Right Whale Research News

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Anderson Cabot Center for Ocean Life
at the New England Aquarium

In this issue:

The 2018/2019 Calving Season

Surveys on the calving grounds off Florida and Georgia finished at the end of March, and although the calf count did not come close to the 20-year average of 17 born per year, the seven calves seen were a big improvement from the complete lack of births last year.

Catalog #2791 was the first right whale mother sighted this season. She and her calf were photographed off the coast of Florida on December 28, 2018, by a trained endangered species observer from a dredge off Jacksonville Beach. Although **#2791** has had three prior calves, it had been 10 years since her last calf was born.

One of the moms this year is an old friend: **Catalog #1204**. First seen in 1982, she gave birth to her ninth calf this year! Except for a single sighting in Roseway Basin in 1989, she has never been seen north of Jeffreys Ledge (off the coast of New Hampshire), including the Bay of Fundy or Gulf of St. Lawrence where many mothers and calves are typically seen. Her one known female calf, **Champagne** (**#3904**), born in 2009, is just reaching adulthood. **Champagne** was also in the southeast this year, but not with a calf.

Other moms include **#3317**, a 16-year-old with her third calf; **#3370**, whose age is unknown, but she's with her second calf; **#4180**, a first-time mom of unknown age; and **Boomerang** (**#2503**), with her fourth calf. **Boomerang**, named for a scar on her ventral fluke, is famous as one of the few mothers who has taken a calf into the Gulf of Mexico. She is also part of a long lineage of females descended from **Baldy** (**#1240**) (see *What a Difference a Mother Makes* in *RWRN May 2009*). The last calf of the season was seen on February 14 off the Florida coast. The mother, **Pico** (**#3270**), had only one other documented calf, which was eight years ago. She is named for an island in the Azores, where

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Catalog #2791 and her 2-week-old calf swim near Amelia Island, FL, on January 7, 2019.
Photo: Georgia DNR, NOAA Permit #20556-01

Calving Season

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she was seen in January 2009. That is more than 2,800 miles northeast of where she was sighted this January!

One noteworthy aspect of this year's calving season was the spread of inter-birth intervals (the time between calves). When female right whales are healthy and well-fed, they can give birth every three years, and that is what they did in the 2000s. Since the broad distribution shift of right whales began in 2010, females have been lengthening the time between calves. In 2017 (the last year a calf was born before the current season), the average inter-birth interval for those calving mothers was more than 10 years. This increased interval is likely caused by a combination of factors, such as stress caused by injuries sustained from past entanglements, as well as poor body condition. The latter could be the result of substandard zooplankton resources and/or more extensive searching for adequate food supplies in a rapidly changing ocean. The current group of seven moms had a big range in their inter-birth intervals, from three years for **#3317** to 10 years for both **#2791** and **#3370**, with an average of seven years.

Now, we watch with anticipation to see if the mothers and their calves safely make the dangerous journey north. Three of the seven—**#1204**, **#3317**, and **#4180**—have already been seen around Cape Cod. We hope to see the other four, and maybe one or two new calves, in the coming weeks.

— Philip Hamilton

Seismic Surveys Are the Wrong Move for the Right Whale

Every governor from Florida to Maine has publicly denounced the current administration's proposal to allow offshore oil and gas exploration, development, and production in the U.S. Atlantic Exclusive Economic Zone—the area within 200 miles of the U.S. coastline.

It's not just our state leadership. Fishermen oppose this. Local businesses and chambers of commerce oppose this. The people oppose this. Despite a formidable wall of opposition, the National Oceanic and Atmospheric Administration (NOAA) gave the green light for the Bureau of Ocean Energy Management in late 2018 to launch a series of seismic surveys by five private companies along the Atlantic coast. Companies use seismic surveys to determine the location and size of possible oil and gas reservoirs beneath the seabed floor. A seismic vessel tows an airgun array that generates controlled explosions every 10 to 15 seconds for days on end while traveling back and forth across vast sections of ocean.

Marine mammals live in an almost entirely acoustic world. Within their oceanic home, they rely on sound to communicate, find food, and mate. The explosions from seismic airgun blasts are 200 to 260 decibels in water—the equivalent of 140 to 200 decibels in air. To put that in context, a jet engine at 100 feet away is about 140 decibels. Worse, these sounds travel thousands of miles through water, which can transmit soundwaves at far greater distances than air. Imagine trying to sleep, eat, or talk with your family if someone is setting off grenades outside your house every 10 seconds for months on end.

In March, Anderson Cabot Center Vice President Dr. Scott Kraus and Dr. Chris Clark from Cornell Laboratory of Ornithology were invited to testify as expert witnesses to the U.S. House of Representatives Subcommittee on Water, Oceans, and the Wildlife in a hearing convened to examine the threats to the North Atlantic right whale. During their testimony, they spoke of the impacts that seismic blasts are known to have on many species and not just right whales. Seismic exploration has been shown to reduce singing in humpback whales, displace finback whales by hundreds of miles, and disrupt activities vital to foraging and reproduction over vast ocean areas. Seismic sounds have been shown to negatively impact commercial fish species, including scallops, haddock, and rockfish. These sounds also kill zooplankton, the foundation of the marine food chain,

Population in Decline

After seeing slow but steady growth for several decades, the population of North Atlantic right whales has been declining since 2010, and the decline in females has been more pronounced than males. These were the findings of a 2017 paper published by Richard Pace and Peter Corkeron, both of NOAA Fisheries, and Scott Kraus, Vice President and Senior Science Advisor at the Anderson Cabot Center for Ocean Life at the New England Aquarium.

The three scientists used a novel statistical approach to estimate the number of right whales considered to be alive. This population finding, while disheartening to the right whale community, is not surprising in light of the increasing frequency of mortality and serious injuries we have been observing in recent years. In order to keep this species from slipping toward extinction, we have to redouble our efforts to keep our oceans safe for whales.

Pace, RM, Corkeron, PJ, Kraus, SD. State–space mark–recapture estimates reveal a recent decline in abundance of North Atlantic right whales. Ecol Evol. 2017; 7: 8730–8741. doi.org/10.1002/ece3.3406

SAVE Right Whales Act
H.R. 1568

Introduced by:

Rep. Seth Moulton (D-MA)
Rep. John Rutherford (R-FL)
Plus 13 additional co-sponsors to date

What is it?

The "Scientific Assistance for Very Endangered" (SAVE) Right Whales Act would establish a new grant program to fund projects put forward by states, research institutions, nongovernmental organizations, industry, and others aimed at reducing the impacts of human activities on right whales.

The act would authorize $5 million in new funding annually from 2019 to 2029 to develop, test, and implement new technologies that would reduce the leading causes of right whale deaths: entanglement and vessel strikes. This bill was introduced on March 6, 2019, and on May 1, the House Natural Resources Committee voted favorably to advance it to the House floor — a great step forward. To follow the progress of this bill, see www.congress.gov/bill/116th-congress/house-bill/1568.

"We humans have nearly killed every right whale in existence through our direct and indirect actions over the past two centuries. Now we have a choice; we can be the generation that brings them back, or the generation that allows their extinction."

Rep. Seth Moulton

for distances over a kilometer from each seismic blast. The cumulative picture that emerges from multiple studies is that seismic exploration off the East Coast will be loud enough to impact every aspect of the marine ecosystem from the smallest zooplankton to the largest marine mammals.

With about 400 individuals alive today, North Atlantic right whales have already been pushed to the brink by human activities. Despite 40 years of federal protections, the right whale population is declining rapidly due to entanglements in fishing gear, vessel strikes, underwater noise, and other chronic stressors.

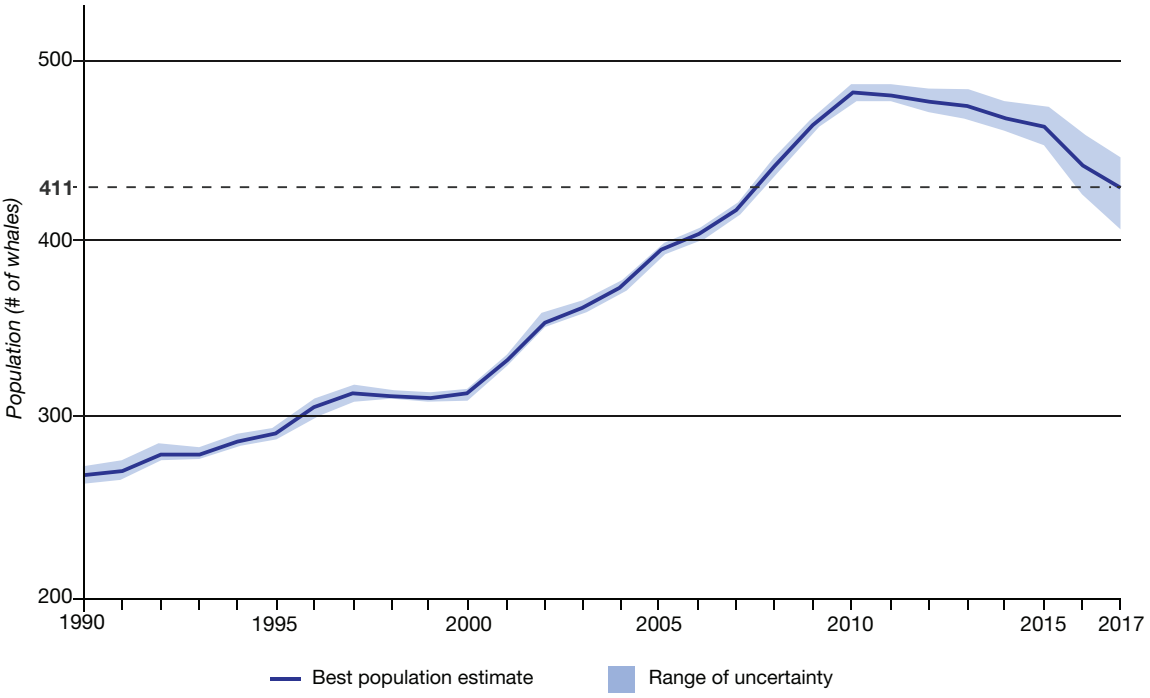
The constant exposure to seismic airgun noise is sure to increase chronic stress, negatively impacting an already stressed population. So, while the seismic surveys themselves are unlikely to kill a whale directly, the added stress of the constant airgun blasts in their habitat may limit their ability to survive and thrive in an increasingly hostile environment.

To rebuild the species, we need more calves, said Dr. Kraus. We need to give the mothers and their calves "every possible chance." That means removing stressors, not adding them.

—Emily Greenhalgh

North Atlantic Right Whale Population 1990 - 2017

As of October 2018



Population estimate using a recently published analytical approach shows a notable population decline through 2017.

Spring in Cape Cod Bay

Cape Cod Bay, the relatively shallow body of water nestled between Cape Cod and the mainland, is one of the most important feeding habitats for right whales. For decades, the Center for Coastal Studies (CCS), located on Cape Cod, has conducted research on the right whales annually found there. In recent years, as more right whales have been using this habitat, additional research efforts by the Woods Hole Oceanographic Institution (WHOI) and Northeast Fisheries Science Center (NEFSC) have been initiated.

The 2019 field season has been a huge success! As of April 22, 228 individual whales have been documented in Cape Cod Bay this winter and spring, with the majority seen by the CCS aerial survey team. That is more than half of the known population! The biggest survey day was April 7 with 129 whales sighted. As in past years, several members of our team joined the NEFSC and WHOI vessel-based surveys that were focused on photo-ID, drone photogrammetry, and collection of respiratory vapor and biopsy samples (see *Cape Cod Bay* in *RWRN May 2018*).

A few of the highlights from the season included sightings of three of the seven 2019 mother-calf pairs documented in the southeast U.S. calving grounds. The teams also documented three of the five known 2017 calves, which is great for the Right Whale Catalog since by two years of age the callosities (the primary feature we use to identify right whales) will have settled into a more permanent pattern. We need to get updated photographs of the callosities so we can identify these young whales in the future (see *How to Identify…*in *RWRN May 2016*).

The longest right whale residency in Cape Cod Bay this season was by **Platypus** (**Catalog #3420**), a 15-year-old reproductive female. She was first seen on December 11, 2018, and has been sighted seven additional times throughout the winter and spring, most recently on April 2, 2019.

Cape Cod Bay is a special place for right whales, and researchers find spring an invaluable time of year to document a large proportion of this endangered species in order to assess its health and survival. The collaborative work of the teams ensures the quality of data we collect and the continuation of the data sharing that helps makes this right whale community so successful and unique.

— Kelsey Howe

Catalog #1204 feeding subsurface in Cape Cod Bay on April 7, 2019 while her calf swims alongside.
Photo: Center for Coastal Studies. NOAA Permit #19315-01

Mortality and Entanglement

UPDATE

In each newsletter we report on the most recent mortality and entanglement events. Since our last newsletter in December 2018, we are relieved to report there have been no mortalities detected, but two new entanglements have been seen. While this is generally good news, we remain vigilant as we recognize that not all mortalities and entanglements are detected and this is typically the quieter time of year for these events. We do have some interesting updates on previously reported entanglements and mortalities.

Mortality Identification (previously reported)

On October 14, 2018, a carcass was found in a very decomposed state more than 100 miles from shore. Evidence indicated it was an entanglement-related death. A tissue sample was collected by NOAA Fisheries; through genetic analysis, it has been identified as **Catalog #3515**, a 13-year-old reproductive female. She had given birth to her only calf in 2013.

Entanglement Update

Three new entanglements were described in our last newsletter—**#3843**, **#3960**, and **#4091**—and all three of these individuals were recently sighted again by teams conducting surveys south of Nantucket, MA.

When **#3843** was partially disentangled last August in the Bay of Fundy, we were concerned about his condition. In December, he was photographed by Northeast Fisheries Science Center (NEFSC) still entangled, though exactly how is unclear. Although his condition showed some improvement, he is still thin.

Catalog #3960 was entangled in the Gulf of St. Lawrence. During our observation, he appeared to shed his gear after a two-hour struggle, but had damaged baleen as a result. He was sighted in December by NEFSC and seems to be in reasonably good condition with no remaining gear detected.

And **#4091**, seen entangled east of Cape Cod in May 2018, was photographed by the Aquarium aerial survey team in February and appears to have shed her gear; her condition appears OK.

In our last newsletter, we inadvertently omitted a fourth entanglement for 2018 that was documented in the Gulf of St. Lawrence by our NEFSC and Canadian Department of Fisheries and Oceans colleagues. On July 13, 2018, they saw **#3312**, a 15-year-old male, entangled with a single rope through the mouth and trailing several body lengths on either side with one of the ropes appearing to sink with weight likely attached. Raw, bloody injuries were observed on the tail stock. Interestingly, they had seen him earlier in the day not entangled. Unfortunately, this whale has not been sighted again, so his fate is uncertain.

New Entanglement

A fifth entanglement for 2018 was documented (after publication of our last newsletter) on December 20 south of Nantucket. **Catalog #2310**, a male of unknown age first sighted in 1993, was observed with a single line coming from his mouth, along the right side of the body, and trailing about one to two body lengths. He was sighted again in that area on February 11, 2019, with the gear still attached. Because of the distance from shore, disentanglement efforts have not been possible, but the hope is this gear will eventually be shed without intervention.

As we have noted in previous newsletters, we remain extremely concerned about the fate of right whales if the entanglement issue cannot be adequately mitigated. In our December 2018 newsletter, we had noted that there would be a meeting of the Atlantic Large Whale Take Reduction Team in March 2019 in order to provide NOAA Fisheries with guidance on measures that would reduce lethal entanglements. The government shutdown caused a delay of that meeting, but was held in late April 2019. We will report on that meeting in our next newsletter.

— Amy Knowlton

Catalog #3312 entangled in fishing gear of an unknown type in the Gulf of St. Lawrence on July 13, 2018. He was seen gear-free earlier that day. His fate is unknown. Photo: Hannah Mark/NOAA/NEFSC. SARA Permit DF0-MAR 2016-2

Monitoring Injuries

Injured whales, particularly those with severe entanglement wounds that are not observed carrying gear, are often overlooked in conversations about population status and anthropogenic (human-caused) impacts on the population.

With generous support from the Volgenau Foundation and in collaboration with right whale survey teams and the North Atlantic Right Whale Consortium, we developed and implemented a standardized protocol for reporting, assessing, and monitoring the impact of serious injuries on right whale health starting in 2013. Since then we have assessed and monitored 102 right whales with human-caused injuries.

Every six months (in June and December) we assess these known cases to determine whether these whales have declined, improved, or likely died. New cases are also added. (See *Monitoring Right Whale Injuries* in *RWRN, December 2015*).

In 2018, scientists detected 17 new severely injured right whales. Fifteen of these injuries were entanglement-related, including five whales with attached gear, and two whales had injuries consistent with vessel strikes. Four whales with new injuries in 2018 exhibited declines in health condition associated with their injuries.

Following assessments of whales who acquired injuries before 2018, nine were removed from the monitoring list because their health condition improved. Unfortunately, five injured whales on the monitoring list were pronounced presumed dead in 2018 (not sighted in the six years after injury).

There are currently 70 whales (about 17% of the population) being monitored on the Serious Injury/Human Impact Monitoring List (see table below).

We provide these reports to government managers to ensure that the impacts of injuries on the health of this population are presented near real time in the hopes of informing and improving management efforts.

— Heather Pettis

	Entanglement		Vessel Strike	Other	Total
	Gear Present	*No Gear Present*			
Decline in Condition	7	13	2	2	24
Inconclusive	14	12	2	0	28
No Decline in Condition	2	11	2	0	15
Extended Monitor	1	1	1	0	3
Total	**24**	**37**	**7**	**2**	**70**

Impact of anthropogenic injury on health by injury type for North Atlantic right whales on the active Injury Monitoring List.

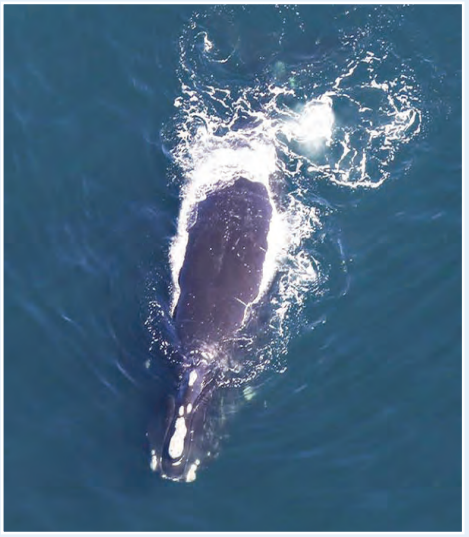
Sponsorship Update

Right whale sponsors will be thrilled to know that we have recent sighting updates for all five sponsored whales! Thanks to sightings collected by our team and our collaborators during field efforts off Massachusetts this winter and spring, we have documented these five, and many others, actively feeding in waters off southern New England and in Cape Cod Bay.

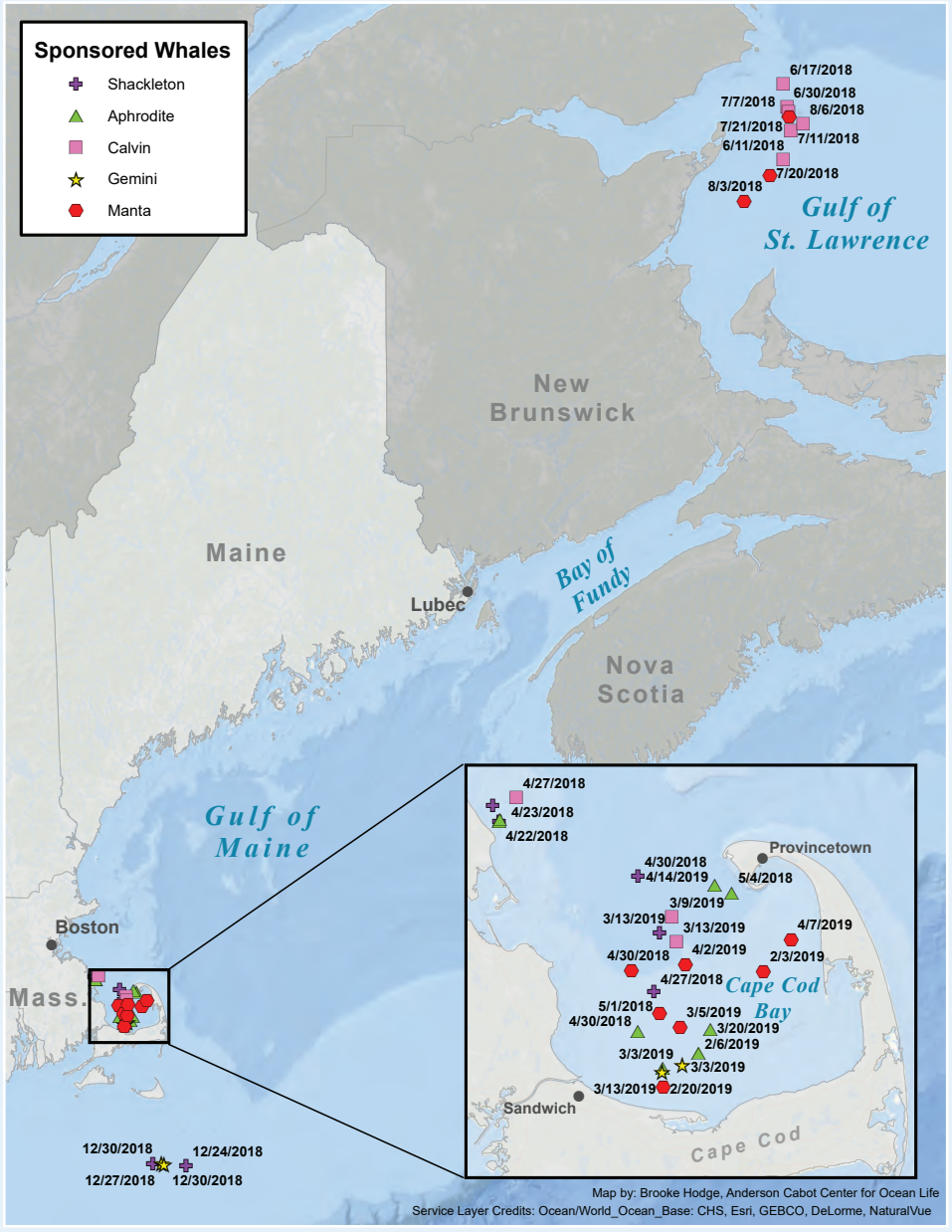
Thank you so much for supporting our research by sponsoring a whale!

— Marianna Hagbloom

Gemini (**Catalog #1150**) was seen south of Nantucket by the Northeast Fisheries Science Center (NEFSC) on December 27 and 30, 2018. On March 3 and 13, 2019, he was spotted in Cape Cod Bay by the Center for Coastal Studies (CCS).

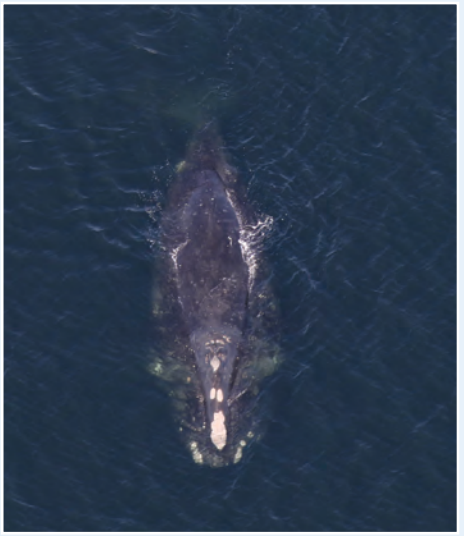


Calvin (**#2223**) was sighted on March 3 and 13 in Cape Cod Bay by CCS.

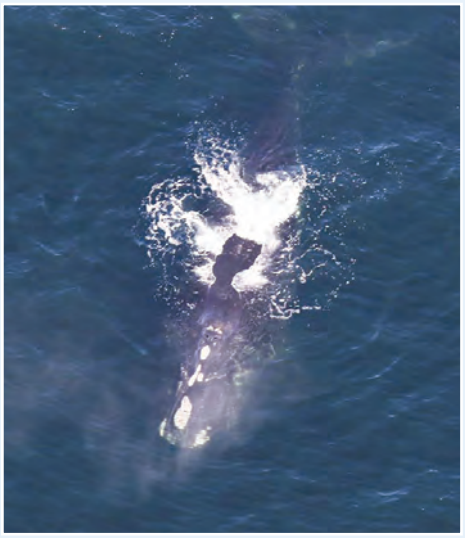


Sponsored whale sightings April 2018 through April 2019.
Map: Brooke Hodge/Anderson Cabot Center for Ocean Life at the New England Aquarium

Manta (**#1507**) has consistently been spending time in Cape Cod Bay this year. He was seen by CCS on February 3 and 20, March 5, and April 2 and 7.



Aphrodite (**#1701**) was spotted by CCS in Cape Cod Bay on February 6, March 3 and 20, and April 14 by the team from Woods Hole Oceanographic Institution.



Shackleton (**#2440**) was recorded off southern New England by the Aquarium's aerial survey team on December 20, 2018, and January 13, 2019, and by NEFSC on December 24 and 30, 2018. On March 13, 2019, he was seen in Cape Cod Bay by CCS.

Longtime sponsors may have noticed that we did not mention sponsorship whales **Phoenix** and **Starry Night** in our update. These two whales have not been seen in several years, so they are being retired from the program.

Sadly, **Starry Night** is now "presumed dead," our term for whales that have not been sighted for six years (see *When Whales Go Missing* in *RWRN May 2015).*

Although **Phoenix** has until September 2019 to be added to that category, we decided we would retire both whales now. However, **Phoenix** will continue to represent right whales, as a life-size model of her is the focal point of the Sant Ocean Hall at the National Museum of Natural History in Washington, D.C. (see *An Urban Whale Goes to Washington* in *RWRN December 2008*). We hope to introduce one or two new whales to the sponsorship program in the next *RWRN*, so stay tuned!

All photos were taken in Cape Cod Bay in 2019 by Center for Coastal Studies, NOAA Permit #19315-01

The North Atlantic Right Whale and Ropeless Consortia

Interest in right whale research and conservation and the challenges this endangered whale population faces has increased significantly over the past decade. Fueled primarily by the species' shifting distributions, increased interactions with human activities, and a decline in its reproduction, researchers, managers, conservationists, and industry stakeholders have mobilized their collaborative efforts to save this species.

Two groups have been at the forefront of these collaborations: the North Atlantic Right Whale Consortium (see *The North Atlantic Right Whale Consortium* in *RWRN December 2013*) and the Ropeless Consortium.

The Ropeless Consortium formed in 2018 with a mission to bring together scientists, engineers, fishermen, NGOs, and governing agencies to develop, test, and bring forth the operational use of ropeless fishing in order to eliminate all whale entanglements with traps and pot gear.

Each fall, members of both consortia gather at annual meetings to share research results, form new collaborations, and strategize priority efforts for the upcoming year. The 2018 meetings were held at the New Bedford Whaling Museum in New Bedford, MA, on November 6-8. More than 240 people attended, and 68 presentations were shared over the three days. The agendas and select presentations are available at narwc.org and ropeless.org.

The importance of the North Atlantic Right Whale and Ropeless Consortia to the right whale research and conservation community cannot be overstated. Once again, this year's annual meetings were a tremendous success. As always, they inspired a renewed sense of commitment to continue efforts to ensure the North Atlantic right whale population lives on. We celebrate the collaborative impact these groups have and will continue to have on all the good work to save North Atlantic right whales.

— Heather Pettis

Whale Naming

Every year, we attempt to give names to a handful of whales. All whales have a four-digit catalog number, but only some have names (38% of the 736 cataloged whales). The primary purpose of naming whales is to help people remember and recognize a whale in the field. However, a name also helps the public relate better to the individuals.

Naming right whales is challenging because their callosities are more difficult to describe than, for example, the two-dimensional Rorschach-like pattern on a humpback whale's tail. But sometimes the scars on a right whale make the job a bit easier. All members of the Right Whale Consortium may nominate names, but a smaller group—researchers who have to recognize these whales in the field—votes on the names. During last fall's naming, we had a record number of suggestions: 225 names for 16 whales! Some of the most popular chosen names from that nominating process were **Koala** for **#3940** and **Cello** for **#1820**.

Check out the photos of these whales at rwcatalog.neaq.org and try to see why they were given these names!

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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*, a small informational book about whales, 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. neaq.org/rwsponsorship

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! rightwhaleresearch.bigcartel.com

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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 our project at accol.org.

You may access past issues of *Right Whale Research News* on our website at neaq.org/rightwhale. 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!

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, and we truly appreciate your generosity. Sponsorship funds are used by our Right Whale Program to support activities that directly contribute to the conservation of North Atlantic right whales.