

North Atlantic Right Whale (*Eubalaena glacialis*)

The North Atlantic right whale was once abundant in coastal waters on both sides of the North Atlantic Ocean, but is now one of the world's most endangered species of mammal, terrestrial or marine. Only a single population numbering about 300 whales survives in the North Atlantic. At least two separate populations existed historically. The eastern population along the coast of Europe was eliminated by commercial hunting that began in the 11th century and continued through the early 1900s. The western population, whose remnants are now found primarily along the coast of North America between Florida and southeastern Canada, was first exploited by Basque whalers in the Gulf of St. Lawrence in the mid-1500s. By the early 1600s thousands of western North Atlantic right whales had been killed, and by the early 1900s, its survivors numbered only a few hundred whales at most, and perhaps just a few tens of animals. With the exception of the eastern North Pacific right whale population found off Alaska in summer, the western North Atlantic right whale population is easily the most endangered marine mammal population in U.S. waters.

There are two other right whale species (the southern right whale, *E. australis*, found only in the Southern Hemisphere, and the North Pacific right whale, *E. japonica*), which also were hunted nearly to extinction by the early 1900s. (Although North Pacific and North Atlantic right whales are now considered separate species, both are still grouped together as northern right whales on the U.S. list of endangered and threatened species as shown in Table 2). Because of their perilous status, all right

Table 2. Marine mammals listed as endangered (E) or threatened (T) under the Endangered Species Act or depleted (D) under the Marine Mammal Protection Act, as of 31 December 2002

Common Name	Scientific Name	Status	Range
Manatees and Dugongs			
West Indian manatee	<i>Trichechus manatus</i>	E/D	Caribbean Sea and North Atlantic from southeastern United States to Brazil; and Greater Antilles Islands
Amazonian manatee	<i>Trichechus inunguis</i>	E/D	Amazon River basin of South America
West African manatee	<i>Trichechus senegalensis</i>	T/D	West African coast and rivers; Senegal to Angola
Dugong	<i>Dugong dugong</i>	E/D	Northern Indian Ocean from Madagascar to Indonesia; Philippines; Australia; southern China
Otters			
Marine otter	<i>Lutra felina</i>	E/D	Western South America; Peru to southern Chile
Southern sea otter	<i>Enhydra lutris nereis</i>	T/D	Central California coast
Seals and Sea Lions			
Caribbean monk seal	<i>Monachus tropicalis</i>	E/D	Caribbean Sea and Bahamas (probably extinct)
Hawaiian monk seal	<i>Monachus schauinslandi</i>	E/D	Hawaiian Archipelago
Mediterranean monk seal	<i>Monachus monachus</i>	E/D	Mediterranean Sea; northwestern African coast
Guadalupe fur seal	<i>Arctocephalus townsendi</i>	T/D	Baja California, Mexico, to southern California
Northern fur seal	<i>Callorhinus ursinus</i>	D	North Pacific Rim from California to Japan
Western North Pacific Steller sea lion	<i>Eumetopias jubatus</i>	E/D	North Pacific Rim from Japan to Prince William Sound, Alaska (west of 144° W longitude)
Eastern North Pacific Steller sea lion	<i>Eumetopias jubatus</i>	T/D	North Pacific Rim from Prince William Sound, Alaska, to California (east of 144° W longitude)
Saimaa seal	<i>Phoca hispida saimensis</i>	E/D	Lake Saimaa, Finland
Whales, Porpoises, and Dolphins			
Baiji	<i>Lipotes vexillifer</i>	E/D	Changjiang (Yangtze) River, China
Indus river dolphin	<i>Platanista minor</i>	E/D	Indus River and tributaries, Pakistan
Vaquita	<i>Phocoena sinus</i>	E/D	Northern Gulf of California, Mexico
Northeastern offshore spotted dolphin	<i>Stenella attenuata attenuata</i>	D	Eastern tropical Pacific Ocean
Coastal spotted dolphin	<i>Stenella attenuata graffmani</i>	D	Eastern tropical Pacific Ocean
Eastern spinner dolphin	<i>Stenella longirostris orientalis</i>	D	Eastern tropical Pacific Ocean
Mid-Atlantic coastal bottlenose dolphin	<i>Tursiops truncatus</i>	D	Atlantic coastal waters from New York to Florida
Cook Inlet beluga whale	<i>Delphinapterus leucas</i>	D	Cook Inlet, Alaska
Northern right whale	<i>Eubalaena glacialis</i>	E/D	North Atlantic, North Pacific Oceans; Bering Sea
Southern right whale	<i>Eubalaena australis</i>	E/D	South Atlantic, South Pacific, Indian, and Southern Oceans
Bowhead whale	<i>Balaena mysticetus</i>	E/D	Arctic Ocean and adjacent seas
Humpback whale	<i>Megaptera novaeangliae</i>	E/D	Oceanic, all oceans
Blue whale	<i>Balaenoptera musculus</i>	E/D	Oceanic, all oceans
Finback or fin whale	<i>Balaenoptera physalus</i>	E/D	Oceanic, all oceans
Sei whale	<i>Balaenoptera borealis</i>	E/D	Oceanic, all oceans
Western Pacific gray whale	<i>Eschrichtius robustus</i>	E/D	Western North Pacific Ocean
Sperm whale	<i>Physeter macrocephalus</i>	E/D	Oceanic, all oceans

Source: Fish and Wildlife Service regulations at 50 C.F.R. § 17.11 and National Marine Fisheries Service regulations at 50 C.F.R. § 216.15.



Figure 1. Unique patterns of callosities, such as those on the head of this right whale, change little after a right whale's first year of life and can be used to identify individual animals. (Photo by Moira Brown, courtesy of the Center for Coastal Studies.)

whales were protected under an international ban on hunting that also included gray whales. The ban was adopted by the League of Nations in 1935 and has been carried forward by the International Whaling Commission since the late 1940s. Although the ban made these the first whale species to receive international protection, some nations were slow to adopt the measure, and some whalers continued to kill right whales illegally. With time, however, acceptance of the ban increased, and since the 1970s, it appears that right whales have received full protection from deliberate hunting.

Information on North Atlantic right whales before the 1970s is limited largely to commercial catch records that are incomplete at best. Estimates of their abundance and understanding of their distribution before the 1970s are therefore poor. Over the past 25 years, however, scientists with research organizations and government agencies have photographed, identified, and catalogued almost every right whale in this population. Identification is based on scars and unique callosity patterns (i.e., raised patches of roughened skin found on the head, lips, chins, above the eye, and behind the blowholes [see Fig. 1]). Resighting histories recorded in this catalogue enable researchers to assess movements, calving rates, survivorship, scarring rates, and other life history parameters vital for monitoring the population's status and trends. The combination of sighting data and

genetic data collected on known individuals since 1988 has made the North Atlantic right whale population one of the best-studied large whale populations in the world.

From early spring through fall, most North Atlantic right whales are found off New England and southeastern Canada where four major feeding habitats have been identified. These include (1) Cape Cod Bay, used principally between January and April, (2) the Great South Channel and northern edge of Georges Bank east of Cape Cod, used mainly from April through early July, (3) the lower Bay of Fundy, just north of the U.S.-Canadian border, used most intensively from August to October, and (4) the Roseway Basin off the southern tip of Nova Scotia, used in summer and fall. Females with nursing calves seem to prefer more protected inshore areas (e.g., Cape Cod Bay and the Bay of Fundy). Although some whales remain in New England waters year-round, it is not known where most right whales spend the winter.

Since the 1970s the western North Atlantic right whale population has shown little evidence of recovery and may now be declining. A recent modeling study suggests that its numbers grew at perhaps as much as 2.5 percent per year in the 1980s, but have been decreasing at about that rate since the early 1990s. This trend stands in sharp contrast to most other large whales, including the southern right whale, which has increased steadily

at 4 percent or more per year in recent decades. Deaths due to ship strikes and entanglement in commercial fishing gear (principally lines from lobster traps and gillnets, as determined by material removed from entangled whales and identified to date) appear to be a major reason for the population's failure to recover. From 1991 through 2002 nearly half of all right whale carcasses (16 of 34 carcasses) found along the eastern United States and Canada have been attributed to these two causes (12 ship strikes and 4 entanglements).

Other unrecorded deaths from these and other causes are likely. In 2001, for example, a badly entangled right whale, whose condition declined markedly as numerous rescue efforts failed to remove the attached gear, disappeared as it was being tracked with a satellite-monitored telemetry tag. It is thought to have died, but because its carcass was not found, it is not listed as a known death. At least eight other whales have disappeared after being last seen seriously entangled, and other whales killed by ships or entanglement undoubtedly go completely unobserved. As noted below, seven new seriously entangled whales (one of which was subsequently found dead) were seen in 2002.

When combined with natural mortality and the species' low rate of reproduction (on the average, adult females bear a single calf every three to six years), this level of human-related mortality could be the difference between a population that is declining and one that otherwise would increase. The modeling study noted above found that eliminating the deaths of just two female right whales per year could reverse the current decline. Since the early 1980s when directed right whale studies began, an average of about 12 calves per year has been born. A record high of 31 calves was seen in 2001, and 22 were counted in 2002. These high calf counts are encouraging, but they follow record low calving years between 1998 and 2000 when only six, four, and one were counted, respectively. Some researchers believe that the large fluctuations in annual calf counts reflect year-to-year changes in right whale food supplies, which could affect the fitness of adult females to carry calves to term. The encouraging reports of high calf counts in the past two years have been tempered by the death of at least 9 of the 53 calves born during that period.

Under the Endangered Species Act and the Marine Mammal Protection Act, the National Marine Fisheries Service is the lead federal agency responsible for right whale recovery work, but many other agencies and groups also perform vital tasks. In addition to the Marine Mammal Commission, cooperating federal and state agencies include the Army Corps of Engineers, the Coast Guard, the Environmental Protection Agency, the Navy, the Florida Fish and Wildlife Conservation Commission, the Georgia Department of Natural Resources, the Maine Department of Natural Resources, the Massachusetts Division of Fisheries, and the Rhode Island Division of Fish and Wildlife. Key nongovernmental partners include the Center for Coastal Studies, the Humane Society of the United States, the International Fund for Animal Welfare, the Massachusetts Environmental Trust, the National Fish and Wildlife Foundation, the New England Aquarium, the University of Rhode Island, the University of Georgia, and the Woods Hole Oceanographic Institution. Recovery work also is closely coordinated with the Canada Department of Fisheries and Oceans, which leads Canada's recovery efforts.

To guide and coordinate recovery work, the National Marine Fisheries Service prepared a right whale recovery plan in 1991 and subsequently established various advisory teams. Among these are two regional implementation teams charged with overseeing research and management activities. One team focuses on right whale feeding grounds off New England, and the other focuses on the calving grounds off Florida and Georgia. Pursuant to the Marine Mammal Protection Act, the Service also established the Atlantic Large Whale Take Reduction Team to help mitigate the incidental take of right whales in commercial fishing gear. A representative of the Marine Mammal Commission has participated in meetings of all three teams.

As discussed in previous annual reports, the Commission helped initiate right whale research off the U.S. East Coast in the late 1970s and made the initial recommendations for preparing a right whale recovery plan in the 1980s. In 1996, 1998, and 2000 the Commission conducted reviews of right whale recovery work by key program participants to identify research and management priorities. Results of those reviews are described in past annual reports. The following describes developments and activities in 2002.

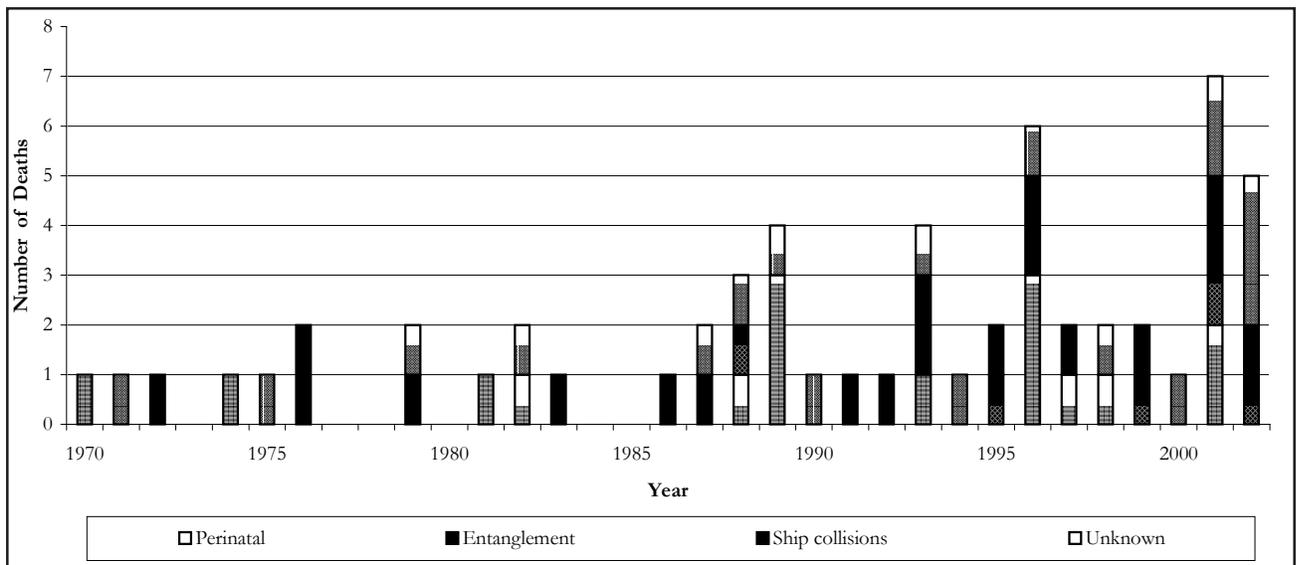


Figure 2. Known mortality of North Atlantic right whales, 1970–2002. (Assignments for cause of death in 2002 are preliminary.)

Right Whale Mortalities and Injuries in 2002

Since 1970, when the collection of data on right whale mortalities along the eastern United States first began, 58 dead right whales have been found along the eastern U.S. and Canadian coasts, including five in 2002 (see Fig. 2). Perhaps two or three times the number of known deaths go unrecorded because carcasses drift far offshore where they are eaten by scavengers and sink undetected. As a result, the total number of deaths, including those due to ship strikes and entanglements, undoubtedly exceeds the numbers shown in Figure 2. Of the five carcasses found in 2002, three died of unknown causes, at least one was hit by a ship, and at least one died of injuries from entanglement in fishing gear. All were either calves or yearlings and four were females.

Right Whale Deaths—The first carcass found in 2002 was a male calf spotted by a right whale aerial survey team about 95 nmi east of Cape Ann, Massachusetts, on 10 June. Due to weather and the animal’s decomposed state, it could not be towed ashore for necropsy. Some tissue samples were collected at sea, but cause of death could not be determined. The second carcass, also a calf, was found by a recreational boater on 22 August, 23 nmi east of Ocean City, Maryland. Although badly decomposed, it was towed to shore and found to have a deep propeller wound on its back, indi-

cating that it had been struck by a ship while alive and died as a result.

The third carcass was a yearling found on 3 September by a recreational fisherman about 20 nmi east of Chincoteague, Virginia. The fourth carcass was a calf first seen by a passing U.S. Navy vessel on 6 September about 90 miles southeast of Ocean City, Maryland. Due to their advanced decomposition, neither of the two whales was retrieved. However, two badly decomposed carcasses assumed to have been the same animals subsequently washed ashore—one on 16 September south of Oregon Inlet on North Carolina’s Outer Banks and the other on 25 September at False Cape State Park, Virginia. Genetic samples were taken to verify that they were the same dead animals seen and sampled offshore, but results of those analyses were not available as of the end of 2002. In neither case could a cause of death be determined.

The last carcass found in 2002 was a yearling (whale #3107) that washed ashore on Nantucket Island, Massachusetts, on 12 October. It was emaciated and had a deep wound on its tail stock. Preliminary analyses suggest that wounds on the tail stock contributed to the whale’s death. The whale was previously seen entangled in commercial fishing gear on 6 July in the Bay of Fundy off Nova Scotia’s southwestern coast. At that time it had several wraps of line around its tail stock and an orange buoy attached to the trailing line. After

several unsuccessful disentanglement attempts, the attached gear was removed on 1 September by which time the attached rope had cut a deep gash into the animal's tail stock. It was last seen alive but in poor condition in the Great South Channel on 30 September.

Right Whale Injuries—In addition to the yearling that died apparently of entanglement wounds, six other serious and potentially fatal entanglements were documented in 2002. On 12 February an adult male added to the right whale catalogue in 1981 (whale #1424) was found seriously entangled by an aerial survey team five miles off Amelia Island, Florida. It had line caught in its mouth, looping over the back, and trailing 150 to 300 feet behind the flukes. It was resighted off Cape Cod, Massachusetts, on 29 March, noticeably thinner. A whale disentanglement team attached a satellite telemetry tag to the trailing line on 17 April to help follow the animal for rescue efforts, but the tag fell off the following day. It was briefly resighted east of Nantucket on 6 May and 12 May and was last seen, still entangled, 15 miles east of Cape Cod on 18 June.

On 7 April 2002 an entangled yearling (whale #3120) was seen by a party boat captain 15 miles south-southeast of Cape Fear, North Carolina. It had rope caught in the mouth with wraps around the rostrum, body, and possibly a flipper, and a buoy was attached to the trailing line. The whale could not be relocated for disentanglement, but was briefly resighted on 23 May in the Great South Channel off Cape Cod, Massachusetts. On 25 July it was resighted in the Bay of Fundy in poor condition and still entangled. A telemetry tag was attached during an unsuccessful disentanglement effort on 24 August, but it came off the next day with some, but not most, of the line. The whale had not been resighted as of the end of 2002.

On 12 June an entangled adult male (whale #1427) was reported by a recreational boater 15 miles east of Atlantic City, New Jersey. The whale had line caught in its mouth and possibly around its flipper; about 150 feet of line and an attached buoy were trailing from its flukes. Cuts from the rope were evident on its head and flipper. About 300 feet of line was removed the same day, and a satellite tag was attached to the remaining line to help relocate the animal for further disentanglement work. Unfortunately a well-meaning charter boat captain cut the buoy off two days later, and

the whale was last seen on 21 June off Georgia, still entangled in the remaining gear.

The other seriously entangled whales included an adult female (whale #2330) seen with two wraps of line through the mouth and around the rostrum on 4 August in the Bay of Fundy and last seen 10 August; another adult female (whale #1815) was seen only once off the southern tip of Nova Scotia with line across the back behind the blowhole; and an unidentified right whale was seen once on 30 August in the central Bay of Fundy with one, and possibly two, tight wraps of line around the rostrum. One other minor entanglement that was seen involved an adult female (whale #2040) accompanied by a calf in Baie de Chaleur, New Brunswick, in the western Gulf of St. Lawrence with line on the tail and in the mouth. That whale was resighted in good condition without attached gear and still accompanied by its calf in the Bay of Fundy on 17 September.

Thus, including the whale that died of apparent entanglement injuries and the minor entanglement, a total of eight right whales was seen entangled in 2002, six of which were still seriously entangled on last sighting.

Entanglement of Right Whales in Fishing Gear

Entanglement in commercial fishing gear poses a serious threat to right whales. In 2002 there were at least one death likely due to entanglement and six potentially fatal entanglements. This was the largest number of such entanglements on record. Because disentanglement efforts either were not possible or were unsuccessful, all six of the whales with potentially fatal entanglements remained entangled when last seen in 2002. A recent analysis also documents 48 whales observed with serious entanglements between 1970 and 2002, at least eight of which have not been resighted in the past six years and have likely died.

Atlantic Large Whale Take Reduction Plan—The Marine Mammal Protection Act requires that the National Marine Fisheries Service convene take reduction teams to help develop take reduction plans for “strategic” marine mammal stocks whose members are incidentally killed or seriously injured by commercial fisheries in U.S. waters. Stocks of marine mammals that are listed as endangered or threatened under the Endangered Species Act are automatically considered strategic

stocks. The Marine Mammal Protection Act further directs that the goal of take reduction plans shall be to reduce the number of deaths and serious injuries among strategic stocks to levels below their calculated potential biological removal level (PBR) within six months of a plan's implementation date. PBR is calculated using a formula designed to estimate the number of animals that can be removed from a stock each year (other than by natural causes) while still maintaining a high degree of assurance that it will continue to increase toward or remain at its optimum sustainable population level. Because of its critically endangered status, the PBR for North Atlantic right whales has been determined to be zero.

Although it often is impossible to identify the source of ropes and lines removed from entangled right whales and other large whales, most of the material removed from whales along the U.S. East Coast that has been identified has been from gillnets or lobster traps. The Atlantic Large Whale Take Reduction Plan has therefore focused exclusively on reducing entanglement risks from these fisheries. Three basic approaches have been used: (1) disentangling whales, (2) seasonal or temporary fishing closures in times and areas where right whales occur most often, and (3) requirements that fishing gear incorporate features that might make it less likely to entangle whales.

Although all three approaches seem appropriate and important, the Commission has written to the Service on numerous occasions expressing its belief that the plan as developed has done little to reduce entanglement risks. Among other things, the Commission believes that the plan has placed too much reliance on abilities to disentangle whales; made too many exceptions to fishery closures, which have resulted in little reduction in fishing activity and little protection against increased fishing effort in high-use right whale habitats; and relied too heavily on gear restrictions that, in most cases, offered questionable benefits for reducing entanglement risks. It therefore has recommended repeatedly that the Service adopt more restrictive seasonal fishing closures within designated right whale critical habitats (see Fig. 4) and stronger restrictions regarding required gear characteristics.

As right whale deaths and entanglements continued in 2001, the Service reconvened the Atlantic Large Whale Take Reduction Team on 27–28 June 2001 to obtain advice on strengthening the

take reduction plan. The team includes representatives of regional gillnet and lobster fisheries, environmental groups, the scientific community, and involved federal and state agencies, including the Marine Mammal Commission. After considering the team's advice, the Service proposed three sets of regulatory changes to the plan in the fall of 2001. As discussed below, the Commission commented on all three rules, which were subsequently adopted by the Service early in 2002.

Gear Design Requirement—On 1 October 2001 the Service proposed changing a list of gear technology options previously established for lobster traps and gillnets. Under previous regulations, the Service required that lobster fishermen select one of several options, including use of line 7/16-in. or less in diameter for buoy lines. That option was based on an assumption by the Service that whales could break line up to that thickness and thereby free themselves if they became entangled. Because use of such line was common practice, this option allowed most fishermen to comply with the requirements without changing their gear. The Service's October proposal called for deleting this option in 2003 because it had determined that line thickness was not necessarily proportionate to breaking strength.

Other options on the Service's list included weak links on buoy lines and gillnet float lines. By making it easier for buoys to separate from lines and gillnet float lines to break, it was thought that whales might be less likely to become entangled or injured. Depending on gear type, the Service's October proposal called for requiring weak links with lower breaking strengths than previously required.



Figure 3. A breaching North Atlantic right whale. (Photo by Amy Knowlton, courtesy of the New England Aquarium.)

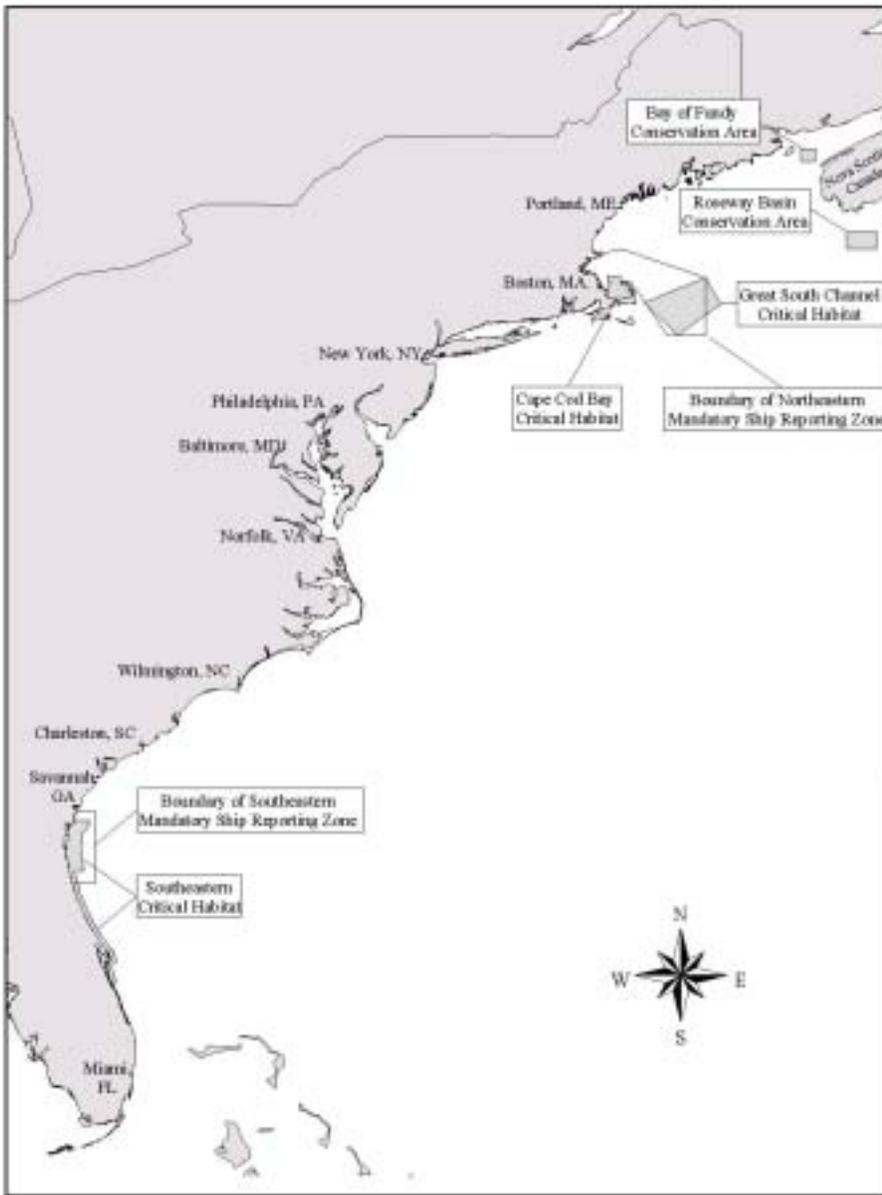


Figure 4. Designated critical habitats and mandatory ship reporting zones for North Atlantic right whales. (Figure by Leslie Ward and Alex Smith, courtesy of the Florida Marine Research Institute.)

With regard to this proposal, the Commission on 31 October recommended that, given the ineffectiveness of the 7/16-in. line as a way to reduce entanglement risks, the Service should immediately eliminate this as a gear option rather than waiting until 2003 and that it should add a requirement that neutrally buoyant or sinking line be used immediately in certain high-use right whale habitats and for all ground lines between lobster traps by 1 January 2003. Most lobster fishermen currently use floating line to link strings of lobster traps because heavier line chafes on submerged rocks. How-

ever, floating line forms loops that rise up into the water column and pose entanglement risks for whales. Neutrally buoyant line remains on or near the bottom, thus eliminating loops in the water column that could entangle whales.

On 10 January 2002 the Service published its final regulations for new lobster and gillnet gear requirements. The Commission's recommendations were not adopted. With regard to the recommendation of the Commission and others that neutrally buoyant line be required for lobster traps, the Service noted that it was still investigating its use, but that it had added its use as an option in some areas and as a requirement in a new seasonal management area (see below).

Dynamic Area Management Closures— On 2 October 2001 the Service published a proposed rule under authority of the Marine Mammal Protection Act and the Endangered Species Act to establish procedures for temporarily restricting fishing on short notice in areas where concentrations of whales were observed. Based on a study of past right whale sightings by Service scientists, it was determined that when three or more whales were seen feeding within an area such that their density was 0.04 whale per sq. nmi., it was likely that a group of whales would remain in the area for two or more weeks as they exploited a local food source. Therefore, the Service proposed that, upon receiving a single report of three or more right whales at a density of 0.04 whales per sq. nmi. from a reliable source (e.g., right whale researchers, the Coast Guard, or whale-watching boats), it would promptly determine whether and what regulatory

based on the continued presence of whales in the area. The area covered would include all waters within 15 nmi of the group's initial sighting. The possible restrictions could include a requirement that all gillnets and lobster traps be removed from the area or that fishing be limited to gear with certain modifications that the Service determined safe for whales. However, because the Service did not identify gear modifications that could be allowed in dynamic management areas, its regulatory options were restricted to a requirement for removing gear. If the Service decided not to implement regulations, it would issue an alert requesting voluntary efforts to remove fishing gear and avoid setting new gear in the area.

By letter of 31 October 2001 the Commission expressed support for the proposed rule, but recommended that the Service describe how it intended to apply the factors identified for determining whether to impose restrictions. On 9 January 2002 the Service published final rules for designating dynamic area management zones, but included no further discussion of how it planned to apply its identified decision factors.

Seasonal Area Management—On 28 November 2001 the Service published proposed rules to establish a seasonal management area in waters immediately north of the designated right whale critical habitat in the Great South Channel. The area, frequently used by groups of feeding whales in the spring, includes a band stretching from the shoreline of Cape Cod and the southern Massachusetts Bay to the seaward boundary of the U.S. Exclusive Economic Zone. During the spring, lobster gear set in the area would have to be equipped with sinking or neutrally buoyant ground lines, a single buoy line per string of traps, and a weak link attached at the buoy on buoy lines with a maximum breaking strength of 1,500 lbs. for offshore areas and 600 lbs. for inshore and nearshore areas. Set gillnets would have to (1) be equipped with five weak links (maximum breaking strength of 1,100 lbs.) on each net panel, (2) be held in place by an anchor with the holding power of a 22-lb. Danforth-style anchor to provide the drag necessary for whales to break the weak link, and (3) have a weak link (1,100-lb. maximum breaking strength) attached at the buoy to the buoy line.

In announcing the proposed rule, the Service cited evidence of a right whale that was seriously entangled and injured in a lobster trap equipped

with a weak link. In its 13 December 2001 comments to the Service, the Commission therefore supported designation of the new seasonal management area, but recommended that the rules prohibit all gillnet and lobster fishing within the area during the designated season. On 9 January 2002 the Service published final rules for the seasonal management area as initially proposed. The Service did not adopt the Commission's recommendation.

Gillnet Fishing in the Right Whale Calving Grounds—Regulations adopted as part of the Atlantic Large Whale Take Reduction Plan prohibit some, but not all types of gillnet fishing in the right whale calving grounds off Florida and Georgia during the winter calving season. On 27 March 2002 the Service proposed rules to prohibit the nighttime use of "straight-set" gillnets in the calving grounds between mid-November and the end of March. Straight-set gillnets are gillnets set in a straight line. They are used in the area to target schooling fish and are usually retrieved within 30 minutes of being set. They were excluded from the initial gillnet fishing restrictions for the area because the Service believed that, given the brief time they were deployed and the constant presence of the fishermen, they posed no risk to right whales.

In its proposed regulations, the Service noted that it continues to believe that daytime sets of straight-set gillnets do not pose a risk to right whales because the fishermen would be on-site in the event of an entanglement. However, it determined that nighttime fishing is more hazardous because fishermen "are not as actively involved with straight-set gear" and because whales are more difficult to see at night. The new restrictions, which cover waters from Savannah, Georgia, to the center of Florida's east coast, were adopted by the Service and published in the *Federal Register* on 26 September 2002.

Efforts to Implement Dynamic Area Management—The Service's efforts to implement its own regulations for the new dynamic area management approach were weak and inconsistent. On most occasions when groups of whales were sighted and reported to the Service by reliable sources, the Service delayed decisions on designating temporary management zones or chose not to impose restrictions on fishing gear. Contrary to its adopted regulations, the Service decided that a

second observation was needed before initiating a closure. Actions taken to implement the program in 2002 are shown in Table 3.

On 14 April 2002 a right whale aerial survey team reported a group of 10 right whales about 30 nmi east of Cape Ann, Massachusetts. After considering its decision-making factors for several days, the Service published a *Federal Register* notice on 26 April requiring that all gillnets and lobster gear be removed from an area covering about 1,100 sq. nmi effective 29–30 April. Thus, it took the Service 14 days after the initial sighting to require fishermen to remove their gear from the dynamic area. The regulated area expanded to about 1,700 sq. nmi for the period 1–13 May. Because about 600 sq. nmi of the temporary management area overlapped the seasonal management area that was due to expire on 1 May, the Service decided to defer the requirement for the overlapping area until that time.

Several other sightings of right whale groups were made by Service scientists and other reliable sources off Massachusetts during this period. However, instead of relying on past analyses that indicate that an initial sighting likely reflects a feeding group that will remain in the area where it was sighted, the Service adopted a policy that, before triggering a management action, it would require sightings on successive surveys to verify that whales were using the area. This decision was made de-

spite the possibility that subsequent surveys could be and, in fact, frequently were delayed several days due to weather or other factors, and that whales could be present in the area but not seen by observers.

As May progressed, most right whale sightings shifted southward into the Great South Channel critical habitat where right whale survey teams observed the largest concentration of right whales (more than 70 individuals) since research efforts began in the 1980s. Many of these animals were located in and around the western part of the designated critical habitat (an area called the “sliver”) that the Service had excluded from its critical habitat rules banning gillnets. The Service continues to allow gillnet fishing in that area because of its use as a fishing area for groundfish.

The Service had closed all waters east of Cape Cod, including the sliver area, to groundfish fishing during May to protect depleted fish stocks. Thus, there was no need to close the area in May. However, the concentration of whales in the Great South Channel persisted through the end of May. In light of the continued presence of whales, the Service issued an advisory on 31 May requesting that fishermen voluntarily refrain from setting fishing gear in the Great South Channel. The advisory noted that the Service was not establishing rules under its dynamic area management authority “be-

Table 3. Actions taken by the National Marine Fisheries Service in 2002 to implement fishing restrictions under the dynamic area management program

Whales Initially Sighted	Date of <i>Federal Register</i> Notice	Action Required
14 April: 10 whales 30 nmi E of Cape Ann, MA	26 April 2002	Required removal of all gillnets and lobster traps from area outside designated seasonal area management (SAM), 29–30 April. Required removal of all gillnets and lobster traps from both SAM and non-SAM portions of the area, 1–3 May.
4 May: 9 whales in eastern half of Great South Channel critical habitat	1 July 2002	Required removal of all anchored gillnets and lobster traps, 1–15 July.
20 November: 10 whales near Jeffrey's Ledge	3 December 2002	Required removal of all anchored gillnets and lobster traps, 5–20 December. Rescinded rule 10 December due to weather. Requested voluntary restraint on new sets until 20 December.
13 December: Cashes Ledge, confirmed 19 December	30 December 2002	Requested voluntary removal of gear for 15 days.

cause that program was developed to protect right whales outside of existing critical habitat.”

Concerned about the risk that gillnets would pose given such a large concentration of right whales and aware that the rules adopted by the Service for dynamic area management zones included no provisions excluding its application in critical habitat, the Commission sent a letter by facsimile on 31 May to the Director of the Service. In its letter the Commission noted that the Service’s decision not to establish a closure under its new dynamic area management authority was both illogical and contrary to the best interests of the species. Concluding that it made no sense for the Service to be able to protect whales outside critical habitat but not within it, the Commission recommended that the Service reexamine its rule and immediately institute a temporary closure of the area to gillnetting either under that authority or under the emergency regulation provisions in section 118 of the Marine Mammal Protection Act.

Although record high numbers of right whales continued to be sighted through mid-June in the critical habitat area, including in and around the sliver area, the Service took no action to prevent gillnet fishing in the sliver area until the end of June, when fishing in the area typically subsides. At that time, it filed a notice published on 1 July requiring that gillnets be removed from the western portion of the critical habitat and that no new gillnets or lobster traps be set in the area during the period 1–15 July. In the western section of the regulatory area, the Service asked that fishermen voluntarily remove gear and avoid setting new gear. It is unknown to what extent fishermen complied with the request. By early July, whale sightings had declined significantly. The dynamic area management zone expired on 15 July.

On 18 July the Service responded to the Commission’s 31 May letter. In its letter, the Service stated that the dynamic area management authority was intended to be used outside designated right whale critical habitat but could be used in designated critical habitat when necessary. Although the gillnet fishing area within the critical habitat was not closed in June, the Service noted that other parts of the critical habitat were closed to both gillnets and lobster traps between 1 April and 30 June. It apparently considered that those

measures afforded adequate protection. In view of those measures, the Service advised that it would use the dynamic area management measures within that critical habitat only from 1 July through 31 March.

The Service invoked its dynamic area management authority twice more in 2002. On 20 November 2002 a group of eight right whales was sighted near Jeffreys Ledge off New Hampshire. On 3 December a *Federal Register* notice was published announcing that, effective 5 December, the Service would require all anchored gillnets and lobster traps to be removed from a 1,600-sq.-nmi area around the whale sighting location and that no new gear could be set in the area until 20 December. On 10 December the Service published another *Federal Register* notice rescinding the rule due to rough weather conditions that made it unreasonable to expect fishermen to remove their gear. Instead, the Service advised that it was asking fishermen to voluntarily remove their gear and avoid setting new gear through 20 December. It is not known to what extent fishermen did so.

The final use of the provision in 2002 was in an area called Cashes Ledge, a bank east of New Hampshire. On 13 December and again on 19 December, aerial survey teams reported sightings of five and eight right whales, respectively, in that area. On 24 December the Service asked lobster and gillnet fishermen to voluntarily remove their fishing gear from the area for the period of 24 December 2002 to 7 January 2003. A *Federal Register* notice announcing the voluntary dynamic management area was published on 30 December. It is not known to what extent fishermen removed gear.

For the dynamic area management system to be effective, the Service must find a way to implement a regulation within 48 hours of the time a congregation of whales is first sighted by a reliable observer. Experience in 2002 demonstrated the Service’s inability or unwillingness to implement its own regulations expeditiously.

As noted above, the Service’s rules for dynamic management areas contemplated, but did not identify, provisions to allow certain types of fishing gear considered safe for whales to be used within established dynamic management areas. As of the end of 2002 the Service was developing a proposed

rule for publication in early 2003 to identify such gear.

Future Management Efforts—As noted above, 2002 was a record year for observed right whale entanglements. During the Marine Mammal Commission's 8–10 October 2002 annual meeting, a representative of the Service briefly summarized information on the status of the entangled whales and the rulemaking actions undertaken earlier in the year. Because it was clear that take reduction plan goals were not being met, it was noted that the Service planned to reconvene the Atlantic Large Whale Take Reduction Team early in 2003 to seek its advice on needed measures. It also was noted that the Service's Northeast Regional Office was planning to prepare an environmental impact statement to analyze the range of options available under the large whale take reduction plan to further reduce entanglement risks.

Based on information provided at the meeting, the Commission wrote to the Service on 27 November 2002 expressing concern about the adequacy of the Service's take reduction measures. It noted that the recent high numbers of lethal and potentially lethal entanglements clearly demonstrate that the current approach falls well short of what is needed to solve the problem. The Commission therefore reiterated its previous recommendations that the Service prohibit all gillnets and lobster traps in designated right whale critical habitats during periods of peak whale occurrence in those areas.

In addition, the Commission recommended that the Service immediately establish a deadline of 1 January 2004 by which date ground lines on strings of two or more lobster traps set along the eastern U.S. coast must be either sinking line or neutrally buoyant line to eliminate line floating in the water column where it could entangle whales. Noting that buoy lines and ground lines associated with crab and fish traps pose no less of a hazard for whales than lobster traps, the Commission also recommended that the Service require that all gear modifications currently applicable to the lobster fishery also be made applicable to any crab or fish traps set in the ocean north of Ft. Pierce, Florida.

As of the end of 2002 the Service had not announced a date for the next meeting of the Atlantic Large Whale Take Reduction Team, and it was unclear when the Service would take additional steps to improve its take reduction plan, when the

environmental impact statement on the plan would be available, or whether section 7 consultations under the Endangered Species Act would be reinitiated on fisheries known to entangle right whales.

Section 7 Consultations

Given the Service's statutory responsibility to manage fisheries in the Exclusive Economic Zone in compliance with section 7 of the Endangered Species Act, it has consulted with itself on potential effects of the lobster trap, monkfish gillnet, groundfish gillnet, and spiny dogfish gillnet fisheries on right whales and other endangered and threatened species. On 14 June 2001 the Service completed four biological opinions on the fishery management plans that regulate those fisheries. Recent rates of right whale entanglement in fishing gear used in these fisheries caused the Service to conclude that each of these fisheries, as initially proposed, was likely to jeopardize the continued existence of right whales. As reasonable and prudent alternatives to the initial proposal, the Service developed measures for (1) additional gear research and gear modification requirements, (2) development of a dynamic area management process to temporarily close or manage fisheries in areas where right whale feeding aggregations are seen, (3) development of seasonal management areas in right whale feeding grounds outside critical habitat where either (a) fishing would be prohibited in seasons when whales are likely to occur or (b) fishermen would be required to use fishing gear that "has been proven to prevent serious injury or mortality to right whales."

As noted above, in 2002 at least eight right whales were entangled in fishing gear, seven of which were considered to be in life-threatening situations, including one in which the animal was subsequently found dead. The Service's biological opinions on the four fisheries required reconsideration when one or more whales was "seriously injured." Despite the large number of potentially life-threatening entanglements, the Service did not determine that "serious injury" had occurred until a right whale that had previously been observed entangled in fishing gear washed ashore on Nantucket Island on 12 October. The whale had serious lacerations in its tail stock thought to be caused by ropes. As of the end of 2002 the Service had not reinitiated consultations with it-

self regarding entanglements despite stipulations to do so as set forth in its previous consultation decision. The Service, however, offered grants to fishermen to help support development of innovative fishing gear designs that would reduce whale entanglement risks.

Collisions between Ships and Right Whales

Most human-related right whale deaths are caused by collisions with ships. Between 1991 and the end of 2002 ship strikes have caused at least 35 percent (12 of 34) of all documented deaths, including an animal found off Maryland in 2002. Based on the large size of propeller slashes and massive injuries, such as crushed skulls and broken vertebrae, evident on carcasses, it appears that large vessels are the cause of most, if not all, lethal collisions.

To prevent ship strikes, the National Marine Fisheries Service has relied on voluntary efforts by vessel operators to look out for and avoid hitting whales. To promote this strategy, the Service, in cooperation with other agencies, has encouraged and partially supported aerial right whale surveys in key right whale habitats to locate whales and alert mariners of their locations. These early warning systems, first developed in the southeastern calving grounds in 1994 and in feeding grounds off New England in 1996, have relied heavily on cooperation and support from the Coast Guard; the Navy; the Army Corps of Engineers; state agencies in Florida, Georgia, and Massachusetts; and nongovernmental research organizations. When whales are sighted in the southeastern calving grounds, their locations are relayed as quickly as possible to the Coast Guard (in as little as 10 minutes in some cases), which forwards that information and a request for caution to vessel operators via broadcast notice to mariners, voice radio, and NAVTEX (a telex communications system aboard most large vessels). The early warning system in the Southeast has provided information on a near real-time basis to mariners, but the program for the northeastern feeding grounds reports sightings to the shipping industry by facsimile at the end of each day.

In addition, the Service and others have developed videos, placards, brochures, and additions to nautical publications such as East Coast volumes of the *U.S. Coast Pilot* and navigation charts

to educate mariners about the threat ships pose to right whales and steps they can take to reduce collision risks, such as maintaining a sharp lookout and using reduced speed in areas where right whales are likely to occur. The Commission assisted in developing a number of these outreach materials.

The Navy, which operates two major port facilities adjacent to right whale calving grounds (i.e., the Kings Bay submarine base in southern Georgia and the Mayport Naval Base in northern Florida), has implemented more restrictive measures for the operation of its vessels during the calving season. Among other things, the Navy minimizes its operations within the calving area and directs that most of its vessels entering or leaving port use a course perpendicular to shore during the calving season to minimize travel through the calving grounds and use reduced speed (generally less than 15 knots) when near reported right whale sighting locations less than 12 hours old.

To supplement these efforts, the Commission recommended that the Coast Guard and the Service advise the International Maritime Organization (IMO) of the threats that large ships pose to right whales and seek its assistance in mitigation efforts. The IMO is a specialized agency of the United Nations that coordinates international management of shipping. Among other things, the IMO has authority to approve mandatory ship reporting systems, as well as speed and routing measures, in international waters. In 1997 the Commission helped draft an initial background paper to the IMO on collisions with right whales and the possible need for IMO action to help protect them.

The Service and the Coast Guard, with assistance from the Marine Mammal Commission, subsequently submitted a proposal to the IMO to establish two mandatory ship reporting systems: one in the southeastern U.S. calving grounds and the other in the northeastern feeding grounds off Massachusetts (see Fig. 4). These systems were approved by the IMO and became operational in 1999. They require that operators of large vessels (more than 300 gross tons) entering the two areas contact a shore station for information on right whales, including recent sighting locations, and advice on how to avoid hitting them. To help assess vessel traffic risks for whales, the vessel operators also must provide certain information, including their destination, route, and speed.

Overall, only about 50 percent of the ships entering ports in the two areas were in compliance with the reporting requirements in 2000 and 2001. The Coast Guard and the National Marine Fisheries Service therefore took steps beginning late in 2001 to clarify reporting procedures and to issue warnings to vessels not reporting. In 2002 the Coast Guard began citing vessels for not reporting.

In 2002 compliance levels increased to 72.7 percent in the northeastern area and to 58.2 percent in the southeastern area in November and December. In early 2002 staff with the Service, the Florida Fish and Wildlife Conservation Commission, and the Coast Guard also completed an analysis of vessel traffic patterns in both areas based on data gathered from the reporting vessels. In part, the analysis revealed that the tracks of commercial vessels entering the southeastern U.S. calving grounds form fans that spread out from points a few miles off entrances to the ports of Jacksonville and Fernandina Beach, Florida, and Brunswick, Georgia, with most coming from the southeast. About three-fourths of these vessels reported speeds of 18 knots or less. Off southern New England, many vessels follow the designated shipping lanes within the western boundary of the Great South Channel right whale critical habitat, but many others cross the southern and central parts of the critical habitat. About three-fourths of the ships entering the northeastern area were traveling at 16 knots or less.

New Regulatory Measures—On several occasions in the past, the Commission has recommended to the Service that vessel speed and routing measures be developed to minimize collision risks to right whales. To help in this regard, the Commission recommended to the Service and, in 1999, provided partial support for a study, in consultation with the commercial shipping industry, to identify additional measures. The study and subsequent report, conducted under auspices of the two regional right whale implementation teams, was completed in August 2001 (see Russell et al. 2001, Appendix C) and transmitted to the Service.

The report recommended various routing and speed measures for vessels 65 ft. (20 m) or longer. Because right whales are believed to migrate close to shore, seasonal 10-knot speed limits were recommended within 20 nmi (37 km) of major port entrances between southern New England and northern Georgia during migratory periods. For the

calving grounds, it recommended a seasonal 10-knot speed limit within about 25 nmi (46.2 km) of the northeastern Florida and southern Georgia coasts, and that a study be done to determine if new mandatory traffic lanes for the three ports would significantly reduce travel in the areas where right whales occur most often. The report also recommended that the Coast Guard conduct a port access route study, which includes analyses of economic and environmental impacts, to ensure navigation safety. For feeding grounds off Massachusetts, it recommended a combination of measures: requiring vessel traffic to follow existing shipping lanes through the Great South Channel; a seasonal 10-knot speed limit for a segment of those lanes; and a dynamic management system to impose short-term 10-knot speed limits in other segments of those lanes, as well as elsewhere within the species' range in U.S. waters, when groups of whales are observed feeding.

On 18 October 2001 the southeastern implementation team wrote to the Service noting that the study represented a commendable job of consolidating information on the various issues and formulating management options. It recommended that the report be further considered and that, as recommended in the report, additional studies be undertaken to assess economic impacts of the identified speed and routing measures, consider the possibility that ships may move to ports outside the calving grounds due to the new restrictions, complete a risk assessment to evaluate the effectiveness of various recommended measures, and carry out a port access study, which is a prerequisite for any new regulatory measures affecting a port.

The northeastern implementation team submitted comments on the report to the Service on 29 January 2002. It noted that the process used to develop the report had provided ample opportunity for all concerned parties to express their views. Although there was not unanimous support among team members for all of the recommendations in the report, most of the recommended measures were supported by a majority of the team. In general, most of the team supported the basic concepts of establishing mandatory routing and speed restrictions through high-use right whale areas. The team also noted that an economic analysis was needed to assess potential economic impacts of the various measures. In this regard, the Marine Policy Center at Woods Hole Oceanographic In-

stitution conducted a preliminary analysis of the economic impacts based on the report. The team also identified an additional regulatory recommendation not included in the report. It recommended requiring that vessel operators or others involved in the accidental injury or death of right whales report such incidents to the Service.

Recognizing that information on the causes of vessel-related right whale deaths was limited, the Commission also organized a study to compile and evaluate information on collisions between large whales of all species and motorized vessels worldwide. The results, published in early 2001 (see Laist et al. 2001 in Appendix C) and provided to the Service and other involved agencies and groups, revealed that all sizes and types of vessels may hit whales, but that lethal and serious injuries are almost always caused by large vessels – particularly those longer than 80 m (262 ft.). The analysis suggested that vessel speed likely is a factor in the probability of serious and lethal collisions and that a vast majority of reported collisions involving serious or lethal injuries to whales have been caused by vessels traveling 13 knots or greater. Such injuries appear to occur rarely at speeds of 10 knots or less. It also found that whales were almost never seen before they were hit or they were seen only at the last moment when it was too late to avoid a strike. Thus, it concluded that, where measures are needed to reduce collision risks for whales, advance planning to alter vessel operating procedures (e.g., ship speed or routing) will likely be needed.

During 2002 staff of the National Marine Fisheries Service reviewed the report by Russell et al. and other information, including results of the study organized by the Commission. At its annual meeting on 8–10 October 2002, the Commission was advised that a proposal to reduce ship collision risks for right whales was nearing completion and that measures under consideration included vessel speed and routing. Based on information provided at the meeting, the Commission, in consultation with its Committee of Scientific Advisors, wrote to the Service on 27 November.

In its letter, the Commission noted that, although constructive steps had been taken to establish mandatory ship reporting systems for two key right whale habitats, right whales continued to be killed by ships and fishing gear at high levels and that unless more determined commitments are

made now, the population would face a real possibility of declining to levels from which recovery may be impossible. With regard to further actions to prevent ship strikes, the Commission noted that restrictions on both vessel speed and routing seemed appropriate, but that the process of developing a proposed plan of action was taking too long, particularly given that regulatory actions once proposed still face a long and uncertain path to implementation. The Commission therefore recommended that the Service complete a proposed plan of action and accompanying timetable to reduce ship strike risks as quickly as possible and that it circulate the plan and timetable to the Commission and other concerned parties for comment.

The Commission also noted that speed and routing for at least some areas would require action by the IMO, which could take several years to develop and implement. For other areas, however, it noted that such measures might be implemented more quickly under domestic authority. The Commission therefore requested that the Service complete and disseminate an analysis identifying what speed and routing measures could be taken under domestic authority, what actions would require IMO approval, and what new legal authority, if any, would be needed to implement regulatory actions such as those identified in the Russell report on recommended management measures.

At the end of 2002 the Service had yet to announce the specific regulatory actions it planned to propose to reduce collision risks in U.S. waters, nor had it responded to the Commission's letter.

Shipping Lanes in Canada—In late summer and fall, up to two-thirds of the North Atlantic right whale population, including most mother-calf pairs, spend at least part of their time feeding in Canadian waters in the Bay of Fundy between Nova Scotia and northern Maine. Each year about 800 ships call at the ports of Saint Johns and Bayside in New Brunswick; Digby and Hantsport in Nova Scotia, and Eastport, Maine. These ships transit designated shipping lanes that cut across the eastern half of the region's right whale feeding grounds. At least three right whales are known to have been struck and killed along these lanes since 1992. Like efforts to alert mariners to the presence of whales in key U.S. right whale habitats, the Canadian Coast Guard advises vessels using these lanes of the location of recent right whale sightings and urges vessel operators to exercise caution to

avoid hitting the whales. To help inform mariners of the importance of the area for right whales, a 15- by 12-nmi area around the core feeding area was designated in 1993 as a right whale conservation area by the Canada Department of Fisheries and Oceans, and information on right whales has been placed on the back of regional nautical charts.

To further protect right whales from vessel traffic in these lanes, Transport Canada, the agency that regulates shipping in Canada, in cooperation with the Department of Fisheries and Oceans and the Canadian Coast Guard, submitted a proposal to the IMO in April 2002 to shift a portion of the designated lanes about 4 nmi east to move vessel traffic farther from the core feeding area. Based on past whale sightings, it is estimated that the shift could reduce the probability of ships encountering whales by as much as 80 percent. Canada's proposal was approved by the IMO's Subcommittee on Safety of Navigation at its 8–12 July 2002 meeting and was forwarded to the Marine Safety Committee for final adoption. The IMO's Marine Safety Committee subsequently met in early December 2002 at which time the Canadian proposal was adopted, thereby clearing the way for Transport Canada to implement the new lane configuration on 1 July 2003 in time for the next whale season in the Bay of Fundy.

Petition To Amend Critical Habitat

Section 4 of the Endangered Species Act authorizes the Secretary of Commerce to designate as critical habitat areas that are determined to contain physical or biological features essential for the survival of species under their jurisdiction that are listed as endangered or threatened under the Act. Such designations serve to formally recognize the importance of these areas as habitat for a listed species. It also requires that federal agencies consult with the Service to assess the effects of any activities they may fund or authorize in that area that could adversely affect the survival of that species or modify the ability of the area to support that species.

In 1990 the Northern Right Whale Recovery Team petitioned the National Marine Fisheries Service to designate three areas off the U.S. East Coast as critical habitat for northern right whales. Those areas included waters along the coast of Florida and Georgia, where most females calve and begin nursing their young, and two feeding areas off Mas-

sachusetts—one in Cape Cod Bay and the other in the Great South Channel east of Cape Cod. To assist in considering that petition, the Marine Mammal Commission funded a study to review available right whale sighting data for each of those areas and to evaluate information on the occurrence of whales relative to criteria for designating critical habitat (see Kraus and Kenney 1991 in Appendix B). Based on that report and other information available at that time, the Service designated critical habitat in all three areas in June 1994 (see Fig. 4).

Since then, research has provided new information on the extent to which right whales use those three areas and adjacent waters. Based on that information, the Ocean Conservancy, a national environmental organization, submitted a petition to the Service on 9 July 2002 to expand the existing critical habitat boundaries. For the southeastern U.S. calving grounds, the petition sought to extend the offshore boundary from roughly 15 to 30 nmi between Brunswick, Georgia, and St. Augustine, Florida, and from 5 to 10 nmi offshore between St. Augustine and a point about 30 miles south of Cape Canaveral, Florida. For the two feeding areas off Massachusetts, the petition sought to establish a single expanded area that encompassed both the Cape Cod Bay and the Great South Channel critical habitats and the waters in between.

Under provisions of the Endangered Species Act, the Service must determine within 90 days of receiving such a petition whether it includes substantial scientific information indicating that the action may be warranted. On 19 November 2002 the Service announced in the *Federal Register* that it had determined that the petition contained information satisfying this requirement and that it was therefore requesting comments on the petitioned action. The Act requires that, within 12 months of the date on which the petition is received, the Service must publish a determination on whether it intends to deny the petitioned action, adopt it, or implement a modified approach. At the end of 2002 the Commission expected to provide comments to the Service in early 2003.

North Atlantic Right Whale Recovery Plan

In the late 1980s, at the recommendation of the Marine Mammal Commission, the National

Marine Fisheries Service appointed a Northern Right Whale Recovery Team to draft a recovery plan for northern right whales. At that time, right whales in the North Atlantic and North Pacific were considered to belong to a single species and thus, in 1991, the National Marine Fisheries Service adopted a final recovery plan identifying research and management priorities necessary to promote recovery of right whales in both areas. Since that time, new information and experience has rendered the plan out of date and the Service has taken steps to develop two new plans—one for the North Atlantic right whale and one for the North Pacific right whale.

As described in its previous annual report, the Commission provided comments to the Service on a draft of a new North Atlantic Right Whale Recovery Plan on 6 September 2001. Due to limited staff and other urgent matters, including the need for new regulations to reduce ship strike and entanglement risks for right whales, the Service was unable to complete and adopt a new North Atlantic Right Whale Recovery Plan in 2002. As of the end of 2002 the Service hoped to do so early in 2003.

National Whale Conservation Fund

As described in previous annual reports, the National Fish and Wildlife Foundation established a National Whale Conservation Fund to help obtain public and private funding for projects that would benefit the conservation of whale populations in U.S. waters, but that have not been undertaken because of limited government funds. The idea for the Fund was developed by the Commission based on a review of the right whale recovery program at its annual meeting in 1996. That review found that constraints on federal funding were severely hampering right whale recovery work. The fund was subsequently created in response to a 1999 law sponsored by Senators Judd Gregg and Ted Stevens that directed the Foundation to administer the fund in consultation with the Marine Mammal Commission and the National Marine Fisheries Service. The purpose of the fund is to help support research, management, conservation, and education/outreach activities related to the conservation and recovery of whales, particularly those that are most endangered.

Initial efforts to establish the fund were hampered by a lack of seed money; however, in 2001

Congress provided \$250,000 earmarked for this purpose. With those funds, the Foundation organized an administrative structure, including a fund council to oversee fund development, and made its initial grant to the Center for Coastal Studies to support work on disentangling right whales and other large whales along the U.S. East Coast.

In 2002 the fund dispersed more than \$125,000 to support projects related to humpback whales and North Atlantic right whales. Work related to right whales included projects by (1) the Woods Hole Oceanographic Institution to assess their hearing and communication capabilities, (2) the New England Aquarium to convene annual meetings of the North Atlantic Right Whale Consortium to review and share new information on right whale biology, ecology, and conservation, and (3) the Center for Coastal Studies to study North Atlantic right whale genetic diversity and population structure.

In 2002 the fund also was asked by the National Marine Fisheries Service to help disperse grants to state agencies in support of their right whale conservation activities and to fund research to develop “whale-friendly” fishing gear. The Foundation and council agreed and subsequently received \$1.1 million for related work by agencies in Atlantic coastal states and \$175,000 for work on designing whale-friendly fishing gear. At the end of 2002 the fund had requested proposals for this work and was in the process of awarding grants. Also in 2002 the Foundation took steps to develop a large whale conservation plan to help identify funding priorities and to expand its fund-raising efforts. Results of the latter effort included a preliminary commitment by the Pacific Life Foundation to serve as a corporate partner and sponsor for the fund.