



**New England
Aquarium**

Protecting the blue planet

Right Whale

RESEARCH NEWS

*Volume 25, Number 2
December 2016*

In this issue:

*Entanglements in Fishing Gear
Threaten Right Whale Recovery*
Anderson Cabot Center Launched
*Catching Up with 2016's
Moms and Calves*
Reports from the Field
Sponsored Whale Update
*Keeping Right Whales
in the Public Eye*
Woodworking for a Cause
Classroom Sponsorship
Gift Ideas

Editor

Marilyn Marx

Contributors

Moira Brown	Scott Kraus
Marianna Hagbloom	Heather Pettis
Philip Hamilton	Brooke Wikgren
Amy Knowlton	Monica Zani

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 neaq.org.

You may now access past issues of *Right Whale Research News* on our website. Go to neaq.org/rightwhale and click on Right Whale Research News Archive. The archive goes back to 2005, and all but the two most recent issues of *RWRN* are available. Now when one of the articles in the current issue refers to an earlier piece on the same subject, it's easy to check it out!



The flukes of **Catalog #2608**, a 20-year-old male, show extensive, fresh wounds from a recent entanglement. Just 27 days later he was seen wrapped in rope and likely will not survive. He had a minimum of five entanglements in his life. Photo: Moira Brown/Canadian Whale Institute/NEAQ

Entanglements in Fishing Gear Threaten Right Whale Recovery

This summer, more North Atlantic right whales were seen than in recent years, but what we saw was disheartening. Many right whales had extensive skin lesions on their heads and bodies; others had large, fresh wounds from recent entanglements; some had both. Worse, six right whales were discovered entangled in gear in a six-week period: two of them were dead, and the long-term fate of the others is in question. Another right whale carcass was found floating off the coast of Maine in September but could not be retrieved, and the cause of death is unknown. If right whales are to survive in the North Atlantic, they cannot sustain this level of injury and mortality.

To put this situation in context, the North Atlantic right whale was believed to number fewer than 200 animals in

1980. Since that time, the Aquarium's Right Whale Research team and our colleagues have studied the biology, population dynamics, and conservation threats to this species. Over this 36-year period, we helped identify and designate critical habitats, moved shipping lanes away from right whales, slowed ships in right whale habitats, and developed a variety of new methods to monitor right whale health. These efforts were rewarded with a slow but steady growth in the population until 2010.

From 2010 to now, right whale seasonal distributions have shifted. Large reductions occurred in the summer Bay of Fundy and Roseway aggregations, and the springtime Great South Channel aggregations.

Continued on page 2

Entanglements

Continued from page 1

In early spring, whales in Cape Cod Bay increased significantly. New right whale aggregation areas were found off Nantucket in winter and spring, and in the Gulf of St. Lawrence in the summer. These distribution changes indicate right whales are seeking food outside of their “normal” habitats. Searching increases energetic demands, and if food is hard to find, female weight gain can be slowed, delaying reproduction. Annual calf production over the last five years (2012–2016) is 45% lower than the previous five years (2007–2011).

As right whales search farther afield for prey, entanglement probability increases. Right whale entanglements and mortalities in the Gulf of St. Lawrence in 2015 and 2016 indicate increasing conflicts with human activities. In the U.S. and Canada combined, 4.3 right whales were killed (on average) annually by human activities from 2009 to 2013, mostly by fishing gear. Until 2009, 44% of diagnosed right whale mortalities were vessel strikes and 35% were entanglements; after 2010, 15% were vessel strikes and 85% were entanglements. Even if some whales survive their entanglements, a new analysis done by our researchers indicates

that non-lethal entanglements can cause reproductive failure and declining health long after the entanglement has ended.

A major challenge is that very few fishermen encounter right whales, but nearly all right whales have been entangled in fishing gear. Thus most fishermen can legitimately say they have never seen, or entangled, a right whale in their gear, and are therefore perplexed if they are asked to adjust fishing methods or gear to accommodate a problem they do not experience. On the other hand, on average, 66 right whales are entangled in fishing gear annually. Overall, 83% of the cataloged right whale population has been entangled at least once, and 59% of those whales have been entangled at least twice. Thus we are confronted with both a threat to population viability for right whales, and a cultural issue, where a majority of the fishing community is not convinced there is a problem.

The combined factors of reduced reproduction and increased mortality from human causes are double jeopardy for right whales, turning a population recovery into a slow population decline. However, there are actions, which if taken immediately, can reverse these trends. Fishing gear modifications to

Anderson Cabot Center Launched

The New England Aquarium launched the Anderson Cabot Center for Ocean Life in June 2016. The groundbreaking initiative is designed to expand the Aquarium’s cutting-edge applied marine research, data-driven conservation solutions, and public engagement to ensure a future for the oceans in which resources are used sustainably, critical species and habitats are protected, and ecosystems are managed wisely. Through the work of the Anderson Cabot Center, Aquarium researchers will offer practical solutions to mitigate human impact on our oceans. The right whale team is excited to be a part of this vision and to make certain that right whales are monitored, protected, and, given the chance, able to thrive.



both prevent and reduce entanglement severity now exist. In some places, temporary fishery closures may be necessary. Joint Canadian and U.S. efforts are urgently needed to develop a strategy for reducing mortality in this species. We believe solutions will come from an approach that includes fishermen, gear technologists, biologists, and fishery managers focused on relevant fisheries and data on whale movements, injuries, mortalities, as well as updated information on fishing gear technology and operations. Extinction caused by ocean industrialization would be illegal, immoral, and achingly sad. The North Atlantic right whale deserves our best efforts to ensure that does not happen.

—Scott Kraus,

Vice President and Senior Advisor
Anderson Cabot Center for Ocean Life



This whale, Catalog #3694, is an adult female that died in September from an entanglement in fishing gear. Rope is wrapped around her head, through her baleen, and around both flippers, and it was determined that she had been entangled for weeks or months before she succumbed. Sadly, her death is not just the loss of a single whale in the population, but all the calves she might have had in the future.

Photo: Christin Murphy/WHOI, NOAA Permit #18786-01

Catching Up with 2016's Moms and Calves

There were 14 mother-calf pairs observed in the southeast U.S. calving ground this year, and our team saw nine of them during our field seasons. In Cape Cod Bay (CCB) this spring, we saw five pairs—**Catalog #1233, Punctuation (#1281), Harmony (#3115), #3317, and Bocce (#3860)**—and collected a vital skin sample from a calf that had not been biopsy-darted on the calving ground. The skin samples are analyzed by our colleagues at Trent University in Ontario and added to the right whale genetics database (see *How to Identify...* in *RWRN May 2016*).

During our Gulf of St. Lawrence (GSL) and Bay of Fundy (BOF) surveys this summer, six pairs were documented (including two from

CCB): **Harmonia (#3101), #3317, Fuse (#3405), Clipper (#3450), Bocce, and #4094**. We had sightings of **Fuse** and her calf in both GSL and BOF, 21 days and more than 700 miles apart!

Sadly, 10 days after we last photographed **Punctuation** and her calf in CCB, the calf was discovered dead off Chatham, Mass., on May 5. He was towed to shore for necropsy, where we learned he had nine large propeller cuts along the length of his body and multiple broken and fractured bones. After lab analyses of the tissue samples were completed, the results concluded what we all suspected: the calf had been killed by a large vessel strike. Concern grew for **Punctuation**, as it was possible that she had also been struck. Three

long months passed before we had our answer. On August 1, Mingan Island Cetacean Study sighted her in GSL, and she appeared to be in good health. Although we still feel the ache of losing a calf to such a horrific event, we have found the silver lining in that a reproductive female was uninjured and will likely calve again.

—*Marianna Hagbloom*

We love documenting mother-calf pairs, not only because it's important to monitor the mom's health and photograph developing features of the calf, but watching them interact with each other is really heartwarming. It's also amusing to witness a calf learn how to feed on zooplankton after being accustomed to nursing. As the mother right whale skimfeeds at the surface, her calf will follow alongside, mimicking her movements and behavior. Feeding right whales have to open their mouths really wide as they swim to get the full benefit of their morphology (adults have enormous mouths and 6-foot long baleen), but this is not what nursing calves are used to doing. These learning calves have their mouths only partially open, usually with the bottom jaw completely out of the water and therefore not actually collecting any food! It's adorable and gives us something to laugh about, which, given our concerns for the current state of the population, is much appreciated.

Photo below: **Harmony** skimfeeds in Cape Cod Bay while her little calf, its mouth partially open, mimics her behavior.

Photo: Marilyn Marx/NEAQ, NOAA Permit #17355-01



Punctuation's 4-month-old calf was killed by a vessel strike off Cape Cod in May. Two of the nine propeller cuts are visible on the left flank. Photo: Marilyn Marx/NEAQ, NOAA Permit #18786-01



Reports from the Field

The Right Whale Research Team, in collaboration with the Canadian Whale Institute (New Brunswick), once again coordinated multiple survey efforts in Canadian waters.

Bay of Fundy

We have conducted annual surveys in the Bay of Fundy since 1980 (36 years in a row!) and were pleasantly surprised to find right whales in higher numbers after five seasons with few sightings. We logged 23 days at sea over two months, an unusually busy season. Wildlife in the bay was more abundant and active than in the

last five years: more than 70 right whales, including two mother-calf pairs, were sighted, as well as harbor porpoises, white-sided dolphins, humpbacks, fin whales, sharks, and many species of seabirds.

The right whales were

primarily focused on feeding—a very positive sign indicating food was bountiful once again. Unfortunately, some

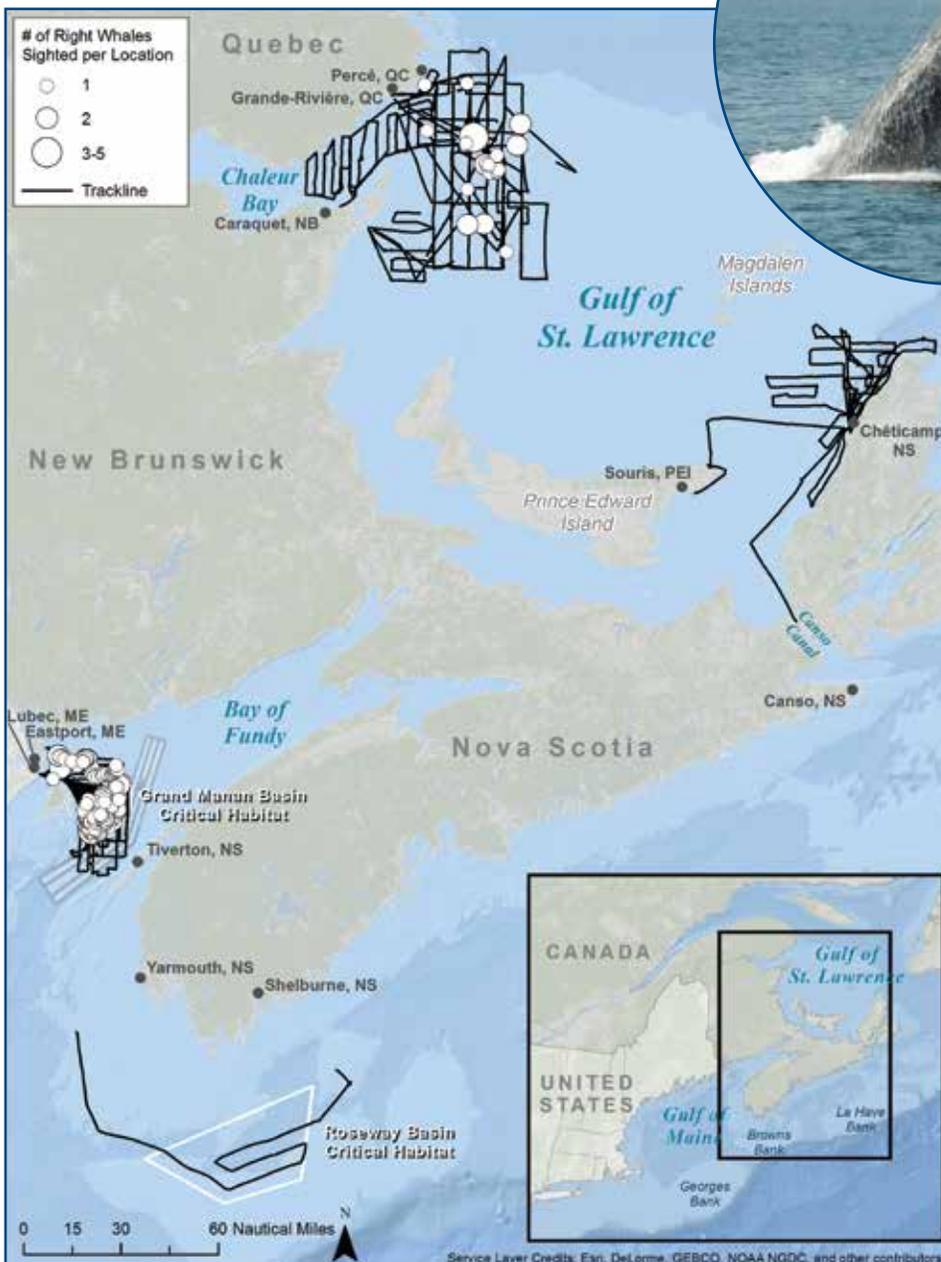
of the whales we saw were in poor condition, including two recently entangled whales and one previously entangled whale. Several others had skin lesions and recent entanglement scars. This is concerning as entanglement injuries, which lead to reduced reproduction and survival, have become more severe in recent years (see *Entanglements in Fishing Gear...*).



Although our research season ended in mid-September, a local whale watch operator reported seeing right whales through mid-October near a small group of islands called the Wolves. How long they stayed and where they went next is anyone's guess as the whereabouts of many right whales during late fall and winter is largely unknown (except for calving females, which head to the southeast U.S.).

R/V Callisto

For the first time last year, a small survey team, led by Monica Zani, towed the 26-foot R/V *Callisto* to Caraquet, New Brunswick, to conduct surveys in the waters of Chaleur Bay, an arm of the Western Gulf of St. Lawrence located between Quebec and New Brunswick (see *Reports from Our Field Efforts in RWRN December 2015*). It was a very large area to cover, but two right whales were sighted, and plans were made to return this year with an expanded field effort. In July, our three-person team made the long drive from Boston to Nova Scotia with *Callisto* in tow to conduct two weeks of surveys in the coastal waters off the western side of Cape Breton. In August, we went back to the area surveyed last year, again working



Survey track lines for the R/V *Shelagh* and R/V *Callisto* in the Gulf of St. Lawrence and the R/V *Nereid* in the Bay of Fundy, July 12 to September 10, 2016. Map: Brooke Wikgren/NEAQ

off Caraquet. While no right whales were documented during our 11 survey days, we did transit more than 1,000 nautical miles on the water and drove more than 4,000 miles over land to get on location! While off Cape Breton, we documented many pilot whales and witnessed the frenzied start of the snow crab fishery. Off Caraquet, only dolphins and minke whales were recorded. Perhaps the most exciting sighting was that of a bluefire jellyfish (*Cyanea lamarckii*), a species rarely seen in the northwestern Atlantic Ocean. Although it's disappointing to survey without having any right whale sightings, it's still an important effort. Negative data, or knowing where whales aren't located, can be as important as knowing where they are!

R/V Shelagh

The R/V *Shelagh* was the great traveler of our three survey platforms this summer. We knew we wanted to survey potential right whale habitat areas in the Gulf of St. Lawrence that were out of reach of the R/V *Callisto*, but first we had to get the boat up there. On July 15, our team of six, which included Captain Joe Howlett and team leader Philip Hamilton, left Campobello Island, New Brunswick, and headed southeast to the Roseway Basin critical habitat. We did a brief survey of southern Roseway (no right whales were seen) before the fog closed in, and then we made our way up the coast of Nova Scotia and into the Gulf of St. Lawrence through the Canso Canal. We were fortunate to have excellent weather in the gulf and logged 12 consecutive days of surveys.

Our surveys were focused on an area east of the Gaspé and Acadian Peninsulas called the Shediac Valley. The first team surveyed this general area through August 3 and found 17 whales, including five mother-calf pairs (see *Catching up with...*). One of the pairs, **Fuse (Catalog #3405)** and calf, were seen a few weeks later in the Bay of Fundy. Overall, the survey area was quiet (not many birds or cetaceans), and

the seven single whales all seemed to be traveling.

The second *Shelagh* expedition, led by Amy Knowlton and Moira Brown, ran from August 19 to August 31. Unfortunately, that team was not as lucky with weather or whales. In eight days of surveys, the team only found **Catalog #3317** and her calf; no other right whales were seen.

It is interesting to note that the entire time the *Shelagh* was working in the gulf, right whales were sighted regularly by observers from Mingan Island Cetacean Study (MICS) off Anticosti Island, which is more than 100 miles north of the *Shelagh's* survey area. MICS photographed at least 27 right whales that were never seen by the *Shelagh* team, suggesting a broad distribution of right whales in the gulf.



The gulf is a vast area and impossible to cover fully by our efforts alone. It will take collaboration and time before we gain a full understanding of how right whales use this enormous, 91,120-square-mile (236,000-square-kilometer) body of water. Our plans are to head back to the Gulf of St. Lawrence next summer to see what more we can learn.

—Amy Knowlton, Monica Zani, Philip Hamilton, and Moira Brown



Photo above: **Clipper (center)** and her calf (left) are joined by an unidentified whale in a surface active group in the Bay of Fundy. Photo: Bill McWeeny/NEAQ

Circular insets left and above: **Catalog #4080**, a 6-year-old female, breaches in the Bay of Fundy.

Photo: Amy Knowlton/NEAQ

Sponsored Whale Update

Gemini (Catalog #1150): We were thrilled to see **Gemini** in the Bay of Fundy on August 20 and September 3. The last time we documented him there was 2011, so it was nice to see him in his old stomping grounds.

Manta (Catalog #1507): Since our last update, three additional May 2015 sightings from the Center for Coastal Studies (CCS) have been matched to **Manta**; he was subsurface feeding in Cape Cod Bay in all three. And this summer we saw **Manta** in the Bay of Fundy on four days: July 25, and August 1, 3, and 19. On August 3, we saw him breach and slap the surface of the water with his flippers!

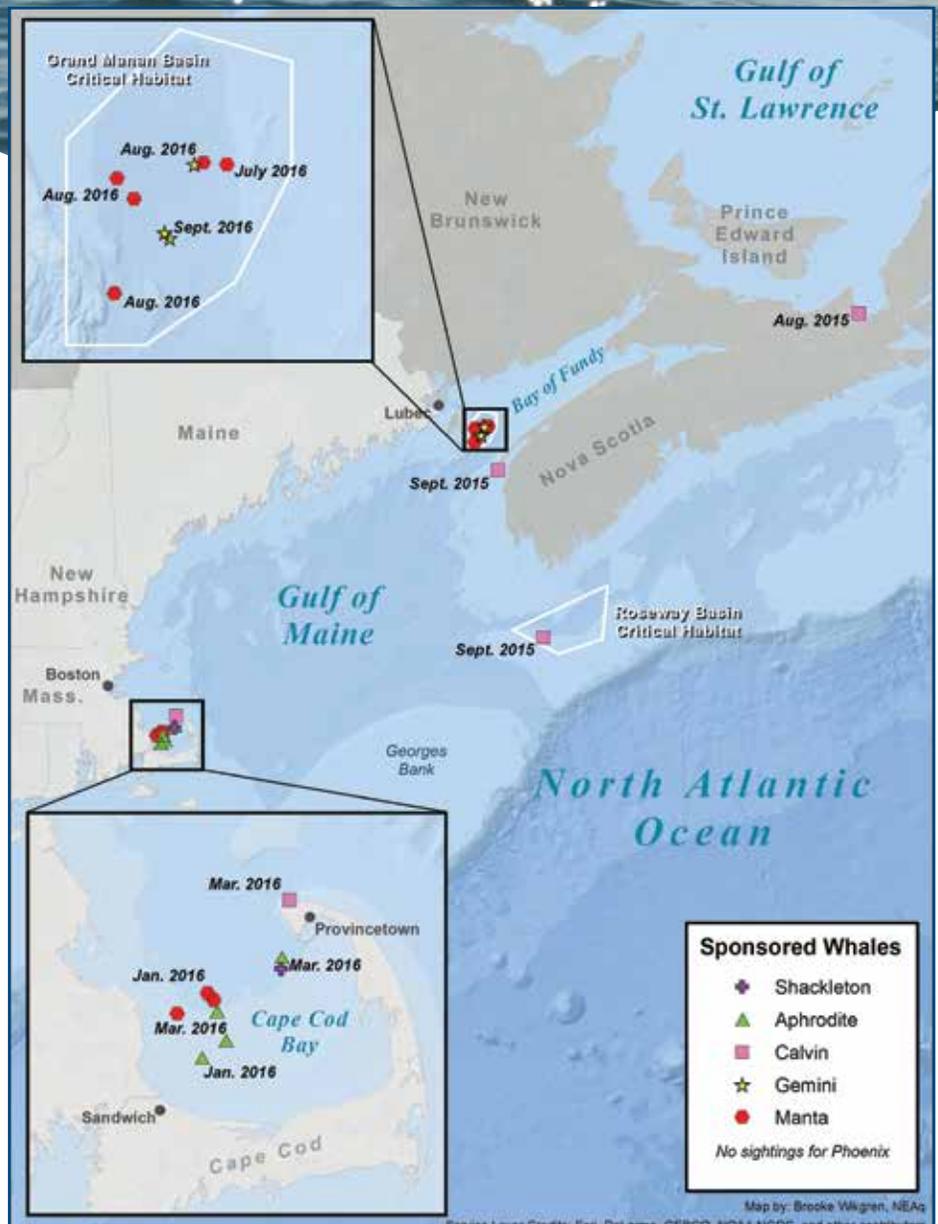
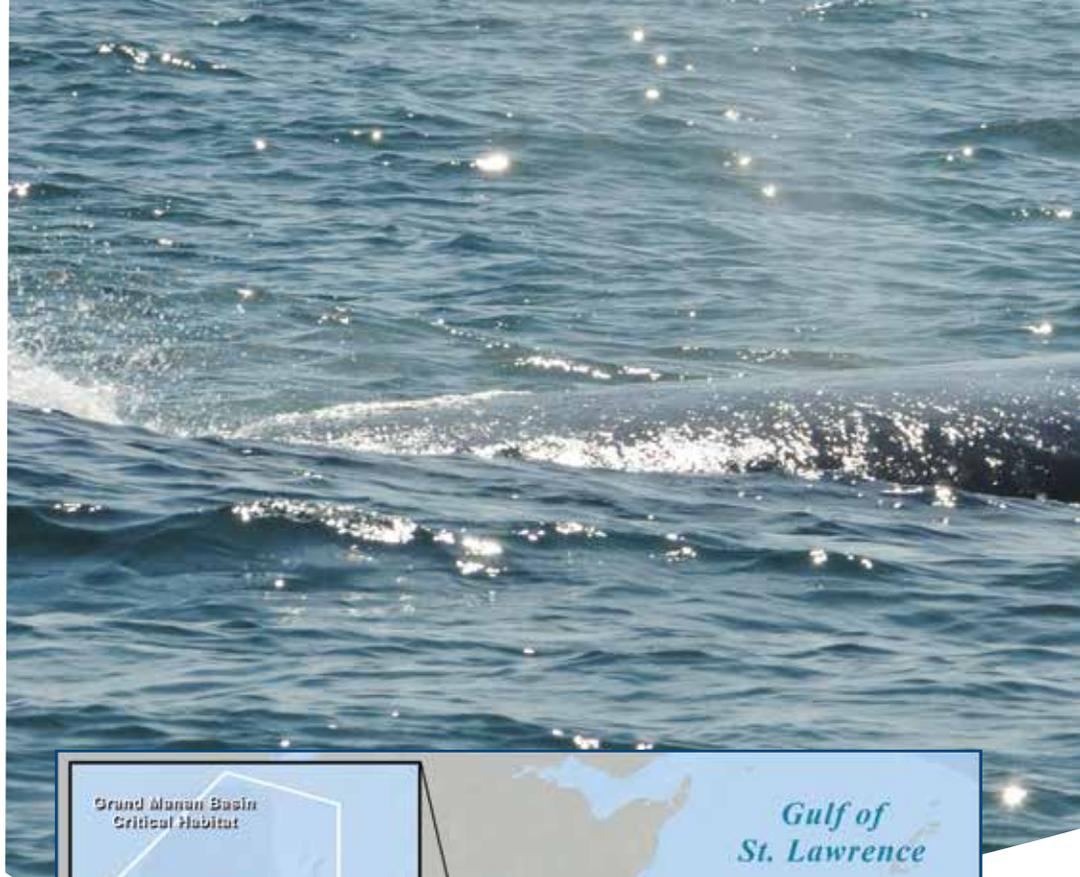
Shackleton (Catalog #2440): The only **Shackleton** update we have to report is a recent match to a 2015 Cape Cod Bay sighting by CCS. Photos from that May 8 sighting documented him skimfeeding, just like the majority of his other 2015 sightings from that area.

Unfortunately, we don't have any new sighting information for our other sponsorship whales: the three females, **Aphrodite (Catalog #1701)**, **Phoenix (Catalog #1705)**, and **Calvin (Catalog #2223)**. Maybe **Phoenix** will be seen in the calving grounds as she most recently had a calf in 2012 (and right whales can give birth every three years at a minimum). **Aphrodite** and **Calvin** each had calves in 2015, so where they might be seen next is anyone's guess. Considering we continuously process data, we'll include any newly discovered sightings in our next issue. Thank you so much for sponsoring a right whale and supporting our work!

—Marianna Hagbloom

Photo above: Sponsored whale **Gemini**, one of the oldest whales in the catalog, was photographed in early September in the Bay of Fundy.

Photo: Marianna Hagbloom/NEAQ



Sponsored whale sightings August 2015 through September 2016. Map: Brooke Wikgren/NEAQ



Keeping Right Whales in the Public Eye

Over the past several decades, the right whale story, with all its trials and tribulations, has garnered tremendous attention throughout the world. Because educating the general public about right whales is one of the most important responsibilities of the right whale research community, we are always looking for fun ways to engage and inform. And one of the most successful has been Right Whale Festivals. The first Right Whale Festival took place in 2009 in Jacksonville, Florida, the heart of the right whale calving grounds. The festival was cofounded by NOAA Fisheries and Sea to Shore Alliance and sponsored by multiple

local entities. On October 1, 2016, they hosted the eighth Right Whale Festival, which attracted more than 5,000 visitors!

In New England, a group of middle school students (dubbed *The Calvineers* after a famous female right whale named **Calvin**) from the Adams School in Castine, Maine, decided to build on this fabulous idea of a festival. The Calvineers, who have always been focused on research and education about right whales, joined forces in 2013 with the New England Aquarium's Education Department. On May 1, 2016, the Aquarium and Calvineers hosted the third annual New England Right Whale Festival in Boston.

More than 1,200 people attended!

These free festivals provide attendees with an opportunity to learn more about right whales, meet right whale scientists, and take part in family-friendly activities. Anticipating this tradition to continue, we ask you to keep an eye out for right whale activities in your area. Or perhaps consider hosting your own celebration of right whales to share what you know about this amazing species!

—Amy Knowlton

Woodworking for a Cause

Sheri Lee is a woodworker-artist extraordinaire who operates a shop called Off the Beam Woodworking. She creates handcrafted items from sustainably harvested domestic hardwoods and responsibly harvested tropical woods and donates her proceeds to nonprofit organizations that work to foster conservation. We are excited to announce that Sheri has selected the New England Aquarium's Right Whale Research team as a beneficiary of her most recent creations: a right whale clock and right whale cheese board. The 18-by-11-inch cheese boards are fashioned from tap-hole maple (sugar maple that was tapped for maple syrup) with a chechen and aspen whale inset.



Right whale clock (left) and cheese board showing right whale detail.

They are finished with Danish and walnut oils and beeswax. These are one-of-a-kind items that would make fabulous holiday, wedding, birthday, and housewarming gifts. To view and purchase Sheri's work and support our research, visit offthebeamwoodworking.com. We are very grateful for Sheri's support of North Atlantic right whale research and conservation!

—Heather Pettis



New England Aquarium

Central Wharf
Boston, MA 02110-3399

 PRINTED ON
RECYCLED PAPER
325/12-16/Alpha

Calling All Teachers! We now offer a Classroom Sponsorship!

Perfect for classrooms or service projects, this sponsorship includes a full-color booklet about your whale, a one-year subscription to *Right Whale Research News*, the small-format hardcover book *Disappearing Giants*, a plush right whale for the classroom, certificates and stickers for up to 30 students, and access to the right whale-themed Smithsonian in Your Classroom lesson plans "The Tale of a Whale."

To learn more about our Sponsorship program, visit us online.
www.neaq.org/rwsponsorship

Thank you!

We would like to thank all the individuals, organizations, and schools that continue to support our research with annual sponsorships and donations. In these difficult economic times, with federal research budgets shrinking, your support is

more critical than ever before, and we truly appreciate your generosity. Sponsorship funds are used by the New England Aquarium Right Whale Program to support activities that directly contribute to the conservation of North Atlantic right whales.



Gift Ideas



Give an adorable right whale plushy, a colorful T-shirt, or other right whale gifts and support our efforts to save right whales.

Buy online. Shipping is free!
www.rightwhaleresearch.bigcartel.com

