

RIGHT WHALE NEWS

*An independent forum for right whale conservation and recovery,
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Three Right Whale Mortalities This Month in the Gulf of St. Lawrence

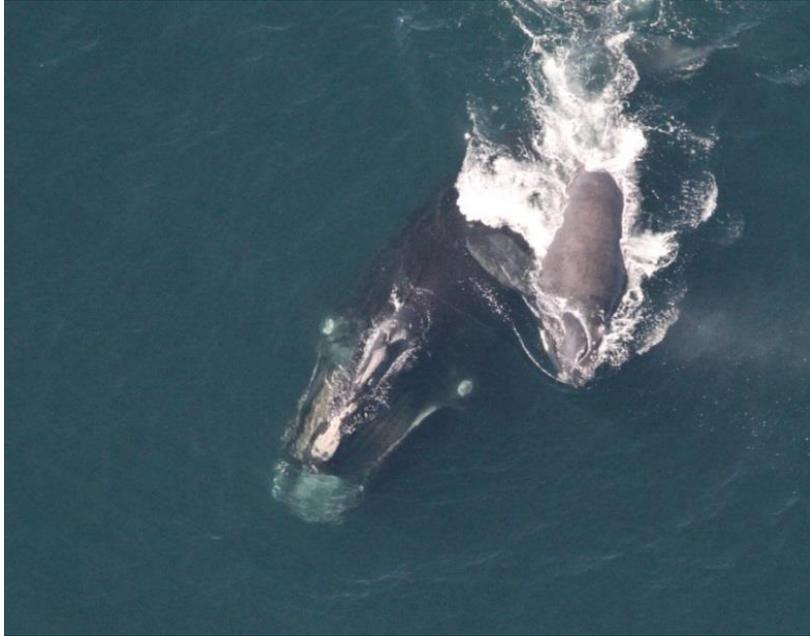
The Marine Response Society, Halifax, Nova Scotia, aided by the New England Aquarium, reports that on 6 June a dead right whale was observed floating ~30 miles west of the Magdalen Islands in the southern Gulf of St. Lawrence. The whale was identified as Catalog #3746, a 10-year-old male last sighted alive in Cape Cod Bay on 23 April 2017.

This initial report was followed by two more: on 18 June and 19 June, also in the southern Gulf of St. Lawrence. Assessment of information and images suggests three different individuals, all males (the latter two do not have features visible that would provide for matching to the Catalog). In all cases, the carcasses are far offshore, and re-sightings, carcass recovery, necropsies, and cause-of-death determinations have not been possible to date. Alerts have been posted. Additionally, aerial efforts are underway by Fisheries and Oceans Canada to re-sight the carcasses and aid in deploying a response team to collect photographs and samples.

The 2017 Season: Two Additional Calves

All three mother-calf pairs observed in the SEUS this season have successfully made the 800-mile migration north and been sighted in Cape Cod Bay. In addition, the Center for Coastal Studies (CCS) discovered a fourth mother, Catalog #1412, east of Cape Cod on 12 April and in Cape Cod Bay on 20 April. This female is rarely seen during any of the regular survey efforts; the last report was from Iceland in June 2003.

Next, Allison Henry, Northeast Fisheries Science Center, reported that the aerial survey team sighted another new mother-calf pair on 30 April. Female #1515 and calf were sighted in the Great South Channel, southeast of Cape Cod, on 10 May, and again on 13 May. On the 10th, she was feeding while her calf cavorted on/near her back. There was also a pair of feeding right whales, a group of five feeding sei whales, and a feeding bowhead in the area. Catalog #1515 was first sighted in 1985, has mostly been seen on the calving grounds, and is rarely seen elsewhere. She was last seen in 2009 in Florida and the Great South Channel.



Female #1515 and calf in the Great South Channel on 10 May 2017. This was calf # 5 for the season. (Photo: P. Duley, NMFS Northeast Fisheries Science Center, under NMFS research permit #17335)

As Bob Kenney, University of Rhode Island, has pointed out, by bringing the season total to five calves, the 2017 season has gone from the second worst to the third worst on record (for calf production).

There are intriguing questions. Of the five mothers reported so far for the 2017 season, four are 30 years of age or older. How is it that these senior females, with sparse sighting records, converged in the Cape Cod area in 2017 with calves? Where did they come from? Were they simply unsighted in the SEUS, or, did they have their calves elsewhere? And, where are the younger reproductive-age females?

In contrast to the low count from the SEUS, and overall, the Cape Cod area has experienced a record high count. On Friday, 14 April, the CCS aerial survey crew spotted 206 individual right whales, or about 40% of the population. This gives hope to the idea that the population has not experienced a catastrophic event, but rather, during this past winter, was simply somewhere else. (Where is still the big question!)

Stormy Mayo, CCS, comments, “The season was remarkable, with what appears to be the highest concentration of food, the most widespread over the bay, and the deepest in water column we’ve seen. The food resource triggering the aggregation of whales was dominated as usual by three species of copepods, including various stages of *Calanus finmarchicus*. The rich food conditions were mirrored by the number of individual whales seen. The survey team is still working to match the many thousands of ID photos; it seems likely that we will have a final

count of around 300 individual whales, and perhaps more. The Cape Cod season began in January with groups of 20+ whales. The numbers increased until a rather dramatic departure in the last week of April. The last right whales were seen in the second week of May, resulting in a 5-month season.”

On the downside, just prior to the high-count day of 14 April, there was a mortality event. On 13 April, there was a sighting of a dead juvenile female in Cape Cod Bay. The 27-foot whale was the 2016 calf of Catalog #4094. While a necropsy was performed, the cause of her death has not been conclusively determined. This whale was seen as a calf in Florida in 2016, and in summer 2016 in the Gulf of St. Lawrence. A video of the carcass recovery is available at: <https://www.youtube.com/watch?v=MbOriETtLos>, or, search on “Dead North Atlantic right whale calf brought to shore.”

Whales from Shore

Contributed by Jesse S. Mechling, Center for Coastal Studies

There was an additional dimension to the 2016-2017 North Atlantic right whale season in Cape Cod Bay. With an abundance of zooplankton throughout the Bay, right whales were scattered across the waters and it was possible to view whales from a number of shore sites including: Sandy Neck in Barnstable, the Cape Cod Canal in Sandwich, Great Island in Wellfleet, and both Herring Cove and Race Point Beaches in Provincetown. For more than a week, a dozen or more right whales could be seen surface and sub-surface feeding off Race Point Beach.

This year the Center’s education program offered five scheduled walks: two in March, three in April, and one non-scheduled beach stroll. The March walks, unfortunately, were canceled due to weather. Three scheduled walks happened around Easter weekend and the following week, with the number of right whales observed peaking at that time. On two of the walks, participants were able to see between 15–20 right whales as well as seis, humpbacks, and Atlantic white-sided dolphins. Right whales were seen visibly skim-feeding within a quarter mile of shore. Despite there being high winds that made for difficult viewing on the third walk, we still saw about a dozen right whales from shore. More than 120 people participated in the walks.

The best day of the shore viewing season was Good Friday, 14 April, where nearly two dozen right whales, as well as four species of cetaceans and one species of seal, were visible from Race Point Beach. The Center held an impromptu beach stroll that day, interacting with dozens of visitors who were lucky enough to see right whales skim-feeding in nearshore waters.

By late April and early May, the right whales had quickly made their way out of Cape Cod Bay, but the Center had reports of right whales visible off the ocean side of the Cape at Head of the

Meadow Beach in Truro the week of 8 May. Overall, the 2017 right whale season was a busy one for our aerial observers and equally fruitful for land-based whale watchers. With over 40% of the world's population within a few miles from the shores of Cape Cod for more than a week, right whales put on a spectacular show, and this year has been the best in a number of years.

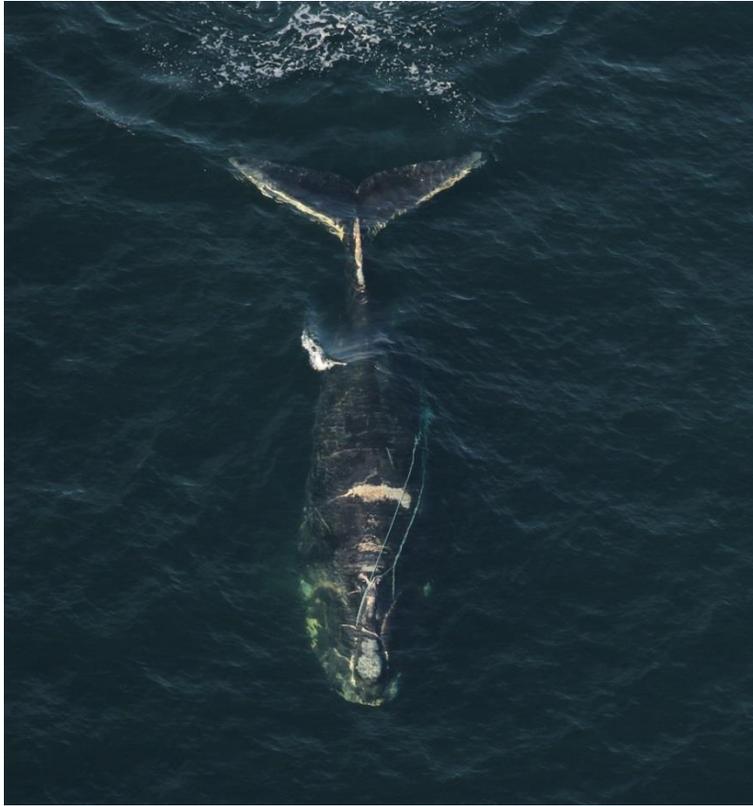


Shore watchers got a treat this season on Cape Cod. Right whales were abundant and sometimes close to shore. (Photo: J. Mechling, 14 April 2017, from Race Point Beach.)

Disentanglement of Right Whale #3530, *Ruffian*

Entanglement of right whales in fishing gear is a major issue, related to human impacts and recovery of the population (see articles below). Central to this issue are the disentanglement efforts that take place perhaps five times per year (David Morin, NMFS Greater Atlantic Regional Fisheries Office). These efforts incorporate skill, resources, and technology. One example took place on 5–6 January 2017 off Georgia.

On 5 January 2017, a Florida Fish and Wildlife Conservation Commission (FWC) survey aircraft sighted right whale Catalog #3530, *Ruffian*, entangled, about 20 miles east of Little Cumberland Island, Georgia. Heavy rope passed through the whale's mouth, over the back, and trailed behind the whale. The angle and tautness of the trailing rope suggested that the whale was towing heavy rope or gear, but this could not be confirmed at the time. As it was too late in the day to attempt disentanglement, a satellite telemetry buoy was attached so the whale could be tracked and disentangled the following day.



Whale #3530 entangled off the coast of Georgia, on 5 January 2017. Philip Hamilton, New England Aquarium, reports that some of his scarring came from a previous unobserved entanglement that occurred sometime and somewhere between December 2007 in the Gulf of Maine and January 2008 in Florida. (Photo: J. Jakush, Florida Fish and Wildlife Commission, under NOAA/NMFS permit # 15488.)

Early on the morning of the 6th, the location data suggested the whale was in the Navy's W-137L exercise area. Missile exercises were scheduled on this morning. The NMFS Southeast Regional Office coordinated with the Navy to postpone the exercise. At this point, the disentanglement response by the Georgia Department of Natural Resources and FWC was initiated, and included several boats and a survey aircraft. The on-site disentanglement activities commenced at 10:53. By 11:48, the whale was gear-free.

Right whale #3530 was subsequently re-sighted post disentanglement, 17 nautical miles east of Fernandina Beach, Florida, on 14 January 2017, and was seen feeding in Cape Cod Bay, Massachusetts, by CCS on 19 February 2017.

An appreciation for what is involved in a right whale disentanglement can be gained by viewing two videos: 1) the attachment of the tracking buoy on 5 January (1:34, search on "Right Whale Tracking buoy 05Jan17," or, enter <https://www.youtube.com/watch?v=-s1s2vZ0n3> in the search box), and 2) an excellent 4:18 video of the disentanglement on the following day (search on

“Right Whale Disentanglement 06Jan17” on YouTube, or, enter <https://www.youtube.com/watch?v=-0hwT8lx82M> in the search box).

Marine Mammal Commission Annual Meeting: Right Whales

*Contributed by Robert D. Kenney, Graduate School of Oceanography,
University of Rhode Island*

The Marine Mammal Commission held its 2017 annual meeting 5–7 April at the Sea Crest Beach Hotel in North Falmouth, Massachusetts. In keeping with their practice of moving the meeting to different regions of the country each year and focusing on topics of special relevance both to that region and the nation overall, the third day of this meeting was focused on “obstacles to recovery of North Atlantic right whales.”

A major part of a topic session at a Commission meeting is a series of invited presentations by selected experts, so that the Commissioners, staff members, and Scientific Advisors can better understand the issues involved. Their principal objective is fact-finding and information-gathering. Each set of presentations was followed by time for questions from the audience, with Commission representatives getting the first chances to ask.

Friday, 7 April, was “right whale day.” Over 100 people were in attendance. The morning was devoted to presentations of basic information on status and trends in the population, management overviews and summaries, and possible threat-mitigation measures.

Scott Kraus, New England Aquarium (NEAQ) led the morning with an overview of population status and recent trends in abundance, health, mortality, and distribution. Calving has declined sharply since the peak in 2009, accompanied by declines in numbers of animals seen in all of the primary habitats except Cape Cod Bay. Indices of individual health have also been declining. Anthropogenic mortality appears to be on the increase and shifting: 44% vessel collisions and 35% entanglement in 2000–2008 and flipping to 85%/15% in 2009–2016.

Peter Corkeron, NMFS Northeast Fisheries Science Center (NEFSC), presented a summary of NEFSC research activities and results. A comparison of the North Atlantic calving trend with that of southern right whale populations in New Zealand, Australia, and Argentina shows the former nearly flat versus exponential growth in the other three. He briefly summarized the results of Richard Pace’s modeling studies, which show a decline in abundance since 2010, affecting females much more than males. Corkeron also showed the results of an additional mark-recapture analysis that he (Corkeron) has been working on, which concluded that half of all females die before reaching age 25.

Amy Knowlton, NEAQ, summarized recent findings about the numbers of entanglements and their effects on whale mortality and reproduction. Over the last three decades, the rate of entanglement has been increasing, 83% of individuals have been entangled one or more times, and the severity of injuries has also increased. Health scores for whales with severe entanglements were significantly poorer than for whales with no, minor, or moderate entanglements, with the effects most severe on reproductive females.

The next three presentations were from the management perspective by both government and industry. Dave Gouveia, NMFS Greater Atlantic Regional Fisheries Office, Protected Resources Division, provided an update on the status of the Atlantic Large Whale Take Reduction Plan (see the summary article below on the ALWTRT meeting). Jennifer Buie, Canadian Department of Fisheries and Oceans in Ottawa, summarized the present status and future plans for research and management in Canada. Canada recently announced a 5-year, \$1.5 billion Oceans Protection Plan (<https://www.tc.gc.ca/eng/canada-oceans-protection-plan.html>) to be jointly administered by three top-level federal departments. “New whale protections” is only one of many components of the plan, and right whales are only one of three endangered species mentioned specifically (along with southern resident killer whales and St. Lawrence belugas). Steps include developing a real-time whale-detection system and a science-based review of current management and recovery actions. But, fisheries are never included in the recognized threats. Finally, Patrice McCarron, Executive Director of the Maine Lobstermen’s Association, summarized the viewpoint of the Maine lobster fishery and their efforts to date to protect both the whales and their livelihood.

The final three presentations of the morning session were on possible new mitigation measures. Amy Knowlton, NEAQ, suggested that the increase in entanglement injuries since the late 1990s was due to a use of ropes with substantially higher breaking strengths for a given diameter. She summarized results of published studies and on-going modeling efforts suggesting that rope with a breaking strength of less than 1,700 pounds, which she is calling “whale-release rope,” was more likely to break without causing serious injury.

John Haviland, South Shore Lobster Fishermen’s Association (SSLFA) on Cape Cod, was the day’s only presenter without a PowerPoint presentation. He described the SSLFA’s successful testing of rope sleeves with less than 1,700-pound breaking strength in the Cape Cod Bay lobster fishery, familiar to attendees at the last two Consortium meetings (see *Right Whale News*, December 2015).

Timothy Werner, NEAQ and the Consortium for Wildlife Bycatch Reduction, described past studies, recent testing, and future concepts for fishing without rope in the water column. Most ropeless designs involve some type of “pop-up” buoys, but fully autonomous traps are a more

futuristic method. Besides the technological questions, rope-less fishing poses substantial economic, operational, and regulatory hurdles.

The afternoon session focused on technological advancements for monitoring and management, beginning with a prologue on the history of technology used in whale research by Peter Tyack, University of St. Andrews in Scotland.

Genevieve Davis and Danielle Cholewiak, NEFSC (filling in for Sofie van Parijs), summarized the range of acoustic studies being conducted by NEFSC. These include passive acoustic monitoring of right whales and many other cetacean species in the western North Atlantic using moored systems from the West Indies to Greenland and Iceland, implementation of the NOAA Ocean Noise Strategy, and the application of acoustic ecology as a long-term monitoring tool for ecosystem health.

Mark Baumgartner, Woods Hole Oceanographic Institution (WHOI), spoke about the use of passive acoustic monitoring using autonomous platforms (gliders) and digital acoustic monitoring buoys for real-time detection of large whale presence and mitigation of potential interactions between large whales and human activities.

Dave Moretti, Naval Undersea Warfare Center, also presented on passive acoustic research. Passive acoustic methods are promising for estimating abundance of some species, such as sperm whales and beaked whales, but may never be useful in doing so for right whales and other mysticetes. He also described Navy research on behavioral disturbance of marine mammals and the long-term effects of disturbance.

Michael Moore, WHOI, wrapped up the presentations by describing the various applications of unmanned aerial systems (“drones”) for research and conservation of large whales. Those applications include enhanced photo-identification; better documentation of skin lesions and other health indices; on-scene documentation and triage of entanglements; photogrammetry for assessment of body condition and measurement of growth rates; and collections of blow samples for assays of hormones, metabolites, and other physiological parameters.

The important outcome from the day’s proceedings came two weeks later (just prior to the Atlantic Large Whale Take Reduction Team meeting) when the Commission sent a letter to Samuel Rauch, the acting head of NMFS, summarizing their conclusions that the right whale population was in decline and recommending that NMFS take action as soon as possible. The full text of the Commission’s letter can be found on the ALWTRT meeting web page (https://www.greateratlantic.fisheries.noaa.gov/protected/whaletrp/trt/meetings/16_2017april_meeting.html). The key recommendations included beginning the use of the

whale-release rope and rope-less methods covered in the Knowlton, Haviland, and Werner presentations, and initiating formal rule-making to strengthen the Take Reduction Plan:

“Therefore, efforts to reduce entanglements must be continued and strengthened. Steps discussed at our Annual Meeting which should be considered at next week’s meeting of the Atlantic Large Whale Take Reduction Team (ALWTRT) include (1) continuing development and testing of new gear or technologies to reduce the risk of entanglement, along with developing a plan for phasing in the use of low breaking-strength buoy lines, and on-call buoys [those with acoustic releases] in deep offshore waters, (2) enhanced gear marking in both U.S. and Canadian waters to improve information on the sources of entangling gear, and (3) upgrading the model and data collection used to monitor and evaluate the effectiveness of mitigation measures, including identification of gear removed from NARWs. Such measures will require significant changes to the current Atlantic Large Whale Take Reduction Plan, and we urge NMFS to use the upcoming ALWTRT meeting to make progress toward a rulemaking process to amend and strengthen that existing plan.”

PDF versions of most of the presentations and the session summaries are available at <https://www.mmc.gov/events-meetings-and-workshops/marine-mammal-commission-annual-meetings/2017-annual-meeting/>.

Atlantic Large Whale Take Reduction Team Meeting

*Contributed by Robert D. Kenney, Graduate School of Oceanography,
University of Rhode Island*

The Atlantic Large Whale Take Reduction Team (TRT) met for two and a half days from 25 to 27 April 2017 at the Biltmore Hotel in Providence, Rhode Island. The purposes of this meeting were to (taken verbatim from the agenda):

- Provide the TRT with the latest information regarding right whale and humpback whale abundance,
- Provide the TRT with detailed information surrounding entanglement events since 2014,
- Discuss recent research on gear modifications,
- Review exemption request from South Shore Lobster Fishermen’s Association, and
- Discuss implications of recent findings and the need for future action.

Copies of the agenda, presentations, proposals, and background documents can be found on the TRT web page at https://www.greateratlantic.fisheries.noaa.gov/protected/whaletrp/trt/meetings/16_2017april_meeting.html. Because of the ground rules agreed to by all TRT members, there are limitations on the level of detail that can be provided at this time on discussions and

deliberations. However, the posting of the “key outcomes memo” on the TRT web page provides additional detail (see below).

Day 1 was devoted largely to informational presentations with breaks for internal caucuses and discussions among the two principal stake-holder groups: conservation/science and fishing industry representatives. John Bullard, Regional Administrator for the NMFS Greater Atlantic (formerly Northeast) Region, led the day and set the tone by summarizing agency perceptions of progress to date, but also by saying that the present situation was not sustainable and required additional action.

Richard Pace, NEFSC, summarized the population trends and status of North Atlantic right whales and the information reported in the annual Stock Assessment Reports (SARs). Changes in re-sighting probabilities have made the previously used method for deriving the minimum abundance much less informative. Consequently, he and his colleagues have developed a Bayesian multi-state hierarchical mark-recapture model to estimate abundance and survival rates while accounting for heterogeneity in recaptures. The modeling results show 1) abundance increased from 1990 to 2010, but has significantly declined since then, 2) recapture rates have dropped substantially since 2010 (but are still much higher than in nearly any other similar study), 3) survival rates have been relatively constant through the entire period at an average of about 96% (*i.e.*, 4% mortality rate), 4) survival differs by age and sex—under 95% for calves and juveniles, about 96.5% for females older than 5, and 98% for males older than 5, and 5) per capita calf production is down, with calving insufficient to replace the average 4% dying each year in six out of the last eight years (and just barely above replacement in the other two).

Peter Corkeron, NEFSC, reviewed the recent peer-reviewed publications relevant to large whale conservation: effectiveness of the ship-speed rule, physiology and stress studies, health assessments, entanglement monitoring, sublethal effects of entanglement, and changes in zooplankton. He also presented the same preliminary results of his own comparative studies and additional modeling that he summarized at the Marine Mammal Commission meeting (see the article in this issue), reinforcing the conclusions presented by Dr. Pace.

Dee Allen, MMC, briefly summarized the recommendations from the Commission arising from their recent annual meeting. She read passages from their letter to NMFS, which recommended initiating rule-making to strengthen the Take Reduction Plan, including phasing in the use of whale-release rope and rope-less fishing methods. The full text of the Commission’s letter is on the TRT meeting web page (see also the summary article above).

The last three inter-related presentations on Day 1 were by NMFS staffers on large whale entanglements, focusing on 2015 and 2016. Dave Morin summarized the entanglement statistics. There were 36 entanglements in total in 2015: 4 right whales, 25 humpback whales, 6 minke

whales, and 1 fin whale. Of these 36 whales, 22 were fully or partially disentangled, shed the gear on their own, or were judged to be non-life-threatening cases. In only 14 of the 36 cases was the origin of the gear identified—9 in the U.S. and 5 in Canada. There were 50 entanglements in 2016, 7 higher than the previous record year of 43: 7 right whales, 31 humpback whales, 5 minke whales, 5 fin whales, 1 sei whale, and 1 unidentified whale. A lower proportion (26 of 50) were in the non-life-threatening categories, and an origin was identified for 23 (20 in the U.S., 3 in Canada). Allison Henry summarized the process for determining the M&SI for each year's stock assessments. She also summarized the 2011–2015 large-whale entanglement M&SI data that are being used in the draft 2017 Stock Assessment Reports (SARs). The average number of entanglements per year was 115, 73% in the U.S. and 27% in Canada. Of 295 mortalities detected, 12% were judged as due to entanglement, 10% vessel strike, 9% natural, and 69% undetermined. Note that the high proportion of undetermined cases is mainly because, except for right whales, much less effort is expended for recovery and necropsy of carcasses, and funding is lacking. Finally, Glenn Salvador summarized the gear-marking requirements and the results of examined gear removed from large whales. Of 37 cases from all species in 2015 and 2016, identified sources were: 18 U.S. lobster, 3 U.S. sink gillnet, 2 U.S. unknown trap/pot, 1 U.S. recreational lobster, 1 U.S. drift gillnet, 1 U.S. unknown gillnet, 1 U.S. unknown fishery, 1 U.S. monofilament line, 1 U.S. vessel anchoring system, 3 Canadian lobster, 3 Canadian snow crab, 1 Canadian crab, and 1 Canadian unknown fishery. In only 14 cases did recovered gear bear recognizable markings.

There were only two informational presentations on Day 2. Amy Knowlton and Tim Werner from New England Aquarium made essentially the same presentations on whale-release ropes and rope-less fishing methods, respectively, which they had done for the MMC annual meeting earlier in the month (see the article in this issue for summaries).

Much of Day 2 was taken up by discussion of a proposal from the South Shore Lobster Fishermen's Association (SSLFA) for an exemption from the current closure in much of Massachusetts Bay and Cape Cod Bay in February–April. John Haviland, SSLFA, presented the proposal to the TRT. The proposal was to open portions of the current closure to inshore lobster fishing using vertical lines with low-breaking-strength (1,575 pounds) whale-release sleeves every 40 feet in the buoy lines. All fishermen who took advantage of the exemption would agree to fish with the same whale-release buoy lines during the rest of the year. After extensive discussions among the entire TRT and within the separate stake-holder caucuses, the Team did not come to consensus on the proposed exemption. There was agreement to establish a working group of fishermen and scientists to further discuss how to move forward with what could be a promising method for reducing entanglement severity.

The remainder of Day 2 was taken up with discussions within the stake-holder groups on what the next steps should be, and those groups reported out their conclusions to start out Day 3.

Those are summarized in the key outcomes memo (see below). That was followed by two presentations on potential improvements to the fisheries information being input to the co-occurrence model that is used to assess the overlap of whales and fishing gear in order to estimate entanglement risk. Peter Burns, NMFS, reported on the recommendations of the Atlantic States Marine Fisheries Commission's (ASMFC) Lobster Board to improve data reporting from the fishery in both state and federal waters. Better data are needed for lobster stock assessments and management, but will also be useful for other purposes (*e.g.*, coral protection and the large whale Plan). A draft for public comment may be available as early as fall 2017. Staff from Industrial Economics, Inc., the contractors who developed the co-occurrence model, reported on the current limitations of the fishery effort data that are being used in the model, the goals and objectives for a more useful data-collection system, and a preliminary proposal for something that could be put in place as a requirement under the MMPA until the new ASMFC plan is fully in place.

The meeting wrapped up with summaries from NMFS staff. Since there were no consensus recommendations from the Team for changes to the Plan, the burden now falls on NMFS to decide whether the current status of the right whale population and rates of entanglement mortality are sustainable and acceptable, and, consequently, whether or not any modifications to the Plan or strengthening of regulations to enhance whale protection are necessary.

The informative outcomes document for the meeting is posted at:

https://www.greateratlantic.fisheries.noaa.gov/protected/whaletrp/docs/2017%20April%20Meeting%20Docs/2017_april_trt_meeting_summary_1.pdf

Atlantic Offshore Wind Development & Marine Protected Species: BOEM Convenes Best Management Practices Workshop

Contributed by Amy Whitt, Azura Consulting, Plano, Texas

With the U.S.' first offshore wind farm up and spinning off Block Island, Rhode Island, and many more in various stages of development, regulators, scientists, and industry leaders are hot on the heels of conservation and management off the East Coast. How do we embrace this alternative energy technology while also protecting North Atlantic right whales and other protected species from any potential impacts that this new technology may bring to the Atlantic Outer Continental Shelf (OCS)? This was the main question on the minds of all who attended the Bureau of Ocean Energy Management's (BOEM) Best Management Practices Workshop for Atlantic Offshore Wind Facilities and Marine Protected Species during 7-9 March at NOAA Fisheries headquarters in Silver Spring, Maryland.

Although BOEM has taken initial steps towards developing standard monitoring/mitigation protocols to minimize or eliminate the potential impacts of offshore wind development to the North Atlantic right whale and other protected species, the input from this workshop is intended to help inform BOEM as they move forward with the development of Best Management Practices (BMPs) related to offshore wind construction and operation.

BOEM assembled an expert panel to identify and discuss potential BMPs for preventing, reducing, and monitoring offshore wind impacts to marine protected species on the Atlantic OCS. Panelists included scientists, managers, and policy experts from nonprofit organizations, universities, and U.S. federal agencies as well as offshore wind industry representatives. In addition, several panelists and speakers, including representatives from the Joint Nature Conservation Committee in the UK and the European energy company Vattenfall Wind, provided unique insights into the lessons learned from international offshore wind programs, many of which have been operational for decades.

Initial presentations on past and current baseline monitoring efforts helped set the stage for the workshop discussions. Protection of the North Atlantic right whale was a key topic for most discussions, particularly in regards to cumulative impacts. Addressing cumulative impacts involves in-depth studies and analyses that require extensive spatial and temporal data on a variety of sources of potential impact, such as shipping traffic, military operations, and seismic surveys, which occur in and near a project area. Because these data typically do not exist, quantitative analyses are limited and often cannot be conducted to accurately estimate cumulative impacts. Therefore, stakeholders often rely on qualitative assessments to describe potential cumulative impacts which can provide some insight but may not be enough to develop plans to adequately protect species like the North Atlantic right whale, which is sensitive to a wide range of anthropogenic activities.

Additional topics discussed during this workshop included High-Resolution Geophysical (HRG) surveys, pile driving, vessel traffic, and baseline monitoring. The panel provided considerations and recommendations for specific BMPs for each of these topic areas. For example, several panelists agreed that general BMPs should be set for all developers to use during HRG surveys, while specific BMPs could be set for certain areas and times of year, such as when right whales are present. However, the development of any seasonal restrictions would need to also account for the fact that these restrictions would likely extend the construction period into additional years which would extend the period of exposure of these activities to marine life. Therefore, managers would need to weigh the pros and cons of seasonal BMPs. Regardless, there appears to be a need for a BMP framework that includes simple yet effective monitoring and mitigation protocols that can also be flexible and altered for specific sites and projects when necessary. BOEM plans to extend these discussions on BMPs to a second workshop which has yet to be announced. For now, managers can continue to use the BMPs included in BOEM's 2007 *Final*

Programmatic Environmental Impact Statement for Alternative Energy Development and Production and Alternate Use of Facilities on the Outer Continental Shelf (<https://www.boem.gov/Renewable-Energy-Program/Regulatory-Information/Guide-To-EIS.aspx>) as minimal mitigation measures to be applied to energy development projects. In addition, for acoustic measures, managers can refer to NOAA's final report (July 2016) on *Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing* (<http://www.nmfs.noaa.gov/pr/acoustics/guidelines.htm>).

For more information about the workshop, refer to the workshop website : (<https://www.boem.gov/BMP-Workshop-Protected-Species/>) which includes links to the presentations within the agendas for each day of the workshop. BOEM is currently compiling a report on this workshop and will post to the website later this year.

Additional Year of Studies for New England Wind Energy Area

*Contributed by Scott Kraus, New England Aquarium;
and Craig Gilvarg, Massachusetts Clean Energy Center*

The Massachusetts Clean Energy Center (MassCEC), in partnership with the U.S. Bureau of Ocean Energy Management (BOEM), is sponsoring a fourth year of marine mammal and turtle surveys in the federal offshore Massachusetts and Rhode Island/Massachusetts wind energy areas (WEAs) south of Martha's Vineyard (see also *Right Whale News*, September 2016). The purpose of these surveys is to support the responsible and expedited development of offshore wind by creating baseline data to inform the federal permitting process.

The fourth-year surveys will be conducted by the NEAQ who will employ the same aerial survey methodology used in previous years, which includes aerial line-transect surveys using a mix of observer sightings and automated aerial photography to estimate distributions and abundances of North Atlantic right whales and other large whales. As part of this effort, WHOI, in coordination with CCS, will conduct simultaneous oceanographic surveys in the winter and spring to assess the physical and biological characteristics of the waters around the right whale distribution to better understand feeding behavior and patterns. The surveys will provide the necessary information required by the federal resource agencies to assess and permit the location and configuration of future offshore wind energy development in the offshore wind areas south of Martha's Vineyard, and will collect additional information on the seasonality, numbers, and distribution of right whales.

These surveys will also address information gaps, including collection of a third year of data in the Rhode Island/Massachusetts wind energy area (which was not included in year one of the

prior surveys). The Principal Investigators are: Scott Kraus, Ester Quintana (aerial surveys), Mark Baumgartner, and Stormy Mayo (Oceanography).

For additional information: <http://www.masscec.com/offshore-wind-marine-wildlife-surveys>

Opportunities for Input and Comment

Right Whale 5-Year Review and Recovery Monitoring Plan. Michael Asaro, Greater Atlantic Regional Office (GARFO), reports that although the posted deadline for comment has passed (see *Right Whale News*, September 2016) and the document is in internal review, NMFS will accept public input at any time during the review process. NMFS intends to release the final document in August, after which they will implement an expanded monitoring effort. Monitoring duties will be shared within GARFO by the Marine Mammal and Sea Turtle Branch and the new Protected Species Monitoring Branch led by Dave Gouveia.

Navy sonar, five-year regulations. NOAA Fisheries is proposing to issue five-year regulations under the Marine Mammal Protection Act to govern the incidental take of marine mammals by the U.S. Navy's operation of Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) SONAR in certain areas of the world's oceans for the period of 15 August 2017 to 15 August 2022. The Navy's activities are likely to result in the incidental take of marine mammals by exposing them to low-frequency sonar signals. The potential takes authorized by this action are Level B Harassment or behavioral disturbance takes. No level A Harassment takes (potential injury) are expected (or authorized) based on results from the past 14 years of operations and computer modeling of potential takes. No lethal takes are requested or authorized under the MMPA for this action. This will be NOAA Fisheries' fourth rulemaking for SURTASS LFA sonar operations under the Marine Mammal Protection Act. NOAA Fisheries' proposed regulations and the subsequent Letters of Authorization include required mitigation and monitoring measures that are expected to reduce adverse impacts to marine mammals. The public is invited to comment on the proposed regulations through [Regulations.gov](http://www.nmfs.noaa.gov/pr/permits/incidental/) beginning 27 April 2017 for 30 days. Please visit <http://www.nmfs.noaa.gov/pr/permits/incidental/> for more information on NOAA's incidental take program under the MMPA.

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Geophysical Surveys in the Atlantic Ocean. NMFS has received five requests for authorization to take marine mammals incidental to conducting geophysical survey activity in the Atlantic Ocean. Pursuant to the Marine Mammal Protection Act, NMFS is requesting comments on its proposal to issue Incidental Harassment Authorizations (IHAs) to incidentally take marine mammals during the specified activities. NMFS is accepting public comment on the proposed authorizations until 6 July 2017. Comments should be addressed to Jolie Harrison, Chief, Permits

and Conservation Division, Office of Protected Resources, National Marine Fisheries Service. Physical comments should be sent to 1315 East-West Highway, Silver Spring, MD 20910 and electronic comments should be sent to ITP.Laws@noaa.gov. Electronic copies of the applications and supporting documents, as well as a list of the references cited in this document, may be obtained online at: www.nmfs.noaa.gov/pr/permits/incidental/oilgas.htm. In case of problems accessing these documents, please call the contact listed above. For further information, contact Ben Laws, Office of Protected Resources, NMFS, (301) 427-8401.

News Bytes

Canadian right whale surveys. Tim Cole, NEFSC, advises that the NEFSC is planning to spend 3 to 4 weeks conducting right whale surveys in Canadian waters this summer. The surveys are planned to begin 20 June and will be conducted both on the Scotian Shelf and in the Gulf of St Lawrence.

Right whale workshop. The right whale workshop scheduled for 14–16 March 2017 (see *Right Whale News*, March 2017) was cancelled due to a snowstorm. Dave Gouvieia, GARFO, advises that much of the information was covered in the Marine Mammal Commission’s annual meeting and the Atlantic Take Reduction Team meeting (see articles above). However, plans remain under discussion.

Whale Bones. Reporter Madeline Sofia visited paleobiologist Nick Pyenson inside the Smithsonian’s whale bone collection—the largest collection of whale bones in the world. The collection is housed in Suitland, Maryland. For a most interesting 3:00 video, see: <http://www.npr.org/2017/06/07/531112519/travel-through-time-with-a-whale-detective>.

Book Review

North Atlantic Right Whales: From Hunted Leviathan to Conservation Icon. By David W. Laist. Johns Hopkins University Press, Baltimore, Maryland; 2017; 464 pp. ISBN: 978-1421420981

Contributed by Robert D. Kenney, University of Rhode Island, Graduate School of Oceanography

I’ll give you the punch-line right up front—I liked this book very much and strongly recommend it. David Laist has accomplished a remarkable feat of research and scholarship in covering the entire sweep of the history of North Atlantic right whales. Every student or scientist interested in conservation of right whales or other endangered species ought to read this book carefully. Before getting into more details, however, I need to make a few disclaimers. David is a long-time colleague and friend whom I have respected as a tireless advocate for right whale conservation (and he inscribed my copy). I read and commented on segments of the book while

he was writing it, so I was already anxious to see the completed product. But mainly, I'm sort of an American history nerd (if I had not gone into science I might very well have been a historian) with a very personal interest. Some of the branches of my mother's family tree go back to colonial Massachusetts, Rhode Island, and Connecticut—to many of the communities and even a couple of the individuals who show up in the pages of this book.

This is not your typical whale book. David's objective was to step back and take a long-term, wide-angle view of the issues surrounding the conservation of what is likely the world's most endangered large whale species. One could almost throw a dart at the preface to pull out a relevant quote setting the scene for what he was trying to accomplish; this says it as well as any:

“Many have investigated segments of species’ histories in great detail, but few have tried to stitch those pieces together into a broad tapestry describing their existence across the full arc of time. Yet, to fully appreciate a species and its current status, one needs to consider all time scales, including long-term geological, archeological, and historic time frames; the shorter-term span of a person’s memory or a species’ generation; and even more myopic time frames measured in the months or years of regulatory and economic planning.

Following the preface, the book includes 22 chapters, each with more or less voluminous end-notes and multiple black-and-white illustrations; 8 pages of color plates in the middle; a short appendix that attempts to summarize whaling kills in the Strait of Belle Isle, Newfoundland, and along the U.S. Atlantic coast; and a 10-page index.

Chapter 1 sets the stage—describing the conservation issues via stories of some of the early disentanglement attempts by the Center for Coastal Studies. Chapter 2 (“What’s in a name?”) explains in detail why we call the species *Eubalaena glacialis* rather than one of a number of other alternatives. The third chapter describes David’s hypothesis for the convergent evolution of feeding structures in right whales and flamingos, which those who attended the 2016 Right Whale Consortium meeting will remember. And Chapter 4 is a summary of the right whale’s evolutionary history.

The next 10 chapters cover the history of right whaling (including bowheads) in the North Atlantic—from prehistory to the Middle Ages, the Basques, the Dutch, the English, and finally the Americans. Five separate chapters cover the American fishery for right whales—the early beginnings in New England; Long Island; Cape Cod; Nantucket, Martha’s Vineyard, and Cape May; and the Carolinas to Florida. The number of sources consulted and cited in these chapters boggles the mind; in all, the 10 chapters include 553 end-notes, some of which include two or three separate sources. This book is my new go-to source, and a recommended source for anyone

else, for the history of North Atlantic whaling and for an exhaustive entry into the primary source material when needed.

Chapter 15 is about the near-impossibility of estimating, with any level of confidence, how many North Atlantic right whales inhabited the ocean before the first Arctic aboriginal or Viking hunter or Basque whaler stuck a harpoon into one. Chapter 16 then brings us into the 20th Century, from the beginnings of whale conservation with the first International Convention for the Regulation of Whaling in 1937, which prohibited hunting of all right whales, to the latest Convention in 1946 that established the International Whaling Commission and the regulatory mechanisms that are still in place. It also describes the beginnings of modern right whale research by Bill Schevill and Bill Watkins in Cape Cod Bay, and David and Melba Caldwell in Florida. Chapter 17, “A dedicated recovery program,” covers the 1970s through 1990s—enactment of the Marine Mammal Protection Act and Endangered Species Act (only two of the several landmark environmental laws passed during a very short span of years during the Nixon administration), BLM’s funding of the Cetacean and Turtle Assessment Program, the beginnings of the research collaboration that came to be called the North Atlantic Right Whale Consortium, the crafting of a recovery plan and appointment of two recovery implementation teams, and the initial designation of critical habitat. David really hits his stride from this point forward, because he was an important part of these efforts, having joined the staff of the Marine Mammal Commission only five years after its creation under the new Marine Mammal Protection Act. His direct participation in much of the action brings a unique and personal perspective to the narrative.

Four of the last five chapters bring us up to the present struggle to conserve a population that has been and still is in serious danger of extinction because of excess human-caused mortality, principally from ship strikes and fishery entanglement. In 1994 Congress amended the Marine Mammal Protection Act, creating the process of annual stock assessments and setting relatively strict targets for reducing mortality. Chapters 18 and 19 cover the issue of mortality from ship collisions. Here we seem to have had some success, albeit slowly, through seasonal management areas, some routing changes, and limits on ship speed—despite the best efforts of certain politicians in Washington to block any action.

Chapters 20 and 21 describe the tangled mess (pun absolutely intentional) involved in trying to reduce anthropogenic mortality caused by entanglement in fishing gear from the lobster, gillnet, and other fixed-gear fisheries. No matter what your favorite metaphor for slow movement may be—tortoise, snail, glacier, molasses, that certain brand of ketchup—all are fast compared to action on regulating fisheries to reduce whale entanglements. Here again David’s intimate involvement in the process provides the reader with an insider’s perspective on why progress has been so painfully slow. I just happened to be reading those chapters while riding the commuter train back and forth to Providence for the latest meeting of the Atlantic Large Whale Take

Reduction Team in late April of this year. The sense of *déjà vu* was almost overwhelming and very depressing—sitting around the table and hearing the same arguments that were voiced over 20 years ago during the first rounds of TRT meetings, while mortalities continue unabated, in fact at increased levels.

The final chapter—“Ten thousand right whales”—wraps up with thoughts for the future: short- and long-term prospects for the North Atlantic right whale population, possibilities for new ways to monitor populations and to either avoid or mitigate impacts, new and/or expanding impacts on the horizon, and looming over everything the threat of climate change. David ends on perhaps a more optimistic note than I might:

“And North Atlantic right whales could rise from the depths of former whaling grounds like a phoenix from the ashes of ruin to once again enliven coastal waters of not only North America but also Europe and northwestern Africa and resume the role they once played in creating a rich and productive ecosystem.”

Given the complexity of the material and the sheer volume of references consulted, the number of errors I found was not consequential. Tighter copy-editing would have helped, but that seems to be a thing of the past. I found no errors that really altered the point that the author was trying to make. The illustrations were numerous and helpful. A few were somewhat dark, but that is probably unavoidable when reproducing figures from centuries-old books and manuscripts. None of this detracts from my whole-hearted recommendation to add this book to your library shelf (or your digital library; it is also available in a Kindle edition).

As a final personal comment, President Trump’s proposed FY2018 budget was released as I was finalizing this review. It included elimination of the Marine Mammal Commission. It is obvious from reading David Laist’s *North Atlantic Right Whales* that the limited success we have seen with measures to conserve this species would never have happened if the Commission had not been there—writing letters, participating in meetings and working groups, funding research, hosting workshops, testifying at Congressional hearings, submitting comments on all manner of federal activities, and generally functioning as the conscience of the federal bureaucracy. Without the Commission, the history of the North Atlantic right whale over the last 45 years of its long existence would have taken a very different path.

Calendar

15–16 November 2017. Fall meeting of the Southeast U.S. Implementation Team (SEIT). Guana Tolomato Matanzas National Estuarine Research Reserve, Education Center, 505 Guana River Road, Ponte Vedra Beach, Florida. For further information, contact Thomas.Pitchford@MyFWC.com.

23–27 October 2017. 22nd Biennial Conference on the Biology of Marine Mammals. Halifax Convention Center, Halifax, Nova Scotia, Canada. The 2017 North Atlantic Right Whale Consortium (NARWC) Annual Meeting will be held on 22 October 2017 at St. Mary's University, Halifax, Nova Scotia, Canada. Further information at: <http://www.smmconference.org/>

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Right Whale News

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