A Dock of Our Own

By: Dr. Moira Brown and Dr. Scott Kraus

Maine’s rockbound coast and high tidal range have always presented a challenge to mariners making the short but difficult transition from ship to shore. Each August, the right whales return to the Bay of Fundy between Maine and Nova Scotia, and since 1981 the biologists who study them gather there as well. Our base of operations is located in Lubec, Maine, and for many years the first order of business was relocating the mooring stone that would anchor our research vessel in the harbor during our stay. Some years it was simply a matter of finding the car engine-sized chunk of granite in the shallows where we had left it the previous autumn. However, more often than not, the first survey of the year was a bottom survey of the harbor—researchers clad in scuba gear scouring the area to relocate the stone moved over the winter by storms, ice or scallop draggers. In the early years, our research vessel, Nereid, was the only vessel moored in the harbor. As the years went by, many more fishing boats followed our lead so that by the time we arrived in late July the only anchorage left was one in deep water, several hundred yards from the town pier. The long row in a little skiff from pier to Nereid was seen by some as romantic in the early morning hours, but the exposed mooring was of concern during autumn storms.

In the 1980s and 1990s, we were often awakened in the early hours by large transport trucks loaded with fish grinding up the hill beside our field station from the Stinson Icehouse at the bottom of the street. Stinson’s had a wooden pier that stretched out into the Lubec Narrows—one of the last remaining of such structures—anchored into the bottom with wooden pilings. When they ceased operations around 1990, the owners donated the deteriorating structure to the New England Aquarium. In the first few years of our ownership, there wasn’t enough left of the pier to use. One spring, Scott Kraus received a call from an alarmed Coast Guard. The remaining shack on the end of the pier and the wooden pilings supporting it had lifted off the bottom during an unusually high tide following a spring storm and was last seen floating down the Lubec Narrows. After many adventures on the high seas and reports to the Coast Guard from passing ships of a “floating house” at sea, the shack and pilings fetched up on the Canadian...
A Dock of Our Own
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island of Grand Manan, where we believe it has been converted into somebody's garage.

The old wooden pier had clearly become dangerous and was falling apart, so we had it removed in the spring of 2004. Since the Aquarium leases the undersea lands from the state of Maine, state law required replacement of the structure within two years, or forfeiture of the rights to use the area for a dock. By this time, the Lubec Marina had also fallen apart due to winter storms and had been removed. The Aquarium's research fleet had grown to three boats, and moorings were becoming scarce. We needed a dock!

In 1990, Stinson Icehouse of Lubec, ME donated this deteriorating wooden pier and accompanying shack to the NEAq Right Whale Project. Photo / New England Aquarium

In partnership with R.J. Peacock Canning Company, the search began for the materials needed to drive new pilings and establish a floating dock on the space left by the old pier. Through an outpouring of good will and hard work from the Lubec community, and with a combination of funds donated from Irving Oil, Bud Levinson, the Right Whale Adoption Program and the New England Aquarium, a new dock was built and put into use in August 2005. In some tides, there are challenges docking our boats as the tidal current rages through the Lubec Narrows (our new motto: "Dock or Die"), but the facility is well protected from storm winds and we can all sleep better at night.

We were overwhelmed by the extraordinary efforts of Bob Peacock, Bobby Hood and many members of the Lubec community in constructing this facility. A dock that would have cost $200,000 was put in place for about $40,000 with a tremendous volunteer effort from businesses and individuals in the town. In true right whale fashion we celebrated the efforts of more than 120 people with a dock party and a ribbon cutting ceremony on October 1st. Special thanks to Bob Peacock, Bobby Hood, Ricky Wilcox, Carelton Fitzsimmons, Ralph and Jessie DeWitt, Bud Levinson, John Logan, Michelle Firmbach, Davis Pike and all of you who have adopted right whales over the last two years! Your support helped give us a dock of our own.

Moira W. Brown, Senior Scientist
Moe studied at the University of Guelph, Ontario, Canada. She has worked as a professor at the College of the Atlantic in Bar Harbor Maine and served as director of Allied Whale at COA. Moe has worked since 1985 with the Aquarium research team in Canadian waters; she only joined the research lab full time in January 2004, after seven years of studying right whales in Cape Cod Bay at the Center for Coastal Studies. Her research interests include population biology and genetics and conservation measures to reduce the risk of ship strikes for right whales in Canadian waters.

Scott Kraus, Vice President for Research, New England Aquarium
Kraus received his B.A. from College of the Atlantic, his M.S. in biology from the University of Massachusetts, and a Ph.D. from the University of New Hampshire. He has published over 50 scientific papers on cetacean biology and conservation, and is adjunct faculty at Univ. of Mass. at Boston and the University of Southern Maine. Kraus' recent research is increasingly focused on conservation issues faced by endangered species and habitats, and the difficulties of identifying what animals need to survive in an increasingly urban ocean.

The NEAq Right Whale Project Fleet: R/Vs Callisto, Nereid, and Galatea sit comfortably at the new dock, August 2005. Photo / Brenna Kraus

The right whale team came to terms with the demise of the donated pier when the supports holding up the wooden shack at the end lifted off the bottom and sent the "floating house" over to Grand Manan Island, leaving only this ineffectual wooden structure. Photo / Davis Pike

With the generous help and support of the Lubec community a brand new dock was built. It was put into use at the beginning of our 2005 summer field season. With a beautiful backdrop of the Lubec Narrows and Mulholland Lighthouse, we celebrated with a ribbon cutting ceremony on October 1, 2005. Photo / New England Aquarium
Sponsored Whale Update
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last December. Their last sighting on the southeast U.S. calving grounds was on February 17th. The pair then moved north to Cape Cod Bay and were sighted several times in late March and throughout April. On April 29th the pair took a tour of the Cape Cod Canal! Bill Danielson, a local photographer, first sighted them in the early morning hours that day. He had set up his camera to take some photos of the sunrise and was surprised to hear the sound of a whale exhaling (the blow). He looked around and saw a mother and calf right whale swimming through the Canal! Since his camera was already set up on his tripod, he took photographs of the pair, which would later be identified as Calvin and her calf. While this is a rare event, it has happened before. On April 15, 2002, #3103 was photographed in the Canal and on May 17, 2002; an unidentified right whale swam from the Bourne Bridge at the south end of the Canal all the way to Cape Cod Bay. Although seeing a whale in relatively confined waters can be an exciting event for onlookers, it is potentially dangerous for the whales—many fishing boats, recreational boats and large ships use the Cape Cod Canal on a daily basis. The recent excursion by Calvin and her calf has sparked the development of informational placards that will be placed along Cape Cod Canal. These placards will include a contact number so that appropriate protection measures can be taken as soon as a whale is reported. Four months later, Calvin and her calf were sighted on August 24th in the Bay of Fundy. They were subsequently seen on August 26th and September 3rd, 5th, and 19th.

During a NEAq boat survey on May 17th in the Great South Channel, Necklace (#1152) was observed skim and sub-surface feeding. Necklace was also seen on August 6th and 13th in a surface active group (SAG) in the Bay of Fundy.

In the May 2005 issue of Right Whale Research News we reported that Piper (#2320) was seen on April 17th, 2005, in Cape Cod Bay by the

Sponsored Whale Sightings for February 2005 - October 2005

Many of the sponsored whales have been seen in more than one critical habitat along the east coast. Read Sponsored Whale Update to find out why there is a sighting point in Cape Cod Canal.
We would like to thank all the individuals, schools and organizations that support our research with sponsorship or donation. Your support is essential to our work and is greatly appreciated!

Information on entangled whales was collected from the Center for Coastal Studies/Atlantic Large Whale Disentanglement Network website.

Yan Guilbault, Research Assistant
In 2003, Yan earned a B.S. in Biology from McGill University, Quebec, Canada. Shortly thereafter, he began working seasonally with the right whale project in the Bay of Fundy and Florida. He recently moved from Montreal and joined the research lab full time. He is currently maintaining the North Atlantic Right Whale Consortium website as well as processing and cataloging photographs.

North Atlantic Right Whale Consortium 2005 Annual Meeting

By: Heather M. Pettis

The 2005 Annual Meeting of the North Atlantic Right Whale Consortium was held at the New Bedford Whaling Museum in New Bedford, MA, on November 2 and 3. The Consortium was formed in 1986 and is comprised of individuals and organizations active in right whale research and management activities. The mission of the North Atlantic Right Whale Consortium is to ensure the long-term conservation and recovery of right whales in the North Atlantic. Members of the Consortium are committed to the coordination and integration of the wide variety of databases and research efforts related to right whales, and to provide the best scientific advice and recommendations on right whale conservation to relevant management groups.

This year, more than 225 individuals representing research and educational institutions; local, state and federal government agencies; shipping and fishing industries; whale watch companies and conservation organizations were in attendance. Those of you who have kept up with Consortium activities over the last few years may have noticed that this annual event grows steadily each year (175 in 2002, 190 in 2003, and 200 in 2004). We are thrilled with the increasing support and interest in the Annual Meeting because it indicates a continued commitment to protecting this endangered species.

The agenda for the two-day event included 42 presentations and covered a wide variety of topics, including population biology and distribution, acoustics, health and physiology, management updates, shipping and entanglement conflict and mitigation, and genetics. Three members of the New England Aquarium right whale office presented at the meeting: Dr. Scott Kraus presented the status of the North Atlantic right whale population (including updates on births, deaths and management progress over the last year), Dr. Kraus also presented his work on right whale reproduction that was recently published in Science. Philip Hamilton presented the new digital image tracking system (DIGITS), which is now up and running. Finally, Dr. Rosalind Rolland presented her work on measuring and characterizing right whale stress hormones (see The Scoop on Poop).

The importance of the Annual Meeting to the right whale research community cannot be overstated. It brings together people committed to right whale conservation to share their work, form new collaborations and brainstorm innovative ways to work towards a
Bay of Fundy 2005

By: Lisa Conger

Every year I return to the Bay of Fundy knowing that it is a spectacular and dynamic place. Yet every year, I am stunned at how beautiful it is there and how I never quite remember exactly how amazing it is until I see it again...

We were fortunate to have had another stellar season on the Bay of Fundy! We started up a bit later than in recent years simply because for the past few years we were there early, but the whales didn’t arrive until later in the summer. Our full team descended upon the small peninsular town of Lubec, Maine, on the first of August. Our primary Bay of Fundy research vessel, Nereid, was there and waiting at our new dock (see A Dock of Our Own). On Aug. 3rd we had our first opportunity to get out on the water and see which of our leviathan friends had arrived. One of our colleagues, Laurie Murison, had given us a heads up on the arrival of a couple right whale mother/calf pairs. Laurie has been monitoring right whales in the Bay of Fundy, especially during the shoulder seasons when dedicated research is not being conducted, for about 20 years. She works as the naturalist for Whale-Sails Adventures out of Grand Manan Island, NB. She was easily able to recognize Slash (#1303) and #2413 as known mothers. Laurie’s first sighting of a right whale was on July 8th, so we had high hopes that on our first trip we would be seeing some of our old friends. This expectation was happily fulfilled, as on our first day we encountered 16 right whales, including three mother/calf pairs.

We had many memorable days out on the Bay. On September 6th, two visiting researchers from Florida Fish and Wildlife Research Institute who had never seen right whales before joined us for a day out on the water. The seas were flat calm and the whales were concentrated in a small area. There were right whale flukes, right whale blows, right whales logging at the surface, right whales breaching, right whales doing all of the things that they do for as far as you could see in every direction. It was amazing! As we were photographing a calf, it became curious about us. The Nereid was shut down and just floating when the calf came over to the boat and started swimming around it and rolling over on its side to check us out. We told our guests, “People can work in the Bay for years and not have a day like this. This is really rare and special.” They were thrilled and feeling that they couldn’t be any luckier... until their next day out, when the team observed a 55-animal surface active group (SAG). Fifty-five of the rarest large whales in the world were rolling around together in one small area! A surface active group is defined as two or more whales rolling and touching at the surface. SAGs are often associated with courtship and mating, however scientists are still trying to uncover all of the reasons right whales exhibit this behavior.

Though every day on the water is very special in its own way, the big picture truly tells the story of this habitat. We were on the water for a total 20 days. Less than half of the photographed sightings have been analyzed to date and we have already accounted for at least 105 individual whales in the Bay of Fundy. That’s at least 30 percent of all known right whales! We had 771 photographed sightings. Only about a dozen
of them were in or near the newly moved shipping lanes. Though this is not perfect, it is a huge improvement from years past. If the shipping lanes had never been moved, the overlap with right whales would have been significantly higher and the risk of a right whale/ship collision would have been much greater.

Of the 28 known calves born this past winter, 11 of them came to the Bay with their moms. These 11 animals will certainly be able to be identified in the future, as their callosity patterns are stabilizing and will be mostly consistent throughout their lives. This enables us to catalog these young animals with the added information of their lineage.

With the beginning of October upon us, we started to think about packing up the field station and heading for Boston. There was just one catch—there were still a lot of right whales in the Bay of Fundy. We decided to stay a bit longer to see if the weather would cooperate. And it did, for the first few days of October, but we soon found ourselves sitting in fog and gale force winds. We decided to pack it up and head home. We will be working for several months on data from this summer to assess just how many whales were seen. In the meantime, we will be preparing to head south to, hopefully, another great calving season. We look forward to updating you with news from the southeast U.S. in our next newsletter.

Lisa Conger, Associate Scientist
Lisa has worked at the New England Aquarium since 1992, studying the North Atlantic Right Whale. She spent eight years flying aerial surveys for right whales off of the coast of Georgia and Florida. Lisa has also worked in the waters of the Bay of Fundy, studying right whales, for the past thirteen years and runs the summer field station in Lubec, Maine.

The Great South Channel
By: Lindsay Hall

The Great South Channel (GSC) critical habitat encompasses the area east of Cape Cod out to Georges Bank. The area is 3,234 square miles, approximately ten times the size of Manhattan. Right whales use this area as their primary feeding habitat between April and June. They aggregate in areas with dense patches of zooplankton, which roughly coincide with waters deeper than 100 meters. Data from surveys in GSC dating back to 1979 suggest that in some years, almost the entire population of right whales has used (or passed through) the area at some time during the year. The Great South Channel is obviously a very important and interesting right whale habitat!

Surveys conducted in GSC and other habitat areas by various organizations and scientists have allowed the North Atlantic Right Whale Catalog to become one of the most comprehensive, longitudinal photo-identification databases for a marine mammal species. However, interruptions in survey effort due to lack of funding, poor weather conditions, and/or remote location of habitat, can produce gaps in the sighting history of individual whales. If a whale is not seen for six years, it is classified in the sightings database as “presumed dead.” This period of time was chosen because it was very rare to re-sight an animal after a six-year interval. However, it does occasionally happen. In those cases when a whale is seen after it’s been presumed dead, it is classified as “resurrected” in the year it was resighted.

Vessel and aerial surveys in GSC began in 1979 and continued through the ‘80s and early ‘90s. Unfortunately, there was a gap in survey effort in the mid-‘90s due to funding constraints. This gap resulted in a high number of presumed mortalities. In the late-‘90s, aerial and vessel surveys were resumed by National Marine Fisheries Service (NMFS), International Fund for Animal Welfare (IFAW) and Provincetown Center for Coastal Studies (PCCS), and by 2003, a whopping 21 whales were resurrected! Fourteen of those whales (about 67%) were seen in GSC the year they were resurrected. Eight of those 14 were seen only once, in GSC, the year they were resurrected. If it had not been for survey effort in GSC, those eight whales would have gone unobserved and remained presumed dead. It is clear from these data that GSC is not only a habitat that most of the population uses, but it’s a habitat used by whales that do not visit the well-surveyed habitats such as the Bay of Fundy, Cape Cod Bay, or the southeast U.S.calving ground. Thus, continued surveys in this area are invaluable for monitoring the status of this population.

In 2003, the New England Aquarium’s right whale team chartered a fishing vessel, F/V Rueby, so we could collect shipboard images of right whales in the GSC (the majority of sightings in GSC have been collected from aerial platforms) and further document who...
was there. In only three days on the water that spring, our team photographed at least 26 individuals.

With the enthusiasm built up from those three good days on the water in 2003, the NEAq right whale team made the decision to add another field season to our year and run more frequent vessel surveys in the GSC. We based out of our offices in Boston and, at the hint of a good weather window, we traveled down to Harwichport, on Cape Cod, MA, where our chartered boat, the F/V Rucby, was kept. But, in that 2004 season, we ended up getting only five days out on the water. It became clear that we had missed good weather days by not being based out of a town near the boat.

This past May, the decision was made to rent a house only a few miles from the dock and schedule members of our team to be on-call to base out of Cape Cod during a possible good weather window. This ensured that a full team was ready and waiting to get on the boat and go. We used several chartered vessels for the surveys during May, but in June we were able to use our own R/V Galatea. We had a total of 11 amazing days out on the water and documented 187 sightings. We obtained biopsy samples from 16 animals, including eight calves, and collected three fecal samples, all of which contributed to several different ongoing studies (see Sample Collection on the Southeast U.S. Calving Ground... and The Scoop on Poop).

During a survey of GSC on May 17th, 2005 we came across whale #1604 and her calf. This was an exciting event due to #1604’s sporadic sighting history. Whale #1604 was first seen in 1986 in Cape Cod Bay. She had been seen only a few times from 1986 through 1997, including one sighting of her with a calf in 1993. In 2002, she was seen with a calf in the southeast U.S. and Gulf of St. Lawrence (another inconsistently monitored right whale habitat where most reported sightings make their way to the Catalog via whale watch vessels). We were happy this past winter when #1604 was seen on the calving ground with her third calf and thrilled on May 17th when we had an opportunity to genetically sample her and her calf, both for the very first time. Events like these make the Great South Channel field season very important. Through contributing such vital information we hope to make the North Atlantic Right Whale Catalog as complete as possible, allowing it to continue as a comprehensive research and conservation tool.

Lindsay Hall, Research Assistant
Lindsay earned a B.S. in Biology from Allegheny College in 2002. She has worked as a research assistant at Duke University Marine Lab and as an aerial and shipboard observer on marine mammal surveys. She joined NEAq as an aerial observer in December 2002. Lindsay is currently the Right Whale Project’s Data Coordinator. She also works on processing and cataloging contributed photographs of right whales, organizing NEAq field season data, and right whale education and outreach projects. She is the editor of Right Whale Research News.

Return to Roseway: From Feast to Near Famine
By: Beth Pike

Last winter’s newsletter (Volume 13, Number 2) brought news from our September 2004 expeditions to Roseway Basin, an offshore right whale habitat located 30 miles off the southern tip of Nova Scotia, Canada. In just four survey days, more than 100 right whales—including three entangled ones—were sighted. Between 1980 and 1992, this number of right whales on Roseway was the norm, but for those of us who joined the project after 1992, Roseway Basin has always been described as the area where right whales used to go. The whales essentially abandoned Roseway from 1993 through 1998, which coincided with a more than twofold increase of right whales in the Bay of Fundy.

An increase in the number of sightings reported from Roseway since 1999 needed further investigation and led to renewed survey efforts beginning in 2004. Last autumn, we were excited that our surveys showed right whales had returned to the area, although our field trips out to the area were arduous. Because our surveys were based out of our homeport in Lubec, Maine, these trips were three or four-day excursions—a 12-hour transit from Maine to Nova Scotia, one or two 14-hour survey days (with nights spent onboard the Galatea), and another full-day transit back to Maine.

It was with much anticipation that we prepared for summer 2005 and our second survey effort on Roseway Basin in as many years. There were near-record numbers of right whales in the Bay of Fundy this past August and we couldn’t wait to see what was happening offshore! We decided to rent a house on Cape Sable Island, N.S., where our team could stay for an entire month rather than make several long commutes between Maine and Nova Scotia. Cape Sable Island is located at the southernmost tip of Nova Scotia and is home to several small towns and communities whose inhabitants make a living from fishing and boat building. Unlike the rocky shores of Maine, Cape Sable Island has beautiful, white sandy beaches. On warm days, once the fog burned off over land, we often had temperatures in the 80s; it was a great place to be caught waiting for the weather to clear up (mostly offshore fogbanks or wind). Some of the team even braved the water for a swim. The people of Cape Sable Island were extremely friendly and

Right whale #1604 skims feeds in the nutrient rich waters of the Great South Channel.
Photo / New England Aquarium
helpful. We enjoyed meeting new friends and reconnecting with old ones.

With a fantastic house and a high-speed Internet connection, we were all set to begin an intensive field season. Unfortunately, the right whales surprised us. Despite eight days of survey effort on Roseway Basin, our team saw fewer than 15 right whales. A cruise run by the National Marine Fisheries Service through the area early in the summer found some animals there, but not like the numbers found in 2004. So, although right whales were clearly using the area in 2005, the increase in right whales in the Bay of Fundy appeared to be leading to a corresponding decrease offshore. A similar shift in habitat use in the mid 1990s indicates that right whales are likely responding to changes in their habitat, mostly likely food related, that we do not fully understand.

Though there have been a number of studies trying to link oceanographic variables and prey availability data to the change in right whale use of Roseway, results are still under investigation. Even with only a few tens of right whales on Roseway, it is still an important habitat area for us to survey and compare with the Bay of Fundy. We are eager to see what happens next summer. We'll be back there, and hopefully the right whales will be back too!

We would like to thank the following people for making our stay on Cape Sable Island so enjoyable: Wanda Atkinson, Sable Fish Packers, West Nova Fuels, especially Jeremy and Troy, Lindsay Nickerson, Henny Nickerson, Garvin and Fawn Atkinson, and all of the fishermen at the Sable Fish Packers wharf who were incredibly helpful and genuinely interested in our work.

Beth Pike, Assistant Scientist
Beth Pike earned a B.S. in Psychology/Biology from Long Island University in 1997. She joined the NEAQ right whale team in 2000, moving back to her home turf after a few years of working on charter boats in Maui. She has worked on various humpback and coral reef projects. She is a primary identifier of individual right whales and provides some geographic information systems (GIS) support for other team members. Beth is pursuing a graduate degree in Environmental Management and GIS.

The Scoop on Poop
By: Cynthia Browning and Dr. Roz Rolland

A team of researchers led by Dr. Roz Rolland returned to the Bay of Fundy this summer in search of whale poop. Right whale poop, to be exact! While this may seem like a strange mission, researchers are finding that defecation samples can provide an enormous amount of information about the health and reproductive status of right whales. Because it is impossible to capture a 40-ton right whale to take a blood sample, Dr. Rolland and a group of scientists have developed a suite of studies that can be done on fecal (or scat) samples. Through genetic analysis, scat samples can be attributed to individual right whales, allowing researchers to link the life history of the whale to the results of several studies. By measuring levels of reproductive hormones in scat samples, researchers can determine if the whale is a male or a female, immature or reproductively active, and whether it is lactating or pregnant. Whale health can be assessed by measuring stress hormones in fecal samples. Researchers have found that many right whales are infected with disease-causing protozoa called Giardia and Cryptosporidium. Finally, research on these samples has shown that right whales are exposed to significant amounts of the marine biotoxins from red-tide blooms in the Bay of Fundy that may compromise their health. These groundbreaking studies are giving researchers an important window into aspects of right whale reproduction and health for the first time.

Dedicated searches for whale scat began five years ago in the Bay of Fundy. Right whales feed on dense patches of copepods in this area, making it a prime habitat for collecting scat samples (if whales are eating they're going to have to poop!). Right whale scat is usually clumped and buoyant, ranges in size from a tiny speck to a small brick and is often orange or red in color (from the copepod zooplankton they're eating). However, it's not easy for a human to find whale scat out there in the big ocean. The pieces of scat may be very small and frequently not visible.

Now a three-year veteran of the summer field season in Lubec, Fargo, handled by Dr. Roz Rolland, intently searches for whale scat aboard the R/V Callisto. Photo / New England Aquarium
on the water’s surface until they are just a few yards away from the research vessel. In addition, as the scat sinks, it may be widely dispersed. And although right whale poop does have a strong, distinct odor, the human nose usually doesn’t detect the scent until the sample is relatively close to the boat. Knowing how valuable scat could be, Dr. Rolland teamed up with Barbara Davenport of Packleader Detector Dogs and Dr. Sam Wasser of the University of Washington to develop a new way to find these elusive samples... using detection dogs!

Fargo is a five-year-old Rottweiler that was first trained as a narcotics detection dog, and now specializes in finding wildlife scat. When searching for right whale poop, Fargo stands on the bow of the boat, sniffing into the wind. When he detects the scent of right whale scat, he becomes animated, wrinkling his forehead and wagging his stump of a tail. He excitedly points his nose in the direction of the strongest scent. The researchers then follow Fargo’s lead and steer the boat in the direction that he indicates. As the boat approaches the sample, the scent gets stronger, and Fargo becomes even more excited. After the researchers locate the sample and Fargo pinpoints it, he anxiously awaits his reward.... his beloved tennis ball.

This was the third year that a detector dog was used in the Bay of Fundy to locate right whale scat and the results are astounding—a record 100 samples were collected this year, 59 of which were found by Fargo! The rest of the samples were collected by the Aquarium’s other research vessels, other researchers working in the Bay of Fundy and whale watch boats. Fargo’s hard work has allowed the dedicated collection team aboard Callisto to collect up to 14 samples in one day. On the same day, the Aquarium’s research team aboard Nereid collected only three samples. Results like this emphasize how efficient a detector dog like Fargo can be at finding scat. Fargo’s acute sense of smell has led the research team to tiny flecks of poop, which would have been impossible for a human to detect. He also led researchers to a sample over one nautical mile away!

The astounding number of fecal samples that dogs like Fargo help researchers obtain has fueled new studies on right whale health and reproduction. These studies will help researchers answer some important questions about this population: Why is the calving rate so variable from year to year? Why have some adult females never been seen with a calf? What impacts are human activities in the oceans having on right whales’ health? Answers to these questions are important both to the conservation of right whales, and to understanding more about human impacts on the oceans.

Cynthia Browning, Research Assistant
Cynthia graduated with a bachelor’s degree in Zoology from the University of New Hampshire in 2003. She has since traveled throughout the Northeast working for various programs dedicated to right whale research. Cynthia spends most of her year photographing individual right whales during aerial and shipboard surveys. She joined Dr. Roz Rolland in the summer of 2005 to assist in collecting fecal samples and to create a database containing information on sample collection and results of studies conducted on fecal samples.

Rosalind M. Rolland, Senior Scientist
Roz is a veterinarian by training, and she received her DVM degree from Tufts University in 1984. She spent several years working with primates both in Africa and in the U.S., and then joined the World Wildlife Fund as a Conservation Scientist where she studied the effects of environmental contaminants on wildlife populations. Before joining the New England Aquarium, Roz was Science Director of the Center for Conservation Medicine at Tufts Veterinary School. Her current research interests include development of methods to study reproduction and to evaluate health in right whales.

The Policy Tunnel
By: Amy Knowlton
Implementing effective policies for the protection of right whales has not been what one might call a streamlined, efficient process. The need for patience as the process unfolds is frustrating. For example, in August 2001, a report co-authored by myself and others was submitted to the National Marine Fisheries Service (NMFS) outlining several years of consultation with the shipping industry and recommendations for regulating ship traffic along the eastern seaboard using reduced speed and alternative routing options. NMFS has taken these recommendations and after internal review started a rulemaking process. However, more than four years later, there are still no regulations in place and a proposed rule for implementing regulations has not yet been published. NMFS has filed a Notice of Intent to publish a proposed rule and we remain hopeful a proposed rule will be published in late 2005/early 2006, which would ideally be followed by a final rule a year later.

On the fishing gear entanglement side of the issue, there have been regulations in place for several years aimed at reducing the level and severity of fixed fishing gear entanglements, but these have not been effective at fully addressing the entanglement problem. Serious and fatal entanglements have continued to occur for all large whale species, including right whales. To begin to address this problem, a new proposed rule was published on June 21, 2005, which details a variety of gear modification changes to be required along the Eastern U.S. seaboard (instead of only in high-use right whale areas as defined presently). These universal gear modification changes include the use of sinking groundline between lobster traps, five weak links within gillnet panels, and the requirement that other similar trap fisheries comply with these regulations. The comment period for this proposed rule ended on August 22, 2005. A final rule will likely be published sometime in 2006. One major issue with fishing gear entanglements that still remains to be addressed is entanglement in vertical lines (fishing line extending from the seafloor to the surface buoy system). This will be the focus of the Atlantic Large Whale Take Reduction Team in the year ahead—trying to assess effective gear modification options available for vertical line...
and develop a strategy for testing and implementation of such modifications. If the timelines above can be adhered to, at long last, there may be a faint glimmer of light at the end of this long policy tunnel. The lengthy rulemaking process is not atypical for NMFS. Though there are many of our colleagues at NMFS who have been working long and hard to develop these regulations, there are many internal hurdles within the rulemaking process that greatly slow the process down. Unfortunately this happens at the expense of the animals we are all trying to protect. In addition, there is often a tremendous amount of opposition to such rules by the groups that will be impacted (including fishermen, port authorities, shipping companies and the military), which can also slow down the process. Yet, we are cautiously optimistic that if final rules can be promulgated in the next year or two, perhaps there will finally be some positive changes for right whales. Hopefully this will happen in time for the North Atlantic right whales to come back from the edge of extinction.

Here at the New England Aquarium, we continue to work closely with NMFS and other regulatory agencies to provide detailed information about the status of right whales and the level of entanglement and ship strike injury and mortality. We have also been involved in efforts to help develop and research effective gear modifications, to review vertical line gear modification options, and to assess sighting data along the coast and recommend seasonal timeframes for ship strike management measures. Our expertise and knowledge of this species has been integral to the development of these proposed regulatory measures.

For more detail on the regulatory process underway for shipping, visit the NMFS ship strike reduction website at: http://www.nero.noaa.gov/shipstrike/ and for fishing, visit the NMFS Atlantic Large Whale Take Reduction Plan website at: http://www.nero.noaa.gov/whaletrp/ ●

Amy Knowlton, Research Scientist
Amy, after graduating with a bachelor’s degree in Geography from Boston University in 1982, began as a part-time volunteer on the Right Whale Project in 1983. She became full-time in 1988. Amy holds a Master’s degree in Marine Policy from the University of Rhode Island with a focus on shipping regulations and protection of right whales from ship strikes. She has a strong interest in meshing science with policy to help develop effective protection measures for right whales.

Right Whales on the Web
By: Yan Guilbault, Phillip Hamilton and Kerry Lagueux

Right whales are becoming increasingly visible on the web! In the last six months, the New England Aquarium has worked extensively on three web sites: the North Atlantic Right Whale Catalog website, the North Atlantic Right Whale Consortium website and the marine GIS website.

The Catalog website is a completely new site that is aimed towards teaching people about right whale photo-identification. It includes background on photographic identification in general, detailed explanations of how individual right whales are matched to the Catalog, photographs and descriptions of identifying features, maps showing where right whales are found, and descriptions of behaviors. This website has short bios of some whales that illustrate what the photographic Catalog can tell us. You’ll find family trees of some right whales that were determined through genetic analyses at Trent University in Kingston, Ontario, illustrating how the information gained from genetic studies (see Sample Collection on the Southeast U.S. Calving Ground…) is adding tremendously to our understanding of individuals. There is a brief description of the new software that we are developing to manage the Catalog called DIGITS, and a bibliography of some of the many scientific articles that have been written using information from the photo-identification database. But some of the most exciting features of this website are still under development, such as links to other related websites, a simple matching game so users can try matching right whales, and a search engine that will allow the user to search the “live” right whale Catalog and see a small subset of images for each whale in the Catalog. The Catalog website was funded by the National Science Foundation and can be found at www.neaq.org/rwcatalog.

The North Atlantic Right Whale Consortium website has been updated and revamped in the last six months. The Consortium is made up of a number of both governmental and non-governmental organizations and individuals in the United States and Canada who work to study and conserve North Atlantic right whales. The website was created to provide information to the public on right whale research and conservation. Here, you can find more information about the North Atlantic Right Whale Consortium, see some great images of right whales that are available for use for educational purposes, and download PDF files of some scientific articles. You will also find contact information for the partners of the Consortium and links to their respective websites. The Consortium website is www.rightwhaleweb.org.

The marine GIS website has also been updated and revamped in the past few months. This site has a number of useful links for GIS (Geographic Information Systems), but one of the most exciting for those interested in right whales is a series of maps plotting right whale locations. These maps include movements of individual whales between habitats, and monthly and annual plots of both survey effort and whale sightings. To view these maps, go to the home page of this website and find the link to the “Right Whale Mapping Project” under the “Right Whales” subheading. Under this subheading, we also have information regarding how we are using satellite remote sensing to understand the oceanographic variables in right whale habitats, how we have used GIS to move the shipping lanes in the Bay of Fundy, and maps of the locations of the sponsored whales from this past season. The GIS website is www.marinegis.org. ●
Sample Collection on the Southeast U.S. Calving Ground: Using genetic-ID techniques when photo-ID is not possible

By: Tim Frasier

The ongoing research on North Atlantic right whales, which has been conducted for more than 25 years, makes them one of the most well studied wild populations. Resulting from these data is a great potential to learn about the factors that are important for the recovery and conservation of not only this species, but for small and/or endangered species in general. The backbone of this valuable dataset is, of course, the long-term photo-identification research and the detailed information it provides for each individual. It is this level of detail, for such a large portion of the species over such a long time period, that sets this work apart from most other population studies. However, there is one major gap in these data that results from calves that are only seen in the calving grounds during their first year of life.

The photo-identification work is primarily based on the callosity patterns that occur on the head of each whale and are unique to each individual. However, these callosity patterns develop and change until the calves are approximately six months old. This results in a large group of calves—those who are seen during the winter or spring months when they are less than six months old, but not during the summer months in the northern feeding grounds when they are over six months old—that cannot be photo-identified in their year of birth when they are still associated with their mothers. Therefore, if these calves are seen later in their lives, once their callosity patterns have stabilized, it is not possible to link them back to specific calving events of specific females, and the resulting demographic data, such as age and family line, are “lost” for these calves. Data show that approximately 40 percent of all calves are not seen during the summer months; therefore, that important demographic information is unknown for almost half of all calves born to this species.

Genetic analyses from skin samples can be used to identify calves before their callosity patterns have developed, and therefore provide a tool to prevent the loss of these valuable data. If a sample is collected from a calf while it is on the calving ground, the DNA from that sample can be analyzed, which results in an individual-specific genetic profile for that whale. If this whale is seen later on in its life and another sample is collected, the DNA can be analyzed and compared to samples collected in previous years from calves that were not photo-identified. Once the unknown animal is genetically matched to a calf from a previous year, we can then determine who its mother was by referring to the photographic database. In this way, genetic analyses can be used to compliment the photo-identification data and provide a valuable tool to aid in obtaining long-term demographic data for population assessment and monitoring. Samples collected from these calves are also used in the ongoing genetic analysis of this species to learn more about the reproductive biology of right whales, and the influence of genetic factors on species recovery.

To increase our ability to obtain samples from calves while they are on the calving ground, some changes will be taking place during this winter’s field season. Two teams will be working in close collaboration with each other to maximize coverage of the southeast calving ground. One team is comprised of Chris Slay—collaborator and contributor to NEAQ who heads up the effort to collect samples in the calving grounds—and Tom Pitchford and Andy Garrett of the Florida Fish and Wildlife Service. The second team includes Lisa Conger of the New England Aquarium, and myself, Tim Frasier of the Natural Resources DNA Profiling and Forensic Centre at Trent University. These teams will be working closely with each other, as well as with the aerial survey teams on the calving grounds to identify mother-calf pairs that are in the area and obtain samples from the calves, and mothers when necessary. Through the combined effort of the sampling and aerial survey teams, the goal of the genetic sampling during this field season will be to minimize the number of calves whose information is “lost,” by providing samples and genetic ID’s for the majority of mother-calf pairs in the calving ground.

Adding the information from these samples to the ongoing genetic and photo-identification databases will not only help fill a major gap in our understanding of the individuals that represent this endangered species, but...
Sample Collection on the Southeast U.S. Calving Ground: Using genetic-ID techniques when photo-ID is not possible

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will also be used to obtain a better understanding of right whale biology in general, and the factors influencing species recovery.

Tim Frasier, Post-doctoral fellow
After obtaining a B.Sc. in biology from the University of North Dakota in 1998, Tim interned with Dr. Moira Brown at the Center for Coastal Studies where he worked on aerial surveys for right whales in Cape Cod Bay. In 1999 he began his Ph.D. work on the genetics of North Atlantic right whales with Dr. Brad White at McMaster University, and since 1999 has also spent summers working in the field with the New England Aquarium right whale research crew. Tim completed his Ph.D. in January of 2005, and is continuing in right whale genetics research, and is also conducting genetic analyses of other endangered whales and dolphins.

THANK YOU!
We would like to thank all of the individuals, organizations and schools that continue to support our research with annual sponsorships and donations. Your support is critical to our work and we appreciate all of your efforts. In the last year, your generous donations have provided these important resources to our project:

- Travel to and participation in implementation team meetings responsible for the recovery of right whales under the Endangered Species Act
- Field supplies in support of field studies and continued updating of the right whale catalog
- Travel and supplies for disentanglement efforts

Have a Happy and Healthy New Year

New England Aquarium