DRAFT BIOLOGICAL OPINION FOR FLS/SCP/BSB 12-06-01

ENDANGERED SPECIES ACT SECTION 7 CONSULTATION

BIOLOGICAL OPINION

Action Agency: National Marine Fisheries Service, Northeast Region Sustainable Fisheries Division

Activity: Authorization of fisheries under the Summer Flounder, Scup and Black Sea Bass Fishery Management Plan
[Consultation No. ???????]
F/NER/2001/01206 GARFO-2001-00004

Consulting Agency: National Marine Fisheries Service, Northeast Region Protected Resources Division

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Section 7(a)(2) of the Endangered Species Act (ESA) (16 U.S.C. 1531 et seq.) requires that each federal agency shall ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat of such species. When the action of a federal agency may affect species listed as threatened or endangered, that agency is required to consult with either the National Marine Fisheries Service (NMFS) or the U.S. Fish and Wildlife Service (FWS), depending upon the species that may be affected. In instances where NMFS or FWS are themselves proposing an action that may affect listed species, the agency must conduct intra-service consultation. Since the action described in this document is proposed to be authorized by NMFS' Northeast Region (NERO), this office has requested formal intra-service section 7 consultation with NMFS' Northeast Region Protected Resources Division.

This document represents NMFS' biological opinion (Opinion) for NMFS' reinitiated consultation on the continued implementation of the Summer Flounder/Scup/Black Sea Bass Fishery Management Plan (FMP) under section 7 of the Endangered Species Act of 1973, as amended (ESA). New information on proposed summer flounder, scup, and black sea bass fishing quotas for the 2002 fishing year warrant reconsideration of the effects of these fisheries on North Atlantic right whale (*Eubalaena glacialis*), humpback whale (*Megaptera novaeangliae*), fin whale (*Balaenoptera physalus*), and loggerhead (*Caretta caretta*), Kemp's ridley (*Lepidochelys kempi*), green (*Chelonia mydas*), and leatherback (*Dermochelys coriacea*), sea turtles.

NMFA reinitiated consultation on November 9, 2001. This Opinion is based on information developed by the NMFS' Office of Sustainable Fisheries, and other sources of information. A complete administrative record of this consultation is on file at the NMFS Northeast Regional Office, Office of Protected Resources, Gloucester, Massachusetts. The consultation number assigned is ???? in the section 7 database.

1.0 CONSULTATION HISTORY

Formal consultation on the Summer Flounder/Scup/Black Sea Bass FMP was last conducted in 1996. The February 24, 1996, Opinion provides a summary of the consultation history prior to that date. Briefly, formal consultation was first conducted on the summer flounder fishery in 1988, and concluded that operation of the fishery would not jeopardize any ESA-listed species under NMFS jurisdiction. However, following substantial turtle takes in the summer flounder fishery in 1990, consultation was reinitiated and a new Opinion, issued on November 15, 1991, concluded that the summer flounder trawl fishery was likely to jeopardize the continued existence of endangered Kemp's ridley sea turtles. A Reasonable and Prudent Alternative (RPA) was provided to avoid jeopardy, and included the use of Turtle Excluder Devices (TEDs) in waters within 10 miles of the North Carolina and southern Virginia coast. This RPA was subsequently deemed unnecessary after consultation completed October 30, 1992, concluded that the fishery as modified by Amendment 2 would not result in jeopardy to any ESA-listed species. Terms and Conditions provided with the Incidental Take Statement did, however, require NMFS to develop and implement regulations for the use of TEDs in the summer flounder trawl fishery. Formal consultation was reinitiated to assess the effects to protected species of including management of the scup and black sea bass fisheries in the summer flounder FMP. The February 24, 1996, Opinion concluded that operation of these fisheries were not likely to jeopardize the continued existence of listed species and would not result in the destruction or adverse modification of designated critical habitat.

Changes to the FMP since 1996 have required informal section 7 consultation, only. However, the most recent action proposes quota specifications for the 2002 summer flounder, scup and black sea bass fisheries which would increase the Total Allowable Landings (TAL) for each species to a level exceeding what was considered by NMFS during previous consultations on the FMP. Because NMFS can not discount that increases in TAL might result in increases in effort affecting protected species, NMFS concluded that the proposed action may adversely affect ESA-listed species in a manner that was not considered in previous consultations. Therefore, NMFS is reinitiating consultation on the Summer Flounder/Scup/Black Sea Bass FMP in order to assess whether the proposed action would result in jeopardy to any listed species.

2.0 DESCRIPTION OF THE PROPOSED ACTION

The National Marine Fisheries Service proposes regulations to modify the management measures applicable to the Summer Flounder/Scup/Black Sea Bass FMP. This action is being taken in response to recommendations made by the Mid-Atlantic Fishery Management Council (Council) for the rebuilding of the summer flounder, scup, and black sea bass stocks. NMFS proposes to increase fishing quotas for the summer flounder, scup and black sea bass fisheries in the 2002 fishing year by:

- increasing summer flounder TAL from 17.91 million pounds to 24.3 million pounds (allocated amongst the commercial and recreational sectors);
- increasing black sea bass TAL from 6.17 million pounds to 6.8 million pounds (allocated amongst the commercial and recreational sectors); and,
- increasing the commercial scup TAL from 6.21 million pounds to 7.76 million pounds.

Changes in the possession limits, changes in the minimum-mesh size, and set-asides for research and data collection are also proposed to help prevent overfishing.

The implementing regulations for the Summer Flounder, Scup, and Black Sea Bass FMP require NMFS to annually specify the catch limits for the summer flounder, scup, and black sea bass commercial and recreational fisheries, as well as other management measures (*e.g.*, mesh size requirements, gear restrictions, minimum fish sizes) for these fisheries. Since much of these fisheries occur in state waters, the fisheries are managed cooperatively by the Council and the Atlantic States Marine Fisheries Commission (Commission). The most recent assessments of the summer flounder, scup, and black sea bass fisheries (June 2001, June 2000, and December 1998, respectively) concluded that each of these stocks is overfished. However, additional data collected on each stock suggests that stock biomass has increased. NMFS is therefore proposing, as recommended by the Council and the Commission, increases in TAL for each of the fisheries since it is expected that rebuilding targets could still be met.

2.1 Description of the Current Fishery for Summer Flounder, Scup and Black Sea Bass

The Mid-Atlantic groundfish fisheries are primarily for summer flounder, scup, black sea bass and monkfish, and are either taken in directed fisheries or as bycatch. Summer flounder, scup and black sea bass are managed under one FMP since these species occupy similar habitat and are often caught at the same time. They are present in offshore waters throughout the winter and migrate and occupy inshore waters throughout the summer.

Although managed under one FMP, permits for summer flounder, scup, and black sea bass are issued separately based on having met that fisheries limited access eligibility requirements. Each of these three fisheries have vessels permitted as commercial, recreational or both. Of the 1,969 vessels with at least one of these permits (as of September 5, 2000), 1,303 held only commercial permits for summer flounder, scup or black sea bass while 546 held only a recreational permit, and 120 held some combination of recreational and commercial permits. Of the vessels that hold at least one Federal permit for summer flounder, scup or black sea bass, the largest number of commercial permit holders are held by Massachusetts vessels followed closely by New York and New Jersey, then Rhode Island, and Delaware. In terms of vessel size, the largest commercial vessels within the management unit are found in Virginia, followed by Massachusetts, Maine, and North Carolina. The smallest vessels are found in Delaware, New Hampshire, and New York. In terms of landings (based on NMFS 1999 weighout data), North Carolina had the highest landings of summer flounder, followed by Virginia and New Jersey. Rhode Island led in scup landings followed by New Jersey and Massachusetts while black sea bass landings were highest in Virginia, Massachusetts, and New Jersey (MAFMC 2001).

The primary gear types used in the summer flounder, scup and black sea bass fisheries are mobile trawl gear, pots and traps, gillnets, pound nets, and handlines. Bottom trawling is the predominant fishing method in the summer flounder, scup and black sea bass fisheries (summer flounder - 90%, scup - 74%, black sea bass - 56%, NMFS 1996) with the highest amount of landings accounted for. Pots and traps are mainly used to target black sea bass and scup. Approximately 38% of the black sea bass fishery uses pot/trap gear. Black sea bass and scup pots are considered lobster traps under the Atlantic Large Whale Take Reduction Plan (ALWTRP) and are subject to the ALWTRP regulations. Pound net, gillnet, and handline gear account for only a small percentage of summer flounder, scup and black sea bass landings as compared to bottom trawl gear and pots/traps. However, portions of the summer flounder, scup and black sea bass gillnet sector are subject to the ALWTRP and Harbor Porpoise Take Reduction Plan (HPTRP) regulations.

2.2 Requirements of the MMPA and ESA for Trap and Gillnet Fisheries

2.2.1 Modifications to Trap and Gillnet fisheries required by the ALWTRP, HPTRP, and the June 14, 2001, Biological Opinions

The ALWTRP was developed pursuant to the Marine Mammal Protection Act to reduce the level of serious injury and mortality of all whales in East Coast lobster trap and gillnet fisheries. Since the scup and black sea bass fisheries use traps meeting the ALWTRP definition of a "lobster trap", these fisheries are subject to the ALWTRP. In addition, the gillnet sectors of the summer flounder, scup, and black sea bass fisheries are subject to the ALWTRP and HPTRP measures for use of gillnet in northeast and Mid-Atlantic waters. Current requirements include gear marking, restrictions on the size of trap trawls (single trap trawls are prohibited), the use of weak links in buoy lines and net panels, seasonal gillnet restrictions, *etc.*

In addition to these, the NMFS recently issued Biological Opinions (June 14, 2001) in accordance with section 7(a)(2) of the ESA which concluded that NMFS' prosecution of federal fisheries managed under the American Lobster FMP, Multispecies FMP, Monkfish FMP, and Spiny Dogfish FMP, as modified by the ALWTRP, are likely to jeopardize the continued existence of the North Atlantic right whale. The opinions identified a reasonable and prudent alternative (RPA) designed to avoid jeopardy for right whales that is being implemented through rulemaking. The scup and black sea bass trap/pot fisheries as well as the FMP's gillnet fisheries will be required to comply with the additional requirements developed through rulemaking to protect right whales from trap and gillnet gear. These include Seasonal Area Management restrictions (seasonal restrictions for specific fishing areas when right whales are present), Dynamic Area Management (restrictions for fishing areas when specified concentrations of right whales occur unexpectedly), and additional gear modifications (*i.e.*, reduction/elimination of floating line and use of weak links).

2.2.2. Requirements for fisheries listed on the MMPA 2001 List of Fisheries

In accordance with the MMPA, the NMFS must place a commercial fishery on the List of Fisheries (LOF) under one of three categories based upon the level of serious injury and mortality of marine mammals that occur incidental to that fishery. The categorization of a fishery in the LOF determines whether participants in that fishery are subject to certain provisions of the MMPA. The 2001 LOF includes the Northeast/Mid-Atlantic Lobster Trap/Pot fishery and the northeast sink gillnet fishery as Category I fisheries, and the Mid-Atlantic coastal gillnet fishery as a Category II fishery. As described above, the scup and black sea bass pot/trap fisheries are considered "lobster traps" under the ALWTRP. As a result, these fisheries are also considered part of the Northeast/Mid-Atlantic Lobster Trap/Pot fishery. Portions of the summer flounder, scup, and black sea bass gillnet fisheries are included in either the Northeast Sink Gillnet fishery or the Mid-Atlantic Coastal Gillnet Fishery. Participants in these fisheries must, therefore, comply with the following MMPA requirements:

- Owners of vessels or gear engaging in a Category I or II fishery are required to register with NMFS and obtain a marine mammal authorization from NMFS in order to lawfully incidentally take a marine mammal in a commercial fishery;
- Any vessel owner or operator participating in a Category I or II fishery must report all incidental injuries or mortalities of marine mammals that occur during commercial fishing operations to NMFS;
- Fishers participating in a Category I or II fishery are required to take an observer aboard the vessel upon request;
- Fishers participating in a Category I or II fishery must comply with any relevant take reduction plan (*e.g.*, the ALWTRP or HPTRP).

2.3 Action Area

The management unit for summer flounder is from Maine (U.S./Canadian border) to the North Carolina/South Carolina border while the management unit for scup and black sea bass is from Maine (U.S./Canadian border) to Cape Hatteras, North Carolina. Black sea bass and scup fisheries that occur south of Cape Hatteras are managed by the South Atlantic Fishery Management Council under the Snapper/Grouper FMP. The action area for this consultation is therefore defined as all waters under U.S. jurisdiction from the U.S./Canadian border to the North Carolina/South Carolina border.

3.0 STATUS OF THE SPECIES AND CRITICAL HABITAT

NMFS has determined that the action being considered in the Opinion may adversely affect the following species provided protection under the ESA

Cetaceans

Right whale (*Eubalaena glacialis*)	Endangered
Humpback whale (*Megaptera novaeangliae*)	Endangered
Fin whale (*Balaenoptera physalus*)	Endangered

Sea Turtles

Loggerhead sea turtle (*Caretta caretta*)	Threatened
Leatherback sea turtle (*Dermochelys coriacea*)	Endangered
Kemp's ridley sea turtle (*Lepidochelys kempii*)	Endangered
Green sea turtle (*Chelonia mydas*[1])	Endangered

NMFS has determined that the action being considered in the Opinion is not likely to adversely affect shortnose sturgeon (*Acipenser brevirostrum*), the Gulf of Maine distinct population segment (DPS) of Atlantic salmon (*Salmo salar*), sperm whales (*Physeter macrocephalus*), sei whales (*Balaenoptera borealis*), blue whales (*Balaenoptera musculus*), or the hawksbill sea turtle (*Eretmochelys imbricata*), all of which are listed as endangered species under the Endangered Species Act of 1973. NMFS has also determined that the action being considered is not expected to destroy or adversely modify right whale critical habitat that occurs within the action area (Cape Cod Bay and Great South Channel). The following discussion is NMFS' rationale for these determinations.

Shortnose sturgeon are benthic fish that mainly occupy the deep channel sections of large rivers. They can be found in rivers along the western Atlantic coast from St. Johns River, Florida (possibly extirpated from this system), to the Saint John River in New Brunswick, Canada. The species is anadromous in the southern portion of its range (*i.e.*, south of Chesapeake Bay), while some northern populations are amphidromous (NMFS 1998). Since the activities proposed to be authorized by the EFP will be conducted in Federal waters beyond where concentrations of shortnose sturgeon are most likely to be found, it is highly unlikely that the action will affect shortnose sturgeon.

The recent ESA-listing for Atlantic salmon covers the wild population of Atlantic salmon found in rivers and streams from the lower Kennebec River north to the U.S.-Canada border. Juvenile salmon in New England rivers typically migrate to sea in May after a two to three year period of development in freshwater streams, and remain at sea for two winters before returning to their U.S. natal rivers to spawn. The numbers of returning wild Atlantic salmon within the Gulf of

[1]Green turtles in U.S. waters are listed as threatened except for the Florida breeding population which is listed as endangered. Due to the inability to distinguish between these populations away from the nesting beach, green turtles are considered endangered wherever they occur in U.S. waters.

Maine DPS are perilously small with total run sizes of approximately 150 spawners occurring in 1999 (Baum 2000). Since operation of the lobster trap fishery will not occur in or near the rivers where concentrations of Atlantic salmon are most likely to be found, and there have been no recorded takes of Atlantic salmon in lobster trap gear, it is highly unlikely that the action being considered in this Opinion will affect the Gulf of Maine DPS of Atlantic salmon. Thus, this species will not be considered further in this Opinion.

Sperm whales inhabit all ocean basins, from equatorial waters to the polar regions (Perry *et al.* 1999). In the western North Atlantic they range from Greenland to the Gulf of Mexico and the Caribbean, generally in waters greater than 180 meters in depth. Their distribution shows a preference for continental margins, sea mounts, and areas of upwelling, where food is abundant (Leatherwood and Reeves 1983). In the U.S. EEZ, sperm whales are distributed in a distinct seasonal cycle; concentrated east-northeast of Cape Hatteras in winter and shifting northward in spring when whales are found throughout the Mid-Atlantic Bight. Distribution extends further northward to areas north of Georges Bank and the Northeast Channel region in summer and then south of New England in fall, back to the Mid-Atlantic Bight (Waring *et al.* 1999). There have been no known entanglements of sperm whales in gear used in the summer flounder, scup or black sea bass fisheries. It is unlikely that sperm whales would interact with these fisheries given the species preference for deeper waters. Therefore, this species will not be considered further in this Opinion.

Sei whales occur in deep water throughout their range, typically over the continental slope or in basins situated between banks (NMFS 1998). In the northwest Atlantic, the whales travel along the eastern Canadian coast in June, July, and autumn on their way to and from the Gulf of Maine and Georges Bank where they occur in winter and spring. Sei whales are known for inhabiting an area for weeks at a time then disappearing for years or even decades; this has been observed all over the world, including in the southwestern Gulf of Maine in 1986 (Clapham pers. comm. 2001). There have been no known entanglements of sei whales in trap or trawl gear. Therefore, this species will not be considered further in this Opinion.

Blue whales range in the North Atlantic from the subtropics to Baffin Bay and the Greenland Sea (Aecium and Leatherwood 1985). In 1987, one report of a blue whale in the southern Gulf of Maine entangled in gear described as probable lobster pot gear was received from a whale watch vessel. However, there was an unusual influx of blue whales into U.S. waters that year and no recent entanglements of blue whales have been reported from the U.S. Atlantic. In fact, blue whales are only occasional visitors to east coast U.S. waters. They are more commonly found in Canadian waters, particularly the Gulf of St. Lawrence where they are present for most of the year, and other areas of the North Atlantic (Waring *et al.* 2000). Therefore, this species will not be considered further in this Opinion.

The hawksbill sea turtle is relatively uncommon in the waters of the continental United States. Hawksbills prefer coral reefs, such as those found in the Caribbean and Central America. The Culebra Archipelago of Puerto Rico contains especially important foraging habitat for hawksbills. Nesting areas in the western North Atlantic include Puerto Rico and the Virgin Islands. There are accounts of hawksbills in south Florida and a number are encountered in Texas. In the north Atlantic, small hawksbills have stranded as far north as Cape Cod, Massachusetts (Sea Turtle Stranding and Salvage Network (STSSN) database). However, many of these strandings were observed after hurricanes or offshore storms. No takes of hawksbill sea turtles have been recorded in northeast or mid-Atlantic fisheries covered by the New England Fisheries Science Center (NEFSC) observer program. Therefore, given the range of hawksbill sea turtles, and based on the lack of documented takes of hawksbill sea turtles in the summer flounder, scup, and black sea bass fisheries, it is unlikely that the proposed action will affect hawksbill sea turtles. This species will not be considered further in this Opinion.

Critical habitat for right whales has been designated for Cape Cod Bay (CCB), Great South Channel (GSC), and coastal Florida and Georgia (outside of the action area for this Opinion). Two other areas under Canadian jurisdiction have been identified as critical to the continued existence of the species. Cape Cod Bay and Great South Channel were designated critical habitat for right whales due to their importance as spring/summer foraging grounds for this species. Although the physical and biological processes shaping acceptable right whale habitat are poorly understood, there is no evidence to suggest that operation of the summer flounder, scup, and black sea bass fisheries have any adverse effects on the value of critical habitat designated for the right whale. The right whale's zooplankton prey is probably more dependent on oceanic conditions than bottom habitat. Right whale critical habitat will, therefore, not be considered further in this Opinion.

The remainder of this section will focus on the status of the various species within the action area, summarizing the information necessary to establish the environmental baseline against which the effects of the proposed action will be assessed. Additional background information on the range-wide status of these species can be found in a number of published documents, including sea turtle status reviews and biological reports (NMFS and USFWS 1995, Marine Turtle Expert Working Group (TEWG) 1998 & 2000), recovery plans for the humpback whale (NMFS 1991a), right whale (NMFS 1991b), leatherback sea turtle (NMFS and USFWS 1992), loggerhead sea turtle (NMFS and USFWS 1991), green sea turtle (NMFS and USFWS 1991), and Kemp's ridley sea turtle (USFWS and NMFS 1992) the Marine Mammal Stock Assessment Reports (SAR) (Waring *et al.* 2000, Waring *et al.* 2001 in review), and other publications (*e.g.*, Perry *et al.* 1999; Clapham *et al.* 1999; IWC 2001 *in press*).

3.1 Status of whales

All of the cetacean species considered in this Opinion were once the subject of commercial whaling which likely caused their initial decline. Right whales were probably the first large whale to be hunted on a systematic, commercial basis (Clapham *et al.* 1999). Records indicate that right whales in the North Atlantic were subject to commercial whaling as early as 1059. Between the 11^{th} and 17^{th} centuries an estimated 25,000-40,000 North Atlantic right whales are believed to have been taken. On a world-wide scale, humpbacks were often the first species to be taken and frequently hunted to commercial extinction (Clapham *et al.* 1999). Wide-scale exploitation of the more offshore fin whale occurred later with the introduction of steam-powered vessels and harpoon gun technology (Perry *et al.* 1999).

All of the cetacean species considered in this Opinion were listed under the ESA at the species level; not as individual stocks or recovery units. Nevertheless, NMFS believes that, for the purposes of this section 7 consultation, the Opinion should focus on the specific subunit/stock of each species which occurs in the action area. With respect to right whales, NMFS recognizes three major subdivisions: North Pacific, North Atlantic, and Southern Hemisphere. NMFS further recognizes eastern and western subunits in the North Atlantic. Because of our limited understanding of the genetic structure of the entire species, the most conservative approach to this species would treat these right whale subunits as recovery units whose survival and recovery is critical to the survival and recovery of the species. Consequently, this Opinion will focus on the western North Atlantic recovery unit of right whales which occurs in the action area. Similarly, the six western North Atlantic humpback whale feeding areas, including the Gulf of Maine, are recognized as representing relatively discreet subpopulations (Waring *et al.* 2000). The decision was recently made to reclassify the Gulf of Maine as a separate feeding stock based upon the strong site fidelity of individual whales to this region and the assumption that, were this subpopulation wiped out, repopulation by immigration from adjacent areas would not occur on any reasonable management timescale (Waring *et al.* 1999). Therefore, this biological opinion will focus on the Gulf of Maine feeding stock of humpback whales which occurs in the action area. In contrast, the stock identity of North Atlantic fin whales has received relatively little attention, and it is uncertain whether the current stock boundaries represent biologically isolated units (Waring *et al.* 2000). While the existence of fin whale subpopulations in the North Atlantic has been suggested from localized depletions resulting from commercial exploitation as well as from genetic studies, for the purposes of this Opinion, NMFS will treat all western North Atlantic fin whales as a single stock consistent with their treatment in the marine mammal stock assessment reports (Waring *et al.* 1999, Waring *et al.* 2000).

3.1.1 Western North Atlantic Right Whale

North Atlantic right whales generally occur west of the Gulf Stream and are most commonly associated with cooler waters (21 °C). They are not found in the Caribbean and have been recorded only rarely in the Gulf of Mexico. Like other baleen whales, they occur in the lower latitudes and more coastal waters during the winter, where calving takes place, and then tend to migrate to higher latitudes for the summer. The distribution of right whales in summer and fall appears linked to the distribution of their principal zooplankton prey (Winn *et al.* 1986). New England waters include important foraging habitat for right whales and at least some right whales are present in these waters throughout most months of the year. They are most abundant in Cape Cod Bay between February and April (Hamilton and Mayo 1990; Schevill *et al.* 1986; Watkins and Schevill 1982) and in the Great South Channel in May and June (Kenney *et al.* 1986, Payne *et al.* 1990) where they have been observed feeding predominantly on copepods, largely of the genera *Calanus* and *Pseudocalanus* (Waring *et al.* 1999). Right whales also frequent Stellwagen Bank and Jeffrey's Ledge, as well as Canadian waters including the Bay of Fundy and Browns and Baccaro Banks, in the spring and summer months. Mid-Atlantic waters are used as a migratory pathway from the spring and summer feeding/nursery areas to the winter calving grounds off the coast of Georgia and Florida.

There is, however, much about right whale movements and habitat that is still not known or understood. Based on photo-identification, it has been shown that of 396 identified individuals, 25 have never been seen in any inshore habitat, and 117 have never been offshore (IWC 2001). Telemetry data have shown lengthy and somewhat distant excursions into deep water off of the continental shelf (Mate *et al.* 1997). Photo-id data have also indicated excursions of animals as far as Newfoundland, the Labrador Basin, southeast of Greenland (Knowlton *et al.* 1992), and Norway (IWC 2001). During the winter of 1999/2000, appreciable numbers of right whales were recorded in the Charleston, SC area. Because survey efforts in the Mid-Atlantic have been limited, it is unknown whether this is typical or whether it represents a northern expansion of the normal winter range, perhaps due to unseasonably warm waters.

Data collected in the 1990's suggested that western North Atlantic right whales were experiencing a slow, but steady recovery (Knowlton *et al.* 1994). However, more recent data strongly suggest that this trend has reversed and the species is in decline (Caswell *et al.* 1999). While it is not possible to obtain an exact count of the number of western North Atlantic right whales, IWC participants from a 1999 workshop agreed that it is reasonable to state that the current size of the western North Atlantic right whale is probably around 300 (+/- 10%) (IWC 2001). This conclusion is based, in large part, on a photo-id catalog comprising more than 14,000 photographed sightings of 396 individuals, 11 of which are known to be dead and 87 of which have not been seen in more than 6 years. In addition, relatively few new non-calf whales have been sighted in recent years (IWC 2001) suggesting that the 396 individuals is a close approximation of the entire population. The sightings data and genetics data also support the conclusion that, as found previously, calving intervals have increased (from 3.67 years in 1992 to 5.8 years in 1998) and the survival rate has declined (IWC 2001). For reasons which are unknown, many (presumed) mature females have not yet given birth (an estimated 70% of mature females are reproductively active). Simply put, the western North Atlantic right whale population is declining because the trend over the last several years has been a decline in births coupled with an increase in mortality.

Factors which have been suggested as affecting right whale reproductive success and mortality include genetic diversity, pollutants, and nutritional stress. However, evidence to support that any or all of these are currently affecting the status of western North Atlantic right whales is lacking. The number of western North Atlantic right whales at the termination of whaling is unknown, but is generally believed to have been very small. Such an event may have resulted in a loss of genetic diversity which could affect the ability of the current population to successfully reproduce (*i.e.*, decreased conceptions, increased abortions, and increased neonate mortality). Studies by Schaeff *et al.* (1997) and Malik *et al.* (2000) indicate that western North Atlantic right whales are less genetically diverse than southern right whales. However, several apparently healthy populations of cetaceans, such as sperm whales and pilot whales, have even lower genetic diversity than observed for western North Atlantic right whales (IWC 2001). Similarly, while contaminant studies have confirmed that right whales are exposed to and accumulate contaminants, researchers could not conclude that these contaminant loads were negatively affecting right whales since concentrations were lower than those found in marine mammals proven to be affected by PCB's and DDT's (Weisbrod *et al.* 2000). Finally, although North Atlantic right whales appear to have thinner blubber than right whales from the South Atlantic (Kenney 2000), there is no evidence at present to demonstrate that the decline in birth rate and increase in calving interval is related to a food shortage. These concerns were also discussed at the 1999 IWC workshop where it was pointed out that since *Calanus* sp. is the most common zooplankton in the North Atlantic and current right whale abundance is greatly below historical levels, the proposal that food limitation was the major factor seemed questionable (IWC 2001).

Anthropogenic mortality in the form of ship strikes and fishing gear entanglements do, however, appear to be affecting the status of western North Atlantic right whales. Data collected from 1970 through 1999 indicate that anthropogenic interactions are responsible for a minimum of two-thirds of the confirmed and possible mortality of non-neonate animals (IWC 2001). Of the 45 right whale mortalities documented during this period, 16 were due to ship collisions and three were due to entanglement in fishing gear (there were also 13 neonate deaths and 13 of unknown causes) (IWC 2001). Based on the criteria developed by Knowlton and Kraus (2001), 37 additional serious injuries were documented between 1970 and 1999: 9 from ship strikes and 28 from entanglement. Thirteen were possibly fatal (2 ship strikes, 11 entanglements), and 24 were non-fatal (7 ship strikes, 17 entanglements) (IWC 2001). Scarification analysis also provides information on the number of right whales which have survived ship strikes and fishing gear entanglements. Based on photographs of catalogued animals from 1959 and 1989, Kraus

(1990) estimated that 57 percent of right whales exhibited scars from entanglement and 7 percent from ship strikes (propeller injuries). This work was updated by Hamilton *et al.* (1998) using data from 1935 through 1995. The new study estimated that 61.6 percent of right whales exhibit injuries caused by entanglement, and 6.4 percent exhibit signs of injury from vessel strikes. In addition, several whales have apparently been entangled on more than one occasion. Some right whales that have been entangled were subsequently involved in ship strikes. Because some animals may drown or be killed immediately, the actual number of interactions is expected to be higher.

Summary of Right Whale Status
The right whales prevalence for coastal habitat, its proximity to major shipping lanes, and the mechanism by which it feeds (filtering large volumes of water) likely make it more susceptible to fishing gear entanglements and ship strikes as compared to other cetacean species. In addition, right whales also forage in Canadian waters where the species is afforded less protection, and where fishing gear and large ship traffic is also prevalent. For purposes of this Opinion, the NMFS considers the current size of the western North Atlantic right whale recovery unit to be approximately 300 animals (+/- 10%). Based on recent reviews of the status of right whales (Caswell *et al.* 1999, IWC 2001), the NMFS also considers that the current trend indicates a decline in calving (for unknown reasons), and high anthropogenic mortality occurring from at least two sources (ship strikes and fishing gear entanglement). Therefore, NMFS considers the western North Atlantic recovery unit of right whales to be declining.

3.1.2 Gulf of Maine Humpback Whales

Humpback whales calve and mate in the West Indies and migrate to feeding areas in the northwestern Atlantic during the summer months. Most of the humpbacks that forage in the Gulf of Maine (GOM) visit Stellwagen Bank and the waters of Massachusetts and Cape Cod Bays. Sightings are most frequent from mid-March through November between 41°N and 43°N, from the Great South Channel north along the outside of Cape Cod to Stellwagen Bank and Jeffrey's Ledge (CeTAP 1982) and peak in May and August. Small numbers of individuals may be present in this area year-round, including the waters of Stellwagen Bank. They feed on a number of species of small schooling fishes, particularly sand lance and Atlantic herring, by targeting fish schools and filtering large amounts of water for their associated prey. Humpback whales have also been observed feeding on krill (Wynne and Schwartz 1999).

In winter, whales from the six feeding areas (including the Gulf of Maine) mate and calve primarily in the West Indies where spatial and genetic mixing among these groups occur (Waring *et al.* 2000). Various papers (Clapham and Mayo 1990, Clapham 1992, Barlow & Clapham 1997, Clapham *et al.* 1999) summarized information gathered from a catalogue of photographs of

643 individuals from the western North Atlantic population of humpback whales. These photographs identified reproductively mature western North Atlantic humpbacks wintering in tropical breeding grounds in the Antilles, primarily on Silver and Navidad Banks, north of the Dominican Republic. The primary winter range also includes the Virgin Islands and Puerto Rico (NMFS 1991a). Calves are born from December through March and are about 4 meters at birth. Sexually mature females give birth approximately every 2 to 3 years. Sexual maturity is reached between 4 and 6 years of age for females and between 7 and 15 years for males. Size at maturity is about 12 meters.

Humpback whales use the Mid-Atlantic as a migratory pathway to and from the calving/mating grounds, but it may also be an important winter feeding area for juveniles. Since 1989, observations of juvenile humpbacks in the Mid-Atlantic have been increasing during the winter months, peaking January through March (Swingle *et al.* 1993). Biologists theorize that non-reproductive animals may be establishing a winter feeding range in the Mid-Atlantic since they are not participating in reproductive behavior in the Caribbean. Swingle *et al.* (1993) identified a shift in distribution of juvenile humpback whales in the nearshore waters of Virginia, primarily in winter months. Identified whales using the Mid-Atlantic area were found to be residents of the GOM and Atlantic Canada (Gulf of St. Lawrence and Newfoundland) feeding groups, suggesting a mixing of different feeding stocks in the Mid-Atlantic region. Strandings of humpback whales have increased between New Jersey and Florida since 1985 consistent with the increase in Mid-Atlantic whale sightings. Strandings were most frequent during September through April in North Carolina and Virginia waters, and were composed primarily of juvenile humpback whales of no more than 11 meters in length (Wiley *et al.* 1995).

It is not possible to provide a reliable estimate of abundance for the Gulf of Maine humpback whale population at this time (Waring *et al.* 2000). Available data are too limited to yield a precise estimate, and additional data from the northern Gulf of Maine and perhaps elsewhere are required (Waring *et al.* 2000). Photographic mark-recapture analyses from the Years of the North Atlantic Humpback (YONAH) project gave an ocean-basin-wide estimate of 10,600 (95% c.i. = 9,300 - 12,100) (Waring *et al.* 2000). For management purposes under the MMPA, the estimate of 10,600 is regarded as the best available estimate for the North Atlantic population (Waring *et al.* 2000).

Humpback whales, like other baleen whales, may also be adversely affected by habitat degradation, habitat exclusion, acoustic trauma, harassment, or reduction in prey resources due to trophic effects resulting from a variety of activities including the operation of commercial fisheries, coastal development and vessel traffic. However, evidence of these is lacking. There are strong indications that a mass mortality of humpback whales in the southern Gulf of Maine in 1987/1988 was the result of the consumption of mackerel whose livers contained high levels of a red-tide toxin. It has been suggested that red tides are somehow related to increased freshwater runoff from coastal development but there is insufficient data to link this with the humpback whale mortality (Clapham *et al.* 1999). Changes in humpback distribution in the Gulf of Maine have been found to be associated with changes in herring, mackerel, and sand lance abundance associated with local fishing pressures (Waring *et al.* 2000). However, there is no evidence that humpback whales were adversely affected by these trophic changes.

As is the case with other large whales, the major known sources of anthropogenic mortality and injury of humpback whales occur from commercial fishing gear entanglements and ship strikes. Sixty percent of Mid-Atlantic humpback whale mortalities that were closely investigated showed signs of entanglement or vessel collision (Wiley *et al.* 1995). Between 1992 and 2001 at least 92 humpback whale entanglements and 10 ship strikes (this includes an interaction between a humpback whale and a 33' pleasure boat) were recorded. There were also many carcasses that washed ashore or were spotted floating at sea for which the cause of death could not be determined. Based on photographs of the caudal peduncle of humpback whales, Robbins and Mattila (1999) estimated that at least 48 percent --- and possibly as many as 78 percent --- of animals in the Gulf of Maine exhibit scarring caused by entanglement. These estimates are based on sightings of free-swimming animals that initially survive the encounter. Because some whales may drown immediately, the actual number of interactions may be higher.

Summary of Humpback Whales Status
NMFS considers the best estimate for the entire North Atlantic humpback population to be 10,600 but the size of the Gulf of Maine feeding stock of humpback whales (the focus of this Opinion) is unknown. Anthropogenic mortality associated with ship strikes and fishing gear entanglements is significant. The winter range where mating and calving occurs is located in areas outside of the United States where the species is afforded less protection. Despite these, modeling using data obtained from photographic mark-recapture studies estimates the growth rate of the Gulf of Maine at 6.5% (Barlow and Clapham 1997).

3.1.3 Fin Whale

Fin whales inhabit a wide range of latitudes between 20-75° N and 20-75° S (Perry *et al.* 1999). Fin whales spend the summer feeding in the relatively high latitudes of both hemispheres, particularly along the cold eastern boundary currents in the North Atlantic and North Pacific Oceans and in Antarctic waters (IWC 1992). During 1978-1982 aerial surveys, fin whales accounted for 24% of all cetaceans and 46% of all large cetaceans sighted over the continental shelf between Cape Hatteras and Nova Scotia (Waring *et al.* 1998). Underwater listening systems have also demonstrated that the fin whale is the most acoustically common whale species heard in the North Atlantic (Clark 1995). The single most important area for this species appears to be from the Great South Channel, along the 50m isobath past Cape Cod, over Stellwagen Bank, and past Cape Ann to Jeffrey's Ledge (Hain *et al.*1992).

Like right and humpback whales, fin whales are believed to use North Atlantic waters primarily for feeding, and more southern waters for calving. However, evidence regarding where the majority of fin whales winter, calve, and mate is still scarce. Clark (1995) reported a general pattern of fin whale movements in the fall from the Labrador/Newfoundland region, south past Bermuda and into the West Indies, but neonate strandings along the U.S. Mid-Atlantic coast from October through January suggest the possibility of an offshore calving area (Hain *et al.* 1992).

Fin whales achieve sexual maturity at 5-15 years of age (Perry *et al.* 1999), although physical maturity may not be reached until 20-30 years (Aguilar and Lockyer 1987). Conception is believed to occur during the winter and, after a 12 month gestation, a single calf is born (Mizroch *et al.* 1984). The calf is weaned 6-11 months after birth (Perry *et al.* 1999). The mean calving interval is 2.7 years (Agler *et al.* 1993).

The predominant prey of fin whales varies greatly in different geographical areas depending on what is locally available (IWC 1992). In the western North Atlantic, fin whales feed on a variety of small schooling fish (*i.e.*, herring, capelin, sand lance) as well as squid and planktonic crustaceans (Wynne and Schwartz 1999). As with humpback whales, fin whales feed by filtering large volumes of water for their prey through their baleen plates.

The NMFS has designated one stock of fin whale for U.S. waters of the North Atlantic (Waring *et al.* 1998) where the species is commonly found from Cape Hatteras northward although there is information to suggest some degree of separation. A number of researchers have suggested the existence of fin whale subpopulations in the North Atlantic based on local depletions resulting from commercial overharvesting (Mizroch *et al.* 1984) or genetics data (Bérubé *et al.* 1998). Photoidentification studies in western North Atlantic feeding areas, particularly in Massachusetts Bay, have shown a high rate of annual return by fin whales, both within years and between years (Seipt *et al.* 1990) suggesting some level of site fidelity. In 1976, the IWC's Scientific Committee proposed seven stocks for North Atlantic fin whales. These are: (1) North Norway, (2) West Norway-Faroe Islands, (3) British Isles-Spain and Portugal, (4) East Greenland-Iceland, (5) West Greenland, (6) Newfoundland-Labrador, and (7) Nova Scotia (Perry *et al.* 1999). However, it is uncertain whether these stock boundaries define biologically isolated units (Waring *et al.* 1999).

Various estimates have been provided to describe the current status of fin whales in western North Atlantic waters. One method used the catch history and trends in Catch Per Unit Effort to obtain an estimate of 3,590 to 6,300 fin whales for the entire western North Atlantic (Perry *et al.*

1999). Hain *et al.* (1992) estimated that about 5,000 fin whales inhabit the Northeastern United States continental shelf waters. The latest (2001- in draft) SAR gives a best estimate of abundance for fin whales of 2,814 (CV = 0.21). The minimum population estimate for the western North Atlantic fin whale is 2,362. This is currently an underestimate: we know too little about population structure, and the estimate derives from surveys over a limited portion of the western North Atlantic. There is also not enough information to estimate population trends.

Like right whales and humpback whales, anthropogenic mortality and injury of fin whales include entanglement in commercial fishing gear and ship strikes. Of 18 fin whale mortality records collected between 1991 and 1995, four were associated with vessel interactions, although the proximal cause of mortality was not known. From 1996-July 2001, there were nine observed fin whale entanglements and at least four ship strikes. It is believed to be the most commonly struck cetacean by large vessels (Laist *et al.* 2001). Unlike right and humpback whales (with the exception of a subsistence hunt in the Caribbean), hunting of fin whales continued well into the 20th century. Fin whales were given total protection in the North Atlantic in 1987 with the exception of a subsistence whaling hunt for Greenland (Gambell 1993, Caulfield 1993). However, Iceland reported a catch of 136 whales in the 1988/89 and 1989/90 seasons, and has since ceased reporting fin whale kills to the IWC (Perry *et al.* 1999). In total, there have been 239 reported kills of fin whales from the North Atlantic from 1988 to 1995.

Summary of Fin Whale Status
The minimum population estimate for the western North Atlantic fin whale is 2,362 which is believed to be an underestimate. In addition to the uncertainty of its population size, there are also uncertainties as to the stock structure and population trends. The species does appear to be less affected by fishing gear as compared to right and humpback whales. However, of these three, it is the most commonly struck by large vessels (Laist *et al.* 2001). Some level of whaling for fin whales in the North Atlantic may still occur. Physical maturity may not be reached until 20-30 years (Aguilar and Lockyer 1987).

3.2 Status of Sea Turtles

Sea turtles continue to be affected by many factors occurring on the nesting beaches and in the water. Poaching, habitat loss (because of human development), and nesting predation by introduced species affect hatchlings and nesting females while on land. Fishery interactions from many sources affect sea turtles in the pelagic and benthic environments. As a result, sea turtles still face many of the original threats that were the cause of their listing under the ESA.

This Opinion treats the sea turtle populations in the Atlantic Ocean as distinct from the Pacific Ocean populations for the purposes of this consultation. This approach is supported by interagency policy on the recognition of distinct vertebrate populations (61 FR 4722). To address specific criteria outlined in that policy, sea turtle populations in the Atlantic basin are geographically discrete from populations in the Pacific basin, with limited genetic exchange (NMFS and USFWS 1998). This approach is also consistent with traditional jeopardy analyses; the loss of sea turtle populations in the Atlantic basin would result in a significant gap in the distribution of each turtle species, which makes these populations biologically significant. Finally, the loss of these sea turtle populations in the Atlantic basin would dramatically reduce the distribution and abundance of these species and would, by itself, appreciably reduce the entire species' likelihood of surviving and recovering in the wild.

Like cetaceans, sea turtles were listed under the ESA at the species level rather than individual stocks or recovery units. An exception was made for green turtles in U.S. waters which are listed as threatened except for the Florida breeding population which is listed as endangered. Due to the inability to distinguish between these populations away from the nesting beach, for the purposes of this Opinion, green turtles are considered endangered wherever they occur in the U.S. Atlantic and Gulf of Mexico waters. In addition, while the loggerhead sea turtle was considered to be a single population in the North Atlantic at the time of listing under the ESA, genetic analyses conducted at nesting sites since the listing indicate the existence of distinct subpopulations (TEWG 2000). These are: (1) a northern nesting subpopulation that occurs from North Carolina to northeast Florida, about 29° N (approximately 7,500 nests in 1998); (2) a south Florida nesting subpopulation, occurring from 29° N on the east coast to Sarasota, Florida on the west coast (approximately 83,400 nests in 1998); (3) a Florida panhandle nesting subpopulation, occurring at Eglin Air Force Base and the beaches near Panama City, Florida (approximately 1,200 nests in 1998); (4) a Yucatán nesting subpopulation, occurring on the eastern Yucatán Peninsula, Mexico (TEWG 2000); and (5) a Dry Tortugas nesting subpopulation, occurring in the islands of the Dry Tortugas, near Key West, Florida (approximately 200 nests per year) (NMFS SEFSC 2001). Any action that appreciably reduced the likelihood that one or more of these nesting aggregations would survive and recover would appreciably reduce the species likelihood of survival and recovery in the wild. Consequently, this biological opinion will treat the five nesting aggregations of loggerhead sea turtles as subpopulations whose survival and recovery is critical to the survival and recovery of the species. Loggerheads from any of these nesting sites may occur within the action area. However, the majority of the loggerhead turtles in the action area are expected to have come from the northern nesting subpopulation and the south Florida nesting subpopulation.

3.2.1 Loggerhead Sea Turtles

Loggerhead sea turtles are the most abundant species of sea turtle in U.S. waters, commonly occurring throughout the inner continental shelf from Florida through Cape Cod, Massachusetts, and may occur as far north as Nova Scotia when oceanographic and prey conditions are favorable (NEFSC survey data 1999). Aerial surveys of loggerhead turtles north of Cape Hatteras indicate that they are most common in waters from 22 to 49 meters deep, although they range from the beach to waters beyond the continental shelf (Shoop and Kenney 1992).

In the western Atlantic, most loggerhead sea turtles nest from North Carolina to Florida and along the gulf coast of Florida. Between 1989 and 1998, the total number of nests laid along the U.S. Atlantic and Gulf coasts ranged from 53,014 to 92,182, annually with a mean of 73,751. On average, 90.7% of these nests were of the south Florida subpopulation (approximately 83,400 nests in 1998), 8.5% were from the northern subpopulation (7,500 nests in 1998), and 0.8% were from the Florida Panhandle nest sites (approximately 1,200 nests in 1998). There is limited nesting throughout the Gulf of Mexico west of Florida, but it is not known to what subpopulation the turtles making these nests belong. Nesting data can also be used to indirectly estimate both the number of females nesting in a particular year (based on an average of 4.1 nests per nesting female, Murphy and Hopkins (1984)) and the number of adult females in the entire population (based on an average remigration interval of 2.5 years; Richardson *et al.* 1978). However, an important caveat is that this data may reflect trends in adult nesting females, but it may not reflect overall population growth rates. With this in mind, using data from 1989-1998, the average adult female loggerhead population was estimated to be 44,780. Data from 1990 to the present for the northern loggerhead subpopulation indicate that nests have been increasing annually (2.8 - 2.9%) (NMFS SEFSC 2001). However, the status of this subpopulation is of concern. There are only an estimated 3,800 nesting females in the northern loggerhead subpopulation. Unlike the much larger south Florida subpopulation which produces predominantly females (80%), the northern subpopulation produces predominantly males (65%) (NMFS SEFSC 2001). The status of this northern population has, therefore, been classified declining or stable, at best (TEWG 2000).

Like other sea turtles, loggerhead hatchlings enter the pelagic environment upon leaving the nesting beach. Loggerhead sea turtles originating from the western Atlantic nesting aggregations are believed to lead a pelagic existence in the North Atlantic Gyre for as long as 7-12 years before settling into benthic environments where they opportunistically forage on crustaceans and mollusks (Wynne and Schwartz 1999). Under certain conditions they may also scavenge fish, particularly if they are easy to catch (*e.g.*, caught in nets; NMFS and USFWS 1991). Once they enter the benthic environment, loggerheads undertake routine migrations along the coast that appear to be limited by water temperature. Loggerhead sea turtles are found in Virginia foraging areas as early as April but are not usually found on the most northern foraging grounds in the Gulf of Maine until June. The large majority leave the Gulf of Maine by mid-September but some may remain in Mid-Atlantic and Northeast areas until late Fall. Loggerheads appear to concentrate in nearshore and southerly areas influenced by warmer Gulf Stream waters off North Carolina during November and December (Epperly *et al.* 1995a). Support for these loggerhead movements are provided by the collected work of Morreale and Standora (1998) who showed through satellite tracking that 12 loggerheads traveled along similar spatial and temporal corridors from Long Island Sound, New York, in a time period of October through December, within a narrow band along the continental shelf before becoming sedentary for one or two months south of Cape Hatteras.

Although foraging grounds contain cohorts from nesting colonies from throughout the Western North Atlantic, loggerhead subpopulations are not equally represented on all foraging grounds. In general, south Florida turtles are more prevalent on southern foraging grounds and their concentrations decline to the north. Conversely, loggerhead turtles from the northern nesting group are more prevalent in northern foraging grounds and less so in southern foraging areas (Table 1) (NMFS SEFSC 2001; Bass *et al.* 1999).

Table 1. Contribution of loggerhead subpopulations to foraging grounds.

SUBPOPULATION[1]	% CONTRIBUTION TO FORAGING GROUND				
	Western Gulf	Florida	Georgia	Carolinas	North of Cape Hatteras/Virginia[2]
South Florida	83%	73%	73%	65-66%	46%
Northern	10%	20%	24%	25-28%	46%
Yucatán	6-9%	6-9%	3%	6-9%	6-9%

[1]- The Florida Panhandle population was not included because it contributes less than 1% in the overall nesting effort and including it could result in overestimating its contribution.

[2]- Virginia was the most northern area sampled for the study (Bass *et al.* 1999)

The diversity of a sea turtle's life history leaves them susceptible to many natural and human impacts, including impacts while they are on land, in the benthic environment, and in the pelagic environment. Hurricanes are particularly destructive to sea turtle nests. Sand accretion and rainfall that result from these storms as well as wave action can appreciably reduce hatchling success. For example, in 1992, all of the eggs over a 90-mile length of coastal Florida were destroyed by storm surges on beaches that were closest to the eye of Hurricane Andrew (Milton *et al.* 1994). Other sources of natural mortality include cold stunning and biotoxin exposure. Anthropogenic factors that impact hatchlings and adult female turtles on land, or the success of nesting and hatching include: beach erosion, beach armoring and nourishment; artificial lighting; beach cleaning; increased human presence; recreational beach equipment; beach driving; coastal construction and fishing piers; exotic dune and beach vegetation; and poaching. An increased human presence at some nesting beaches or close to nesting beaches has lead to secondary threats such as the introduction of exotic fire ants, and an increased presence of native species (*e.g.*, raccoons, armadillos, and opossums) which raid and feed on turtle eggs. Although sea turtle nesting beaches are protected along large expanses of the northwest Atlantic coast (in areas like Merrit Island, Archie Carr, and Hobe Sound National Wildlife Refuges), other areas along these coasts have limited or no protection. Sea turtle nesting and hatching success on unprotected high density east Florida nesting beaches from Indian River to Broward County are affected by all of the above threats.

Loggerhead sea turtles are impacted by a completely different set of anthropogenic threats in the marine environment. These include oil and gas exploration, coastal development, and transportation; marine pollution; underwater explosions; hopper dredging, offshore artificial lighting; power plant entrainment and/or impingement; entanglement in debris; ingestion of marine debris; marina and dock construction and operation; boat collisions; poaching, and fishery interactions. In the pelagic environment loggerheads are exposed to a series of long-line fisheries that include the U.S. Atlantic tuna and swordfish longline fisheries, an Azorean long-line fleet, a Spanish long-line fleet, and various fleets in the Mediterranean Sea (Aguilar *et al.* 1995, Bolten *et al.* 1994, Crouse 1999). In the benthic environment in waters off the coastal U.S., loggerheads are exposed to a suite of fisheries in Federal and State waters including trawl, purse seine, hook and line, gillnet, pound net, longline, and trap fisheries (see further discussion in the Environmental Baseline of this Opinion).

Summary of Status for Loggerhead Sea Turtles
NMFS recognizes five subpopulations of loggerhead sea turtles in the western Atlantic based on genetic studies. Although these subpopulations mix on the foraging grounds, cohorts from the northern subpopulation appear to be predominant on the northern foraging grounds. Data from 1990 to the present indicate that nests for the northern subpopulation have been increasing annually (2.8 - 2.9%) (approximately 7,500 nests in 1998). However, over half of the hatchlings produced are males (NMFS SEFSC 2001). Nest rates for the south Florida subpopulation have increased at a rate of 3.9 - 4.2% since 1990 (approximately 83,400 nests in 1998). Over 80% of the hatchlings produced are females. All loggerhead subpopulations are faced with a multitude of natural and anthropogenic effects. Many anthropogenic effects occur as a result of activities outside of U.S. jurisdiction (*i.e.*, fisheries in international waters). For the purposes of this consultation, NMFS considers that the northern subpopulation of loggerhead sea turtles is declining or stable, at best, and the Florida subpopulation of loggerhead sea turtles is potentially increasing.

3.2.2 Leatherback Sea Turtles

The leatherback sea turtle is the largest living turtle and ranges farther than any other sea turtle species, exhibiting broad thermal tolerances (NMFS and USFWS 1995). Evidence from tag returns and strandings in the western Atlantic suggests that adults engage in routine migrations between boreal, temperate and tropical waters (NMFS and USFWS 1992). A 1979 aerial survey of the outer Continental Shelf from Cape Hatteras, North Carolina to Cape Sable, Nova Scotia showed leatherbacks to be present throughout the area with the most numerous sightings made from the Gulf of Maine south to Long Island. Leatherbacks are predominantly a pelagic species and feed on jellyfish (*i.e., Stomolophus, Chryaora,* and *Aurelia* (Rebel 1974)), cnidarians (medusae, siphonophores) and tunicates (salps, pyrosomas). Shoop and Kenney (1992) observed concentrations of leatherbacks during the summer off the south shore of Long Island and off New Jersey where they are thought to be following their preferred jellyfish prey. Leatherbacks may also come into shallow waters if there is an abundance of jellyfish nearshore. For example, leatherbacks occur annually in places such as Cape Cod and Narragansett Bays during certain times of the year, particularly the fall (C. Ryder, pers comm.).

Estimated to number approximately 115,000 adult females globally in 1980 (Pritchard 1982) and only 34,500 by 1995 (Spotila *et al.* 1996), leatherback populations have been decimated worldwide by fishery related mortality as well as intense exploitation of the eggs (Ross 1979). The Pacific population appears to be in a critical state of decline, now estimated to number less than 3,000 total adult and subadult animals (Spotila *et al.* 2000). Eastern Atlantic (*i.e.,* off Africa) and Caribbean populations appear to be stable, but there is conflicting information (Spotila, pers. comm) for some sites and it is certain that some nesting populations (*e.g.*, St. John and St. Thomas, U.S. Virgin Islands) have been extirpated (NMFS and USFWS 1995). Data collected in southeast Florida clearly indicate increasing numbers of nests for the past twenty years (9.1-11.5% increase), although it is critical to note that there was also an increase in the survey area in Florida over time (NMFS SEFSC 2001). However, the largest leatherback rookery in the western North Atlantic remains along the northern coast of South America in French Guiana and Suriname. The nesting population of leatherback sea turtles in the Suriname-French Guiana trans-boundary region has been declining since 1992 (Chevalier and Girondot 1998). Poaching and fishing gear interactions are, once again, believed to be the major contributors to the decline of leatherbacks in the area (Chevalier *et al.* in press, Swinkels *et al.* in press). While Spotila *et al.*(1996) indicated that turtles may have been shifting their nesting from French Guiana to Suriname due to beach erosion, analyses show that the overall area trend in number of nests has been negative since 1987 at a rate of 15.0 -17.3 % per year (NMFS SEFSC 2001). If turtles are not nesting elsewhere, it appears that the Western Atlantic portion of the population is being subjected to mortality beyond sustainable levels, resulting in a continued decline in numbers of nesting females. Tag return data emphasize the global nature of the leatherback and the link between these South American nesters and animals found in U.S. waters. For example, a nesting female tagged May 29, 1990, in French Guiana was later recovered and released alive from the York River, Virginia. Another nester tagged in French Guiana on June 21,1990, was later found dead in Palm Beach, Florida (STSSN database).

Of the Atlantic turtle species, leatherbacks seem to be the most vulnerable to entanglement in fishing gear. This susceptibility may be the result of their body type (large size, long pectoral flippers, and lack of a hard shell), and their attraction to gelatinous organisms and algae that collect on buoys and buoy lines at or near the surface, and perhaps to the lightsticks used to attract target species in longline fisheries. Sea turtles entangled in fishing gear generally have a reduced ability to feed, dive, surface to breathe or perform any other behavior essential to survival (Balazs 1985). They may be more susceptible to boat strikes if forced to remain at the surface, and entangling lines can constrict blood flow resulting in necrosis.

Leatherbacks are exposed to fisheries in many areas of their range. According to observer records, an estimated 6,363 leatherback sea turtles were caught by the U.S. Atlantic tuna and swordfish longline fisheries between 1992-1999, of which 88 were released dead (NMFS SEFSC 2001). However, the U.S. fleet accounts for only 5-8% of the hooks fished in the Atlantic Ocean. Adding up the under-represented observed takes of the other 23 countries actively fishing in the area would likely result in annual take estimates of thousands of leatherbacks over different life stages. Leatherbacks are also susceptible to entanglement in the lines associated with trap/pot gear used in several fisheries. In the Northeast, leatherbacks are known to become entangled in lobster trap gear. One hundred nineteen leatherback entanglements were reported from New York through Maine for the years 1980 - 2000 (NMFS 2001b) and these represented known entanglements between the months of June and October, only (NEFSC, unpublished data). Leatherback entanglements have also been observed in the Mid-Atlantic blue crab fishery, Florida's lobster pot and stone crab fisheries, and in the U.S. Virgin Islands West Indian fish trap fishery (R. Boulon, pers. comm.) where one of five leatherback strandings from 1982 to 1997 were due to entanglement (Boulon 2000). Leatherback interactions with the southeast shrimp fishery are also common. Turtle Excluder Devices (TEDs), typically used in the southeast shrimp fishery to minimize sea turtle/fishery interactions, are less effective for the large-sized leatherbacks. Therefore, the NMFS has used several alternative measures to protect leatherback sea turtles from lethal interactions with the shrimp fishery. These include establishment of a Leatherback Conservation Zone (60 FR 25260) to restrict, when necessary, shrimp trawl activities from off the coast of Cape Canaveral, Florida to the Virginia/North Carolina Border, and the (temporary) use of larger TEDs. Gillnet fisheries operating in the nearshore waters of the Mid-Atlantic states are likely to take leatherbacks when these fisheries and leatherbacks co-occur. However, there is very little quantitative data on capture rate and mortality. Anecdotal reports include the incidental capture of eight leatherbacks in gillnets set in North Carolina of which six were released alive (D. Fletcher, pers.comm.).

Leatherbacks also face problems from poaching and ingestion of marine debris. NMFS SEFSC (2001) notes that poaching of juveniles and adults is still occurring in the U.S. Virgin Islands. In all, four of the five strandings in St. Croix were the result of poaching (Boulon 2000). A few cases of fishermen poaching leatherbacks have been reported from Puerto Rico, but most of the poaching is on eggs. Investigations of the stomach contents of stranded leatherback sea turtles revealed that a substantial percentage (44% of the 16 cases examined) contained plastic (Mrosovsky 1981). The presence of plastic debris in the digestive tract suggests that leatherbacks might not be able to distinguish between prey items and plastic debris (Mrosovsky 1981). Balazs (1985) speculated that the object may resemble a food item by its shape, color, size or even movement as it drifts about, and induce a feeding response.

It is important to note that marine debris, fishing gear interactions and poaching are problems for leatherbacks throughout their range. Along the coast of Peru, intestinal contents of 19 of 140 (13%) leatherback carcasses were found to contain plastic bags and film (Fritts 1982). Fishing gear entanglements are common in Canadian waters where Goff and Lien (1988) reported that 14 of 20 leatherbacks encountered off the coast of Newfoundland/Labrador were entangled in gear including salmon net, herring net, gillnet, trawl line and crab pot line. Leatherbacks are reported taken by the many other nations that participate in Atlantic pelagic longline fisheries, including Taipei, Brazil, Trinidad, Morocco, Cyprus, Venezuela, Korea, Mexico, Cuba, U.K., Bermuda, People's Republic of China, Grenada, Canada, Belize, France, and Ireland (see NMFS SEFSC 2001, for a complete description of take records). Leatherbacks are known to drown in fish nets set in coastal waters of Sao Tome, West Africa (Castroviejo *et al.* 1994; Graff 1995) and in gillnets targeting green and hawksbill turtles in the waters of coastal Nicaragua (Lagueux *et al.* 1998), and in shrimp trawls in the northeastern region of Venezuela (Marcano and Alio 2000). An estimated 1,000 mature female leatherback sea turtles are caught annually off of Trinidad and Tobago with mortality estimated to be between 50-95% (Eckert and Lien 1999). However, many of the turtles do not die as a result of drowning, but rather because the fishermen butcher them in order to get them out of their nets (NMFS SEFSC 2001). In Ghana, nearly two thirds of the leatherback sea turtles that come up to nest on the beach are poached by local fishermen.

Summary of Leatherback Status

In summary, the conflicting information regarding the status of Atlantic leatherbacks makes it difficult to conclude whether or not the population is currently in decline. Numbers at some nesting sites are up, while at others they are down. Leatherbacks are taken in many kinds of fishing gear and interact with fisheries in State, Federal and international waters. Poaching is a problem and affects leatherbacks that occur in U.S. waters. Leatherbacks also appear to be more susceptible to marine debris than other turtle species.

3.2.3 Kemp's Ridley Sea Turtles

The Kemp's ridley is the most endangered of the worlds sea turtle species. The only major nesting site for ridleys is a single stretch of beach near Rancho Nuevo, Tamaulipas, Mexico (Carr 1963). Estimates of the adult female nesting population reached a low of 300 in 1985. Conservation efforts by Mexican and U.S. agencies have aided this species by eliminating egg harvest, protecting eggs and hatchlings, and reducing at-sea mortality through fishing regulations. From 1985 to 1999, the number of nests observed at Rancho Nuevo, and nearby beaches increased at a mean rate of 11.3% per year. Current totals exceed 3000 nests per year, allowing cautious optimism that the population is on its way to recovery (TEWG 2000).

Kemp's ridley nesting occurs from April through July each year. Little is known about mating but it is believed to occur at or before the nesting season in the vicinity of the nesting beach. Hatchlings emerge after 45-58 days. Once they leave the beach, neonates presumably enter the Gulf of Mexico where they feed on available sargassum and associated infauna or other epipelagic species (USFWS and NMFS 1992). The presence of juvenile turtles along both the Atlantic and Gulf of Mexico coasts of the U.S., where they are recruited to the coastal benthic environment, indicates that post-hatchlings are distributed in both the Gulf of Mexico and Atlantic Ocean (TEWG 2000). The location and size classes of dead turtles recovered by the STSSN suggests that benthic immature developmental areas occur in many areas along the U.S. coast and that these areas may change given resource quality and quantity (TEWG 2000).

Like loggerheads, Kemp's ridleys are affected by water temperature. Kemp's ridleys are the second most abundant sea turtle in Virginia and Maryland waters, arriving in these areas during May and June (Keinath *et al.* 1987; Musick and Limpus 1997). As water temperatures along the coast increase, Kemp's ridleys move farther north, as far as Cape Cod. These Mid-Atlantic and Northeast waters appear to be important foraging habitat for juvenile Kemp's ridleys. Kemp's ridley's consume a variety of crab species, including *Callinectes* sp., *Ovalipes* sp., *Libinia* sp., and *Cancer* sp. Mollusks, shrimp, and fish are consumed less frequently (Bjorndal 1997). In the fall, juvenile ridleys migrate down the coast, passing Cape Hatteras in December and January (Musick and Limpus 1997). These juveniles join others from North Carolina sounds to form one of the densest concentrations of Kemp's ridleys outside of the Gulf of Mexico (Musick and Limpus 1997; Epperly *et al.* 1995a; Epperly *et al.* 1995b).

Kemp's ridleys face many of the same natural threats as loggerheads, including destruction of nesting habitat from storm events, natural predators at sea, and oceanic events such as cold-stunning. Although cold-stunning can occur throughout the range of the species, it may be a greater risk for sea turtles that utilize the more northern habitats of Cape Cod Bay and Long Island Sound. For example, in the winter of 1999/2000, there was a major cold-stunning event where 218 Kemp's ridleys, 54 loggerheads, and 5 green turtles were found on Cape Cod beaches

(R. Prescott, pers. comm.). Annual cold stun events do not always occur at this magnitude; the extent of episodic major cold stun events may be associated with numbers of turtles utilizing Northeast waters in a given year, oceanographic conditions and the occurrence of storm events in the late fall. Although many cold-stun turtles can survive if found early enough, cold-stunning events can represent a significant cause of natural mortality.

Anthropogenic impacts to the Kemp's ridley population are similar to those discussed above. Like other turtle species, the severe decline in the Kemp's ridley population appears to have been heavily influenced by a combination of exploitation of eggs and impacts from fishery interactions. From the 1940s through the early 1960s, nests from Ranch Nuevo were heavily exploited (USFWS and NMFS 1992), but beach protection in 1966 helped to curtail this activity (USFWS and NMFS 1992). Following World War II, there was a substantial increase in the number of trawl vessels, particularly shrimp trawlers, in the Gulf of Mexico where the adult Kemp's ridley turtles occur. Information from fishers helped to demonstrate the high number of turtles taken in these shrimp trawls (USFWS and NMFS 1992). Subsequently, NMFS has worked with the industry to reduce turtle takes in shrimp trawls and other trawl fisheries, including the development and use of TEDs. Sea sampling coverage in the Northeast otter trawl fishery, and southeast shrimp and summer flounder bottom trawl fisheries have recorded takes of Kemp's ridley turtles.

Kemp's ridleys may also be affected by large-mesh gillnet fisheries. In the spring of 2000, a total of five Kemp's ridley carcasses were recovered from the same North Carolina beaches where 277 loggerhead carcasses were found. Cause of death for most of the turtles recovered was unknown, but the mass mortality event was suspected to have been from a large-mesh gillnet fishery operating offshore in the preceding weeks. The five ridley carcasses that were found are likely to have been only a minimum count of the number of Kemp's ridleys that were killed or seriously injured as a result of the fishery interaction since it is unlikely that all of the carcasses washed ashore.

Summary of Status for Kemp's Ridleys

The only major nesting site for ridleys is a single stretch of beach near Rancho Nuevo, Tamaulipas, Mexico (Carr 1963). From 1985 to 1999, the number of nests observed at Rancho Nuevo, and nearby beaches increased at a mean rate of 11.3% per year. Current totals exceed 3000 nests per year (TEWG 2000). It has been suggested that Kemp's ridley sea turtles mature much sooner (6-7 years) but there is some doubt that these figures are accurate given the disparity with age at sexual maturity for other carnivorous sea turtles, namely loggerheads (USFWS and NMFS 1992). Anthropogenic impacts to the Kemp's ridley population are similar to those discussed above. Despite these, there is cautious optimism that Kemp's ridley sea turtles are increasing.

3.2.4 Green Sea Turtle

Green turtles are distributed circumglobally. In the western Atlantic they range from Massachusetts to Argentina, including the Gulf of Mexico and Caribbean, but are considered rare north of Cape Hatteras (Wynne and Schwartz 1999). Green turtles were traditionally highly prized for their flesh, fat, eggs, and shell, and directed fisheries in the United States and throughout the Caribbean are largely to blame for the decline of the species. In the Gulf of Mexico, green turtles were once abundant enough in the shallow bays and lagoons to support a commercial fishery. In 1890, over one million pounds of green turtles were taken in the Gulf of Mexico green sea turtle fishery (Doughty 1984). However, declines in the turtle fishery throughout the Gulf of Mexico were evident by 1902 (Doughty 1984).

In the continental United States, green turtle nesting occurs on the Atlantic coast of Florida (Ehrhart 1979). Occasional nesting has been documented along the Gulf coast of Florida, at southwest Florida beaches, as well as the beaches on the Florida Panhandle (Meylan *et al.* 1995). More recently, green turtle nesting occurred on Bald Head Island, North Carolina just east of the mouth of the Cape Fear River, on Onslow Island, and on Cape Hatteras National Seashore. Increased nesting has also been observed along the Atlantic Coast of Florida, on beaches where only loggerhead nesting was observed in the past (Pritchard 1997). Certain Florida nesting beaches have been designated index beaches. Index beaches were established to standardize data collection methods and effort on key nesting beaches. The pattern of green turtle nesting shows biennial peaks in abundance, with a generally positive trend during the ten years of regular monitoring since establishment of the index beaches in 1989, perhaps due to increased protective legislation throughout the Caribbean (Meylan *et al.* 1995). Recent population estimates for the western Atlantic area are not available.

While nesting activity is obviously important in determining population distributions, the remaining portion of the green turtles life is spent on the foraging and breeding grounds. Juvenile green sea turtles occupy pelagic habitats after leaving the nesting beach. Pelagic juveniles are assumed to be omnivorous, but with a strong tendency toward carnivory during early life stages (Bjorndal 1985). At approximately 20 to 25 cm carapace length, juveniles leave pelagic habitats and enter benthic foraging areas, shifting to a chiefly herbivorous diet but may also consume jellyfish, salps, and sponges (Bjorndal 1997). Some of the principal feeding pastures in the western Atlantic Ocean include the upper west coast of Florida and the northwestern coast of the Yucatan Peninsula. Additional important foraging areas in the western Atlantic include the Mosquito and Indian River Lagoon systems and nearshore wormrock reefs between Sebastian and Ft. Pierce Inlets in Florida, Florida Bay, the Culebra archipelago and other Puerto Rico coastal waters, the south coast of Cuba, the Mosquito Coast of Nicaragua, the Caribbean Coast of Panama, and scattered areas along Colombia and Brazil (Hirth 1971). In

North Carolina, green turtles are known to occur in estuarine and oceanic waters and to nest in low numbers along the entire coast. The summer developmental habitat for green turtles also encompasses estuarine and coastal waters of Chesapeake Bay and as far north as Long Island Sound (Musick and Limpus 1997).

Green turtles face many of the same natural threats as loggerhead and Kemp's ridley sea turtles. In addition, green turtles appear to be susceptible to fibropapillomatosis, an epizootic disease producing lobe-shaped tumors on the soft portion of a turtles body. Juveniles are most commonly affected. The occurrence of fibropapilloma tumors may result in impaired foraging, breathing, or swimming ability, leading potentially to death. Stranding reports indicate that between 200-400 green turtles strand annually along the Eastern U.S. coast from a variety of causes most of which are unknown (STSSN database).

As with the other sea turtle species, fishery mortality accounts for a large proportion of annual human-caused mortality outside the nesting beaches, while other activities like dredging, pollution, and habitat destruction account for an unknown level of other mortality. Sea sampling coverage in the pelagic driftnet, pelagic longline, southeast shrimp trawl, and summer flounder bottom trawl fisheries has recorded takes of green turtles. A preliminary sea sampling data summary (1994-1998) shows the following total take of green turtles: 1 (anchored gillnet), 2 (pelagic driftnet), and 2 (pelagic longline).

Summary of Status for Green Sea Turtles
Green turtles range in the western Atlantic from Massachusetts to Argentina, including the Gulf of Mexico and Caribbean, but are considered rare north of Cape Hatteras (Wynne and Schwartz 1999). Green turtles face many of the same natural and anthropogenic threats as loggerhead and Kemp's ridley sea turtles. In addition, green turtles are also susceptible to fibropapillomatosis which can result in death. In the continental United States, green turtle nesting occurs on the Atlantic coast of Florida (Ehrhart 1979). Recent population estimates for the western Atlantic area are not available. However, the pattern of green turtle nesting shows biennial peaks in abundance, with a generally positive trend during the ten years of regular monitoring since establishment of index beaches in 1989. There is cautious optimism that the green sea turtle population is increasing.

4.0. ENVIRONMENTAL BASELINE

Environmental baselines for biological opinions include the past and present impacts of all state, federal or private actions and other human activities in the action area, the anticipated impacts of all proposed federal projects in the action area that have already undergone formal or early Section 7 consultation, and the impact of state or private actions that are contemporaneous with the consultation in process (50 CFR 402.02). The environmental baseline for this Opinion includes the effects of several activities that may affect the survival and recovery of threatened and endangered species in the action area. The activities that shape the environmental baseline in the action area of this consultation generally fall into the following three categories: vessel operations, fisheries, and recovery activities associated with reducing those impacts.

4.1. Fishery Operations

Federally regulated gillnet, longline, trawl, seine, dredge, and pot fisheries have all been documented as interacting with whales and/or sea turtles. Formal ESA section 7 consultation has been conducted on the American Lobster, Monkfish, Northeast Multispecies, Atlantic Mackerel/Squid/Atlantic Butterfish, Atlantic Bluefish, Spiny Dogfish, Tilefish, and Atlantic Herring fisheries. An Incidental Take Statement (ITS) has been issued for the take of sea turtles in each of the fisheries (Appendix 1). A summary of each consultation is provided but more detailed information can be found in the respective Opinions.

Serious injuries and mortality of endangered whales have occurred as a result of interactions with gear used in the *American lobster pot fishery*. NMFS is addressing the interaction between the lobster trap fishery and endangered whales in the ALWTRP. NMFS reinitiated consultation on the lobster fishery on May 4, 2000, to reevaluate the ability of the reasonable and prudent alternative (RPA) to avoid the likelihood of jeopardy to right whales from the lobster trap fishery. The Opinion also considered new information on the status of the northern right whale and new ALWTRP measures that affect operation of the lobster fishery. The Opinion concluded that the lobster trap fishery as modified by the RPA did not avoid the likelihood of jeopardy for northern right whales. A new RPA has been provided that is expected to remove the threat of jeopardy to northern right whales as a result of the continued implementation of the American Lobster FMP.

The Federal *Monkfish fishery* occurs in all waters under federal jurisdiction from Maine to the North Carolina/South Carolina border. The monkfish fishery uses several gear types that may entangle protected species. In 1999, turtles were taken in excess of the ITS as a result of gillnet entanglements. NMFS reinitiated consultation on the Monkfish FMP on May 4, 2000, in order to reevaluate the affect of the monkfish gillnet fishery on sea turtles. The Opinion also considered new information on the status of the northern right whale and new ALWTRP measures, and the ability of the RPA to avoid the likelihood of jeopardy to right whales. The Opinion concluded that continued implementation of the Monkfish FMP is likely to jeopardize the existence of the northern right whale. A new RPA has been provided that is expected to remove the threat of jeopardy to northern right whales as a result of the gillnet sector of the monkfish fishery. In addition, a new ITS has been provided for the take of sea turtles in the fishery.

The *Atlantic Mackerel/Squid/Atlantic Butterfish fishery* is known to take sea turtles and may occasionally interact with whales and shortnose sturgeon. Several types of gillnet gear may be used in the mackerel/squid/butterfish fishery. Gillnet sectors of this fishery are subject to the requirements of the ALWTRP and the HPTRP as appropriate. Other gear types that may be used in this fishery include midwater and bottom trawl gear, pelagic longline/hook-and-line/handline, pot/trap, dredge, poundnet, and bandit gear. Entanglements or entrapment of whales, sea turtles, and sturgeon have been recorded in one or more of these gear types. An ITS has been issued for the taking of sea turtles and shortnose sturgeon in this fishery.

The *Atlantic Bluefish fishery* may pose a risk to protected marine mammals, but is most likely to interact with sea turtles (primarily Kemp's ridley and loggerheads) given the time and locations where the fishery occurs. Gillnets are the primary gear used to commercially land bluefish. Whales and turtles can become entangled in the buoy lines of the gillnets or in the net panels. The bluefish fishery is subject to the ALWTRP and HPTRP measures to reduce the risk of entanglement to marine mammals from gillnet gear.

The primary gear types for the *Spiny dogfish fishery* are sink gillnets, otter trawls, bottom longline, and driftnet gear. Sea turtles can be incidentally captured in all gear sectors of this fishery. Turtle takes in 2000 included one dead and one live Kemp's ridley. Since the ITS issued with the August 13, 1999, Opinion anticipated the take of only one Kemp's ridley (lethally or non-lethally), the incidental take level for the dogfish FMP was exceeded. In addition, a right whale mortality occurred in 1999 as a result of entanglement in gillnet gear that may (but was not determined to be) have originated from the spiny dogfish fishery. NMFS, therefore, reinitiated consultation on the Spiny Dogfish FMP on May 4, 2000, in order to reevaluate the ability of the RPA to avoid the likelihood of jeopardy to right whales, and the affect of the spiny dogfish gillnet fishery on sea turtles. The Opinion also considered new information on the status of the northern right whale and new ALWTRP measures. The Opinion concluded that continued implementation of the Spiny Dogfish FMP is likely to jeopardize the existence of the northern right whale. A new RPA has been provided that is expected to remove the threat of jeopardy to northern right whales as a result of the gillnet sector of the spiny dogfish fishery. In addition, a new ITS has been provided for the take of sea turtles in the fishery.

Multiple gear types are used in the *Northeast Multispecies fishery*. However, the gear type of greatest concern is sink gillnet gear that can capture whales and sea turtles (*i.e.*, in buoy lines and/or net panels). Data indicate that sink gillnet gear has seriously injured or killed northern right whales, humpback whales, fin whales, and loggerhead and leatherback sea turtles. The northeast multispecies sink gillnet fishery has historically occurred from the periphery of the Gulf of Maine to Rhode Island in water to 60 fathoms. In recent years, more of the effort in the fishery has occurred in offshore waters and into the Mid-Atlantic. Participation in this fishery has declined since extensive groundfish conservation measures have been implemented. The fishery operates throughout the year with peaks in spring, and from October through February. The NMFS reinitiated consultation on the Multispecies FMP on May 4, 2000, and concluded that operation of the fishery may adversely affect loggerhead, Kemp's ridley and green sea turtles but would not jeopardize these species. A new RPA was also included to avoid the likelihood that operation of the gillnet sector of the multispecies fishery would result in jeopardy to right whales.

The management unit for the *Tilefish* FMP is all golden tilefish under U.S. jurisdiction in the Atlantic Ocean north of the Virginia/North Carolina border. Tilefish have some unique habitat characteristics, and are found in a warm water band (47-65° F) at approximately 250 to 1200 feet deep on the outer continental shelf and upper slope of the U.S. Atlantic coast. Because of their restricted habitat and low biomass, the tilefish fishery in recent years has occurred in a relatively small area in the mid-Atlantic Bight, south of New England and west of New Jersey. Section 7 consultation was completed on this newly regulated fishery in March 2001. An ITS is provided for loggerhead and leatherback sea turtles.

Section 7 consultation was completed on the *Atlantic Herring* FMP on September 17, 1999, and concluded that the federal herring fishery was not likely to jeopardize the continued existence of threatened or endangered species or adversely modify designated critical habitat. Since much of the herring fishery occurs in state waters, the fishery is managed in these waters under the guidance of the Atlantic States Marine Fisheries Commission (ASMFC). A new *Atlantic herring plan and Amendment 1 to the plan* was approved by the ASMFC in October 1998. This plan is complementary to the NEFMC FMP for herring and includes similar measures for permitting, recordkeeping/reporting, area-based management, sea sampling, Total Allowable Catch (TAC) management, effort controls, use restrictions, and vessel size limits as well as measures addressing spawning area restrictions, directed mealing, the fixed gear fishery, and internal waters processing operations (transfer of fish to a foreign processor in state waters). The ASMFC plan, implemented through regulations promulgated by member states, is expected to benefit listed species and critical habitat by reducing effort in the herring fishery.

In addition to the above, several other federally-regulated fisheries may take sea turtles or cetaceans. It was previously believed that the *Scallop dredge fishery* was unlikely to take sea turtles given the slow speed at which the gear operates. However, the NMFS, Northeast Fisheries Science Center has recently documented the take of sea turtles in this fishery. The NMFS has initiated consultation on the scallop fishery. The *Red crab fishery* is a pot/trap fishery that occurs in deep waters along the continental slope. A FMP for the fishery is in development. There have been no recorded takes of ESA-listed species in the red crab fishery. However, given the type of gear used in the fishery, takes may be possible where gear overlaps with the distribution of ESA-listed species. Finally, a section 7 consultation on the proposed issuance of an Exempted Fisheries Permit for the collection of horseshoe crabs from the Carl N. Shuster, Jr. Federal Horseshoe Crab Reserve (in Federal waters off of the mouth of Delaware Bay) was issued in October 2001 and includes an ITS for loggerhead sea turtles.

4.1.3 Non-Federally Regulated Fisheries

There is limited information on non-federally regulated fisheries occurring in the action area. Several trap/pot fisheries for non-federally regulated species do occur in the action area. The amount of gear contributed to the environment by these fisheries is unknown.

A *whelk fishery* using pot/trap gear is known to occur in several parts of the action area, including Maine, Connecticut, Delaware and Virginia. In Maine, state regulations limit the number of whelk pots to three per trawl. Landings data for Delaware suggests that the greatest effort in the whelk fishery in the waters off of that state occurs in the months of July and October; times when sea turtles are present. Various *crab fisheries* using pot/trap gear also occur in federal and state waters such as horseshoe crab, green crab, blue crab, and Jonah crab. Effort in the latter is currently limited by trap limits set for the lobster fishery since Jonah crab fishers use lobster gear. However, there is interest in developing a separate fishery. If the Jonah crab fishery were to develop exclusive of the lobster fishery, there is a potential for a significant amount of trap/pot gear to be added to the environment. Other fishery activities occurring in waters within the action area which use gear known to be an entanglement risk for protected species include a slime eel pot/trap fishery in Northeast waters (*e.g.*, Massachusetts and Connecticut) and finfish trap fisheries (*i.e.*, for tautogs). Residents in some states (*e.g.*, Connecticut and Massachusetts) may also obtain a personal use lobster license that allows individuals to fish traps to obtain lobster for personal use.

4.2. Vessel Activity

Potential adverse effects from federal vessel operations in the action area of this consultation include operations of the U.S. Navy (USN) and the U.S. Coast Guard (USCG), which maintain the largest federal vessel fleets, the Environmental Protection Agency (EPA), the National Oceanic and Atmospheric Administration (NOAA), and the Army Corps of Engineers (ACOE). NMFS has conducted formal consultations with the USCG, the USN and is currently in early phases of consultation with other federal agencies on their vessel operations (*e.g.*, NOAA research vessels). Through the section 7 process, where applicable, NMFS has and will continue to establish conservation measures for all these agency vessel operations to avoid adverse effects to listed species. At the present time, however, there is the potential for some level of interaction.

Private and commercial vessels, including fishing vessels, operating in the action area of this consultation also have the potential to interact with sea turtles and cetaceans. The effects of fishing vessels, recreational vessels, or other types of commercial vessels on listed species may involve disturbance or injury/mortality due to collisions or entanglement in anchor lines. Shipping traffic, private recreational vessels, and private businesses such as high-speed catamarans for ferry services and whale watch vessels all contribute to the risk of vessel traffic to protected species. Shipping traffic to and from east coast ports poses a serious risk to cetaceans. Out of 27 documented right whale mortalities in the North Atlantic from 1970 to 1991, 22% were caused by ship propellor injuries (Perry *et al.* 1999). Hamilton *et al.* (1998), using data from 1935 through 1995, estimated that an additional 6.4% of right whales exhibit signs of injury from vessel strikes. High-speed catamarans for ferry services (such as the Maine to Canada high speed ferry) and whale watch vessels operating in congested coastal areas also contribute to the potential for impacts.

Other than injuries and mortality resulting from collisions, the effects of disturbance caused by vessel activity on listed species is largely unknown. Attempts have been made to evaluate the impacts of vessel activities such as whale watch operations on whales in the Gulf of Maine. However, no conclusive detrimental effects have been demonstrated. Other than entanglement in fishing gear, effects of fishing vessels on listed species may involve disturbance or injury/mortality due to collisions or entanglement in anchor lines. However, no collisions between commercial fishing vessels and listed species or adverse effects resulting from disturbance have been documented.

Listed species or critical habitat may also be affected by fuel oil spills resulting from vessel accidents. Fuel oil spills could affect animals directly or indirectly through the food chain. Fuel spills involving fishing vessels are common events. However, these spills typically involve small amounts of material that are unlikely to adversely affect listed species. Larger oil spills may result from accidents, although these events would be rare and involve small areas. No direct adverse effects on listed species or critical habitat resulting from fishing vessel fuel spills have been documented.

4.3 Reducing Threats to ESA-listed Cetaceans

A number of activities are in progress that may ameliorate some of the threat that activities summarized in the *Environmental Baseline* pose to threatened and endangered species in the action area of this consultation. These include education/outreach activities, gear modifications, fishing gear time-area closures and whale disentanglement, and measures to reduce ship and other vessel impacts to protected species. Many of these measures have been implemented to reduce risk to critically endangered right whales. Despite the focus on right whales, other cetaceans and some sea turtles will likely benefit from the measures as well.

4.3.1 ALWTRP

The ALWTRP is a major component of NMFS' activities to reduce threats to listed cetaceans. It is a multi-faceted plan that includes both regulatory and non-regulatory actions. Regulatory actions are directed at reducing serious entanglement injuries and mortality of right, humpback, fin, and minke whales (a non-ESA listed species) from fixed gear fisheries to levels approaching zero within five years of its implementation.

The regulatory component of the ALWTRP includes a combination of broad fishing gear modifications and time-area closures supplemented by progressive gear research to reduce the chance that entanglements will occur, or that whales will be seriously injured or die as a result of an entanglement. The long-term goal, established by the 1994 Amendments to the MMPA, is to reduce entanglement related serious injuries and mortality of right, humpback, fin, and minke whales to insignificant levels approaching zero within five years of its implementation. The ALWTRP is a "work-in-progress" and revisions are made to the regulations as new information and technology becomes available. Because gear entanglements of right, humpback, fin, and minke whales have continued to occur, including serious injuries and mortality, new and revised regulatory measures are anticipated. These changes are made with the input of the Atlantic Large Whale Take Reduction Team (ALWTRT), which is comprised of representatives from federal and state government, the fishing industry, and conservation organizations.

The non-regulatory component of the ALWTRP is composed of four principal parts: (1) gear research and development, (2) disentanglement, (3) the Northeast Implementation Team, and (4) the Sighting Advisory System. These components of the ALWTRP address both fishing gear entanglements and ship strikes; the two primary anthropogenic causes of right whale mortality. These are discussed further below.

4.3.1.1 Gear Modifications and Development

Gear research and development is a critical component of the ALWTRP, with the aim of finding new ways of reducing the number and severity of protected species-gear interactions while still allowing for fishing activities. The gear research and development program follows two approaches: (a) reducing the number of lines in the water without shutting down fishery operations, and (b) devising lines that are weak enough to allow whales to break free and at the same time strong enough to allow continued fishing. This aspect of the ALWTRP is also important in that it incorporates the knowledge and participation of the fishing industry for developing and testing modified and experimental gear.

4.3.1.2 Whale Disentanglement Network

In recent years, NMFS has greatly increased funding for the Whale Disentanglement Network; purchasing equipment caches to be located at strategic spots along the Atlantic coastline, supporting training for fishers and biologists, purchasing telemetry equipment, etc. This has resulted in an expanded capacity for disentanglement along the Atlantic seaboard including offshore areas. The Center for Coastal Studies (CCS), under NMFS authorization, has responded to numerous calls since 1984 to disentangle whales entrapped in gear, and has developed considerable expertise in whale disentanglement. NMFS has supported this effort financially since 1995. Memorandum of Understandings developed with the USCG ensure their participation and assistance in the disentanglement effort. Hundreds of Coast Guard and Marine Patrol workers have received training to assist in disentanglements. As a result of the success of the disentanglement network, NMFS believes that many whales that may otherwise have succumbed to complications from entangling gear have been freed and survived the ordeal.

4.3.1.3 Northeast Recovery Implementation Team

The Northeast Recovery Plan Implementation Team (NEIT) was founded in 1994 to help implement a right whale recovery plan developed under the Endangered Species Act. The NEIT provides advice and expertise to address the issues affecting right whale and humpback whale recovery, and is comprised of representatives from federal and state regulatory agencies and private organizations, and is advised by a panel of scientists with expertise in right and humpback whale biology. NEIT activities include: (a) a food web study to provide a better understanding of whale prey resource requirements and the activities that might affect the availability of plankton resources to feeding right whales in the Gulf of Maine, and (b) a comprehensive plan for reducing ship strikes of right and humpback whales in the Northeast.

The Ship Strike Committee of the Northeast Implementation Team has undertaken several efforts to reduce ship collisions with northern right whales. These include production of a video titled: *Right Whales and the Prudent Mariner*, that provides information to mariners on the distribution and behavior of right whales in relation to vessel traffic. The video raises the awareness of mariners as to the plight of the right whale in the North Atlantic and solicits the industry to become part of the solution. In addition, NEIT members conducted workshops with representatives of the maritime industry from Georgia to Massachusetts to seek solutions to the ship strike problem, particularly in the areas of regulating vessel speed or routing in areas of right whale concentrations.

4.3.1.4 Sighting Advisory System

The Sighting Advisory System (SAS) documents the presence of right whales in and around right whale critical habitat and nearby shipping/traffic separation lanes in order to provide information to mariners with the intent of averting ship strikes. Through a fax-on-demand system, fishermen and other vessel operators can obtain SAS sighting reports, and make necessary adjustments in operations to decrease the potential for interactions with right whales. The SAS has also served as the only form of active entanglement monitoring in the Cape Cod Bay and Great South Channel critical habitat. Some of these sighting efforts have resulted in successful disentanglement of right whales. SAS flights have also contributed sightings of dead floating animals that can occasionally be retrieved to increase our knowledge of the biology of the species and effects of human impacts. The Commonwealth of Massachusetts has been a key collaborator to the SAS effort and has continued the partnership. The USCG has also played a vital role in this effort, providing air and sea support as well as a commitment of resources to the NMFS operations. Other potential sources of sightings include the U.S. Navy, Northeast Fisheries Science Center/NOAA and independent research vessels. Canada funded a small number of flights in 2000 in the Bay of Fundy and is expected to do the same this year. The Northeast Fisheries Science Center (NEFSC) conducts aerial surveys, on an annual basis, for cetacean population assessment in the North Atlantic. The principal purpose of the survey effort is to provide an estimation of abundance and determination of population structure of cetaceans. Survey efforts are directed to provide photo identification of right whales in known critical habitat areas and to research other areas of right whale aggregation in the North Atlantic. Aerial survey efforts by the NEFSC have provided initial reports of entangled large whales and provided support for disentanglement efforts. Sighting information from these flights is forwarded to the SAS for fax on demand distribution to mariners.

4.3.3 Education and Outreach Activities

Education and outreach activities are considered one of the primary tools to reduce the threats to all protected species. For example, outreach efforts for fishermen under the ALWTRP are fostering a more cooperative relationship between all parties interested in the conservation of threatened and endangered species. NMFS has also been active in public outreach to educate fishermen regarding sea turtle handling and resuscitation techniques. NMFS has conducted workshops with longline fishermen to discuss bycatch issues including protected species, and to educate them regarding handling and release guidelines. NMFS intends to continue these outreach efforts in an attempt to increase the survival of protected species through education on proper release techniques.

4.3.4 Other Measures to Reduce Ship and Vessel Impacts

Other on-going activities to benefit right whales, in particular, include the *Mandatory Ship Reporting System (MSR).* The USCG educates mariners on whale protection measures and uses its program- such as radio broadcasts and notice to mariner publications - to alert the public to potential whale concentration areas. In April 1998, the USCG submitted on behalf of the United States, a proposal to the International Maritime Organization (IMO) requesting approval of a MSR in two areas off the east coast of the United States. The system became operational in July 1999, and requires ships greater than 300 gross tons to report to a shore-based station when they enter two key right whale habitats - one off the northeast U.S. and one off the southeast U.S. In return, ships receive a message about right whales, their vulnerability to ship strikes, precautionary measures the ship can take to avoid hitting a whale, and locations of recent sightings. Much of the program is aimed at increasing mariner's awareness of the severity of the ship strike problem and seeking their input and assistance in minimizing the threat of ship strikes.

Disturbance was identified in the Recovery Plan for the western north Atlantic right whale as one of the principal human-related factors impeding right whale recovery (NMFS 1991b). As part of recovery actions aimed at minimizing human-induced disturbance, NMFS published an interim final rule in February 1997 (62 FR 6729) restricting vessel approach to right whales to 500 yards (50 CFR 224.103(b)). Exceptions for closer approach are provided when: (a) compliance would create an imminent and serious threat to a person, vessel or aircraft, (b) a vessel or aircraft is restricted in its ability to maneuver around the 500 yard perimeter of a whale and unable to comply with the right whale avoidance measures, (c) a vessel is investigating or involved in the rescue of an entangled or injured right whale, (d) the vessel is participating in a permitted activity, such as a research project, and (e) for aircraft operations, unless that aircraft is conducting whale watch activities. If the vessel operator finds that he or she has unknowingly approached closer than 500 yards, the rule requires that a course be steered away from the whale at a slow, safe speed. Similarly, aircraft are required to take a course away from the right whale and immediately leave the area at a constant airspeed. The regulations are consistent with the Commonwealth of Massachusetts' approach regulations for right whales.

4.4 Reducing Threats to Sea Turtles

4.4.1. Sea Turtle Stranding and Salvage Network (STSSN)

There is an extensive array of STSSN participants along the Atlantic and Gulf of Mexico coasts which not only collects data on dead sea turtles, but also rescues and rehabilitates live stranded turtles. Data collected by the STSSN are used to monitor stranding levels and compare them with fishing activity in order to determine whether additional restrictions on fishing operations are needed. These data are also used to monitor incidence of disease, study toxicology and contaminants, and conduct genetic studies to determine population structure. All of the states that participate in the STSSN are collecting tissue for and/or conducting genetic studies to better understand the population dynamics of the small subpopulation of northern nesting loggerheads. These states also tag live turtles when encountered (either via the stranding network through incidental takes or in-water studies). Tagging studies help provide an understanding of sea turtle movements, longevity, and reproductive patterns, all of which contribute to our ability to reach recovery goals for the species. Unlike cetaceans, there is no organized, formal program for at-sea disentanglement of sea turtles. However, recommendations for such programs are being considered by NMFS pursuant to conservation recommendations issued with several recent section 7 consultations. Entangled sea turtles found at sea in recent years have been disentangled by STSSN members, the whale disentanglement team, the USCG, and fishermen. NMFS regulations require fishermen to handle sea turtles in such a manner as to prevent injury. As stated in 50 CFR 223.206(d)(1), any sea turtle taken incidentally during fishing or scientific research activities must be handled with due care to prevent injury to live specimens, observed for activity, and returned to the water according to a series of procedures. These handling and resuscitation regulations are currently being amended, but the appropriate procedures that fishermen must follow are included in the terms and conditions of the Biological Opinions.

4.4.2 Turtle Excluder Devices (TEDs)

Interactions with fishing gear pose a risk to sea turtles as well as cetaceans. NMFS has implemented a series of regulations aimed at reducing the potential for incidental mortality of sea turtles in commercial fisheries. Many of these are focused on fisheries that primarily operate in waters south of the action area for this consultation, such as the shrimp fishery. However, TEDs, which were first developed to address the take of turtles in the shrimp trawl fishery, have been used in summer flounder trawls in the Mid-Atlantic (south of Cape Henry, Virginia) since 1992. It has been estimated that TEDs exclude 97 percent of the turtles caught in such trawls. The regulations have been refined over the years to ensure that TED effectiveness is maximized through proper placement and installation, configuration (*e.g.*, width of bar spacing), flotation, and more widespread use. However, recent studies have shown that the current TED openings may not allow for the release of large juvenile and adult sea turtles (Epperly and Teas 1999). As fisheries expand to include underutilized and unregulated species, trawl effort directed at these species may be an undocumented source of mortality for which TEDs should be considered. NMFS is also working to develop a TED that can be effectively used in a type of trawl known as a flynet, which is sometimes used in the Mid-Atlantic and northeast fisheries for summer flounder, scup, and black sea bass. Regulations will be formulated to require use of TEDs in this fishery if observer data demonstrate a need for such TEDs.

4.5 Summary and synthesis of the status of species and environmental baseline

The potential for vessels, military activities, fisheries, *etc.* to adversely affect right, humpback and fin whales and leatherback sea turtles remains throughout the action area of this consultation. Recovery actions have been undertaken as described and continue to evolve. However, activities to benefit sea turtles within the action area do not specifically address the activities that cause take (*e.g.*, the stranding network rehabilitates injured sea turtles but does not reduce the chance that further interactions will occur). Activities to benefit cetaceans are in progress but it may be years before a measurable level of benefit to the species is apparent. In addition, these recovery activities may be less effective at reducing the risk of non-regulated fisheries, affecting changes to international shipping, and addressing the disparity for protecting these ESA-listed species when they occur outside of U.S. jurisdiction. Finally, the continuation of many of these activities relies on annual funding which cannot always be guaranteed.

Quantifying the effects of all human impacts on ESA-listed species is difficult. For example, NMFS SEFSC (2001) summarized what is known about the effects of human activities on leatherback populations. However, it was not possible to quantify the total number of turtles affected since some effects cannot be quantified and, for those which can be quantified, values are not directly comparable (some represent estimates, some are observed, observations are at different levels of effort, *etc* .). Nevertheless, even without quantified data, it is obvious that thousands of sea turtles of all species are being taken annually from various activities with varying levels of associated mortality. This means that many of the factors contributing to their original listing have not yet been alleviated, particularly fishing-related mortality; a priority recovery activity. Therefore, minimizing takes of sea turtles in all fishery-related activities is still imperative.

Similarly, while we cannot quantify the effects of all human impacts on northern right whales, humpback whales, and fin whales, it is apparent that these species continue to be affected by two primary anthropogenic activities; fishing gear entanglements and ship strikes. The extent to which ship strikes and fishing gear entanglements impede the recovery of these species depends, in part, on their current status. For the northern right whale, minimizing all mortality is vital for this critically endangered species. The GOM humpback whale population appears to be increasing. However, the exact population size is undeterminable at this time and the level of fishing gear entanglements, based on scarification analysis, is high. A population estimate cannot be provided for fin whales given the lack of information currently available. It is, therefore, prudent to minimize all known activities that result in serious injury or mortality to this species.

Given the current status of threatened and endangered species in the action area, and the magnitude of known and suspected mortalities affecting these species, it is reasonable to assume that the combined effects of factors existing in the environmental baseline hinder the recovery of all of the species considered in this Opinion. For the purposes of this consultation, NMFS will consider that:

- the western North Atlantic recovery unit of right whales is declining;
- the Gulf of Maine feeding stock of humpback whales is increasing;
- the status of the fin whale population is unknown;
- the northern subpopulation of loggerhead sea turtles is declining or stable, at best;
- the Florida subpopulation of loggerhead sea turtles is potentially increasing;
- the Atlantic population of leatherback sea turtles is stable, at best;
- there is cautious optimism that green sea turtles are potentially increasing; and,
- there is cautious optimism that Kemp's ridley sea turtles are potentially increasing.

5.0. EFFECTS OF THE PROPOSED ACTION

Pursuant to Section 7(a)(2) of the ESA (16 USC 1536), federal agencies are directed to ensure that their activities are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. This biological opinion examines the likely effects of the proposed action on listed species within the action area to determine if summer flounder, scup and black sea bass fisheries are likely to jeopardize the continued existence of listed species. This analysis is done after careful review of the listed species status and the factors that affect the survival and recovery of that species, as described above.

In this section of a biological opinion, NMFS assesses the direct and indirect effects of the proposed action on threatened and endangered species or critical habitat. The purpose of the assessment is to determine if it is reasonable to expect that the fishery can be expected to have direct or indirect effects on threatened and endangered species that appreciably reduce their likelihood of surviving and recovering in the wild by reducing their reproduction, numbers, or distribution or appreciably diminish the value of designated critical habitat for both the survival and recovery of threatened and endangered species in the wild. Since the proposed action is not expected to affect designated critical habitat, this Opinion will focus only on the jeopardy analysis.

5.1 Approach to the Assessment

NMFS generally approaches jeopardy analyses in three steps. The first step identifies the probable direct and indirect effects of an action on the physical, chemical, and biotic environment of the action area. The second step determines the reasonableness of expecting threatened or endangered species to experience reductions in reproduction, numbers or distribution in response to these effects. The third step determines if any reductions in a species reproduction, numbers or distribution (identified in the second step of our analysis) can be expected to appreciably reduce a listed species likelihood of surviving and recovering in the wild. A species reproduction, numbers, and distribution are interdependent. Reducing a species reproduction will reduce its population size; reducing a species population size will usually reduce its reproduction, particularly if those reductions decrease the number of adult females or the number of young that recruit into the breeding population; and reductions in a species reproduction and population size normally precede reductions in a species distribution.

The final step of the analysis - relating reductions in a species reproduction, numbers, or distribution to reductions in the species likelihood of surviving and recovering in the wild - is the most difficult step because (a) the relationship is not linear; (b) to persist over geologic time, most species have evolved to withstand some level of variation in their birth and death rates without a corresponding change in their likelihood of surviving and recovering in the wild; (c) our knowledge of the population dynamics of other species and their response to human perturbation is usually too limited to support anything more than rough estimates. Nevertheless, our analysis must distinguish between anthropogenic reductions in a species' reproduction, numbers, and distribution that can reasonably be expected to affect the species likelihood of survival and recovery in the wild and other (natural) declines.

Statistics provides two points of reference for analyzing data, information, or other evidence to test hypotheses:(1) analyzing data to minimize the chance of concluding that there was an effect from an activity or treatment that is being analyzed when, in fact, there was no effect or (2) analyzing data to minimize the chance of concluding that there was no effect when, in fact, there was an effect. These two points of reference are called "errors". The difference between these reference points is that the first minimizes what is called Type I error while the second minimizes what is called Type II error (Cohen 1987). Unfortunately, for most analyses, minimizing one type of error increases the risk of committing the other type of error. The concept of error is important for jeopardy analyses because Type II error places listed species at greater risk of extinction.

Analyses contained in biological opinions can minimize the likelihood of concluding that an action reduced a listed species' likelihood of surviving or recovering in the wild (or no effect on the value of critical habitat that has been designated for a listed species) when, in fact, no reduction occurred (Type I error) or the analyses can minimize the likelihood of concluding that an action did not reduce a listed species likelihood of surviving and recovering in the wild when, in fact, a reduction occurred (Type II error). To comply with direction from the U.S. Congress to provide the "benefit of the doubt" to threatened and endangered species [House of Representatives Conference Report No.697, 96th Congress, SecondSession,12 (1979)], jeopardy analyses are designed to avoid concluding that actions had no effect on listed species or critical habitat when, in fact, there was an effect (Type II error). This approach to error may decrease risks to listed species and designated critical habitat, but increases the risk of concluding that there was an effect when, in fact, no effect occurred.

5.2 Scope of the Analyses

This Opinion treats the sea turtle populations in the Atlantic Ocean as distinct from the Pacific Ocean populations for the purposes of this consultation. This approach is supported by interagency policy on the recognition of distinct vertebrate populations (61 FR 4722). To address specific criteria outlined in that policy, sea turtle populations in the Atlantic basin are geographically discrete from populations in the Pacific basin, with limited genetic exchange (NMFS and USFWS 1998). This approach is also consistent with traditional jeopardy analyses; the loss of sea turtle populations in the Atlantic basin would result in a significant gap in the distribution of each turtle species, which makes these populations biologically significant. Finally, the loss of these sea turtle populations in the Atlantic basin would dramatically reduce the distribution and abundance of these species and would, by itself, appreciably reduce the entire species' likelihood of surviving and recovering in the wild.

As described in the *Status of the Species* section, for the purposes of this Opinion, NMFS will focus on the western North Atlantic recovery unit of right whales and the Gulf of Maine feeding stock of humpback whales which occur in the action area, but will treat all western North Atlantic fin whales as a single stock consistent with their treatment in the marine mammal stock assessment reports (Waring *et al.* 1999, Waring *et al.* 2000).

The analyses in this Opinion are based on an implicit understanding that the species considered in this Opinion are threatened with global extinction by a wide array of human activities and natural phenomena. NMFS also recognizes that some of these other human activities and natural phenomena pose a much larger and more serious threat to the survival and recovery of these species (and other flora and fauna) than the proposed activities. Further, NMFS recognizes that these species will not recover without addressing the full range of human activities and natural phenomena (*i.e.*, ship strikes for cetaceans, and beach erosion, poaching and interactions with international fisheries for sea turtles) that could cause these animals to become extinct in the foreseeable future (USFWS and NMFS 1997). Nevertheless, this Opinion focuses solely on whether the direct and indirect effects of the proposed quotas for the 2002 summer flounder, scup and black sea bass fisheries can be expected to appreciably reduce the listed species likelihood of surviving and recovering in the wild by reducing their reproduction, numbers, or distribution. NMFS will consider the effects of other actions on these endangered species as a separate issue. As stated previously, jeopardy analyses in biological opinions distinguish between the effects of a specific action on a species likelihood of surviving and recovering in the wild and a species background likelihood of surviving and recovering given the full set of human actions and natural phenomena that threaten a species.

5.3. Information Available for the Assessment

Detailed background information on the status of these species and critical habitat has been published in a number of documents including sea turtle status reviews and biological reports (NMFS and USFWS 1995, Marine Turtle Expert Working Group (TEWG) 1998 & 2000), recovery plans for the humpback whale (NMFS 1991a), right whale (NMFS 1991b), leatherback sea turtle (NMFS and USFWS 1992), loggerhead sea turtle (NMFS and USFWS 1991), green sea turtle (NMFS and USFWS 1991), and Kemp's ridley sea turtle (USFWS and NMFS 1992) the Marine Mammal Stock Assessment Reports (SAR) (Waring *et al.* 2000, Waring *et al.* 2001 in review), and other publications (*e.g.*, Perry *et al.* 1999; Clapham *et al.* 1999; IWC 2001 *in press*).

5.4 Effects of the Proposed Quotas for the 2002 Summer Flounder, Scup and Black Sea Bass Fisheries

As discussed in the *Description of the Proposed Action* section for this Opinion, the action being considered by NMFS is the continued implementation of the summer flounder, scup and black sea bass fisheries under (new) quota specifications for the 2002 fishing year. The proposed action would, in part, increase the total allowable landings (TAL) for all three fisheries. The TAL has been increased as a result of new information on the status of these stocks. Summer flounder spawning stock biomass has increased each year since approximately 1993. Survey results indicate that spawning biomass of scup has also been increasing from 1998 and based on the current information it will likely continue to increase into 2002. Black sea bass abundance has also been observed to be increasing. TAL for the summer flounder fishery would increase from 17.91 million pounds to 24.3 million pounds; black sea bass TAL would increase to 6.8 million pounds from 6.17 million pounds; and the commercial scup TAL would increase from 6.21 million pounds to 7.76 million pounds. In addition, in order to prevent overfishing of summer flounder, scup and black sea bass, the NMFS has proposed to change possession limits, minimum mesh size, and set asides for research and data collection. The commercial sector of each fishery is limited access, which means that the number of vessels participating are limited by current permit holders. While it is recognized that effort would not necessarily increase due to an increase in TAL (*i.e.*, if there were higher trip limits or if catch per unit effort increased) an increase in effort as a result of increases in TAL cannot be discounted given the currently available information. Therefore, for the purposes of this Opinion, NMFS has to evaluate the possibility that the proposed quotas may result in an increase in effort.

Right whales, humpback whales, fin whales, loggerhead, Kemp's ridley, green, and leatherback sea turtles are known to suffer injuries and mortality as a result of vessel strikes, and are known to be taken in a number of fishing gear types the same or similar to those used in the summer flounder, scup and black sea bass fisheries. Therefore, the summer flounder, scup and black sea bass fisheries may affect protected species as a result of vessel interactions and/or gear interactions. The following discussion provides further information on the likelihood that these effects will occur, and the reaction of right, humpback, and fin whales, loggerhead, Kemp ridleys, green and leatherback sea turtles to vessels and fishing gear used in the summer flounder, scup and black sea bass fisheries.

5.4.1. Effect of Vessels

(1) *Effect of Vessel Collisions* - All whales are potentially subject to collisions with ships (Clapham *et al.* 1999). Of the 11 species of cetaceans known to be hit by ships, fin whales are struck most frequently; while right whales, humpback whales and others are hit commonly (Laist *et al.* 2001). In some areas, one-third of all fin whale and right whale strandings appear to involve ship strikes (Laist *et al.* 2001). Of the 45 right whales mortalities recorded between 1970 and 1999, 16 (35.6%) were determined to be the result of ship strikes (IWC 2001, Knowlton and Kraus in press). Ship strike injuries to whales take two forms: (1) propellor wounds characterized by external gashes or severed tail stocks; and (2) blunt trauma injuries indicated by fractured skulls, jaws, and vertebrae, and massive bruises that sometimes lack external expression (Laist *et al.* 2001). Collisions with smaller vessels may result in propellor wounds or no apparent injury, depending on the severity of the incident.

Sea turtle stranding data for the U.S. Gulf of Mexico and Atlantic coasts, Puerto Rico, and the U.S. Virgin Islands show that between 1986 and 1993, about 9% of living and dead stranded sea turtles had propellor or other boat strike injuries (Lutcavage *et al.* 1997). According to 1980-1999 STSSN stranding data, the number of leatherback strandings involving boat strikes or collisions (231) was considerably greater than the number of strandings involving entanglement in fishing gear (81), ingestion of marine debris (36) or some kind of intentional interaction (*i.e.*, gaff wounds or rope deliberately tied to a flipper) (21) combined (NMFS SEFSC 2001). Strandings as a result of boat strikes were equally represented (45%) in states from Virginia through Maine and southern states (Florida's east coast through North Carolina) (NMFS SEFSC 2001). It should be noted, however, that it is not known whether all boat strikes were the cause of death or whether they occurred post-mortem (NMFS SEFSC 2001).

(2) *Factors which may contribute to the occurrence of vessel strikes* - For cetaceans, a great majority of ship strikes seem to occur over or near the continental shelf; probably reflecting the concentration of vessel traffic and whales in these areas (Laist *et al.* 2001). Other factors which

may contribute to a whale being struck include the amount of time spent at the surface, the use of habitats in the vicinity of major shipping lanes, and the speed at which the animal travels (Clapham *et al.* 1999). North Atlantic right whales qualify in all three categories (Clapham *et al.* 1999).

Based on an assessment of 58 collisions between whales and vessels ocean-wide, it appears that all sizes and types of vessels can hit whales. However, the most severe or lethal injuries are caused by ships 80 m or longer, and vessels traveling 14 kn or faster (Laist *et al.* 2001). The massive nature of most blunt trauma and propellor injuries observed on dead ship-struck whales also suggests that most, if not all, lethal collisions are caused by large ships rather than small vessels (Laist *et al.* 2001). The vessels used in the summer flounder, scup and black sea bass fisheries are all commercial fishing vessels typical of those used in other commercial fishing operations. Vessel length overall is typically in the range of 40-60 feet but many are in the mid-50's; far less than the size of vessels known to pose the most likely risk of serious injury and mortality to large whales. In addition, these vessels typically operate at slower speeds than what is observed by large ships, ferry services, or other vessels.

Information is lacking on the type or speed of vessels involved in turtle vessel strikes. However, there does appear to be a correlation between the number of vessel struck turtles and the level of recreational boat traffic (NRC 1990). Although little is known about a sea turtle's reaction to vessel traffic, it is generally assumed that turtles are more likely to avoid injury from slower-moving vessels since the turtle has more time to maneuver and avoid the vessel.

(3) *Summary of Effect of Vessel Collisions* - As previously described, the summer flounder, scup and black sea bass fisheries operate in federal waters from the North Carolina/South Carolina border to Maine (U.S. Canadian border). The commercial sector of each fishery is limited access, which means that the number of vessels participating are limited by current permit holders. As a result, the increase in the proposed quotas should not result in an increase in the number of vessels operating in the fishery. Because the increase in quota has the potential to increase the amount of effort in the fishery, it is possible that vessels may make more trips. An increase in the number of trips contributes to the level of traffic on the water and, therefore, may result in increased vessel interactions with protected species.

Vessel interactions with protected species are expected to be more likely in areas where vessels and protected species both concentrate. Right whales, humpback, and fin whales use different parts of the action area throughout the year. Most of the effort for the commercial summer flounder, scup, and black sea bass fisheries occurs from fall through spring in Mid-Atlantic and southern New England waters. Overlap of vessels used in these fisheries with right and humpback whales may occur during the fall and spring when right and humpback whales travel between northern foraging grounds and southern calving areas. Overlap of the fishery with humpback whales may also occur in the winter off of Virginia where juvenile humpback whales have been observed feeding. Fin whales are more ubiquitous in their distribution, and less is known about their winter distribution than for right and humpback whales. In the North Atlantic, the single most important area for this species appears to be from Great South Channel, along the 50m isobath past Cape Cod, over Stellwagen Bank, and past Cape Ann to Jeffrey's Ledge (Hain *et al.* 1992).

The vessels operating in the summer flounder, scup and black sea bass fisheries also operate in areas known to be utilized by sea turtles for foraging and migration. Since the summer flounder, scup, and black sea bass fisheries are primarily fall through spring fisheries, sea turtle interactions with vessels used in these fisheries are most likely to occur in Mid-Atlantic waters as turtles migrate to and from wintering grounds in the south.

Despite the potential for vessel strikes during operation of the fisheries, there have been no reports of interactions between summer flounder, scup, or black sea bass fishing vessels in the federal waters portion of the action area and ESA-listed cetaceans or sea turtles. Given the best available information it is, therefore, deemed unlikely that any vessel participating in the proposed activity will strike a right whale, humpback whale, fin whale or loggerhead, Kemp's ridley, green or leatherback sea turtle in the action area other than by random chance given that: (1) vessels are much smaller than those known to cause serious injury and mortality to large whales, (2) overlap of protected species and vessel activity for the fisheries is limited spatially and temporally, and (3) the vessels will be operated by experienced fishers familiar with the area, and the presence of these species at certain times of the year.

5.4.2 Effects of Fishing Gear

As previously described, several gear types are used in the summer flounder, scup, and black sea bass fisheries. Trawls are most commonly used for summer flounder, while pot/trap gear is commonly used for scup and black sea bass. Other gear types used include gillnets, pound nets, and handlines. There have been no known takes of cetaceans or sea turtles on handlines used in the summer flounder, scup or black sea bass fisheries. Therefore, the effects to protected species from this gear type will not be considered further in this Opinion. Pound net fisheries are known to take large amounts of summer flounder in areas where sea turtles also occur (*e.g.*, New York and Virginia). However, gear is set in state waters and regulated by the states under rules comparable to those established for the federal waters fishery. Therefore, the effects of pound nets used in the summer flounder, scup, and black sea bass fisheries will also not be considered further in this Opinion. Gillnets represent a small portion of the gear used in the summer flounder, scup, and black sea bass fisheries but are considered here since they are known to pose a considerable entanglement risk to cetaceans and sea turtles.

(1) Effects of take in fishing gear - The incidental take of sea turtles in otter trawls has been extensively documented. A detailed summary of the impacts of the Mid-Atlantic winter trawl fishery for summer flounder and the U.S. shrimp trawl fishery can be found in the TEWG reports (1998, 2000). Turtle takes have also been observed in the North Carolina flynet trawl fishery for Atlantic croaker.

Bottom trawls are typically cone-shaped nets which are towed on the bottom. Large, rectangular doors attached to the two cables to tow the net keep the net open while deployed. At the bottom of an otter trawl mouth is the footrope or ground rope that can bear many heavy (tens to hundreds of kilograms) steel weights (bobbins) that keep the trawl on the seabed. In addition, bottom trawls may be constructed with large (up to 40 cm diameter) rubber discs or steel bobbins (rockhoppers) that ride over structures such as boulders and coral heads that might otherwise snag the net. Some trawls are constructed with tickler chains that disturb the seabed to flush shrimp or fishes into the water column to be caught by the net. The constricted posterior netting of a trawl is called the cod end.

The risk to sea turtles from capture in a trawl is forced submergence. Sea turtles forcibly submerged in any type of restrictive gear eventually suffer fatal consequences from prolonged anoxia and/or seawater infiltration of the lung (Lutcavage *et al.* 1997). A study examining the relationship between tow time and sea turtle mortality showed that mortality was strongly dependent on trawling duration, with the proportion of dead or comatose turtles rising from 0% for the first 50 minutes of capture to 70% after 90 minutes of capture (Henwood and Stuntz 1987). However, metabolic changes that can impair a sea turtles ability to function can occur within minutes of a forced submergence. While most voluntary dives appear to be aerobic, showing little if any increases in blood lactate and only minor changes in acid-base status, the story is quite different in forcibly submerged turtles, where oxygen stores are rapidly consumed, anaerobic glycolysis is activated , and acid-base balance is disturbed, sometimes to lethal levels (Lutcavage and Lutz 1997). Forced submergence of Kemp's ridley sea turtles in shrimp trawls found that an acid-base imbalance resulted after just a few minutes (times that were within the normal dive times for the species) (Stabenau *et al.* 1991). Conversely, recovery times for acid-base levels to return to normal may be prolonged. Henwood and Stuntz (1987) found that it took as long as 20 hours for the acid-base levels of loggerhead sea turtles captured in shrimp trawls for less than 30 minutes to return to normal. This effect is expected to be worse for sea turtles that are recaptured before metabolic levels have returned to normal. Physical and biological factors that increase energy consumption, such as high water temperatures and increased metabolic rates characteristic of small turtles would be expected to exacerbate the harmful effects of forced submergence from trawl capture (NRC 1990).

Given their large size and mobility, right whales, humpback whales and fin whales are not expected to be caught in trawl gear. However, fixed gear, including pot/traps and fixed gillnets as those used in the summer flounder, scup, and black sea bass fisheries are an entanglement risk to these baleen whales. The pot/trap sector of the scup and black sea bass fisheries uses gear that is comparable to that used in the lobster trap/pot fishery. The gear consists of baited traps to catch the targeted species, fished in groups of two or more traps attached in series by polypropylene line, and with at least one buoy line at the end of a series of traps to mark the location of the gear. The traps rest on the bottom with the buoy line rising vertically to the surface. Floating polypropylene line typically used between traps resting on the bottom arcs in the water column.

Right whales, humpback whales, and fin whales cannot get caught in the trap itself as the trap is far smaller than any of these species. In addition, right, humpback, and fin whales would not be expected to be attracted to the bait used in these traps since the bait is inconsistent with their typical prey (*i.e.*, zooplankton, live fish). Whales may, however, become entangled in buoy lines and with polypropylene (floating) lines between pots.

It is surmised that when the whale encounters a line, it may move along that line until it comes up against something such as a buoy. The buoy can then be caught in the baleen (in the case of whales), against a flipper or on some other body part. When the animal feels the resistance of the gear, it likely thrashes, which may cause it to become entangled in the lines. For large whales, there are generally three areas of entanglement: 1) the gape of the mouth, 2) around the flippers, and 3) around the tail stock. If the line is attached to gear too heavy for the whale, drowning may result. But many whales have been observed swimming with portions of the line, with or without the fishing gear, wrapped around a pectoral fin, the tail stock, the neck or the mouth. Documented cases have indicated that entangled animals may travel for extended periods of time and over long distances before either freeing themselves, being disentangled, or dying as a result of the entanglement (Angliss and Demaster 1998). Entanglements may lead the animal to exhaustion and starvation due to increased drag (Wallace 1985). A sustained stress response, such as repeated or prolonged entanglement in gear makes marine mammals less able to fight infection or disease, and may make them more prone to ship strikes. Younger animals are particularly at risk if the entangling gear is tightly wrapped since the gear will become more constricting as they grow. The majority of large cetaceans that become entangled are juveniles (Angliss and Demaster 1998).

Pot/trap gear also poses a risk to leatherback sea turtles who may be attracted to gelatinous organisms that accumulate on the buoy lines. Records of stranded or entangled sea turtles reveal that fishing debris can wrap around the neck, flipper, or body of the sea turtle and severely restrict swimming or feeding (Balazs 1985). Drowning may occur immediately as a result of the weight of the gear or, at a later time, if trailing gear becomes lodged between rocks and ledges below the surface. Leatherbacks may be more susceptible to drowning as compared to other sea turtles due to their unusual physiology and metabolic processes. Anecdotal evidence indicates that when leatherbacks encounter lobster pot gear, they may swim in circles resulting in multiple wraps around a flipper. Long pectoral flippers along with extremely active behavior make leatherback sea turtles especially defenseless to any type of ocean debris. Leatherbacks lack calcium which aids in the neutralizing of lactic acid that builds up by increasing bicarbonate levels. The dive behavior of leatherbacks consists of continuous aerobic activity. When entanglement occurs, available oxygen decreases allowing anaerobic glycolysis to take over producing high levels of lactic acid in the blood (Lutcavage and Lutz 1997). Therefore, especially when caught, the stored oxygen is likely to be used up quickly (NMFS 2000a). The softer epidermal tissue of leatherbacks may make them more susceptible to serious injuries from entangling gear. Constriction of the neck and flippers can amputate limbs also leading to death by infection. If the turtle is cut loose with line attached, the flipper may eventually become occluded, infected and necrotic. Entangled sea turtles can also be more vulnerable to collision with boats, particularly if the entanglement occurs at or near the surface (Lutcavage *et al.* 1997).

Gillnets pose an entanglement risk to both cetaceans and sea turtles. For cetaceans, the cause of the entanglement and the effects of the entanglement are much the same as for pot/trap gear. Whales can become entangled in the buoy lines or the anchor lines of the gillnets, and may also become entangled in the net panels. A whale that encounters the vertical "wall" of the gillnet may become wrapped in the net if it thrashes in its attempt to get away from the gear. This wall of netting poses a serious risk to sea turtles as well. A sea turtle who encounters such gear may become snagged or caught up in the netting. Records of stranded or entangled sea turtles reveal that fishing debris can wrap around the neck, flipper, or body of the sea turtle and severely restrict swimming or feeding (Balazs 1985). Drowning may occur immediately as a result of forced submergence or, at a later time, if trailing gear becomes lodged between rocks and ledges below the surface. Gillnets are so effective at catching sea turtles, they were commonly used in sea turtle fisheries.

(2) Factors contributing to interactions with fishing gear - Several factors likely contribute to the risk of entanglement of right, humpback, and fin whales, and sea turtles in summer flounder, scup, and black sea bass fishing gear. With respect to sea turtle interactions with trawl gear, the primary factor appears to be the concentration of sea turtles where trawl gear is operating. Based on landings by state, effort is greatest in waters off of North Carolina, followed by Virginia.

New Jersey and Rhode Island also show high landings for summer flounder. Sea turtles are present in southern waters (*i.e.*, North Carolina) year-round but are more concentrated during the winter months when water temperatures are cooler. Sea turtle distribution in more northern waters (*i.e.*, New Jersey and Rhode Island) is typically limited to summer through early fall. Therefore, the risk to sea turtle from trawl gear would be expected to be greatest off of North Carolina in winter months when sea turtles and concentrated fishing effort occur simultaneously (Table 1). However, sea turtles could also be taken in more northern areas when trawl effort occurs in areas occupied by sea turtles.

Table 1. Turtle takes per hour calculated by observer coverage of the North Carolina summer flounder trawl fishery during the winter

Date/Location	Turtles Taken	Net Hours	Turtle takes per hour
12/1990-01/1991 Nearshore Ocracoke Inlet	4 loggerheads 3 Kemp's ridleys	49.25	0.14
11/1991-02/1992 Cape Charles, south	50 loggerheads 30 kemp's ridleys 2 greens and 1 hawksbill	2840	0.03
11/1991-02/1992 Cape Charles, north	no turtles	560	0

As is the case with trawl gear, the level of overlap of protected species with gear used in the summer flounder, scup, and black sea bass fisheries is a factor affecting the risk of entanglement from such gear. Pot and trap gear accounts for only a very small percentage of the gear used to land summer flounder and scup, but accounts for 38% of the gear used in the black sea bass fishery. Peak black sea bass landings occur from January to May and come from New Jersey, Maryland, and Virginia. Therefore, right whales and humpback whales are most likely to encounter trap/pot gear used in the black sea bass fishery during their spring migrations from southern calving/nursing grounds to northern foraging areas. However, several factors likely contribute to the likelihood of entanglement of right, humpback, and fin whales in pot/trap gear. Baleen whales, including right, humpback and fin whales, tend to skim and gulp for prey and filter vast quantities of water through rows of baleen plates suspended from the upper jaw on the inside of their large mouths. Line suspended in the water column such as from buoy lines or floating line between traps may, thus, become caught in the baleen if the whale incidentally encounters the line when feeding. However, since these whales are not known to feed while traveling through Mid-Atlantic waters on their way to the northern foraging grounds, the entanglement risk from black sea bass pot/trap gear should be reduced since the whales will not be behaving in manner that contributes to entanglement (skimming and gulping for prey).

In contrast to cetaceans which appear to interact with pot/trap gear incidental to foraging, buoys used on trap/pot gear may actually attract leatherback sea turtles to such gear. Leatherbacks may be attracted to the buoys which could appear as jellyfish, or they may be attracted to the organisms which colonize ropes and buoys. Certain gear configurations such as longer floating lines (such as the floating polypropylene line between traps) or thinner, more flexible lines may be more likely to hold wraps on flippers of turtles. Although, green, loggerhead, and Kemp's ridley sea turtles may be present in areas where pot/traps are known to be used, it is unlikely that they are at risk of becoming entangled given the configuration of the traps. Loggerheads have been known to become entangled in the bridles of whelk pots. However, these are constructed differently than the traps/pots used in the summer flounder, scup and black sea bass fisheries and contain bait that is preferred loggerhead prey (horseshoe crabs).

(3) Actions to reduce the risk of entanglement - As described previously in the *Environmental Baseline*, the summer flounder, scup and black sea bass fisheries must comply with all requirements of the ALWTRP. The purpose of the ALWTRP, in part, is to reduce serious injury and mortality of large whales (right, humpback, fin, and minke) in fixed gear (trap/pot gear and gillnet gear). New measures to protect right whales, and other large whales from serious injury and mortality in fixed gear fisheries were recommended in the June 14, 2001, Opinion for the lobster trap/pot fishery, and the multispecies gillnet fishery, amongst others. The new measures include additional gear modifications, Dynamic Area Management (restrictions for areas as necessary when concentrations of right whales and fixed gear co-occur), and Seasonal Area Management (seasonal restrictions for areas where right whales and fixed gear co-occur), and are expected to be effective by January 1, 2002, as modifications to the ALWTRP. These new requirements would apply to the scup and black sea bass pot/trap fisheries since they meet the definition of a "lobster trap" under the ALWTRP. The whale disentanglement program, another ALWTRP component, has been successful in disentangling many whales. Although not all entangled whales are detected or disentangled, the newly proposed gear modifications are expected to make it more likely that a whale will be able to break free of fixed gear (pots/traps and gillnet) before entanglement occurs, and to reduce the severity of entanglements that do occur.

In addition to the ALWTRP measures which affect operation of the summer flounder, scup, and black sea bass fisheries, fishers must also comply with the HPTRP that prohibits the setting of gillnets in certain areas for selected time periods. These closures include a prohibition on the use of gillnet gear west of 72°30' in southern Mid-Atlantic waters (Maryland, Delaware, Virginia and North Carolina) February 15 through March 15. Although the closure is meant to prevent harbor porpoise takes in gillnet gear, it should also be of benefit to sea turtles by reducing gillnet effort where sea turtles occur during this time period off of North Carolina. Finally, as described previously, trawl gear poses a risk to sea turtles but actions to minimize this risk have been taken. Existing sea turtle conservation regulations (50 CFR 223.205 and 223.206) require summer flounder trawlers operating in Atlantic waters between Cape Charles, Virginia and the North Carolina/South Carolina border to have a NMFS-approved TED installed in each net rigged for fishing when sea turtles are present. These TEDs are estimated to release 97% of the turtles incidentally caught in such trawls.

(4) Summary of effects of gear entanglement - Gear used in the summer flounder, scup, and black sea bass fisheries are of a type known to interact with right whales, humpback whales, fin whales, and loggerhead, Kemp's ridley, green, and leatherback sea turtles. However, the fisheries and protected species are segregated spatially and temporally for parts of the year, reducing the opportunity for protected species-gear interactions, and conservation measures have been taken to further reduce the likelihood that protected species-gear interactions will occur in the summer flounder, scup, and black sea bass fisheries.

Right whales, humpback whales, and fin whales are not likely to get caught in trawl gear. Although entanglement of these species have occurred in pot/trap and gillnet gear used in other fisheries, right whales, humpback whales, and fin whales are not expected to be taken in this gear when used in the summer flounder, scup, and black sea bass fisheries given that concentrated effort for the scup and black sea bass fisheries does not occur in areas where right whales, humpback whales or fin whales aggregate for feeding (a behavior which can contribute to entanglements). In addition, seasonal restrictions and gear modifications for the pot/trap and gillnet sectors under the ALWTRP are expected to reduce the number of cetacean entanglements in pot/trap gear where these species and gear occur. None of the right, humpback, or fin whale entanglements to date have been in gear identified as being from the scup or black sea bass pot/trap fisheries. Therefore, even if the proposed action were to result in additional effort in the summer flounder, scup, and black sea bass fisheries, takes of right whales, humpback whales or fin whales would not be expected to occur as a result of interactions with gillnet or pot/trap gear used in the summer flounder, scup, and black sea bass fisheries.

Leatherback sea turtles are also at risk of entanglement in lines associated with pot/trap gear. There have been no reports of leatherback entanglements in scup or black sea bass pot/trap gear. However, there have been many reports of leatherback entanglements in lobster trap gear and there have been many more cases in which stranded leatherbacks show evidence of entanglement such as chafing and abrasions on the flippers and neck (Prescott 1988, Rob Nawajchick pers.comm.2001) but without any attached gear, the cause of mortality cannot be conclusively established. While leatherbacks are typically considered a pelagic species, there are seen in New

England bays at certain times of the year and concentrations have also been observed south of Long Island. Leatherback distribution may, therefore, overlap with scup and black sea bass pot trap gear in certain areas and at certain times of the year suggesting that takes in such gear are possible. Given that there have been no observed takes of leatherbacks in scup or black sea bass pot/trap gear, this Opinion will not assume that leatherbacks are being taken in this gear. However, this is an area of concern that will need further investigation.

Trawl gear poses the greatest risk to sea turtles considered in this Opinion, particularly loggerhead and Kemp's ridleys, although green sea turtles have also been observed in summer flounder trawls. Conservation measures have been taken to reduce the risk. In particular, existing regulations for TEDs address the time and place of greatest overlap between sea turtles and summer flounder trawl gear. It is estimated that 97% of turtles escape from summer flounder trawls as a result of the TED requirement. However, TEDs do not reduce the chance that a turtle will be captured, and some mortality still occurs. Therefore, increased effort in the summer flounder, scup, and black sea bass fisheries may increase the likelihood that trawls used in the summer flounder, scup, and black sea bass fisheries will result in the take of sea turtles in the action area.

As previously discussed, turtles are also taken in gillnets used in various fisheries (Table 2), and gillnets are used in the summer flounder, scup, and black sea bass fisheries in areas and at times where sea turtles also occur. Therefore, turtles takes may be possible in gillnets used in the summer flounder, scup, and black sea bass fisheries. However, given the limited data on observed takes of sea turtles in the summer flounder, scup, and black sea bass gillnet fisheries, and the very small amount of effort in the fishery using this gear type, increased effort in the summer flounder, scup, and black sea bass fisheries is not expected to result in an increase in takes of sea turtles in gillnets used in the summer flounder, scup, and black sea bass fisheries.

Table 2. Observed Sea Turtle Takes in Some Mid-Atlantic Sink Gillnet Fisheries

Date	Target Species	Mesh Size	Location	Soak Time (hours)	Water Temperature	Turtle Species	Animal Condition
June 1999	shark unknown	6.0"	Virginia	24	69°F	loggerhead	alive
June 1999	spanish mackerel	3.0"	North Carolina	2.5	75°F	loggerhead	alive
November 1999	southern flounder	6.5"	North Carolina	24	59.1°F	unknown	unknown

May 2000	smooth dogfish	6.0"	Virginia	24	60°F	unknown	alive
October 2000 (same trip, different hauls)	spanish mackerel	5.0"	North Carolina	1.5	70 F	loggerhead	alive
		3.5"	North Carolina	1.3	70 F	green	alive
November 2000 (same trip, different hauls)	king mackerel	5.5"	North Carolina	2.5	67.8 F	unknown	unknown
		5.5"	North Carolina	2.0	67.8 F	unknown	unknown
November 2000	king mackerel	5.5"	North Carolina	3.1	62.8 F	unknown	alive

5.4.3.1 Estimating the Number of Turtles Taken in Summer Flounder Trawl Gear

Observer data from the summer flounder, scup, and black sea bass trawl fishery is presented in Appendix 2. All trips targeted summer flounder. None of them targeted only scup or black sea bass. For the purposes of this Opinion, observed takes prior to implementation of the TED regulations (in 1996) were not used for estimating the number of turtles that might be taken as a result of the proposed action.

Based on data collected from 1996, the NMFS endangered species observer program recorded the take of 22 sea turtles in the summer flounder trawl fishery. Four of these were lethal takes. The majority of the turtles taken (18 of 20 identified) were loggerhead sea turtles. Observer effort was focused in the area affected by the TED regulations with the exception of one trip which occurred off of New Jersey. This trip hauled a severely decomposed loggerhead sea turtle which is not reported in Appendix 2 since it was clearly dead before being caught in the trawl.

Given the level of observer coverage in the fishery, it is not possible to extrapolate the estimated number of turtle takes that may occur in the fishery under current quota specifications or under the proposed (increased) 2002 quota specifications. For these reasons, NMFS is basing its estimate of takes in the summer flounder, scup, black sea bass trawl fisheries on the maximum level of take observed between 1996 - November 30, 2001. This approach may overestimate take in the fishery since an enlarged mesh size in TED extensions used in 1998-1999 were shown to seriously compromise TED effectiveness. However, it may also underestimate the level of take given that observer coverage in the fishery is relatively low and is focused primarily on the southern portion of the action area (albeit the area believed to be where sea turtle concentrations are highest in relation to trawl fishing effort). For the purposes of the consultation, NMFS estimates that 18 sea turtles may be taken annually in the summer flounder, scup, black sea bass trawl fisheries annually of which 4 may be lethal takes. NMFS anticipates that the majority will be loggerhead sea turtles based on this same observer data. However, NMFS notes that Kemp's ridleys have comprised a high proportion of the turtle takes previously observed in summer flounder trawls (Table 1). Therefore, NMFS is not segregating the estimated take between loggerhead and Kemp's ridley sea turtles. The take of green sea turtles in the summer flounder trawl fishery has only been observed on one occasion. However, given that the species does occur in waters where trawl effort is present, takes have been recorded previously, and unidentified turtle takes may represent green sea turtles, NMFS is estimating that 1 green sea turtle take may occur annually in the summer flounder, scup, black sea bass trawl fisheries.

5.4.3.2 Estimating the Number of Turtles Taken In Gillnet Gear

NMFS is estimating that one loggerhead, Kemp's ridley, or green sea turtle will be taken annually as a result of summer flounder, scup, black sea bass gillnet fisheries based on observed takes (Table 2).

6.0. CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

State Water Fisheries - Commercial fishing activities in state waters are likely to take several protected species. Approximately 80% of the fishery for American lobsters occurs in state waters and many Atlantic states permit coastal gillnetting. However, it is not clear to what extent state-water fisheries may affect listed species differently than the same fisheries operating in Federal waters. Further discussion of state water fisheries is contained in the Environmental Baseline section. The Atlantic Coast Cooperative Statistics Program (ACCSP), a cooperative state-Federal marine and coastal fisheries data collection program, is expected to provide information on takes of protected species in state fisheries and systematically collect fishing effort data. The data will be useful in monitoring impacts of fisheries on ESA listed species. The Commonwealth of Massachusetts developed a conservation plan for right whales in state waters that addresses state fishery interactions. This is expected to reduce the impacts of fixed gear fisheries on right whales in Massachusetts state waters.

Maritime Industry - Ship strikes have been identified as a significant source of mortality for the North Atlantic right whale population (Kraus 1990) and are known to impact all other endangered whales, specifically humpback, fin and sperm whales. Records from 1970 through 1993 report that eight right whale mortalities in the U.S. were due to ship collisions (Waring *et al.*, 1999). Between 1993 and 1997 the reported mortality and serious injury was six right whales (Waring *et al.*, 1999). Since 1997, one U.S. right whale mortality was attributed to a ship strike. It is important to note that minor vessel collisions may not kill an animal directly, but may weaken or otherwise affect it so it is more likely to become vulnerable to effects such as entanglements. Ships strike right whales more often than other whales, perhaps because their coastal migration and feeding paths cross heavily traveled shipping lanes more than whale species that travel further out to sea.

Boston, Massachusetts is one of the Atlantic seaboard's busiest ports. In 1999, 1,431 commercial ships used the port of Boston (Container vessels-304, Auto-84, Bulk Cargo-972). The major shipping lane to Boston traverses the Stellwagen Bank National Marine Sanctuary, a major feeding and nursery area for several species of baleen whales. Vessels using the Cape Cod Canal, a major conduit for shipping along the New England Coast must pass through Massachusetts and Cape Cod Bays. In a 1994 survey, 4093 commercial ships (> 20 meters in length) passed through the Cape Cod Canal, with an average of 11 commercial vessels crossing per day (Wiley *et al.*, 1995).

In southeastern waters, shipping channels associated with Jacksonville and Port Everglades, Florida bisect the area that contains the most concentrated whale sightings within right whale critical habitat. These channels and their approaches serve three commercial shipping ports and two military bases. The commercial ports are growing and the port of Jacksonville is undergoing major expansions.

Various initiatives have been planned or undertaken to expand or establish high-speed watercraft service in the northwest Atlantic. The Bar Harbor, ME – Yarmouth, Nova Scotia high-speed ferry conducted its first season of operations in 1998. The ferry makes regular runs during Nova Scotia's busy tourist season, which coincides with peak concentrations of right whale feeding on summering grounds. The 91-meter (300-foot) catamaran travels at speeds up to 90 km/h (48 knots); crossing the Bay of Fundy in less than half the time as traditional car ferries. The operation of this vessel and other high-speed craft such as high-speed whale watching boats may adversely affect threatened and endangered whales and sea turtles in the action area and Canadian waters. NMFS and other member agencies of the Northeast Implementation Team will continue to monitor the development of the high-speed vessel industry and its potential threat to listed species and critical habitat.

Small vessel traffic is also known to take marine mammals and sea turtles. Recent whale strikes resulting from interaction with whale watch boats and recreational vessels have been recorded

(Pat Gerrior, pers. comm.). In New England, there are approximately 44 whale watching companies, operating 50-60 boats, with the majority of effort during May through September. The average whale watching boat is 85 feet but size ranges from 50 to 150 feet (NMFS 1998). In addition, over 500 fishing vessels and over 11,000 pleasure craft frequent Massachusetts and Cape Cod Bays (Wiley *et al.*, 1995). Significant hubs of vessel activity exist to the south as well. These activities have the potential to result in lethal (through entanglement or boat strikes) or non-lethal (through harassment) takes of listed species that could prevent or slow a species recovery. Because most of the whales involved in vessel interaction are juveniles, areas of concentration for young or newborn animals are particularly vulnerable. This also raises concerns that future recruitment to the breeding population may be affected by the focused mortality on one age-class.

Pollution - In feeding areas of the northeast such as the Massachusetts Bay area, the dominant circulation patterns make it probable that pollutant inputs into Massachusetts Bay will affect Cape Cod Bay's right whale critical habitat. Sources of pollutants in the Gulf of Maine and other coastal regions include atmospheric loading of pollutants such as PCB's, storm water runoff from coastal towns, cities and villages, runoff into rivers emptying into bays, groundwater discharges and sewage treatment effluent, and oil spills. A present concern, not yet completely defined, is the possibility of habitat degradation in Massachusetts and Cape Cod Bays due to the Massachusetts Bay Disposal Site (MBDS) located 9.5 miles east of Deer Island. The MBDS began discharging secondary sewage effluent into Massachusetts Bay about 16 miles-from identified right whale critical habitat in 2000. NMFS concluded in a 1993 biological opinion that the discharge of sewage at the MBDS may affect, but is not likely to jeopardize, the continued existence of any listed or proposed species or critical habitat under NMFS jurisdiction. However, scientific uncertainties remain about the potential unforeseen impacts to the marine ecosystem, the food chain, and endangered species. Therefore, post-discharge monitoring is being conducted by the Massachusetts Water Resources Authority.

Nutrient loading from land-based sources such as coastal community discharges is known to stimulate plankton blooms in closed or semi-closed estuarine systems. The effect to larger embayments is unknown. Pollutant loads are usually lower in baleen whales than in toothed whales and dolphins. However, a number of organochlorine pesticides were found in the blubber of North Atlantic right whales with PCB's and DDT found in the highest concentrations (Woodley et al., 1991). Contaminants could indirectly degrade habitat if pollution and other factors reduce the food available to marine animals.

Catastrophic events - An increase in commercial vessel traffic/shipping increases the potential for oil/chemical spills. The pathological effects of oil spills have been documented in laboratory studies of marine mammals and sea turtles (Vargo *et al.*, 1986). There have been a number of documented oil spills in the northeastern U.S.

Noise Pollution - The potential effects of noise pollution, on marine mammals and sea turtles, range from minor behavioral disturbance to injury and death. The noise level in the ocean is thought to be increasing at a substantial rate due to increases in shipping and other activities, including seismic exploration, offshore drilling and sonar used by military and research vessels. Because under some conditions low frequency sound travels very well through water, few oceans are free of the threat of human noise. While there is no hard evidence of a whale population being adversely impacted by noise, scientists think it is possible that masking, the covering up of one sound by another, could interfere with marine mammals ability to communicate for mating. Masking is a major concern about shipping, but only a few species of marine mammals have been observed to demonstrate behavioral changes to low level sounds. At this time, the only usable threshold used by scientists to predict adverse effects is 180 dB. Although this is not a conclusive fact, researchers believe that 180 dB impulse can trigger the onset of tissue damage for many species of marine mammals. Concerns about noise in the action area of this consultation include increasing noise due to increasing commercial shipping and recreational vessels.

Canadian Waters - The Scotian Shelf off Nova Scotia, Canada has been exposed to heavy commercial shipping, intensive fishing activities and extensive amounts of seismic exploration over the past decades. Right whales congregate in the Bay of Fundy, east and southeast of Grand Manan Island, where the commercial shipping lanes for the port of Saint John, New Brunswick, are charted. Large whale ship strikes and entanglements including right whales have been reported in Canadian waters. Although this area is under the jurisdiction of the Canadian Government, it is close to eastern Maine in the U.S. Entanglements observed in U.S. waters may have originated in Canadian waters, but it is often impossible to determine the origin of the gear.

7.0 INTEGRATION AND SYNTHESIS OF EFFECTS

The *Status of Affected Species*, and *Environmental Baseline* sections of this Opinion discuss the natural and human-related phenomena that caused populations of listed species to become threatened or endangered and may continue to place their populations at high risk of extinction. Portions of the *Environmental Baseline* section and the *Cumulative Effects* section describe measures that may ameliorate some of the negative effects of these natural and human-related phenomena. The present section of this Opinion examines the net effects (taking into consideration any on-going actions that may ameliorate negative effects) of the proposed action, to determine if (a) those effects can be expected to reduce the reproduction, numbers, or distribution of threatened or endangered species in the action area, (b) determine if any reductions in reproduction, numbers or distribution would be expected to reduce the species' likelihood of surviving and recovering in the wild, and (c) if a reduction in a species' likelihood of surviving and recovering in the wild would be appreciable.

As described above, based on the most current information available, right whales, humpback whales, fin whales, and sea turtles occurring in the action area for this consultation are not expected to be affected by vessel strikes resulting from operation of the vessels used in the summer flounder, scup and black sea bass fisheries other than by random chance given that: (1) vessels are much smaller than those known to cause serious injury and mortality to large whales, (2) overlap of protected species and vessel activity for the fisheries is limited spatially and temporally, and (3) the vessels will be operated by experienced fishers familiar with the area, and the presence of these species at certain times of the year. The use of trawl gear, trap/pot gear or gillnet gear used in the summer flounder, scup and black sea bass fisheries is not expected to affect right whales, humpback whales, or fin whales given that these species and the fishing gear are separated spatially for many months of the year, these species do not forage in areas where they co-occur with summer flounder, scup, and black sea bass pot/trap or gillnet gear, and conservation measures already in place as well as new proposed measures are expected to reduce the likelihood of interactions where protected species and gear used in the summer flounder, scup, and black sea bass fisheries do co-occur. The summer flounder, scup, and black sea bass fisheries may take sea turtles, particularly in trawl gear where gear and the species co-occur. However, the proposed action, even if it were to result in an increase in effort, is not expected to result in additional takes of sea turtle species given the conservation measures in place that restrict the use of trawl, gillnet, and trap/pot gear.

In the *Approach to the Assessment* section of this Opinion, it was noted that the jeopardy analysis proceeds in three steps:(1) identification of the probable direct and indirect effects of an action on the physical, chemical and biotic environment of the action area; (2) determination of whether there is a reasonable expectation that threatened or endangered species will experience reductions in reproduction, numbers or distribution in response to these effects; and (3) determination of whether any reductions in a species' reproduction, numbers, or distribution (identified in the second step) can be expected to appreciably reduce a listed species' likelihood of surviving and recovering in the wild.

This Opinion has identified that the proposed activity will directly affect loggerhead, Kemp's ridley, and green sea turtles as a result of entrapment in trawl gear or entanglement in gillnet gear used in the summer flounder, scup, black sea bass fisheries. No takes of right whales, humpback whales, fin whales, or leatherback sea turtles are anticipated. Therefore, the proposed action is not expected to reduce the reproduction, numbers, or distribution of right whales, humpback whales, fin whales, or leatherback sea turtles. No other direct or indirect effects to endangered species are expected as a result of the activity.

7.1 Integration and Synthesis of Effects on Sea Turtles

Based on past patterns of take of loggerhead, Kemp's ridley, and green sea turtles in trawl and gillnet gear, the proposed action can be expected to capture 19 loggerheads or Kemp's ridleys (up to 5 lethal takes), and 2 green sea turtles (lethal or non-lethal takes) annually.

7.1.1 Loggerhead Sea Turtle

The threatened loggerhead sea turtle is the most abundant of the sea turtles listed as threatened or endangered in the U.S. waters. In the western Atlantic, most loggerhead sea turtles nest from North Carolina to Florida and along the gulf coast of Florida. The southeastern U.S. nesting aggregation is the second largest and represents about 35 percent of the nests of this species. From a global perspective, this U.S. nesting aggregation is critical to the survival of this species.

The status of the northern loggerhead subpopulation is, however, of concern. There are only an estimated 3,800 nesting females in the northern loggerhead subpopulation and the status of this northern population, based on number of loggerhead nests, has been classified declining or stable at best (TEWG 2000). Another factor which may add to the vulnerability of the northern subpopulation is that NMFS scientists estimate that the northern subpopulation produces predominantly males (65%). In contrast, the much larger south Florida subpopulation produces predominantly females (80%) (NMFS SEFSC 2001).

Based on observer data, the anticipated take of loggerheads in the summer flounder trawl fishery is expected to occur off of North Carolina/Virginia in winter months when sea turtle concentrations and trawl effort are high. While sea turtles from all loggerhead nesting sites may occur in this area, previous studies suggest that at least 65% of the turtles that occur in this area originate from the South Florida nesting population. While all takes of this threatened species are of concern, nesting data suggests that the South Florida nesting group is growing. Therefore, takes of loggerhead sea turtles in the summer flounder trawl fishery (up to 5 lethal takes annually) are not expected to reduce the distribution, numbers of reproduction of this species.

7.2.2 Kemp's Ridley Sea Turtles

The Kemp's ridley is the most endangered of the worlds sea turtle species. The only major nesting site for Kemp's ridleys is a single stretch of beach near Rancho Nuevo, Tamaulipas, Mexico (Carr 1963). Estimates of the adult female nesting population reached a low of 300 in

1985. From 1985 to 1999, the number of nests observed at Rancho Nuevo, and nearby beaches increased at a mean rate of 11.3% per year. Current totals exceed 3000 nests per year, allowing cautious optimism that the population is on its way to recovery (TEWG 2000). In light of this, the take of Kemp's ridley sea turtles in the summer flounder trawl fishery (up to 5 lethal takes annually) are not expected to reduce the distribution, numbers of reproduction of this species. Given that this is an endangered species, NMFS must follow all Terms and Conditions to minimize take of Kemp's ridleys in the fishery, and use its authorities in furtherance of the purposes of the ESA (Section 7(a)(1)) to benefit the species.

7.2.3 Green Sea Turtle

Green turtles are distributed circumglobally. In the western Atlantic they range from Massachusetts to Argentina, including the Gulf of Mexico and Caribbean, but are considered rare north of Cape Hatteras (Wynne and Schwartz 1999). The pattern of green turtle nesting shows biennial peaks in abundance, with a generally positive trend during the ten years of regular monitoring since establishment of the index beaches in 1989, perhaps due to increased protective legislation throughout the Caribbean (Meylan *et al.* 1995). In light of this, the take of green sea turtles in the summer flounder trawl fishery (up to 2 lethal takes annually) are not expected to reduce the distribution, numbers of reproduction of this species.

8.0 CONCLUSION

After reviewing the current status of the species, the environmental baseline for the action area, and the effects of the proposed action, it is the NMFS biological opinion that the continued implementation of the Summer Flounder/Scup/Black Sea Bass FMP with modifications as proposed by the 2002 specifications is not likely to jeopardize the continued existence of western North Atlantic right whales, Gulf of Maine humpback whales, fin whales, loggerhead, Kemp's ridley, green, or leatherback sea turtles.

9.0 INCIDENTAL TAKE STATEMENT

Section 9 of the Endangered Species Act and Federal regulations pursuant to Section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as "to harass, harm, pursue, hunt, shoot, capture, or collect, or to attempt to engage in any such conduct." Incidental take is defined as take that is incidental to, and not the purpose of, the execution of an otherwise lawful activity. Under the terms of Sections 7(b)(4) and 7(o)(2), taking that is incidental to and not intended as part of the action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement (ITS).

The measures described below are non-discretionary and must therefore be undertaken in order for the exemption in section 7(o)(2) to apply. Failure to implement the terms and conditions through enforceable measures, may result in a lapse of the protective coverage section of 7(o)(2).

When a proposed NMFS action is found to be consistent with section 7(a)(2) of the ESA, section 7(b)(4) of the ESA requires NMFS to issue a statement specifying the impact of incidental taking, if any. If no take is anticipated, the Service must still issue an incidental take statement for the proposed action. It also states that reasonable and prudent measures necessary to minimize impacts of any incidental take be provided along with implementing terms and conditions. Only those takes resulting from the agency action (including those caused by activities approved by the agency) that are identified in this statement and are in compliance with the specified reasonable and prudent alternatives and terms and conditions are exempt from the taking prohibition of Section 9(a), pursuant to section 7(o) of the ESA.

Anticipated Amount or Extent of Incidental Take

NMFS anticipates that the continued operation of the summer flounder, scup, and black sea bass fisheries may result in the injury or mortality of sea turtles. Based on data from observer reports for these fisheries NMFS anticipates that 19 loggerhead or Kemp's ridley sea turtles takes (up to 5 lethal), and 2 green sea turtle takes (lethal or non-lethal) may occur annually.

Anticipated Impact of Incidental Take

In the accompanying Opinion, NMFS has determined that this level of anticipated take is not likely to result in jeopardy to loggerhead, Kemp's ridley, or green sea turtles.

Reasonable and Prudent Measures

NMFS has determined that the following reasonable and prudent measures are necessary and appropriate to minimize impacts of incidental take of sea turtles in the summer flounder, scup and black sea bass fisheries:

1. NMFS shall evaluate observer information from the summer flounder, scup and black sea bass fisheries, including the percentage of observer coverage, and any other relevant information before the start of each fishing year to determine whether the incidental take levels provided in this Opinion should be modified or if other management measures need to be implemented to reduce take.

2. NMFS shall provide adequate guidance to fishers participating in the summer flounder, scup and black sea bass fisheries to make them aware of the presence of sea turtles in the area, and shall provide adequate guidance to all fishers such that any sea turtle incidentally taken is handled with due care, observed for activity, and returned to the water.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, NMFS must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1. NMFS must provide all participating fishers with a copy of the proposed sea turtle resuscitation and handling techniques [66 FR 32787] and instruct fishers in the resuscitation and handling of sea turtles as follows:

   "Any specimen taken incidentally during the course of fishing or scientific research activities must be handled with due care to prevent injury to live specimens, observed for activity, and returned to the water. Sea turtles that are actively moving or determined to be dead must be released over the stern of the boat. In addition, they must be released only when fishing or scientific collection gear is not in use, when the engine gears are in neutral position, and in areas where they are unlikely to be recaptured or injured by vessels.

   Resuscitation must be attempted on sea turtles that are comatose, or inactive by: (1) placing the turtle on its bottom shell (plastron) so that the turtle is right side up, and (2) elevating its hindquarters at least 6 inches (15.2 cm) for a period of 4 up to 24 hours. The amount of the elevation depends on the size of the turtle; greater elevations are needed for larger turtles. Periodically, rock the turtle gently left to right and right to left by holding the outer edge of the shell (carapace) and lifting one side about 3 inches (7.6 cm) then alternate to the other side. Gently touch the eye and pinch the tail (reflex test) periodically to see if there is a response. Sea turtles being resuscitated must be shaded and kept damp or moist (such as by placing a water-soaked towel over the head, carapace, and flippers) but under no circumstance be placed into a container holding water. Turtles that revive and become active must be released over the stern of the boat only when fishing or scientific collection gear is not in use, when the engine gears are in neutral position, and in areas where they are unlikely to be recaptured or injured by vessels. Sea turtles that fail to respond to the reflex test or fail to move within 4 hours (up to 24, if possible) must be returned to the water in the same manner as that for actively moving turtles. A turtle is determined to be dead if the muscles are stiff (rigor mortis) and/or the flesh has begun to rot; otherwise the turtle is determined to be comatose or inactive and resuscitation attempts are necessary. Any specimen taken incidentally during the course of fishing or scientific research activities must not be consumed, sold, landed, offloaded, transshipped, or kept below deck."

2. NMFS shall require all vessels participating in the these fisheries to post the sea turtle handling guidelines and a turtle identification key in an accessible area of the vessel (*i.e.*, inside the wheelhouse) to ensure that the operator of the vessel is aware of the necessary procedures in the event that a turtle is caught.

3. Takes must be reported to the NMFS NERO Assistant Regional Administrator of Protected Resources Division (telephone 978-281-9116, fax 978-281-9394) within 24 hours of returning from the trip in which the incidental take occurred. The reports must include a description of the animal's condition at the time of release.

4. All available information collected shall be evaluated by NMFS on an annual basis to determine whether estimated annual incidental injuries or mortalities of sea turtles have exceeded the levels detailed in the incidental take statement of this biological opinion.

10.0 CONSERVATION RECOMMENDATIONS

In addition to section 7(a)(2), which requires agencies to ensure that proposed projects will not jeopardize the continued existence of listed species, section 7(a)(1) of the ESA places a responsibility on all Federal agencies to utilize their authorities in furtherance of the purposes of the Act by carrying out programs for the conservation of endangered species. Conservation Recommendations are discretionary activities designed to minimize or avoid adverse effects of a proposed action on listed species or critical habitat to help implement recovery plans, or to develop information. The following additional measures are recommended regarding incidental take and sea turtle conservation:

1. NMFS should increase observer coverage on summer flounder, scup, and black sea bass trawls north of Cape Henry, Virginia in areas and at times when sea turtles are known to occur to determine whether TEDs are necessary in other parts of the action area to prevent/reduce sea turtle trawl mortality or injury.

2. In order to better understand sea turtle populations, NMFS should support (*i.e.*, fund, advocate, promote) in-water abundance estimates of sea turtles in the action area.

3. NMFS, in conjunction with the ASMFC and other appropriate regulatory authorities, should encourage states to require fishermen to report sea turtle takes as bycatch and provide

instructions on release. Reports should include a description of the animal's condition at the time of release.

4. A significant amount of ghost gear is generated from fixed gear fisheries, occasionally due to conflict with mobile gear fisheries, other vessel traffic, storms, or oceanographic conditions. Mobile gear also occasionally contributes to the quantity of ghost gear. There is potential that this gear could adversely affect marine mammals, sea turtles and their habitat. In order to minimize the risks associated with ghost gear, NMFS should assist the USCG in notifying all Atlantic fisheries permit holders of the importance of bringing gear back to shore to be properly discarded. In conjunction with the USCG, fishery councils/commissions, and other appropriate parties, NMFS should review current regulations that concern fishing gear or fishing practices that may increase or decrease the amount of ghost gear to determine where action is necessary to minimize impacts of ghost gear. NMFS should assist the USCG in developing and implementing a program to encourage the fishing industry and other marine operators to bring ghost gear in to port for re-use and recycling. In order to maximize effectiveness of gear marking programs, NMFS should work with the USCG and fishery councils/commissions to develop and implement a lost gear reporting system to tie in with the ghost gear program and consider incorporating this system into future revisions of the appropriate management plans.

5. NMFS should examine the possibility of developing or modifying existing technologies, such as sonar, to detect and alert fishers if sea turtles or marine mammals become entangled in their gear.

6. NMFS should expand education and outreach, and establish a recognition program to promote incentives to assist in prevention activities. Outreach focuses on providing information to fishermen and the public about conditions, causes and solutions to protecting endangered species and continuing commercial fishing. Outreach is an essential element for building ongoing stewardship for endangered species. Involvement engages people to solicit their ideas and comments to help direct conservation ideas and participate meaningfully in decision-making processes. Examples of assistance by fishermen occur but often go unnoticed. Recognizing the positive efforts of individuals, fishing organizations and others encourages stewardship activities and practices and sharing good ideas. Parties that demonstrate innovation and leadership in resource protection should be recognized and used as models for others.

7. When it has been determined that 50% of the incidental take level for loggerhead, Kemp's ridleys, green or leatherback sea turtles is reached, NMFS' NERO shall enter discussions

with NMFS' Protected Resources program to identify options for reducing additional sea turtle takes in the summer flounder, scup, and black sea bass fisheries.

11.0 REINITIATION STATEMENT

This concludes formal consultation on the continued implementation of the Summer Flounder/Scup/Black Sea Bass FMP with changes as proposed by the 2002 specifications. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. If the amount or extent of incidental take is exceeded, NMFS shall immediately reinitiate formal consultation on the summer flounder, scup, and black sea bass fisheries.

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APPENDIX 1. THE ANTICIPATED INCIDENTAL TAKE OF LOGGERHEAD, LEATHERBACK, KEMP'S RIDLEY AND GREEN SEA TURTLES AS CURRENTLY DETERMINED IN THE MOST RECENT BIOLOGICAL OPINION'S FOR NMFS IMPLEMENTATION OF THE BLUEFISH, AMERICAN LOBSTER, MONKFISH, MULTISPECIES, MONKFISH, MACKEREL/SQUID/BUTTERFISH, AND SPINY DOGFISH FISHERY MANAGEMENT PLANS.

FISHERY	SEA TURTLE SPECIES			
	Loggerhead	**Leatherback**	**Kemp's Ridley**	**Green**
Bluefish	6-no more than 3 lethal	None	6 lethal or non-lethal	None
Lobster	2 lethal or non-lethal	4 lethal or non-lethal	None	None
Mackerel/Squid/ Butterfish	6-no more than 3 lethal	1 lethal or non-lethal	2 lethal or non-lethal	2 lethal or non-lethal
Monkfish - through 4/30/02	6-no more than 4 lethal	1 lethal or non-lethal	1 lethal or non-lethal	1 lethal or non-lethal
through 4/30/03	3-no more than 2 lethal	1 lethal or non-lethal	1 lethal or non-lethal	1 lethal or non-lethal
after 4/30/03	None	None	None	None
Multispecies	1 lethal or non-lethal	1 lethal or non-lethal	1 lethal or non-lethal	1 lethal or non-lethal
Spiny Dogfish	3-no more than 2 lethal	1 lethal or non-lethal	1 lethal or non-lethal	1 lethal or non-lethal
Summer Flounder	15 lethal or non-lethal	3 lethal or non-lethal	3 lethal or non-lethal	3 lethal or non-lethal

APPENDIX 2. SUMMARY OF ALL OBSERVED TURTLE TAKES IN THE SUMMER FLOUNDER TRAWL FISHERY BETWEEN MAY 1, 1994 AND NOVEMBER 30, 2001

HAUL DATE	SPECIES	LAT/LON	WATER DEPTH (FT.)	ANIMAL COND.	TED USED[1] (Y/N)
10/30/94	Loggerhead	36°33′/75°41′	84	Alive	N
12/05/94	Loggerhead	35°43′/75°16′	90	Alive	Y
10/25/95	Loggerhead	37°40′/75°11′	90	Alive	N
10/25/95	Loggerhead	37°27′/75°18′	90	Dead	N
10/25/95	Loggerhead	37°27′/75°18′	90	Alive	N
10/26/95	Loggerhead	37°27′/75°12′	108	Alive	N
10/26/95	Loggerhead	37°27′/75°12′	108	Alive	N
10/26/95	Loggerhead	37°20′/75°20′	108	Dead	N
10/23/96	Loggerhead	37°13′/75°25′	78	Alive	N
10/24/96	Loggerhead	37°10′/75°18′	90	Alive, injured	N
10/25/96	Loggerhead	37°14′/75°16′	96	Dead	N
10/25/96	Turtle, spp	37°14′/75°16′	102	Alive	N
1/13/99	Loggerhead	35°38′/75°13′	96	Alive	Y
1/13/99	Loggerhead	35°42′/75°10′	96	Alive	Y
1/14/99	Loggerhead	35°47′/75°15′	84	Dead	Y
1/14/99	Loggerhead	35°47′/75°15′	84	Dead	Y
1/15/99	Kemp's ridley	35°29′/75°16′	102	Alive	Y
1/13/99	Loggerhead	35°34′/75°13′	90	Alive	Y
1/13/99	Kemp's ridley	35°28′/75°16′	84	Alive	Y
1/13/99	Loggerhead	35°40′/75°12′	84	Dead	Y
1/13/99	Loggerhead	35°40′/75°12′	84	Alive	Y
1/14/99	Loggerhead	35°37′/75°16′	84	Alive	N
1/15/99	Loggerhead	35°56′/75°18′	90	Alive	N
1/13/99	Loggerhead	35°39′/75°14′	90	Dead	Y
1/13/99	Turtle, spp	35°39′/75°14′	90	Alive	Y
1/15/99	Loggerhead	35°48′/75°10′	96	Alive	N
1/15/99	Loggerhead	35°48′/75°10′	96	Alive, injured	N
2/12/99	Loggerhead	35°39′/75°11′	86	Alive, unk.	N
2/12/99	Loggerhead	35°39′/75°11′	86	Alive, unk.	N
2/12/99	Loggerhead	35°39′/75°11′	86	Alive	N

[1] - T.E.D. regulations implemented in 1996 require use between 33°35′ and 37°05′. Northern line moved to 35°46.1′ during Jan. 15 to March 15.

Notes - Four turtles that were severely decomposed (dead prior to being caught in this gear) were deleted from the summary (one each observed from 1998-2001);
Turtle, spp = Observer unable to identify to species.