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ENDANGERED SPECIES ACT SECTION 7 CONSULTATION

BIOLOGICAL OPINION

Agency: National Marine Fisheries Service

Activity: Consultation Regarding the Fishery Management Plan for the Atlantic Mackerel, Squid, and Atlantic Butterfish Fishery and Amendment 8 to the Fishery Management Plan

Conducted by: National Marine Fisheries Service
Northeast Regional Office

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This document transmits the NMFS' biological opinion based on our review of the proposed implementation of Amendment 8 to the Fishery Management Plan for the Atlantic Mackerel, Squid, and Atlantic Butterfish Fisheries in United States Exclusive Economic Zone (EEZ) off the Northeast and Mid-Atlantic coasts in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). This biological opinion is based on information provided by NMFS' Office of Sustainable Fisheries in the proposed rule to implement Amendment 8 to the Fishery Management Plan for the Atlantic Mackerel, Squid, and Atlantic Butterfish Fisheries, the Environmental Assessment/Regulatory Impact Report, and other sources of information. A complete administrative record of this consultation is on file at NMFS' Office of Protected Resources in Gloucester, Massachusetts.

The Mid-Atlantic Fishery Management Council has submitted Amendment 8 to the Atlantic Mackerel, Squid, and Atlantic Butterfish Fishery Management Plan (FMP), including the Draft Environmental Impact Assessment (EA) and Draft Regulatory Impact Review (RIR). On April 7, 1999 the National Marine Fisheries Service (NMFS) published a proposed rule (64 FR 16891) to implement this amendment. The primary geographic area affected by the FMP includes Northeast and Mid-Atlantic waters of the United States Exclusive Economic Zone (EEZ). In addition, territorial waters of Northeast and Mid-Atlantic states are affected through the regulation of activities of federal permit holders fishing in those areas.

CONSULTATION HISTORY

Formal consultation on the Atlantic Mackerel/Squid/Atlantic Butterfish FMP was conducted in the context of the consultation on all fisheries for the then-Marine Mammal Exemption Program (MMEP). A Biological Opinion with an Incidental Take Statement for all fisheries was issued on July 5, 1990. Subsequently, NMFS completed informal consultations for Amendment 4 (August 6, 1991), Amendment 5 (February 16, 1995), and Amendment 6 (August 15, 1995) to the FMP. Due to the low level of incidental take of endangered or threatened species in the

fishery, formal consultation was not initiated for this fishery independently of the MMEP consultation and no separate Incidental Take Statement (ITS) was issued. Recently, NMFS has become aware of more evidence of sea turtle takes by vessels targeting mackerel and/or squid. Formal consultation has been reinitiated to consider the impacts of Amendment 8 as well as the entire fishery on listed species and critical habitat and to provide a separate ITS.

I. DESCRIPTION OF THE PROPOSED ACTION

A. Atlantic Mackerel, Squids, and Atlantic Butterfish Fisheries under the Current Fishery Management Plan

Species managed under the FMP include Atlantic Mackerel, *Scomber scombrus*; short-finned squid, *Illex illecebrosus*; long-finned squid, *Loligo pealeii*; and Atlantic butterfish, *Peprilus triacanthus* . The most recent description of the fishery can be found in the FMP/EIS document (MAFMC 1995) prepared for Amendment 5. Status of these fishery resources is summarized in NMFS (1995) and in the EA for Amendment 8. The Council notes that there is considerable uncertainty in the level of abundance for mackerel. All four of these stocks are migratory and transboundary with Canada, so Canadian fishing effort may influence the status of the stocks in U.S. waters. Although separate biological stocks for some of the species may exist, insufficient information is available to support this theory, and the FMP is designed around one stock per species. Further investigation of stock definition has been recommended.

None of the four species is currently considered to be overfished; therefore, no rebuilding periods with scheduled serial effort reduction measures are included in the FMP at this time. Instead, the fishery is managed through a system of specifications for harvesting and processing, with the domestic annual harvest (DAH) specification serving as a sort of quota. The 1999 specifications for the squid, mackerel, and butterfish fisheries were published in the *Federal Register* on January 8, 1999 (64 FR 1139). These specifications include DAH allocations of 75,000 metric tons (mt) of mackerel; 21,000 mt of long-finned squid; 19,000 mt of short-finned squid; and 5,900 mt of butterfish. No foreign harvesting is authorized at this time for the U.S. EEZ. The Canadian catch of mackerel is factored into the DAH mackerel calculation. This deduction is not included in setting the DAH for the other three species. A joint venture (JV) processing allowance of 10,000 mt of mackerel is included. This is a processing allocation for domestic catcher vessels to transfer mackerel to foreign processors operating in the U.S. EEZ.

To control fishing effort during a given year, the FMP contains a provision for closure of the directed mackerel fishery if catch projections indicate that 80 % of the DAH will be reached and for species-specific closures of either of the directed squid or butterfish fisheries if 95% of the DAH will be reached. During a mackerel fishery closure, there is an incidental catch allowance of 10% by weight per trip of mackerel. During a squid or butterfish closure, the incidental catch allowances for long-finned squid and butterfish are 2,500 lbs each and, for short-finned squid, 5,000 lbs.

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Currently, the squid and butterfish fisheries are managed under controlled access via a limited access permit system which was implemented by placing a moratorium on new entrants into the fishery. A limited access system effectively places a ceiling on future expansion in a fishery. Although a mackerel moratorium was considered by the Council, this alternative was not adopted, so there is currently no limit on new entrants into the mackerel fishery. The Council plans to consider limited entry for mackerel again in the upcoming Amendment 9. The FMP does not currently contain closures to protect spawning adults or other restrictions during spawning seasons.

Based on permit records, 2979 vessels held permits in the combined squid/mackerel/butterfish (SMB) fishery in 1996. Only 527 vessels reported landings of mackerel in 1996, with 94% of the landings caught by 54 vessels. As of March 1998, 5837 vessels held SMB permits. The Council notes that there is a potential pool of approximately 1,000 new entrants into the mackerel fishery and that the current Northeast fleet has the capacity to exceed the DAH allocation for mackerel.

The federal SMB fishery is primarily a mobile gear fishery using midwater trawl and bottom trawl gear. As of January 27, 1999, the list of allowable commercial gear types authorized under this FMP -- published in the Magnuson-Stevens Act List of Fisheries (64 FR 4030) -- includes trawl, pelagic drift gillnet, pelagic longline/hook-and-line/hand line, purse seine, pot, trap, dredge, and bandit gear. Other gear types such as pound nets may be used in state water fisheries.

Several types of gillnet gear may be used in the SMB fishery, possibly by vessels catching mackerel to use as bait in other fisheries such as the tuna or lobster fishery. Vessels using bait gillnets to harvest SMB species are required to possess a permit and comply with mandatory reporting requirements. Thus, even a bait gillnet vessel that does not sell the mackerel but uses it to catch a species that it does sell, such as lobster or tuna, is required to obtain a SMB permit and comply with mandatory reporting. Bait gillnets are usually constructed with small mesh monofilament. The use of small mesh gear is restricted under the Multispecies FMP; however, certain exemptions are provided. Framework Adjustment 16 included an exemption for small pelagic gillnets attached to the vessel. In addition, vessels can use small mesh gillnets, to target SMB in certain small mesh exemption areas in the Gulf of Maine/Georges Bank (GOM/GB), Southern New England (SNE), and Mid-Atlantic (MDA) regulated mesh areas as defined under the Multispecies FMP. In the GOM/GB area, exemptions include the Cultivator Shoal Whiting Exemption Area (June 15 - October 31), Small Mesh Area 1 (July 15 - November 15), and Small Mesh Area 2 (January 1 - June 30). Small mesh gillnets can be used to target SMB in the entire SNE and MDA regulated mesh areas, with the exception that squid and butterfish cannot be harvested in certain sections of MDA regulated mesh area.

The fishery includes domestic harvesting and processing activities and recently has continued to include JV processing. The fishery also currently includes domestic processors, including several freezer-trawlers.

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All four species managed under this FMP were exploited by the foreign fishery in the 1960s and 1970s. During that time, fish were often transferred to processing vessels by towing the net at the surface. In the current fishery, transfer activities may also involve codend transfer, rather than pump-out operations such as are used in the herring fishery, and small-scale operations may transfer fish by hand. Those vessels catching mackerel incidental to effort which is primarily directed at herring are likely to use pumpout for mackerel as well.

Long-finned squid are primarily harvested by bottom otter trawl gear. Most landings occur during January-April and October-December. There has been a shift from inshore to offshore in the geographic distribution of landings. In 1992, 97% of long-finned squid harvested came from offshore waters. (No information is available at this time on more recent landings.) The majority of landings come from southern New England to mid- Mid-Atlantic waters. Abundance of short-finned squid may be linked to the level of fishing in the offshore portion of the range outside the U.S. EEZ. This species is also primarily harvested by bottom otter trawl gear. The majority of landings occur during June-October in mid- to lower Mid-Atlantic waters.

No information is provided on primary gear type or spatio-temporal distribution of fishing effort targeting Atlantic mackerel in the current fishery. It is likely that purse seines and midwater and bottom otter trawl gear are used. Gillnets may also be used in the federal fishery. There is a significant recreational fishery for mackerel in the action area.

No information is provided on primary gear type targeting Atlantic butterfish in the current fishery. It is possible that gear type varies by season since butterfish school at the surface during warmer months and overwinter in deeper (up to 675') water. For otter trawl effort, most landings occur in inshore Massachusetts and Rhode Island waters. About half of butterfish landings occur during January-February, with the remainder scattered throughout the year.

Mandatory data reporting was instituted in the SMB fishery in Amendment 5 and has been required since May 1996. Vessel owners complete daily logs and submit the logs monthly. Dealers are required to report weekly. As of January 1, 1997, vessels possessing a SMB permit were required to take observers if requested by NMFS.

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B. Proposed Action

Amendment 8 contains several provisions to bring the FMP into compliance with the Sustainable Fisheries Act and new and revised National Standards. The consistency measures are administrative in nature and include the following:

- revision to the overfishing definitions for all four species;
- designation of Essential Fish Habitat (EFH) for all four species; and
- incorporation of new National Standards 8 (effects on fishing communities), 9 (bycatch), and 10 (safety).

In addition, Amendment 8 establishes a framework process to allow the Council to modify or

add management measures during the fishing year using a streamlined public review process rather than limiting changes to an annual schedule. A list of 25 measures which can be included or modified via the framework adjustment process is included in the EA.

To address concerns regarding harvest capacity and overcapitalization, Amendment 8 also includes vessel size restrictions for harvesting vessels. These limitations are designed to establish a ceiling on harvest capacity and are parallel to those developed by the New England Fishery Management Council for the proposed Atlantic Herring FMP. Harvesting vessels must be less than 165 feet in length, no more than 750 GRT, and have a shaft horsepower which does not exceed 3,000 hp. Vessels which exceed these measurements will only be able to engage in processing activities.

C. Action Area

The Action Area for this proposed action includes waters of the EEZ offshore the northeastern and mid-Atlantic United States.

II. STATUS OF AFFECTED SPECIES

NMFS has determined that the action being considered in this biological opinion may affect the following species and/or their critical habitat(s) provided protection under the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*; ESA):

Cetaceans

Northern right whale (*Eubalaena glacialis*)	Endangered
Humpback whale (*Megaptera novaeangliae*)	Endangered
Fin whale (*Balaenoptera physalus*)	Endangered
Blue whale (*Balaenoptera musculus*)	Endangered
Sei whale *(Balaenoptera borealis)*	Endangered
Sperm whale *(Physeter catodon*)	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

[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.*

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Fish

Shortnose sturgeon (*Acipenser brevirostrum*)	Endangered

Critical Habitat Designations

Northern right whale	Cape Cod Bay and Great South Channel portions of Northern right whale critical habitat

This section will focus on the status information within the action area necessary to establish the environmental baseline and to assess the effects of the proposed action. Background information on the range-wide status of these species and a description of critical habitat can be found in a number of published documents. General information on the potential for entanglement in the gear types used in the mackerel fishery is likely to be similar to that summarized in consultations on the Multispecies FMP, including the June 12, 1986, November 30, 1993, February 18, 1996, and December 13, 1996 (NMFS 1996) Biological Opinions. Additional sources include recent shortnose sturgeon (NMFS 1996) and sea turtle (NMFS and USFWS 1995, USFWS 1997) status documents; Recovery Plans for the humpback whale (NMFS 1991a), right whale (NMFS 1991b), blue whale (NMFS 1998c), fin and sei whale (NMFS 1998a), shortnose sturgeon (NMFS 1998b), loggerhead sea turtle (NMFS & USFWS 1991) and leatherback sea turtle (NMFS & USFWS 1992); and the 1998 marine mammal stock assessment report (Waring *et al.* 1999).

Northern Right Whale

About half of the species' geographic range is within the action area for this consultation. In the action area as a whole, right whales are present throughout most months of the year, but are most abundant between February and June. The species uses mid-Atlantic waters as a migratory pathway from the winter calving grounds off the coast of Florida to spring and summer nursery/feeding areas in the Gulf of Maine. NMFS designated right whale critical habitat on June 3, 1994, (59 FR 28793). Portions of the critical habitat within the action area include the waters of Cape Cod Bay and the Great South Channel off the coast of Massachusetts, where the species is concentrated at different times of the year. Whales 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). Right whales in the Gulf of Maine feed on zooplankton, primarily copepods, by swimming at ("skim feeding") or below the water's surface with mouths slightly ajar, often for hours at a time (NMFS 1991a, Kenney *et al.* 1986, Murison and Gaskin 1989, Mayo and Marx 1990).

In the last several years, significant attempts have been initiated to determine the current status and trends of this very small population and to make valid recommendations on recovery requirements. Knowlton *et al.* (1994) concluded, based on data from 1987 through 1992, that the

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northern right whale population was growing at a net annual rate of 2.5% (CV=0.12). This rate is also used in NMFS' marine mammal Stock assessment reports (Waring *et al.* 1999). The data used in Knowlton *et al.* (1994) has recently been re-evaluated, and new attempts to model the trends of the northern right whale population are in progress (Kraus 1997). A draft working paper prepared by Hain *et al.* (in prep.) examined the effects of survey effort on preliminary mortality estimates and suggested that it was unlikely that mortalities recorded during the 1990s represented a substantial increase over past years, *i.e.*, relative to the mortality rate incorporated into the calculation of the 2.5% net rate of increase.

Recognizing the precarious status of the right whale, the continued threats present in its coastal habitat throughout its range, and the uncertainty surrounding attempts to characterize population trends, the International Whaling Commission (IWC) held a special meeting of its Scientific Committee from March 19-25, 1998, in Cape Town, South Africa, to conduct a comprehensive assessment of right whales worldwide. The workshop's participants reviewed available information on the northern right whale, including Knowlton *et al.* (1994), Kraus (1997), and an early draft of Caswell *et al.* (1999). After considering this information, the workshop attendees concluded that it is unclear whether the Western North Atlantic stock of the northern right whale population is "declining, stationary or increasing, and [that] the best estimate of current population size is only 300 animals." Maintaining a conservative stance due to these uncertainties, participants concluded that the growth rate of this population "is both low and substantially less than that of the southern right whale populations" (IWC 1998).

Workshop participants expressed "considerable concern" in general for the status of the Western North Atlantic population. Based on recent (1993-1995) observations of inconsistent calf production, the relatively large number of human-induced mortalities, and an observed increase in the calving interval, it was suggested that the slow but steady recovery rate published in Knowlton *et al.* (1994) may not be continuing. Workshop participants urgently recommended increased efforts to determine the trajectory of the northern right whale population, and NMFS' Northeast Fisheries Science Center has initiated several efforts to implement that recommendation.

Caswell *et al.* (1999), using data on reproduction and survival, determined that the right whale population was declining at a rate of 2.4% per year as of 1996. One model used suggested that the right whale population has undergone a five-fold increase in mortality rate in less than one generation. If the mortality rate is not decreased and the population performance improved, extinction could occur within 100 years and would be certain within 400 years. The mean time to extinction would be 191 years. The NMFS Northeast Fisheries Science Center is currently reviewing this paper and several other assessment efforts to identify the best and most current available scientific information on population status and trends.

Reports from Early Warning System surveys in the Southeast U.S. calving grounds and from Cape Cod Bay thus far in 1999 suggest low calf production (three calves seen to date). However, this cannot be confirmed as an annual total until subsequent seasonal observations are undertaken

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in the Gulf of Maine and Bay of Fundy. It is not unusual for additional calves to be sighted later in a given year in the northern part of the range (Kraus, pers. comm.).

It should be noted that no information is currently available on the response of the right whale population to recent (1997-1999) efforts to mitigate the effects of entanglement and ship strikes. Therefore, it is not possible to determine whether the trend reported in Caswell *et al.* (1999) is continuing. Furthermore, results reported in Caswell *et al.* (1999) suggest that it is not possible to determine that anthropogenic mortalities alone are responsible for the decline in right whale survival. However, they conclude that reduction of anthropogenic mortalities would result in a significant improvement in population performance. Given the uncertainty in the effects of natural factors relative to anthropogenic factors -- and assuming that the population is in fact declining -- it is not possible to determine whether the population has reached the point where it would continue to decline even if all human-induced mortalities ceased.

In light of the above information, and until the new trend information and alternative theories have been fully reviewed, it is essential to remain diligent in efforts to control human-induced detrimental impacts to this population in order to avoid jeopardy from those activities. For the purposes of this Biological Opinion, NMFS will assume that the northern right whale population is declining until the new information on status and trends has been thoroughly reviewed for assimilation into NMFS management programs.

Recent mortality and human impacts

Six right whale mortalities resulting from various causes were recorded in 1996. In addition to these mortalities, 2 reports of right whale entanglement in fishing gear were received during 1996. One, classified as a serious injury, was not relocated; the other was disentangled and was seen the following year with a calf. Preliminary data from 1997 indicates that one mortality occurred from natural or unknown causes, another mortality occurred due to a ship strike in the Bay of Fundy, and 8 entanglements were reported. Six of the entanglements were reported in Canadian waters and 2 in U.S. waters; it should be noted that the point of occurrence is only known for two of the 1997 entanglement events (one in U.S. and one in Canadian waters), and one of the reports may represent a resighting of an earlier entanglement. So far in 1998, two known mortalities have occurred, as evidenced by stranded carcasses. The first was the mortality of a calf due to natural causes and the second was an adult male, for which cause of death has not yet been determined. Two adult female right whales were discovered in a weir off Grand Manan Island in the Bay of Fundy on July 12, 1998, and were released two days later; no residual injuries other than minor chafing were reported. On July 24, 1998, the Disentanglement Team removed line from around the tail stock of a right whale which was originally seen entangled in the Bay of Fundy on August 26, 1997. This same whale, apparently debilitated from the earlier entanglement, became entangled in lobster pot gear twice in one week in Cape Cod Bay in September 1998. The gear from the latter two entanglements was completely removed, but line believed to be from the 1997 entanglement remained in the animal's mouth. On August 15, 1998, a right whale was observed entangled in the Gulf of St. Lawrence; the animal apparently

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freed itself of most of the gear, but it is unknown whether gear remains on the animal.

On April 20, 1999, a 45-foot, 50-ton northern right whale was discovered dead in Cape Cod Bay. NMFS is currently conducting a search for an explanation to this unfortunate death. Preliminary information suggests that although the female whale had several broken bones suggesting she may have been struck by a ship before she died, she also appears to have been suffering from acute and chronic diseases. The cause of this death is still undetermined.

The IWC workshop recommended that the following activities be undertaken to reduce the adverse impacts of entanglement in fishing gear :

- research into methods to reduce right whale entanglements in fishing gear,
- determination and monitoring of entanglement rates and the success of steps to reduce entanglement,
- modification of protective measures if shown to be insufficient through monitoring,
- establishment of disentanglement programs, and
- consideration of prohibition of any gear that might entangle right whales in high-use habitats, especially in calving, breeding or feeding areas, and sanctuaries.

Humpback Whale

About half of the species' geographic range is within the action area for this consultation. Humpback whales feed in the northwestern Atlantic during the summer months and migrate to calving and mating areas in the Caribbean. Five separate feeding areas are utilized in northern waters after their return; the Gulf of Maine, which is within the action area of this consultation, is one of those feeding areas. Humpback whales also use the Mid-Atlantic as a migratory pathway and apparently as a feeding area, at least for juveniles. Since 1989, observations of juvenile humpbacks in that area 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. It is assumed that humpbacks are more widely distributed in the action area than right whales. 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 the associated prey. Humpbacks have also been observed feeding on krill.

New information has become available on the status and trends of the humpback whale population in the North Atlantic. Although current and maximum net productivity rates are unknown at this time, the population is apparently increasing. It has not yet been determined whether this increase is uniform across all five feeding stocks (Waring *et al.* 1999). The rate of increase has been estimated at 9.0% (CV=0.25) by Katona and Beard (1990), while a 6.5% rate was reported for the Gulf of Maine by Barlow and Clapham (1997). The rate reported by Barlow and Clapham (1997) may roughly approximate the rate of increase for the portion of the population within the action area. This rate of increase was used for NMFS assessment

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purposes. The best estimate of abundance for the North Atlantic humpback whale population is 10,600 animals (CV=0.067; Smith *et al.* 1999), while the minimum population estimate used for NMFS management purposes is 10,019 animals (CV = 0.067; Waring *et al.* 1999).

Recent mortality and human impacts

In 1996, 3 humpback whales were killed in collisions with vessels and at least 5 were seriously injured by entanglement in the same year. At least 3 humpback whale entanglements were reported in 1997. Preliminary stranding records from January through December 1997 include 4 stranded/dead floating humpback whales in the Northeast Region (Maine - Virginia). For 1998 (as of November 9, 1998) at least 14 humpback whale entanglements resulting in injury (n=13) or mortality (n=1) have been reported. One of the animals with entanglement injuries stranded dead, but the role of the entanglement in the whale's death has not been determined. Three of the injured animals were completely disentangled, one partially disentangled, one partially disentangled and later shed the remaining gear, and one shed the gear without assistance from the Disentanglement Team. One injury from a vessel interaction involving a known whale was reported in 1998; the whale was seen several times after the injury, which exhibited some healing. At least three incidents of dead floating humpback whales were also reported as of December 1998; however, cause of death has not been determined for any of these animals. On March 24, 1999, a humpback whale was found entangled in gillnet gear deployed in a state-regulated fishery off North Carolina. The whale freed itself from one net and became entangled in another net, from which it was disentangled by the Disentanglement Network.

Fin Whale

The fin whale is ubiquitous in the North Atlantic and occurs from the Gulf of Mexico and Mediterranean Sea northward to the edges of the arctic ice pack (NMFS 1998a). The overall pattern of fin whale movement is complex, consisting of a less obvious north-south pattern of migration than that of right and humpback whales. Based on acoustic recordings from hydrophone arrays, however, Clark (1995) reported a general southward "flow pattern" of fin whales in the fall from the Labrador/Newfoundland region, south past Bermuda, and into the West Indes. The overall distribution may be based on prey availability, and fin whales are found throughout the action area for this consultation in most months of the year. This species preys opportunistically on both invertebrates and fish (Watkins *et al.* 1984). As with humpback whales, they feed by filtering large volumes of water for the associated prey. Fin whales are larger and faster than humpback and right whales and are less concentrated in nearshore environments.

Insufficient data are available to determine status and trends of the Western North Atlantic stock of the fin whale population (Waring et al. 1999). Hain *et al.* (1992) estimated that about 5,000 fin whales inhabit the northeastern United States continental shelf waters. Shipboard surveys of the northern Gulf of Maine and lower Bay of Fundy targeting harbor porpoise for abundance estimation provided an imprecise estimate of 2,700 (CV=0.59) fin whales, from which the

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current minimum population estimate of 1,704 animals (CV = 0.59) was derived (Waring *et al.* 1999).

Recent mortality and human impacts

Of 18 fin whale mortality records collected between 1991 and 1995, four mortalities were associated with vessel interactions, although the proximal cause of mortality was not known. In 1996, three reports of ship strikes were received, although this impact source was only confirmed as cause of death for one of the incidents. One entanglement report was received in 1996.

At least five reports of entangled fin whales were received by NMFS in 1997. Four fin whales were reported as having stranded in the period from January 1, 1997, to January 1, 1998, in the Northeast Region; the cause of death was not determined for these animals. One ship strike mortality has been documented thus far in 1998 in the Virginia-North Carolina border area. One entanglement mortality was reported in September 1998.

Blue whale

Compared to the other species of large whales, relatively little is known about this species. Blue whale range in the North Atlantic extends from the subtropics to Baffin Bay and the Greenland Sea (Yochem and Leatherwood 1985). This species is highly mobile, spending little time in any one area. Large euphausiid crustaceans (*Thysanoessa inermis* and *Meganyctiphanes norvegica)* make up the bulk of the blue whale's diet. Fish and copepods may also be consumed but are not likely to be significant diet components (NMFS 1998c).

There are insufficient data to determine the status and trends of the blue whale population in the Western North Atlantic (Waring *et al.* 1999). The Recovery Plan for the blue whale (NMFS 1998c) summarizes what is known about blue whale abundance in the western North Atlantic and concludes that the population probably numbers in the low hundreds. More than 320 individuals were photo-identified in the Gulf of St. Lawrence between 1979-1995, while 352 individuals were catalogued from eastern Canada and New England through Autumn 1997 (Sears *et al.* 1990; and Sears, pers. comm., reported in NMFS 1998c).

Recent mortality and human impacts

No recent entanglements of blue whales have been reported from the U.S. East Coast. In 1987, concurrent with an unusual occurrence of blue whales into the Gulf of Maine, one report was received from a whale watch boat that spotted a blue whale entangled in gear described as probable lobster pot gear in the southern Gulf of Maine. In March 1998, a juvenile male blue whale was brought into Rhode Island waters on the bow of a tanker. Cause of death was determined to be due to ship strike, although not necessarily caused by the tanker on which it was observed, and the strike may have occurred outside the U.S. EEZ (Waring *et al.* 1999).

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Sei Whale

The sei whale population in the western North Atlantic is assumed to consist of two stocks, a Nova Scotian Shelf stock and a Labrador Sea stock. Within the action area, the sei whale is most common on Georges Bank and into the Gulf of Maine/Bay of Fundy region during spring and summer, primarily in deeper waters. Individuals may range as far south as North Carolina. There are occasional influxes of this species further into Gulf of Maine waters, presumably in conjunction with years of high copepod abundance inshore. Sei whales are occasionally seen feeding in association with right whales in the southern Gulf of Maine and in the Bay of Fundy. Although sei whales may prey upon small schooling fish and squid in the action area, available information suggests that calanoid copepods and euphausiids are the primary prey of this species.

There are insufficient data to determine trends of the sei whale population. Because there are no abundance estimates within the last 10 years, a minimum population estimate cannot be determined for NMFS management purposes (Waring *et al.* 1999). Abundance surveys are problematic as this species is difficult to distinguish from the fin whale.

No entanglements of sei whales in U.S. Atlantic waters have been documented. Very few ship strikes have been reported, the last of which was observed in 1994 in Charlestown, Massachusetts.

Sperm whale

The sperm whale occurs throughout the U.S. EEZ on the continental shelf edge, over the continental slope, and into the mid-ocean regions. It is unclear whether the northwest Atlantic population is discrete from the northwestern or northeastern Atlantic populations (Waring *et al.* 1999). The marine mammal SAR also notes that 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.

The best abundance estimate that is currently available for the western North Atlantic sperm whale population is 2,698 (CV=0.67) animals, and the minimum population estimate used for NMFS management purposes is 1,617 (CV=0.67) (Waring *et al.* 1999). Due to insufficient data, no information is available on population trends at this time for the western North Atlantic sperm whale stock.

The NMFS Sea Sampling program has recorded three entanglements (1989, 1990, 1995) of sperm whales in the swordfish drift gillnet fishery. All three animals were injured, found alive, and "released"; at least one was still carrying gear. For the years 1993-1997, opportunistic reports of sperm whale entanglement include three records involving offshore lobster pot gear, heavy monofilament line, and fine mesh gillnet from an unknown source. Sperm whales are also

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struck by ships, although no information is available on recent confirmed cases in U.S. waters.

Loggerhead Sea Turtle

The loggerhead turtle was listed as "threatened" under the ESA on July 28, 1978, but is considered endangered by the World Conservation Union (IUCN) and under the Convention on International Trade in Endangered Species of Flora and Fauna (CITES). Loggerhead sea turtles are found in a wide range of habitats throughout the temperate and tropical regions of the Atlantic. These include open ocean, continental shelves, bays, lagoons, and estuaries (NMFS & USFWS 1995). In the action area of this consultation they are most common on the open ocean in the northern Gulf of Maine, particularly where associated with warmer water fronts formed from the Gulf Stream. The species is also found in entrances to bays and sounds and within bays and estuaries, particularly in the Mid-Atlantic. Since they are limited by water temperatures, sea turtles do not usually appear on the summer foraging grounds in the Gulf of Maine until June, but are found in Virginia as early as April. They remain in these areas until as late as November and December in some cases, but the large majority are leaving the Gulf of Maine by mid-September. Loggerheads are primarily benthic feeders, opportunistically foraging on crustaceans and mollusks. Under certain conditions they also feed on finfish, particularly if they are easy to catch (*e.g.*, caught in gillnets or inside pound nets where the fish are accessible to turtles).

During 1996, a Turtle Expert Working Group (TEWG) met on several occasions and produced a report assessing the status of the loggerhead sea turtle population in the northwestern Atlantic. Of significance is the conclusion that in the WNA, there are at least 4 loggerhead subpopulations separated at the nesting beach (TEWG 1998). This finding was based on analysis of mitochondrial DNA, which the turtle inherits from its mother. It is theorized that nesting assemblages represent distinct genetic entities, but further research is necessary to address the stock definition question. These nesting subpopulations include the following areas: northern North Carolina to northeast Florida, south Florida, the Florida Panhandle, and the Yucatan Peninsula. Genetic evidence has shown that loggerheads on foraging grounds from Chesapeake Bay southward to Georgia are nearly equally divided in origin between South Florida and northern subpopulations. Work is currently ongoing in the northwestern Atlantic to collect samples which will provide information relative to turtles north of the Chesapeake, which is most of the action area for this consultation.

The TEWG (1998) analysis indicates that the Northern Subpopulation may be experiencing a significant decline (2.5% - 3.2% for various beaches). A recovery goal of 12,800 nests has been assumed for the Northern Subpopulation, but current nests number around 6,200 (TEWG 1998). Since the number of nests have declined in the 1980's, the TEWG concluded that it is unlikely that this subpopulation will reach this goal. Considering this apparent decline as well as the lack of information on the subpopulation from which loggerheads in the northwest Atlantic are derived, progress must continue to reduce the adverse effects of fishing and other human-induced mortality on this population.

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The most recent 5-year ESA sea turtle status review (NMFS & USFWS 1995) reiterates the difficulty of obtaining detailed information on sea turtle population sizes and trends. Most long-term data is from the nesting beaches, and this is often complicated by the fact that they occupy extensive areas outside U.S. waters. The TEWG was unable to determine acceptable levels of mortality. This status review supports the conclusion of the TEWG that the Northern Subpopulation may be experiencing a decline and that inadequate information is available to assess whether its status has changed since the initial listing as threatened in 1978. The current recommendation from the 5-year review is to retain the threatened designation but note that further study is needed before the next status review is conducted.

General entanglement information
Loggerheads have been taken in the sink gillnet fisheries, Monkfish, Northeast otter trawl fishery, Southeast shrimp, and summer flounder bottom trawl fisheries. Loggerheads are also known to interact with the lobster pot fishery. Based on analogy with available data from other fisheries, gear types used to target SMB are capable of taking loggerhead turtles if time/area overlap exists. However, there is no reason to suppose at this time that the SMB fishery would represent a major source of human-induced serious injury or mortality of this species.

Incidental Take in Atlantic Mackerel/Squid/Butterfish Gear

The following summarizes observed take of sea turtles in gear used in the SMB fishery:
- 1 lethal take of a loggerhead sea turtle and 1 non-lethal take of a leatherback sea turtle in the foreign squid fishery in 1982
- 1 non-lethal take of a loggerhead sea turtle in the domestic mackerel trawl fishery in 1990
- 3 non-lethal takes of sea turtles (2 loggerhead, 1 leatherback) in the foreign squid fishery in 1986

Leatherback Sea Turtle

The leatherback is widely distributed in the Atlantic Ocean, Gulf of Mexico, and Carribean Sea. In the United States, the largest nesting assemblages of leatherbacks are found in the U.S. Virgin Islands, Puerto Rico, and Florida. Nesting data for these locations have been collected since the early 1980's and indicate that the annual number of nests is likely stable; however, information regarding the status of the entire leatherback population in the Atlantic is lacking.

The leatherback is the largest living turtle and ranges farther than any other sea turtle species, exhibiting broad thermal tolerances (NMFS & USFWS 1995). Leatherback turtles feed primarily on cnidarians (medusae, siphonophores) and tunicates (salps, pyrosomas) and are often found in association with jellyfish. These turtles are found throughout the action area of this consultation and, while predominantly pelagic, they occur annually in places such as Cape Cod Bay and Narragansett Bay during certain times of the year, particularly in the Fall. Of the turtle species common to the action area, leatherback turtles seem to be the most susceptible to entanglement in lobster gear and longline gear. This susceptibility may be the result of attraction

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to gelatinous organisms and algae that collect on buoys and buoy lines at or near the surface.

General entanglement information
In addition to the information summarized in the Multispecies Biological Opinions, sea sampling coverage in the Southeast shrimp fishery has recorded takes of leatherback turtles. Leatherbacks are also known to interact with the lobster pot fishery. Based on analogy with available data from other fisheries, gear types used to target SMB are capable of taking leatherback turtles if time/area overlap exists. However, there is no reason to suppose at this time that the SMB fishery would represent a major source of human-induced serious injury or mortality of this species.

Kemp's Ridley Sea Turtle

The Kemp's ridley is probably the most endangered of the world's sea turtle species. The only major nesting site for ridleys is a single stretch of beach near Rancho Nuevo, Tamaulipas, Mexico (Carr 1963). Estimates on the adult population reached a low of 1,050 in 1985, and have increased to 3,000 individuals in 1997. First-time nesting adults have increased from 6% to 28% from 1981 to 1989, and from 23% to 41% from 1990 to 1994, indicating that the ridley population may be in the early stages of recovery (TEWG 1996).

Juvenile Kemp's ridleys use northeastern and mid-Atlantic coastal waters of the U.S. Atlantic coastline as primary developmental habitat during summer months, with shallow coastal embayments serving as important foraging grounds. Juvenile ridleys migrate south as water temperatures cool in fall, and are predominantly found in shallow coastal embayments along the Gulf Coast during fall and winter months.

Ridleys found in mid-Atlantic waters are primarily post-pelagic juveniles averaging 40 centimeters in carapace length, and weighing less than 20 kilograms (Terwilliger and Musick 1995). Next to loggerheads, they are the second most abundant sea turtle in Virginia and Maryland waters, arriving in these areas during May and June, and emigrating to more southerly waters from September to November (Keinath *et al.* 1987; Musick and Limpus 1997). In the Chesapeake Bay, ridleys frequently forage in shallow embayments, particularly in areas supporting submerged aquatic vegetation (Lutcavage and Musick 1985; Bellmund *et al.* 1987; Keinath *et al.* 1987; Musick and Limpus 1997). The juvenile population in Chesapeake Bay is estimated to be 211 to 1,083 turtles (Musick and Limpus 1997).

Juvenile ridleys follow regular coastal routes during spring and fall migrations to and from developmental foraging grounds along the mid-Atlantic and northeastern coastlines. Consequently, many ridleys occurring in coastal waters off Virginia and Maryland are transients involved in seasonal migrations. However, Maryland's and Virginia's coastal embayments, which contain an abundance of crabs, shrimp, and other prey, as well as preferred foraging habitat such as shallow subtidal flats and submerged aquatic vegetation beds, are likely used as a foraging ground by Kemp's ridley sea turtles (John Musick, Virginia Institute Of Marine

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Science, 1998 personal communication; Sherry Epperly, National Marine Fisheries Service, Beaufort Laboratory, Beaufort North Carolina, 1998 personal communication; Molly Lutcavage, New England Aquarium, 1998 personal communication). No known nesting occurs on Virginia or Maryland beaches.

Mortality in the large juvenile and adult life stage would have the greatest impact to the Kemp's ridley population (TEWG, 1998). The vast majority of ridleys identified along the Atlantic Coast have been juveniles and subadults. Sources of mortality in this area include incidental takes in fishing gear, pollution and marine habitat degradation, and other man-induced and natural causes. Loss of individuals, particularly large juveniles, in the Atlantic may therefore impede recovery of the Kemp's ridley sea turtle population.

Post-pelagic ridleys feed primarily on crabs, consuming a variety of species, including *Callinectes* sp., *Ovalipes* sp., *Libinia* sp., and *Cancer* sp. Mollusks, shrimp, and fish are consumed less frequently (Bjorndal 1997).

General entanglement information
In addition to the information summarized in the Multispecies Biological Opinions, sea sampling coverage in the Northeast otter trawl fishery and Southeast shrimp and summer flounder bottom trawl fisheries has recorded takes of Kemp's ridley turtles. Based on analogy with available data from other fisheries, gear types used to target SMB are capable of taking Kemp's ridley turtles if time/area overlap exists. However, there is no reason to suppose at this time that the SMB fishery would represent a major source of human-induced serious injury or mortality of this species.

Green Sea Turtle

Green sea turtles are more tropical in distribution than loggerheads, and are generally found in waters between the northern and southern 20°C isotherms (Hirth 1971). In the western Atlantic region, the summer developmental habitat encompasses estuarine and coastal waters as far north as Long Island Sound, Chesapeake Bay, and the North Carolina sounds, and south throughout the tropics (Musick and Limpus 1997). Most of the individuals reported in U.S. waters are immature (Thompson 1988). Individuals that use waters north of Florida during the summer must return to southern waters in autumn, or face the risk of cold stunning.

There is evidence that the green turtle nesting population in the southeastern U.S. is stable. For example, increased nesting has been observed along the Atlantic coast of Florida, on beaches where only loggerhead nesting was observed in the past (Pritchard 1997). Recent population estimates for the western Atlantic area are not available. However, the Florida nesting population is estimated to be approximately 700 females.

Green turtles are threatened by incidental captures in fisheries, pollution and marine habitat degradation, destruction/disturbance of nesting beaches, and other sources of man-induced and

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natural mortality.

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. At approximately 20 to 25 cm carapace length, juveniles leave pelagic habitats, and enter benthic foraging areas, shifting to a chiefly herbivorous diet (Bjorndal 1997).

Post-pelagic green turtles feed primarily on sea grasses and benthic algae, but also consume jellyfish, salps, and sponges. Known feeding habitats along U.S. coasts of the western Atlantic include shallow lagoons and embayments in Florida, and similar shallow inshore areas elsewhere.

General entanglement information
In addition to the information summarized in the Multispecies Biological Opinions, sea sampling coverage in the scallop dredge fishery and Southeast shrimp and summer flounder bottom trawl fisheries has recorded takes of green turtles. Based on analogy with available data from other fisheries, gear types used to target SMB are capable of taking green turtles if time/area overlap exists. However, there is no reason to suppose at this time that the SMB fishery would represent a major source of human-induced serious injury or mortality of this species.

Shortnose Sturgeon

Shortnose sturgeon occur in large rivers along the western Atlantic coast from the 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 1998b). Popuation sizes vary across the species' range. From available estimates, smallest populations occur in the Cape Fear (~ 8 adults) (Moser and Ross 1995) and Merrimack Rivers (~ 100 adults) (M. Kieffer, United States Geological Survey, personal communication), and the largest populations are found in the Saint John (~ 100,000) (Dadswell 1979) and Hudson Rivers (~ 35,000) (Bain et al. 1995). Total instantaneous mortality rates (Z) are available for the Saint John River (0.12 - 0.15; ages 14-55) (Dadswell 1979), Upper Connecticut River (0.12) (Taubert 1980), and Pee Dee-Winyah River (0.08-0.12) (Dadswell *et al.* 1984). Total instantaneous natural mortality (M) for shortnose sturgeon in the lower Connecticut River was estimated to be 0.13 (T. Savoy, Connecticut Department of Environmental Protection, personal communication). There is no recruitment information available for shortnose sturgeon because there are no commercial fisheries for the species. Estimates of annual egg production for this species are difficult to calculate because females do not spawn every year (Dadswell *et al.* 1984). Further, females may abort spawning attempts, possibly due to interrupted migrations or unsuitable environmental conditions (NMFS 1998b). Thus, annual egg production is likely to vary greatly in this species.

Shortnose sturgeon are benthic fish that mainly occupy the deep channel sections of large rivers.

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They feed on a variety of benthic and epibenthic invertebrates including molluscs, crustaceans (amphipods, chironomids, isopods), and oligochaete worms (Vladykov and Greeley 1963; Dadswell 1979). Shortnose sturgeon are long-lived (30 years) and, particularly in the northern extent of their range, mature at late ages. In the north, males reach maturity at 5-10 years, while females mature between 7 and 13 years.

In the northern extent of their range, shortnose sturgeon exhibit three distinct movement patterns that are associated with spawning, feeding, and overwintering periods. In spring, as water temperatures rise above 8° C, pre-spawning shortnose sturgeon move from overwintering grounds to spawning areas. Spawning occurs from mid/late April to mid/late May. Post-spawned sturgeon migrate downstream to feed throughout the summer. As water temperatures drop below 8° C again in the fall, shortnose sturgeon move to overwintering concentration areas and exhibit little movement until water temperatures rise again in spring (Dadswell *et al.* 1984; NMFS 1998b). Young-of-the-year shortnose sturgeon are believed to move downstream after hatching (Dovel 1981) but remain within freshwater habitats. Older juveniles tend to move downstream in fall and winter as water temperatures decline and the salt wedge recedes. Juveniles move upstream in spring and feed mostly in freshwater reaches during summer.

Shortnose sturgeon spawn in freshwater sections of rivers, typically below the first impassable barrier on the river (*e.g.*, dam). Spawning occurs over channel habitats containing gravel, rubble, or rock-cobble substrates (Dadswell *et al.* 1984; NMFS 1998b). Additional environmental conditions associated with spawning activity include decreasing river discharge following the peak spring freshet, water temperatures ranging from 9 -12° C, and bottom water velocities of 0.4 - 0.7 m/sec (Dadswell *et al.* 1984; NMFS 1998b).

General entanglement information

General information on takes of shortnose sturgeon in trawl, dredge, and gillnet gear is summarized in the Multispecies Biological Opinions. Based on analogy with available data from other fisheries, gear types used to target monkfish are capable of taking sturgeon if time/area overlap exists. However, there is no reason to suppose at this time that the monkfish fishery would represent a major source of human-induced serious injury or mortality of this species.

Right Whale Critical Habitat

Scientists suspect that all habitats used by the northern right whale are not known at the present time. Genetics work performed by Schaeff *et al.* (1993) suggested the existence of at least one unknown nursery area. Within the known distribution of the species, however, the following five areas have been identified as critical to the continued existence of the species: (1) coastal Florida and Georgia; (2) the Great South Channel, east of Cape Cod; (3) Cape Cod and Massachusetts Bays; (4) the Bay of Fundy; and (5) Browns and Baccaro Banks, south of Nova Scotia. The first three areas occur in U.S. waters and have been designated by NMFS as critical habitat (59 FR, 28793, June 3, 1994). This section focuses on the Cape Cod Bay and Great South Channel areas, which are the only components of right whale critical habitat within the action area.

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The availability of dense concentrations of zooplankton blooms in the late winter (Cape Cod Bay) and spring (Great South Channel) is described as the key factor for right whale utilization of the areas. Kraus and Kenney (1991) provide an overview of data regarding right whale use of these areas. Important habitat components in Cape Cod Bay include seasonal availability of dense zooplankton patches and protection from weather afforded by the land masses surrounding the bay. The spring current regime and bottom topography of the Great South Channel result in nutrient rich upwelling conditions. These conditions support the dense plankton and zooplankton blooms utilized by right whales. The combination of highly oxygenated water and dense zooplankton concentrations are optimal conditions for the small schooling fishes (sand lance, herring, and mackerel) that prey upon some of the same zooplankton as right whales. Therefore, the abundance of these fishes may affect the availability of prey for right whales. The abundance of these fishes, in turn, may affect and be affected by the distribution of several piscivorous marine mammal species such as humpback, fin, minke, and pilot whales, Atlantic whitesided dolphins, and harbor porpoise. Concentrations of these species were observed in this region during the same spring period (CeTAP 1982).

Overfishing has severely reduced the stocks of several groundfish species such as cod, haddock, and yellowtail flounder. Recovery of commercially targeted finfish stocks from their current overfished condition may reduce the biomass of small schooling fish that feed directly on zooplankton resources throughout the region. It is unknown whether zooplankton densities that occur seasonally in Cape Cod Bay or the Great South Channel could be expected to increase significantly. However, increased predation by groundfish on small schooling fish in certain areas and at specific critical periods may allow the necessary high zooplankton densities to be maintained in these areas for longer periods, or accumulate in other areas at levels acceptable to right whales.

In 1997, NMFS, the U.S. Coast Guard, and the Commonwealth of Massachusetts began a program of monitoring the presence of right whales in an adjacent to the Cape Cod Bay and Great South Channel habitats for the purpose of reducing the potential for ship-whale collisions. Sightings in other parts of the Northeast have also been investigated. One such investigation revealed the presence of approximately 23 whales in one day off Rhode Island in an area of heavy shipping traffic. This monitoring program, called the Early Warning System (EWS), is described in more detail in the Environmental Baseline section. Important information has been collected through the EWS which may enable NMFS to identify additional critical habitat areas within Northeast waters as well as to refine the time and area boundaries of the known existing critical habitat areas and peak usage periods.

III. 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

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the consultation in process (50 CFR § 402.02). The environmental baseline for this Biological Opinion includes the effects of several activities that 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. Other environmental impacts include effects of discharges, dredging, ocean dumping, sonic activity, and aquaculture.

A. Federal actions that have undergone formal or early Section 7 Consultation. In the past four years, NMFS has undertaken several ESA Section 7 consultations to address the effects of vessel operations and gear associated with federally-permitted fisheries on threatened and endangered species in the action area. Each of those consultations sought to develop ways of reducing the probability of adverse impacts of the action on large whales and sea turtles. Similarly, recovery actions NMFS has undertaken under both the MMPA and the ESA are addressing the problem of take of whales in the fishing and shipping industries.

(1) *Vessel Operations*
Potential adverse affects 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, the National Oceanic and Atmospheric Administration (NOAA), and the Army Corps of Engineers (ACOE). NMFS has conducted formal consultations with the USCG, the USN (described below) and is currently in early phases of consultation with the other federal agencies on their vessel operations. In addition to operation of ACOE vessels, NMFS has consulted with the ACOE to provide recommended permit restrictions for operations of contract or private vessels around whales. 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, they represent potential for some level of interaction. Refer to the Biological Opinions for the USCG (September 15, 1995 , July 22, 1996, and June 8, 1998) and the USN (May 15, 1997) for detail on the scope of vessel operations for these agencies and conservation measures being implemented as standard operating procedures.

Since the USN consultation only covered operations out of Mayport, Florida, potential still remains for USN vessels to adversely affect large whales when they are operating in other areas within the range of these species. Similarly, operations of vessels by other federal agencies within the action area (NOAA, EPA, ACOE) may adversely affect whales. However, the in-water activities of those agencies are limited in scope, as they operate a small number of vessels or are engaged in research/operational activities that are unlikely to contribute a large amount of risk. Through the consultation process, conservation recommendations will be provided to further reduce the potential for adverse impacts.

(2) Federal Fishery Operations
Several commercial fisheries operating in the action area use gear which is known to take listed

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species. Efforts to reduce the adverse effects of commercial fisheries are addressed through both the MMPA take reduction planning process and the ESA Section 7 process. Gillnet, longline, trawl gear, and pot fisheries have all been documented as interacting with either whales or sea turtles or both. Other gear types are known to impact whales as well. For all fisheries for which there is a federal fishery management plan (FMP) or for which any federal action is taken to manage that fishery, impacts have been evaluated under Section 7.

Several formal consultations have been conducted on the following fisheries that NMFS has determined are likely to adversely affect threatened and endangered species: American Lobster, Northeast Multispecies, Monkfish, Atlantic Herring, Atlantic Pelagic Swordfish/Tuna/Shark, and Summer Flounder/Scup/ Black Sea Bass fisheries. In addition, consultation was also conducted on four East Coast fisheries in the context of the ALWTRP. These consultations are summarized below; for more detailed information, refer to the respective Biological Opinions.

NMFS recently reinitiated formal consultation on the *federally regulated American Lobster Fishery* to consider potential effects of the transfer of management authority from the MSFCMA to the Atlantic Coastal Fisheries Cooperative Management Act (ACFCMA), the implementation of new lobster management actions under the ACFCMA, and recent takes of endangered whales in the fishery. The previous formal consultation on the fishery under the MSFCMA had reached a jeopardy conclusion for the northern right whale with the Biological Opinion issued December 13, 1996. As a result of the Reasonable and Prudent Alternative included with the 1996 Biological Opinion, an emergency regulation under the Marine Mammal Protection Act (MMPA) (Emergency Interim Final Rule, 62 FR 16108) was published implementing restrictions on the use of lobster pot gear in the federal portion of the Cape Cod Bay right whale critical habitat and in the Great South Channel right whale critical habitat during periods of expected peak right whale abundance.

The proposed ACFCMA plan contains measures to limit the number of lobster traps that can be deployed during the first two years of the plan, and further trap reduction measures may be chosen as default effort reduction measures during subsequent plan years. The reduction in the number of traps fished is expected to result in a reduction of entanglement risk. The interaction between the lobster trap fishery and endangered whales is addressed in the Atlantic Large Whale Take Reduction Plan (ALWTRP) implemented November 15, 1997. The ALWTRP incorporated the RPA issued with the 1996 Biological Opinion and implemented additional restrictions. Because of the greater protection provided by the ALWTRP, NMFS substituted the ALWTRP for the RPA issued with the 1996 Biological Opinion and has concluded that the lobster fishery in the context of the ALWTRP is likely to adversely affect but is not likely to jeopardize the northern right whale. Additional description of the ALWTRP is provided below.

The *Northeast Multispecies Sink Gillnet Fishery* is one of the other major fisheries in the action area of this consultation that is known to entangle whales and sea turtles. This fishery has historically occurred along the northern portion of the action area for this Biological Opinion from the periphery of the Gulf of Maine to Rhode Island in water to 60 fathoms. In recent years,

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more of the effort in this fishery has occurred in offshore waters and into the Mid-Atlantic. Participation in this fishery declined from 399 to 341 permit holders in 1993 and is expected to continue to decline as further groundfish conservation measures are implemented. The fishery operates throughout the year with peaks in the Spring and from October through February. Data indicates that gear used in this fishery has seriously injured northern right whales, humpback whales, fin whales, and loggerhead and leatherback sea turtles. Waring *et al.* (1997) reports that 17 serious injuries or mortalities of humpback whales from 1991 to 1996 were fishery interactions (not necessarily multispecies gear), the majority of which indicated some kind of monofilament like that used in the multispecies fishery. It is often difficult to assess gear found on stranded animals or observed at sea and assign it to a specific fishery. Only a fraction of the takes are observed, and the catch rate represented by the majority of takes, which are reported opportunistically, *i.e.*, not as part of a random sampling program, is unknown. Consequently, the total level of interaction cannot be determined through extrapolation.

The *Monkfish Fishery Management Plan* was recently completed by the New England and Mid-Atlantic Fishery Management Councils. The monkfish fishery uses several gear types which may entangle protected species, and takes of shortnose sturgeon and sea turtles have been recorded from monkfish trips. The monkfish gillnet sector is included in either the Northeast sink gillnet or Mid-Atlantic coastal gillnet fisheries and is therefore regulated by the Atlantic Large Whale and Harbor Porpoise Take Reduction Plans. NMFS completed a formal consultation on the Monkfish FMP on December 21, 1998, which concluded that the fishery, with modification under the take reduction plans, is not likely to jeopardize listed species or adversely modify critical habitat.

Different components of the *Atlantic Pelagic Fishery for swordfish/tuna/shark* in the EEZ have occurred within the action area for this Biological Opinion. Historically, gear used in this fishery has resulted in the take (in the driftnet portion of the fishery) of 5 endangered whales between 1986 and 1995 (1 northern right whale, 2 humpback whales, and two sperm whales). The right whale was previously entangled in lobster gear, and NMFS has determined that, although the lobster gear entanglement was a serious injury, the driftnet entanglement was a non-serious injury since the whale was successfully disentangled from that gear. Sea turtles are entangled in both the longline and driftnet portions of the fishery. Out of 155 driftnet sets in 1995, 34 loggerheads, 27 leatherbacks, and 1 Kemp's ridley were observed taken (20 turtles were dead). Out of 98 driftnet sets in 1996, 7 turtles were observed taken. Bycatch estimates from the observations of takes in the longline fishery have been as high as 3,136 in a given year (Johnson et al., 1999), and significant efforts are underway to evaluate gear and fishing practice modifications that will decrease the number of interactions.

NMFS has not determined which bycatch reduction measures will be implemented for this fishery. The driftnet portion of the fishery was prohibited during an emergency closure that began in December 1996, extended through May 31, and was subsequently extended for another six months. Therefore, the fishery did not operate between December 1996 and July 31, 1998. An extensive environmental assessment has been prepared to evaluate this fishery from both a

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fisheries and protected species perspective to identify measures that will be implemented for the longline and driftnet fisheries. The northeast swordfish driftnet segment was reopened on August 1, 1998. A proposed rule to close the entire swordfish driftnet fishery was published on October 20, 1998 (63 FR 55998), and a Notice of Availability for the draft comprehensive FMP for the whole pelagic fishery was published on October 26, 1998 (63 FR 57093).

The *Summer Flounder, Scup and Black Sea Bass fisheries* are known to interact with sea turtles. While not documented, the gillnet portion of this fishery could entangle endangered whales, particularly humpback whales. Significant measures have been developed to reduce the take of sea turtles in summer flounder trawls and trawls that meet the definition of a summer flounder trawl (which would include fisheries for other species like scup and black sea bass) by requiring Turtle Excluder Devices (TED) in nets in the area of greatest bycatch off the North Carolina coast. NMFS is considering a more geographically inclusive regulation to require TEDs in trawl fisheries that overlap with sea turtle distribution to reduce the impact from this fishery. Developmental work is also ongoing for a TED that will work in the flynets used in the weakfish fisheries. These fisheries are subject to the requirements of the ALWTRP for gillnets in the Mid-Atlantic.

On November 15, 1997, NMFS implemented the interim final rule for the *Atlantic Large Whale Take Reduction Plan*. This plan is designed to reduce the rate of serious injury and mortality of right, humpback, fin, and minke whales incidental to the Northeast sink gillnet, lobster pot, Southeast shark gillnet, and Mid-Atlantic gillnet fisheries to acceptable removal levels as defined in the MMPA. A Section 7 consultation was conducted on this plan -- and on the operation of the four fisheries regulated by the plan -- and concluded, with a Biological Opinion issued on July 15, 1997, that the implementation of the ALWTRP and continued operation of these fisheries may adversely affect, but is not likely to jeopardize the continued existence of any listed species of large whales or sea turtles under NMFS jurisdiction. The primary take reduction measures of the plan include closures and modification of fishing gear and practices to reduce the adverse impacts of entanglement.

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B. State or private actions

(1) *Private and Commercial Vessels*

Private and commercial vessels operate in the action area of this consultation and also have the potential to interact with whales and sea turtles. For example, shipping traffic in Massachusetts Bay is estimated at 1,200 ship crossings per year with an average of 3 per day. More than 280 commercial fishing vessels fish on Stellwagen Bank in the Gulf of Maine, and sportfishing contributes more than 20 vessels per day from May to September. Similar traffic may exist in many other areas within the scope of this consultation which overlap whale high-use areas. The invention and popularization of new technology resulting in high speed catamarans for ferry services and whale watch vessels operating in congested coastal areas contributes to the potential for impacts from privately-operated vessels in the environmental baseline.

In addition to commercial traffic and recreational pursuits, private vessels participate in high

speed marine events concentrated in the southeastern U.S. that are a particular threat to sea turtles. The magnitude of these marine events is not currently known. NMFS and the USCG are in early consultation on these events, but a thorough analysis has not been completed. The STSSN also reports many records of vessel interaction (propeller injury) with sea turtles off the New Jersey coast.

(2) *State fishery operations*
Very little is known about the level of take in fisheries that operate strictly in state waters. In addition, depending on the fishery in question, many state permit holders also hold federal licenses; therefore, Section 7 consultations on federal action in those fisheries address some state-water activity. Impacts of state fisheries on endangered whales are addressed as appropriate through the MMPA take reduction planning process. NMFS is actively participating in a cooperative effort with ASMFC to standardize and/or implement programs to collect information on level of effort and bycatch in state fisheries. When this information becomes available, it can be used to refine take reduction plan measures in state waters. With regard to whale entanglements, vessel identification is occasionally recovered from gear removed from entangled animals. With this information, it is possible to determine whether the gear was deployed by a federal or state permit holder and whether the vessel was fishing in federal or state waters. Thus far in 1998, 3 entanglements of humpback whales in state-water fisheries have been documented.

In 1998, East Coast states from Maine through North Carolina began implementing regulations pursuant to the Year 1 requirements of *Amendment 3 to the Atlantic States Marine Fisheries Commission's Coastal Fishery Management Plan for American Lobster* (ASMFC 1997). The proposed federal ACFCMA plan is designed to be complementary to the ASMFC plan, and the two plans are largely similar in structure. Regulations will be geared toward reducing lobster fishing effort by 2005 to reverse the overfished status of the resource. States in the 6 coastal areas must implement regulations according to a compliance schedule established in Amendment 3. Effort reduction measures will be similar to those proposed in the federal ACFCMA plan. Several states have implemented trap caps for 1998. Further trap limits, which the compliance schedule requires for Area 1 and the Outer Cape Lobster Management Area in 1999, will generate some localized risk reduction for protected species in those areas. If all states elect to implement a significant trap reduction program, the overall entanglement risk would be substantially reduced. As the definition of the fishery in the MMPA includes state water effort, vessels fishing in state waters will be required to comply with MMPA take reduction plan regulations designed to reduce entanglement risk to whales.

Early in 1997, the *Commonwealth of Massachusetts* implemented restrictions on lobster pot gear in the state water portion of the Cape Cod Bay critical habitat during the January 1 - May 15 period to reduce the impact of the fishery on northern right whales. The regulations were revised prior to the 1998 season. State regulations impact state permit holders who also hold federal permits, although effects would be similar to those resulting from federal regulations during the January 1 - May 15 period. Massachusetts has also implemented Winter/Spring gillnet restrictions similar to those in the ALWTRP and the MSFCMA for the purpose of right whale

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and/or harbor porpoise conservation.

In October 1998, the ASMFC approved a new *Atlantic Herring plan and Amendment 1 to the plan*, which is complementary to the Council FMP and includes similar measures for permitting, recordkeeping/reporting, area-based management, sea sampling, 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 (IWP) operations (transfer of fish to a foreign processor in state waters). The ASMFC plan, implemented through regulations promulgated by member states, is expected to affected listed species and critical habitat in a manner similar to the federal FMP.

C. Conservation and recovery actions shaping the environmental baseline

A number of activities are in progress that ameliorate some of the potential threat from the aforementioned activities. Education and outreach are considered one of the primary tools to reduce the threat of impact from private and commercial vessels. The USCG has provided education to mariners on whale protection measures and uses their programs -- such as radio broadcasts and notice to mariner publications -- to alert the public to potential whale concentration areas. The USCG is also participating in international activities (discussed below) to decrease the potential for commercial ships to strike a whale. In addition, outreach efforts under the ALWTRP for fishermen are also increasing awareness and fostering a conservation ethic among fishermen that is expected in the long run to help reduce overall probability of adverse impacts in the environmental baseline from activities that operate vessels on the water.

In addition to the ESA measures for federal activities mentioned in the previous section, numerous recovery activities are being implemented to decrease the level of impacts from private and commercial vessels in the action area and during the time period of this consultation. These include the early warning system (EWS), other activities recommended by the Northeast Recovery Plan Implementation Team for the Right and Humpback Whale Recovery Plans (NEIT) and Southeast Recovery Plan Implementation Team for the Right Whale Recovery Plan (SEIT), and NMFS regulations.

The *Northeast Early Warning System:* NMFS has the ability under the ESA to impose emergency regulations which may be used to protect unusual congregations of right whales. Through a fax-on-demand system, fishermen can obtain EWS sighting reports and, in some cases, can make necessary adjustments in fishing practices to decrease the potential for entanglements. The Commonwealth of Massachusetts was a key collaborator in the 1996-1997 EWS effort and developed a plan to expand the effort during the 1997-1998 season. The USCG has played a key role in this effort all along, providing both air and sea support, and their continued cooperation is expected throughout. The State of Maine and Canada Department of Fisheries and Oceans have expressed interest in conducting this type of EWS along their coastal waters. It is expected that other potential sources of sightings such as the U.S. Navy may contribute to this effort following NMFS' commitment to support the EWS over the long term. The NMFS Maine ALWTRP Coordinator is also working with local aquaria to collect whale

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sightings from fishing vessels in the Gulf of Maine. All this cooperation will increase the chance of success of this program in diverting potential impacts in the environmental baseline.

In order to address the known impacts to right and humpback whales described in the Recovery Plans, NMFS established the NEIT. The Recovery Plans describe steps to reduce the impacts to levels that will allow the two species to recover and rank the various recovery actions in order of importance. The NEIT provides advice to the various federal and state agencies or private entities on achieving these national goals within the Northeast Region. The NEIT agreed to focus on habitat and vessel related issues and rely on the take reduction planning process under the MMPA for reducing takes in commercial fisheries.

As part of NEIT activities, a Ship Strike Workshop was held in December 1996 to inform the shipping community of their need to participate in efforts to reduce the impacts of commercial vessel traffic on northern right whales. The workshop summarized current research efforts using new shipboard and moored technologies as deterrents, and a report was given on ship design studies currently being conducted by the New England Aquarium and Massachusetts Institute of Technology. This workshop increased awareness among the shipping community and has further contributed to reducing the threat of ship strikes of right whales. In addition, a Cape Cod Canal Tide Chart that included information on critical habitat areas and the need for close watch during peak right whale activity was distributed widely to professional mariners and ships passing through the canal. A radio warning transmission was also transmitted by Canal traffic managers to vessels transiting the Canal during peak Northern right whale activity periods. Follow-up meetings were held with New England Port Authority and pilots to notify commercial ship traffic to keep a close watch during peak right whale movement periods. In response to current needs, the NEIT is reconfiguring its ship strike subcommittee to address these impacts on a more formal basis.

As part of recovery actions aimed at reducing vessel related impacts, NMFS published a proposed rule in August 1996 restricting vessel approach to right whales (61 FR 41116) to distances outside of 500 yards in order to minimize human-induced disturbance. The Recovery Plan for the Northern Right Whale identified disturbance as one of the principal human-related factors impeding right whale recovery (NMFS 1991b). Following public comment, NMFS published an interim final rule in February 1997 codifying the regulations. With certain exceptions, the rules prohibit both boats and aircraft from approaching any right whale closer than 500 yds. Exceptions for closer approach are provided for the following situations when: (a) compliance would create an imminent and serious threat to a person, vessel, or aircraft; (b) a vessel is restricted in its ability to maneuver around the 500-yard perimeter of a whale; (c) a vessel is investigating or involved in the rescue of an entangled or injured right whale, or (d) the vessel is participating in a permitted activity, such as a research project. If a vessel operator finds that he or she has unknowingly approached closer than 500 yds, the rule requires that a course be steered away from the whale at slow, safe speed. Exceptions are made for emergency situations and where certain authorizations are provided. In addition, all aircraft, except those involved in whale watching activities, are excepted from these approach regulations. The regulations are

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consistent with the Commonwealth of Massachusetts' approach regulations for right whales. These are expected to reduce the potential for vessel collisions in the environmental baseline.

In April 1998, the USCG submitted, on behalf of the United States, a proposal to the International Maritime Organization (IMO) requesting approval of a mandatory ship reporting system in two areas off the east coast of the United States. The USCG worked closely with NMFS and other agencies on technical aspects of the proposal The proposal was submitted to the IMO's Subcommittee on Safety and Navigation for consideration and submission to the Marine Safety Committee at IMO and approved in December 1998. The reporting system may be implemented as early as mid-1999. The USCG and NOAA will play important roles in helping to implement the system.

Measures to Reduce Incidental Takes of Sea Turtles in Commercial Fisheries: NMFS has implemented a series of regulations aimed at reducing potential for incidental mortality of sea turtles in commercial fisheries. In particular, NMFS has required the use of TEDs in southeast U.S. shrimp trawls since 1989 and in summer flounder trawls in the mid-Atlantic area (south of Cape Henry, Virginia) since 1992. It has been estimated that TEDs exclude 97% of the turtles caught in such trawls. These 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), floatation, and more widespread use.

In 1993 (with a final rule implemented 1995), NMFS established a Leatherback Conservation Zone to restrict shrimp trawl activities from off the coast of Cape Canaveral, Florida, to the North Carolina/Virginia border. This provides for short-term closures when high concentrations of normally pelagically distributed leatherbacks are recorded in more coastal waters where the shrimp fleet operates. This measure is necessary because, due to their size, adult leatherbacks are larger than the escape openings of most NMFS-approved TEDs.

NMFS is also working to develop a TED which 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. If observer data conclusively demonstrate a need for such TEDs, regulations will be formulated to require use of TEDs in this fishery, once such a device has been developed.

In addition, NMFS has been active in public outreach efforts to educate fishermen regarding sea turtle handling and resuscitation techniques. As well as making this information widely available to all fishermen, over the past year NMFS has conducted a number of 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 and hopes to reach all fishermen participating in the pelagic longline fishery over the next one - two years.

Sea Turtle Stranding and Salvage Network Activities: There is an extensive network of sea turtle

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stranding and salvage network (STSSN) participants along the Atlantic and Gulf of Mexico which not only collects data on dead sea turtles, but also rescues and rehabilitates any live stranded turtles. In most states, the STSSN is coordinated by state wildlife agency staff, although some state stranding coordinators are associated with academic institutions. 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 activities 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 turtles as live ones are encountered (either via the stranding network through incidental takes or in-water studies). Tagging studies help provide an understanding of sea turtle movements, longevity, reproductive patterns, etc.

D. Other potential sources of impacts in the baseline.

A number of activities that may indirectly affect listed species in the action area of this consultation include discharges from wastewater systems, dredging, ocean dumping and disposal, and aquaculture. The impacts from these activities are difficult to measure. Where possible, however, conservation actions are being implemented to monitor or study impacts from these elusive sources. For example, extensive monitoring is being required for a major discharge in Massachusetts Bay (Massachusetts Water Resources Authority) in order to detect any changes in habitat parameters, because it is located in close proximity to Massachusetts Bay. Close coordination is occurring through the Section 7 process on both dredging and disposal sites to develop monitoring programs and ensure that vessel operators do not contribute to vessel-related impacts.

NMFS and the U.S. Navy have been working cooperatively to establish a policy for monitoring and managing *Acoustic Impacts from Anthropogenic Sound Sources* in the marine environment. Acoustic impacts can include temporary or permanent injury, habitat exclusion, habituation, and disruption of other normal behavior patterns. It is expected that the policy on managing anthropogenic sound in the oceans will provide guidance for programs such as the use of acoustic deterrent devices in reducing marine mammal-fishery interactions and review of federal activities and permits for research involving acoustic activities. The Office of Naval Research hosted a meeting in March 1997 to develop scientific and technical background for use in policy preparation. NMFS hosted a workshop in September 1998 to gather technical information which will support development of new acoustic criteria.

Aquaculture is currently not concentrated in whale high use areas, but some projects have begun in Cape Cod Bay Critical Habitat and in other inshore areas off the Massachusetts and New Hampshire coast. Acknowledging that the potential for impacts is currently unknown, NMFS is coordinating research to measure habitat related changes in Cape Cod Bay and is ensuring that these facilities do not contribute to the entanglement potential in the baseline through the Section 7 process. Many applicants have agreed to alter the design of their facilities to minimize or

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eliminate the use of lines to the surface that may entangle whales and/or sea turtles.

The *Massachusetts Environmental Trust and Massachusetts Division of Marine Fisheries* have funded several projects to investigate fixed fishing gear and potential modifications to reduce the risk of entanglement to whales. These projects are an important complement to the NMFS research effort and have yielded valuable information on the entanglement problem. The Trust has also funded research on right whales in the Cape Cod Bay critical habitat area.

In summary, the potential for vessels and fisheries to adversely affect shortnose sturgeon, large whales and/or sea turtles remains throughout the action area of this consultation. However, recovery actions have been undertaken as described and continue to evolve. Although those actions have not been in place long enough for the northern right whale population to respond, those actions are expected to benefit the northern right whale in the foreseeable future. These actions should not only improve conditions for the northern right whale, they are expected to reduce sources of human-induced mortality to this endangered species.

IV. EFFECTS OF THE ACTION

This section of a Biological Opinion assesses the direct and indirect effects of the proposed action on threatened and endangered species or critical habitat, together with the effects of other activities that are interrelated or interdependent (50 CFR 402.02). Indirect effects are those that are caused later in time, but are still reasonably certain to occur. Interrelated actions are those that are part of a larger action and depend upon the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration (50 CFR 402.02).

Several protected species impact assessment documents prepared by NMFS or the Council have bearing on this assessment of the potential impacts of the proposed action on shortnose sturgeon, marine mammals and sea turtles. An assessment of impacts of the fishery on endangered and threatened species of whales, sea turtles, and fish is presented in the EA prepared by the Council (MAFMC 1998). Additional discussion of entanglement in gear types similar to those used in the squid/mackerel/butterfish (SMB) fishery was provided in the EISs prepared for the Amendments 5 and 7 to the Multispecies FMP and Amendment 4 to the Scallop FMP, the 1989-1996 Biological Opinions on the Multispecies FMPs, the EA contained in Framework Adjustment 23 to the Multispecies FMP restricting the multispecies gillnet fishery in the northeast right whale critical habitat areas (NMFS 1997a), and the EA and subsequent Section 7 consultation prepared for the Atlantic Large Whale Take Reduction Plan (NMFS 1997b and c, respectively) interim final rule.

Mandatory data reporting was instituted in the SMB fishery in Amendment 5 and has been required since May 1996. Vessel owners complete daily logs and submit the logs monthly. Dealers are required to report weekly. As of January 1, 1997, vessels possessing a SMB permit were required to take observers if requested by NMFS. This information, which should provide

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important information on both the levels of efforts and location of fishing activities associated with the SMB fishery, was not available at the time this opinion was prepared. This information is critical to accurately anticipate and assess the effects of incidental take associated with the SMB fishery, particularly with respect to sea turtles. NMFS anticipates receiving this information, as well as additional information regarding bycatch estimates, within the next six months. Receipt of this information will represent new information and require reinitiation of section 7 consultation.

Listed species and/or critical habitat may be directly affected by fishing activities authorized under the SMB Plan through incidental take or indirectly by effects on prey resources. Incidental take could include injury or mortality resulting from entanglement, entrapment, disturbance, or collisions between fishing vessels and listed species. Effects on prey resources could result from competition between the fishery and piscivorous whales or between planktivorous whales and mackerel, squid, or butterfish.

A. Spatial and Temporal Overlap

The potential for any kind of interaction between a fishery and listed species is limited by the degree of spatial and temporal overlap. A detailed analysis of overlap between the SMB fishery and listed species is not available at this time. However, some qualitative statements can be made based on current knowledge on the distribution of fishery target species and listed species. The squid, mackerel, and butterfish resources are widely distributed in the action area and overlap the distribution of all listed species to a certain extent. The greatest overlap with current fishing effort, however, is for sea turtles during summer and early fall months. Therefore, it is likely that interactions between the fishery and those species would be most pronounced during those periods. There is insufficient information to describe overlap with shortnose sturgeon in the open ocean; interactions would be most likely just outside river mouths.

None of the species targeted by the SMB fishery are known to be primary prey species for listed species. However, humpback and fin whales are known to prey upon mackerel. Overlap in target species increases the potential for interaction.

B. Interactions with Squid/Mackerel/Butterfish Gear and Vessels

Squid/Mackerel/Butterfish Gear

The deployment of gear used in the SMB fishery could adversely affect listed species through entanglement, entrapment, or interference with feeding. Rates of entanglement have not been quantified, largely due to a minimal amount of sampling. However, takes of whales, sea turtles, and sturgeon have been recorded in one or more of the gear types used in the fishery. Adverse effects such as stress resulting from disturbance or encirclement are possible but have not been reported and, in the case of internal metabolic effects, may be impossible to identify. Potential for interference with feeding is addressed in the trophic interaction discussion below. This

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section focuses on potential effects of entanglement or entrapment.

Entanglement of small cetaceans and pinnipeds has been documented in trawl fisheries for pelagic finfish in both the eastern and western Atlantic Ocean (Fertl and Leatherwood 1997, Morizur *et al.* 1997, Waring *et al.* 1990, Waring *et al.* 1999). Entanglement in trawl gear has been reported historically for some whales. However, available information suggests that interactions between whales and SMB trawls are likely to be rare occurrences and would be more likely to involve rigging cables than the nets themselves. Interactions between SMB trawl gear and listed species are most likely to involve sea turtles. Entanglement of sea turtles has been reported for both midwater and bottom trawl gear. Because the long-finned squid and butterfish fishery seasons peak at times of the year when turtles are not abundant in the action area, interactions with this fishery are less likely than with the short-finned squid fishery. However, at least one take in the long-finned squid fishery has been observed. NMFS Sea Sampling coverage from 1995 through 1997 observed 4 takes of sea turtles in the SMB fishery, including 3 loggerhead turtles in the short-finned squid (*Illex*) fishery and 1 loggerhead in the long-finned squid (*Loligo*) fishery. It is possible that pair trawl gear may be used in this fishery. Due to the increased fishing power of pair trawlers, entanglement in this gear type may be more likely than for single trawl vessels. Based on observations of the tuna fisheries, both lethal and non-lethal takes of leatherback turtles have been observed in pair trawl gear.

Purse seine gear is an authorized gear type for the SMB fishery. At this time, information is not available on which species are targeted with this gear type. Purse seine gear may interact with listed species. Most whales that have been observed encircled by purse seines have been released without apparent injury.

Several types of gillnet gear, including pelagic drift gillnets, anchored pelagic gillnets, and anchored sink gillnets, have been used historically in the mackerel fishery. Currently, only pelagic drift gillnet gear is authorized. Mesh size is likely to be smaller than that used in the large pelagics drift gillnet, Multispecies, Monkfish, or Dogfish fisheries. Although mesh size of gillnets may play a significant role in bycatch of finfish, available information suggests that mesh size is not as important relative to marine mammal or sea turtle entanglement in the gillnet gear type as a whole, particularly since both whales and sea turtles are known to become entangled in buoy lines as well as in the nets themselves. Entanglements of right and humpback whales have been reported in small mesh gillnet gear. Gillnet gear set to catch bait for the lobster or tuna fisheries may be the most likely source of entanglement for endangered whales. Entanglement of endangered whales has been recorded in all three gillnet types mentioned above. Sea turtles and shortnose sturgeon have also been taken in gillnet gear. As noted earlier, the SMB Plan requires all commercial vessels catching any of the four target species for bait to possess SMB permits and comply with mandatory reporting even if squid/mackerel/butterfish are not their primary target species. The relationship between bait gillnet fisheries and the SMB Plan is somewhat indirect because these vessels would traditionally be considered part of their primary fishery, *e.g.*, lobster pot or tuna hand line, rather than the SMB fishery. Regardless of the MSA authority under which bait gillnet vessels might be operating, these vessels are subject to requirements of

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the ALWTRP and HPTRP. Therefore, any interactions would be addressed under actions restricting the Northeast sink gillnet or Mid-Atlantic gillnet fisheries as defined under the MMPA.

Other gear types which may be used in the SMB fishery include pelagic longline/hook-and-line/handline, pot/trap, dredge, pound net, and bandit gear. No information is available on where or to what extent these gear types may be used. Entanglements or entrapments of whales, sea turtles, and sturgeon have been recorded in one or more of these gear types. Some of these gear types may only be used in state waters and therefore not likely to be part of the federal fishery.

Any interactions that do occur in the SMB fishery may be exacerbated by the element of attraction to harvesting or processing operations. Whales may be attracted to mobile gear operations due to the surface activity involved. In certain circumstances, fishing activity can make prey more accessible to marine mammals and birds by concentrating the target species, scattering injured fish, or bringing fish up to depths where they are accessible. The amount of activity at or near the surface during the haulback and transfer processes may have been a factor in the incidental take of small cetaceans observed in the foreign/joint venture squid and mackerel trawl fisheries in the 1970s and 1980s (Waring, pers. comm.). No information is available on the degree to which codend transfer is used in the current SMB fishery. Surface activity may encompass a greater period of time for pair trawl vessels than for single vessels. Sea turtles may be attracted to fixed gear such as pound nets and anchored gillnets, and some depredation of the catch may occur.

Information is not available at this time on takes of shortnose sturgeon that may have been observed in the SMB fishery by the NMFS Sea Sampling program. However, fishing effort data from 1992 reported in the EIS for Amendment 5 (MAFMC 1995) includes 6,338 pounds, 222 pounds, and 8,178 pounds of "sturgeons" caught in the otter trawl fishery for long-finned squid, mackerel, and butterfish, respectively. Because of similarity in appearance with the Atlantic sturgeon, *Acipenser oxyrinchus*, it is not possible to rule out the possibility that some of the sturgeon catch in the SMB fishery consisted of shortnose sturgeon.

In summary, the potential exists for incidental take of listed species in the SMB fishery. The level of observation has been low, and additional monitoring effort is required in all sectors of the fishery. Steps should be taken to determine the target species and level of effort for each SMB gear type and to identify all vessel owners that may be targeting SMB with gillnets so that they can be informed of ALWTRP and HPTRP requirements. Based on current available information, the number of takes is likely to be small and therefore unlikely to affect the recovery of populations of listed species.

Vessel Effects

This section discusses effects of fishing vessels as distinct from effects of fishing gear. Fishing vessels may interact directly with listed species through disturbance or through injury or

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mortality due to collisions or entanglement in anchor lines. The effects of vessel activity on listed species is largely unknown. Although it is logistically nearly impossible to study the effects of vessel activities on any marine organism, attempts have been made to evaluate the impacts of whale watch activities on whale behavior. However, no conclusive detrimental effects have been demonstrated. No information is available on the potential effects of the various types of vessel activity involved in the harvesting or processing components of the SMB fishery. No incidences of collision with SMB vessels or entanglement in vessel anchor lines have been documented. Due to differences in vessel speed, collisions during fishing activities are less likely than collisions during transit to and from fishing grounds. Entanglement in anchor lines would primarily involve those vessels deploying, tending, or hauling fixed gear. In terms of opportunity, anchor line entanglement would be most likely to occur in the bait gillnet fishery. Given the current lack of information on prevalence or impacts of interactions, there is no reason to assume that the level of interaction represented by any of the various vessel activities discussed in this section would be detrimental to the recovery of listed species.

C. Trophic Interactions: Competition with the Squid/Mackerel/Butterfish Fishery and the Fishery Resources

As discussed above, entanglement of listed species in SMB gear is not expected to be frequent and is therefore not likely to substantially effect survival and recovery. It is also unlikely that the level of fishing effort in the SMB fishery will increase as a result of the proposed action or that the fishery will expand significantly in the near future. However, this consultation represents the first examination of the importance of the SMB resources to listed species and right whale critical habitat under the formal ESA Section 7 process. Therefore, the potential indirect effects due to trophic interactions involving the SMB fishery on survival and recovery of endangered whales have not yet been addressed.

The availability of sufficient prey for endangered whales may be affected through competition with the SMB fishery or with the fishery resources. The two types of potential trophic interactions which might occur include a) competition for fishery resources between piscivorous or teuthivorous (squid-eating) whales and the fishery and b) competition for zooplankton between planktivorous whales and squid/mackerel/butterfish.

An extensive discussion of potential competition between whales and a fishery for a patchily distributed prey resource is contained in the Biological Opinion prepared for the Atlantic Herring FMP. Humpback and fin whales prey upon mackerel, and sei whales are known to feed upon squid. Since whales are opportunistic feeders, it is possible that they may feed upon butterfish when they school at the surface in warmer months. Therefore, much of the Herring discussion is applicable to this consultation and is incorporated by reference. However, it should be noted that SMB species are not known to be primary prey species for endangered whales in the action area. Mackerel is a faster-swimming species than herring; therefore, foraging efficiency on this species may be lower than for herring. Foraging may be limited to age classes of fish that are easier to catch. Effects of competition between the SMB fishery and whales are likely to be less

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pronounced than those which might occur from the herring fishery. As with the herring fishery, there is insufficient information to determine whether the SMB fishery could be affecting survival and recovery of either whale species. If individual whales depend on mackerel or squid, then the fishery could have a greater adverse affect on these individuals than the populations as a whole. Adverse affects on whales would be greatest if mackerel or squid is targeted by whales in times and areas of high fishing mortality, particularly if concentrations of prey which are important to the whales are removed by the fishery.

The Herring BO also contains an extensive discussion of possible competition between herring and planktivorous endangered whales (right, sei, blue). Squid, mackerel, and/or butterfish are known to prey upon species groups such as copepods and euphausiids, which are targeted by one or more species of planktivorous whales. Therefore, much of this discussion is applicable to the SMB analysis and is incorporated by reference. As with mackerel or squid as prey resources, there is insufficient information at this time to determine whether predation by squid/mackerel/butterfish on zooplankton resources might affect the survival and recovery of planktivorous whales.

The ecosystem in the action area is not considered to be in equilibrium, and the abundance of the various prey resources may continue to fluctuate with commercial fishing pressure on some of those species or their predators or competitors. It will be difficult to measure the effects of competition with the SMB fishery or squid/mackerel/butterfish on whale recovery.

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D. Effects of the Amendment 8 Management Measures and Existing Plan Measures

If endangered whales continue to prey upon SMB resources, the implementation of the FMP under a system of specifications will benefit these species by controlling harvest. The measure to close directed fisheries when the domestic annual harvest (DAH) is approached may also benefit listed species. However, the incidental catch allowances would limit the benefit by allowing fishing to continue. Insufficient information is available at this time to evaluate whether requirements of natural predators were adequately considered in calculating rates of natural mortality used in developing specifications for the SMB fishery. The operation of the squid and butterfish fisheries under the limited access system may result in gradual effort reduction in the fishery which would reduce the potential for entanglement of listed species. However, effort in the mackerel fishery may expand significantly if markets are developed. Vessels displaced from heavily restricted fisheries such as the Multispecies fishery may elect to fish for SMB species. No information is available on the degree to which effort has expanded in the SMB fishery in the last several years when the majority of groundfish restrictions have been implemented. Further displacement may occur from FMPs which will be implemented for monkfish and dogfish. Both these species are targeted in the Mid-Atlantic.

It is possible that whales could be targeting SMB species when they are concentrated for spawning. The FMP does not currently contain restrictions during spawning seasons, therefore there will be no controls on the degree of interaction with whales in spawning times/areas.

Given that the fishing vessels currently engaged in or capable of entering the mackerel fishery have a harvest capacity which cumulatively exceeds acceptable levels, a ceiling on harvest capacity would provide some protection against over-exploitation by individual vessels. However, this restriction is of limited value because it is not proposed in the context of a controlled access system which considered the harvest capacity of the entire fishery. Given the fishing power of factory trawlers which once participated in the fishery, it is more protective of the resources involved to implement vessel restrictions at this time rather than waiting for a controlled access system to be developed and implemented. The relationship between fishing power and rates of entanglement of various protected species is poorly understood. Factors such as the towing speed, dimensions of net openings, depth in the water column, time of day, length of haulback process, and duration of transfer activity at the surface may affect entanglement rates. Fishing strategies may also affect the potential for competition with baleen whales. Further information on vessel characteristics and fishing strategies is expected to be obtained from proposed monitoring provisions.

Several of the frameworkable measures could either adversely or beneficially affect listed species or critical habitat. Assessment of impacts on any framework actions taken by the MAFMC will be conducted in separate consultations on those actions.

The requirement for mandatory data reporting in the SMB fishery will facilitate management of protected species interactions. At this time, the data collected since the institution of this requirement in 1996 is not available for a detailed analysis of overlap between the fishery and listed species.

The other measures proposed in Amendment 8 or already implemented under the FMP are primarily administrative in nature and therefore not expected to affect listed species or critical habitat.

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CUMULATIVE EFFECTS

"Cumulative Effects", as defined in the ESA, are "those effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." Therefore, this section does not discuss the cumulative effects of federal actions since these actions undergo Section 7 consultations.

Commercial fishing activities in state waters are likely to take several protected species. 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 on state water fisheries is contained in the Environmental Baseline section. The Atlantic Coastal Cooperative Statistics Program (ACCSP), when implemented, is expected to provide information on takes of protected species in state fisheries and systematically collected fishing effort data which will be useful in monitoring impacts of the fisheries.

Ship strikes have been identified as a significant source of mortality to the northern right whale population (Kraus 1990) and are also known to impact all other endangered whales. Small vessel traffic is also known to take sea turtles. Commercial shipping traffic is estimated at 1,200 ship crossings per year with an average of three per day. In one region of the action area, about 20 whale watch companies representing 40 to 50 boats conduct several thousand trips from April through September, with the majority of effort in the summer season. In addition, an unknown number of private recreational boaters frequent coastal waters; some of these are engaged in whale watching or sportfishing activities. While these activities may result in lethal (through entanglement or boat strike) or non-lethal (through harassment) takes of listed species, that could prevent or slow a species' recovery, such effects are currently unknown. Various initiatives have been planned or undertaken to expand or establish high-speed watercraft service in the northwest Atlantic, including one service between Bar Harbor, Maine, and Nova Scotia with a vessel operating at higher speeds than established watercraft service. The Bar Harbor-Nova Scotia high speed ferry conducted its first season of operations in 1998. The operations of these vessels and other high-speed craft may adversely affect threatened and endangered whales and sea turtles, as discussed previously with private and commercial vessel traffic in the Action Area. NMFS and other member agencies of the Northeast Recovery Plan Implementation Team will continue to monitor the development of the high speed vessel industry and its potential threats to listed species and critical habitat.

Sources of pollutants in the Gulf of Maine and other coastal regions include atmospheric loading of pollutants such as PCBs, storm water runoff from coastal towns, cities and villages, runoff into rivers emptying into the bays, groundwater discharges and river input and runoff. 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 effects to larger embayments is unknown.

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V. CONCLUSION

After reviewing the best available information on the status of endangered and threatened species under NMFS jurisdiction, the environmental baseline for the action area, the effects of the action, and the cumulative effects, it is NMFS' Biological Opinion that the operation of the federal fishery for Atlantic Mackerel, Squids, and Atlantic Butterfish under the FMP as modified by the proposed action is not likely to jeopardize the continued existence of endangered and threatened species under NMFS jurisdiction and also not likely to destroy or adversely modify right whale critical habitat.

VI. 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, wound, kill, trap, 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 Act 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 be undertaken by NMFS in a manner that they become binding conditions so that the exemption in Section 7(o)(2) will apply. NMFS has a continuing duty to regulate the activity covered by this ITS. If NMFS fails to assume and implement the terms and conditions through enforceable terms, the protective coverage of Section 7(o)(2) may lapse. In addition, NMFS must report the progress of the action and monitor the impact of incidental take.

When a proposed NMFS action which may incidentally take individuals of a listed species 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 any incidental taking. It also states that reasonable and prudent measures necessary to minimize such impacts be provided along with implementing terms and conditions. Only those incidental 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 takings prohibition of Section 9(a), pursuant to Section 7(o) of the ESA.

NMFS is not including an incidental take authorization for endangered whales at this time because the incidental take of endangered whales currently cannot be authorized under the provisions of Section 101(a)(5) of the Marine Mammal Protection Act or its 1994 Amendments. Following issuance of such regulations or authorizations, NMFS may amend this Biological Opinion to include an incidental take allowance for these species, as appropriate.

Anticipated Amount or Extent of Incidental Take

NMFS anticipates that the operation of the federal Squid, Mackerel, Butterfish (SMB) fishery under the FMP as modified by the proposed action may result in the injury or mortality of loggerhead, leatherback, green, and/or Kemp's ridley sea turtles and/or shortnose sturgeon. Based on observed takes from Sea Sampling data for gear types which may be used in the SMB fishery, NMFS anticipates that the following numbers of incidental takes of sea turtles and shortnose sturgeon may be taken annually:

- 6 takes (no more than 3 lethal) of loggerhead sea turtles,
- 2 lethal or non-lethal take of green sea turtles,
- 2 lethal or non-lethal take of Kemp's ridley sea turtles,
- 1 lethal or non-lethal take of leatherback sea turtles, and/or
- 3 takes (no more than 1 lethal) of shortnose sturgeon.

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Anticipated Impact of Incidental Take

In the accompanying Biological Opinion, NMFS has determined that this level of anticipated take is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

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 and shortnose sturgeon:

(Note: *wherever possible, these measures should be implemented in conjunction with similar requirements for ITSs issues with Biological Opinions on other FMPs in the action area.*)

1. For each gear type used in the SMB fishery, NMFS shall analyze all available data to determine the annual level of incidental take of sea turtles and shortnose sturgeon. NMFS shall prepare a report analyzing existing data, providing estimated levels of take by species, by gear, location, and month and discussing any statistical or other scientific shortcomings of those data. Beginning in 2000, reports shall be submitted to the Director, Office of Protected Resources by September 1 of each year.

2. NMFS must evaluate observer information (and other information when available) quarterly to determine whether the incidental take level should be modified or if other management measures need to be implemented to reduce the take.

3. NMFS must incorporate planning for reporting of sea turtle and shortnose sturgeon takes into the Atlantic Coastal States Cooperative Statistics Program. Reporting information must provide adequate identification guidance for both sea turtles and shortnose sturgeon. Takes must be reported within 48 hours of returning from a trip in which an incidental take occurred. The reports shall include a description of the animal's condition at the time of release. NMFS shall consider incorporating this reporting requirement into the FMP.

4. NMFS must provide adequate guidance such that any sea turtle incidentally taken will be handled with due care to prevent injury to live specimens, observed for activity, and returned to the water. NMFS will send a letter to all herring permit holders detailing protocol for handling a turtle interaction. This letter must include the following measures, which are provided in 50 CFR Part 223.206(d)(1)

    a. Live animals must be handled with care and released as soon as possible without further injury.

    b. Animals are to be released when the vessel is in neutral and only in areas where

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they are unlikely to be recaptured or injured by vessels.

c. Comatose sea turtles should be resuscitated according to the procedures set forth in 50 CFR 223.206 (d)(1).

d. Dead sea turtles and shortnose sturgeon may not be consumed, sold, landed, offloaded, transshipped or kept below deck, but must be released over the stern of the vessel.

NMFS anticipates that not more than 6 loggerhead sea turtles, 2 green or Kemp's ridley sea turtles, 1 leatherback sea turtle, and/or 3 shortnose sturgeon will be incidentally taken in any given year as a result of the SMB fishery. The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of the incidental take that might otherwise result from the fishing effort authorized under the FMP as modified by the proposed action. If, during the course of the SMB fishery, this level of incidental take is exceeded, the additional level of take would represent new information requiring reinitiation of consultation and review of the reasonable and prudent measures that have been provided. If authorized levels of incidental take are exceeded, the Office of Sustainable Fisheries must immediately provide an explanation of the causes of the taking and review, with the Office of Protected Resources, the need for possible modification of the reasonable and prudent measures.

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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 this 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 conservation actions related to whale entanglement which were recommended in the Recovery Plans for the right and humpback whales are implemented in the Atlantic Large Whale Take Reduction Plan (ALWTRP) and are incorporated by reference. The ALWTRP should also provide some benefit to other endangered whales and to sea turtles. The following additional measures are recommended regarding whale prey resources and sea turtle conservation:

A. Whale prey resources in relation to population status and trends.

1. Planning for analysis of squid, mackerel, and butterfish parameters should be included in the list of Conservation Recommendation activities issued with the Atlantic Herring Biological Opinion. Although SMB species are not know to be primary prey items, they are important prey and predator species in the Northeast Shelf ecosystem and could therefore have direct or indirect effects on listed species.

B. Sea turtle and shortnose sturgeon conservation.

1. NMFS should continue to pursue efforts to work with states to develop Section 10 permits and associated conservation plans that improve data collection regarding the incidental take of sea turtles and reduction of takes.

2. NMFS, in conjunction with the ASMFC or other appropriate regulatory authority, should encourage states to require fishermen to report sea turtle and shortnose sturgeon takes as bycatch in any mandatory state logbooks and should provide instructions on release. Reports should include a description of the animal's condition at the time of release.

3. 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. There is potential that this gear could adversely affect both 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 importance of bringing gear back to shore to be discarded properly. 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

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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 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 ghost gear program and consider incorporating this system into future revisions of the appropriate management plans.

4. To facilitate investigation of behavioral interactions related to incidental take, NMFS should determine the feasibility of underwater observation of the various SMB fishing activities, including use of ROVs if necessary. This information should be compared with any existing observations of capture of sea turtles, marine mammals, or marine birds.

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REINITIATION OF CONSULTATION

This concludes formal consultation on the proposed action in the context of the FMP for Atlantic Mackerel, Squids, and Atlantic Butterfish. 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 (specifically, should new information on SMB biology and whale prey requirements suggest that the levels of prey resources required by endangered whales may be compromised by SMB fishing mortality, consultation should be reinitiated); (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. In instances where the amount or extent of incidental take is exceeded, NMFS' Office of Sustainable Fisheries must immediately request reinitiation of formal consultation.

Mandatory data reporting was instituted in the SMB fishery in Amendment 5 and has been required since May 1996. Vessel owners complete daily logs and submit the logs monthly. Dealers are required to report weekly. As of January 1, 1997, vessels possessing a SMB permit were required to take observers if requested by NMFS. This information, which should provide important information on both the levels of efforts and location of fishing activities associated with the SMB fishery, was not available at the time this opinion was prepared. This information is critical to accurately anticipate and assess the effects of incidental take associated with the SMB fishery, particularly with respect to sea turtles. NMFS anticipates receiving this information, as well as additional information regarding bycatch estimates, within the next six months. Receipt of this information will represent new information and require reinitiation of section 7 consultation.

Because of the FMP adjustment process, it is anticipated that consultation on the FMP will be reinitiated at least annually as new management measures are developed. Each reinitiation will consider all aspects of the fishery and the FMP.

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