

# RIGHT WHALE NEWS

**The Publication of the Southeast United States Right Whale Recovery Plan Implementation Team  
and the Northeast Large Whale Recovery Plan Implementation Team**

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## **NMFS Denies Petition to Expand Right Whale Critical Habitats**

The National Marine Fisheries Service has denied a July 2002 petition from The Ocean Conservancy to combine and expand the Cape Cod Bay and Great South Channel critical habitats off Massachusetts and to expand the critical habitat off Georgia and Florida (see *Right Whale News* 9(4):3). The National Marine Fisheries Service (NMFS; also known as NOAA Fisheries) issued a final determination, stating: "The requested revision, as specified by the petitioner, is not warranted at this time. However, NMFS will continue to analyze the physical and biological habitat features essential to the conservation of right whales."

NMFS's denial is based primarily on language in the Endangered Species Act which defines critical habitat as specific areas "on which are found those physical or biological features essential to the conservation of the species" (Section 3(5)(A)(i)(I)). The agency found that The Ocean Conservancy's petition was largely based on where right whales have been found and what they are doing, rather than on the specific nature and location of the physical or biological features of the habitat. It ruled that without establishing a nexus between the specific habitat feature and the requested expansions, the petition did not support the suggested changes.

NMFS does intend to continue with planned research and to further evaluate factors that may warrant a revision of critical habitat. The agency's plans include continued analysis of right whale distribution in the southeast in relation to sea surface temperature and bathymetry, and characterization of the spatial and temporal distribution of zooplankton in the northeast.

The final determination was published in the Federal Register on August 28 (volume 68, number 167, pages 51758-517630); it also is posted on the NOAA Fisheries web site: <http://www.nero.noaa.gov/whatetrp/> under "What's New."

## **Right Whale Recovery Summary**

*Editor's note: The following "Recovery Summary" was created by a group of right whale scientists assembled by the World Wildlife Fund & Canada for use in both Canada and the United States. Participants included Scott Kraus, Moira Brown, Laurie Murison, Brad White, Chris Taggart, Karen Baragona and Cathy Merriman. Readers are encouraged to copy the summary and use it in other documents such as reports and newsletters. An electronic version of the summary is available on the web at [www.GEPInstitute.com](http://www.GEPInstitute.com)*

**Right whales without borders / Baleines franches**

## sans frontières

### ***What is the problem?***

- Fewer than 350 North Atlantic right whales remain and the population is declining.
- Right Whale coastal habitat along the eastern U.S. and Canada is heavily industrialized and under increasing negative pressures from human activities.
- Mortality from ship-strikes and fishing-gear entanglements is driving the species toward extinction.
- On average only 11 calves are born per year, this is only 1/3 of the expected birth rate and less than the present annual death rate.

### **What is essential to solve the problem?**

- Eliminate human-caused mortality.
- Protect right whale habitats.
- Take the necessary actions to increase recruitment into the population.

### **What actions must be taken to effect the solutions?**

#### **1. Eliminate human-caused mortality to right whales in critical habitats and migration corridors**

Reduce and eliminate mortality and injury from ship-strikes via:

- Ship rerouting around critical areas
- Ship speed reduction to "whale safe" speeds
- Advanced technology to help ships avoid right whales

Reduce and eliminate mortality and injury from fishing-gear entanglements via:

- Universal fishing-gear modifications
- Seasonal time and area fishing-gear closures
- Modification of fishing practices

#### **2. Protect right whale habitats**

- Assess patterns of known critical habitat use by right whales and humans, and eliminate conflict
- Locate the other critical habitats not yet identified but known to exist
- Protect critical habitats using a range of tools (including some of the means identified above)
- Advance effective protection of known habitats and protect other habitats as they become known

#### **3. Assess factors that reduce reproductive success of right whales**

- Identify and assess actual and potential threats in right whale habitats that reduce reproductive success
- Reduce and eliminate threats as they become identified

### *Essential resources and tools*

- Information based on credible science that can address uncertainties
- International and national leadership, coordination and cooperation
- Political will at all jurisdictional levels
- Coordination and integration of Canadian and U.S. recovery plans, processes and policy development
- Multi-year continuity in funding for research, monitoring and stewardship to capitalize on insights and advance policy and conservation initiatives
- Public and private partnerships, stakeholder and institutional commitment
- Education

### **Big Picture from Small Genes**

On November 5, at the North Atlantic Right Whale Consortium 2003 Annual Meeting in New Bedford, Massachusetts, two investigators from Trent University reported results from years of sampling and analysis on the genetic makeup of the North Atlantic right whale (see article on page 10 for citations). From these reports, it is clear that genetic analysis can properly take its place alongside the photographic identification catalog as a principal research tool for describing and monitoring the population. (The concept of obtaining skin samples from which to isolate DNA was initially driven by the simple lack of data in the photo catalog on the sex ratio of the population. The first biopsy sample was taken in August 1988 from a known adult female, #1602.)

Timothy R. Frasier, speaking on behalf of four co-authors, reported that DNA samples have been obtained from 63 % of all North Atlantic right whales photographically identified, and from 72% of right whales currently thought to be alive. Based largely on samples collected through 1999, the intriguing findings include (1) the father is unknown for 68% of the calves; (2) older males appear to be almost solely responsible for successful fertilizations; and (3) mating resulting in conception likely is occurring in a location other than the Bay of Fundy, where surface active groups (often associated with sexual activity) are commonly observed. In addition, Frasier reported, "There are both more males and more females in the population than are currently accounted for in the photo identification catalog."

Also reporting was Brenna McLeod, who, along with seven co-authors, analyzed the DNA in samples of 58 whale bone specimens collected from the 16th century Basque whaling station at Red Bay, Labrador. Previous studies of the specimens conducted by Dr. David Gaskin and others, which were based on osteology, concluded that the proportion of bowhead whales to right whales was about 50-50. As a result, the pre-exploitation population of right whales was estimated to be between 12,000 and 15,000 animals. Ms. McLeod's mitochondrial DNA analysis suggests that the ratio of bowheads to right whales was 57 to 1, and that the pre-exploitation population of right whales was between 400 and 520 individuals. This sample also exhibits a genetic profile similar to individuals within the population today. These data suggest that 16th century Basque whaling did not have a major role in reducing genetic variability, and was not responsible for the demise of the North Atlantic right whale. If borne out by sampling from additional areas in Quebec and Labrador, these findings will substantially revise the estimates of impacts of early whaling on right whales as well as the historic population size estimates of both bowheads and right whales. Results to date suggest that right whales may have an intrinsic low population size with low genetic variability.

## **2003 Entanglements and Mortality**

Three new cases of entangled right whales have been reported since the beginning of 2003. One entangled whale (unknown #) was disentangled and another (#2240) was first sighted entangled and later seen un-entangled. The third (#1430) is still entangled. The Center for Coastal Studies considers this third entanglement to be life-threatening.

One known mortality has occurred so far this year. The dead whale was a calving age female (#2150) that was first sighted off Digby, Nova Scotia, on October 2. The condition of the animal suggested that it had been dead for at least a week. A necropsy was conducted under the direction of Dr. Michael Moore of the Woods Hole Oceanographic Institution. The numerous broken bones and soft tissue trauma suggest that the whale was struck and killed by a ship. Drift studies indicate that the animal may have been struck south of the southern tip of Nova Scotia.

## **Take Reduction Plan Amendment and EIS**

The National Marine Fisheries Service has issued a final rule amending the Atlantic Large Whale Take Reduction Plan to allow gear with certain modifications within a dynamic area management (DAM) zone. The rule is effective as of September 25, 2003; it is posted on the NOAA Fisheries web site: <http://www.nero.noaa.gov/whatetrp/>

An Environmental Impact Statement (EIS) on the plan is being prepared. Scoping meetings were held earlier this summer. The anticipated schedule calls for a draft EIS to be released for public review in April 2004, followed by public hearings and a 30-day comment period. The Final EIS is scheduled for release in December 2004. The Final Rule will go into effect 30 days later. For additional information, contact Diane Borggaard at NMFS: 978-281-9328, ext 6503 or [diane.borggaard@noaa.gov](mailto:diane.borggaard@noaa.gov)

## **Where are the Missing Right Whales?**

In any given season of the year, roughly one third of the population of North Atlantic right whales is missing and presumed to be in some unknown habitat(s). Most of the adult males are missing when the pregnant females are on the calving ground off Georgia and Florida. While most of the population is feeding in the Bay of Fundy, the others are elsewhere. Recent studies have identified right whales that do not use the five well-known critical habitats for the population. Where are the missing whales?

While no definitive answers were provided at the recent meeting of the North Atlantic Right Whale Consortium, some interesting insights were provided. Scott Kraus reported on a July 2003 survey<sup>1</sup> of a historic whaling area known as the Cape Farewell Ground southeast of Greenland (ca 60-62° N, 33-35° W). In spite of some rough seas that exceeded Beaufort 7, the team observed numerous marine mammals, including one right whale. Analysis of photos and biopsies determined that the right whale was an adult female not previously known in the New England Aquarium's North Atlantic Right Whale Catalog.

Not all right whale sightings east of Greenland are of unknown animals, however. Marilyn Marx reported that a right whale sighted in June off the west coast of Iceland was #1412, a female who had been seen earlier off Jeffreys Ledge but not on the calving ground. Another right whale seen off Norway in 1999 had also been seen in the western North Atlantic (a male, #1143; see *Right Whale News* 6 (4):10).

Randall Reeves, Elizabeth Josephson and Tim Smith reported on their analysis of "Maury's Smear" in the central North Atlantic (ca 35-42°N, 30-48°W), which, based on published 19th century American whaling records, had been identified as a summer ground for right whales. The researchers determined that the alleged concentration was based on erroneously transcribed data. Their findings were reinforced by Michael Moore, who visited Maury's Smear in 2000 and saw lots of sperm whales but no right whales.

<sup>1</sup>Financial support for the survey was provided by the National Marine Fisheries Service, a French television station and the National Film Board of Canada (and not the Canadian government, as erroneously reported in the last issue of *Right Whale News*).

### **New Aerial Survey Protocols May Reduce Data Collection**

As a result of the fatal crash of the right whale survey airplane last January (*Right Whale News* 10(1):1) and increased interest in improved air safety within the National Oceanic and Atmospheric Administration (NOAA), the agency convened an aviation safety and policy development workshop in May. The purpose of the workshop was to review aircraft safety protocols used by NOAA and other federal agencies, and to revise the safety protocols for aircraft flights chartered by NOAA including right whale surveys. After public review, the final agency-specific protocols are expected to go into effect in 2006.

In the meantime, NOAA program managers can raise the safety bar for chartered aerial surveys by requiring multi-engine aircraft to have two pilots, both of whom must have a Commercial Instrument Rating and meet or exceed the minimum requirements of a Part 135 certificate (41 CFR 102-33) or its equivalent. Other requirements can include safety training and having operational safety equipment on board.

The two-pilot requirement is expected to go into effect in time for the surveys in the southeast (starting in December) and Cape Cod Bay (January). The addition of the second pilot will reduce the number of scientists on board. The former three-scientist configuration of observer/observer/data recorder will be reduced to two scientists who must serve as both observers and data recorders. With the priority being placed on observation, the amount of data collected will be reduced, and new methods of data recording will be needed. Some of the changes may improve safety and data collection. For example, the use of a camera mounted in the belly of the aircraft should increase straight and level flight and reduce the riskier maneuvers of turning and banking. Such camera mounting may also increase the usefulness of the photographs for morphometric purposes.

A discussion at the recent right whale Consortium meeting resulted in a general agreement that the top priorities for data collection should remain the locations of right whales and large ships. Data on whale and ship behavior (e.g., heading and speed) may be curtailed, and recorded observations of other marine species (e.g., dolphins, turtles and large fish) may be terminated all together.

Nicole Cabana and Debora Barr of NOAA will lead a workshop on the topic on December 13, prior to the Biennial Conference on the Biology of Marine Mammals (see calendar of events, page 14).

### **Marine Mammal Commission's Annual Meeting Focuses on Right Whales**

The Marine Mammal Commission and its Committee of Scientific Advisors held their annual meeting October 21-23 in Newport, Rhode Island. In introductory remarks, Chairman Dr. John Reynolds noted that the Commission's meeting was set in New England primarily to focus on right whales. In the days that followed, several sessions were devoted to right whales. Topics included the status of the population, a research and funding overview, the take reduction plan, ship collisions, and scientific research permits.

Reports clearly showed substantial increases in numbers of people (scientists, managers and others), funding levels (\$10 million plus in FY03, perhaps \$12.6 million plus in FY04), and level of effort (field research, new methods and technologies, analyses, and meetings). Despite these efforts, Reynolds cautioned, the problem isn't solved.

This was evidenced by the open and frank consideration of a number of issues and topics. A report from the Northeast Regional Office of NMFS described the activities of the Atlantic Large Whale Take Reduction Team. A seemingly exhausting schedule of steps, comment periods and management options (measures that include Dynamic Area Management, Seasonal Area Management and gear modifications) caused one Scientific Advisor to reflect on the number of person-hours dedicated to meetings and wonder if, in the end, the work is producing a useful effect. Similarly, a report from NMFS headquarters on the Mandatory Ship Reporting System—where commercial vessels (except military) are required to report upon entering designated areas of right whale habitation, and receive advisory information in return—caused a Scientific Advisor to question whether there was any evidence that this system has helped any ship avoid a whale.

The challenges were not limited to management issues. Researcher Dr. Douglas Nowacek reported that experiments with an alarm system (of the type that might, for example, be mounted on a ship) suggested that an alarm, rather than reduce right whale collisions with ships may actually increase them. He suggested that a right whale responding to an alarm sound might ascend and hang motionless a few feet below the surface—within potential vertical distance of a ship's hull, but out of sight of lookouts.

The scientific research permit process was examined from both sides. Steve Leathery of NMFS and Charles Chandler of the US Fish and Wildlife Service described their view of the processes and challenges relating to scientific research permits. Two factors were foremost: workload and staffing; and legal challenges (compliance with the National Environmental Policy Act and others). At the same time, a number of researchers described frustration with a system that, at times, was felt to impede research aimed at Recovery Plan goals.

In a closing summary, Chairman Reynolds again recognized the level of effort, but noted that right whales are still being lost. "We need new options and methods," he suggested. He also worried that the high and seemingly increasing day-to-day demands on all involved left little time for the reflection and creative thought that is essential. The challenge, he said, is to allocate finite resources, to be creative and

resourceful, and still to meet day-to-day demands. Regarding the complex aspects of legal and regulatory issues, Scientific Advisor Douglas Wartzok said aspects of the current situation were not unlike those in Dickens' Bleak House, where the London fog is a metaphor for the legal system, and expressed concern that by the time we work through the laws, etc., there will be no right whales remaining. The overall sense of the meeting was that, despite increases in effort and funding, there remain more challenges than successes.

### **Marine Mammal Commission Creates Website**

The Marine Mammal Commission has created a new website: [www.mmc.gov](http://www.mmc.gov). The website includes information on the Commission, legislation, reports, letters, testimony, species and a calendar of events. For the North Atlantic right whale, the website includes an introduction and information on range and habitat, status under the law, conservation issues, physical characteristics and age. Links are provided to relevant parts of the MMC Annual Report, Commission letters and other sources. Because the Commission has oversight of marine mammal protection and conservation, both domestic and international, and for actions and policies of all federal agencies, this website will be a valuable information resource.

### **SEIT Meeting Focuses on Education and Outreach**

The Southeast US Right Whale Recovery Plan Implementation Team (SEIT) met on October 17 in Jacksonville, Florida. A primary focus of the meeting was education and outreach efforts in the southeast. The initiative identifies the target (example: commercial mariners), the specific target (e.g., deep draft vessel operators), the objectives (e.g., integrate right whale protection strategies into standard navigational procedures while operating in known right whale habitats), the performance objectives (e.g., implement prudent navigational practices to avoid the risk of collision or adverse interaction with whales), tasks and implementing party.

The SEIT also considered adding a Technical Advisory Committee to the team structure and identified various alternatives.

A summary of the SEIT meeting is available from team chair Jameson Smith at 904-573-4910 or [Jameson.Smith@fwc.state.fl.us](mailto:Jameson.Smith@fwc.state.fl.us)

### **NEIT Meets December 3**

The next meeting of the Northeast Large Whale Recovery Plan Implementation Team (NEIT) will be held December 3 at the Black Falcon Terminal in Boston, Massachusetts. A major focus of the meeting will be to determine who will serve on the NEIT and who will serve on the Technical Committee. The changes in participants are being brought about by the new organizational structure (summarized in *Right Whale News* 10 (3): 2). The reconstituted NEIT plans to expand its geographic scope to cover more of the mid Atlantic coast (Maine to North Carolina). The team will also address its spending priorities for the region. For further information, contact NEIT chair Tom Fetherston at 401-832-5857 or [fetherstontn@npt.nuwc.navy.mil](mailto:fetherstontn@npt.nuwc.navy.mil)

## **Canadian Team Meeting**

The Canadian Right Whale Implementation Team met on October 20 to continue work on its existing recovery plan, focusing on reducing ship strikes and entanglements in fishing gear.

The work of the team will be influenced by the new Species At Risk Act (SARA), which went into effect on June 5. SARA requires that the current endangered status of both the North Atlantic right whale and the North Pacific right whale be reaffirmed. The reaffirmation will require a regulatory impact analysis and a decision by the Governor in Council. The process is estimated to take about a year and a half.

The strategies for right whale recovery will also have to be adapted to be compliant with SARA. This means the strategy will be "leaner and meaner." The strategy will include descriptions of recovery feasibility, recovery objectives, ecological gaps and research needs, identification of critical habitat and an evaluation of the barriers to recovery. More rigorous guidelines are expected on what is meant by "harm," "habitat" and "interactions" – the latter including both research permits and whale watching.

Funding for implementation, always an issue, is likely to be tighter under SARA. While the available pot of money is larger, the needs are also greater. There are more than 400 species at risk that need to be addressed under SARA. Funding for right whale necropsies will be particularly tight.

A newsletter providing information and opinions on the recovery of species at risk in Canada is available online at [www.speciesatrisk.gc.ca](http://www.speciesatrisk.gc.ca)

## **Massachusetts Proposes Allowing Closer Approaches to Right Whales**

Federal regulations currently prohibit coming closer than 500 yards to right whales, except under specific circumstances such as ships entering port. One of the results of this prohibition is the dramatic reduction in sighting data and photo-identifications by commercial whale watching vessels. To rectify this, the Commonwealth of Massachusetts Division of Marine Fisheries has requested that NMFS approve a pilot program to allow commercial whale watching vessels to approach right whales to photo-document animals when "off season" and "out of habitat." These close approaches would be allowed during times and in areas where directed research and surveillance efforts are not being conducted. Participants would have to be trained and certified. Under the proposal, opportunistic sightings would be called in to either NMFS or the Division. If determined on a case-by-case basis to be necessary, the observer would be given a temporary authorization to approach the whale(s) for the purpose of photo-documentation and monitoring. The Division's proposal asserts that this pilot program is not intended to sanction right whale watching. For additional information on the proposal, contact Dan McKiernan at the Massachusetts Division of Marine Fisheries: 617-727-3193, ext. 369 or [Dan.Mckiernan@state.ma.us](mailto:Dan.Mckiernan@state.ma.us)

## **People**

Bill McLellan of the University of North Carolina at Wilmington has received NOAA's Environmental



Hero award for his work on marine mammals. Bill's work on right whales includes conducting necropsies and conducting aerial and shipboard surveys from Savannah to Virginia. Max Strahan of GreenWorld, a frequent litigator over right whale issues, has enrolled in a graduate program in astrophysics in San Francisco. Beth Pike is now the Right Whale Catalog data coordinator at the New England Aquarium. She can be reached at 617-226-2143 or [bpike@neaq.org](mailto:bpike@neaq.org) Lance Garrison is now the acting Marine Mammal Group Leader at the Southeast Fisheries Science Center. At the November 4th business meeting of the North Atlantic Right Whale Consortium, three people were elected to the board for three-year terms: Scott Kraus, Leslie Ward and Brad White. Current Consortium officers are Amy Knowlton, chair; Michael Moore, vice chair (and chair-elect for 2005-2007) and Heather Pettis, secretary. Retiring are secretary Marilyn Marx, public information officer Deb Tobin, and board members Roz Rolland and Anna Moscrop.

### ***Fluke, Or, I Know Why the Winged Whale Sings: A Review***

Fluke, Or, I Know Why the Winged Whale Sings, Christopher Moore. 2003. William Morrow/Harper Collins Publishers. 321 pp. \$23.95. Review by Jim Hain.

Well, OK, the book mentions right whales only in passing. It is, however, a mostly dead-on portrayal of "whale world." Set in Hawaii, and focused on the humpbacks, author Christopher Moore's novel perceptively and irreverently captures the psycho-socio-bio-politico rarified world of whale research &ndash; and throws in the U.S. Navy for good measure. One day, biologist Nate Quinn, shortly after musing about how he should've gotten a real job and reflecting on the divorce rate among researchers, drives his 23-foot research boat, Constantly Baffled, into position to take a fluke photograph. As the whale raises its tail high into the air, instead of the usual pattern of black-and-white markings, there is, spelled out in foot-high letters, the words "BITE ME!" Based out of Lahaina, where "you couldn't throw a coconut without conking a Ph.D. in cetacean biology," the cast of characters disperses in four dimensions. This will be familiar territory to all those in whale world, and is guaranteed to bring a smile to your face, if not a few major chuckles.

### **Consortium Papers**

The North Atlantic Right Whale Consortium 2003 annual meeting was held at the New Bedford Whaling Museum in New Bedford, Massachusetts, November 4-5. Funding for the meeting was provided by the National Whale Conservation Fund (a special project of the National Fish and Wildlife Foundation, the National Marine Fisheries Service and the Marine Mammal Commission) and the New England Aquarium. A record number of people attended the sessions. Presenters and the titles of their papers are listed here. Abstracts for the papers and a complete list of authors are available electronically and in hard copy, the latter for a \$5.00 fee. Contact Marilyn Marx at 617-973-6584 or [mmarx@neaq.org](mailto:mmarx@neaq.org) for details.

#### **Population Biology and Behavior**

Beth Pike &ndash; The North Atlantic Right Whale Catalog: An update on mortality, reproduction and population status

Mark Baumgartner &ndash; North Atlantic right whale habitat inferred from satellite telemetry

Jim Hain &endash; Aspects of behavior: Apparent coordinated movement in the SE US  
Susan Parks - Hearing in the North Atlantic right whale: Anatomical predictions  
Scott Kraus &endash; A summer survey of a historical right whale habitat, the Cape Farewell Ground  
Tim Smith &endash; Historical occurrence of North Atlantic right whales in mid-latitude offshore waters: Is "Maury's Smear" real?

### **Management Updates**

Diane Borggaard &endash; Atlantic Large Whale Take Reduction Plan 2003 regulations and update  
Robert Stephenson &endash; Update on Canadian recovery plan and actions  
Phil Clapham &endash; Projects proposed for funding under the FY2003 North Atlantic Right Whale Competitive Grant program  
Glenn Salvador &endash; National Fish and Wildlife Foundation Large Whale Fund activities  
Debora Barr &endash; Workshop on aircraft safety protocols  
Dan McKiernan &endash; Massachusetts proposal to restore whale watch vessels as photo-id platforms of opportunity  
Tom Fetherston &endash; Revised Northeast Implementation Team &endash; announcement of meeting

### **Health and Condition**

Roz Rolland - Bowhead/right whale comparative health and physiology workshop: March 25-26, 2003  
Roz Rolland &endash; Prevalence of *Cryptosporidium* sp. and *Giardia* sp. in right whales and bowhead whales  
Philip Hamilton &endash; Using detector dogs to find right whale scat at sea: How to find a small, smelly needle in a very big haystack  
Josée Michaud - Energy available in the prey field of the Northern Atlantic right whale (*Eubalaena glacialis*) in the Bay of Fundy, and why it matters  
Wayne Perryman &endash; Results from photogrammetric sampling of North Atlantic right whales in the Bay of Fundy 2000-2002

### **New Methods**

Mark Hahn &endash; Understanding the potential impact of persistent organic pollutants in cetaceans through characterization of contaminant susceptibility genes  
Mackenzie Sheridan - Determining pregnancy status of free-ranging North Atlantic right whales (*Eubalaena glacialis*) by quantifying progesterone in blubber biopsies  
Doug Nowacek - New approaches for studying right whales in the presence of vessels  
Doug Gillespie - Update on automatic detection and classification of right whale calls: No, that's not a humpback !  
Pete Duley &endash; Use of a belly-mounted digital camera for right whale aerial photogrammetry

### **Genetics**

Tim Frasier - Genetic profiling of North Atlantic right whales: Application to paternity analysis  
Tim Frasier - Genetic profiling of the North Atlantic right whale: Implications on estimates of population size and structure  
Brenna McLeod &endash; DNA analysis of 58 16th century whale bones from Basque sites in Labrador

### **Entanglements : Documentation and Mitigation**

Dave Morin &dash; Right whale entanglement cases of 2003  
Amanda Kozuck - Analysis of fishing gear involved in entanglements of right and humpback whales  
John Higgins &dash; Mission of the National Marine Fisheries Service, N.E. Region, gear research team  
Ed Lyman &dash; Commonwealth of Massachusetts' gear modification initiatives to reduce the threat of entanglement for the North Atlantic right whale  
Michael Moore - Friction of different ropes in right whale baleen: A potential strategy to reduce entanglement  
Cliff Goudey &dash; Efficacy tests of the whale-free buoy  
Scott Kraus &dash; Reducing fatal entanglements in North Atlantic right whales

### **Shipping**

Greg Silber &dash; Developing a strategy to reduce the threat of ship strikes to right whales  
Pat Gerrior &dash; Education and outreach to the shipping industry  
Flora Lichtman &dash; Characterizing anthropogenic sources of ocean noise in the western Gulf of Maine: A noise production approach  
Chris Taggart &dash; Ships and fishing gear and whales in the Bay of Fundy: estimating the relative probability of being in the same place at the same time.  
Bruce Russell - Vessel traffic-management scenarios based on recommended measures to reduce ship strikes of northern right whales  
Hauke Kite-Powell &dash; A model of ship strike risk for the North Atlantic right whale  
Chris Clark &dash; Right whales acoustic monitoring: Results and progress toward real-time reporting

## **Scientific Literature and Reports**

Baumgartner, M.F. 2003. Comparisons of *Calanus finmarchicus* fifth copepodite abundance estimates from nets and an optical plankton counter. *Journal of Plankton Research* 25 (7): 855-868.

Durbin, E., G. Teegarden, R. Campbell, A. Cembella, M.F. Baumgartner and B.R. Mate. 2002. North Atlantic right whales, *Eubalaena glacialis*, exposed to paralytic shellfish poisoning (PSP) toxins via a zooplankton vector, *Calanus finmarchicus*. *Harmful Algae* 1 (3): 243-251.

Faust, I. Zoologische Einblattdrucke und Flugschriften vor 1800 Band IV Wale, Sirenen, Elefanten. [Zoological broadsides before 1800, volume IV, Whales, sirenians, elephants.] Hiersemann Publishers, Stuttgart. 402 pp. Includes four records of the North Atlantic right whale. Reviewed in *Marine Mammal Science* 19(4):851-852 by C. C. Kinze.

Kareiva, P. 2001. When one whale matters. *Nature* 414(6863): 493-494.

Laurinolli, M.J., A.E. Hay, F. Desharnais and C.T. Taggart. 2003. Localization of North Atlantic right whale sounds in the Bay of Fundy using a sonobuoy array. *Marine Mammal Science* 19(4):708-723.

Levenson, D.H. and A. Dizon. 2003. Genetic evidence for the ancestral loss of short-wavelength-sensitive cone pigments in mysticete and odontocete cetaceans. *Proceedings of the Royal Society Biological Sciences Series B* 270, no. 1516: 673-679.

Matthews, J.N., R. Leaper, T. Lewis and P. Tyack. 2001. Vocalization rates of the North Atlantic right whale (*Eubalaena glacialis*). *Journal of Cetacean Research and Management* 3 (3): 271-282.

Marx, M. 2003. North Atlantic Right Whale Consortium annual meeting abstracts. New England Aquarium.

Mayo, S. 2003. All flesh is grass: Right whales foraging at the margins. Woods Hole Oceanographic Institution Endangered North Atlantic Right Whale Lecture Series &endash; Webcasts. Audio with slides, 43 minutes. On line at [www.whoi.edu/whalelectures/](http://www.whoi.edu/whalelectures/)

McDonald, M.A. and S. E. Moore. 2002. Calls recorded from North Pacific right whales (*Eubalaena japonica*) in the eastern Bering Sea. *Journal of Cetacean Research and Management* 4(3): 261-266.

Moore, S.E., J.M. Waite, L.L. Mazzuca and R.C. Hobbs. 2000. Mysticete whale abundance and observations on prey associations on the central Bering Sea shelf. *Journal of Cetacean Research and Management* 2(3): 227-234.

Pettis, H. 2003. Data and photographic submission to the North Atlantic right whale photographic database. New England Aquarium, Boston, MA.

Reeves, R. 2003. Recovery of North Atlantic right whales: a historical perspective. Woods Hole Oceanographic Institution Endangered North Atlantic Right Whale Lecture Series &endash; Webcasts. Audio with slides, 45 minutes. On line at [www.whoi.edu/whalelectures/](http://www.whoi.edu/whalelectures/)

Tyack, P. 2003. Why don't right whales respond to the noise of an oncoming vessel? Woods Hole Oceanographic Institution Endangered North Atlantic Right Whale Lecture Series &endash; Webcasts. Audio with slides, 42 minutes. On line at [www.whoi.edu/whalelectures/](http://www.whoi.edu/whalelectures/)

Vanderlaan, A.S.M., A.E. Hay and C.T. Taggart. 2003. Characterization of North Atlantic right whale (*Eubalaena glacialis*) sounds in the Bay of Fundy. *IEEE Journal of Oceanic Engineering* 28: 164-173.

## **Calendar of Events**

December 3: Meeting of the Northeast Large Whale Recovery Plan Implementation Team, Black Falcon Terminal, Boston. For further information, contact team chair Tom Fetherston at 401-832-5857 or [fetherston@npt.NUWC.Navy.mil](mailto:fetherston@npt.NUWC.Navy.mil)

December 14-19: 15th Biennial Conference on the Biology of Marine Mammals, Greensboro, North Carolina. Sponsored by the Society for Marine Mammalogy. For more information, visit the conference web site (<http://smm2003biennialmarinemammalogy.org/frameset.html>) or the Society's web site (<http://www.marinemammalogy.org/>)

March 30-31, 2004: Canadian right whale science and research coordination meeting, St. Andrews, New Brunswick. For further information, contact Dr. Robert Stephenson at 506-529-5882 or [stephensonr@mar.dfo-mpo.gc.ca](mailto:stephensonr@mar.dfo-mpo.gc.ca)

November 3-4, 2004: Annual meeting of the North Atlantic Right Whale Consortium, New Bedford, Massachusetts. Dates and location are tentative. For further information, contact Heather Pettis, consortium secretary, at 617-226-2144 or [hpettis@neaq.org](mailto:hpettis@neaq.org)

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<http://www.graysreef.nos.noaa.gov/rightwhalenews.html>

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[Back to top page](#)