

# **Update on the United States' Actions to Reduce the Threat of Ship Collisions with Large Whales**

**Prepared for the International Whaling Commission's Working Group on Ship Strikes and Presented at the International Whaling Commission's Conservation Committee, Santiago, Chile, June 16, 2008  
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## **Background**

Collision with vessels is a threat to all large whale species occurring in U.S. waters, and a leading human-caused source of mortality for the endangered North Atlantic right whale. To address this threat, the U.S. has developed regulatory and non-regulatory measures to reduce ship strikes, including proposed operational measures for vessels, education and outreach programs, technological research, and research and monitoring activities. We describe actions taken in five specific areas off U.S. coasts to reduce the threat to various endangered large whale species.

## **North Atlantic Right Whale Ship Strikes in the Western North Atlantic**

The U.S. has taken a number of steps to reduce the threat of ship strikes to right whales, one of the world's most critically endangered large whale species. Despite these efforts, right whale mortalities continue as a result of collisions with vessels. The National Oceanic and Atmospheric Administration (NOAA) has identified and is developing measures to reduce the likelihood of ship strikes while minimizing the adverse impact on ship operations.

**Vessel Routing Activities:** In 2008, the United States submitted two vessel routing proposals to the International Maritime Organization (IMO) to reduce the risk of ship strikes to North Atlantic right whales. The proposals will be considered at the July 2008 meeting of the IMO's Subcommittee on Safety of Navigation.

One proposal is to amend the north-south leg of the IMO-adopted traffic separation scheme (TSS) "In the approach to Boston, Massachusetts" by narrowing the width of each of the lanes from two miles to a mile and a half, leaving the western boundary of the TSS and the width of the mile separation zone unchanged. This amendment would move ships away from the greatest density of right whales and minimize the overlap between whales and ships, while making the width of the north-south lanes of the Boston TSS consistent with the width as the east-west lanes.

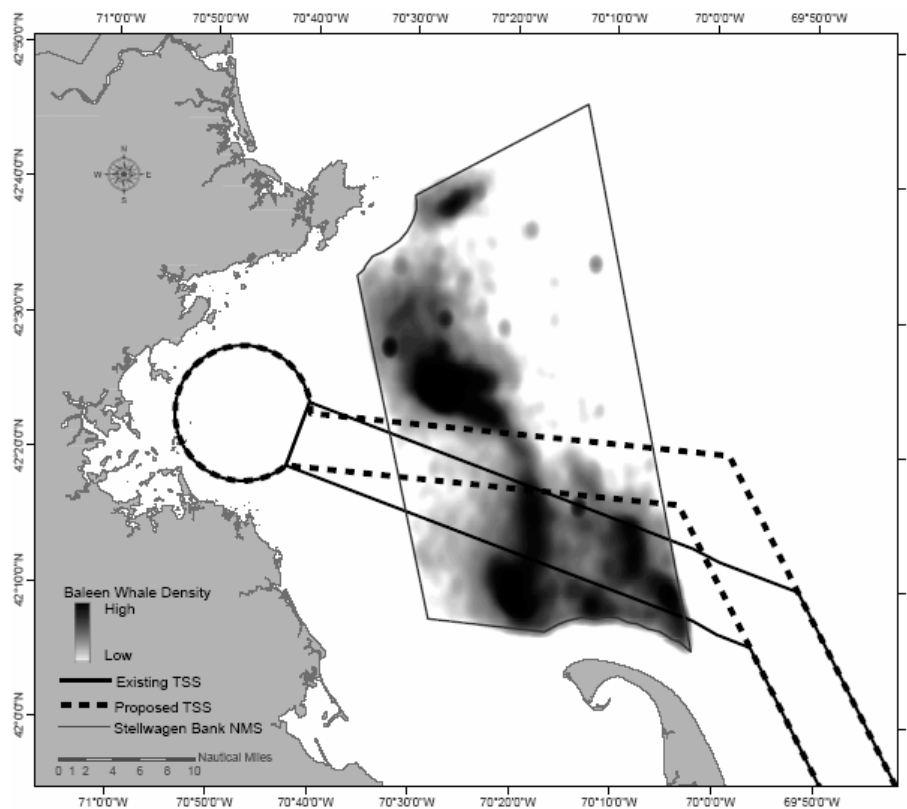
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The second proposal is to establish a recommended, seasonal area to be avoided (ATBA) in the Great South Channel off of Massachusetts. The time that the ATBA would be operational has been constrained to accomplish the biological objective of protecting the remaining right whales while minimizing the adverse impact on shipping and accounting for maritime safety. The ATBA covers a substantial area. Mariners, should they choose to avoid the area, would encounter somewhat longer voyages. However, the ATBA could be taken into account with advance voyage planning thus minimizing any adverse impact.

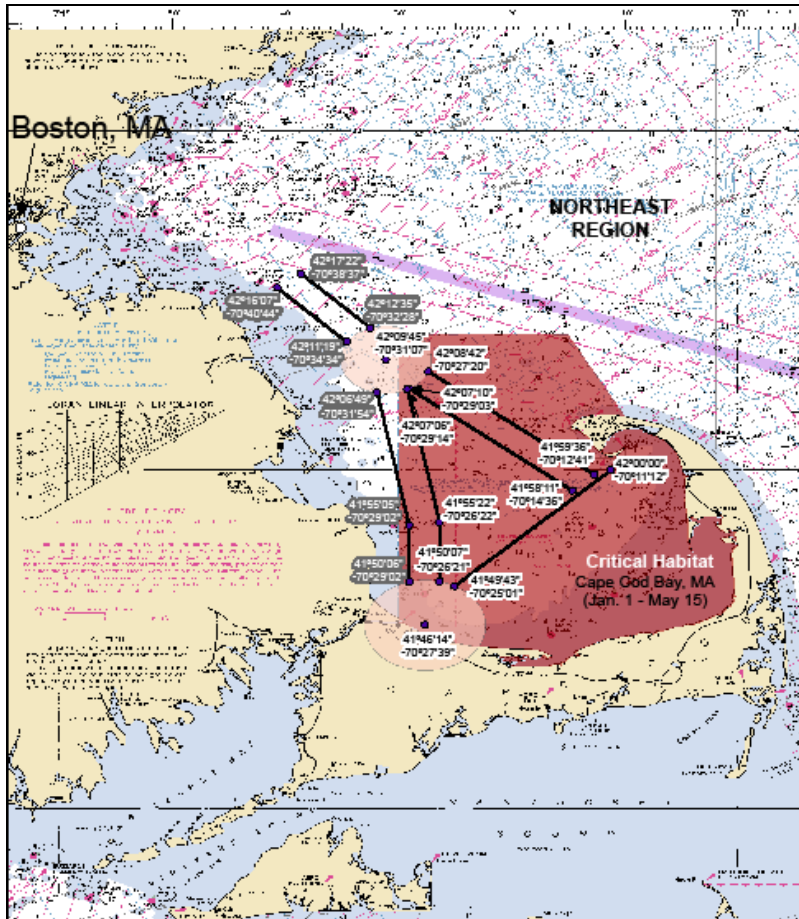
### Past and Ongoing Activities

**Vessel Routing Activities:** The United States prepared and submitted to the International Maritime Organization (IMO) a proposal to reconfigure the “Traffic Separation Scheme” (TSS) that services Boston, Massachusetts. The proposed realignment -- involving only a 12 degree shift in the northern leg and narrowing the two traffic lanes by approximately 1/2 mile each -- is expected to provide a significant reduction in ship strike risk to right whales and all baleen whale species occurring in the area, with minimal concurrent impact to mariners using the TSS. NOAA estimates that the described changes in the TSS would result in a 58% reduction in the risk of ship strikes to right whales, and an 81% risk reduction in ship strikes of other large whale species occurring in the area. The IMO reviewed and adopted the proposal, and the realignment was implemented in July 2007.

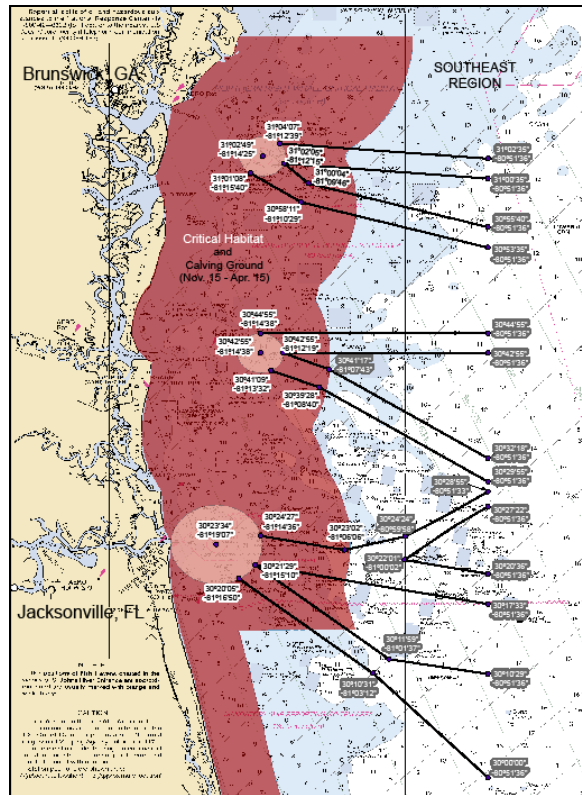


The distribution and density of baleen whales relative to the existing and proposed (dotted line) traffic separation scheme in the approach to Boston, Massachusetts.

**Recommended Routes:** In November 2006, NOAA established recommended shipping routes in key right whale aggregation areas within Cape Cod Bay and off three ports in Georgia and Florida. The routes are an attempt to reduce the co-occurrence of whales and ships by minimizing ship transit times in whale habitat and avoiding specific whale aggregation areas, while also ensuring navigational safety and limiting adverse effects on the shipping industry.



Recommended vessel routes in Cape Cod Bay.



Recommended vessel routes off of Georgia and Florida coasts.

**Ship Speed Advisories:** NOAA issues speed advisories recommending speeds of 10 knots or less to mariners in areas and at times where right whales occur. These advisories distributed through a number of media, including NOAA Weather Radio, the Mandatory Ship Reporting systems outgoing message, National Weather Buoy websites, aircraft survey e-mail messages and faxes, and are published in U.S. *Coast Pilots*, international *Notice to Mariners/Sailing Directions*, and *Admiralty Publications*. Additionally, the U.S. Coast Guard includes these speed advisories in its Broadcast Notice to Mariners.

**Proposed Ship Speed Regulations:** NOAA has proposed regulations, currently under review, to regulate ships along the U.S. east coast. Evidence suggests that the likelihood of death and serious injury to large whales struck by ships is related to ship speed. The proposed regulations would limit ship speed during times and in areas where relatively high right whale and ship densities overlap near a number of U.S. east coast ports, at calving/nursery areas in waters off Georgia and Florida, and in New England waters. Text of the proposed rule, draft environmental impact statement and economic analysis, as well as the public comments received (as well as information on other actions described here), can be found at: <http://www.nmfs.noaa.gov/pr/shipstrike/>.

**Aircraft Surveys and Right Whale Alerts:** NOAA and other Federal and state agencies support or conduct extensive aircraft surveys for right whales. NOAA Fisheries Service assembles reports, and “alerts” are disseminated to mariners via e-mail and facsimile,

web pages, U.S. Coast Guard Broadcast Notices to Mariners, NOAA Weather Radio, NAVTEX, NOAA Weather Buoys, shipping agents, pilots and port authorities.

**Mandatory Ship Reporting Systems:** The International Maritime Organization adopted a U.S. proposal to establish two Mandatory Ship Reporting systems – one in waters off New England and another in calving/nursery areas in waters off Georgia and Florida. The systems, operational since July 1999, require that all ships 300 gross tons and greater report to a shore-based station via satellite communication systems upon entering these two key right whale aggregation areas. Mariners are required to report ship name, call sign, entry location, destination, and ship speed. Reporting prompts an automated return message providing information about the vulnerability of right whales to ship strikes, and recent right whale sighting locations.

**Mariner Training:** NOAA has developed, in collaboration with a number of partners, a multi-media CD entitled “The Prudent Mariner’s Guide to Right Whale Protection”. This CD is intended for professional mariners operating along the U.S. East Coast, and has been made available to the Conservation Committee.

NOAA has provided contracts to develop training modules for mariner training facilities. These modules are intended for mariners attending formal training at seven maritime academies along the U.S. East Coast. These materials have been made available to the Conservation Committee.

**Mariner and boater education and outreach programs:**

- Continued distribution of placards, brochures, and videos to mariners on ways to reduce ship strikes.
- NOAA maintains two websites specifically devoted to right whale ship strike reduction.
- NOAA navigational charts are routinely updated as they are reprinted to include right whale advisories.
- Current information on right whales is provided throughout the U.S. eastern seaboard *Coast Pilot* guides, National Geospatial Intelligence Agency’s *Notice to Mariners* and *Sailing Directions*, and to the United Kingdom’s *Admiralty Publications*.
- Holland America Cruise Line, working in conjunction with NOAA and others, developed an interactive compact disc on reducing ship strikes that is now required for certification for all its captains and crew. Copies of the disc have been distributed to other companies in the cruise industry, shipping companies, and the European Union (EU) for distribution to the EU governments.

**Consultations under Section 7 of the Endangered Species Act (ESA):** Since U.S. government vessels account for a substantial number of ship transits each year through right whale habitat, ship strike reduction efforts include consultations under Section 7(a) (2) of the ESA (required for any action authorized, funded, or carried out by any federal agency) to ensure that federal actions are not likely to jeopardize an endangered species or its critical habitat.

A number of federal agencies have, over the years, entered into consultations, and as a result of prior consultations, have modified vessel operating procedures, including:

- protected species training for personnel;
- posting lookouts when operating vessels in areas where right whales occur;
- providing specific guidance to vessel operators to proceed with caution and at the “safe speed” in the vicinity of right whales;
- transmitting broadcasts reporting right whale sightings and locations to mariners;
- supporting NOAA emergency efforts in responding to right whale strandings;
- limiting vessel transits through right whale habitat when not adversely affecting a vital mission;
- limiting operations in critical habitat or areas of concern to daylight and periods of good visibility when possible;
- contributing to Early Warning System survey flights; and
- slowing vessels engaged in dredging activities to 5 knots or less when operating in areas where whales have been sighted.

In 2005, NOAA contacted all relevant Federal agencies and asked that vessels proceed at 12 knots or less when in right whale habitat. Most have voluntarily complied when vital missions are not compromised.

### **Blue Whales in Waters off California**

In early September 2007, an unusually high number of blue whales, likely feeding aggregations, occurred in the Santa Barbara Channel, California, and nearby waters. These waters are also key shipping lanes for the ports of Los Angeles and Long Beach, California. In September and November, 2007, five or six carcasses (one possibly being a re-sight) were reported in California’s Channel Island area extending from Santa Cruz Island to immediately north of San Diego. Three carcasses were examined. The whales exhibited blunt force trauma or other wounds consistent with injuries sustained in a collision with a large vessel. A fourth was a calf that likely died as a consequence of its mother being struck and killed.

Working cooperatively, NOAA’s Fisheries Service, Channel Islands National Marine Sanctuary, and Weather Service; and the USCG, and the Ports of Los Angeles and Long Beach quickly prepared, and began to broadcast, advisories for mariners entering the channel. The broadcasts, made over USCG’s Local Notices to Mariners and NOAA Weather Radio, advised mariners of the presence of blue whales and recommended they transit the channel at 10 knots or less. Vessel monitoring by the ports initially indicated that voluntary compliance was high, but more analyses is needed before that conclusion can be made. No further blue whale deaths or ship strikes were detected.

## **Humpback Whales in Hawaii**

An estimated 10,000 humpback whales occur seasonally (November through May) in waters around the Hawaiian Islands. The area is the principal wintering grounds of Central North Pacific humpback whale stock. Increasing population size, coupled with an increase in commercial, recreational, and whale watch vessel activities has resulted in an increase in the reported occurrences of vessel/whale collisions. Improved public awareness and education, knowledge about where and how to report vessel strikes in particular, also likely contributes to the growing number of reports.

NOAA Fisheries Pacific Islands Regional Office (PIRO), the Hawaiian Islands Humpback Whale National Marine Sanctuary (HIHWNMS), NOAA Office of Law Enforcement (OLE), and the State of Hawaii Department of Land and Natural Resources (DLNR) work cooperatively in educating the boating community on how to avoid collisions. PIRO developed internal protocols that *include incident command system procedures*, collision investigations, and *public talking points*. The HIHWNMS conducts an Ocean Etiquette Campaign with the partners above ([www.hawaiihumpbackwhale.noaa.gov/safe\\_boating.html](http://www.hawaiihumpbackwhale.noaa.gov/safe_boating.html)). As part of the campaign, boater workshops across the state were held, and special signage was installed at harbors and ramps near important whale habitats. New brochures, marine wildlife legal handbooks, stickers, and other outreach products targeting boaters are being distributed at HIHWNMS and DLNR offices statewide.

In addition, two types of investigations take place when a whale strike occurs. First, enforcement investigations are opened by OLE under the federal Endangered Species Act, National Marine Sanctuaries Act, Marine Mammal Protection Act, and other federal authorities. A state-level enforcement investigation under the state's wildlife protection law may also be initiated. Second, a marine mammal health investigation is also conducted by PIRO and HIHWNMS to determine the extent of the injury to the whale and, in the case of mortality, a necropsy may be conducted to determine the cause of death. These investigations are conducted for scientific and management purposes.

## **Humpback Whales in Glacier Bay, Southeast Alaska**

Glacier Bay National Park and Preserve, located in the northern panhandle of Alaska, is utilized by humpback whales in summer. In 2007, over 130 individual humpback whales were documented in Glacier Bay and adjacent areas. Glacier Bay is also a destination for large cruise ships, most of which measure over 180m in length. In 2007, there were 225 entries of cruise ships into the Park. Given the high density of whales in a relatively confined area, encounters between cruise ships and whales are common.

The U.S. National Park Service has jurisdictional control over the marine waters within the park. The National Park Service, with substantial guidance from Biological Opinions that resulted from consultation with NOAA Fisheries under Section 7 of the Endangered Species Act, has taken steps to minimize the threat or severity of ship strikes within park

waters. These actions include restrictions on the number of vessels entering the Park, boater education on operating safely in the presence of whales, restrictions on vessel speed and course within designated areas based on historical and real-time aggregations of whales, and specified approach distances when in the known presence of a whale. Conservation actions also include regular monitoring of the humpback whale population and distribution within the park, and a research effort using observers placed aboard cruise ships to document the encounters and strikes that may occur.

**Restrictions on the Number of Vessels entering Park Waters:** The number and operating requirements of ships entering Glacier Bay is strictly regulated (36 CFR 13.1160(a)). Under these regulations, the Park Superintendent annually determines the number of seasonal entries by cruise ships into the park based upon applicable authorities, appropriate public comment and available scientific and other information (36 CFR 13.1160(b)). Although these regulations, promulgated in 2007, allow the potential for a maximum of 184 ship entries during the June-August season, 153 cruise ship entries have so far been authorized, pending the outcome of scientific studies of the effects of the ships on whales and other Park resources.

**Vessel Operating Conditions in the Known Presence of Humpback Whales:** When vessels are in the known presence of humpback whales, a number of operating restrictions are in place in order to decrease the potential for disturbance and reduce the probability of a strike. These include (36 CFR Subpart N, 13.1770):

“(a) Operating a vessel within 1/4 nautical mile of a whale is prohibited, except for a commercial fishing vessel authorized under this subpart that is actively trolling, setting, or pulling long lines, or setting or pulling crab pots.

“(b) The operator of a vessel inadvertently positioned within 1/4 nautical mile of a whale must immediately slow the vessel to ten knots or less, without shifting into reverse unless impact is likely. The operator must direct or maintain the vessel on as steady a course as possible away from the whale until at least 1/4 nautical mile of separation is established. Failure to take such action is prohibited.

“(c) The operator of a vessel positioned within 1/2 nautical mile of a whale is prohibited from altering course or speed in a manner that results in decreasing the distance between the whale and the vessel. The operator of a vessel inadvertently positioned within 1/4 nautical mile of a [humpback] whale must immediately slow the vessel to 10 knots or less, without shifting into reverse unless impact is likely. The operator must direct or maintain the vessel on as steady a course as possible away from the whale until at least 1/4 nautical mile of separation is established.”

**Mandatory Vessel Operating Requirements in “Whale Waters”:** Since 1979, the NPS has established site-specific operating requirements for vessels in areas designated as ‘Whale Waters’, i.e., “any portion of Glacier Bay, designated by the Superintendent, as having a high probability of whale occupancy, based upon recent sighting and/or past patterns of occurrence”.



At the entrance to Glacier Bay, where the highest densities of vessels and whales tend to co-occur and whales are typically found close to shore, from May 15<sup>th</sup> through September 30 each year, vessel speed is restricted to 20 knots or less, and ships are required to travel at least one mile from shore. When systematic surveys by Park whale biologists indicate that there are a number of whales distributed throughout this designated area a 13-knot speed limit is implemented by the Park Superintendent.

When systematic surveys indicate that whales are aggregating elsewhere in Glacier Bay, the Park Superintendent can also implement vessel course and speed restrictions. Specific speed and course restrictions in these areas depend upon geography, vessel traffic patterns and the number and distribution of whales seen in the area.

Ship operators are informed of these restrictions via NPS press releases, NOAA Charts, daily NPS radio broadcasts of Whale Water areas and weather information. Private vessels are advised of restrictions during their required VHF radio contact with the NPS prior to entering park waters.

**Boater Education:** When the operator of a private vessel enters Glacier Bay for the first time that calendar year, the operator must go to the Bartlett Cove Ranger Station for a boater orientation (36 CFR § 13.1152(a)) where they are educated on vessel operating conditions, including park regulations specifying a minimum approach distance of ¼ mile to a humpback whale, and what actions the operator must take if a whale surfaces within that distance.

**Research Using Shipboard Observers to Quantify Interactions and Any Strikes Between Cruise Ships and Humpback Whales:** Park interpretive rangers travel onboard all cruise ships while they are in Glacier Bay, to provide educational commentary on the natural and cultural history of Glacier Bay. Since July 2006, whale observers have also boarded cruise ships to document whale-ship encounters during the ship's transit through park waters. Observers scan with the naked eye and with laser range-finding binoculars from the ship's bow rail to allow for an unimpeded view of the water in front of and around the ship to maximize the probability of detecting a strike should one occur. The observers record separation distances between whales and ships as the ships travel from the mouth of Glacier Bay to the head of the bay and back, a total of 9-12 hours. Ancillary data are also collected including the speed of the ship at time of encounter, environmental conditions (sea surface conditions, precipitation, cloud cover, glare), and whale behavior and group size. Ship route data is recorded continuously from the GPS unit. Although the main purpose of the observer program is to study the frequency and circumstances around whale-ship encounters at various distances, these observers are in a position to record any strikes should they occur and report to NPS immediately via radio such that the interaction can be investigated immediately.

## **Summary of Mitigation of LNG Ship-Strike Risk Using Auto-Detection Buoys in the Boston Traffic Separation Scheme**

In spring 2007, a new program was implemented to reduce the threat of ship strikes to endangered large whales that could result from transport of Liquefied Natural Gas (LNG) in waters off New England. The U.S. government provided authorization to install and operate offshore LNG import terminals/deepwater ports and associated pipelines in Massachusetts Bay. Pipelines laid on the seafloor will be used to move gas to land from the offshore terminals. The sites, operated by Northeast Gateway Energy Bridge, LLC and Neptune, LLC, are also situated near the boundaries of the Stellwagen Bank National Marine Sanctuary. Each port is predicted to receive 55 to 65 shipments of LNG per year, with each shipment taking eight days to offload via one of the four buoys that make up the two offshore terminals outside Boston Harbor, a preferred habitat for fin, humpback and right whales. Licenses granted to develop the sites were conditioned upon the use of three passive acoustic monitoring arrays to reduce the threat of ship strikes. Use of these arrays was initially recommended by the NOAA's National Marine Sanctuary Program (NMSP) as part of formal consultations for these projects under the National Marine Sanctuaries Act (NMSA, 1972 amended 1992). Permitting was coordinated through NOAA National Marine Fisheries Service and the NMSP, and was the subject of Biological Opinions rendered by the Fisheries Service under the Endangered Species Act via consultations with the U.S. Maritime Administration and the U.S. Coast Guard, acting jointly.

The program calls for establishing three passive acoustic arrays for detecting calling whales. Two of the arrays include real-time auto detection buoys (ABs), first at the site of port and pipeline construction, and later within the Boston shipping lanes or Traffic Separation Scheme (TSS). The ABs, designed by Woods Hole Oceanographic Institution's Applied Ocean Physics and Engineering Department and Cornell University's Bioacoustics Research Program (BRP), automatically detect northern right whale contact calls and transmit alerts in real-time via Iridium satellite data. Detections are confirmed in real time by trained acousticians at BRP before triggering management decisions. Whale detections close to pipeline and port construction activities were used between May and December 2007 to alert Northeast Gateway's construction teams and visual observers to the presence of whales within ranges that could lead to vessel-whale interactions and/or acoustic harassment. Ten of the same buoys were placed in the TSS in January 2008 to alert transiting the same company's LNG vessels to the presence of whales within the TSS. Currently, confirmed detections communicated to LNG vessels via phone trigger 24 hour time periods in which transiting LNG vessels are mandated to slow their speeds to 10 knots or less anywhere within 5 nautical miles of the detecting AB and heighten their visual awareness. The use of the arrays is mandated for the life of both ports (each estimated to be 25-40 years).

Although only vessels calling on the new LNG ports are mandated to slow their speeds in response to real-time whale detection information, NOAA's Northeast Fisheries Science Center began including acoustic detections in the Boston TSS in their Sighting Advisory System (SAS) in February 2008. The SAS provides information to mariners entering the

area regarding the locations of right whales that have been seen, and, now, heard, in Northeast waters and provides guidance for avoiding collisions.