

National Fish and Wildlife Foundation
Final Programmatic Report

Project Name and Number: State of Florida Right Whale Coordinator II (2006-0093-007)

Recipient Organization/Agency: Florida Fish and Wildlife Conservation Commission (FWC)

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1) Summary

The Florida Fish and Wildlife Conservation Commission (FWC) received funding for continuing support for their scientist hired and trained to coordinate North Atlantic right whale recovery tasks for the state of Florida. Primary activities include; coordinating Florida's collection of winter aerial survey and genetics data, responding to dead and entangled whales, facilitation of and participation in the Early Warning System (EWS) communications network, facilitation of semi-annual Southeast Implementation Team (SEIT) meetings, participating in various teams, training, report writing, and conducting outreach activities.

2) Introduction

This project is an integral part of FWC's North Atlantic right whale program and a continuation of a past Foundation-funded project grant. The state's program assists in the implementation of the federal Right Whale Recovery Plan. Continued support for a full-time state right whale field activities coordinator enhances the state of Florida's role in right whale conservation and benefits the species. This individual dedicates his time solely to the state's efforts for conserving right whales. This allows for better opportunities to conserve the species, conduct outreach activities, and coordinate efforts in the state. This project meets the need to build on a consistent skill and knowledge base. Years have been invested in building skills and knowledge for right whale recovery activities such as aerial surveys, large whale disentanglement, early warning communication networks, boatmanship, and stranding response. The stability of FWC's right whale field activities is dependent on maintaining and building on this position.

Objectives Include:

- 1) Coordinate with state, federal, and private partners to implement the Right Whale Recovery Plan.
- 2) Coordinate the state of Florida's efforts to monitor right whale use of Florida waters.
- 3) Minimize human interaction incidents by alerting mariners in Florida waters to the presence of right whales and by serving as disentanglement Level-3 responder.
- 4) Coordinate the state of Florida's response to dead right whales in the Southeast U.S. (SEUS).
- 5) Coordinate the state's effort to collect biopsy samples for genetic analysis and health assessment.
- 6) Maintain the EWS's communication network.

3) Methods

Project coordination is conducted by the person supported by the award. This person serves as co-chair of the Southeast U.S. Right Whale Recovery Plan Implementation Team (SEIT), serves as member of the Atlantic Large Whale Take Reduction Team, liaison with military and local community, leads state large whale stranding response in Florida, Level-3 responder for the disentanglement network in the SEUS, liaison with NMFS southeast right whale coordinator. This person also coordinates Florida's aerial surveys, coordinates vessel-based genetic sampling of right whales off the Florida coast, and is involved with the North Atlantic Right Whale Consortium.

4) Results

a) Outputs

- i) The short-term results of the project are outlined in the logic framework table below (Figure 1). As SEIT co-chair, the state of Florida right whale coordinator hosted four SEIT meetings (May and Oct 2007 and May and Oct 2008), presented at all four meetings, and disseminated SEIT meeting notes and important updates to the SEIT participants. Topics presented by the coordinator at SEIT meetings included EWS Communication Network updates, wound analysis, and affects of red tide in Northeast Florida. Florida's coordinator serves on NOAA Fisheries' Atlantic Large Whale Take Reduction Team (ALWTRT) and attended three meetings during this project time frame. The coordinator also serves as a SEIT Target Audience Coordinator and member of Education and Outreach Steering Committee, Passive Acoustic Monitoring Work Group, and EWS Communications work group. The coordinator attended two North Atlantic Right Whale Consortium annual meetings, the Florida Marine Mammal Health Conference III, and multi-agency telemetry workshop; presented on large whale natural history at the University of Florida's Sea Vet course; participated in numerous local public education and outreach events (e.g. FWRI's open house event "Marine Quest" and Jacksonville Zoo brown bag lunch); and contributed to the development of educational articles for publications (e.g. Navy's All Hands Magazine, Florida Wildlife Magazine, and FWC's right whale Sea Stats). The coordinator also contributed to the development of FWC's right whale efield trip, an interactive online tutorial for school-age children. The coordinator submitted and managed grant proposals to support and enhance Florida's standing response capabilities and right whale sighting response capabilities and coordinated with Georgia Department of Natural Resources (GaDNR) on a NFWF grant proposal and award to enhance disentanglement and biopsy efforts in the SEUS. In collaboration with other FWC staff the coordinator helped develop FWC's comment letters to the Navy on the Atlantic Fleet Active Sonar Training (AFAST) DEIS and Undersea Warfare Training Range (USWTR) DEIS. The coordinator co-authored a wound analysis report, submitted to NMFS, based on the necropsy findings from right whale GA2006025 and worked with a 3D artist to develop and refine an animation of a right whale/vessel collision. In accordance with safety policies and recommendations set by FWC and NOAA, the coordinator completed all prudent and required training exercises and certifications including disentanglement, Aircraft Ditching Course (underwater egress and sea survival), first aid, and CPR. The coordinator oversaw the 2006-2007 and 2007-2008 calving season field activities. A brief summary of outputs is as follows:
 - (1) Seasonal implementation, troubleshooting, revision and improvements to the

EWS Communication Network. This included the reorganization of EWS “whale alerts” into geographic bins (Figure 2). The creation of these bins allowed vessel operators and shipping interests to receive only the whale alerts relevant to their operational area.

- (2) The FWC Southern Early Warning System (SEWS) aerial survey team flew 77 surveys between December 1, 2006 and March 31, 2007 and 70 surveys between December 1, 2007 and March 31, 2008. The FWC/SEWS survey team had 82 sightings* consisting of 208 whales (not unique individuals) and 86 sightings consisting of 218 whales (not unique individuals) during the 2006-2007 and 2007-2008 calving seasons respectively.
 - (3) Participated in discussions related to disentanglement, documentation, and intervention efforts for entangled or injured whales and responded to five cases of entangled or injured whales in the SEUS. These whales included; BK01SEUS06 in 2007, #3346 “Kingfisher” in 2007 and 2008, #3333 in 2008, and #3520 “Ruffian” in 2008 (See FWC/SEWS aerial survey reports).
 - (4) Coordinated in whole or in part the recovery and subsequent necropsy of six whale carcasses in the SEUS; four right whales (GA2006025, EgNEFL0704, Hubbs-0803-Eg, EgNEFL0802), one humpback whale (Hubbs-0816-Mn), and one fin whale (Hubbs-0814-Bp). Participated in the writing of necropsy reports and the dissemination of samples for all right whale cases.
 - (5) Coordinated Florida’s right whale biopsy effort in collaboration with GaDNR and NMFS. The joint biopsy effort resulted in sixty biopsy cruises total, 28 and 32 cruises during the 2006-2007 and 2007-2008 calving seasons respectively, and 43 total biopsy samples, 19 and 24 samples during the 2006-2007 and 2007-2008 calving seasons respectively (See Table 1).
- ii)* Reports filed during the course of this project that provide additional information about specific field activities coordinated under this project:
- (1) Aerial Surveys for Ship Strike Mitigation and Other Field Observations of North Atlantic Right Whales (*Eubalaena glacialis*) off the East Coast of Florida December 2006-March 2007
 - (2) Aerial Surveys for Ship Strike Mitigation and Other Field Observations of North Atlantic Right Whales (*Eubalaena glacialis*) off the East Coast of Florida December 2007-March 2008
 - (3) Table 1: 2007-2008 SEUS Biopsy Data NFWF
- iii)* There are no discrepancies to report between the predicted and actual outputs of this project. It is worth noting that entanglement and stranding response events are dependant on the number of cases sighted in the SEUS and detectability can be influenced by several outside sources, most notably behavior and weather. However, despite inherent difficulties in locating entangled or dead whales the predicted value of project output was met in both cases.

Figure 1: Logic framework table with indicators.

* A sighting is any observed whale or group of whales at a given time and location. A sighting may consist of one to many whales, but an individual whale may not be counted more than once during a sighting. An individual whale may be part of more than one sighting per day and/or more than one sighting over a period of many days throughout the entire calving season.

Activities	Short-Term Outputs	Long-Term Outcomes	Indicator	Baseline Value	Predicted Value of Project Output	Actual Value of Project Output
Coordinate with state, federal, and private partners to implement the recovery plan.	Improved awareness and cooperation among partners and stakeholders.	Sustained capacity for future stewardship, science, and management among partners.	Provide for continuity of process and planned	2 SEIT meetings /year	2 SEIT meetings /year	4 SEIT Meetings (2/year)
Coordinate aerial surveys to report whale locations to Early Warning System.	Prevention of ship/whale collisions which likely would result in death or serious injury.	Conservation of right whales due to avoidance and increased awareness of whale presence.	# of whale sightings reported to EWS	50-100	50-100	82 in 2006-07 and 86 in 2007-08
Provide staff and equipment to assist response to entangled whales.	Whales freed from entanglement and gear collected.	Reduction in whale death or serious injury and increased understanding of entanglements.	# of entangled whales responded to	0-2	3	5 (2 in 2006-07 and 3 in 2007-08)
Coordinate state response to reports of dead whales.	Documentation , carcass retrieval and necropsy of dead whales.	Increased understanding of mortality factors which may improve conservation.	# dead whales responded to	0-1	1-2	6 whales (4 Eg, 1Bp, 1Mn)
Coordinate the state's right whale biopsy effort.	Collection of biopsy samples for genetic analysis and health assessment.	Sustained capacity to contribute to increased understanding of population dynamics, reproductive success, and health.	# of biopsy samples collected	0-4	8-15	43 (19 in 2006-07 and 24 in 2007-08)

b) Post-project Outcomes

- i)* The predicted values of post-project outcomes were provided in the logic framework of the full proposal.
- ii)* The coordinator continues to serve as co-chair of the SEIT and as such will continue to host the semi-annual SEIT meetings. These meetings are consistently well-attended and provide a framework for continuity of process and Recovery Plan work planning. Planning for the 2008-2009 winter calving season is well underway. Long range goals associated with surveys flown, biopsies collected, and dead and entangled whales responded to are likely to be met as long as staffing and funding remain stable.
- iii)* Although aerial surveys are limited to daylight hours and constrained by weather conditions they are currently the best method available locating whales in the SEUS. These surveys should continue as long as funding is available and until other methods

of detecting whales or other conservation strategies reduce the risk of vessel collision. FWC assistance with stranding response, biopsy and disentanglement will continue as long as there is support and funding from state and federal agencies. Currently, Florida's right whale coordinator position is being funded directly by NMFS. FWC's right whale disentanglement, biopsy sample collection and stranding response are supported by a combination of NMFS, FWC, and extramural funding.

iv) Not applicable

5) Discussion & Adaptive Management

a) Lessons Learned and Transferability

- i)* The importance of focused local coordination of field activities can not be understated. FWC has significant infrastructure and expertise at their disposal and functional ties to adjacent response outfits. State and Federal agencies should continue to foster the development of local response networks.
- ii)* Carcass detection, stranding response, necropsy, cause of death determination and wound analysis are likely to become even more important as agencies move forward with new rules aimed at reducing deaths and serious injury to right whales from vessel collision and entanglement. These important front-line monitoring efforts are critical to evaluating the effectiveness of these rules and to provide feedback to adaptive management strategies.
- iii)* With the continued support of NMFS and other agencies FWC plans to maintain and expand its capacity for response and other conservation efforts.

b) Dissemination

- i)* Data collected during this project were submitted to collaborators and required reporting agencies including NMFS, New England Aquarium (NEAq), North Atlantic Right Whale Consortium Database Manager, and the Provincetown Center for Coastal Studies (PCCS). Right whale identification photographs were submitted to the NEAq for final identification and inclusion in the North Atlantic Right Whale Identification Database – the central repository for archiving and maintaining images and sighting data on right whales. Disentanglement data from this project is provided to disentanglement network members via a password protected website maintained by PCCS. All aerial survey and biopsy data from this project may be accessed through the North Atlantic Right Whale Consortium data access process. NMFS staff coordinated public outreach efforts during disentanglement events. Attendance at the semi-annual SEIT meeting is 45-50 persons. Attendance at the Sea Vet lecture was approximately 70 veterinary students and faculty. Approximately 2000 school children at 4000 others visited FWC's two-day open house in 2008
- ii)* Attachments:
 - All Hands Magazine April 2007
 - FWC Right Whale Sea Stats March 2007
 - Florida Wildlife Magazine December 2006

c) NFWF Adaptive Management

- i)* Not applicable

6) References

- i)* Not applicable

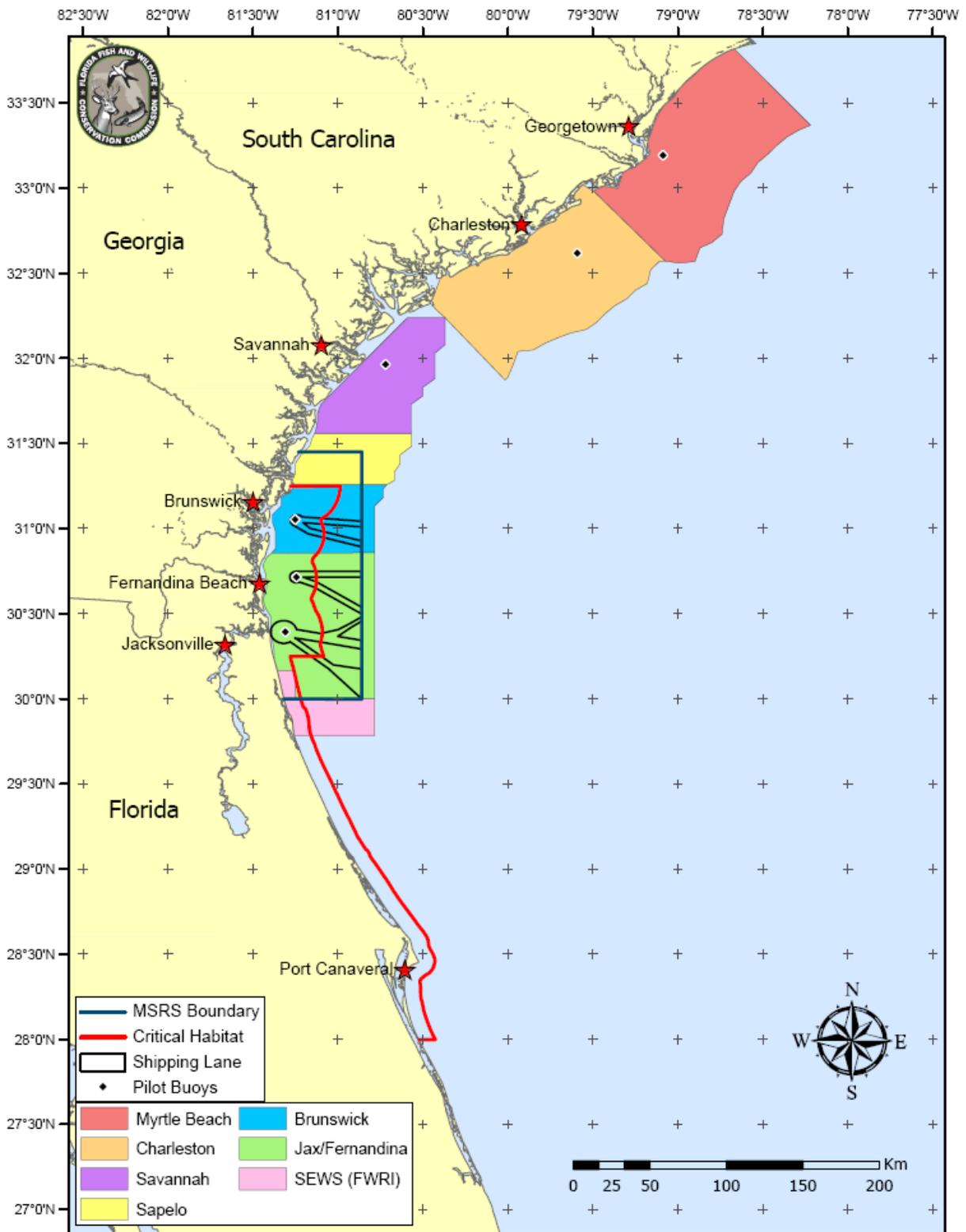
POSTING OF FINAL REPORT: *This report may be shared by the Foundation and any Funding Source for the Project via their respective websites. In the event that the Recipient intends to claim that its Final Report contains material that does not have to be posted on such websites because it is protected from disclosure by statutory or regulatory provisions, the Recipient shall so notify the Foundation and the Funding Source and clearly mark all such potentially protected materials as “PROTECTED,” providing an accurate and complete citation to the statutory or regulatory source for such protection.*

Approved: Linda M Torres
Signature

Date: November 3, 2008

Linda M Torres, Operations & Management Consultant Mgr, Grants Administration
Print name and title

Figure 2. EWS Sighting Bin Map



Space Sailors Reach New Heights



APRIL 2007

ALL HANDS

MAGAZINE OF THE U.S. NAVY



Navy's

Environmental Stewardship



Protecting a Species

Navy Sailors in Southeast Keep Right Whales Safe

Story and photos by MC2(SW) Rebekah Blowers

Only 350 to 400 of them are left, and the right whale has been migrating, way before we came here, to the one part of the United States where the Navy's efforts are an integral part of their survival. According to Katie Jackson, a marine mammal biologist for the Florida Fish and Wildlife Conservation Commission, the critically endangered North Atlantic right whale migrates from waters off Eastern Canada to the safety of the Atlantic waters off the southeast coast, close to Naval Air Station (NAS) Jacksonville (Jax) and Naval Station (NS) Mayport, Fla., to birth their young. The annual calving season runs from Dec. 1 to March 31.

► **A female right whale will produce a calf once every three to four years.** The calves are usually born during the winter with a birth weight of approximately 3,000 pounds. They are usually 10 to 15 feet long and stay with their mothers for up to a year.

Photo courtesy of the Florida Fish and Wildlife Conservation Commission



▲ Lookout watches aboard *USS Doyle* (FFG 39) stand watch topside, watching for signs of right whales.

To protect this endangered species, the Navy implemented right whale mitigations on ships and shore stations in the Jacksonville and Mayport operating areas. Whether it's the operation specialists in Fleet Area Control and Surveillance Facility (FACSFAC) at NAS Jacksonville or the deck seamen lookouts aboard ships like *USS Doyle* (FFG 39), the Southeast Region works with the Coast Guard, the Florida Fish and Wildlife Conservation Commission (FWC) and other mariners in the region to protect these whales.

According to Jackson, North Atlantic right whales have unique qualities.

"The right whale is about 50 to 55 feet when they're fully grown. In the spring and summer months they live in the Bay of Fundy in Canada and travel to the Jacksonville area in the winter months primarily for calving," said Jackson.

"This is the only known calving grounds for this species of right whales. The calves are about 14-feet long and weigh about a ton at birth and adult whales can weigh up to 70 tons."

"A couple things are different about right whales than other whales that you may see," Jackson continued. "Humpback whales have a small dorsal fin on their back and they are lunge feeders, so they come springing out of the water to feed. When right whales are down here, they aren't feeding, they're generally just swimming. They spend a lot of time near the surface with the calves because the calves can't dive as often or as deep as the adults."

Jackson said right whales have special and distinctive characteristics that identify them individually.

"The right whale's head has a growth called a callosity. It's a fingernail-like material that grows on the top of their head, on their chin and along their lips. The material grows as the whale grows. Whales have little creatures on them called whale lice. The lice are white and live on the callosity. From the air and from a boat or ship the callosity looks white and the whales are easily

identified by their individual callosity pattern. By photographing those patterns we can identify each whale and track them wherever they go. Every time we photograph them we can tell if that whale has been here, if it's calving, if they are in Canada or on their way back home and track it," Jackson said.

To ensure the right whales are safe, Jackson and her team at the FWC perform daily aerial surveys to spot and track them where they usually swim. When the aerial survey team spots a right whale, they call FACSFAC.

According to CAPT Robert Buehn, commanding officer of FACSFAC, his activity acts as the command and control center for right whale mitigation, with an operation area that expands roughly from Charleston, S.C., to Port Canaveral, Fla.

"[We] coordinate reports from Navy units or other agencies that sight right whales in the Jax operating area. That report goes out over our system and alerts dozens of agencies including commercial fisherman and Navy vessels. We are known as the 'fusion center,'" said Buehn.

"The Navy is concerned during the calving season, so we stand up the fusion center around Dec. 1, although if the whales show up a little bit early like they did this year, we'll adjust to their schedule. Our concern is we don't want any naval vessels to hit any whales. So we want to know where they are and we want all our units to know," he said.

Jackson said the daily aerial surveys are conducted in three different early warning center (EWC) networks along the southeast coast: one from Sapelo Sound, Ga., to north Cumberland Island, Ga.; one from north Cumberland Island, Ga., to Ponte Vedra Beach, Fla.; and one from Ponte Vedra Beach, Fla., south.

"Once we spot the whales, we circle, photograph them and call in their positions," she said. "For the past few years there have been an influx of whale sightings in the NAS Jax and Mayport area, with more than 100 individual



▲ OSC(SW/AS) Daniel Hacker (foreground) and OS3(SW) Richard Tarsitano prepare a simulated message to FACSFAC about a whale sighting. Drills like the one performed aboard *Doyle* (FFG 39) ensure a ship's crew is prepared to handle an actual whale sighting.



▲ A Sailor aboard *USS Doyle* (FFG 39) plots the location of a possible whale sighting in the Combat Information Center. Not only do the Sailors aboard *Doyle* plot the location of the whale, but they send that information to FACSFAC Jacksonville to be disseminated to other vessels or aircraft in the area.

right whales spotted last year."

Operations Specialist 1st Class (SW) Frederick Granger, FACSFAC's right whale coordinator for the Southeast Region said the fusion center is manned 24/7.

"We take in reports from civilians and Sailors. We take the positions on paper

and then we plot it into our system so all ships in the area know exactly where the calves are and give them a wide berth especially if they are outside the critical habitat area. The critical habitat area is located six to 10 miles from land where the mother may give birth and care for



Photo courtesy of the Florida Fish and Wildlife Commission

▲ A North Atlantic right whale is photographed during an aerial survey. The right whale can be individually identified based on the white callosity formations on their head. Every formation is different for each whale.

the young whale. Mariners and aircraft are asked to keep a five mile berth around the whale areas,” said Granger.

Granger and the rest of the FACSFC crew agree that what they do is not only important to the environment, but to the Navy’s mission as well.

“As we speak, there are approximately 350 whales left alive today and the Navy is a very big protector of their environment. This is why we’re very vigilant on the reporting of the right whale positions. We’re their bodyguards and we give them the protection they need to be able to survive and thrive in the wild,” Granger said.

Buehn said he is proud of what he and his crew does.

“We’re glad to be part of this system. Although we don’t actually go out and see the whales, the personnel here really do get the word out from those who do see them to those who really need to avoid them. We view it as a unique mission for FACSFC Jax. I don’t know of any other Navy command that does it and it is one we take very seriously,” Buehn said.

Keeping this endangered species safe requires work from Sailors everywhere in the Southeast Region on land and at sea. The crew aboard the *Doyle* knows this only too well as they work diligently to keep their ship and the right whales safe and secure. Because of the immense size of the whales, they pose just as much a danger to our ships as ships can pose to whales.

“Smaller vessels are at a great danger around the whales,” Jackson said. “Down here, most of the whale is under the water so you can’t see a lot of it. You might just see the top of its head so boaters may not be aware of how large the whale actually is. From the air we can see exactly how large the whale is next to a 20-foot vessel. That’s one of the reasons we have the 500-yard rule between vessels and whales – to keep them separated – for the whale’s benefit, and for the vessel operator’s benefit.”

CDR Mike Elliot, commanding officer, USS *Doyle* said he has seen the effects of an accident with a whale and he will ensure he and his crew go to any means necessary

to prevent having it happen again.

“Our lookouts are trained to spot the whales when they blow on the surface and as soon as we see then we turn the ship, go the opposite direction and mark the sighting on the charts. Then we contact our chain of command to report the location, type of whales, and if the herd has calves with it. We try to pass on as much information as possible. That way it educates the rest of the sea area,” Elliot said.

Coast Guard Lt.j.g. Andrew Weiss, the navigation officer aboard *Doyle*, gives training to all personnel who stand watch on the bridge.

“We have a DVD that’s required viewing for all topside watchstanders. It covers the requirements of avoiding whales and other marine mammals. We look for the blow of the whale. It is one of the first things that lets us know there is a whale. For the right whale the blow is shaped like a ‘V,’ a twin spout blow hole, that helps

identify it as a right whale. Also we may be able to see the top of the whale coming out of the water. They don’t breach or jump out of the water too often so the blow is the only thing we’ll see most of the time,” Weiss said.

According to RADM James A. Symonds, Director, Chief of Naval Operations Environmental Readiness Division, training is the first step to marine mammal mitigation.

“We have a series of mitigation measures that begin with training. All of our Sailors receive specific lookout training. It’s approved by the National Fish and Wildlife Service, and it’s available on video or disk - all the ships have it so lookouts ensure their ship remains clear of whales,” said Symonds.

He noted the Navy’s partnerships are vital to protect right whales and other marine mammals.

“The Navy, the Army Corps of

Engineers and the Coast Guard donate up to \$140,000 annually for aerial surveys that support an emergency warning system to locate and track right whales. And there’s a sighting advisory system sponsored by the National Oceanic and Atmospheric Administration that provides broadcasts to let folks know where right whales are at any given time,” he said.

Tom Pitchford, wildlife biologist for FWC, agreed.

“The partnership is fantastic. It’s a great example of federal, state and private entities involved. The U.S. Navy is doing a huge service here for the right whales by getting the word out. There are so few of these whales that saving one life really does matter, so it makes a tremendous difference. This is a fantastic example of a joint effort between all the partners, and I am really pleased to be a part of it,” Pitchford said. ❧

Blowers is a photojournalist assigned to the Naval Media Center, Washington, D.C.

Navy Uses Sonar While Being Environmentally Aware

Sonar is an acronym for “Sound Navigation and Ranging.” It is a tool that uses underwater acoustics to determine water depth, the location of mines, and the presence of submarines. According to Director, Chief of Naval Operations Environmental Readiness Division, Rear Adm. James A. Symonds active sonar has become a major piece of the Navy’s antisubmarine warfare program over the last 10 to 15 years.

“As submarines have gotten quieter, the passive sonar that used to stand us in good stead 20 years ago is not effective enough in making sure we can track and take action against enemy submarines,” Symonds said.

He explained that this is especially true during the global war on terrorism when the Navy is operating in shallow waters such as the Persian Gulf. He emphasized how critical it is that the Navy stays ahead of technology. Symonds also said that working in the shallow water brings the Navy closer to many densities of marine mammals and the Navy is doing all it can to prevent sonar use from causing any harm.

“We are trying to limit our effect in three forms. The first is research, [the research’s]

long-term compliance plan and analysis, and Sailors on ships. [It comes down to Sailors] using and employing mitigation measures everyday like they have been for years. All of our lookouts are specifically trained to look for whales, whether it’s a sonar ship or not. If you are sonar ship and you have a whale within [spotting distance], you want to take action to lower the source level of the sonar or cease the sonar altogether if that whale gets close enough. Sailors know this through their training,” Symonds said.

Some of the other protective measures include employing night vision and thermal imaging equipment, extra precautions during chokepoint exercises, listening passively for marine mammals, safety zones around ships and taking appropriate actions when marine mammals are spotted.

“The Navy will continue to train at sea with MFA sonar to ensure the security of our nation and the safety of our Sailors and ships. We will also continue to take every step necessary to safeguard ocean life and to advance the scientific research that will help us make informed decisions,” said Donald Schregardus, deputy assistant secretary of

the Navy (environment).

According to the Navy’s sonar and marine mammal protection Web site, of the U.S. Navy’s approximately 280 surface ships, only about 58 percent are equipped with mid-frequency active sonar. About half of these ships are underway at any given time, and for each ship, active sonar is turned on only a small percentage of the time (during certain types of training and maintenance activities). Ships typically employ active sonar, whether for maintenance of for exercises, less than 5 percent of the total time they spend underway in a given year.

Symonds said that as responsible environmental stewards, the Navy is concerned about the potential effects of active sonar on marine mammals and is committed to complying with all applicable federal laws, regulation and policies. The Navy dedicated over \$14 million in fiscal year 06 alone towards marine mammal research, part of which is to better understand the potential effects of manmade sound on marine mammals, helping to ensure that Navy policy and compliance are based on real science.



Florida Fish and Wildlife Conservation Commission

Fish and Wildlife Research Institute

Pursued by humans for more than eight centuries, the North Atlantic right whale is one of the most endangered marine mammals in U.S. waters. Early whalers designated the North Atlantic right whale as the “right” whale to hunt because it frequented coastal waters, swam slowly, floated when dead, and yielded large amounts of oil and baleen (an elastic, horny substance used in corsets, buggy whips, etc.). Commercial organizations considered right whales to be economically extinct by the early 1900s, but whalers in search of other species still opportunistically killed right whales. Although protection for right whales began in the 1930s, the population has not recovered well. Researchers estimate that between 300 and 350 North Atlantic right whales exist today.

The continental shelf waters from Savannah, Georgia, to Port Canaveral, Florida, are the only known calving area of this benign behemoth; therefore, the state of Florida plays a major role in the study and protection of right whales and their calving area. Today, North Atlantic right whales are threatened by human-related events such as ship

RIGHT WHALES

Giants in Jeopardy

collisions and fishing-gear entanglements. Officials and scientists are developing methods to protect right whales, especially in the calving area. Protection measures include (1) aerial surveys for locating right whales to prevent ship strikes, (2) a pager system whereby aerial observers notify mariners of right whale locations to mitigate potential ship strikes, and (3) disentanglement operations in which biologists try to remove fishing gear from seriously entangled whales. Locational data from aerial surveys are also used to relate whale distribution and abundance to environmental variables, such as temperature and depth, in their habitat. Understanding right whale use of habitat helps managers to decide when and where to implement protection measures to prevent extinction of the species.

Description

The right whale is one of four species of large whales that lack a dorsal fin; the other three species are the bowhead, the gray, and the sperm whale. Another

AT A glance	Scientific name	<i>Eubalaena glacialis</i>
	Size	To 55 feet, up to 70 tons
	Life expectancy	More than 70 years
	Range	Eastern coast of North America
	Habitat	Coastal waters
	Status	Federally listed as an endangered species
	Estimated population	Between 300 and 350

Whale art after Howard Hall photo; used with permission.





characteristic that helps to identify right whales in the water is their V-shaped blow, reminiscent of a geyser that can shoot as high as 16 feet in the air. When they surface, right whales inhale and exhale through two widely separated blow holes, producing their distinctive blow. Other identifying characteristics of right whales include broad, short flippers on the chest and a pair of long tail fins, called flukes, that are usually raised high into the air as they begin a deep dive.

Right whales are baleen whales. In contrast to toothed whales such as dolphins and killer whales, baleen whales have finely fringed plates along their jaws that are used like sieves to trap prey. Typically, each plate is 8–9 feet tall. Baleen whales eat by taking a large mouthful of water containing tiny animals such as copepods, a type of zooplankton that is about the size of a grain of rice. The water is then strained out through the baleen, which traps the copepods.

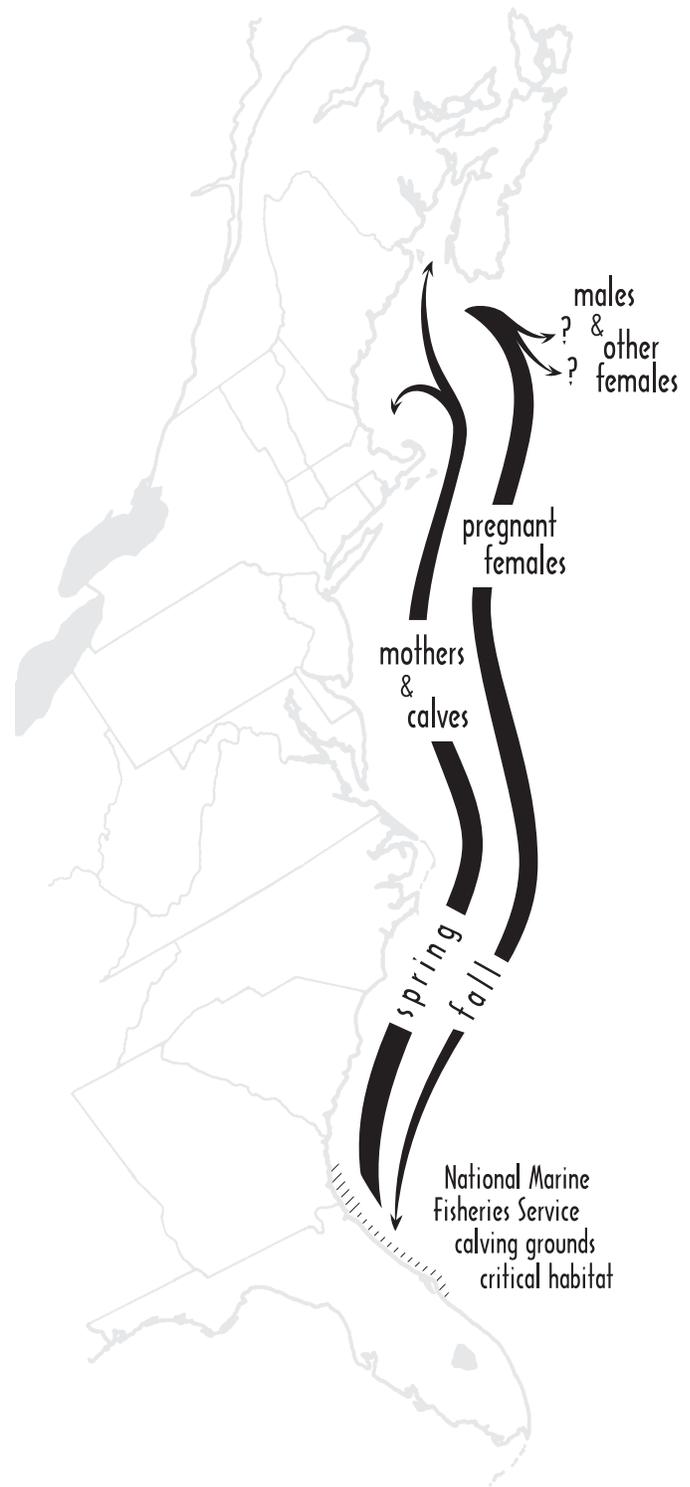
A right whale has black or dark gray skin with distinctive callous growths, called “callosities,” on its head. White cyamids, also known as whale lice, often cover these growths. The largest of these callosities, on the whale’s snout, is called the bonnet. These growths help scientists identify individual right whales.

From tail to head, the length of a right whale can be equal to the height of a five-story building, and it can weigh as much as a fully loaded military transport plane. Their rotund shape has earned them the moniker “tugboat of whales.” Although they are slow swimmers, they are remarkably acrobatic, gracefully performing underwater turns and pirouettes, and executing near-vertical dives after they breach the water’s surface. They also wave their flippers and slap the surface with them.

FAST FACT

Right whale calves weigh one ton—2,000 pounds—at birth, and they grow more than a half inch every day for the first ten months of their lives.

Their massive size likely contributes to the species’ slow reproductive rate. A female right whale



can begin giving birth at 8 to 12 years of age, but she can reproduce only once every three to five years. A calf usually remains with its mother until it is about



one year old and 28 feet long. Scientists have estimated an average of approximately 12–13 births per year, about 1/3 of the births necessary to sustain the species. Although they noted a record high of 31 births in 2001, only one calf was born in the previous year. Calf mortalities, from ship strikes and fishing gear, reduce the overall reproduction, further contributing to problems of recovery in the right whale.

Range and Distribution

In the mid 1970s, researchers identified Florida and Georgia coastal waters as a calving area for the right whale. Pregnant females, along with some juveniles and adult males, leave their northeastern feeding grounds sometime in October/November and come to the southeastern calving area to have their young. Scientists and members of public sighting networks observe them in the calving area from approximately December through March. Calves travel with their mothers on the return trip to northeastern feeding and nursery areas in late winter and early spring.

f a s t FACT

From 1980 to 1992, only 51 females were known to be reproductively active out of the estimated population of around 300.

Late spring through fall, right whales feed in waters off New England and Canada. The summer feeding place for males and females without calves is an Atlantic Ocean area called Roseway Basin, south of Nova Scotia. The summer feeding and nursing grounds for many mothers with first-year calves is the Bay of Fundy, just north of the U.S.-Canada border between Maine and Nova Scotia. These waters have large, dense patches of zooplankton that are required by right whales in order to sustain themselves on such tiny prey items. Right whales leave the northeastern feeding grounds by the end of fall. Scientists do not know where many of the males and non-pregnant females go during the winter months, when pregnant females and some others migrate to the calving grounds off the southeastern U.S.

North Atlantic right whales are closely related to the southern right whales of the coastal waters off

South America, Africa, and Australia. However, they are separate species. Unlike the North Atlantic right whale, southern right whale populations have increased in numbers since whaling was banned. In fact, the southern right whale has recovered from an estimated population of a few hundred individuals in the 1970s to 3,000–5,000 individuals presently.

Behavior and Threats

Herman Melville, author of *Moby Dick*, warned as early as 1851 that hunting right whales could cause the species to “vanish from the face of the earth.” Right whales were among the first baleen whales to receive international protection. The commercial harvest of right whales was banned internationally, first by the League of Nations in 1935, and then by the International Whaling Commission, which was established in 1946. Even with this international protection, North Atlantic right whale populations have not recovered to safe population levels, and experts consider this species of large whale as one of the most susceptible to extinction.

f a s t FACT

From 1999 to 2003, total human-caused mortality and serious injury to right whales, resulting from fishery-related entanglements and ship strikes, was estimated at 2.6 per year. Even this small number is significant in a population as small as that of right whales and contributes to the potential for extinction of the species.

Right whales have only one natural predator: killer whales. However, only 3% of right whales have scars caused by killer whale attacks. This means that humans, principally through shipping, both commercial and military, and fishing gear, pose the biggest threat to right whale survival. Although ships are no longer armed with harpoons, they may still be deadly. Some ships, such as tankers and freighters, may be as long as a football field and have propellers that are 15 to 30 feet in diameter. Getting hit by a ship this large can shatter ribs or jawbones, and the huge propeller blades can shatter right whales' spines or slice their tails. Right whales may also



become injured through entanglement in gill nets, or in fixed or discarded fishing gear.

Unfortunately, right whales aren't usually wary of boats or people; for example, federally-permitted researchers are sometimes able to maneuver inflatable boats within 100 yards of them. Their placid nature and habit of resting on the surface of the water makes the whales especially vulnerable to collisions with ships, and they often cannot dive deeply enough in the shallow waters they inhabit to avoid being struck. The danger of collision is magnified in the calving area because of the major port facilities in Georgia at Savannah, Brunswick, and Kings Bay Naval Submarine Base, and in Florida at Fernandina Beach, Jacksonville, Mayport Naval Station, and Port Canaveral.

Future threats to right whales and their habitat include pollution and oil spills resulting from increased coastal development and proposed offshore leasing for oil and gas drilling. In addition, global warming may change circulation patterns in the ocean, which could reduce their food supplies. Researchers are also unsure how noise from increased vessel traffic, sonar devices, and drilling may affect the species. Scientists expect that any such disturbances will negatively affect right whales and their habitat.

To manage existing right whales, scientists study the animals' behavior and movements, protect identified habitats, and work to develop regulations to keep people and whales a safe distance apart. Federal rules require everyone, except researchers with special permits, to stay 500 yards away from right whales. Additionally, coastal waters from southern Georgia to Port Canaveral, the Great South Channel east of Cape Cod, and Cape Cod Bay have been designated as critical habitat for right whales.

To protect the whales, scientists have developed a warning system in which ships traveling in the calving area are quickly notified of whale sightings. This information helps mariners to steer clear of the whales. Researchers have also worked with port communities to develop guidelines for mariners, such as posting whale lookouts while in the calving area and traveling at slower speeds to avoid collisions. The Florida Fish and Wildlife Conservation Commission's (FWC) Fish and Wildlife Research Institute, along with numerous government and private enterprises, received the Federal 1997 Partnership Award in recognition of the high level of effective cooperation among these partners to reduce the likelihood of collision between ships and whales.

More immediately, researchers from the FWC, along with scientists from the New England Aquarium, Georgia Department of Natural Resources (GDNR), and U.S. Navy, conduct annual aerial surveys of the calving grounds. They record the number, sizes, and estimated ages of any right whales that they see and note the number of ships in the area. In one month during the calving season, researchers observed 310 vessel trips in and out of the Jacksonville port alone. In the winter of 1995-1996, FWC and GDNR researchers broadened their surveys to include water farther off Florida and Georgia, where right whales have been sighted. This information may be used to expand the boundaries of habitat critical to the survival of right whales. The number of births has been greater than average for the past six calving seasons (2000/2001 through 2005/2006). This information is an encouraging sign that future generations of Floridians will be able to witness these awesome marine mammals playing and rearing their young along the state's eastern shore.



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Graceful giants

North Atlantic right whales

By Henry Cabbage



North Atlantic right whales – as large as a mobile home and heavy as an army tank, yet graceful like a ballerina and nimble like an acrobat – are spectacular creatures to watch, as long as you watch them from the beach. If you move your boat closer than 500 yards to one, you're risking a maximum \$27,500 civil penalty.

Their existence is that delicate. The right whale is the most endangered marine mammal in United States waters, and Florida and Georgia coastal waters are their only known calving area. December through March, pregnant right whales migrate to the calving area to have their young, accompanied by whales with calves, juveniles and a few adult males. Whale watchers often can see them from shore between Jacksonville and St. Augustine, and scientists seize the opportunity to study them. Meanwhile, an observation and reporting network distributes information about whales' locations during that time of year to help steer ships away from them.

Only 300 to 350 right whales remain, and state and federal authorities take extraordinary protective measures to prevent further decline of the right whale population as a result of collisions with ships or other hazards caused by human activities. Right whales usually aren't wary of boats or people, and that's a factor in the species' decline.

Right whales are easy to recognize. They breathe through two blow holes when they break the surface, and their distinctive, V-shaped blow shoots as high as 16 feet. Also, they have a broad back with no dorsal fin. Their skin is black or dark gray, and on their heads, they have distinctive growths, called "callosities." White whale lice often cover their callosities, creating patterns that scientists use to identify and track individual whales.

Right whales have no teeth. They feed by straining tiny animals through finely fringed plates in their mouths. They have broad, short flippers under their chests and a pair of long tail fins called flukes. Right whales swim at a leisurely 4 miles an hour and they make a habit of resting at the surface of the water like giant logs.

For 800 years, whalers hunted the species for its oil and baleen (whalebone – an elastic, horny substance once used in corsets). Whalers named it the right whale because it was the "right" whale to kill; it swims slowly and floats when dead. Although ships no longer carry hunters with har-

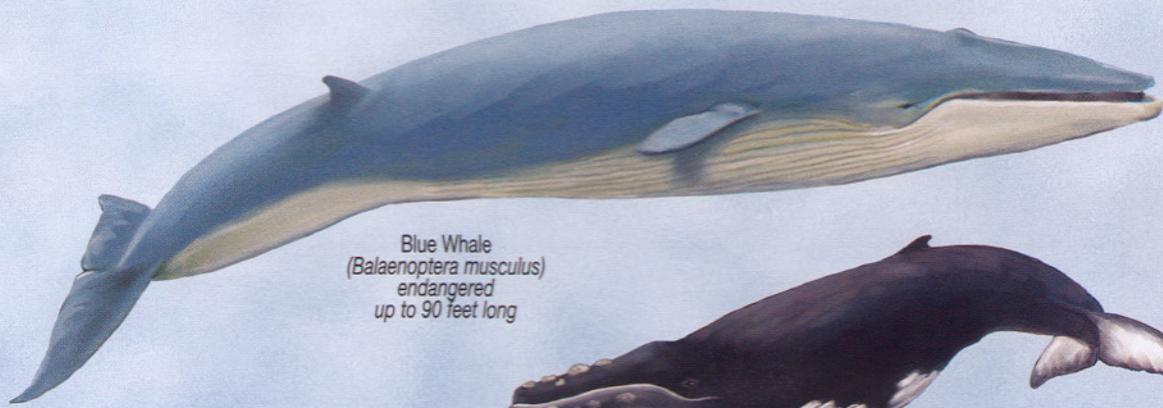
Right whales breathe through two blow holes, and their V-shaped blow shoots up to 16 feet in the air.



FWC FILES

PHOTOS TAKEN UNDER AUTHORIZATION OF NOAA FISHERIES SERVICE AND MARINE MAMMAL PROTECTION ACT PERMIT #932-1489-08.

NORTH ATLANTIC LARGE WHALES



Blue Whale
(*Balaenoptera musculus*)
endangered
up to 90 feet long



Humpback Whale
(*Megaptera novaeangliae*)
endangered
up to 52 feet long



Killer Whale
(*Orcinus orca*)
up to 28 feet long



North Atlantic Right Whale
(*Eubalaena glacialis*)
endangered
up to 50 feet long

Lizabeth West, FWC

poons, large tankers and military ships can inflict lethal injuries if they collide with a whale. In addition, right whales may suffer injuries from getting entangled in fishing gear or marine debris.

Atlantic right whales travel, in late winter and early spring, to a feeding and nursery area in Cape Cod Bay, Mass. During summer months, right whales hang out in the Bay of Fundy and in the Roseway Basin. By mid-November, pregnant females and others begin heading south again to the calving area. Still other right whales move toward a destination still unknown to researchers.

Females reproduce about once every three to five years after they reach the age of 8 – 12 years. Calves remain with their mothers about one year. They grow more

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than half an inch per day during the first 10 months of their lives.

Rarely, right whales show up in the Gulf of Mexico, and researchers tracked one whale on a trip across the Atlantic from Cape Cod Bay to Norway and back within one year.

Researchers with the Florida Fish and Wildlife Conservation Commission (FWC), study the animals' behavior and movements, protect whale habitats and work to develop regulations to keep people and whales a safe distance apart. Other scientists from the National Oceanic and

Atmospheric Administration, Georgia Department of Natural Resources, the New England Aquarium, the Provincetown Center for Coastal Studies, the U.S. Coast Guard and the U.S. Navy, work closely with the FWC to protect right whales.

Researchers in the United States and Canada have studies in progress, including genetic analyses to try to learn more about why the North Atlantic right whale population remains small, despite the 57-year-old international ban on right whale hunting. Hopefully, genetic studies will reveal whether factors other than habitat loss, human-induced mortality and limited prey caused by climate changes, contribute to the population's slow recovery. **FW**