

# Right Whale Research News

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## Message to Our Readers

*As everyone knows, we are in the midst of a global pandemic that is disrupting everything in our daily lives—jobs, schools, sports, socializing, and the economy, to name just a few. Even this newsletter is impacted: coming to you later than usual and only as a PDF. The pandemic has also disrupted many of the right whale surveys and field research efforts that were planned for this spring and summer in the U.S. and Canada. NOAA suspended their aerial and shipboard surveys on March 16. The Center for Coastal Studies was able to conduct spring aerial and shipboard habitat surveys of Cape Cod Bay, although they had a 17-day hiatus beginning March 18 while they sorted out safety measures. For the summer, our Gulf of St. Lawrence cruises have been cancelled, but we remain hopeful that our Bay of Fundy research can continue, though with a more limited timeframe. There is some Canadian aerial surveillance in the Gulf of St. Lawrence and as of early June, they had already detected several right whales there. However, because of the reduced field efforts, there will be gaps in photographed right whale sightings which we use to monitor their distribution*

*and review for evidence of interactions with human activities. Also, dynamic management measures that rely on these sightings will likely be curtailed. So, we are anxious to get back in the field but will be using extreme caution and will rely on government guidance before we take any steps in that direction.*

*We appreciate your continued support and hope you are all staying safe and healthy!*

## Notes from the Calving Ground

Another right whale calving season in the southeastern U.S. has come and gone. While the world has been thrown into turmoil by the coronavirus, the whales are going about their business. Right whale calving has been well below normal in recent years with just five calves born in 2017, none in 2018, and seven last year; that's compared to an average of 18 calves a year for the previous 20 years. So when five potential moms were sighted in November (unusually early), we hoped it would be a banner year for calves. But, by the end of the season in late March the survey teams from Florida Fish and Wildlife Institute, Clearwater Marine, Aquarium Research Institute, Georgia Department of Natural Resources, Marine Resource Council and others had documented just ten calves. Certainly better than none, but far below what a healthy population should be producing.

Of the ten mothers, two were over 30 years old: **Catalog #1612** who has had six previous calves, and **Palmetto (#1970)** who has had four. The two youngest moms were 15-years-old: **Halo (#3546)** with her second calf and **#3560** with her first. That calf was first



**Harmony and her calf sighted off Atlantic Beach, FL, on February 4, 2020. Photo: Florida Fish and Wildlife Conservation Commission. NOAA permit #20556-01**

## Notes from...

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seen on December 16, the earliest of the season. In March, that same pair was sighted in the Gulf of Mexico! Right whale sightings in the Gulf are quite unusual but not unheard of (see *The Winter of 2018... in RWRN May 2018*).

The average interval between calves for the nine mothers who had calved before was 7.5 years—more than double the time it takes a healthy right whale to have her next calf. There was a range of four to 11 years with some evidence that the females who have been seen feeding in the Gulf of St. Lawrence in recent years had shorter inter-calf intervals on average (5.8 years) than those mothers whose current summer feeding areas are unknown (9.8 years).

There were four other noteworthy events during the season. Sadly, the calf of **Derecha (#2360)** had a deep propeller wound to its head and mouth that likely made it impossible to nurse. The pair were seen several times over a one-week period and, under the direction of NOAA Fisheries, a team administered antibiotics to the calf. Neither **Derecha** nor her calf were seen after that, so it is presumed that the calf died from its wounds and **Derecha** left the calving grounds early. On a brighter note, **Calvin (#2223)**, one of our most popular sponsorship whales, was seen with her fourth calf. **Calvin** has an extraordinary life story of struggle and survival that starts with her being orphaned when her mom was killed by a ship in the Bay of Fundy. Since then she has experienced at least six entanglements

in fishing gear. Her story inspired teacher Bill McWeeny at the Adams School in Castine, Maine, to start the Calvineers: a group of energetic and informed middle school students who advocate for right whales and the environment (see *The CALVIN Project... in RWRN May 2008*).

Also worth noting was the return to the southeast of four of the seven calves born last year. In the 2000s, it was not uncommon for one-year-old whales to return to the calving ground, but such sightings have been rare since 2010. Finally, several adult males were seen off the mid-Atlantic and southeast U.S. Six males ranging in age from 11 to 17 were documented, some of them remaining in the area for almost a month. What draws males and juveniles to these waters where little to no feeding occurs remains one of the many intriguing mysteries of this enigmatic species!

As this newsletter goes to press, we know that three mothers and their calves have arrived in Cape Cod Bay. It's always heartening to learn that the calves made the long migration safely, and there's always hope that one or two additional calves have yet to be discovered.—*Philip Hamilton*

## The News from Cape Cod Bay

If this were a typical year, members from our team would have joined the Woods Hole Oceanographic Institution and NOAA's Northeast Fisheries Science Center on their springtime right whale surveys in Cape Cod Bay (see *Cape Cod Bay in RWRN May 2018*). But, unfortunately, this is not a typical year and their field efforts were either cancelled or dramatically curtailed. However, the intrepid crew from the Center for Coastal Studies (CCS) did carry out their aerial

surveys and vessel-based habitat research on the right whales annually found in the Bay, so here is their update.

CCS sighted the first right whale of the season in Cape Cod Bay on January 6, and then had more whales than usual in February, with a February-record-breaking 49 individuals seen on February 29. In the beginning of March, they saw the most whales of the season in a single day (58 individuals on March 12), but a few days later the numbers had dropped by half. Then, on March 19, they suspended aerial and shipboard surveys to carefully evaluate how to keep their teams safe and healthy in light of the pandemic situation. CCS resumed surveys on April 4 but a lot had changed in those 17 days: instead of finding many right whales as they were expecting (April is usually the peak of the season), only six were sighted. It wasn't until April 12 that the first mother/calf pair was sighted by a citizen on the beach at Race Point. And then two days later, the CCS team found two more mother/calf pairs deep in the Bay. The three mothers, **Calvin (Catalog #2223)**, **Harmonia (#3101)**, and **Palmetto (#1970)**, were all skimfeeding—not surprising since they had been fasting for the past few months!

In total the CCS team documented 156 individuals in Cape Cod Bay, but all in all, it was a strange season for right whales—an early peak and, apparently, an early departure, with very few whales in April. Interestingly, in late February, the CCS Right Whale Ecology Program, which conducts the vessel-based habitat studies in the Bay, documented a highly unusual zooplankton overlap that had not been seen before in their more than 30 years of monitoring the resource. Given those unique zooplankton conditions, the CCS Ecology team predicted that right whale occurrence during the 2020 season would be substantially different compared to past years. And that was certainly the case. A sharp reminder that the driving force behind right whale distribution is their food resource. With climate change, the concentration of right whale prey has become less predictable, which in turn makes the distribution of right whales harder to predict. The right whale research community continues as best it can to adapt monitoring efforts while right whales do their best to adapt to their constantly changing environment. —*Marilyn Marx*



**Catalog #1612** sighted with her newborn calf off Little St. Simon's Island, GA, on December 30, 2019. Photo: Clearwater Marine Aquarium Research Institute. NOAA Permit #20556-01



Sponsorship whale **Calvin** photographed from Race Point Beach on April 12 by Peter Flood. This was the only sighting of **Calvin** and her young calf in northern waters; they had been last seen on the calving grounds on March 10. Photo: Peter Flood

## How The Public Can Support Right Whale Research

Right whales roam everywhere in the western North Atlantic. With a range that extends from Florida to Newfoundland and beyond, keeping track of this small population is no easy feat. While survey teams typically focus their efforts on documenting right whales in their high use habitats, reports we receive from private citizens often provide interesting insights into right whale movements and distribution that have proven to be incredibly important to our understanding of this species.

Since the beginning of 2020, we have received more than 55 such sightings from multiple locations including the Gulf of Mexico, off the Carolinas, at the tip of Cape Cod, and from coastal New England. Some of these sightings come from beachgoers, others from private boaters, fishing charters, and other such activities. Especially now, with aerial and shipboard surveys drastically curtailed or even suspended, the sightings reported by the general public have been invaluable. Here are just a few of the whales whose movements would not be known to us if they had not been reported by the public:

A right whale mother (**Catalog #3560**) and her calf were seen multiple times in the Gulf of Mexico, a very unusual place for right whales! Two weeks later, the pair was sighted off Miami indicating they had come “around the corner” of the Florida Keys and were trekking northward. Another mother (**Halo, #3546**) and calf were seen off South Carolina in mid-March so we knew they were heading towards the feeding grounds in the northeast. On April 12, **Calvin (#2223)** and her calf were seen off the tip of Cape Cod—this was their only sighting in northern waters, and because of it we know that the pair had successfully returned from the calving grounds. Sponsorship whale **Aphrodite (#1701)** was never sighted by survey teams this spring, but she was photographed twice by beachgoers—in February off Cape Cod and in April in Nahant Bay just north of Boston. Without those reports we would never have known she was in New England waters.

We are so grateful when members of the public take the time to report their sightings and submit their photographs,

which then get funneled to the New England Aquarium and matched to the North Atlantic Right Whale Catalog ([rwcatalog.neaq.org](http://rwcatalog.neaq.org)). Also, when sightings are reported near real-time, it ensures that other mariners in the area are notified to keep a sharp lookout for right whales. If you see a right whale, please report your U.S. sighting to the NOAA hotline at 866-755-NOAA (VA to ME) or 877-WHALE-HELP (FL to NC). In Canadian waters, report using the toll-free hotline 844-800-8568 or email [XMARWhaleSightings@dfo-mpo.gc.ca](mailto:XMARWhaleSightings@dfo-mpo.gc.ca). Alternatively, you can always report your sightings (from either the U.S. or Canada) by using the Whale Alert app ([whalealert.org](http://whalealert.org)). Please submit any right whale photos to [rwcatalog.neaq.org](http://rwcatalog.neaq.org) and help researchers learn more about the species! —Amy Knowlton

*Please remember that it is illegal to purposefully approach within 500 yards of a right whale in U.S. waters without a permit. This includes motor vessels, kayaks, surfboards, swimmers, and drones!*

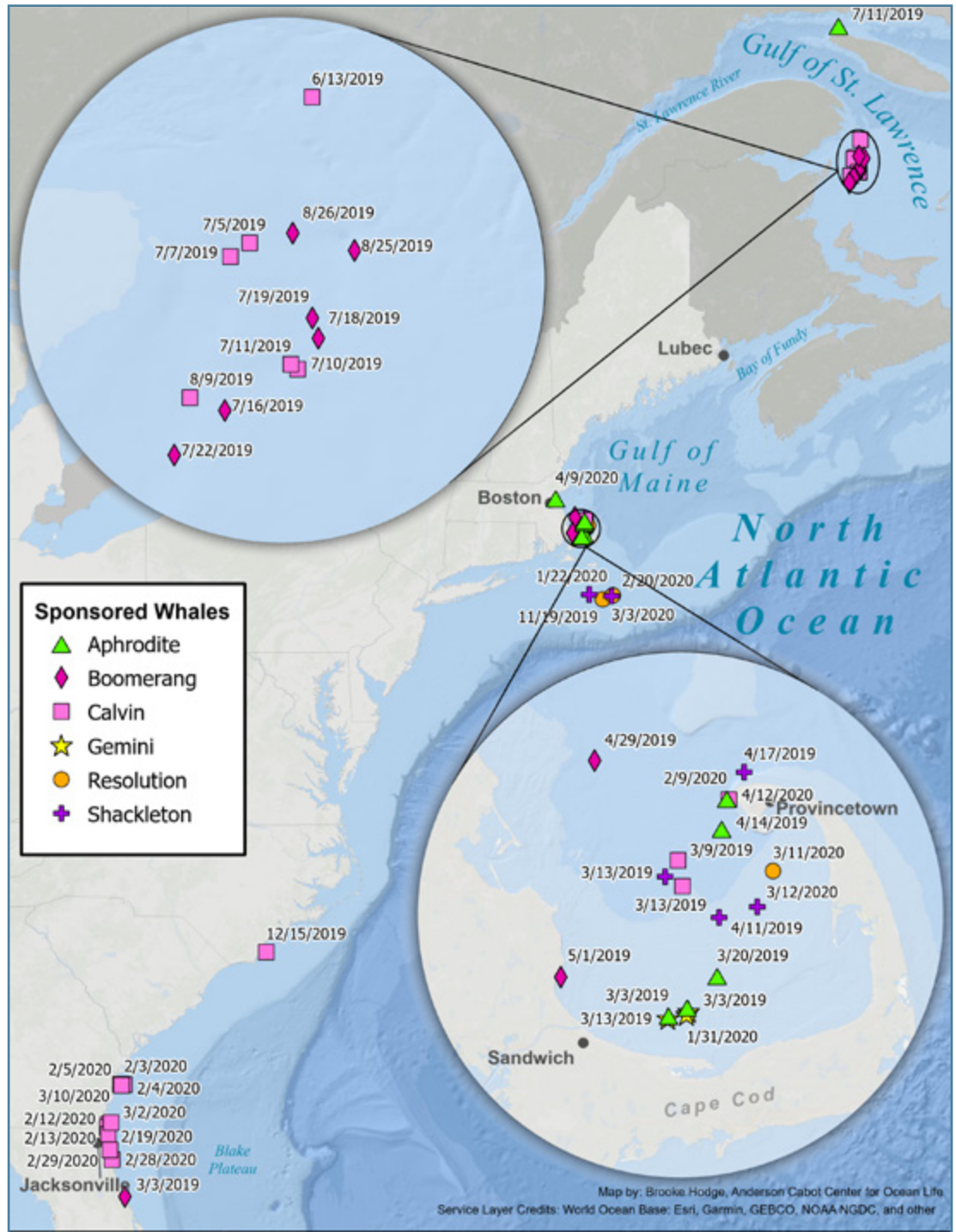
# Sponsored Whale Update

Due to the COVID-19 pandemic, field teams have experienced disruptions to their surveys during peak right whale presence in coastal New England waters. Nonetheless, we do have new sightings to report for all our whales, with the exception of **Boomerang (Catalog #2503)**. Hopefully our next issue will have an update on her!

**Gemini (#1150)** was photographed swimming alone in Cape Cod Bay on January 31 by the Center for Coastal Studies (CCS).

**Aphrodite (#1701)** was photographed from land by members of the public on February 9 in Cape Cod Bay and April 9 in Nahant Bay, MA. She was skimfeeding in both sightings.

**Calvin (#2223)** was reported off North Carolina by members of the public on December 15, 2019. At her next sighting on February 3, 2020, the Clearwater Marine Aquarium Research Institute (CMARI) found her off Georgia—with a calf! The pair was sighted on numerous days in February and into early March along the Georgia and Florida coasts by CMARI, Florida Fish & Wildlife Conservation Commission, and by the public from beach sightings. Their last sighting in the calving ground was on March 10, and on April 12 the pair was photographed in the waters off Cape Cod by a member of the public. We are relieved to know they safely made the long journey north!



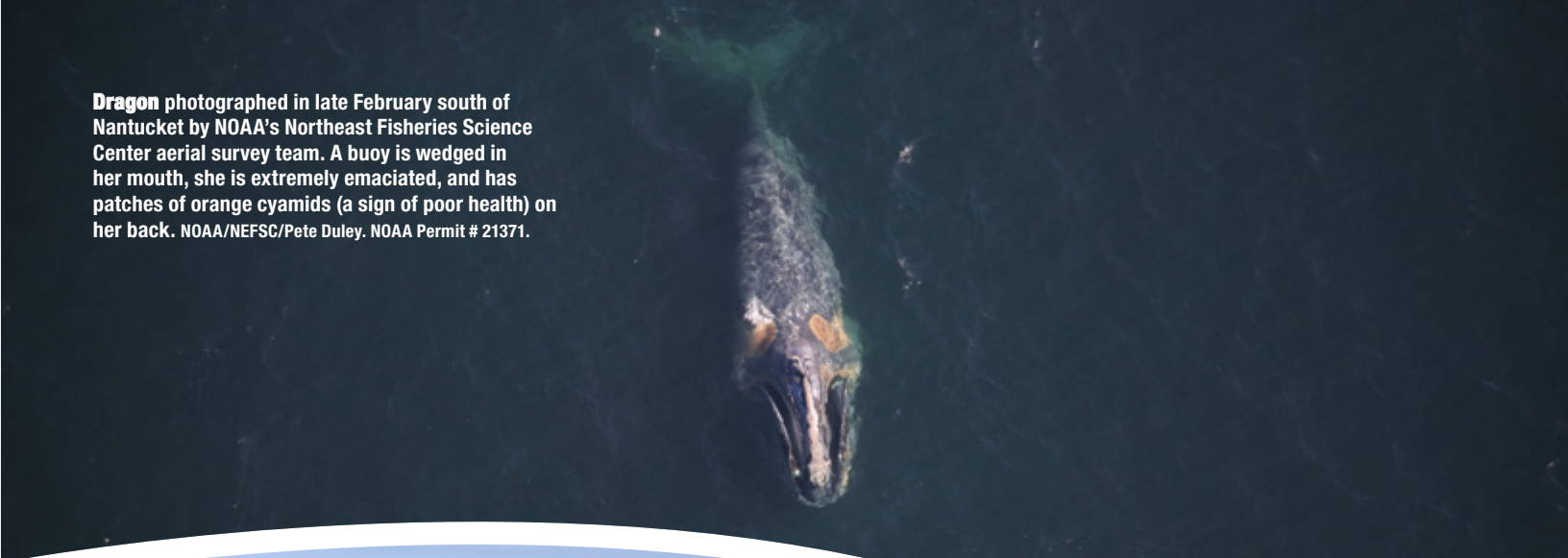
Sponsored whale sightings March 2019 through April 2020. Map: Brooke Hodge/Anderson Cabot Center for Ocean Life at the New England Aquarium.

**Shackleton (#2440)** was seen swimming with **Indy (#1607)** on January 22 by CCS in Cape Cod Bay. On February 3, he was sighted on George’s Bank by the Northeast Fisheries Science Center (NEFSC) in a surface active group with one other whale. A CCS sighting confirms he returned to Cape Cod Bay on March 12.

**Resolution (#3532)** was photographed swimming on George’s Bank on November 19, 2019, by NEFSC. The team saw him in the same area again on February 20, 2020. On March 11, CCS observed him skimfeeding in Cape Cod Bay.

Thank you for sponsoring a whale and supporting our research! —Marianna Hagblom

**Dragon** photographed in late February south of Nantucket by NOAA's Northeast Fisheries Science Center aerial survey team. A buoy is wedged in her mouth, she is extremely emaciated, and has patches of orange cyamids (a sign of poor health) on her back. NOAA/NEFSC/Pete Duley. NOAA Permit # 21371.



**Derecha** swims with her badly injured calf during their last sighting in mid-January. The calf's head is almost unrecognizable due to slicing propeller cuts. Photo: Florida Fish and Wildlife Conservation Commission. NOAA Permit #20556-01.

## A New Year Sees the Same Old Problems

On the heels of yet another devastating summer for right whale deaths (see *Mortalities and Entanglements in RWRN December 2019*), we ended the year with a new entanglement. Now, well into 2020, right whales still face the same ongoing issues—entanglement and vessel strikes—that have plagued them for decades.

**December** – The end of the year added one more entanglement to 2019's tally when the NOAA aerial survey team sighted right whale **Catalog #3466**, a 15-year-old male, approximately 20 miles south of Nantucket Island, MA. He was entangled through the

mouth and carrying a tremendous amount of line but due to the location and time of day, no response was mounted. He was resighted in two subsequent surveys south of Nantucket, still entangled, but a disentanglement attempt was not possible—mainly due to distance from shore.

**January** – The beginning of the year always brings hope and excitement for right whale births. However, in early January, the aerial survey teams on the calving ground had a grave realization when documenting **Derecha (#2360)** and her newborn calf for the first time. The calf had been severely injured by a vessel and had fresh propeller wounds

across its head. Subsequent sightings left many wondering if the calf could nurse. The last sighting of the pair was in mid-January, so it is likely that the calf died from its injuries and **Derecha** left the calving grounds shortly thereafter.

**February** – Early in the month, there was a report of a possible entanglement off North Carolina. The report and photo documentation confirmed it was a right whale, but the nature of the entanglement was hard to glean from the distant images captured of the event. However, the whale appeared to be carrying what might have been deflated buoys. Near the end of February, yet another entangled right whale was reported

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## A New Year...

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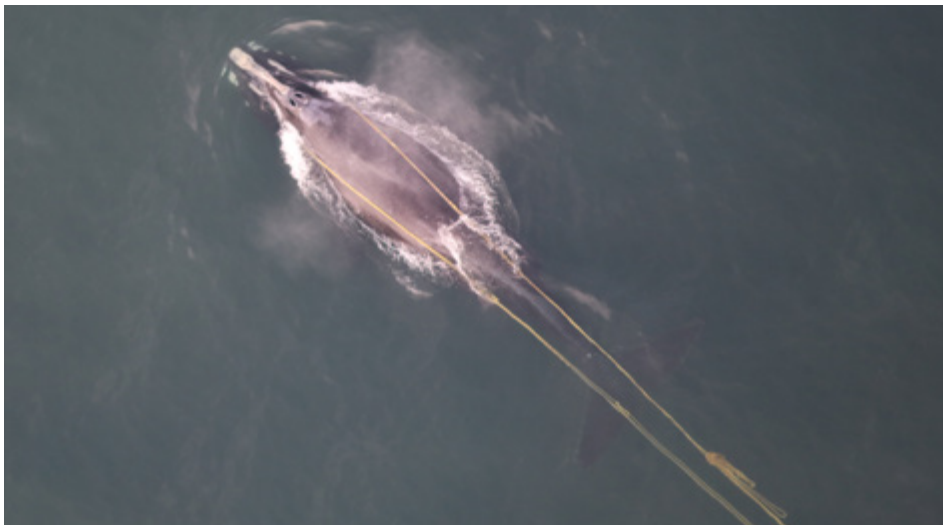
south of Nantucket. The NOAA aerial team documented **Dragon (#3180)**, a 19-year-old reproductive female, with an entanglement around her head and with a buoy lodged in the corner of her mouth, keeping it ajar. She was emaciated and her overall body condition was extremely poor. **Dragon** has not been resighted and she is unlikely to survive.

**March** – Another month and another entanglement. This time the report was far from shore on Georges Bank, approximately 130 miles east of Cape Cod. Unfortunately, this sighting was not photo-documented but the reporter's description was that of a right whale carrying two large buoys. Without photo-documentation the whale's

identity, health condition, and nature of the entanglement are unknown.

Since the end of March, most survey efforts for right whales in the U.S. have stopped. For some, like the teams on the calving ground, it was the end of their season. For others, the ongoing COVID-19 pandemic has forced them to be grounded. With the exception of Cape Cod and Massachusetts Bay, the northern right whale habitats are left largely unmonitored by visual survey effort. Without survey effort, entanglements, injuries, and deaths could, and likely are, going undocumented. —*Monica Zani*

*Editors Note: Sadly, as this newsletter goes to press, we have just learned that a dead right whale calf was discovered off New Jersey. We will have details about this mortality in our next issue.*



Entangled right whale #3466 photographed on December 21, 2019 south of Nantucket by NOAA's Northeast Fisheries Science Center aerial survey team. Due to the distance from shore, no disentanglement attempt could be mounted. Photo: NOAA/NEFSC/Pete Duley. NOAA Research Permit # 21371

## IUCN Uplisting

On July 9, 2020, the International Union for Conservation of Nature (IUCN) changed the status of the North Atlantic right whale from *Endangered* to *Critically Endangered* on its Red List of Threatened Species to reflect the extremely high risk of extinction this species faces. The North Atlantic right whale is the only large whale species in the world classified as *Critically Endangered*.

## Gear Innovation Summit Held in Canada

On February 11-12, 2020, three scientists from the Anderson Cabot Center—Amy Knowlton, Richard Malloy, and Tim Werner—attended a Gear Innovation Summit hosted by Canada's Department of Fisheries and Oceans. The goal of the summit was to bring together Canadian fish harvesters, scientists, technical experts, government agencies, and others to share information about gear changes that could reduce or eliminate large whale entanglements. Amy teamed up with Rob Martin, a lobster fisherman from Massachusetts, to share their work on developing and testing the South Shore Sleeve, a hollow braided sleeve that can be integrated into endlines and will break at less than 1700 pounds, thereby allowing a whale to escape from an entanglement before getting badly wrapped up in the rope (see *Fishing Ropes and Whales...* in *RWRN May 2016*).

Richard presented on the work that he and Tim have been undertaking in collaboration with Woods Hole Oceanographic Institution, to develop one type of ropeless fishing gear—the flotation spool design—and to conduct at-sea testing with offshore lobster fishermen. There were a variety of other presentations about different gear innovations as well as presentations on the topic of how to prevent “ghost gear” (fishing gear that has been abandoned or lost). In addition, there were panels with three or four experts on a given topic so the attendees could have their questions answered. The Summit was attended by more than 300 people and there was a strong sense of interest and willingness to work together to address the threat of large whale entanglements. It was an excellent meeting that provided the Canadian government and the fishing industry with ideas for a path forward.

—*Amy Knowlton*

# Canada's Efforts to Protect Right Whales in 2020

After high levels of right whale mortality were documented in 2017 and 2019 in the Gulf of St. Lawrence, the Canadian government has continued to assess the situation and adapt their regulations to reduce risk to right whales. In 2020, a number of new and strengthened measures have been put in place. On the shipping side, there is a continued 10-knot speed restriction throughout much of the Gulf of St. Lawrence for vessels more than 42-feet in length, with an expansion of this speed zone further to the east in certain timeframes. The shipping lanes in the northern Gulf will continue to be monitored with speed restrictions put in

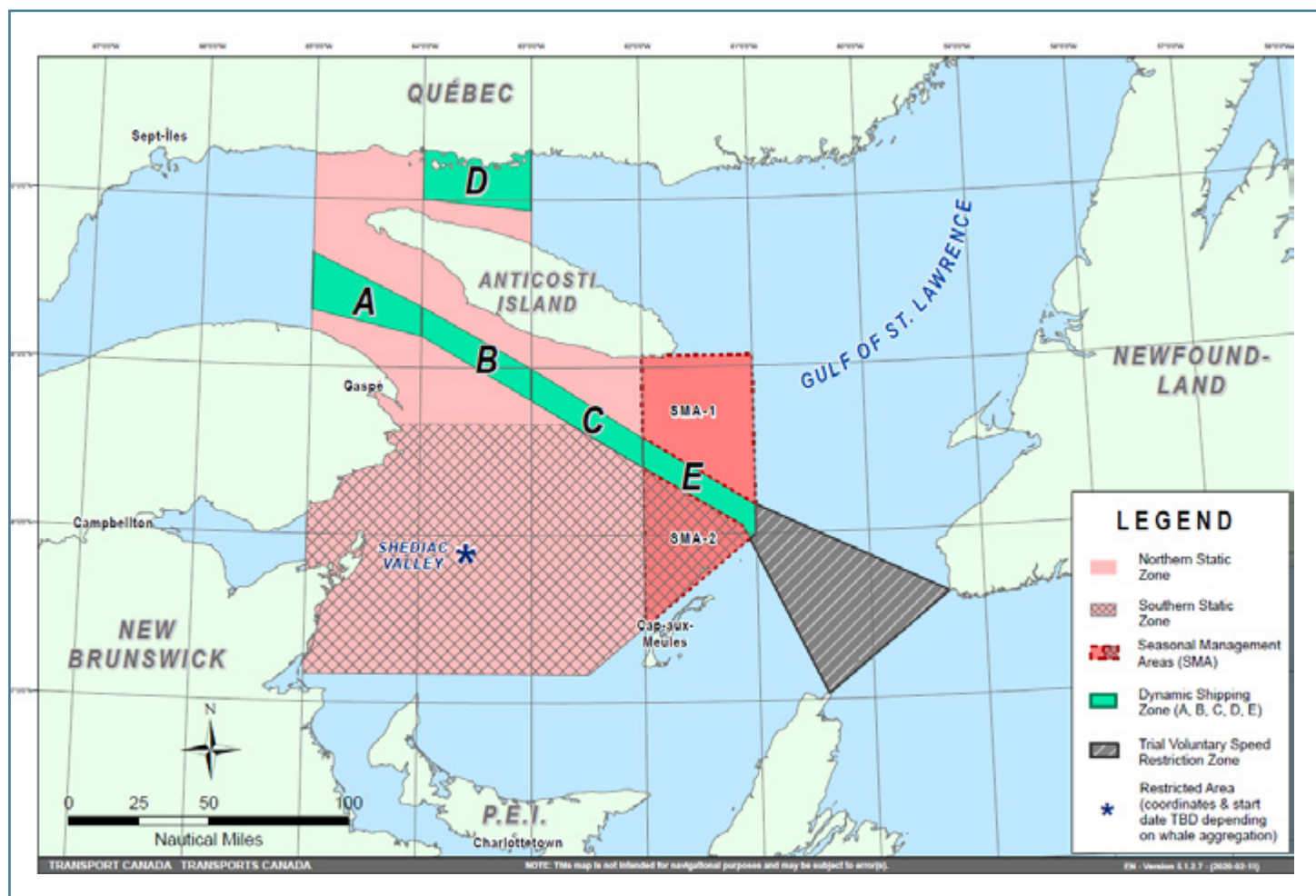
place if right whales are observed in or near the lanes. And a voluntary speed restriction in the Cabot Strait will be put in place for two timeframes that are suspected to overlap with right whale movements in and out of the Gulf.

On the fishing side, instead of a static closure in the Gulf, areas will be closed to fishing for the entire season when right whales are sighted there more than once in a 15-day period. This will ensure closures are put in place where the right whales are aggregating as this shifts from year to year. Gear marking is also being expanded so that all crab and lobster gear will be marked to differentiate it from U.S. gear.

Lastly, the Canadian government will be exploring ropeless and weak ropes and are committed to shift gear towards these options by the end of 2021.

We are encouraged that the Canadian government continues to monitor the right whale situation and adapt measures accordingly. There is still a long way to go to make right whales safe throughout their range and we will continue to share our science and ideas for solutions with both the Canadian and U.S. governments.—*Amy Knowlton*

**See this site for further details: [tc.canada.ca/en/background-protecting-north-atlantic-right-whales](https://tc.canada.ca/en/background-protecting-north-atlantic-right-whales)**



Areas where risk reduction measures will be implemented in the Gulf of St. Lawrence in 2020. Map: Fisheries and Oceans Canada.

# Monitoring Injured Right Whales—2019

Injured whales, particularly those that have severe entanglement wounds but have no fishing gear attached, are often overlooked in conversations about population status and anthropogenic (human-caused) impacts on the species. 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 severe injuries on right whale health beginning in 2013. Since then, we have assessed and monitored 111 right whales with human-caused injuries. Each year,

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

In 2019, scientists detected **nine** new severely injured right whales. All of these injuries were entanglement-related and four of the nine had attached gear. Three of these nine whales exhibited declines in health condition because of their injuries. Of the whales seen in 2019 which acquired injuries before 2019, six were removed from the monitoring list because their health condition improved. Unfortunately, one whale (**Wolverine, Catalog #4023**), which

was being monitored because of prop cuts near his tailstock, was discovered dead in June 2019 (see *Mortalities and Entanglements...in RWRN December 2019*). Though his cause of death is unknown, it does not appear to be related to his preexisting injury.

For all years combined, 72 whales (about 18% of the population) are currently being monitored on the Serious Injury/Human Impact Monitoring List (see table below). We provide these reports twice a year to government managers to ensure that the impact of injuries on the health of this population is 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	9	14	2	1	26
Inconclusive	12	13	1	1	27
No Decline in Condition	5	9	3	0	17
Extended Monitor	1	1	0	0	2
<b>Total</b>	<b>27</b>	<b>37</b>	<b>6</b>	<b>2</b>	<b>72</b>

Impact of anthropogenic injury on health by injury type for the 72 North Atlantic right whales on the active Injury Monitoring List.

## 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 (39% of the 753 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 better relate 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.

Whale naming is always fun, competitive, and sometimes rather contentious! During last fall's whale naming, we had a record number of suggestions: 259 names for 15 whales! Twenty-six people from 14 organizations nominated names and all 15 whales were named—which is not always successful because a consensus must be reached!

Some of the most popular chosen names from that nominating process were **Gully (Catalog #4601)** for a deep entanglement wound across her head and **Sundog (#3823)** for the bright round scar on the side of her head. The most controversial name that just squeaked by was **Oakley (#3120)**, named after sharpshooter Annie Oakley, for the rifle-like white mark on his head. Check out the photos of these whales at [rwcatalog.neaq.org](http://rwcatalog.neaq.org) and try to see why they were given these names! —Kelsey Howe



# Catalog Website Revamped!

New England Aquarium  
Protecting the blue planet

North Atlantic Right Whale Catalog

NARWC  
THE NORTH ATLANTIC  
RIGHT WHALE CONSORTIUM

About Find A Whale Submit Photos Sponsor A Whale

**757 RIGHT WHALES**  
**MORE THAN A MILLION PHOTOGRAPHS**  
**500+ CONTRIBUTORS**  
**1935-PRESENT**

Anderson Cabot Center for Ocean Life  
at the New England Aquarium

This site is maintained by researchers at the New England Aquarium, who serve as curators of all North Atlantic Right Whale photographs for the North Atlantic Right Whale Consortium.

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Home page of the newly upgraded North Atlantic Right Whale Catalog website.

As many of you know, the Right Whale Program at the Anderson Cabot Center for Ocean Life (ACCOL) maintains the North Atlantic Right Whale Catalog—a detailed database of every photographed sighting of a right whale from 1935 to present. In the old days, the images in the Catalog were all slides or print photographs. If you wanted to look up the photos of a cataloged whale, you had to go to the Aquarium office, pull out the individual whale’s folder from a fire-proof file drawer, and use a light table and a magnifying lens to review the slides. With the advent of digital photography, the world shifted away from film and so we had to adapt to having our slides and prints replaced by a digital image on the computer

screen. Thanks to a grant from the National Science Foundation in 2003, we were able to bring everything into a server-based system using the custom-made software *DIGITS (Digital Image Gathering and Information Tracking System)*. This format allowed us to develop an online catalog for the public and other researchers to use. Technology has advanced since the launch of that website in 2005, so we recently upgraded the Catalog website: [rwcatalog.neaq.org](http://rwcatalog.neaq.org).

The new website has a much more pleasing appearance and a drastically improved image viewer. It is still linked directly to the database, so counts and sightings are updated automatically. Now the general public can more easily submit images to the Catalog and the site has

links to updated right whale information on the ACCOL website. An important, but easy-to-miss, resource is the Examples of Search Criteria on the search screen; in it there are links to descriptions of the many different features we use to identify right whales. The site is also linked now to a FlukeBook website where people can upload an aerial image of a right whale and see if A.I. (artificial intelligence) can identify a whale for you. —Philip Hamilton

**Want to give matching a try? You can watch a short presentation about the Catalog website at [bit.ly/NARWcatalog](http://bit.ly/NARWcatalog) and then try a matching exercise posted on the Aquarium’s Virtual Visits page or download it directly at [bit.ly/NARWmatching](http://bit.ly/NARWmatching).**

## When Photo-identification is Not Enough...

While photo-identification (using photographs of the natural markings to repeatedly identify individuals) is the core of what we do, sometimes pictures are not enough. The two most common situations where photo-identification falls short are when we try to identify very young calves from past years (before their callosities are well-developed), and for dead whales that have had all their identifying features obscured by decomposition. In such cases, genetics often come to the rescue. If the whales in question were genetically sampled in an earlier sighting and then sampled again at the later sighting, we can often link them genetically. And by we, I really mean Drs. Brenna McLeod Frasier and Tim Frasier at St. Mary's University in Halifax, Nova Scotia ([timothyfrasier.github.io/research](http://timothyfrasier.github.io/research)).

Recently, there have been some interesting results from the Frasier Lab. For years, we have wondered who the mother of **Chiminea (Catalog #4040)** was. She was first seen in 2010 and

looked like a young whale at that time. Recently, after 10 years of trying, we matched her to the **2008 calf of #1308**. Because the calf was only 2-months-old at its last sighting, before any discernible callosity had developed, it was a very challenging match. But this past summer, we were finally able to get a skin sample from **Chiminea** and the genetics confirmed our match. We now know she is a 12-year-old female and has two half-sisters and a half-brother (meaning these siblings have the same mother but different fathers).

Another calf that was poorly photographed in her first year of life, the **2016 calf of #1812** was genetically matched to a whale we had temporarily referenced as **G046**; she has now been cataloged as **#4612**. This young whale was first photographed in 2017 and we would never have been able to photo-identify it as the 2016 calf due to the poor quality images of her at that time.

The last calf to be genetically identified recently is **#4540**, a young whale first seen in 2015 and catalogued this past January. But just a month later, thanks to genetics, we were able

to determine that this is the **2013 calf of #1612**—a female with three half-brothers and three half-sisters!

Linking these calves to current sightings drastically improves our understanding of calf survival.

But it is not just the identifications that prove interesting. Sometimes the right whales that cannot be identified are also intriguing. Two deceased whales fit this description. One is a carcass of a female that floated into Clam Harbor, Nova Scotia, in July 2012 with no head and many, many wraps of thick rope around the remainder of her tail stock. Initially, the Frasier Lab team could not extract adequate genetics from such a decomposed carcass, but they recently tried again with fragments of bone and were able to determine that it does not match any of the other genotypes on file. Given that more than 80% of all the cataloged whales have been genetically sampled, this is a very interesting finding. Might this have been a female that we rarely, or perhaps never, saw? Unfortunately, the mystery will remain unsolved.

The other intriguing story involves a skull that was found in September 2018 on Martha's Vineyard. Initially it was surmised to be a whale that was known to have died in a prior year whose skull washed up on shore and was buried. However, the genetic findings showed that it did not match any other samples from living or dead whales. More interesting is that one of the alleles in the genotype does not exist in the current population. To date, the Frasier Lab team has identified this allele only in a historic bone specimen dating to 1000–1100 A.D. from the Faroe Islands. This means that while it is a known right whale allele, it has never been identified in the contemporary population. Another mystery! This one may yield more information if scientists are able to carbon date the bone. —*Philip Hamilton*

An example of a match that was only possible using genetics. **Catalog #4540** photographed as a young calf in 2013 (inset) and then five years later in 2018. Because the calf had no discernible callosities or identifying features it could not be matched to later sightings without the help of genetics. Photo: Center for Coastal Studies. NOAA Permit #19315-01. Inset photo: Clearwater Marine Aquarium Research Institute. NOAA Permit #15488.





Past and present Anderson Cabot Center scientists at the 2nd World Marine Mammal Conference in Barcelona, Spain, in December 2019. L to R: Phillip Hamilton, Amy Knowlton, Dan Pendleton, Kelsey Howe, Elizabeth Burgess, Heather Pettis, Rosalind Rolland, Scott Kraus, Bill McWeeny, Ester Quintana, Tim Werner, Peter Corkeron. PHOTO: NEAQ

## World Marine Mammal Conference

Every two years, the Society for Marine Mammalogy hosts a conference on the biology of marine mammals. In 2019, they teamed up with the European Cetacean Society to co-host the 2nd World Marine Mammal Conference in Barcelona, Spain. During this week-long conference, more than 2,700 people from 95 countries came together to share research findings, discuss emerging issues facing marine mammal populations around the world, and strengthen existing collaborations and build new ones. Throughout the week, the conference featured more than 600 talks and 1,600 displayed research posters. Ten researchers from the Anderson Cabot Center for Ocean Life's Right Whale Team presented at the conference. A list of researchers and their presentation title is listed to the right. (It is important to note that only the presenting author is listed. Each presentation represents a collaboration with other team members as well as colleagues from other institutions.) These international conferences provide invaluable opportunities to share our work, as well as learn and network with researchers from around the world. The next biennial conference will be held in Palm Beach, FL, in 2021. —*Heather Pettis*

### Presentations

Developing non-invasive fecal biomarkers to monitor Florida manatee health

—*Elizabeth Burgess*

A call for more comparative studies in cetacean conservation biology

—*Peter Corkeron*

Genetic identification of North Atlantic right whale calves challenge our assumptions of growth, weaning, and survival

—*Phillip Hamilton*

Interannual variation and trends in marine mammal sighting rates over 30 years (1987-2016) in the Bay of Fundy, Canada

—*Kelsey Howe*

Feasibility of using reduced breaking strength ropes (1700lbf) in fixed gear fisheries

—*Amy Knowlton*

Entanglement of North Atlantic right whales increase as their distribution shifts in response to climate change: The need for a new management paradigm

—*Dan Pendleton*

The North Atlantic Right Whale Consortium: A model for advancing science and conservation of marine mammals

—*Heather Pettis*

Resighting and movement patterns of right whales (*Eubalaena glacialis*) sighted in an area designated for offshore wind energy development

—*Esther Quintana*

Fecal thyroid hormones as a biomarker of nutritional status in North Atlantic right whales (*Eubalaena glacialis*)

—*Rosalind Rolland*

A computer model for studying fishing gear modifications in virtual reality to prevent large whale entanglements

—*Tim Werner*



# New England Aquarium

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## Disappearing Giants: The North Atlantic Right Whale

As some of you may recall from years past, our sponsorship packets used to include a small-format book, published in 2003, called *Disappearing Giants*. We are thrilled to announce that earlier this year, the completely revised and updated *Disappearing Giants: The North Atlantic Right Whale* was published by Fitzhenry & Whiteside! Written by long-time right whale researchers from the Anderson Cabot Center, it tells the story of one of the most endangered large whales in the oceans today, from the whaling history for which it is named to the most up-to-date research efforts and population status. Illustrated throughout with beautiful photos and in a larger format than the earlier version,



*Disappearing Giants* describes how individual right whales are identified, how they feed, migrate, and face the challenges of life in the industrialized North Atlantic Ocean. We hope this book will bring awareness to this wondrous but endangered whale species and the tremendous efforts being taken to help North Atlantic right whales avoid extinction, and thrive far into the future.

To order your copy please visit [rightwhaleresearch.bigcartel.com](http://rightwhaleresearch.bigcartel.com)

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In this newsletter, all photographs of right whales in U.S. waters were taken under NOAA research permits 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](http://accol.org).

You may access past issues of *Right Whale Research News* on our website at [neaq.org/rightwhale](http://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.

## 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](http://rightwhaleresearch.bigcartel.com)

