



New England
Aquarium

Protecting the blue planet

Right Whale

RESEARCH NEWS

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In this newsletter all photographs of right whales in U.S. waters were taken under NMFS/NOAA permit under the authority of the Marine Mammal Protection Act and the U.S. Endangered Species Act.

Right Whale Research News is produced and published by the New England Aquarium. We welcome your comments and suggestions!

Read more about a particular aspect of our project at www.neaq.org. 

Bay of Fundy, 2011: Taking the Annual Pulse of Right Whales

Moira Brown and Amy Knowlton

Fog, wind, rain and a hurricane or two—despite the challenges of weather, we can never wait to get back to the Bay of Fundy for our annual right whale survey. Based out of Lubec, Maine, the New England Aquarium’s right whale researchers have seized every good weather opportunity in August and September for the last 32 years to steam 25 to 35 nautical miles out into the Bay of Fundy and photographically “capture” as many right whales as possible. On the bad weather days we pour over photographs: matching our new sightings to the right whale Catalog to augment life histories of each whale seen, documenting which mother/calf pairs seen on the Southeast U.S. calving ground have survived the migration to the waters of Atlantic

Canada, and updating data on scarring and health for each animal. Essentially our research in Fundy allows us to take the pulse of the population. In 2011, our efforts yielded 411 sightings of at least 140 different right whales, slightly less than the annual average of 164 animals between 2005 and 2009, but over twice the number seen in 2010 (only 62 right whales). We were relieved that last year’s low count was not the beginning of a new trend.

Our emotions ranged from excitement (seeing more than 60 right whales a day in mid-September and a new mother/calf pair —**Legato (Catalog # 1802)** and her calf—who appeared in the Bay of Fundy on our second to last survey

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Portia (Catalog #3293) lifts her graceful flukes high in the air at sunset before diving in the Bay of Fundy in September. Photo: Marianna Hagbloom/NEAQ

Bay of Fundy, 2011

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day) to concern, as there was a notable evidence of graying skin, skin lesions, and thinness for some animals. This is reminiscent of how the animals looked in the late 1990s and coincided with lower than average calving rates for about four years (1997-2000). We don't know if the population is again heading in this direction of low calving—time will tell.

The last two survey days brought more concern with entangled whale **Catalog #3302** sighted on September 26 and **Catalog #3111** sighted on September 27 (See *Update on Right Whale Injury...*). These sightings prompted considerable efforts from our research team along with the Campobello Whale Rescue Team, Canadian Whale Institute and Coastwise Consulting to try to relocate and disentangle these animals. **Catalog #3111** was partially disentangled, but **Catalog #3302** was not relocated for disentanglement. The prognosis for both animals is unclear and will have to await future sightings.

Boats are hauled, and with another Bay of Fundy field season in the record books, the team is shackled to their computers at the Aquarium analyzing data. Our thoughts turn toward putting the data to work through meetings, deliberations and scientific publications as we keep chipping away at the mystery of the right whale and how best to help it survive.

For details of our day-to-day activities and photographs and videos of the researchers and whales in action during the field season, please visit our blog, rightwhales.neaq.org

Other Research Projects

In addition to our standard photo-ID work done from the *R/V Nereid*, often there are other projects going on at the same time. This year there were two such studies.

The first was a pilot study to collect samples of right whale blows. The project was designed and carried out by Aquarium scientists Dr. Kathleen Hunt, Dr. Roz Rolland, and Dr. Scott Kraus on the *R/V Callisto*. The blow samples were being collected and analyzed to see if stress hormones can be detected. If they can be detected, this would provide an additional tool to monitor stress in this population. Previous studies on stress have been successfully carried out using fecal samples, but fecal samples are much harder to come by.

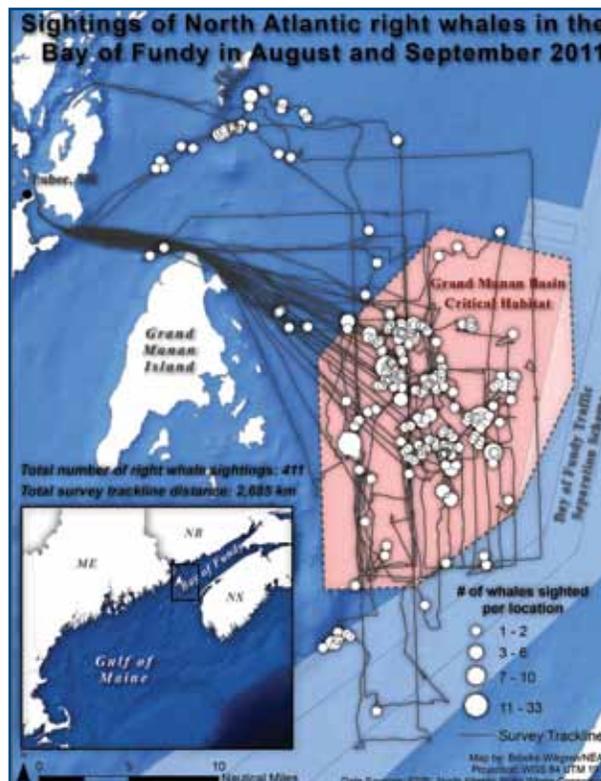
The second project is a multiyear study of mother/calf behaviors (both visual and acoustic) under the direction of Dr. Susan Parks, a senior research associate from Penn State University. This year the studies were undertaken by Lisa Conger, Jenny Tennesen and Kelly Slivka, who were able to conduct several mother/calf follows during their few days at sea, so their study is off to a good start!

Surveys for Wind Energy Development Planning

Jessica Taylor

There is an increasing need to produce alternative energy. With offshore wind in the federal waters south of Massachusetts estimated to be capable of producing approximately 4 gigawatts of electricity, enough to power 70 percent of Massachusetts households, wind is a valuable potential energy source. A prerequisite for offshore renewable energy development is determining appropriate sites where the impact to natural habitats would be minimal. Prospective development sites may be in outer continental shelf waters, where there has been limited or no research performed in the past due to difficulties in reaching these distant areas, as well as associated high costs. As always, with any proposed change to a habitat, it is essential to retrieve baseline data to which an altered state can be compared to assess the impact.

This fall, the New England Aquarium was awarded an 18-month contract from the Massachusetts Clean Energy Technology Center (MassCEC) to survey an area of federal water extending approximately 40 nautical miles south of Nantucket Island for large whales and sea turtles over the course of one year. This effort is a collaboration among the Aquarium, University of Rhode Island, Provincetown Center for Coastal Studies and Cornell University, which are now known collectively as the Northeast Large Pelagic Survey Collaborative (NLPSC). The goal is to perform two aerial surveys per month (with additional surveys in response to biological hotspots or areas of particular interest) using a twin engine Cessna Skymaster airplane with two pilots from ASSIST U.S. and to deploy acoustic detection buoys called "pop-ups" to continuously detect and



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Wind Energy Surveys

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record any vocalizations of blue, fin, right, humpback and minke whales. Both the aerial and acoustic methods will provide a year-long assessment of how large whales and sea turtles are utilizing these offshore waters. MassCEC requires a year's worth of seasonal migratory data to inform the federal offshore leasing process.

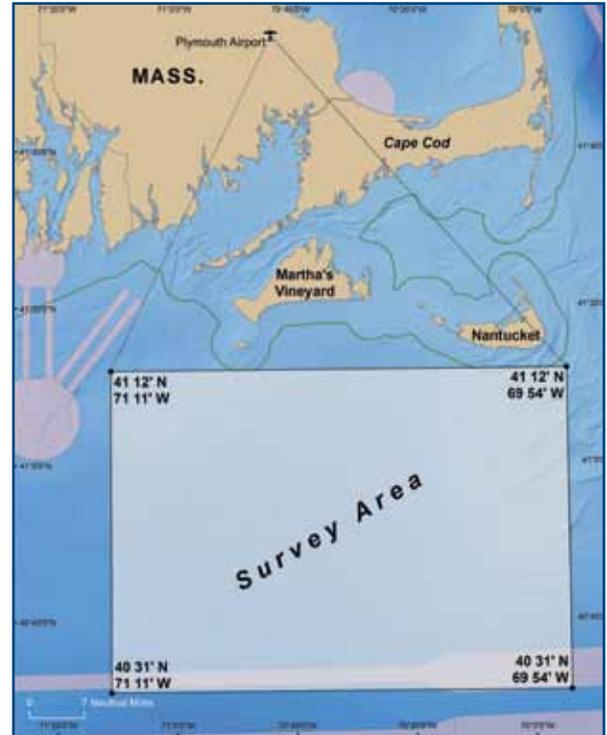
The first aerial survey was performed on October 9. Two observers in the rear seats scanned for large whales, while the automated digital SLR camera mounted in the belly port of the plane collected vertical photographic data at 5-second intervals for turtles. Aerial Imaging Solutions (AIS) developed and customized the camera mount system and data logging program. Each geo-referenced image will be reviewed after the survey to determine the density of sea turtles along the plane's track.

We are proud to be an integral part of this collaborative effort and are very curious to see what we find out there.



Survey crew left to right: Bob Lynch, PCCS; Jessica Taylor, NEAQ; Richard Jackson and Scott Patten, ASSIST-U.S. Photo: Dick Pierce/BroadOakStudios.com

This represents a huge advancement toward assessing seasonal migration and habitat use in this region, as well as contributing to informed decisions for offshore renewable energy development. And we will be keeping a close eye out for right whales to see if they are migrating through this area at certain times of year. Stay tuned for updates in our next newsletters!



Cartography: Brooke Wikgren/ NEAQ

Muddy Right Whales and Risk from Fishing Gear

Scott D. Kraus and Philip K. Hamilton

Entanglements in fishing gear are a known source of injury and mortality for right whales in the western North Atlantic, but information needed to determine risk factors (location, season, depth, gear type and diving behavior) is limited. However, one valuable piece of data to help us understand how right whales use the water column is that they sometimes make contact with the ocean floor (for reasons we aren't entirely sure of—feeding, scratching their heads, or simply a mistake?) and their heads get covered with mud! We evaluated all bottom encounters by right whales from photographs of whales with mud on their heads and bodies. Between 1980 and 2008, over 307 right whales have been observed 1,460 times with muddy heads, with the highest level of occurrence in the Bay of Fundy (6.5 percent), followed by Jeffrey's Ledge (1.8 percent), the Gulf of St. Lawrence (1.1 percent) and the

Gulf of Maine (1.1 percent). Not all sea floor substrate is mud, so these records may underestimate the rate at which right whales encounter the ocean floor.

Concerns about entanglement risk led to regulations in 2009 that required the rope connecting traps or pots along the bottom (called groundlines) to sink or lie on the bottom in U.S. waters. Risk

of groundline entanglement is a function of the behavior and morphology of right whales, and the height of groundlines from the ocean floor. The muddy right whale data suggest that in the U.S., the sinking rope rule may significantly reduce the likelihood of groundline entanglements. It's amazing what you can learn from mud on a whale's head!



With mud covering his head and callosities, **Catalog #2830** surfaces in the Bay of Fundy. Mud indicates that he came in contact with the seafloor—potentially more than 700 feet down! Photo: Jessica Taylor/NEAQ

Update on Injury, Entanglement and Mortality

Monica Zani

To keep tabs on how right whales are doing, we keep track not only of the number of calves born in a given year but also the number of mortalities, injuries and entanglements that have been detected. The beginning of 2011 was a challenging one as five mortalities (two entanglement, one vessel strike, two undetermined), four vessel strike injuries and three additional entanglements were documented through May (See *Update on Right Whale Mortality...in RWRN Vol20(1) May 2011*). We are happy to report there have been no additional mortalities documented since May, however there have been several new entanglements and injuries detected. The following is a brief summary of the right whale injuries and entanglements that have occurred since our last newsletter in May, as well as updates on previously entangled and injured whales.

Injuries

- **CT01MB2011 (temporary ID code):** In August a young-looking (likely a 1- or 2-year-old) whale was documented off the coast of Cape Cod, Mass., with new (but healing) propeller cuts/wounds on its back and evidence of grey skin and lesions. This whale was again seen in September on Jeffreys Ledge and appeared in similar condition.
- **2011 Calf of 2660:** Documented off Provincetown, Mass., in late July. The calf was sighted alone and had extensive new entanglement wounds on its fluke, peduncle and flippers. Except for a sighting the next day, the calf has not been sighted since. The calf is typically still nursing in the summer months but has also probably been taught how to feed. Hopefully it can survive this separation from its mom as long as it can heal from its wounds.
- **Gannet (Catalog #2660, 15-year-old female, a 2011 mother):** Documented in early September off Gaspe, Quebec, without her calf (see above). Like her calf, she was documented with extensive new entanglement wounds. In late September, she was photographed in the Bay of Fundy, still without her calf.

Update on Previously Injured Whales

- **Lou (Catalog #3140, 10-year-old male):** Sighted in September in the Bay of Fundy. The whale suffered a large wound forward of its peduncle caused by a vessel interaction sometime last winter. The wound appears to be healing, and the whale was in a surface active group (SAG).



The large wound on the back of Lou (Catalog #3140) is evidence that he has been hit by a ship. Lou survived his encounter, but shipstrikes are the leading cause of mortality in right whales.

Photo: Moe Brown/NEAq

Entanglement

- **S044 (temporary ID code):** First documented in Cape Cod Bay with line exiting both sides of the mouth. Fortunately, this whale was disentangled the same day by Provincetown Center for Coastal Studies (PCCS).
- **Catalog #3893 (3-year-old, unknown sex):** This whale was first photo-documented with netting exiting the mouth in March in Cape Cod Bay.

The PCCS team was able to do a partial disentanglement in April, and in May, aerial photographs showed the whale to be gear free.

- **2010 Calf of #3360 (1-year-old, unknown sex):** Documented on Jeffreys Ledge in September, entangled in netting. This animal was thrashing vigorously and may have freed itself from the gear but we won't know for certain if it has survived or has any gear still attached until it is resighted.
- **Catalog #3302 (8-year-old male):** This whale was first recognized as being entangled in late September in the Bay of Fundy. However, recent analysis of images from April in the Great South Channel show that the entanglement was already present then, but because only a single dark line around the whale's head was visible it was easily overlooked.
- **Catalog #3111 (10-year-old male):** First documented entangled in late September in the Bay of Fundy. A disentanglement response from the Campobello Whale Rescue Team was mounted. Due to the complexity of the entanglement, it was unclear whether the whale was partially or fully disentangled. We anticipate a future sighting will provide us with the answers.

Update on Previously Entangled Whales:

- **Catalog #1980 (adult male):** In April of 2008 **Catalog #1980** was last sighted with line wrapped around his head and through his mouth. Years went by without another sighting, and though his fate was unknown, many presumed the worst. But, amazingly, in April he was documented in Cape Cod Bay, alive and gear free!
- **Binary (Catalog #3010, adult female, a 2011 mother):** Binary was sighted in the coastal waters off Florida in January with line coming out of the left side of her mouth. Happily she was confirmed to be gear free when she and her calf were sighted in Rhode Island Sound this spring.

- **Catalog # 3120 (10-year-old male):** Documented in the Bay of Fundy this summer gear free. He had originally been sighted entangled in netting in September of 2010 on Jeffreys Ledge. Although no longer entangled, this whale's left flipper still remains white in color from the constricting gear wrap that was around it for many months. Hopefully he can fully recover from these impacts now that the gear is gone.
- **Catalog #3123 (10-year-old female):** Documented in the Bay of Fundy in September with a loose piece of rope still visible on occasion over her back. She was first seen with this entanglement in April off of Cape Cod, but it is not clear if the gear originates from the mouth or the flipper.
- **Kingfisher (Catalog# 3346, 8-year-old male):** Documented in the Bay of Fundy in September, **Kingfisher** is the longest persistent entanglement case ever documented in a right whale. Seven years after being entangled and partially disentangled as a yearling, he still carries many wraps of tangled rope around his right flipper.



Catalog #1980 skim feeds in Cape Cod Bay in April. He was last seen in 2008, badly entangled with a line tightly wrapped around his head. Three years later the line is gone but he still carries the scar and deep indentation through his callosity. Photo: PCCS, NOAA permit #14603

- **Catalog #3712 (4-year-old, unknown sex):** Documented in April on Stellwagen Bank National Marine Sanctuary. This whale was seen in January off the Florida coast with a short piece of rope exiting the mouth. It now appears to be gear free, but poor lighting conditions during the sighting leave some uncertainty.

To learn more about disentanglement efforts for right whales and other large whales, visit the website of our colleagues at the Provincetown Center for Coastal Studies (PCCS), who are the pioneers in disentanglement techniques. Together with their network partners they have saved many whales from a slow and painful death. www.coastalstudies.org/what-we-do/whale-rescue/update_disentanglement.htm



With his left flipper raised in the air **Catalog #3120** rolls with another whale in the Bay of Fundy. Although his flipper is no longer entangled, netting had been tightly wrapped around it, compromising circulation and turning it white. Chronic flipper entanglements kill numerous right whales, but hopefully **Catalog #3120** will recover.

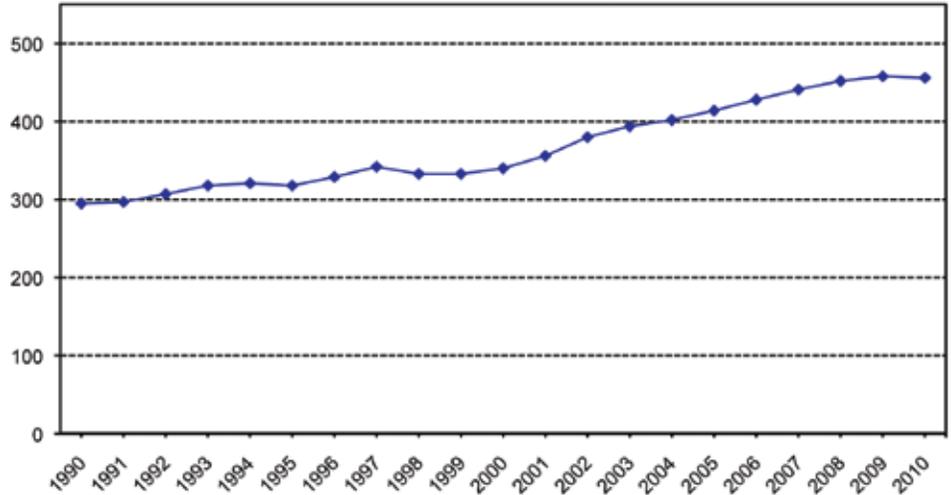
Photo: Patricia Naessig/NEAq

Population Update

Amy Knowlton

As we finish up matching and confirming all sightings for a given year, we are able to assess the estimated population count. This number represents all individuals seen alive in the previous five years (if they aren't seen for five years, they become "presumed dead" in the sixth year) minus any documented mortality that was matched to the Catalog. Although this approach to monitoring the population has some limitations (as some presumed dead animals could actually be alive and others that we count as alive may have died well before the six years have passed), we believe it provides a reasonable estimate of how the population is faring: Is it increasing, decreasing or remaining stable?

We have just completed confirming all 4,632 sightings from 2009 (the highest number of annual sightings we've ever had!). The graph shows our estimation of annual population tallies through 2009. As you can see, things have been improving over the past decade—high calf counts have offset the mortalities



Annual estimate of the number of presumed living right whales. This number is calculated by tallying all animals seen alive in the five years prior to and including the given year.

this population continues to suffer. But even with this positive trajectory, it will still be many decades before this population can be considered healthy and able to withstand problems they might face, from sporadic food limitation to disease outbreaks. In fact, the National Marine Fisheries Service has stated in their 2004 Recovery Plan for right whales that until the population shows annual growth rates of 2 percent or more for 35 years, it will remain endangered.

The population growth in the past 18 years has exceeded 2 percent in only 10 of those years, so though there is growth, it is still somewhat meager. We, along with many involved in right whale recovery activities, will continue to focus our efforts on understanding and trying to eliminate the harm caused by certain human activities (especially shipstrikes and entanglements) so that right whales can have a better chance of increasing their numbers.

Update on 2011 calves

In our last newsletter we reported that 20 calves had been born in the Southeast U.S during the 2011 calving season (See *Who's who...in RWRN Vol20 (1) May 2011*). But since then there have been sightings of two mother/calf pairs that had not been photographed on the calving ground. In April the Northeast Fisheries Science Center had a first sighting of **Sonnet (Catalog #1123)** and calf in Rhode Island Sound; this is **Sonnet's** fifth calf. And as reported in this newsletter (*Bay of Fundy 2011...*), **Legato (Catalog #1802)** and her calf were first sighted in the Bay of Fundy by the Aquarium's Right Whale Research Team in late September. This is **Legato's** fourth calf. With those sightings confirmed we are able to update the number of calves born in 2011 to 22! It is not unusual



Sonnet (Catalog #1123) and her calf frolic in the Bay of Fundy in August. This mother/calf pair was never seen on the Southeast U.S. calving ground; their first sighting was in Rhode Island Sound in April.

Photo: Tracy Montgomery/NEAq

to have a first sighting of a mother/calf pair in northern waters, and this year the poor weather in the southeast (which kept the aerial survey teams on the ground for

many days at a time) may have resulted in these two mother/calf pairs not being detected while on the calving ground.

Sponsored Whale Update

Marianna Hagbloom

As curators of the right whale photo-ID catalog for the entire North Atlantic, we process as many as 4,200 photographed sightings per year. As we do, we keep a careful eye out for all sponsored whales so we can update you on their latest known activities.

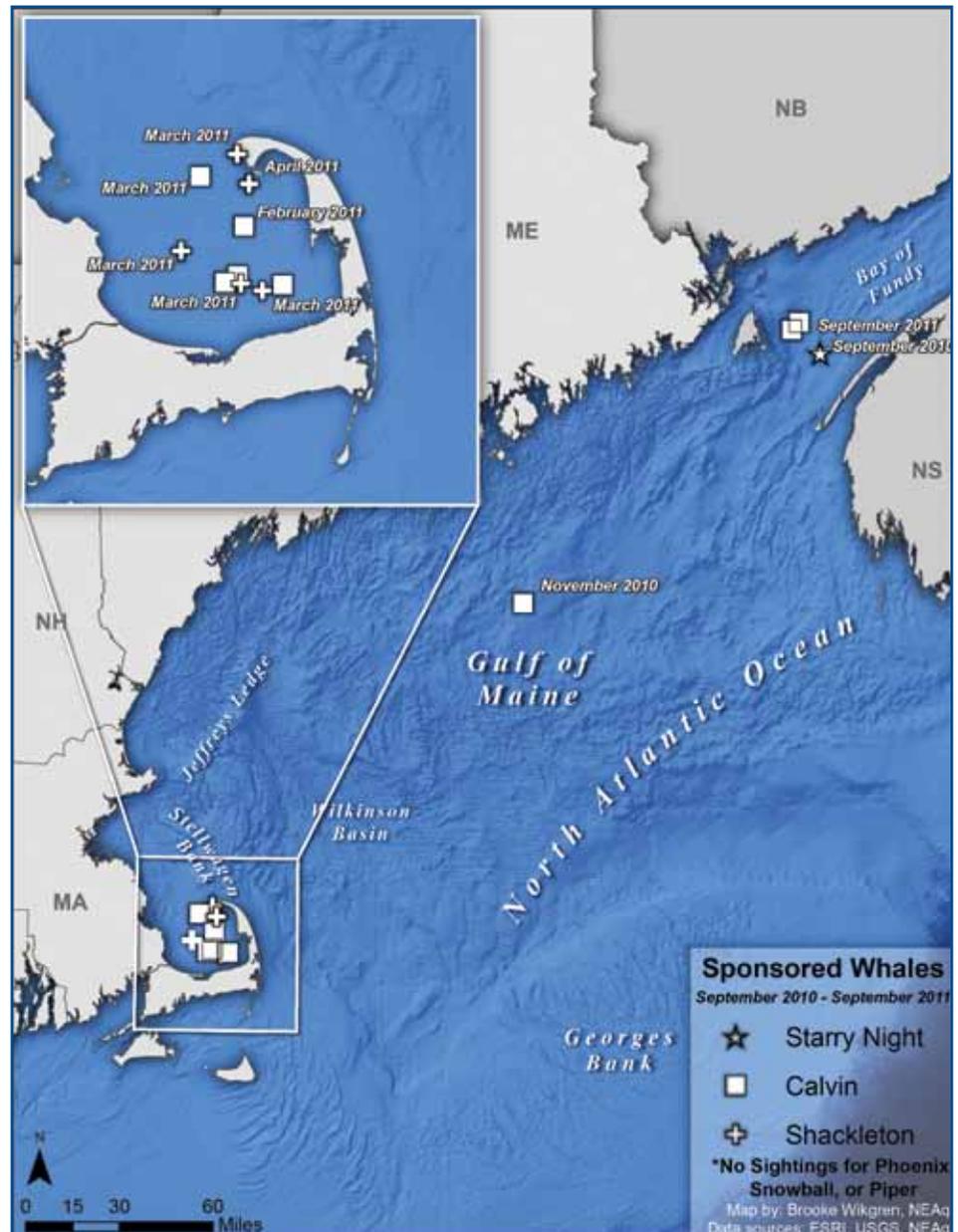
Shackleton (Catalog #2440) was among the large numbers of right whales seen by the Provincetown Center for Coastal Studies (PCCS) in Cape Cod Bay this spring. In addition to the March sightings mentioned in the last newsletter (See *Sponsored Whale...in RWRN Vol. 20(1) May 2011*), he was also seen subsurface feeding in Cape Cod Bay on March 30 and skim feeding there on April 22.

Calvin (Catalog #2223) returned to the Bay of Fundy this summer, and the crew of the *R/V Nereid* was excited to see her on September 19. She had been resting at the surface but did a couple of head lifts before moving off. A few hours later, she was sighted by the *R/V Callisto*, paired up with a 10-year-old female right whale, **Catalog #3101**. We also recently confirmed that **Calvin** was seen by PCCS on March 20 and 23 in Cape Cod Bay (in addition to several other February-March sightings of her reported in our last newsletter). Another recently confirmed sighting takes us back to November 2010, when she was photographed in the Gulf of Maine by the Northeast Fisheries Science Center. She was the focal female in a surface active group on November 15. Because we're always processing incoming data, some sightings aren't reviewed or confirmed until months later.

We currently don't have updates for **Snowball (Catalog #1131)**, **Piper (Catalog #2320)**, **Starry Night (Catalog #1028)** or **Phoenix (Catalog #1705)**, but we have plenty of photographs to analyze, so there may be sightings of them that we haven't found yet. Hopefully we'll have updates for all of our sponsored whales in the next newsletter. In the meantime, check out the map to see where the whales have been since last September!



Sponsored whale Calvin (Catalog #2223) raises her distinctively scarred head in the Bay of Fundy in September. Photo: Tracy Montgomery/NEAq



Sponsored whale sightings September 2010 through September 2011.



New England Aquarium

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2011 Consortium Meeting

Heather Pettis

The 2011 North Atlantic Right Whale Consortium Annual Meeting took place on November 2 and 3 at the New Bedford Whaling Museum in New Bedford, Mass. With a mission to ensure the long-term conservation and recovery of right whales in the North Atlantic, this annual meeting brings together representatives from research, academic and conservation organizations; shipping and fishing industries; whale watching companies; U.S. and Canadian Government agencies; and state and provincial authorities, all of whom are dedicated to the conservation and recovery of the North Atlantic right whale.

The agenda for the meeting included presentations on research, management, conservation and education activities as well as open sessions for discussion on emerging interests and concerns about right whales. The importance of this annual meeting to the right whale research community cannot be overstated; it provides unparalleled opportunities for collaboration among right whale stakeholders. Rich discussions and idea sharing gave us all insight and inspiration that will carry us through to our next meeting.

Thank you!

Thanks to all of the individuals, organizations and schools that continue to support our research with annual sponsorships and donations. Your contributions are critical to our work and we truly appreciate your generosity. Sponsorship funds are used by the New England Aquarium Right Whale Research Program to support activities that directly contribute to the conservation of North Atlantic right whales.

This year funds were used for:

- Travel to Lubec, Maine, to provide Whale Day activities during the Lubec Bicentennial
 - Travel to the Southeast Implementation Team meeting in Florida
- Registration fees for the Right Whale Consortium meeting in New Bedford
 - Shipping costs
 - Satellite phone charges

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