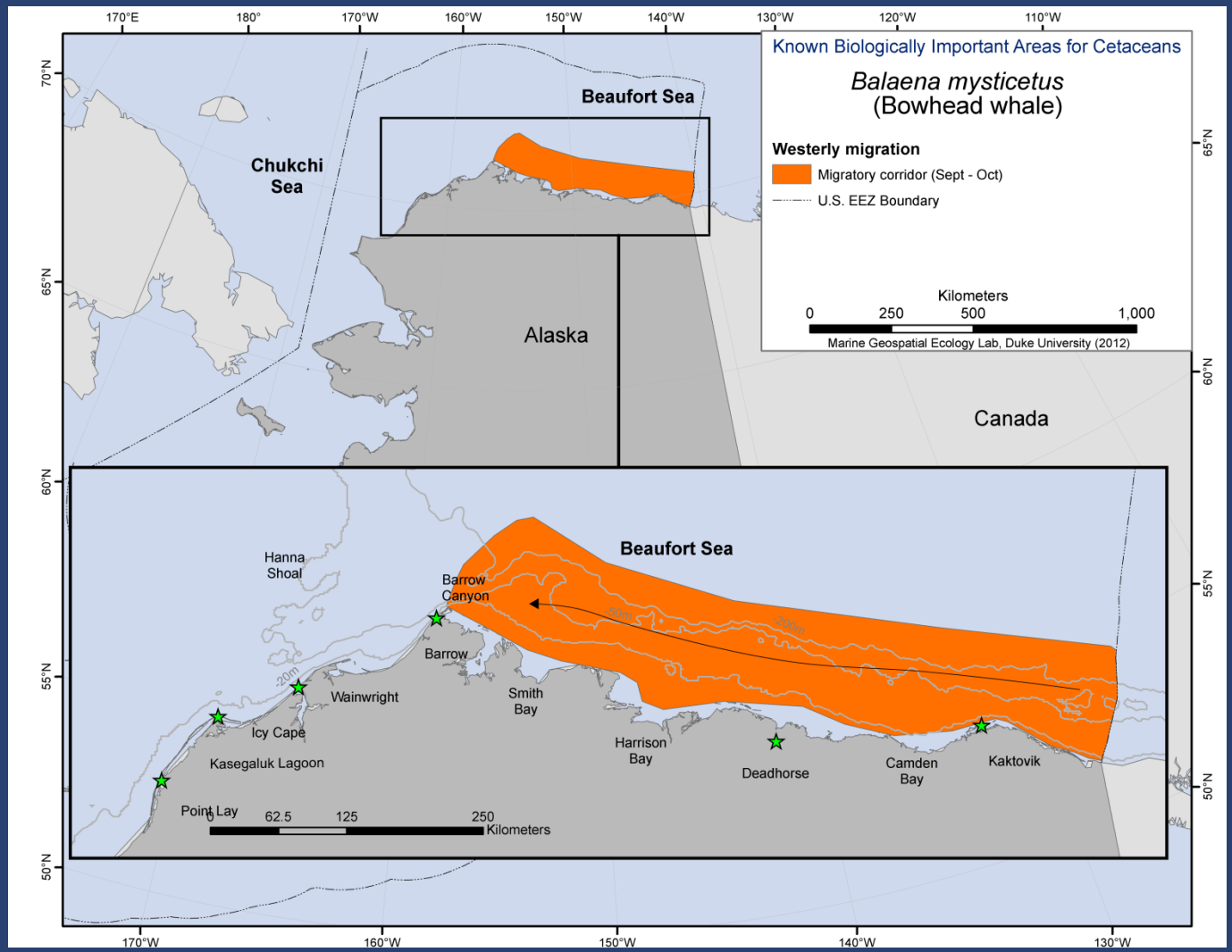

Beluga Spring Migration BIA

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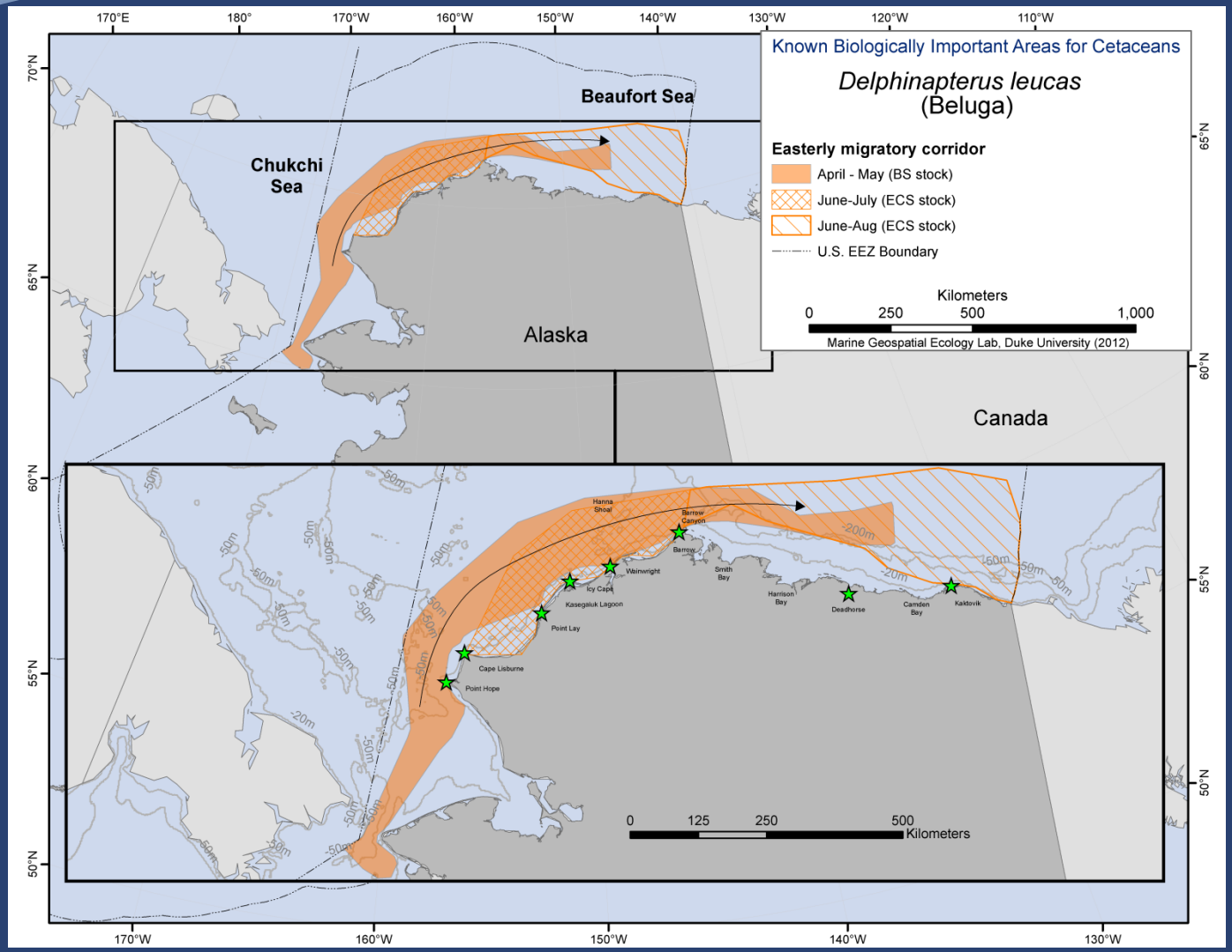

Beluga Fall Migration BIA

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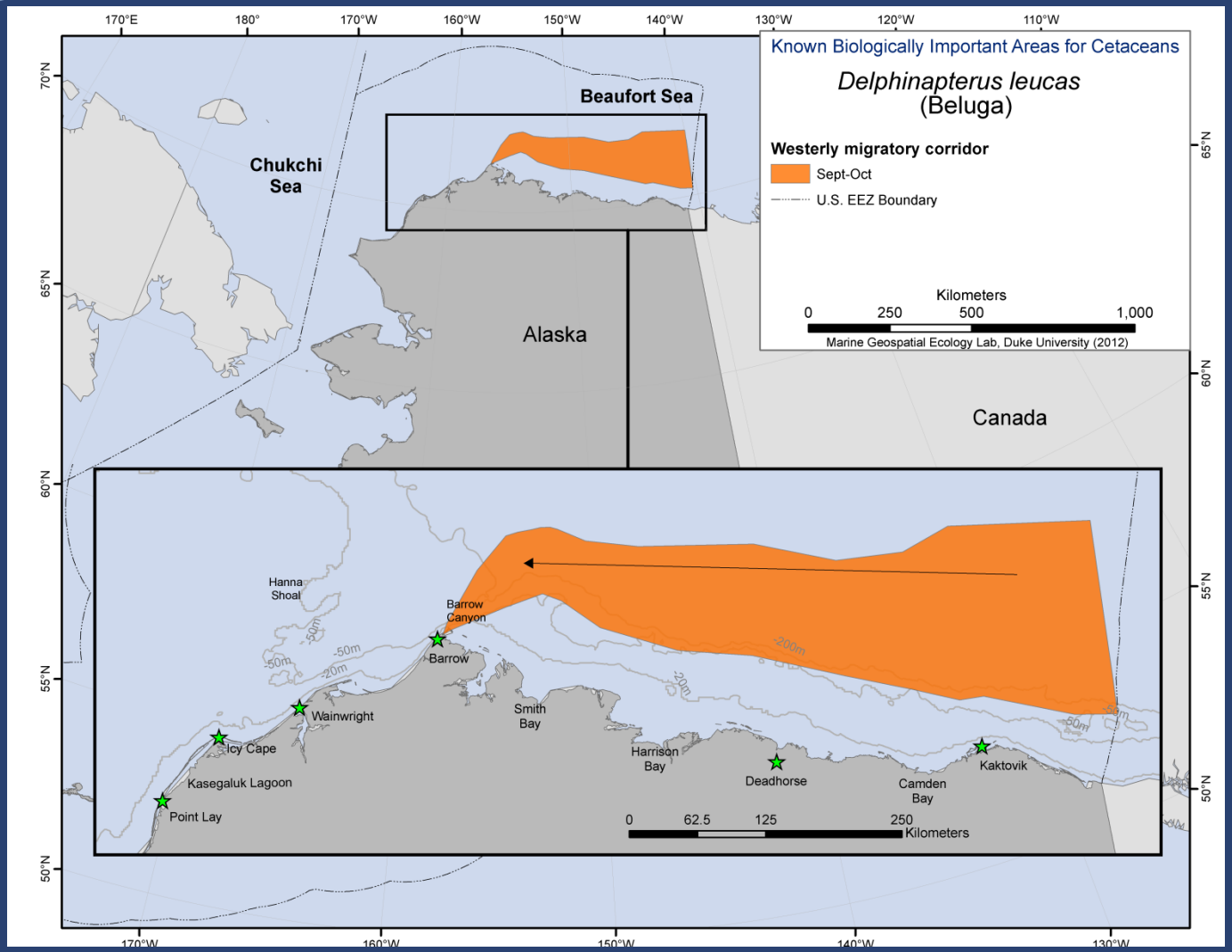

Beluga Reproduction & Feeding BIA

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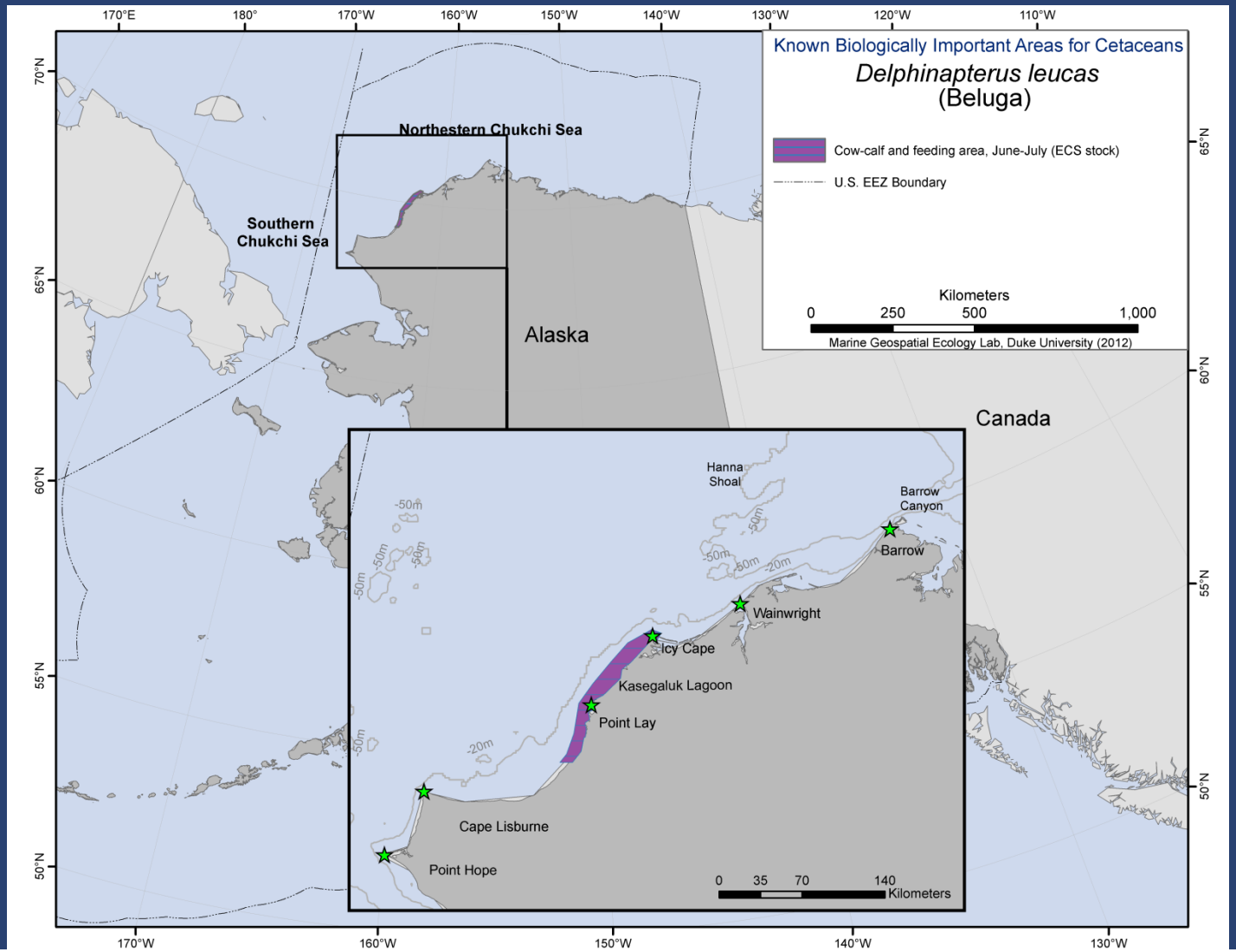

Gray Whale Reproduction & Feeding BIAs

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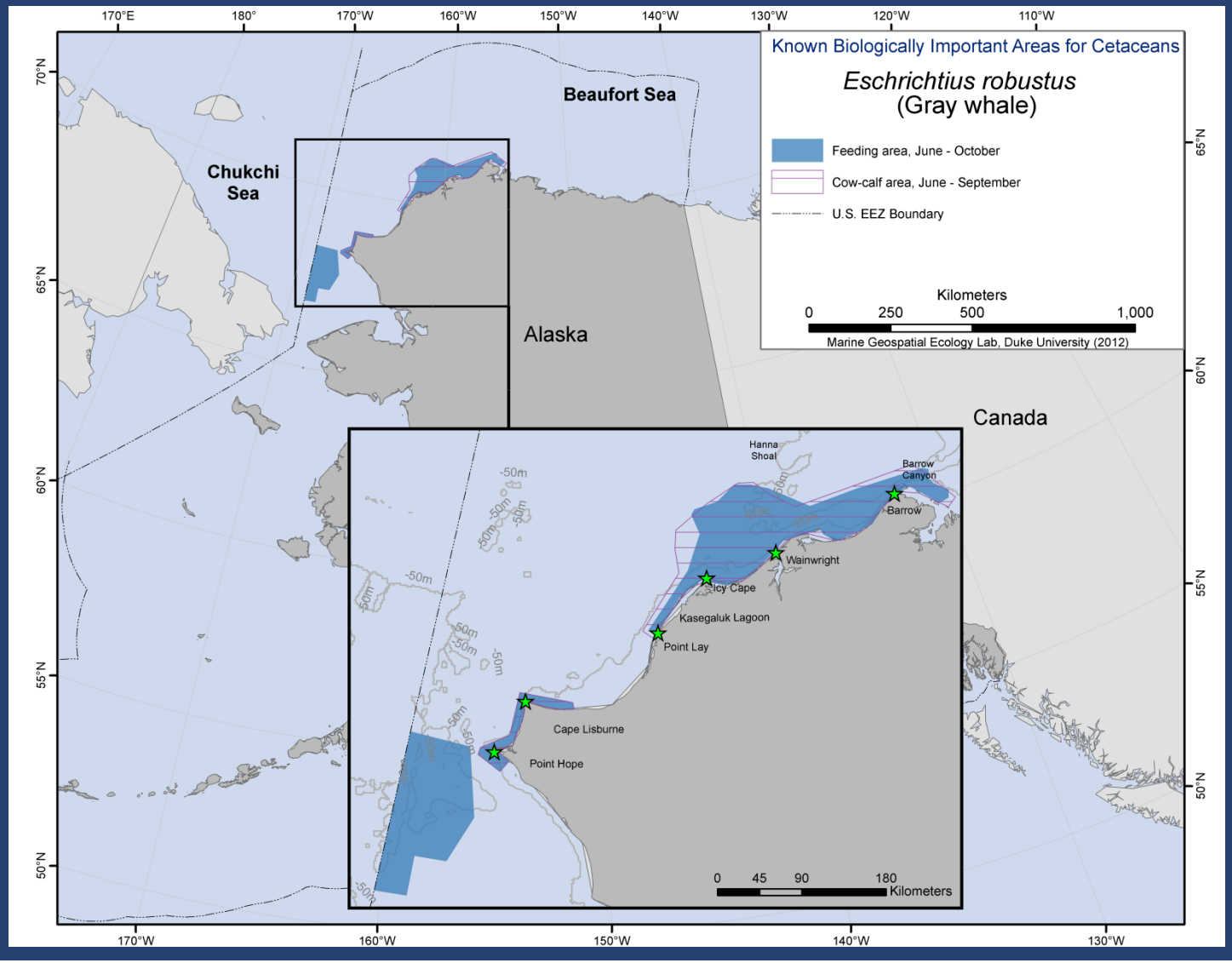

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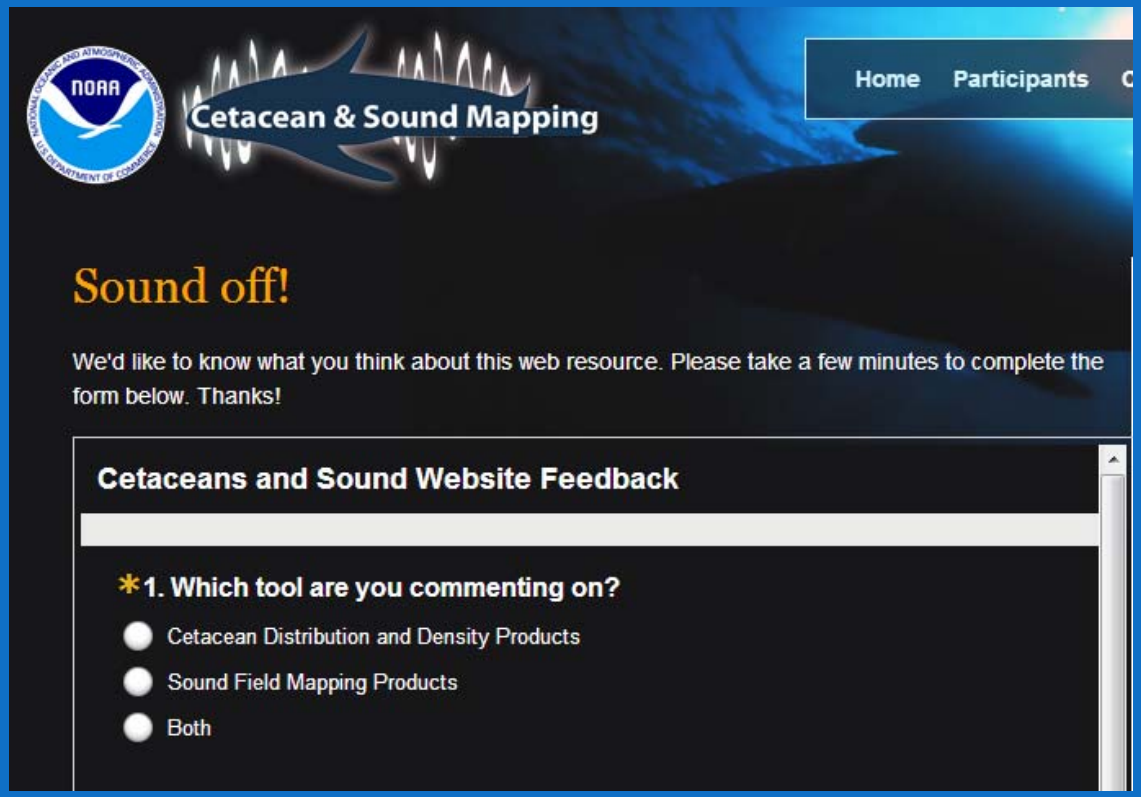
Next Steps

- Application of tools to NOAA decision-making
- Formalize leadership, funding, and staff structure for the effort
- Continued outreach to enhance support and utility
- Maintenance, refinement, and expansion of tools

Feedback Welcome!

http://cetsound.noaa.gov/feedback.html



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CetSound would not have been possible without

Financial Support

- U.S. NOAA
- U.S. Navy
- U.S. BOEM

Additional Support

- Dokumentes des Meeres (to SoundMap)
- Marine Mammal Commission (Symposium)