



Draft Climate Working Group White Paper

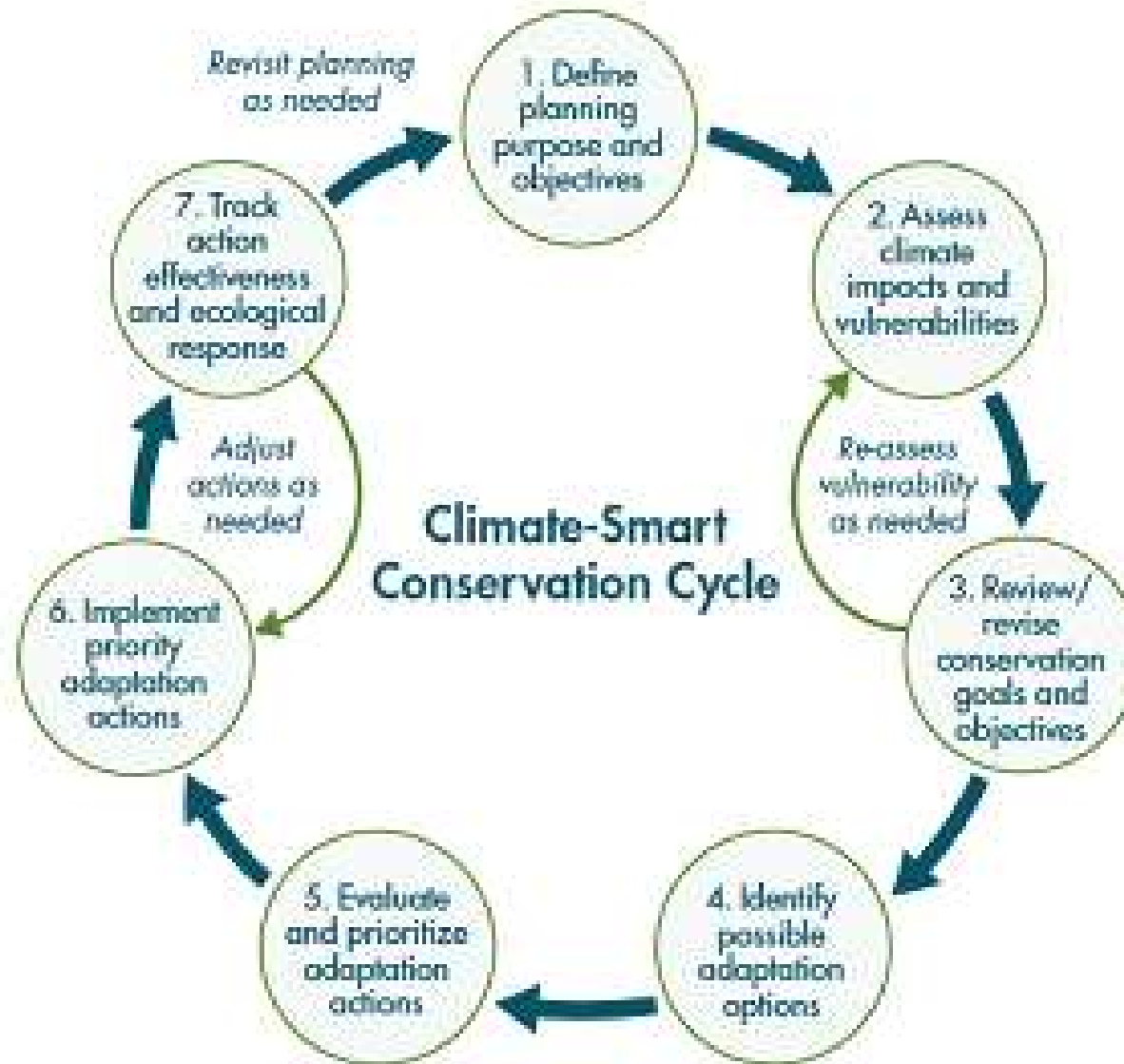
February 2018

Task



- Develop science, policy and management strategies to assist with adapting management to changes in species abundance and distribution resulting from climate change impacts.
- White paper provides options to assist Boards and Sections in the management of species impacted by climate change, with a focus on stocks with low biomass and allocation.

A. Stepwise Approach



B. Stocks at Persistent Low Biomass



Two questions to Ask:

1. What is the appropriate harvest level, if any
2. How many resources should be committed to continue monitoring and managing the species

B. Stocks at Persistent Low Biomass



1. Status Quo-how to address monitoring and management.
2. Evidence of a Change in Productivity- adjust ref points to reflect change
3. Evidence the stock has a low to no Productivity; recovery to sustainable levels is highly unlikely
4. Management and monitoring cease and harvest does not continue because it becomes economically unfeasible.

Science Requirements



- What is the mechanism of decline/loss of productivity?
- What evidence is there that the stock will likely not come back to its former productivity?
- How is sustainable yield determined and at what level of biomass will a harvest be permitted?
- Are there ecological/genetic considerations to be considered before taking any of these approaches to manage a stock or population?
- What are the economic and ecological tradeoffs of continuing to harvest at lower levels vs. a moratorium?

C. Management for Stock with Changing Distributions



- State-by-State
 - Quota sharing
 - Minimum allocations
 - Episodic
- Maintain State-by-State with revisit based on trigger
 - After x years
 - Alter who makes allocation decision: external or internal
 - Adjust allocations: distribution data, combine historical and current harvest, MSE

C. Management for Stock with Changing Distributions



- Change management away from state-by-state
 - Area focused
 - Allocation by timeframe

D. Climate TOR



- Recommends a TOR be considered and included if the TC/SAS thinks there may be climate impacts on the stock, if no impacts than do not include a TOR

E. List Climate Related Data



- Review to ensure all known programs that collect environmental data are included
 - Verify that all appropriate information is included
- Review types of environmental data collected
 - Determine temporal and/or spatial gaps in data necessary to investigate the effects of climate change on species
 - Determine importance of filling individual data gaps
 - Prioritize data gap filling and identify strategies to address the important gaps



Habitat Committee Report

Presentation to ASMFC Policy Board

February 8, 2018

Climate Change Recommendations Report



- 2017 ASMFC Action Plan
 - *Strategy 4.6 Task 4.6.2:*
 - *Identify gaps in state coastal regulatory planning regarding climate change impacts and make recommendations to increase resiliency.*
- Builds off the 2016 Summary of State Initiatives that Address Climate Change

Climate Change Recommendations Report



- State initiatives were grouped into 8 different categories ranging from establishing legislation to reduce carbon output to responding to climate change on the ground.
- Each state has implemented 1 – 8 of the initiatives, and four states have implemented all 8.

Climate Change Recommendations Report



- All states address climate change in their planning documents (SWAPs).
- Opportunities:
 - On the ground response.
 - Working groups or legislation to reduce carbon outputs and to respond to climate change threats.
 - More collaboration and outreach.

Climate Change Recommendations Report



- Report includes list of recommendations
 - Energy production and use
 - Science and monitoring
 - Increasing resiliency

Climate Change Recommendations Report



- Also includes additional literature and links to climate change initiatives along the coast (incl. NOAA and USFWS)
- Summary of initiatives by state

Updated SAV Policy



2017 is 20th anniversary of Habitat Committee's Submerged Aquatic Vegetation Policy

- 2017 Habitat Hotline theme was Submerged Aquatic Vegetation
- Reviewed and updated 1997 SAV Policy document

Updated SAV Policy



- Habitat Committee re-evaluated SAV Policy recommendations and importance.
- Determined the policy is still relevant, arguably more important now than ever.
- Left goals largely unchanged from 1997 version.
- Primary goal: preserve, conserve, and restore SAV where possible, in order to achieve a net gain in distribution and abundance, and prevent further losses.

Updated SAV Policy



- Six key components to achieving the goal of this policy:
 - Assessment of historical, current, and potential distribution and abundance of SAV
 - Protection of existing SAV
 - SAV restoration and enhancement
 - Public education and involvement
 - Research
 - Implementation

Updated SAV Policy



- Updated based on emerging issues and new information:
 - Background information
 - Policies
 - Recommended actions
- Summary of initiatives taken by state and federal partners
- SAV contacts for each state



Questions?



NOAA
FISHERIES

Protected Resources

Right Whale 5-Year Review and ESA Section 7 Consultations on Commercial Fisheries

Michael J. Asaro, PhD
Greater Atlantic Regional
Fisheries Office

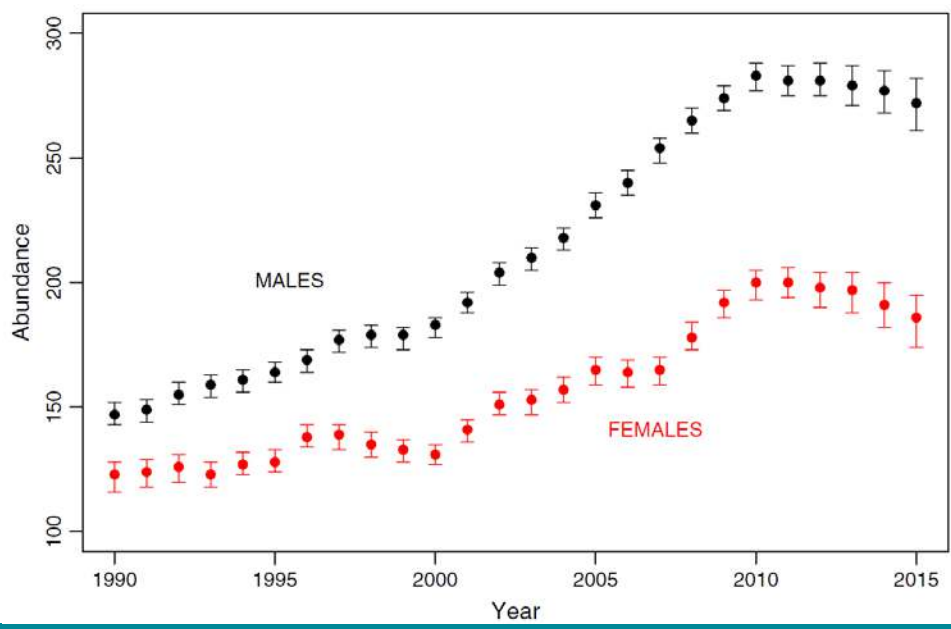
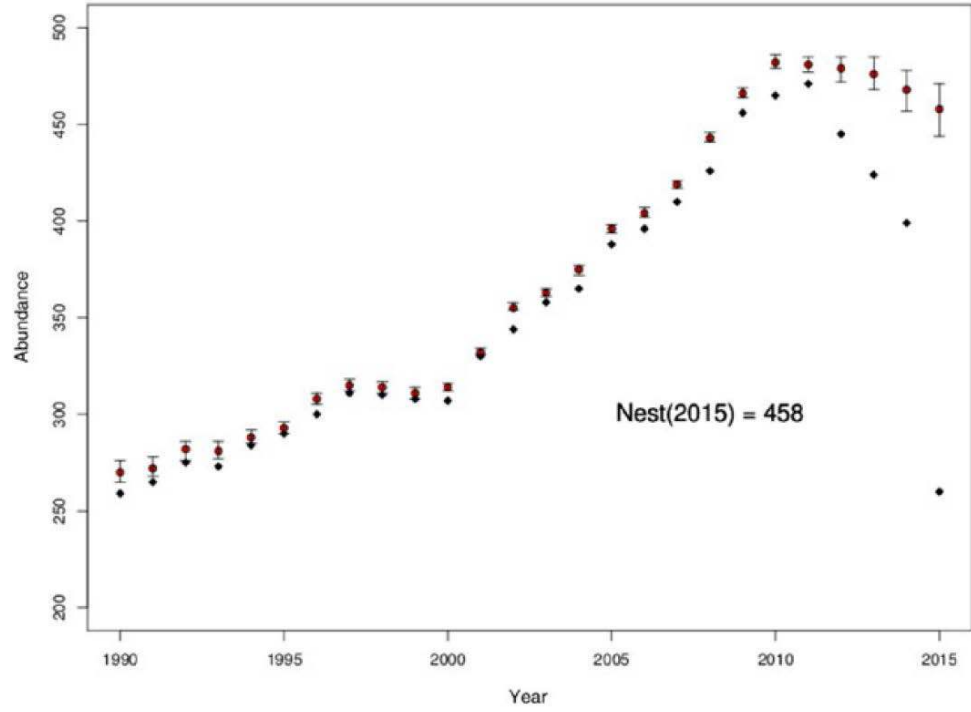
February 8, 2018

Overview

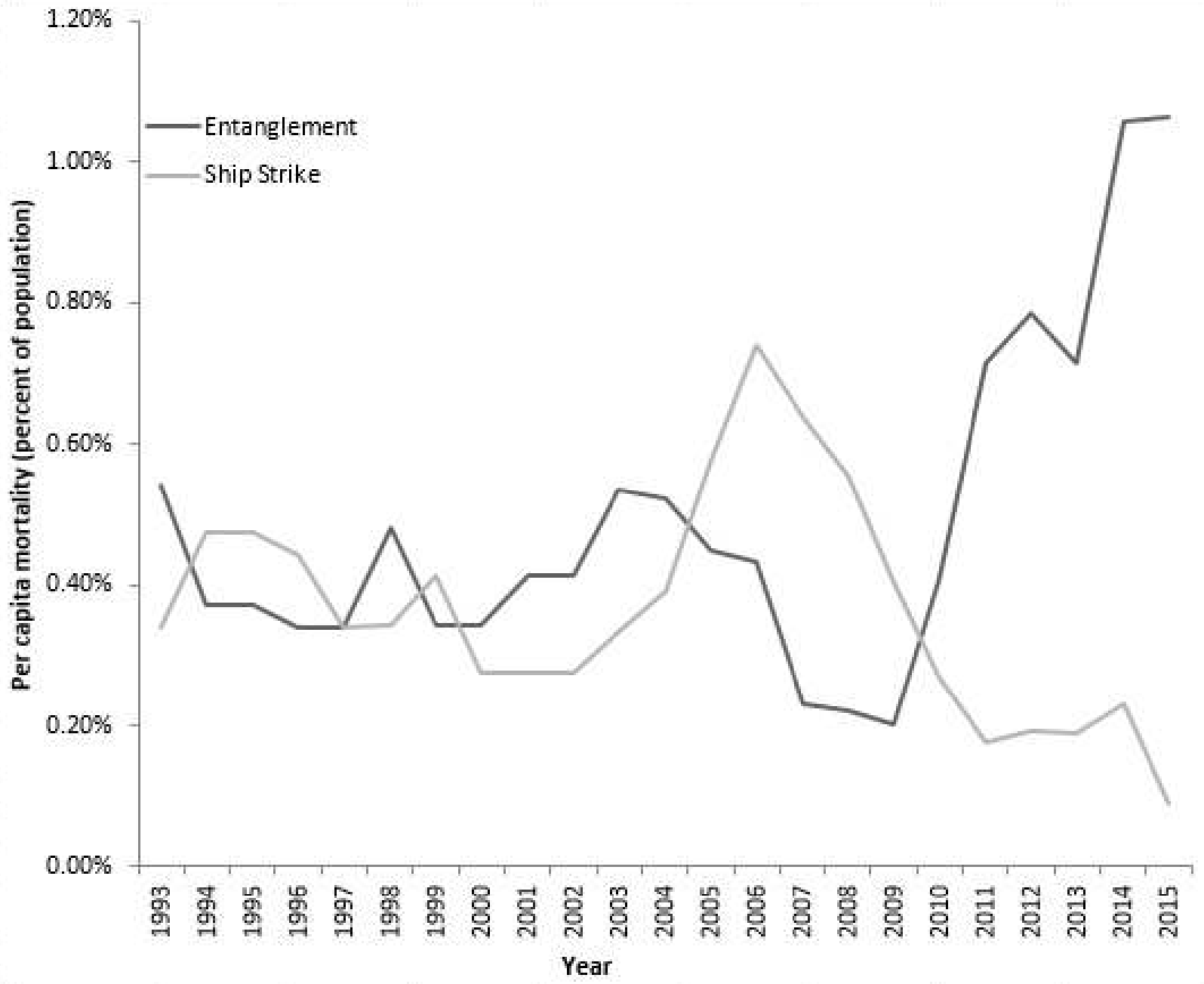
- North Atlantic Right Whale 5-year Review
 1. Summary of recent right whale biology
 2. Management recommendations planned
 3. Management recommendations in progress
- Fisheries consultations under Section 7 of the Endangered Species Act
- Atlantic Large Whale Take Reduction Team activities this year

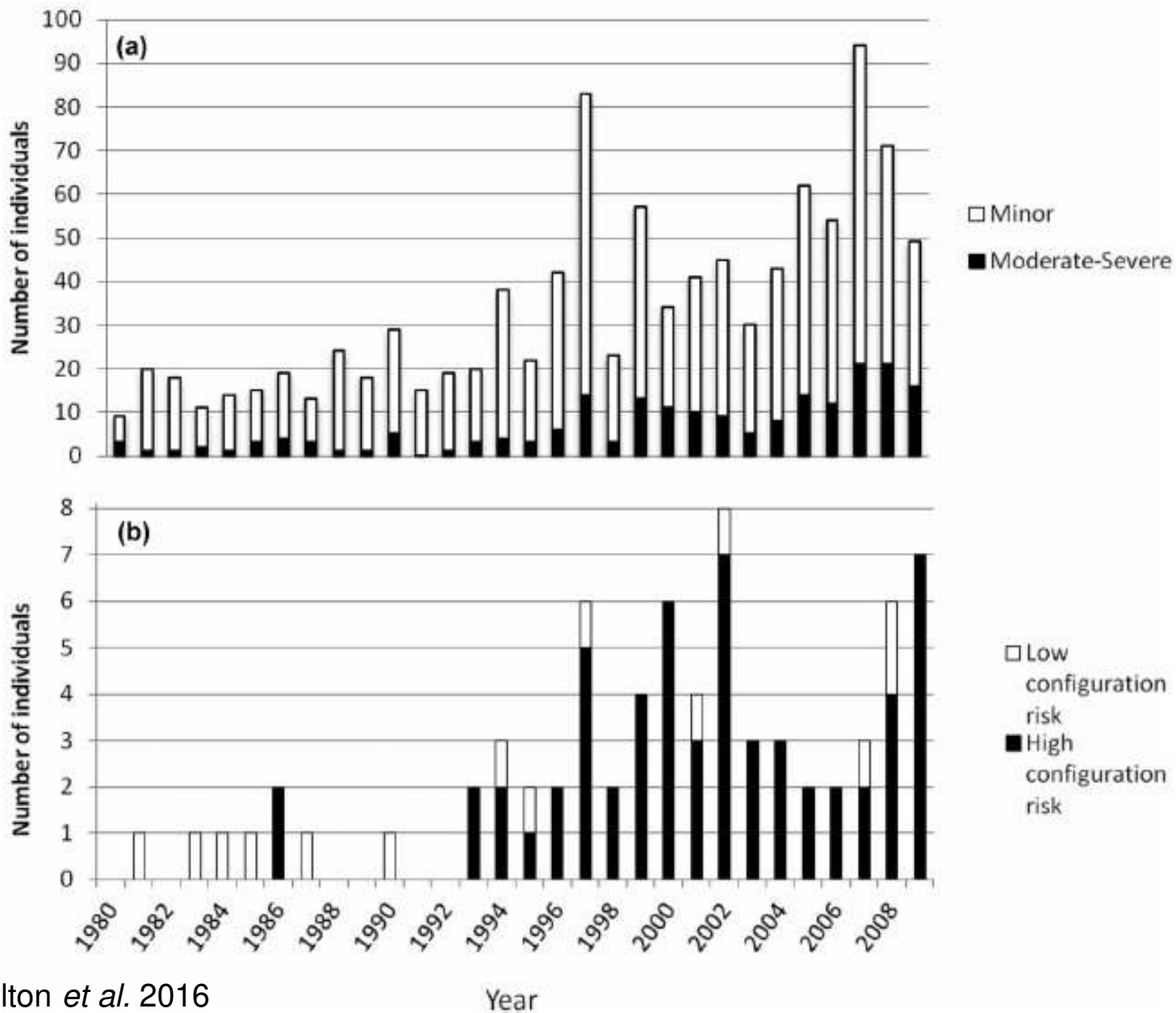
Right Whale 5-Year Review

- A Requirement of the Endangered Species Act; follow-on from the 2005 North Atlantic Right Whale Recovery Plan
- Findings of the 2017 5-year review:
 - A low rate of reproduction,
 - Longer calving intervals,
 - Declining population abundance,
 - Continued mortality from vessel and fishing gear interactions,
 - Changes in prey availability, and
 - Increased transboundary movement and risk.
- Confirms endangered status



Source: Pace *et al.* 2017





Source: Knowlton *et al.* 2016

Scar coding



Minor



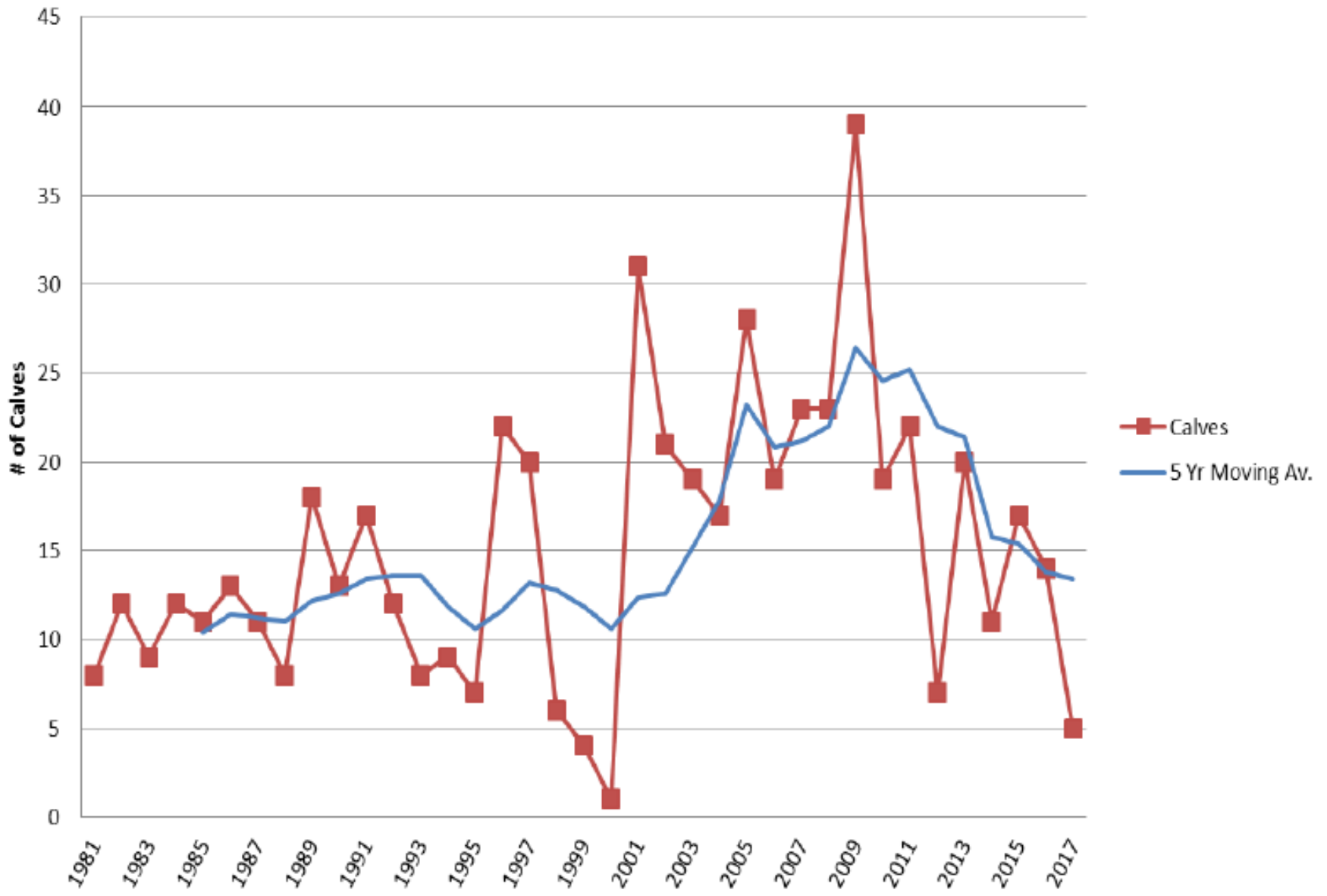
Moderate



Severe

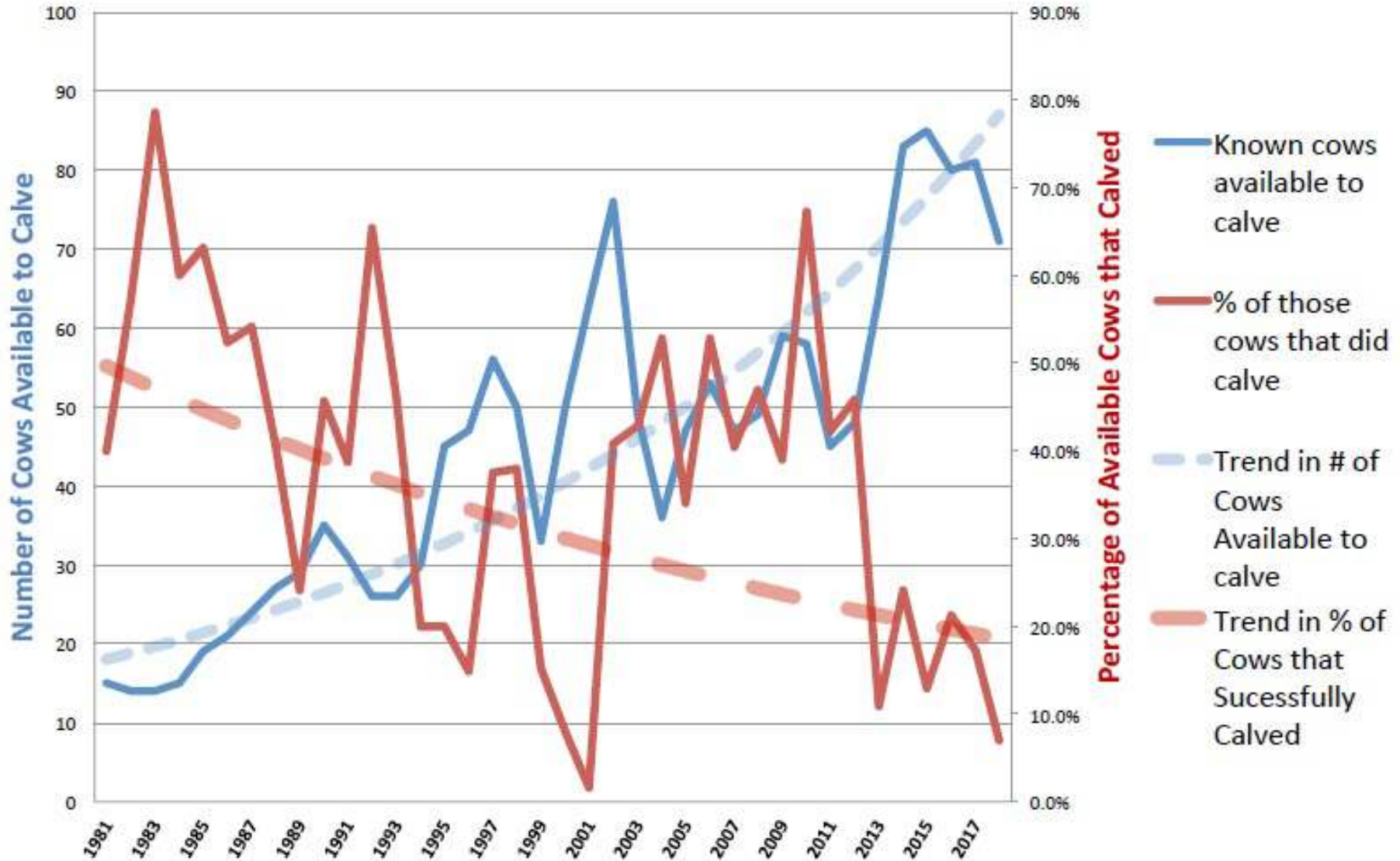
Entanglement levels
3 injury severity levels
(based on extensiveness
and depth of wounds)
+
With or without attached
gear
=
6 levels

Calves per Year

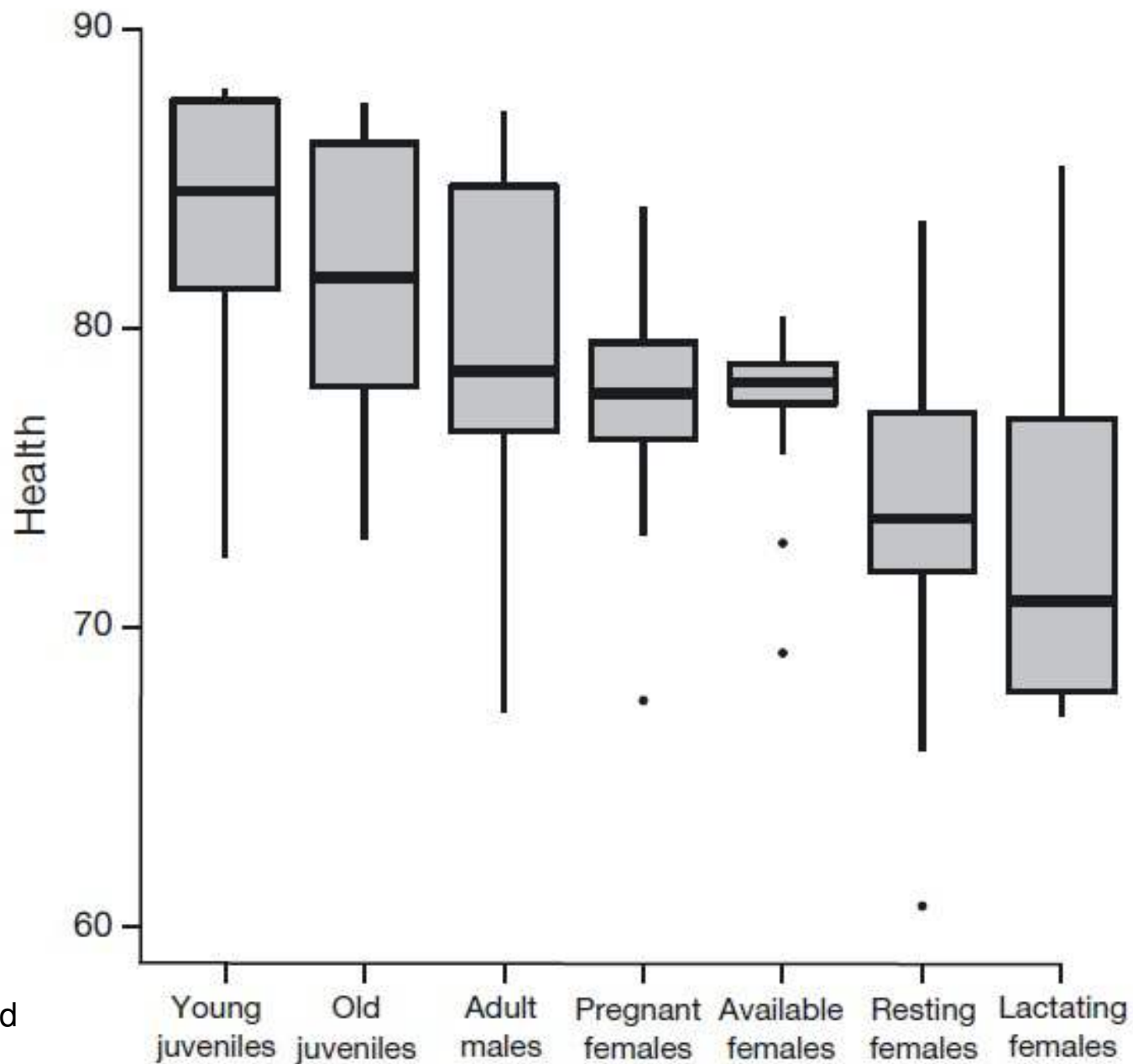


Source: S. Kraus/M. Baumgartner, North Atlantic Right Whale Consortium

Number of Right Whale Cows Available to Calve (blue line) vs % of Cows that Successfully Calved (red line)



Source: S. Kraus/M. Baumgartner, North Atlantic Right Whale Consortium



Source: Rolland
et al. 2016

Entanglement is a costly life-history stage in large whales

Julie van der Hoop^{1,2}  | Peter Corkeron³ | Michael Moore²

¹Massachusetts Institute of Technology-Woods Hole Oceanographic Institution Joint Program in Oceanography/Applied Ocean Science and Engineering, Cambridge, MA, USA

²Biology Department, Woods Hole Oceanographic Institution, Woods Hole, MA, USA

³NOAA Fisheries, Northeast Fisheries Science Center, Woods Hole, MA, USA

Abstract

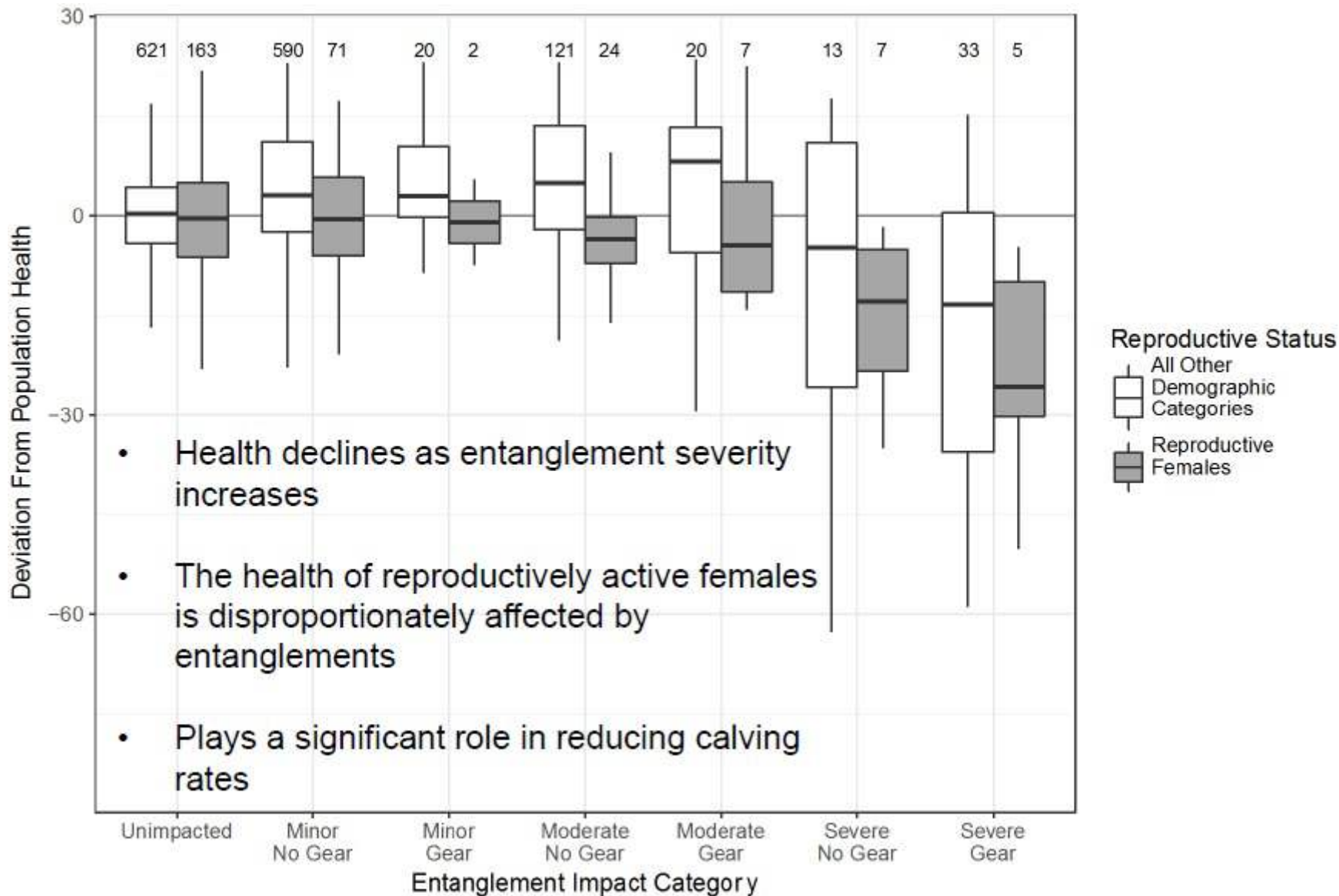
Individuals store energy to balance deficits in natural cycles; however, unnatural events can also lead to unbalanced energy budgets. Entanglement in fishing gear is one example of an unnatural but relatively common circumstance that imposes energetic demands of a similar order of magnitude and duration of life-history events such as migration and pregnancy in large whales. We present two complementary bioenergetic approaches to estimate the energy associated with entanglement in North

Source: Van der Hoop *et al.* 2016

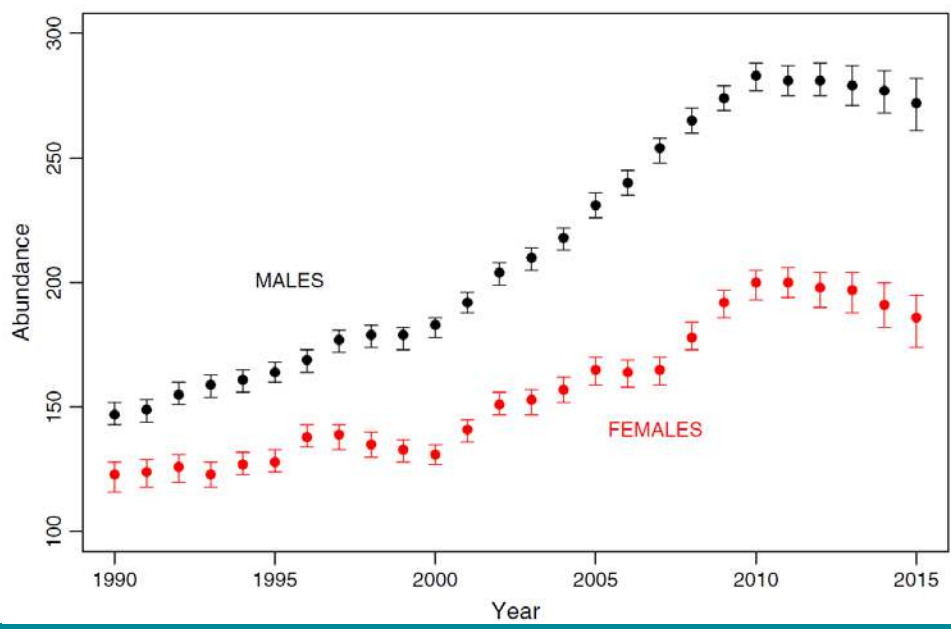
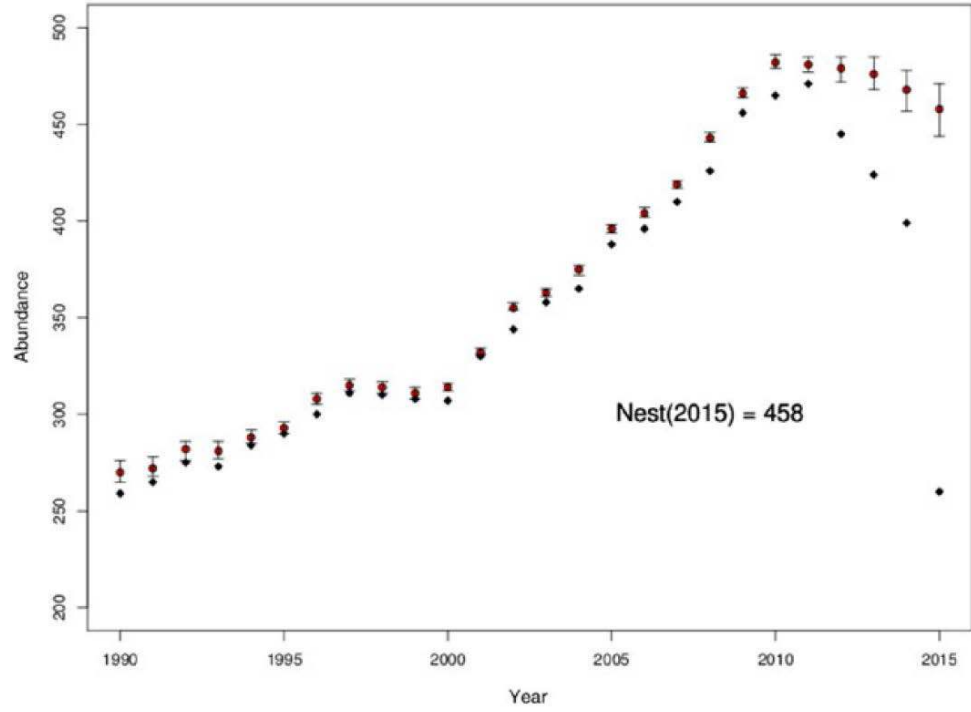


Fig. 1. (a) A North Atlantic right whale (EG# 3911) in good health observed on 10 February 2010 (Photo credit: Florida Fish and Wildlife Conservation Commission, NOAA Permit No. 775-1875). (b) The same right whale, observed on 15 January 2011, in poor health after a severe fishing gear entanglement that resulted in her death (Photo credit: Georgia Department of Natural Resources, NOAA Permit No. 932-1905/MA-009526). Poor body condition was evident from concavity in the dorsal profile in the post-blowhole area (denoted by white arrow), skin lesions and widespread orange cyamid coverage (yellow circles), orange cyamids along the margins of the blowholes (white circle), and rake marks anterior to the blowholes (yellow arrow). A white fishing line can be seen exiting the margin of the lips next to the yellow circle on the left.

Source: Rolland
et al. 2016



Source: Knowlton *et al. in press*



Source: Pace *et al.* 2017

2017 Right Whale Mortalities

- 12 whales from June 7 – September 15 in the Gulf of St. Lawrence, Canada
 - 7 necropsies performed
 - Causes of death: 2 entanglement, 4 blunt force trauma, 1 unknown
- 5 whales from April 13 – November 26 near Massachusetts, USA
 - 4 necropsies performed
 - Causes of death: 2 pending, with evidence of entanglement, 1 blunt force trauma, 2 unknown
- 9 live entanglements observed in US and Canada in 2017

Right Whale 5-Year Review

- Recommendations for the period 2017-2022:
 - Developing a strategy for understanding the energetic stressors on right whales including the effect of chronic, sublethal entanglement on overall and reproductive health and the effects of changes in environmental conditions and prey availability.
 - Developing a long-term, cross-regional plan for monitoring right whale population trends and habitat use.
 - Prioritizing funding for a combination of acoustic, aerial, and shipboard surveys of right whales that can be used to understand right whale presence in near real time.
 - Evaluating the effectiveness of the Atlantic Large Whale Take Reduction Plan and the Ship Speed Rule to determine whether it may be necessary to modify or extend these protections for right whales.
 - Analyzing the effects of commercial fishing on right whales.

Right Whale 5-Year Review

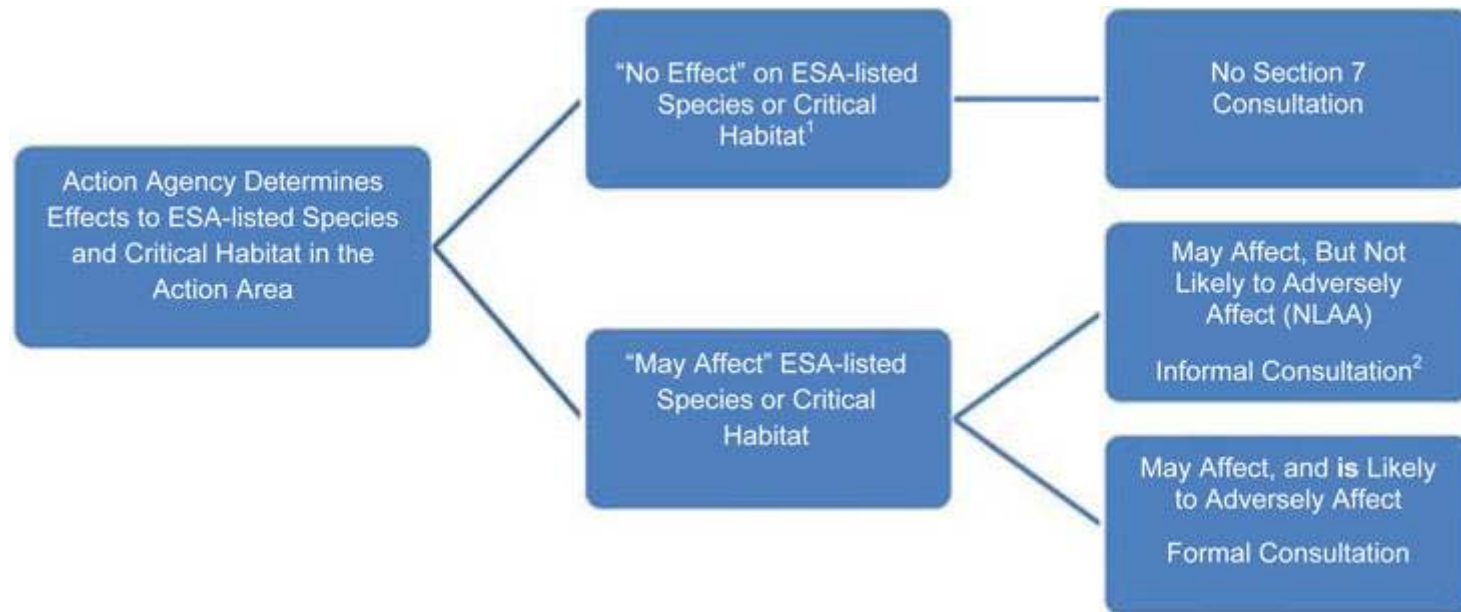
- Recommendations currently underway:
 - Convening a bilateral work group with Canada to focus on addressing science and management gaps
 - Designating a dedicated Right Whale Recovery Coordinator in the Greater Atlantic Region
 - Developing a new North Atlantic Right Whale Recovery Team
 - Reinitiate our fisheries Biological Opinions under the Endangered Species Act

Section 7 of the Endangered Species Act

Section 7 of the Endangered Species Act

Section 7 of the Endangered Species Act requires federal agencies to ensure that actions they authorize, fund, or carry out do not jeopardize the existence of any species listed under the ESA, or destroy or adversely modify designated critical habitat of any listed species.

Section 7 of the Endangered Species Act



Biological Opinions issued on Federal FMPs

- American Lobster Fishery - July 31, 2014
- Batched Fisheries - December 16, 2013
 - Northeast Multispecies
 - Monkfish
 - Spiny Dogfish
 - Atlantic Bluefish
 - Northeast Skate Complex
 - Mackerel/Squid/Butterfish
 - Summer Flounder/Scup/Black Sea Bass
- Atlantic Deep-Sea Red Crab – February 6, 2002
- These Biological Opinions concluded that the fisheries under consideration may adversely affect but were not likely to jeopardize the continued existence of any ESA listed species, including right whales

Formal Consultation, Biological Opinions

Content:

1. Introduction/Consultation History
2. Description of the Proposed Action and Action Area
3. Status of Listed Species and Critical Habitats
4. Environmental Baseline
5. Effects of the Proposed Action
6. Cumulative Effects
7. Integration and Synthesis of Effects
 - Jeopardy and Destruction/Adverse Modification analysis
8. Conclusion
9. Incidental Take Statement /Reasonable and Prudent Alternatives (RPA)
 - Includes Reasonable and Prudent Measures (RPM), terms and conditions, and monitoring measures
10. Literature Cited and Appendices

Formal Consultation, Biological Opinions

Reasonable and Prudent Measures (RPM)

Measures necessary and appropriate to minimize the impacts of incidental take that is anticipated to result from implementing an action that NMFS concludes is not likely to jeopardize the species.

Reasonable and Prudent Alternatives (RPA)

Alternatives to eliminate the likelihood of jeopardy or adverse modification of critical habitat.

- Implemented in a manner consistent with the intended purpose of the action.
- Consistent with the scope of the action agency's legal authority and jurisdiction.
- Economically and technologically feasible.

Atlantic Large Whale Take Reduction Plan under the Marine Mammal Protection Act

Atlantic Large Whale Take Reduction Team

- Established in 1996 under Marine Mammal Protection Act:
 - Purpose: to develop a take reduction plan for reducing the incidental take of right whales, humpback whales, fin whales and minke whales in commercial trap/pot and gillnet gear in U.S. waters from Maine to Florida
 - Goal: reduce serious injuries and mortalities to $<$ PBR

Team Membership

Group	Number
Trap/Pot Industry	18
Gillnet Industry	5*
Conservation/Environmental	6
Academic/Scientific	9
State Managers	14
Federal Managers	5
Fishery Mgmt Organizations	4
Total	61

* Some trap/pot member represent gillnet as well



July 22, 1997

- Establish TRP
- Weak link requirements
- Effective November 15, 1997

January 9, 2002

- Establish SAM and DAM program
- DAM effective February 8, 2002
- SAM effective March 2002

October 5, 2007

- Expand weak link requirements
- Implement sinking groundline requirements
- Effective April 2009
- Replaced SAM and DAM program

December 12, 2014

- Modification to time/area of closure area
- Effective immediately

December 2000

- Gear marking requirements
- Effective February 2001

June 25, 2007

- Seasonal gillnet closures in Southeast
- Effective July 2007

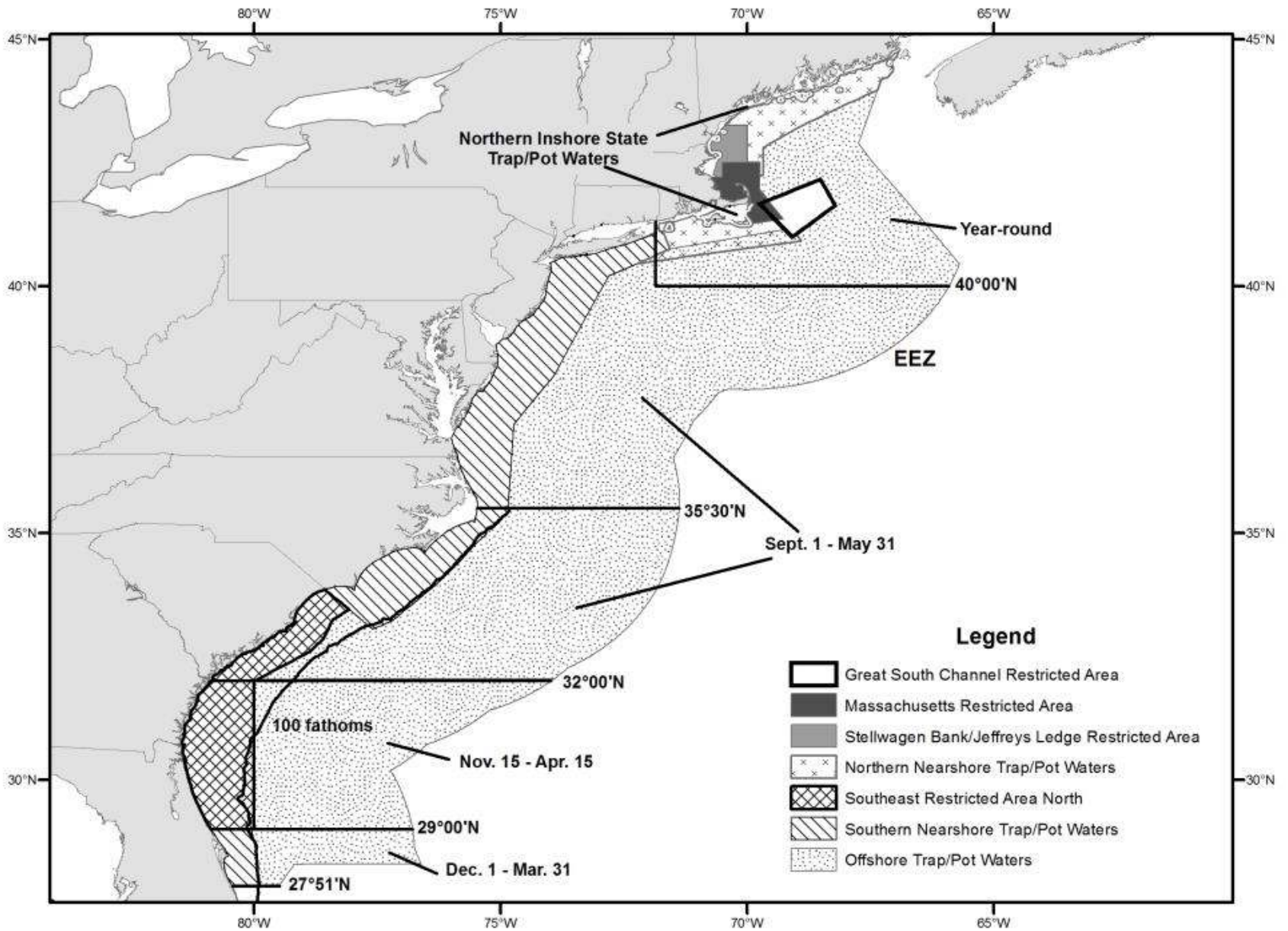
June 27, 2014

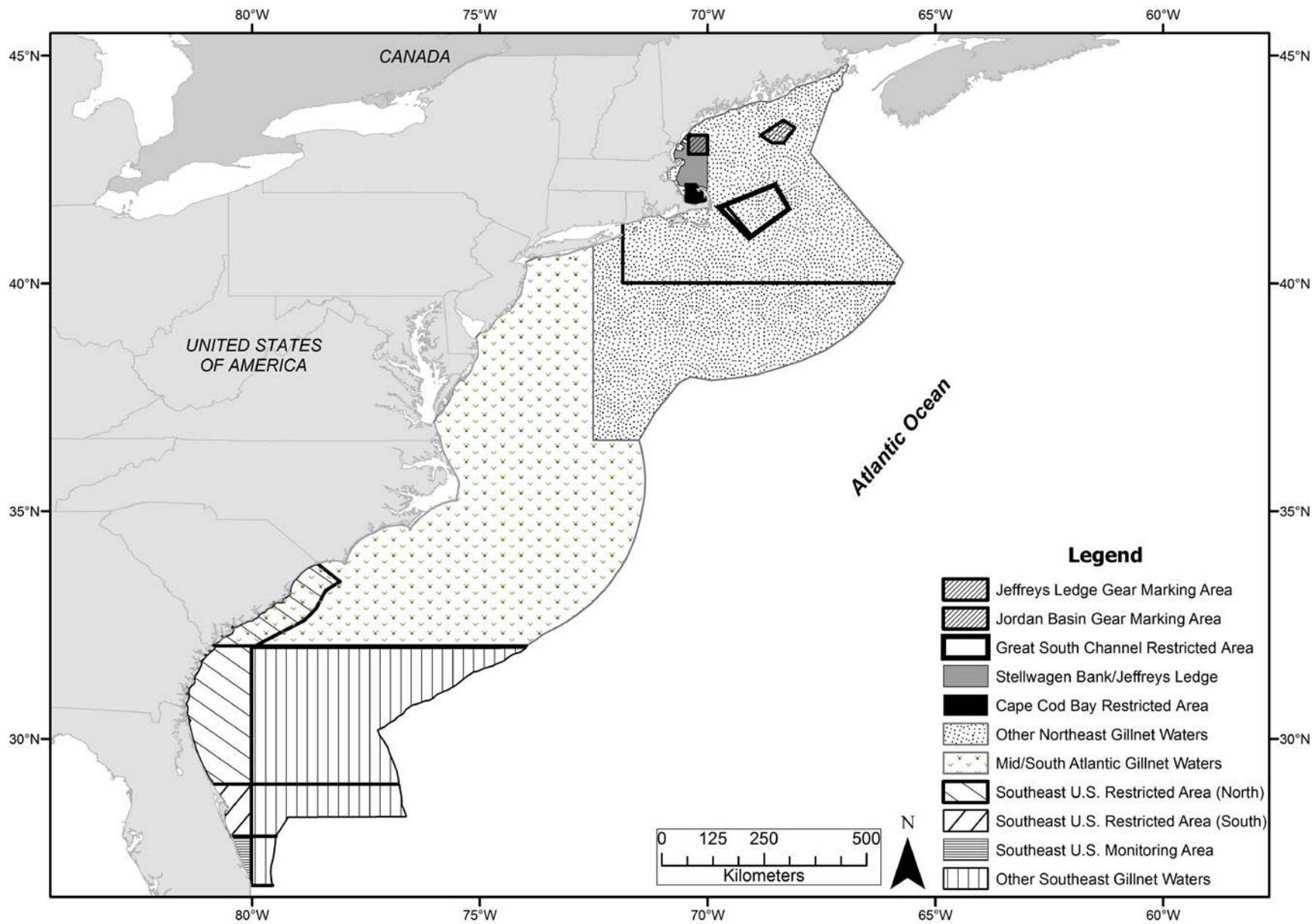
- Vertical line rule
- Additional gear marking requirements
- Effective June 2015

May 28, 2015

- Modification to vertical line rule. Effective immediately
- Additional gear marking requirements







Lines removed from water column

- In 2009 U.S. fishermen converted 27,000 miles of floating groundline to sinking groundline
- In 2015 U.S. fishermen removed 2,740 miles of vertical line by trawling up



Trap/Pot and Gillnet Closure areas

31,916 TOTAL SQ MILES of seasonal closures

MA Restricted Area (trap/pot, Feb-April)

- 3,073 sq mile

Great South Channel (trap/pot and gillnet, April-June)

- 3,232 sq mile

Cape Cod Bay Restricted Area (gillnet, Jan-May)

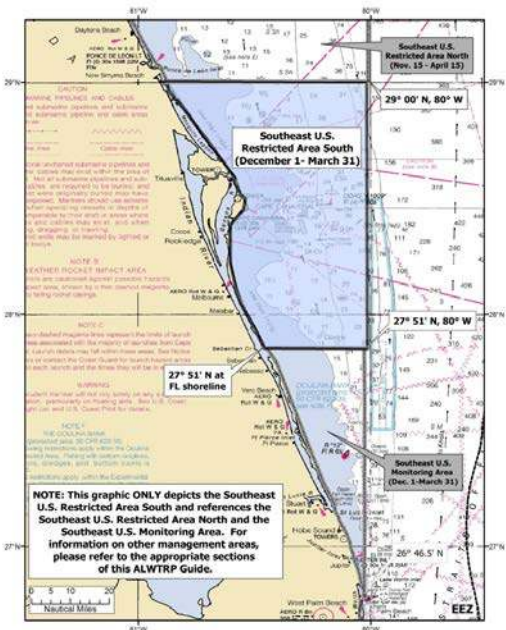
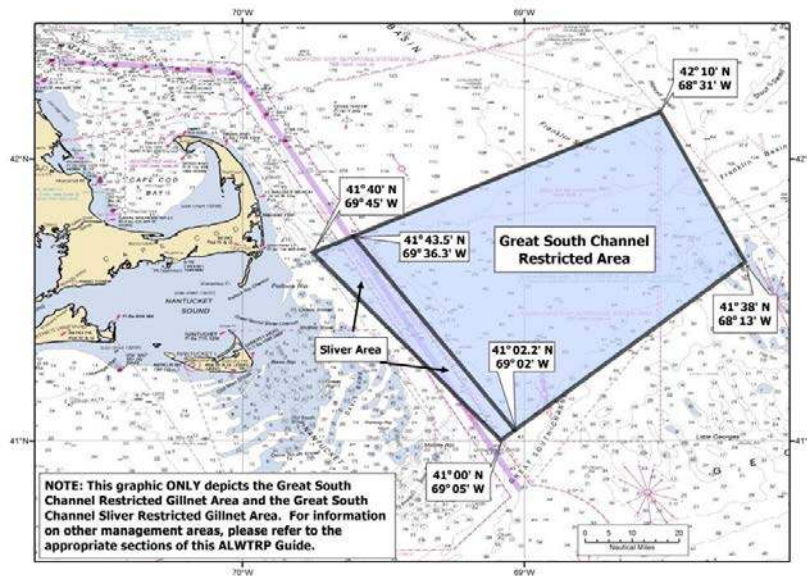
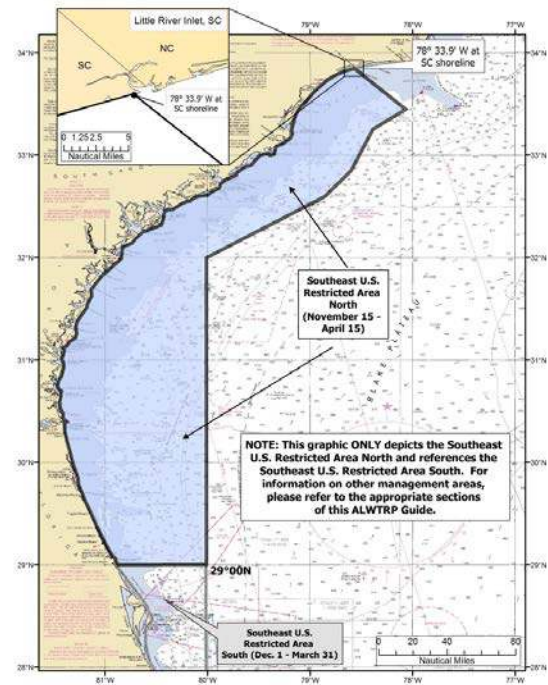
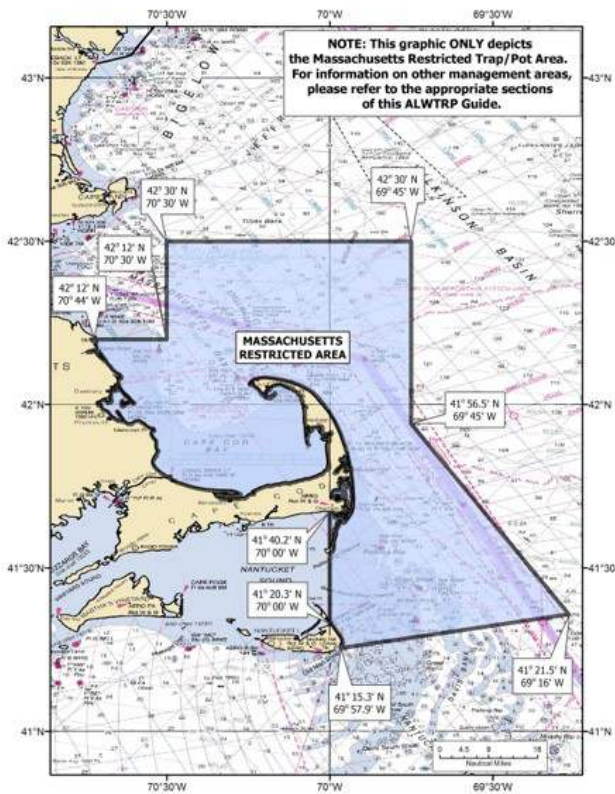
- 664 sq mile

Southeast Restricted Area North (gillnet, Nov 15- April 15)

- 21,996 sq mile

Southeast Restricted Area South (gillnet, Dec-March)

- 2,951 sq mile



Weak Links and Gear Marking

- Weak links are required coastwide



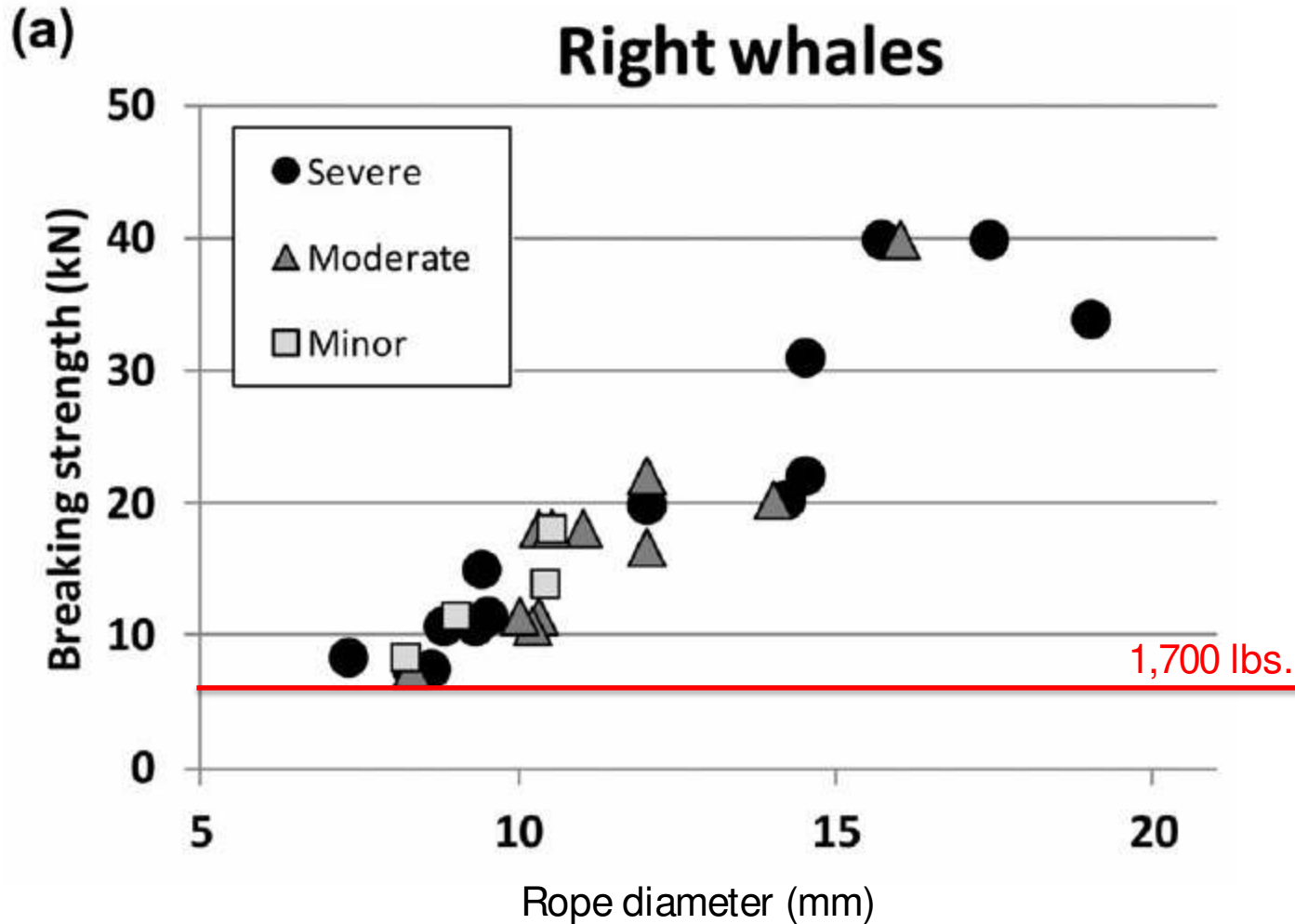
- Gear marking is required coastwide
 - Including two areas of importance for right whales with specific marks (Jordan Basin and Jeffreys Ledge)
 - 4,008 vessels are required to gear mark with three 12” marks

Atlantic Large Whale TRT Activities in 2018

Atlantic Large Whale TRT in 2018

- Two TRT Subgroups forming this month:
 1. Reduced breaking strength (1,700lb) rope & gear marking
 2. Ropeless fishing

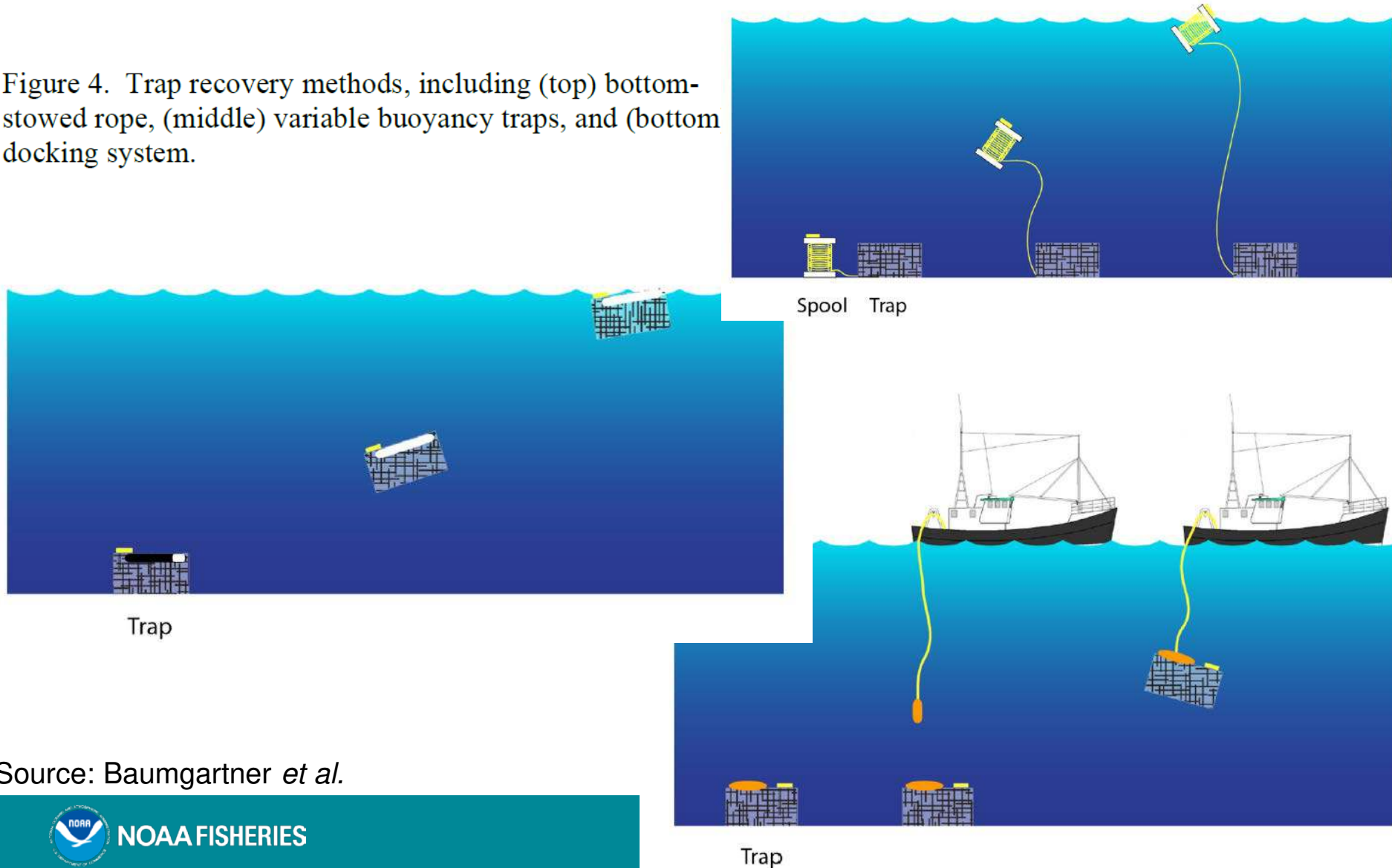
1,700 lb. Breaking Strength Rope



Source: Knowlton *et al.* 2016

Ropeless Fishing

Figure 4. Trap recovery methods, including (top) bottom-stowed rope, (middle) variable buoyancy traps, and (bottom) docking system.



Source: Baumgartner *et al.*

TRT Subgroups

Focused on feasibility

1. Technological feasibility: Does the tech exist?
2. Functional feasibility: Will it work?
3. Economic feasibility: Is it cost-effective?

Questions?



Image collected under MMPA Research permit number 17355
Photo Credit: NOAA/NEFSC/Christin Khan



2019 American Shad Benchmark Stock Assessment Terms of Reference

ISFMP Policy Board
February 8, 2018



Terms of Reference for Stock Assessment Process



1. Define and justify stock structure.



2. Characterize age and repeat spawner data by stock and identify utility of data source.
 - a. Provide descriptions of methods, any changes to methods, and associated peer-reviewed literature.
 - b. Describe validation experiments, if available, and available samples.
 - c. Where possible, explore reader consistency, potential bias, and agreement statistics.
 - d. Where possible, explore use of correction factors when consistency in method or reader was not maintained.



3. Characterize precision and accuracy of other fishery-dependent and fishery-independent data used in the assessment, including nontraditional data (i.e., entrainment, impingement, passage). Characterization should include the following but is not limited to:
 - a. Provide descriptions of each data source (e.g., time series, geographic location, sampling methodology and changes, potential explanation for outlying or anomalous data).
 - b. Describe calculation and potential standardization of abundance indices.
 - c. Discuss trends and associated estimates of uncertainty (e.g., standard errors).
 - d. Justify inclusion or elimination of available data sources.



4. Estimate bycatch where and when possible.



5. Summarize data availability and trends by stock.



6. If possible, develop models used to estimate population parameters (e.g., Z , biomass, abundance) and biological reference points, and analyze model performance.



7. Recommend stock status as related to reference points, if available.



8. Other potential scientific issues:

- a. Compare trends in population parameters and reference points with current and proposed modeling approaches. If outcomes differ, discuss potential causes of observed discrepancies.
- b. Compare reference points derived in this assessment with what is known about the general life history of the exploited stock. Explain any inconsistencies.
- c. Explore climate change impacts on the species.
- d. Explore predation impacts on the species.
- e. Discuss all known anthropogenic sources of mortality and productivity (i.e., stocking, passage mortality) by stock.



9. If a minority report has been filed, explain majority reasoning against adopting approach suggested in that report. The minority report should explain reasoning against adopting approach suggested by the majority.



10. Develop detailed short and long-term prioritized lists of recommendations for future research, data collection, and assessment methodology. Highlight improvements to be made by initiation of next benchmark stock assessment. Note research recommendations from the previous assessment that have not been addressed and those that have been partially or fully addressed.



11. Recommend timing of next benchmark assessment and intermediate updates, if necessary relative to biology and current management of the species.



Terms of Reference for External Peer Review



1. Evaluate choice of stock structure.



2. Evaluate the thoroughness of data collection and the presentation and treatment of fishery-dependent and fishery-independent data in the assessment, including the following but not limited to:
 - a. Presentation of data source variance (e.g., standard errors).
 - b. Justification for inclusion or elimination of available data sources.
 - c. Consideration of data strengths and weaknesses (e.g., temporal and spatial scale, gear selectivities, ageing accuracy, sample size).
 - d. Calculation and/or standardization of abundance indices.
 - e. Estimation of bycatch.



3. Evaluate the methods and models used to estimate population parameters (e.g., Z , biomass, abundance) and biological reference points, including but not limited to:
 - a. Evaluate the choice and justification of the preferred model(s). Was the most appropriate model (or model averaging approach) chosen given available data and life history of the species?
 - b. If multiple models were considered, evaluate the analysts' explanation of any differences in results.
 - c. Evaluate model parameterization and specification (e.g., choice of CVs, effective sample sizes, likelihood weighting schemes, calculation/specification of M , stock-recruitment relationship, choice of time-varying parameters, plus group treatment).
 - d. Evaluate the diagnostic analyses performed, including but not limited to:
 - Sensitivity analyses to determine model stability and potential consequences of major model assumptions.
 - e. Evaluate the methods used to characterize uncertainty in estimated parameters. Ensure that the implications of uncertainty in technical conclusions are clearly stated.



4. If a minority report has been filed, review minority opinion and any associated analyses. If possible, make recommendation on current or future use of alternative assessment approach presented in minority report.



5. Recommend best estimates of stock biomass, abundance, and exploitation from the assessment by stock for use in management, if possible, or specify alternative estimation methods.



6. Evaluate the choice of reference points and the methods used to determine or estimate them. Recommend stock status determination from the assessment, or, if appropriate, specify alternative methods/measures for management advice.



7. Review the research, data collection, and assessment methodology recommendations provided by the TC and make any additional recommendations warranted. Clearly prioritize the activities needed to inform and maintain the current assessment, and provide recommendations to improve the reliability of future assessments.



8. Recommend timing of the next benchmark assessment and updates, if necessary, relative to the life history and current management of the species.



9. Prepare a peer review panel terms of reference and advisory report summarizing the panel's evaluation of the stock assessment and addressing each peer review term of reference. Develop a list of tasks to be completed following the workshop. Complete and submit the report within 4 weeks of workshop conclusion.



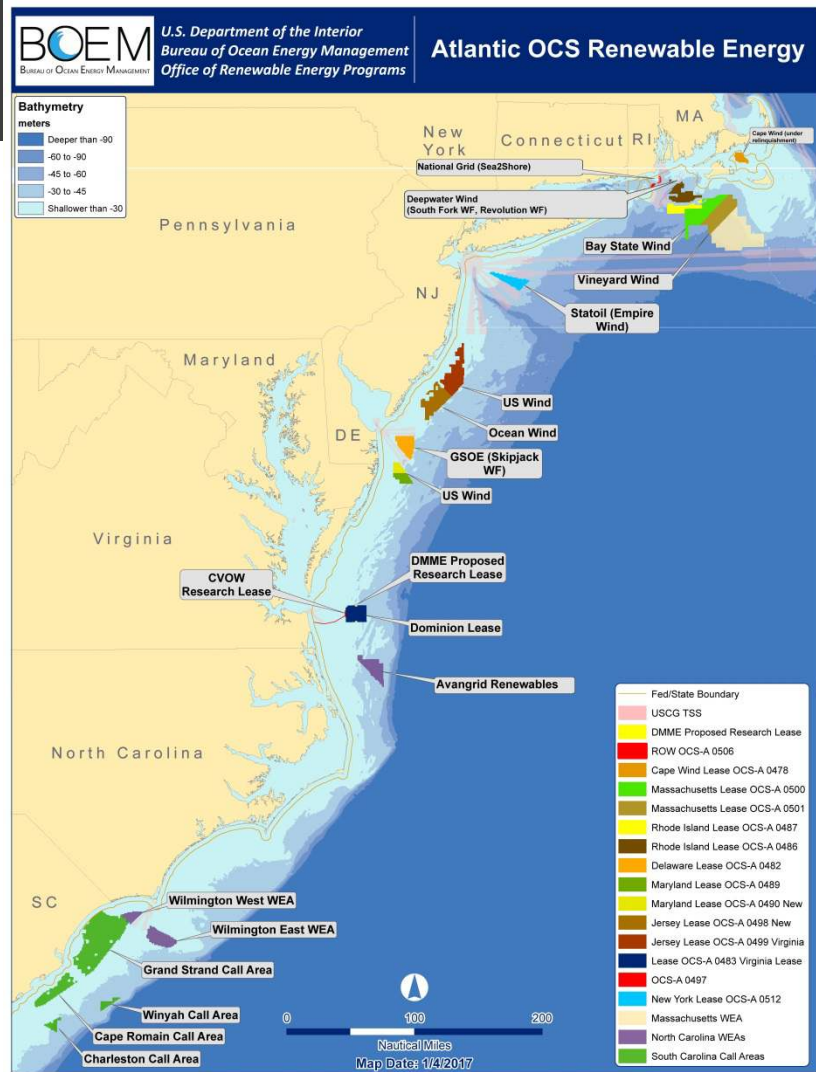
Assessment Schedule

<u>Event</u>	<u>Required Participants</u>	<u>Date/Deadline</u>
Timeline and Terms of Reference presented to ISFMP Policy Board for approval	ASMFC Science Staff and ISFMP Policy Board	February 2018
Data Workshop	TC and SAS	March 5-8, 2018
Methods Workshop	SAS	October 2018
Assessment Workshop	SAS	February 2019
Peer Review Workshop	Lead analysts, SAS Chair, TC Chair, Peer Review Panel	August 2019
Shad and River Herring Management Board Meeting to Review Assessment	SAS Chair, Peer Review Panel Chair, and Shad and River Herring Management Board	October 2019

BOEM

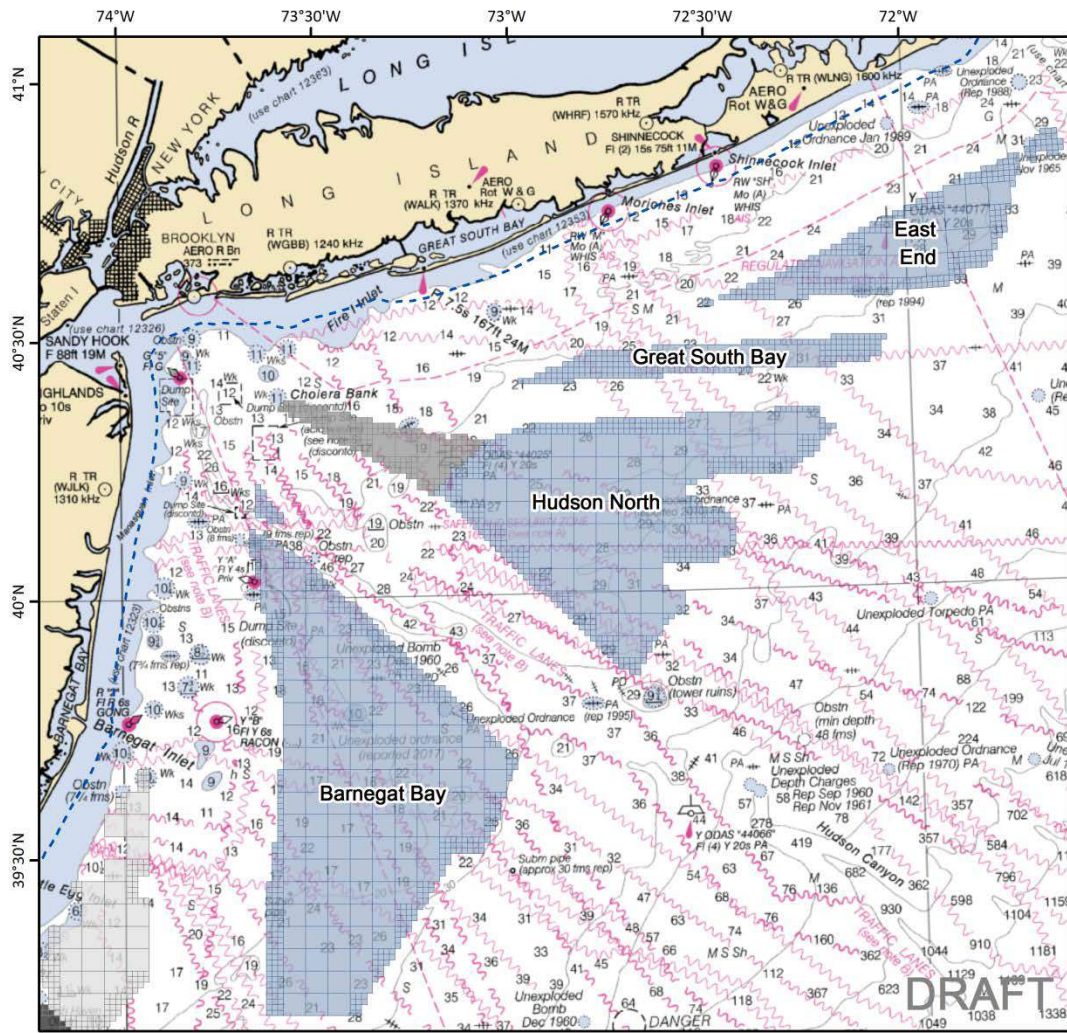
Renewable Energy Leasing and Environmental Studies Update

Brian Hooker, Marine Biologist



Atlantic OCS Renewable Energy Leases

- Seven competitive lease sales, 13 leases issued.
- One lease auction anticipated for 2 areas in early 2018 (MA WEA)



NEW YORK BIGHT CALL AREAS

--- Federal/State Boundary

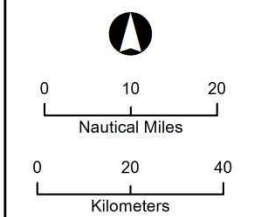
Proposed Call Areas

BOEM Lease Areas

Statoil Wind US LLC OCS-A 0512

US Wind Inc. OCS-A 0499

Ocean Wind LLC OCS-A 0498

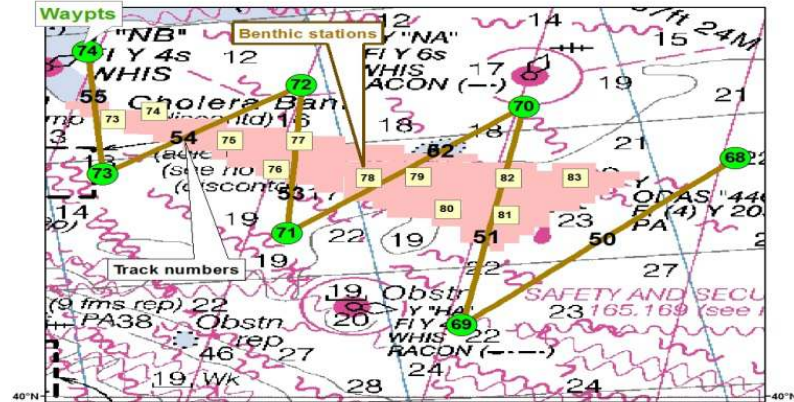


Map Date: 11/22/2017

BOEM
BUREAU OF OCEAN ENERGY MANAGEMENT

BOEM Studies | Fish and Fisheries

- Spatial and Temporal Distribution of Lobsters and Crabs Around Cox Ledge
- Benthic Habitat Mapping
- Fish Telemetry
- Electromagnetic Field effects on Lobster, Skates, Crabs
- Behavioral Effects of Construction Noise on Black Sea Bass and Longfin Squid



A scenic photograph of a sunset over the ocean. The sun is low on the horizon, creating a bright lens flare and casting a golden glow across the sky and water. The sky is filled with soft, wispy clouds, and the water in the foreground shows gentle ripples and a small wave on the right side.

Questions?

Brian Hooker

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www.boem.gov/Renewable-Energy-Environmental-Studies

Fishing Industry Webpage: <https://www.boem.gov/Atlantic-Fishing-Industry-Communication-and-Engagement/>